

## **Nature and Magnitude of Industry Payments to Fellowship Program Directors in Orthopaedic Surgery**

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**INTRODUCTION:** Financial relationships between medical device companies and orthopaedic educators have the potential to advance medicine yet carry the risk of bias in research and clinical decision making. This study sought to define the nature and magnitude of industry payments to Orthopaedic Surgery Fellowship Program Directors (FPDs) in the United States.

**METHODS:** This was a retrospective cohort study of Orthopaedic Surgery FPDs in the United States during 2021. Data were obtained from the Accreditation Council for Graduate Medical Education (ACGME) and Centers for Medicare and Medicaid Services. Profiles of FPDs were obtained for ACGME and non-ACGME accredited training programs. Non-research industry payments from 2015 to 2021 were extracted and adjusted for inflation. Temporal trends were elucidated via calculation of the compound annual growth rate (CAGR). Comparisons were made by sex, sub-specialty, accreditation status, award year, and with control groups via non-parametric tests.

**RESULTS:** Of 600 Orthopaedic Surgery FPDs, 596 received industry funding (99%), which totaled \$340.6 million over the study period. There was a trend towards greater total annual industry payments over the study period (CAGR=3.3%,  $P=0.009$ ). Most industry payments were for royalties or licensing (\$246.6 million, 72.4%) and consulting fees (\$53.6 million, 15.7%). The median total payment per FPD was \$49,971 (IQR, \$291,674) with 22% receiving between \$100,000-\$500,000 and 17% receiving more than \$500,000. The highest annual industry payments existed in Shoulder and Elbow (\$41,489, IQR, \$170,613) and Spine Surgery (\$26,103; IQR, \$84,968). FPDs received significantly higher total industry payments than other practicing orthopaedic surgeons in their respective sub-specialties ( $P<0.001$ ). This disparity ranged from a fold-difference of 5.5 in Pediatric Orthopaedics to 153 in Foot and Ankle Surgery. ACGME accreditation status did not influence the magnitude of industry compensation to FPDs across orthopaedic sub-specialties ( $P>0.05$ ). Male FPDs had higher total median annual industry payments than female FPDs (\$7,799 (IQR, \$47,712) vs \$1,298 (IQR, \$6,169),  $P<0.001$ ).

**DISCUSSION AND CONCLUSION:** Industry payments to FPDs are ubiquitous, but the magnitude varies by orthopaedic sub-specialty. Most industry funding was found in Shoulder and Elbow and Spine Surgery. Standards for orthopaedic fellowship education, such as those upheld by the ACGME and subspecialty societies should include guidelines on how FPDs handle and disclose financial relationships with industry.