

## **Mean Inflation-Adjusted Surgeon Reimbursement for Prophylactic Treatment of Impending Femur Fractures has Decreased Nearly 50% from 2000 to 2021**

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**INTRODUCTION:** Prophylactic fixation of impending long bone fracture in the setting of oncologic lesions has been demonstrated to be cost-effective and lead to improved patient outcomes for patients compared to eventual fixation of completed pathologic fracture. However, previous study has not demonstrated the reimbursement profile of such procedures for surgeons in order to assess trends over time and assure adequate remuneration to surgeons for prophylactic treatment compared to fixing completed pathologic fracture. As such, the purpose of this study was to evaluate trends in volume and surgeon reimbursement for prophylactic fixation of impending fractures about the femur among the Medicare population from 2000 to 2021.

**METHODS:** The publicly available Medicare Part B National Summary File from 2000 to 2021 was queried. Current Procedural Terminology (CPT) codes 27187 (prophylactic fixation of impending fracture, proximal femur) and 27495 (prophylactic fixation of impending fracture, mid-shaft or distal femur) were utilized in the query, and all such procedures were included from 2000 to 2021. CPT codes 27245 and 27506 were also included to assess reimbursement for treating completed pathologic fracture the proximal femur and femoral shaft/distal femur to compare recent reimbursement. For the prophylactic fixation codes, the number of procedures and total Medicare reimbursement were extracted. All monetary data was adjusted for inflation to year 2021 U.S. dollars. Descriptive statistics over time were reported, and a student's t-test was utilized to compare reimbursement between prophylactic procedures and treatment of completed fracture.

**RESULTS:** A total of 37,425 prophylactic fixation surgeries of the femur were performed in the Medicare population from 2000 to 2021, 14,794 for lesions of the proximal femur, and 22,631 for lesions including the midshaft or distal femur. All procedures were included. During this period, there was a 64.1% increase in annual prophylactic fixation procedures of the proximal femur. Further, annual volume of prophylactic fixation of the mid-shaft or distal femur increased by 181.6%. The average adjusted Medicare reimbursement to surgeons per procedure decreased by 42.2% for prophylactic fixation of the proximal femur (\$1,215.41 in 2000, \$702.99 in 2021), and decreased by 49.1% for prophylactic fixation of the mid-shaft or distal femur (\$1,421.32 in year 2000 and \$723.23 in 2021). The mean surgeon reimbursement in year 2021 per procedure for prophylactic fixation of impending pathologic fracture of the proximal femur was significantly lower at \$702.99 compared to mean reimbursement for treatment of completed pathologic fracture at \$1,243.32 (P<0.001). This was similar for mean reimbursement for fixation of impending pathologic fracture of the mid-shaft or distal femur, which was reimbursed on average \$723.23 per procedure in 2021. This was significantly lower than the mean reimbursement for treatment of completed pathologic fracture of the femoral shaft or distal femur, which had a mean reimbursement of \$1,375.49 (P<0.001).

**DISCUSSION AND CONCLUSION:** The volume of prophylactic fixation procedures of the femur among the Medicare population has increased from 2000 to 2021, however, when adjusting for inflation, the average reimbursement to surgeons for such prophylactic procedures has decreased by nearly 50% throughout this time. Further, reimbursement for treatment of completed pathologic fracture is significantly higher in comparison to prophylactic treatment. Appropriately identifying and prophylactically treating impending pathologic fractures before they occur has been demonstrated to carry societal cost-savings, and lead to improved patient outcomes compared to those patients who go on to ultimately need treatment for completed pathologic fracture. Additionally, oncologic patients often carry increased complexity, and more time and resources from the treating surgeon. As such, surgeons and policy-makers should be aware of these trends of decreasing reimbursement for prophylactic treatment in order to assure that adequate remuneration and incentive exists for surgeons to prophylactically treat impending pathologic fractures, and ultimately incentivize improved outcomes and better care for oncology patients.