ESTIMATING THE COST OF ROAD TRAFFIC INJURIES IN A TERTIARY HOSPITAL IN GAUTENG PROVINCE IN 2009

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EXECUTIVE SUMMARY

Introduction: South Africa has seen a 23% rise in the annual numbers of fatalities due to road traffic accidents between 2001 and 2008. Road traffic injuries (RTIs) are estimated to cost 1.5% of the Gross National Product (GNP) in middle-income countries like South Africa. In South Africa, 60% of all acute injuries are treated in a hospital, 75% of those in public facilities placing a significant burden on public hospitals. Generally there are no cost data available from the public hospital information systems as it not routinely collected, yet cost information is necessary for the purpose of accurate reimbursement from entities such as the Road Accident Fund (RAF) which provides medical insurance for all road users in South Africa.

Aim: The aim of this study is to estimate the cost burden of road traffic injuries at Charlotte Maxeke Johannesburg Academic Hospital in Gauteng Province for the year 2009 by estimating admission costs and factors associated with these costs. The study also compared cost derived from a mixed-costing approach to the charges used in the billing system at the hospital.

Methodology: The study was a facility-based cost estimation of patient care following a road traffic injury using cost accounting methods. A retrospective review of medical records of patients admitted following a road traffic accident was done. Systematic sampling was used to select the files. Univariate and multivariate regression models were fitted to determine which factors were associated with cost and length of stay, the two outcome variables selected for the analysis. Log transformation of the cost data was done prior to doing the

regression analysis because the cost data were not normally distributed. Assumptions for linear regression were assessed to ensure the validity of the model.

Results: A total of 259 files were included in the sample. The study showed that the majority of admissions were young males aged between 26-35 years and pedestrian vehicle accidents were the most common (54%) type of accident. Admission peaked over the weekend and peaked on a Saturday. The cost analysis showed that overhead costs make up the bulk of the total costs. These costs were significantly correlated with length of stay. The analysis of factors associated with costs revealed that the injury severity score, intensive care unit (ICU) admission, having surgery and having a disability were significantly associated with log of admission costs in the multivariate model after adjusting for other variables.

Factors significantly associated with length of stay were having a disability, the number of injury sites and having an underlying medical condition. The analysis of the costs using the current hospital billing method and the mixed costing approach used in the study showed a significant difference between the two methods. The geometric mean (±SD) for the current billing method was R9.046 ± 0.920 and R9.102 ±1.24 for the mixed costing approach (p-value = 0.000).

Conclusion: The cost analysis showed that having surgery, being admitted to ICU and having a disability were significantly associated with higher hospitalization costs, supporting the need for prevention strategies that not only reduce the number of road traffic injuries but also the degree of severity of injuries and associated disability. Road traffic injury prevention using primary, secondary and tertiary methods is necessary to curb this burden.

Finally, there needs to be more accurate costing of hospital services in view of the expected health funding reform under the National Health Insurance. Accurate costing methods would allow more accurate revenue generation from funds such as the RAF and other private medical insurers.

Key words: Road traffic injuries, hospitalization, cost analysis, predictors of cost, predictors of length of stay.