A preliminary statistical model for identifying repeaters of parasuicide

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Abstract. This paper presents a statistical model constructed using logistic regression to identify those at high-risk of repeating parasuicide. The subjects in the study are Cork city residents who exhibited parasuicidal behaviour between 1 January and 30 June 1995. Repetition of the behaviour within six months of the index episode distinguishes repeaters from non-repeaters. The model was designed so that it could be used by non-clinicians and hence does not require information relating to psychiatric diagnosis or use of psychiatric services. The proportion of subjects correctly classified remained stable across a range of cut-point probabilities (mean = 86%, range: 83.9–97.5%). Using a cut-point of 0.2, 96% of repeaters and 81% of non-repeaters were correctly classified. Using 0.45 led to the correct identification of 81% of repeaters and 90% of non-repeaters. If these high levels of sensitivity and specificity are maintained in validation tests on future cohorts in Cork city then the model could form the basis of an intervention programme designed to prevent the repetition of parasuicide.

Key words: Parasuicide, repetition, statistical model, logistic regression

Traditionally, clinical medicine has sought both to diagnose and prognosticate. In recent years, the emphasis has been on diagnosis which dictates treatment. Prognosis is more difficult. It may be divided into predicting the outcome of the current illness, whether with or without treatment, and predicting recurrence.

Suiicidology has been singularly unsuccessful in predicting acts of future deliberate self-harm. The rarity of suicide, even among high-risk groups, is central to why it is so difficult to predict. The problem of predicting repetition of parasuicide should be more feasible as the phenomenon is quite common, 10–25% of parasuicides repeating within one year of an act (Arensman et al. 1994; Daly et al. 1986; Hjemeland & Bjerke, 1994).

* Funding: Grant-assisted by the Health Research Board and the Southern and Mid-Western Health Boards.
Two of the most significant advances in the development of instruments to identify those most likely to repeat the act of parasuicide were made by Buglass and Horton (1974) and Kreitman and Foster (1991). The former constructed a six-point scale for predicting subsequent suicidal behaviour within 12 months of the 'index' act (i.e., first act of parasuicide in the calendar year). The items included in the scale are: sociopathy, problems in the use of alcohol, previous in-patient psychiatric treatment, previous out-patient psychiatric treatment, previous parasuicide (resulting in hospital admission) and not living with a relative.

In their results, Buglass and Horton found that of those who scored zero on the scale, five per cent, were repeaters. This proportion increased in a step-wise manner with each increase in score to the point where 48% of those who scored 5 or 6 on the scale were repeaters. Thus, the level of repeaters in the high risk group was 9.6 times higher than in the low risk group. Sixty percent of the parasuicides scored one or more on the scale. This included 88% (104) of the repeaters but also 56% (365) of the non-repeaters. If this group had been followed up with a view to reducing repetition it would have meant following up 7 non-repeaters for every 2 repeaters.

The Edinburgh Risk of Repetition Scale was designed by Kreitman and Foster both for clinical use, where the scale score equals the sum of the items present, and research use, where each item has a specific weighting to be used in the calculation of the score. The items in the scale with those weightings are as follows: previous parasuicide (whether treated or not) (6); personality disorder (3); alcohol (excessive consumption, physical harm, alcoholism or dependence) (3); previous psychiatric treatment (3); unemployment (3); social class V (2); drug abuse (2); criminal record (2); violence (2); age 25–54 years (2); and, civil status (single, divorced or married but separated) (1).

Kreitman and Foster felt that risk scales for prediction of likely outcome, using a single cut-off point, resulted in the loss of a great deal of information. Consequently, they advocated forming low, medium and high risk groups, comprising 30%, 50% and 20% of the total sample, respectively. To measure the effectiveness of their scale, they defined the 'efficiency ratio' which is the proportion of repeaters in the high risk group divided by the proportion of repeaters in the low risk group. Namely, the ratio of relative risk.

Kreitman and Foster validated their scale prospectively on male and female cohorts for two separate years. In general, the research version of the scale outperformed the clinical version attaining efficiency ratios of 7.5, 10.2, 12.1 and 30.1. The proportion of individuals in the high risk groups who repeated were 35%, 44%, 44% and 54%. Thus, in general, following up the high risk group would involve treating more non-repeaters than repeaters. Furthermore,