The CORE-10 in screening for current mental health problems and severe mental illness in prisoners.

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Abstract

Background: Few mental health screening tools are validated for prisoners. Existing tools do not guide referral between primary and secondary care pathways.

Aims: To assess the CORE-10's performance in screening any current mental health problem and current severe mental illness (SMI) in prisoners.

Method: CORE-10 ratings were compared with Mini International Neuropsychiatric Interview version 6.0 (MINI 6.0) ratings and current practice in 150 male prisoners. Receiver operating curve (ROC) analyses were used to estimate the likelihood with which CORE-10 ratings matched MINI ratings, yielding 'area under the curve' statistics.

Results: ROC analyses suggested a strong relationship between CORE-10 screen scores and the more detailed assessment both in identifying any problem (AUC 0.85) and severe mental illness (AUC 0.76). Sensitivity was 0.88 and 0.83, and specificity 0.64 and 0.61 respectively. Re-test reliability was moderate (ICC=0.83). The CORE-10 identified many cases of any problem and severe illness, who while also identified by the MINI, had not been referred to clinical services in routine practice.

Conclusions: This study evidences the potential of the CORE-10 for improving appropriate referrals for prisoners to mental health services.

Keywords: Screening, prisoners, mental illness, CORE-10, MINI 6.0.

Introduction: Untreated mental health problems in prisoners are associated with violence, self-harm, suicide and reoffending (Martin, Colman, Simpson & McKenzie, 2013). Current screening in UK prisons generally takes place on intake and emphasises severe mental illness through assessment of historic factors (Grubin, Carson & Parsons, 2002). It does not assess less severe problems or current distress. Psychometric tools validated in UK prisons do not have established utility for distinguishing mild and severe mental health problems, as required by the separate primary/secondary care treatment pathways for these conditions. To fill this gap, we assessed the performance of the CORE-10 (Connell & Barkham, 2007) for identifying any current mental health problem and serious mental illness in prisoners.

Method: Ethical approvals were from Cardiff University and the then National Offender Management Service. Participants were 150 volunteer prisoners from male remand and a resettlement prisons in Wales. This was an opt-in sample, it is not known how many declined to participate. Inclusion criteria were; aged 18 years or more and entered custody in the previous six months. Exclusion criteria were non-English speakers, 'unsafe to see' or interviewer judgement of lacking consent capacity.

CORE-10 ratings were compared with MINI 6.0 diagnostic interview findings (Sheehan, Lecrubier, Harnett-Sheehan, Janavas, Weiller, Bonara, *et al, 1997).* Eighty-one of the participants completed the CORE-10 again after two weeks for re-test reliability. Referral to mental health services at any stage since admission was also recorded.

A serious mental illness was recorded if the MINI showed the following within the last month: current major depressive disorder, bipolar (i), bipolar (ii), bipolar disorder not otherwise specified, mood disorder with psychosis or psychotic disorder. Identification of 'any current mental health disorder' required a positive screen in the last month for: any of the above disorders or suicidality, manic episode, panic disorder (with and without agoraphobia), agoraphobia, social phobia, obsessive compulsive disorder, post traumatic distress disorder and generalised anxiety disorder. Data were also collected about referral to primary and secondary mental health services since reception into prison.

Results: Men participating were aged 18 to 81 years (mean [M] 31.7, standard deviation [SD] 10.8): 134(92%) were white. Eighty three (55%) were sentenced, 43 (29%) on remand. The mean CORE-10 score was 12.4 (range 0-36, SD 8.7, 95% confidence interval [CI] 11.0 - 13.8. The MINI identified 41 men (27%) as likely to have a current serious mental illness and 92 (61%) with a likely mental health problem of some kind. The in-prison clinical record indicated that 92 (61%) had not been referred for a mental health assessment, 52 (35%) had been referred to primary care and just 5 (3%) to secondary care at any time since reception.

CORE-10 scores were significantly related to MINI classification (AUC 0.85). Placing the CORE-10 cut-off at 6 or above for any problem, the sensitivity was 0.88, specificity 0.64, positive predictive value 0.79 and the negative predictive value 0.77. Where any current mental health disorder had been

identified according to the MINI, 48 (53%) had been referred to primary mental health services but 43 (47%) had not. Treating a CORE-10 score of 10 or more as indicative of need for secondary care referral, sensitivity was 0.83, specificity 0.61, positive predictive value 0.44 and negative predictive value 0.90. Of those with a MINI score indicating current serious mental illness, 2 (5%) had been referred to secondary mental health but 39 (95%) had not.

Test re-test reliability (interclass correlation) for the CORE-10 was 0.83.

Discussion: Prevalence of current mental health disorder during the first six months of an imprisonment was over 60% in this sample compared to previous estimates of 54-56% in the UK and USA (Offender Health Research Network, 2010; Ford, Trestman, Weisbrock & Zhang, 2007). The proportion screening positively for current serious mental illness (27%) was at the low end of previous estimates for England and Wales (28-41%) (Grubin, Carson & Parsons, 2002; Ford, Trestman, Weisbrock & Zhang, 2007).

The CORE-10 was at least moderately accurate (AUC 0.85) in distinguishing between no mental health problems and any current problems and appeared to be more sensitive than other screening tools in a prison setting (sensitivity 0.88, specificity 0.64), including the Correctional Mental Health Screen for men (CMHS-M) (sensitivity 0.64-0.75, specificity 0.70; Ford, Trestman, Weisbrock, & Zhang, 2007 & 2009) and the General Health Questionnaire 28 (GHQ-28) (sensitivity 0.65, specificity 0.69; Andersen, Sestoft, Lillebaek, Gabrielsen, & Hemmingsen, 2002).

In relation to serious mental illness, for the key screening parameter of sensitivity (0.83), the CORE-10 exceeded most other tools validated for screening this in prisoners including Referral Decision Scale (RDS) (sensitivity 0.79; Teplin & Swartz, 1989), Brief Jail Mental Health Screen (BJMHS) (sensitivity 0.34-0.82; Baksheev, Ogloff & Thomas, 2012; Evans, Brinded, Simpson, Frampton, & Mulder, 2010; Steadman, Scott, Osher, Agnese & Robbins, 2005) and the K6 (sensitivity 0.75; Louden, Skeem, & Blevins, 2013). By contrast, Grubin's screening tool appeared to have greater sensitivity (0.97; Grubin, Carson & Parsons, 2002). The CORE-10 specificity of 0.61 was lower than that of: The RDS (specificity 0.98, Teplin & Swartz, 1989); the Grubin (specificity 0.84 Grubin, Carson & Parsons, 2002) and the BJMHS (specificity 0.74 - .86, Baksheev, Ogloff & Thomas, 2012; Evans, Brinded, Simpson, Frampton, & Mulder, 2010; Steadman, Scott, Osher, Agnese & Robbins, 2005). However, the CORE-10 had higher specificity than the K6 (0.36, Louden, Skeem, & Blevins, 2013). Specificity is however less crucial in screening. The CORE-10 demonstrated moderate retest stability despite the significant and variable stressors in custody, and real possibility of mental state change in that time.

Finally, the CORE-1 showed slightly lower sensitivity for SMI than for any mental health problem. This may appear counterintuitive since serious problems are more pronounced. However, this difference is small, and is probably due to the 'base-rate effect' wherby all sensitivity of psychological tests declines for less common condtions. For this reason we recommend using the CORE-10 to detect less serious mental health problems with the Grubin for screening SMI.

Limitations

Findings were limited by the non-random selection of the sample and measurement at up to six months after reception into prison rather than on reception. The sample size did not permit separate analyses for specific conditions. The screening and MINI assessment were not performed blind.

Conclusion

The CORE-10 is brief, simple, considers risk to self, has minimal training requirements and is freely available. It has potential as a screening tool for both mild and severe mental health problems in the first six months of custody and to identify cases that go undetected by current screening practice. Clinically, administering the CORE-10 as well as the Grubin items (Grubin *et al*., 2002) which predict SMI may improve detection of milder problems now treated by primary care.

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