Interventions that are costly and need highly trained professionals for implementation have serious limitations in such settings.

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Authors' reply: Dr Shaji *et al* raise an important point in relation to the interpretation of trials of interventions with carers of people with dementia. In relation to our own study, information was provided in three 45-minute sessions by an experienced clinician, and supplemented by four written information booklets entitled "What are dementia and Alzheimer's disease", "Stress and the person with Alzheimer's disease", "Coping with caring" and "Advice about services". The control group did not receive the information and education sessions. We carried out an analysis after the three sessions of information, which occurred at the beginning of the intervention, and there was no difference between the intervention and control groups at that time on any outcome variable. This finding has also been reported in trials of family intervention with the carers of patients with serious mental illness (Tarrier *et al*, 1988). This is perhaps not surprising, as providing information and advice is notoriously poor at changing people's behaviour.

With regard to the method of the intervention, we utilised an integrated model described previously in relation to schizophrenia (Barrowclough & Tarrier, 1992). This takes an individualised approach and includes an assessment of the carer's own model of coping. It is recognised that there are significant individual differences in the impact of education on carers managing older people with dementia. It may be that the information provided will enable those in the intervention group to utilise the later sessions more effectively.

We agree entirely with Dr Shaji *et al* that simple, straightforward strategies should be evaluated in carers of people with dementia, and that costly interventions should not be adopted unless they have been shown to be effective.

Barrowclough, C. & Tarrier, N. (1992) *Families of Schizophrenic Patients: A Cognitive–Behavioural Intervention*. London: Chapman & Hall.

Tarrier, N., Barrowclough, C., Vaughn, C., *et al* (1988) The community management of schizophrenia. A controlled trial of a behavioural intervention with families to reduce relapse. *British Journal of Psychiatry*, **153**, 532–542.

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Violence risk prediction in practice

Dolan & Doyle (2000) provide a helpful review of clinical and actuarial measures in violence risk prediction. The evidence shows that prediction can be significantly better than chance. However, they present only one half of the story. How well do the best instruments perform in the real clinical world where prediction leads to action, including restrictions on the liberty of patients regarded as dangerous? False positives are very serious from an ethical (including resource allocation) point of view. Here we encounter the 'base rate' problem that the authors inexplicably fail to mention.

The rate at which violent acts occur in the population of interest is critical to the predictive abilities of any instrument. The authors reproduce a receiver operator characteristics (ROC) curve of a well-performing instrument which, as they say, shows the trade-off between the true positive rate and the false positive rate (or conversely the true negative rate). Where that trade-off should lie depends on the relative costs of false positives *v.* false negatives. One usually looks at the point of maximum perpendicular distance from the diagonal line. For this ROC, a true positive rate of 0.7 and a false positive rate of 0.3 (equivalent to a true negative rate of 0.7) is probably the optimum. A test has to predict accurately who will be violent as well as who will not be violent. Although this ROC is statistically significant against chance at the $P<0.001$ level in predicting violence, how does it fare in practice?

It is difficult to describe how prediction instruments perform in a way that is easily comprehensible to non-mathematicians. Perhaps probability trees can help. Figure 1 shows a probability tree in which the essential data are presented in relation to a population in which 20% of patients will actually be violent during the follow-up period. Using the test represented by the ROC described, it can be seen that the positive predictive value, that is, the proportion of patients predicted by the test to be violent who indeed turn out to be violent, is 0.37. But this means also that the prediction will be wrong about six times out of ten. Perhaps a base rate of 20% is appropriate to some forensic populations.

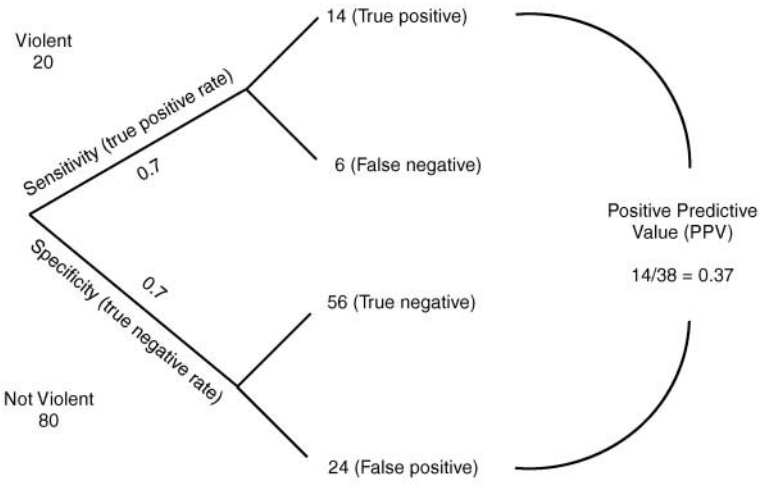

Fig. 1 Probability tree for determining the predictive ability of a test for violence. The rate of violence in the population is 20%. The test has a true positive rate of 0.7 and a true negative rate of 0.7.

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