Predicting work-related disability and medical cost outcomes: A comparison of injury severity scores and scoring methods

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Background Injury severity scores were developed in part to predict mortality, but may also prove useful in predicting disability and cost-related outcomes.

Aims/Objectives/Purposed The objectives were (1) to describe the degree to which injury severity predicts work-related disability and medical cost outcomes, and (2) to compare the performance of several injury severity scores and scoring methods.

Methods We linked Washington State Trauma Registry (WTR) data with long-term outcomes from workers’ compensation claims (1998–2008), finding 6052 work-related injuries. Injury severity scores (ISS, NISS, maximum AIS) were estimated from ICD-9-CM codes using two software packages (ICDMAP-90 and icdpic-), and compared with existing WTR scores. Differences in the Akaike Information Criterion, amount of variance explained (R^2) and estimated effects on outcomes were compared. Competing risks survival analysis was used to evaluate work disability outcomes. Adjusted total medical costs were modelled using linear regression.

Results/Outcome There was substantial agreement between WTR and ICDMAP-90 (κ=0.68), and between WTR and ICDPIC (κ=0.68). All models were highly significant. Costs and duration of compensated time loss increased with severity, while time to total permanent disability (TPD) determination decreased. WTR and ICDMAP-90 scores performed better than ICDPIC scores, but effect estimates were very similar. The worst injury (maxAIS) was a better predictor of TPD, while ISS/NISS were better predictors of compensated time loss duration and costs.

Significance/ Contribution to the Field Injury severity was significantly associated with work disability and medical cost outcomes for work-related injuries. We observed little practical difference between scoring methods. Using existing software to estimate injury severity may be useful for intervention/outcomes research.
Corrections

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