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## Economics

## COVID-19 Impact on Young Arthroplasty Surgeons

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## ABSTRACT

**Background:** The current coronavirus crisis, COVID-19, has affected all orthopedic surgeons. Surgeons at early stages of their career are at risk of being affected differently than their more established counterparts.

**Methods:** We conducted an online survey for members of the Young Arthroplasty Group to determine what effects this had on their current practice.

**Results:** Nearly 40% of our surveyed group responded ranging from residents, fellows, and early career surgeons. All groups had been affected by the crisis, with different impacts on each subgroup.

**Conclusion:** COVID-19 had significant impact on young surgeons affecting their compensation, redeployment, and career advancement. Available resources should be offered to this group, where available, to mitigate the impact of the crisis.

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The spread of the novel coronavirus SARS-CoV-2 and its resulting illness COVID-19 has had far-reaching impact on all aspects of the orthopedic community. In the realm of adult joint reconstruction, this has significantly limited if not eliminated all elective joint arthroplasty as well as drastically changed the delivery of routine office-based care. Although this has implications for all practicing orthopedic surgeons, this poses unique challenges for young arthroplasty surgeons in training or the earlier phases of their career. The goal of this study is to investigate the impact of the COVID-19 crisis on young arthroplasty surgeons.

## Methods

We created a computer-based digital survey for all young arthroplasty surgeons enrolled within the young arthroplasty group (YAG) within the American Association of Hip and Knee Surgeons

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(AAHKS). This group encompasses surgeons from residency through their first 5 years of practice who have opted in for membership. The survey was emailed to the database with different questions based on career stage (resident/fellow/young surgeon).

Residents were queried regarding their anticipated goals after training, future job acceptance, and their current scope of practice. Fellows were also assessed regarding postfellowship preparedness considering decreased surgical training, selected job type, and job opportunity in light of the changes in orthopedic volumes. Finally, we assessed early practice surgeons regarding compensation and employment status, as well as advancement in career stage/partner/tenure, modification of practice nature to cover medical patients/COVID-19 patients, and further implications within payment models and future job opportunities. This survey was mailed to all members of the YAG group and results were tabulated using standard statistical techniques on Excel Spreadsheet.

## Results

Data were compiled from the digital survey sent on 4/10/2020. A total of 157/406 YAG members responded to the survey (38.7%). The respondents included 39 residents, 15 current fellows, and 103 early practice surgeons.

Of the residents, 7/39 (18%) had been reassigned to the care of COVID-19 patients, whereas the remaining 32/39 (82%) continue working primarily in orthopedic surgery. All 39 residents noted

that the current crisis did not alter their plans with regard to seeking jobs or fellowships. Six of the thirty-nine residents (15%) had accepted job offers in arthroplasty; however, 2 have had their job offers withdrawn as a result of COVID-19.

All 15 fellows had secured jobs following fellowship, with only 1 respondent noting that they have been advised of a change to their initial compensation. 7/15 (47%) fellows planned on entering private practice, 3/15 (20%) entering “privademic” model with trainees, 3 (20%) joining academic institutions, and 2 (13%) planned on being employed by a hospital or health care system. All but one fellow noted that they felt prepared with the fellowship training they had received to date to enter their future practice.

Of the responding early career surgeons, 56/103 (54%) had maintained their current role at their current compensation. 41 (40%) had continued their role as an orthopedic surgeon, however, have seen their income decreased. Five (5%) had been repurposed into the coverage of general medical and COVID-19 patients, and 1 had lost their job. Furthermore, of the 103 respondents, 8 (8%) had seen delay in their advancement of tenure or partnership as a consequence of the COVID crisis. 75% have remained functioning clinically as orthopedic surgeons only, whereas 7% had been redeployed into the ICU care for COVID-19 patients, and another 18% had been redeployed into emergency room/non-ICU care for COVID-19 patients.

With regard to monetary compensation, 45/103 (44%) have maintained their normal compensation models as orthopedic surgeons, whereas another 52/103 (50%) have decreased overall compensation as surgeons including 11/52 receiving no pay. Of the remaining 6 physicians, 2 have been redeployed being paid to manage general medical/COVID patients, and 4 are currently “no-pay” volunteers managing COVID-19 patients.

Of the young surgeons polled 81 are in the process of board certification. 68/81 (84%) still feel that they will be able to complete their part 2 of the ABOS Board selection. However, the other 16% feel that they may either have to delay because of the crisis or lack of complete cases. Finally, of the 103 respondents, 90% had the intention of maintaining their current role and position going forward. However, 10/103 had intention before the crisis of relocating their career. Of those 10%, 3 have lost the opportunity to relocate as a consequence of COVID-19.

## Discussion

COVID-19 has had far-reaching consequences to all aspects of orthopedic surgery. Elective specialties such as adult reconstruction have witnessed considerable change due to the limitations in elective surgical cases. These changes and challenges have been reported in other countries as well and while the international impact may vary it demonstrates a widespread disruption to the orthopedic community at large [1]. The purpose of this study was to look specifically at the impact of COVID-19 on young arthroplasty surgeons either in the late stages of training or in the 1st five years of practice.

Several different trends have been evolving as this pandemic continues to impact our communities. One is the redeployment of orthopedic surgeons and trainees into nonorthopedic areas to assist with patient care for those afflicted with COVID-19. This may include both medical (general medicine or intensive care) and nonmedical (administrative or ancillary) service lines. Commonly termed, “redeployment”, the fundamental shift away from orthopedic clinical practice into needed nonorthopedic service lines grows in response to the increased demand necessary to care for COVID-19 patients. Although tenured surgeons and well-established physicians in practice may have the political or personal choice to avoid redeployment into COVID-19 care, younger surgeons who are closer to their general medical training are at a

potentially greater risk of being redeployed into the care of COVID-19 patients.

Of our pool, approximately 11% (13/157) indicated that this had been their circumstance. It is unclear from the survey whether or not these were volunteer redeployments or dictated by the employers. It is important to realize that residents and fellows are all employed, albeit in potentially different models. As such, they may have less autonomy when it comes to the decision to participate in direct COVID-19 care. Employed young surgeons are in a similar situation, as opposed to private practice surgeons. We have also seen the rapid development of new models in response to this crisis that allows private practice surgeons immediate credentialing at hospitals for the purpose of COVID care. Under these unique circumstances there may be a transient monetary benefit for private practice surgeons, especially those less established or early in practice, to sustain their income using these redeployment initiatives. Although this was not captured in the survey, it is a growing trend in communities with high COVID-19 penetration.

According to the American Academy of Orthopaedic Surgeons 2018 Census most orthopedic surgeons work in private practice, with 37.5% in an orthopedic group and 18.1% in a hospital/medical center setting [2]. Roughly 18.1% of full time orthopedists are employed by hospitals and 13.2% of part-time orthopedists are employed. Under the current COVID-19 pandemic, this suggests that most surgeons will be directly affected financially by the temporary ban on elective surgeries. This is not to suggest employed surgeons are not affected, but most likely their compensation structure provides a degree of insulation to the immediate impact of decreased revenue. Again this is likely impacted by regional variation and at the institutional level there will be significant differences between employment models. In some cases, there is no change and there has been a shift toward virtual visits and emergency cases. Hybrid models exist wherein clinical time is documented toward salaried compensation and nonclinical time is being debited from paid time off. In the most extreme circumstance, employed orthopedic surgeons are joining the ranks of internal medicine and family practice physicians caring on the front lines for COVID-19 patients.

In regard to the young arthroplasty surgeon, there are unique financial constraints that must be considered. Most young surgeons are still recovering from the financial debt associated with their training and may not have the fiscal reserves of their more senior colleagues. They are at a higher risk of financial hardship due to the crisis. As noted in this report, 40% had decreased monetary compensation and another 15% had no monetary compensation. This 54% of our group may not have the financial savings and/or stability to be able to weather this storm and may be forced to seek alternative avenues for loans or compensation. Total amount of student debt in the United States as now reached \$1.6 trillion [3]. Financial concerns have long been reported among healthcare professionals, especially those going into programs such as orthopedics with longer residency and fellowship requirements. Hwang et al performed a financial survey of their orthopedic residents and reported that 48% had medical educational debt > \$100,000 while 45% had debt >\$200,000 [4]. As educational debt increases, so too does the concern about managing that debt. In another survey of 3076 residents performed by Johnson et al, more than 60% reported educational debt greater than \$150,000 and 12% greater than \$300,000 [5]. Equally important in this survey was the high interest rates, which was over 6% for 56% of respondents.

In the current crisis, it's important to understand the issue of interest rate. Although short-term interest rates may be approaching 0%, long-term rates are inherently different. Educational loans are not typically variable rates and rather fixed at the time of the loan. There may be an option to refinance some of these

loans at lower rates (although again long term rates are not dropping as low as short term rates), the current portfolio will not change and as such the financial responsibility remains, irrespective of decreased monetary compensation as reported in our survey. As a result, there is a real concern for being able to maintain these financial responsibilities. This was partially alleviated by the Coronavirus Aid, Relief and Economic Security (CARES) Act, passed by congress on March 27th, 2020 providing some relief for those with educational debt. Specifically, the loan payments will be suspended, interest-free through September 30, 2020 [6]. Although there are many provisions and nuances that may affect people differently, this does provide some relief. We found that 15% of respondents are generating no income whether functioning as an orthopedic surgeon or volunteering for COVID care. Despite the potential financial support this legislation provides, medical education does not typically provide finance training and most residents, fellows, and young surgeons remain frustrated navigating these financial challenges. As a matter of fact, Jennings et al found that of the residents surveyed, only 4% had formal training in investing, personal finance, or retirement. 75% felt less prepared for retirement than their peers who were not medical professionals [7].

When considering the specific group of trainees in residency and fellowship, an essential question to ask is whether or not they feel that they are prepared for practice given the disruption to their training. Do they feel the training they received was sufficient to confidently move forward in their careers? 84% of respondents reported they still felt comfortable completing the ABOS part 2. Several resources have been created to help those in need of additional discussion, case-based learning, and educational content. Programs such as the AAHKS Focal Curriculum are good references and represent a shift toward remote learning and the utilization of technology to augment clinical education. The AAHKS and other groups have provided webinars to touch on novel topics such as telemedicine and crisis mitigation. This begs the question of whether or not shorter, “mini” fellowship programs may be beneficial moving forward to assist those with concerns about the completeness of their training in becoming proficient and confident to enter into practice. It may lead to an evolution in the educational curriculum such that certain areas of focus can be accomplished in finite amounts of time to augment an abbreviated clinical education.

Finally, the advancement in their career either through achievement of partnership or tenure status or, alternatively, the relocation of their job, may be a larger concern for a young arthroplasty surgeon as they are still in the growth phase of their career. The implications of the COVID-19 crisis may ultimately have a greater impact on their advancement and subsequent personal progress, which may ultimately prolong the stressful portion of their orthopedic career. As the pandemic continues, this concern continues to grow and the long-term impact will be more profound. At the time of this survey, 10% reported they had intended to

relocate their career and 3% of those have lost that opportunity. No doubt this creates a challenge professionally and personally for many and the hope is that new opportunities will arise moving forward. That said, the impact is very real for those individuals and represents a need for additional resources to help identify comparable opportunities.

There are several limitations to this study. First, it is a survey and while the overall response rate was 39%, it is limited in size. The small sample size decreases generalizability. This is only a survey of residents, fellows, and those within the first 5 years of practice. We acknowledge that there are barriers at each level of training and were not able to quantify each in detail. For example residents still have to complete their ABOS part 1 examination before fellowship or practice. Those whom have completed part 2 of the ABOS may have different challenges that were uncaptured by this survey. We were not able to identify regional variations in practices or patterns with the questions being asked and acknowledge regional practice difference based on COVID-19 penetration could impact the results. To that point, we are unable to correlate the severity of the pandemic with responses, which will naturally vary depending on local markets.

## Conclusion

COVID-19 has had a significant impact on all adult reconstruction surgeons within the orthopedic community. We have identified a considerable impact unique to young arthroplasty surgeons in training and within the first 5 years of their career concerning: compensation, redeployment, and career advancement opportunities or losses. Orthopedic practices should be conscious of these implications on young arthroplasty surgeons, and extend additional resources including loans, counseling, or educational support as they face the current COVID-19 crisis in a different way than their more seasoned colleagues.

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