The Effect of Methodology in Determining Disparities in In-Hospital Mortality of Trauma Patients Based on Payer Source
Gina Berg, Felecia Lee, Ashley Hervey, Robert Hines, Paul Harrison
Wesley Medical Center

Background: Payer source is commonly associated with disparities in health outcomes. However, because payer source has not been universally defined in trauma literature nor consistently merged and analyzed, differences in outcome, therefore disparities, may be biased and conclusions inaccurate. The objective was to determine if in-hospital mortality as associated with payer sources vary based on methodology employed (inclusion/exclusion; referent group in modeling; categorization of mixed payer [Medicaid: socioeconomic or Medicare: physiologic reserve definition], and subjective statistical interpretation).

Methods: Retrospective, registry cohort study of admitted adult patients between 2005-2010 at a Midwestern Level I trauma facility was completed to assess in-hospital mortality. Eligible patients were categorized based on payer source, then stratified by four literature-based definitions: Definition 1 (n=7025)—insured [commercially insured, Medicare, Medicaid, mixed insured payer sources] and uninsured; Definition 2 (n=5744)—commercially insured, publicly insured [Medicare, Medicaid, mixed payer Medicare/Medicaid], and uninsured; Definition 3 (n=5606)—commercially insured, Medicaid, Medicare, and uninsured; Definition 4 (n=5162)—commercially insured, Medicaid, and uninsured. Two additional sub-analyses were completed with the dual eligible Medicare/Medicaid population (n=142) originally excluded from Definition 3. The first based on a socioeconomic status (SES) indicator (all dual eligible were included as the Medicaid population) and the second a physiologic reserve indicator (dual eligible ≤ 64 and 65+ were categorized as Medicaid and Medicare, respectively).

Results: Only in Definitions 2 and 3, using commercially insured as referent group, was there a difference in mortality: publicly insured (Adjusted Odds Ratio [AOR] 2.05; Confidence Interval [CI] 1.2-3.4) and Medicare (AOR 3.41; CI 1.5-7.8). Using uninsured as the referent group, there were no statistically significant differences. When reclassifying the mixed payer Medicare/Medicaid according to the socioeconomic definition, there was an increased risk of mortality for Medicaid (AOR 1.86; CI 1.1-3.2) and Medicare (AOR 2.62; CI 1.3-5.4). When reclassifying into the physiologic reserve definition, there was increased risk of mortality for Medicare (AOR 3.63; CI 1.6-8.2).

Conclusion: Variations in methodology culminated in results that could be interpreted with differing conclusions. Payer source varied as a significant predictor variable depending on literature definition, referent group, and categorization of mixed payer. It is necessary from a policy, research, public health and healthcare management perspective that conclusions drawn be based on distinctions of payer type that are explicitly defined, standardized, and the methodologies utilized be consistent. This poster, with comparative methodologies, provides clinicians with a background to more critically evaluate research regarding health disparities. In addition, this information benefits a trauma center organization in terms of assessing disparities by payer-mix across hospitals. Appropriate risk adjustment techniques are necessary to ensure that comparisons across hospitals are not confounded with differences in payer mix. Such variation in payer mix and definitions of payer source highlights the need for risk adjustment when comparing hospitals with respect to the incidence of mortality.