# Insurance Status Influences In-Hospital Outcomes among Hip Dysplasia Patients

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INTRODUCTION: Developmental dysplasia of the hip is relatively common in the pediatric population, occurring once in every 1,000 live births. Intrauterine position, female sex, and positive family history are important risk factors of hip dysplasia. Previous literature has found that primary payer status is associated with worsened surgical outcomes in the pediatric population. The purpose of this study is to examine differences in mortality, extended length of stay (eLOS), and respiratory, cardiac, digestive, and urinary complications between insurance types in children with hip dysplasia.

METHODS: The 2016 Kids' Inpatient Database (KID) was queried for patients diagnosed with congenital hip dysplasia based on International Classification of Diseases, Tenth Revision codes (ICD-10-CM) Q65.00, Q65.1, Q65.30, Q65.4, Q65.01, Q65.32, Q65.02, Q65.31, and Q65.89. Complication subgroups were created based on relevant ICD-10-CM codes. Primary payer status was divided into Medicaid, private insurance, self-pay, and other. eLOS consisted of ≥ 75th percentile values (≥ 4 days). Data were analyzed via univariate chi-square and multivariate regression analyses.

RESULTS: Overall, 3,917 (42.41%) patients had Medicaid, 4,618 (50.00%) had private insurance, 190 (2.06%) were self-payers, and 511 (5.53%) were classified as other. There were differences in age, sex, median household income, race, hospital region, teaching status of hospital, and LOS by primary payer status (Table 1). Medicaid patients had the highest mean LOS out of all insurance types. The majority of Black (68.33%) and Hispanic (66.00%) patients used Medicaid. After adjusting for preoperative differences, Medicaid patients were 1.414 times more likely to experience eLOS (95% CI [1.267 - 1.577] $p < 0.001$), 1.898 times more likely to experience respiratory complications (95% CI [1.404 - 2.558] $p < 0.001$), and 3.125 times more likely to experience digestive complications (95% CI [1.862 - 5.263] $p < 0.001$) than patients with private insurance. Medicaid patients were 1.894 times more likely to experience eLOS than self-paying patients (95% CI [1.266 - 2.833] $p = 0.002$).

DISCUSSION AND CONCLUSION: This study demonstrates that Medicaid patients with hip dysplasia were more likely to have longer lengths of hospital stay and experience in-hospital respiratory and digestive complications. These findings present concerns over socioeconomic and health system-related issues that should be addressed to improve outcomes for children with hip dysplasia.

| | | *Medicaid n = 3917* | *Private Insurance n = 4618* | *Self-Pay n = 190* | *Other n = 511* | *p-value* |
|---|---|---|---|---|---|---|
| Age | Age, years(mean [SE]) | 4.74 [0.94] | 5.07 [0.97] | 2.58 [0.359] | 6.10 [0.279] | **< 0.001** |
| Sex | Male | 1398 (35.7%) | 1411 (30.6%) | 52 (27.4%) | 157 (30.7%) | **< 0.001** |
| | Female | 2519 (64.3%) | 3207 (69.4%) | 138 (72.6%) | 354 (69.3%) | |
| Median Income Quartile | 0-25th | 1456 (37.6%) | 641 (14.1%) | 41 (24.6%) | 110 (22.0%) | **< 0.001** |
| | 26th-50th | 1098 (28.3%) | 948 (20.6%) | 42 (25.1%) | 140 (27.9%) | |
| | 51st-75th | 844 (21.8%) | 1279 (28.1%) | 54 (32.3%) | 150 (29.9%) | |
| | 76th-100th | 476 (12.3%) | 1688 (37.1%) | 30 (18.0%) | 101 (20.2%) | |
| Race | White | 1527 (42.9%) | 3047 (74.9%) | 70 (40.2%) | 256 (54.1%) | **< 0.001** |
| | Black | 520 (14.6%) | 193 (4.7%) | 17 (9.8%) | 31 (6.6%) | |
| | Hispanic | 1150 (32.6%) | 402 (9.9%) | 55 (31.6%) | 140 (29.6%) | |
| | Other | 352 (9.9%) | 425 (10.4%) | 32 (18.4%) | 46 (9.7%) | |
| Hospital Region | Northeast | 573 (14.6%) | 839 (18.2%) | 31 (16.3%) | 59 (11.5%) | **< 0.001** |
| | Midwest | 901 (23.0%) | 1365 (29.5%) | 30 (15.8%) | 91 (17.8%) | |
| | South | 1502 (38.3%) | 1331 (28.8%) | 86 (45.3%) | 155 (30.3%) | |
| | West | 941 (24.0%) | 1085 (23.5%) | 43 (22.6%) | 206 (40.3%) | |
| Teaching Status of Hospital | Rural | 135 (3.4%) | 139 (3.0%) | 18 (9.5%) | 15 (2.9%) | **< 0.001** |
| | Urban/Non-teaching | 343 (8.8%) | 537 (11.6%) | 31 (16.3%) | 46 (9.0%) | |
| | Urban/Teaching | 3439 (87.8%) | 3944 (85.4%) | 141 (74.2%) | 450 (88.1%) | |
| Length of Stay | Days, mean [SE] | 7.74 [0.315] | 5.06 [0.189] | 4.24 [0.549] | 6.66 [0.859] | **< 0.001** |