The Financial Value of Fellowship Training in Otolaryngology

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Abstract
Objective. To evaluate the financial impact of pursuing a fellowship in otolaryngology.


Subjects and Methods. The American Academy of Otolaryngology—Head and Neck Surgery report, entitled Socioeconomic Study among Members April 2011, gives a financial profile of respondents who reported their primary area of specialization as either general otolaryngology or a specific area of subspecialization. Weighted averages were calculated from the reported data. The weighted averages were used to calculate a net present value (NPV) over a 30-year contiguous career.

Results. The NPV for general otolaryngology was $4.73 million. The NPV for the following subspecialties in relation to general otolaryngology were (in hundredthousands) as follows: otolaryngologic allergy ($–1153), sleep medicine ($–677), otology/neurotology ($–339), laryngology ($–288), head and neck ($–191), pediatric otolaryngology ($–176), facial plastic surgery ($–139), skull base surgery ($122), rhinology ($285), and allergy and immunology ($350). Ninety-four percent of general otolaryngology respondents were in private practice. Most subspecialists worked in an academic setting.

Conclusion. Fellowship training in otolaryngology will affect career earnings of prospective fellows. The overall financial impact of fellowship training, calculating in the delay in receiving a full clinical salary, should be factored into the decision to pursue fellowship training.

Keywords
fellowship, otolaryngology, financial value, return on investment, motivation

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Many variables factor into the decision to pursue fellowship-level training. Studies have shown that interest within a given field, intellectual stimulation, lifestyle, marketability, and the opportunity for mastery are all powerful influences that contribute to career decisions such as the choice to subspecialize. Similarly, residents may elect to pursue fellowship training due to the influence of mentors, perceptions about avoiding malpractice litigation, access to complex cases, a higher level of job security, to make up for deficits in residency training, to gain more prestige to be more successful (left to resident interpretation), or to enhance academic progression. In addition, marital status and the presence of children have been shown to influence career motivations and perceptions about additional training.

Financial factors may also affect the decision to pursue subspecialty training. The financial sacrifices made to complete medical education, residency, and fellowship training can result in debt that may be a consideration as residents decide whether to postpone practice to pursue postresidency training. As stated by Gaskill et al.,

Graduates now carry 4.5 times the educational debt of those graduating only two decades prior, and the debt may be in excess of $350,000. Considering forecasted decreases in Medicare fee schedules and greater managed-care penetration, the financial implications of practicing medicine are becoming increasingly important.

Conversely, residents may ascribe to the human capital theory, described by economists as the concept of
individuals investing in additional training and foregoing current earnings to increase their income in the future.23

Previous studies have examined the financial impact of fellowship training in various fields.21,22 This type of analysis has not yet been published in the field of otolaryngology and would be of value to residents as they decide whether to pursue fellowship training. The present study was undertaken to give prospective fellows an idea of the financial implications of additional training.

Methods

This study received an exemption from the Institutional Review Board at the Eastern Virginia Medical School. It was performed as a retrospective analysis of data from the April 2011 Socioeconomic Study among Members (SSAM) of the American Academy of Otolaryngology—Head and Neck Surgery (AAO-HNS). This survey of 1328 otolaryngologists (23.2% of email contacts) accumulated physician-reported data regarding income and debt among clinicians in a variety of practice types and subspecialties.23 Subspecialty designation was determined by the respondent’s answer to the following question: “What is your primary area of specialization?” For the purposes of this analysis, we make the assumption that those primarily working in the following fields have undergone respective fellowship training: laryngology (1 year), head and neck (1 year), pediatric otolaryngology (1 year), otology/neurotology (2 years), facial plastic surgery (1 year), sleep medicine (1 year), rhinology (1 year), allergy and immunology (1 year), and skull base surgery (2 years). In the past, a fellowship in sleep medicine was not required for its clinical practice. We made a 1-year fellowship assumption to make this analysis valuable for prospective fellows who would be required to undergo a year of additional training to be eligible to take sleep medicine boards. Income data represented only income from clinical services and not from research or other financial relationships. Five respondents designated their primary area of subspecialization as “other” and their data were disregarded for this analysis.

Our primary outcome measure was the 30-year net present value (NPV). The NPV is a metric for the amount by which an investment is expected to increase based on the present value of its potential cash flows and initial cost. A positive NPV indicates profitability and a negative NPV indicates a financial loss. It is calculated according to the following formula:

\[ NPV = \sum_{t=0}^{T} \frac{Ct}{(1+r)^t} \]

In this formula, \( Ct \) represents the net annual cash flow, and \( t \) represents the time of the cash flow. The variable \( r \) represents the discount rate, which is the annual depreciation of money, or inflation.

In our study, NPV describes the profitability, in current monetary value, of a decision to do a fellowship. It considers the initial cost of an investment and the expected annual net income. The annual net income was determined in part by weighting the income data reported in the SSAM (Table 1). The annual net income also takes into consideration the increased annual loan repayment amount given the extra interest accrued during years in fellowship training. The cost of the investment is seen as the difference between the annual net income earned during fellowship and that earned by an individual in a nonfellowship practice during the same period, plus the interest accrued on prior educational debt during fellowship training.

A number of assumptions were made to calculate the NPV for our data set. These are as follows:

1. There was no break during or between residency, fellowship, or employment.
2. Those who undertook fellowship training worked afterward primarily in their field of subspecialization.
3. Each otolaryngologist enjoyed a 30-year career, and the duration of the career included time spent during fellowship training.
4. Educational indebtedness was based on the average educational debt of indebted graduates of the class of 2010.24
5. Residents had no remaining debt from undergraduate studies; no payments were made on student debt during residency or fellowship training, and interest capitalized during residency and fellowship at the current fixed federal rate of 6.8%.
6. Student loans were repaid over 20 years and repayment began immediately upon completion of fellowship training.
7. Incomes demonstrated in Table 1 remained stable over time and did not increase with inflation (as there is uncertainty in the current political atmosphere over future physician reimbursements). Fellowship stipends for the years 2015-2017 were estimated based on the AAMC Survey of Resident/Fellow Stipends and Benefits—Autumn 2010 Report25; we conservatively adjusted the value by less than the average annual rate of increase in resident stipends over the past 10 years for first-year residents, which we assumed held true for fellowship stipend increases. The increase was 2.5% annually.
8. A discount rate of 5%.

The NPV was calculated for each otolaryngology subspecialty. We acknowledge that weighted incomes may not be representative of every otolaryngologist in each respective subspecialty (ie, the first few years of clinical practice may yield less income). However, for the purposes of this article, we assume the number of respondents in each subspecialty is representative of that subspecialty as a whole, regardless of how long they have been in clinical practice.

Results

The weighted income averages for each subspecialty and general otolaryngology are represented in Table 1. Confidence intervals were calculated from the standard error of the mean for grouped data. Net present value calculations are shown in Table 2. In most cases, fellowship training in otolaryngology...
did not increase career earnings. In fact, in only 3 specialties (skull base surgery, rhinology, and allergy and immunology) did fellowship training increase career earnings. Facial plastic surgeons, pediatric otolaryngologists, and head and neck surgeons earned similar amounts over a 30-year career. Sleep medicine physicians and otolaryngologic allergy physicians, if they restricted their practice to these subspecialties, earned significantly less over a career than general otolaryngologists.

Table 3 demonstrates the percentage of each subspecialist that reported a career in a private practice vs an academic setting. Although these data may not accurately reflect the ratio of private practice to academic physicians in each subspecialty (or in different geographic regions), it does demonstrate that most general otolaryngologists worked in private practice and that many subspecialists worked in an academic setting.

Figure 1 is a graphical comparison of the estimated career earnings of each subspecialty over the course of a 30-year career. It should be noted that 3 subspecialties eventually become more profitable than a career in general otolaryngology: allergy and immunology (7 years after residency), rhinology (8 years after residency), and skull base surgery (14 years after residency). Careers in otolaryngologic allergy, laryngology, and sleep medicine become less profitable each year compared with general otolaryngology. Career earnings in otology/neurotology, pediatric otolaryngology, head and neck, and facial plastic surgery approach those of general otolaryngology only near the end of a 30-year career.

Discussion

Although financial motivations to pursue subspecialty training are not uncommon,1,3,5-7,9,10 our data suggest that many otolaryngology subspecialists may, over the course of their career, earn less than their counterparts in general otolaryngology. Our findings are similar to those reported previously for fellowship training in pediatrics, where most fellowships...
decrease career earnings, but are opposite the financial impact of fellowship subspecialization for orthopedic training, where more than half of the fellowships evaluated yielded a positive NPV. As stated previously, for some residents, fellowship training offers a chance to fulfill a dream, garner prestige, achieve better work-life balance, or gain academic opportunities. Based on the current study, however, those who choose to do a fellowship for the potential financial rewards may ultimately be less satisfied with their choice. Furthermore, given the uncertainty among future reimbursement patterns and reports that the return on physician educational investment is not excessive when compared with other professional groups, prospective fellows should give thought to the financial implications of their decisions.

Although our results are informative, some inconsistencies exist. For example, the profit margin for otolaryngologists who declared themselves specialists in “allergy and immunology” was substantially larger than that for “otolaryngologic allergy.” One potential explanation for this rather puzzling finding is that some otolaryngologists may not practice immunology as part of their allergy practice. We suspect that the income generated from the treatment of allergic disorders by otolaryngologists is closer to that of rhinology, since many of the complaints are related to the sinuses and nasal cavities. But this discrepancy is representative of the limitations from the survey design of the SSAM. Another puzzling finding is that no otolaryngologists who practice sleep medicine report income between $200,000 and $250,000. There appears to be a bimodal distribution to their income. This may be due to the difference in academic and private sleep medicine physicians—private practice physicians are more likely to have ownership in a sleep center and can bill facility and

Table 3. Academic vs private practice settings.

<table>
<thead>
<tr>
<th>Total No.</th>
<th>Academic, %</th>
<th>Private, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otolaryngologic allergy</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Laryngology</td>
<td>29</td>
<td>59</td>
</tr>
<tr>
<td>Head and neck</td>
<td>117</td>
<td>68</td>
</tr>
<tr>
<td>Pediatric otolaryngology</td>
<td>106</td>
<td>64</td>
</tr>
<tr>
<td>General otolaryngology</td>
<td>782</td>
<td>6</td>
</tr>
<tr>
<td>Otology/neurotology</td>
<td>109</td>
<td>38</td>
</tr>
<tr>
<td>Facial plastic surgery</td>
<td>62</td>
<td>34</td>
</tr>
<tr>
<td>Sleep medicine</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>Rhinology</td>
<td>76</td>
<td>45</td>
</tr>
<tr>
<td>Allergy and immunology</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Skull base surgery</td>
<td>10</td>
<td>70</td>
</tr>
</tbody>
</table>

*aBased on the American Academy of Otolaryngology—Head and Neck Surgery’s Socioeconomic Study among Members April 2011.*

Figure 1. Thirty-year cumulative income comparison among otolaryngology subspecialties.
professional fees. The difference may also be due to geographic location, as insurance companies are less likely to reimburse for in-facility testing and in some regions mandate home-polysomnography. This may also represent a glitch in the data given that only 12 respondents report subspecializing in sleep medicine. Further investigation is warranted.

Any financial analysis is dependent on the assumptions that form its foundation. This study has many inherent limitations due to its design and assumptions. First, the interpretation of our results is limited by the retrospective survey design with a low response rate and by the calculations performed to create data amenable to financial analysis. In addition, although the number of respondents was large, they may have been overrepresented by otolaryngologists who are more engaged in the AAO-HNS, creating a bias. Furthermore, the design of the SSAM may not have included the intention to generate aggregate data fit for statistical analysis. Future SSAM surveys may be redesigned to gather data more amenable to these types of investigations. Second, there may be some overlap among various fields (i.e., rhinology and neurotology both involve skull base surgery, rhinology may include some allergy and immunology as well as otolaryngologic allergy, etc). Third, we are unable to verify that otolaryngologists who identify themselves as subspecialists have completed fellowship training. This was one of the most significant limitations of this study. Therefore, the expected annual salary associated with specialty practice would be similar without accruing an opportunity cost. In this case, our analysis would not be applicable. Similarly, we have no data indicating what proportion of practice a subspecialist spends in his or her area of expertise and assumed that the primary scope of a subspecialty practice was confined to the area of fellowship training. We recognize that many subspecialists may still treat many general otolaryngology problems, although we assume they practice primarily in their area of fellowship expertise. Next, we do not know the payer-mix of each respondent and recognize that payer-mix can largely affect financial analyses in contemporary health care. Finally, approximately 14% of respondents to the AAO-HNS survey that constitutes our source data worked 40 hours a week or less, which could be classified as “part-time.” Although this could confound our data, we believe this may be representative of current otolaryngologists’ practice patterns.

Many who examine our findings may want to compare the income differential between otolaryngologists in private practice with academics. This was not the primary objective of this study but would be a valuable piece of information. We were unable to identify any sources describing the number of academic and private otolaryngologists currently in practice nationally. These estimates are difficult to obtain given that some academic otolaryngologists are still in private practice while others are salaried by a university. Anecdotal estimates suggest that approximately 80% of practicing otolaryngologists are currently in private practice. We are not aware of any estimates reporting this ratio within the subspecialties in otolaryngology. Seventy-six percent of respondents to the SSAM reported they were in private practice. Most otolaryngologists in private practice are anticipated to earn more than their academic counterparts from clinical activities. If anecdotal estimates are accurate, we expect the national income data for currently practicing otolaryngologists to be higher than our estimates. However, further evaluation is warranted. Moreover, this study is a comparison of the income generated from clinical activities. We recognize that this may not account for the income of most academic otolaryngologists for whom a large portion of their earnings come from grants, financial relationships borne out of their academic notoriety, or other financial incentives. This limitation is significant.

Although our assumptions affect our conclusions, we affirm they are reasonable given the current available data but remind readers to carefully consider them. Perhaps these assumptions would be improved for future financial analyses by adjustments to the questions in SSAM or other similar surveys. Despite these weaknesses, these data give otolaryngology residents an idea of the financial implications of fellowship training.

Conclusion
Fellowship training in otolaryngology may not yield a positive return on investment. Prospective fellows are motivated by many factors and should consider the financial implications of career decisions but should not base their decision solely on the monetary impact.

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Author Contributions
Benjamin P. Hull, acquisition of data, interpretation, writing manuscript first draft; David H. Darrow, participation in concept, editing manuscript, interpretation of data; Craig S. Derkay, original idea, interpretation of data, editing manuscript.

Disclosures
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References


