

True Cost Savings of Fracture Surgery Performed by Trauma-Trained Orthopaedic Surgeons Versus Non-Trauma Specialists at a Level I Trauma Center

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Purpose: Central to reducing waste and inefficiencies in healthcare spending is accurately measuring costs. Previous attempts at measuring costs have focused on patient charges, but are highly inaccurate due to hyperinflation to allow cross-subsidization of services. Value Driven Outcomes (VDO) is a unique validated analytics framework developed at our institution in 2012 to efficiently identify costs of individual components of patient care encounters. This study compares the costs for commonly performed fracture surgeries when performed by trauma fellowship trained surgeons versus non-trauma fellowship trained surgeons.

Methods: We conducted a retrospective chart review and cost analysis on all operative, isolated distal radius, both bone forearm, hip, femoral shaft, distal femur, tibia and ankle fractures cared for at our Level 1 Trauma Center. Medical records were reviewed to determine patient age, BMI, medical comorbidities, ASA score, hospital length of stay, fracture pattern, and implants utilized. True dollar costs to the system were determined using VDO tools. Costs were analyzed using a multivariate generalized linear model (GLM).

Results: 1026 patients were identified for this study. When comparing patients between trauma and non-trauma trained groups, patients were significantly older (34.7% vs 20.1% age > 65, $p < .001$), sicker (38.9% vs 21.1% ASA > 2, $p < .001$), less privately insured (49.2% vs 65.4%, $p < .001$), and more likely to be treated in an inpatient setting (78.2% vs 31.6%, $p < .001$) when treated by a trauma trained surgeon. Results from the GLM with a trauma trained group interacted with fracture type showed significantly reduced total health care costs for the trauma trained group for treatment of tibial shaft fractures (22.1% cheaper, $p = 0.044$) and hip fractures (21.7% cheaper, $p = 0.027$). There was a near significant effect on distal femur fractures (29.7% cheaper, $p = 0.063$). Trauma training showed non-significant savings on all fractures with the exception of distal radius fractures. Cost savings were most attributed to lower facility utilization costs, which includes OR time/cost.

Conclusion: This is the first study to use cost data to assess fracture care delivery expenses. Orthopaedic trauma fellowship training is associated with lower costs (21.7-29.7% cheaper) for the treatment of common fractures. This cost difference is most attributed to lower OR time/cost. This further demonstrates the financial value of orthopaedic trauma specialists to the healthcare system and to hospitals.