Rising Chronic Disease Burden Within a National Sample of Orthopaedic Trauma Patients (2013 to 2019)

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Purpose: Although the epidemiology of common chronic diseases has been described in the United States, longitudinal trends in the comorbidity burden among orthopaedic trauma patients are not as well understood. Further analysis of comorbidity patterns within this population may enable more nuanced risk adjustment and quality-reporting protocols.

Methods: A retrospective study was conducted using data from the Medicare Physician and Other Supplier Public Use Files (POSPUF) to extract the mean Hierarchical Condition Category (HCC) risk score and medical comorbidity data for all orthopaedic traumatologists submitting at least 11 Medicare Part B claims annually between 2013 and 2019. Mann-Kendall tests with Bonferroni adjustment were used to identify significant changes in comorbidity prevalence. Trends in overall HCC risk scores were stratified by individual and practice characteristics such as years of experience, sex, academic affiliation, and geographic setting (urban vs rural).

Results: Of the 489 active traumatologists identified, average HCC risk scores increased by 9.2% from 2013 to 2019 (1.71 ± 0.32 to 1.87 ± 0.42; P = 0.007). This trend was driven by large increases in the prevalence of atrial fibrillation (15.3% to 16.7%; P = 0.007), Alzheimer's disease (21.2% to 25.4%; P = 0.016), cancer (11.4% to 12.6%; P = 0.003), chronic kidney disease (31.8% to 43.5%; P = 0.003), depression (34.8% to 38.8%; P = 0.003), and osteoarthritis (57.1% to 63.0%; P = 0.003). Early career trauma surgeons, female surgeons, and surgeons practicing in urban, academic settings treated patient populations with higher HCC risk scores.

Conclusion: Considering large increases in both medical and psychological comorbidities among orthopaedic trauma patients within the Medicare population, it is important to allocate the necessary resources for a multidisciplinary approach to care. Surgeons, hospital leaders, and policymakers should collaborate to implement protocols for routine psychological screening to ensure that alternative payment systems do not penalize surgeons performing life-saving interventions for higher-risk, medically complex populations.

Table 1. Change in the Overall Risk and Individual Comorbidities of Medicare Population, 2013 to 2019

Mean Comorbidity Proportion (mean ± std dev)	2013	2019	Change (%)	p-value
Overall Risk				
HCC Score	1.712 ± 0.321	1.869 ± 0.419	9.19%	0.007*
Individual Comorbidities				
Atrial Fibrillation	15.33% ± 3.8%	16.7% ± 4.45%	8.96%	0.007*
Alzheimer	21.17% ± 7.62%	25.43% ± 9.46%	20.12%	0.016*
Asthma	10.45% ± 2.88%	9.81% ± 2.35%	-6.06%	0.133
Cancer	11.37% ± 2.96%	12.56% ± 3.12%	10.49%	0.003*
CHF	27.2% ± 7.93%	28.2% ± 8.25%	3.67%	0.072
CKD	31.8% ± 7.75%	43.5% ± 9.3%	36.81%	0.003*
COPD	20.64% ± 5.86%	21.32% ± 6.19%	3.30%	0.072
Depression	34.75% ± 7.39%	38.76% ± 7.38%	11.55%	0.003*
Diabetes	35.09% ± 6.29%	34.73% ± 6.75%	-1.04%	1
Hyperlipidemia	55.57% ± 6.68%	61.66% ± 6.89%	10.95%	0.072
Hypertension	72.94% ± 3.76%	73.19% ± 3.85%	0.34%	0.072
Ischemic Heart Disease	41.08% ± 7.85%	40.84% ± 8.41%	-0.60%	0.764
Osteoporosis	20.65% ± 7.42%	20.89% ± 7.63%	1.19%	0.368
Osteoarthritis	57.13% ± 9.29%	62.99% ± 8.73%	10.26%	0.003*
Stroke	8.18% ± 3%	8.46% ± 3.08%	3.35%	0.072

* Indicates significance after Bonferroni adjustment

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device they wish to use in clinical practice.