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Chronic Osteomyelitis Predictors Study: National Versus Louisiana Trends in Osteomyelitis Hospitalizations and Cost by Age, Sex, and SES

INTRODUCTION: Chronic osteomyelitis is defined as the presence of infection or inflammation within the bone marrow at a subsequent time point from initial trauma or another causative event. Despite treatment with antimicrobial therapy or surgical debridement, osteomyelitis may remain as a persistent, relapsing infection presenting unique challenges in the provider-patient dynamic and potentially leading to elevated healthcare costs. Studies examining osteomyelitis epidemiology have identified meaningful risk factors, such as age over 60 and very low median income in adult and pediatric osteomyelitis cases, respectively. Despite these findings, no literature has examined the relationship of hospitalization rate and cost due to chronic osteomyelitis with patient age, sex, and socioeconomic status (SES) and compared these trends across regions of the United States. Given the complexity of osteomyelitis pathology, treatment approaches, and potential to develop into a chronic condition, insight into factors which increase hospitalization rates and costs may improve management and reduce disease morbidity in affected patients.

OBJECTIVES: This study's objectives are to investigate national and regional trends in hospital inpatient admissions and costs due to the primary diagnosis of osteomyelitis reported by age range, sex, patient-level income, and hospital-level characteristics

METHODS: This study utilized inpatient hospitalization rates and costs using data from the National Inpatient Sample (NIS), Healthcare Cost and Utilization Project (HCUP), and Agency for Healthcare Research and Quality. Hospitalization rates, discharge care, and inpatient costs were stratified by age range, sex, community-level income, and hospital location/type between 2018 and 2022, where complete data sets were publicly available. Trend comparisons were made between national data, census-level regions, and census-level divisions where Louisiana is represented in the South (region) and West South Central (division).

RESULTS: Nationally, hospital costs ranged from 1.0 to 1.25 billion dollars annually to treat osteomyelitis between 2018 and 2022. Costs and visit numbers dropped in 2020, with increases in 2021 and 2022. Costs in the Southern region are 35% of national costs and account for 39% of visits annually. Length of inpatient stays ranges between 7.4 and 9.8 days, with post-discharge care, in facility or as home health, in 35-85% of cases, with increasing needs associated with age. Males are twice as likely to be admitted, but female patients require more post-discharge care and are twice as likely to die while hospitalized. While middle-income patients incur the most inpatient costs, low-income patients have the longest length of stay. Teaching hospitals incur the majority of inpatient stays and patient care costs for treatment of osteomyelitis.