01
Change in Payer Mix and Transfer Appropriateness at a Quaternary Hand Trauma Referral Center after Medicaid Expansion under the Affordable Care Act

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PURPOSE: Multiple studies have demonstrated limitations in access to specialized trauma care for uninsured patients. Some institutions have sought remedies to these limitations in access, such as adopting the policy of accepting all transfers for specialized trauma care. For instance, the Curtis National Hand Center (CNHC) accepts all transfer requests for hand trauma. However, this policy of universal transfer acceptance has encouraged unnecessary transfers and inappropriate indications for transfer, especially of uninsured patients. In this study, we evaluate if Medicaid expansion under the Affordable Care Act has decreased unnecessary transfers for lower-acuity care by reducing the prospect of uncompensated care provided at local hospitals.

METHODS: Using data from the Maryland Upper Extremity Trauma Registry at CNHC, we selected all cases of isolated upper extremity trauma encounters between 2009 and 2016—including 6 years before and 2 years after Medicaid expansion in Maryland (January 1, 2015). First, we used multivariable regression models to evaluate predictors of transfer for upper extremity evaluation. Secondly, controlling for variations in case volume and acuity of injury, we used time-trend analysis to evaluate changes per-quarter in payer status of transferred patients after Medicaid expansion. Lastly, we evaluated changes in the indications for transfers after Medicaid expansion.

RESULTS: There were 11,560 upper extremity trauma patients in the registry and 26% were transfers. Results from regression models adjusting for demographics, injury type, and acuity, uninsured status increased odds of being transferred by 35% (OR 1.35, 1.21–1.5, p<0.001). Our models, adjusting for variations over time in overall and transferred trauma volume, showed significant decreases in uninsured patients, largely due to an increase in the number of patients with Medicaid coverage. When looking at all patients within our cohort, we found an increase over time in the proportion of patients without an appropriate indication for referral to a hand trauma center. However, of the patients who were transferred after initial evaluation at other institutions, there was a significant increase in the proportion of patients transferred for appropriate indications after Medicaid expansion.

CONCLUSIONS: Uninsured status predicts a patient being transferred to a quaternary hand trauma center. With the expansion of Medicaid in Maryland, there was a decrease in the proportion of patients treated for upper extremity trauma without insurance. Additionally, after Medicaid expansion, there was an overall increase in the proportion of transfers for appropriate indications. This finding possibly indicates that transferring facilities increasingly attended to less acute hand trauma as a result of the decreased prospect of uncompensated care after Medicaid expansion.

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02
Geospatial Econometric Exploration of Risk Factors for Loss to Followup in Cleft Care

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PURPOSE: Cleft lip and/or palate (CL/P) is among the most common congenital conditions. Due to its numerous functional and aesthetic sequelae, long-term, multidisciplinary team care is essential. There are a limited number of approved cleft teams in the United States; consequently, some patients who live remote from the closest cleft team may never initiate care, and patients who begin care in infancy may be lost to followup. The reasons for loss to followup (LTFU) are varied and complex but may include low socioeconomic status (SES) and geographic
isolation. This study aims to identify patient characteristics associated with LTFU for a mid-volume cleft team that serves a mixed urban/suburban/rural population in North Carolina.

METHODS: Medical records were retrospectively evaluated for 558 children with CL/P aged 0–15 years, and treated at Duke Children’s Hospital from 1998–2013. The primary outcome was LTFU, defined as three consecutive missed appointments and two years without seeing the team despite attempts at reestablishing followup. Patients who transferred care to other teams were not considered LTFU. The secondary outcome variable was age at last successful encounter. Patient demographics included cleft phenotype, sex, race/ethnicity, location (address, ZIP code, and county FIPS code), and rural/urban designation. SES index was assigned by linkage with the U.S. Census American Community Survey. Spatial dependency was evaluated using variograms, Moran’s I test, Geary’s CC test, and BB join count tests. The probability of LTFU was assessed using a Bayesian approach to hierarchical generalized linear geo-statistical modeling. Risk maps were plotted to summarize at-risk populations.

RESULTS: 29% of patients seen in this time period were lost to followup. When ignoring spatial dependency, younger age at last successful encounter was a strong predictor of LTFU (p<0.0001), while SES and cleft phenotype were weakly associated with LTFU. When including spatial dependency in the model, both SES and phenotype became significant. Distance from the team and rural/urban designation were not statistically significant. Cartographic representation of predicted probability of LTFU was prepared using SES, age at last encounter, and cleft phenotype, revealing discrete pockets of at-risk communities. Surprisingly, not all of these communities were far from our team; rather, some vulnerable communities were identified in the immediate vicinity.

CONCLUSION: SES, age at last encounter, and cleft phenotype are associated with the risk of LTFU, and these factors are spatially dependent. Specific vulnerable communities were identified to be at high-risk for LTFU. In future work, we plan to expand the analysis to include patients from all approved cleft teams in NC and the Mid-Atlantic States region. This information will help cleft teams better allocate resources to high-risk areas so that deficiencies in care may be prevented or rectified.

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03

The Global Macroeconomic Burden of Breast Cancer: Implications for Oncologic and Reconstructive Surgery

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PURPOSE: Although breast cancer mortality has decreased since 1990 in the United States, mortality in low and middle-income countries (LMICs) continues to be as high as 88%. In this study, we quantified the global macroeconomic burden of breast cancer across 94 countries between 2005 to 2015. Defining the global burden of breast cancer represents the first step towards expanding access to breast cancer care and reconstruction internationally.

METHODS: Data from the Institute of Health Metrics and Evaluation (1990–2015) were used to calculate epidemiological statistics and temporal trends for 94 high, middle, and low-income countries. To characterize the economic burden of breast cancer, Welfare Loss was calculated by measuring disability-adjusted-life-years (DALYs) lost to breast cancer alongside the dollar equivalent of a value of statistical life year (VSLY), and as a function of each country’s GDP. Known estimates of VSLY for the United States were used as the benchmark to compute peak VSLY for each country. As such, the economic burden of breast cancer was defined based on: 1. DALY’s and VSLY, and 2. DALY’s and a country’s per capita GDP.

RESULTS: Annual mortality rates among breast cancer patients were significantly greater in LMICs in South Asia (3.06%) and Sub-Saharan Africa (2.76%), compared to high-income countries like the United States (1.69%). From 2005–2015, mortality in South Asia and Sub-Saharan Africa increased by 27.9% and 19.7%, respectively. In 2015, the global prevalence, incidence, and deaths