

Is it All About the Money? Not All Surgical Subspecialization Leads to Higher Lifetime Revenue when Compared to General Surgery

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OBJECTIVE: It is believed that spending additional years gaining expertise in surgical subspecialization leads to higher lifetime revenue. Literature shows that more surgeons are pursuing fellowship training and dedicated research years; however, there are no data looking at the aggregate economic impact when training time is accounted for. It is hypothesized that there will be a discrepancy in lifetime income when delay to practice is considered.

DESIGN: Data were collected from the Medical Group Management Association's 2015 report of average annual salaries. Fixed time of practice was set at 30 years, and total adjusted revenue was calculated based on variable years spent in research and fellowship. All total revenue outcomes were compared to general surgery and calculated in US dollars.

PARTICIPANTS: The financial data on general surgeons and 9 surgical specialties (vascular, pediatric, plastic, breast, surgical oncology, cardiothoracic, thoracic primary, transplant, and trauma) were examined.

RESULTS: With fellowship and no research, breast and surgical oncology made significantly less than general surgery (−\$1,561,441, −\$1,704,958), with a difference in opportunity cost equivalent to approximately 4 years of work. Pediatric and cardiothoracic surgeons made significantly more than general surgeons, with an increase of opportunity cost equivalent to \$5,301,985 and \$3,718,632, respectively. With 1 research year, trauma surgeons ended up netting less than a general surgeon by \$325,665. With 2 research years, plastic and transplant surgeons had total lifetime revenues approximately equivalent to that of a general surgeon.

CONCLUSIONS: Significant disparities exist in lifetime total revenue between surgical subspecialties and in comparison, to general surgery. Although most specialists do gross more than general surgeons, breast and surgical oncologists end up netting significantly less over their lifetime as well as trauma surgeons if they do 1 year of research. Thus, the economic advantage of completing additional training is dependent on surgical field and duration of research. (J Surg Ed ■■■■-■■■. © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEYWORDS: Economics, Subspecialization, Fellowship, Income, Revenue, Surgery

COMPETENCIES: Systems Based Practice

INTRODUCTION

General surgery residents decide at the end of their residency training whether to pursue specialized instruction or enter directly into an active general surgery practice. Historically, approximately half of a program's residents chose additional training. In the past several decades, this percentage has drastically shifted, increasing from 74% to 80% of residents entering a fellowship.¹⁻³ This has helped to facilitate a shortage of general surgeons with a decrease from 6.93 to 5 general surgeons per 100,000 people in 1974 to modern day. This is projected to result in an estimated deficit of more than 2500 general surgeons by 2030.⁴⁻⁶ This is clearly problematic as on top of a growing population, this progressive specialization comes with an inevitable narrowing of services, thus further accentuating the general surgeon shortage.⁷

The choice to subspecialize seems to be a complex decision involving factors such as hospital and surgeon volume, work-hour regulations, restricted operative resources, and decreased

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autonomy. Yeo et al. showed that a majority of residents also believe that there is a need to complete fellowship training in order to be a successful general surgeon as well as a competitive applicant for a faculty position.⁸ A quarter of chief residents believe that their 5-year residency training does not adequately prepare them for transition into faculty.⁹ Furthermore, residents believe that there are financial advantages to subspecialization, resulting in higher lifetime revenue when compared to general surgery, and this can be a driving force for career decisions owing to the substantial cost of graduate medical education and the significant loans most residents accrue.¹ This assumption persists even though one must often dedicate additional years of earning to research during residency, as studies and experience show that at least 1 year of research significantly improves competitiveness for most fellowships.¹⁰ These years not only interrupt the clinical training of young surgeons during key points of the residency programs leading to self-reported diminished satisfaction of training but also serve to decrease lifetime revenue by delaying one's time to earning an attending's salary.¹¹ Inclan et al. demonstrated that the financial return of fellowship is highly variable on surgical subspecialty; however, there are no data looking at the aggregate economic impact when training time and years of dedicated research are accounted for.¹²

This study seeks to examine the economic impact of additional years of training and research on lifetime revenue. It aims to determine whether there is an opportunity cost associated with delay to practice, and if so, is general surgery in fact a more attractive option economically in comparison to subspecialization in certain surgical fields (Fig.).

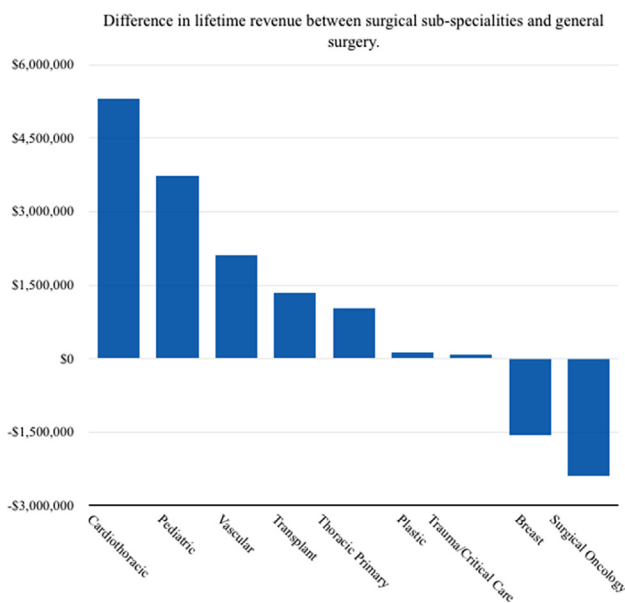


FIGURE. Difference in lifetime revenue between surgical subspecialties and general surgery.

METHODS

This study is a retrospective cross-sectional analysis in which the principle outcome was to evaluate differences in lifetime revenue between general surgeons and surgical subspecialists. Data were obtained from the Medical Group Management Association's (MGMA) 2015 report. The data collected included the average annual salaries for general surgery and 9 surgical subspecialties: vascular, pediatric, plastic, breast, surgical oncology, cardiothoracic, thoracic primary, transplant, and trauma/critical care.

Several assumptions were made to derive a formula for total adjusted revenue. Years of practice was set at 30 years, and expected years of fellowship training was set according to Table 1, even though there is often variability in length of both. The lifetime revenue for each specialty was calculated using 0 to 2 years spent in clinical or laboratory research during residency training. We chose to use an average salary of \$50,000 for research and fellowship years (\$40,000 per research year and \$60,000 per fellowship).

The following equation was derived by adding one's attending salary to the fellow/research salary over a 30-year timespan. The equation can be represented as follows:

$$TAR = (AYS)[30 - (F + R)] + [50,000(F + R)]$$

where *TAR* is total adjusted revenue, *AYS* is average yearly salary, *F* is years of fellowship training, and *R* is years of research taken during residency training. Calculations were made for each of the 9 subspecialties examined as well as for general surgery. The primary study objective was to compare the opportunity cost of each surgical subspecialty to general surgery after taking into account 0 to 2 years of research. Differences between total adjusted revenue were described in terms of years of practice. All calculated results were recorded in US dollars.

RESULTS

A total of 9 surgical subspecialties and general surgery were included (Table 1). The annual average salary of a general surgeon was \$429,923, which was greater than surgical oncologists and breast surgeons who made \$396,169 and \$389,181, respectively. All other subspecialties examined had greater salaries ranging from \$460,075 of trauma surgeons to \$717,987 of cardiothoracic surgeons.

Research Year: 0

When opportunity cost is calculated with zero years research, surgical oncologists and breast surgeons make significantly less than general surgeons with a difference in lifetime salary of losing 4.3 and 4.0 years of earnings, respectively (Table 2). Trauma surgeons earn approximately the same amount, with a difference of only \$84,410 in lifetime revenue. The remaining subspecialties earn more than general surgeons, ranging from \$1 million more to up to \$4.9 million in pediatrics and \$6.6 million in cardiothoracics.

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