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Modelling lifetime QALYs and health care costs from different drinking patterns over time: a modified Markov model

C. Barbosa, Centre for Health Economics and Health Sciences Department, University of York, UNITED KINGDOM

Objectivos (Objectives):

The negative health consequences of alcohol use and its treatment account for significant health care expenditure worldwide. Reviewing published economic evaluation models of alcohol treatment reveals that this literature is dominated by studies exclusively based on premature mortality outcomes, usually from those abstinent from drinking after an intervention and do not attempt to model the natural flow of patients with alcohol problems. This paper describes a method to build a decision analytical model that simulates the drinking patterns of a cohort over lifetime and assesses the cost-effectiveness of alcohol treatments. An application of the model using patient-level data from a pragmatic multicentre randomized trial in the UK is also presented. The UK trial compared Social Behaviour and Network Therapy (SBNT), a new treatment for alcohol problems, with that of the proved Motivational Enhancement Therapy (MET).

Metodologia (Methodology):

Long term modelling techniques are developed to establish a link between drinking patterns, health consequences and alcohol treatment effectiveness and cost-effectiveness. The overall change in health related quality and quantity of life which results from changes in health-related behaviour is estimated. Specifically, a probabilistic lifetime Markov model is presented where alcohol consumption in grams of alcohol per day and drinking history are used for the categorization of patients into four Markov states. The main outcome measures are Quality Adjusted Life Years (QALYs) and lifetime costs. Utility weights are assigned to each drinking state using EQ-5D scores. Mortality and morbidity estimates are state, gender and age specific, and are alcohol-related and non-alcohol-related. The model incorporates uncertainty in its inputs through the use of probabilistic sensitivity analysis and one-way sensitivity analysis. Analysis of heterogeneity is also embedded in the model structure.

Resultados (Results):

This paper extends the previous economic evaluation models of alcohol treatment by: 1) exploring levels of drinking rather than whether people are abstinent or not; 2) providing a dynamic model that allows for relapse and natural recovery; 3) including mortality, morbidity, Health Related Quality of Life and long term costs savings; and 4) considering a wider population with alcohol problems, not just those confined to an alcohol dependent population. The case-study results show a steep reduction in the Incremental Cost-

Effectiveness Ratio (ICER) as the short-term analysis progresses to a long-term one, which shows the importance of long-term modelling techniques for the cost-effectiveness analysis of alcohol interventions. The simulation results of the overall uncertainty in the model are presented in a cost-effectiveness acceptability curve. The results of the long-term analysis vary across different subgroups. If decision makers are willing to pay more than £5,000 per QALY gained, then MET should be adopted for males as it has a higher probability of being cost-effective. The gender differences ought to be further studied, but it appears that SBNT represents better value for money than MET when delivered to females.

Conclusões (Conclusions):

This represents a major development in the techniques traditionally used in alcohol economic models, in which short term costs and outcomes are assessed, omitting potential longer term cost savings and improvements in health related quality of life. The model has the potential to provide essential information regarding the cost-effectiveness of alcohol treatments and which treatments represent better value for money, as well as to promote consistency and uniformity on economic evaluations of alcohol treatment. Assumptions and implications of the approach are discussed.