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Letter to the Editor

Screening for suicide: a comment on Steeg *et al.*

In their recent paper, Steeg *et al*. (2012) introduced ReACT, 'a clinical tool to help identify patients at higher risk of repeat self-harm, or suicide, within 6 months of an emergency department self-harm presentation'. The paper's abstract reported that ReACT:

> performed with 95% sensitivity [95% confidence interval (CI) 94–95] and 21% specificity (95% CI 21–22), and had a positive predictive value of 30% (95% CI 30–31) and a negative predictive value of 91% (95% CI 90–92) in the derivation centres; it identified 83/92 of all subsequent suicides.

Some readers may have misinterpreted this sentence to mean that the researchers had found a way of predicting suicide with only two false positives for every true positive. In fact the figures in the clause before the semicolon in the quoted sentence above are ReACT's metrics for any form of repeated self-harm. After the semicolon, the 83 of 92 suicides that ReACT was able to 'identify' were associated with approximately 16 600 false positives with a positive predictive value of 0.5%.

Despite using the words 'predict' and 'identify', the authors describe ReACT as a 'screening' test rather that a predictive or diagnostic test. However, we do not believe it can be usefully used as a way to screen for future suicide. The World Health Organization (WHO) has issued guidelines outlining when screening is worthwhile (Wilson & Jungner, 1968). These include the recommendation that a specific diagnostic test should be available to follow a sensitive but non-specific test like ReACT. Well-known examples from other areas of medicine include faecal occult blood tests that may be followed by endoscopy for bowel cancer and mammograms that may be followed by biopsy for breast cancer. The authors imply that ReACT might be used as 'a guide or adjunct to the wider assessment of risk', perhaps with another form of suicide risk assessment. We doubt that any further more sensitive and specific risk categorization is really possible, particularly because the items in ReACT (including recent self-harm and treatment for a mental disorder) cannot be used to further discriminate within a group of people who have already been defined by possession of these characteristics.

More broadly, if we assume that there is an intervention that is likely to decrease the likelihood of future suicide, then categorizing patients by their likelihood of suicide within 6 months might be justified if the proportion of true positives (suicide victims) among the whole 'high-risk' group were sufficiently high to justify the intervention for the whole 'high-risk' group. Such justification would only be present if the intervention were sufficiently effective and sufficiently benign (in terms of side-effect burden), as to mean that any down side to health or welfare of patients who were 'high-risk' false positives was clearly outweighed by the benefits accrued to patients who were 'high-risk' true positives. Even under these circumstances, categorization of patients by their likelihood of suicide within 6 months would hardly be necessary if it were feasible to also provide the benign, effective intervention to 'low-risk' patients as well. After all, these 'low-risk' patients are still at very high risk for future suicide compared to the general population. In the Steeg *et al*. (2012) study there were nine suicides within 6 months among 13 000 people classified by ReACT as at 'low-risk'. This translates into an annual rate of suicide among the 'low-risk' of 138 per 100 000 which can be compared to figures for population of England of about 10 suicides per 100 000 per year (NMHDU, 2009). We doubt that any form of risk categorization can lead to any intervention that can be ethically provided to 'high-risk' patients, the vast majority of whom will not attempt suicide, yet be denied to patients classified as 'low-risk'.

The authors suggest that 'some' patients who present to the emergency department after a suicide attempt or act of self-harm and who are classed as 'low-risk' by ReACT could be 'followed up for an assessment at a more convenient time and place, perhaps in the community'. If this is to imply that ReACT 'low-risk' patients could have the 'full mental health and social needs assessment' that NICE recommends be offered in the emergency department (NICE, 2004) be delayed and completed more conveniently in the community, we would strenuously disagree. It is quite feasible to offer such assessments in the emergency department to all patients presenting with self-harm. The assessments place little burden on the patient and, combined with the formation of an appropriate management plan, are likely to decrease the likelihood of future suicide.

ReACT may offer a statistically valid way of discriminating between patients on the basis of their likelihood of suicide within 6 months, but even so we cannot see how using this tool will have any clinical utility and are concerned that it might be inappropriately used to deny some patients a timely

and comprehensive assessment of their illness and circumstances.

Declaration of Interest

None.

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Screening for suicide - Reply

The Letter by Large & Ryan (2012) correctly points out that the positive predictive value of 30% is for both non-fatal and fatal repeat self-harm acts, which is the outcome we based our performance measures on. We hope that this will not be misinterpreted as the measure for suicide alone. We acknowledge that suicide is a rare outcome and that aiming to predict only those repeat acts that end fatally would not be feasible. Throughout the development of ReACT we were mindful that there needed to be a balance between correctly identifying the relatively small number of suicides and the large proportion that re-attended with non-fatal self-harm. We acknowledged that 'no risk assessment measure can be accurate enough to assume a patient assessed as low risk will not repeat self-harm or complete suicide' (Steeg *et al*. 2012) and the risk of suicide is markedly elevated for anyone within the self-harming population relative to the general population (Cooper *et al*. 2005).

However, we proposed that a tool drawing together risk factors from a large prospective cohort, based on population-level data and real outcomes provides some evidence to inform risk categorization according to a patient's likelihood of further self-harm. We support the NICE guidance (NICE, 2004) that this is only a part of a wider assessment of a patient's psychological and social needs. With any clinical decision tool it is important to be clear about the proposed utility as well as its statistical validity and performance. With tools designed for use in mental health settings, such as the ReACT tool, discussion around the proposed clinical use becomes more important than with those designed for physical conditions. As Large & Ryan highlight, specific diagnostic tests are often carried out following the result of screening tools. While the course of action is not so clear-cut when treating self-harm patients presenting in an emergency situation, the use of screening tools as part of mental health risk assessment has been recommended (DoH, 2007). We therefore welcome the opportunity to expand on this further.

Screening is the beginning of a process and we were not suggesting a four-question tool can be used alone to determine a patient's outcome in terms of non-fatal repetition or suicide. The four factors identified may act as a 'red flag' to emergency-department (ED) staff treating the patient in the early stages of the presentation. We agree that specific interventions would not be determined solely on the basis of the ReACT tool. Any intervention would be based on a comprehensive assessment of psychological and social needs. Risk is an important area to consider as part of the wider assessment, particularly when considering immediate management, but would not inform decisions on interventions alone. However, mental health clinicians may use this awareness in consideration of the potential benefits of certain treatments