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# Feasibility of a structured risk assessment tool in general adult psychiatry admissions

## AIMS AND METHOD

To assess the feasibility of using a structured risk assessment tool (Historical Clinical Risk 20-Item (HCR–20) Scale) in general adult psychiatry admissions and the characteristics of 'high-risk' patients. A

notes review and interviews were used to conduct an HCR–20 assessment of 135 patients admitted to Murray Royal Hospital, Scotland.

## RESULTS

Patients scoring higher on the HCR–20 were discharged earlier and more

likely to have a diagnosis of personality disorder and a comorbid diagnosis.

## CLINICAL IMPLICATIONS

It was possible to complete an HCR–20 assessment of over 80% of patients within 48 h of admission.

In the current political climate there is increased pressure on psychiatrists to get risk prediction correct, although inquiries into homicides committed by patients with mental illness suggested that 27.5% of acts were predictable, albeit that 65% were preventable (Munro & Rungay, 2000).

The Historical Clinical Risk 20-item (HCR–20) Scale (Webster *et al*, 1997) has been validated in both male and female forensic patients, and scored highest in the evaluation of risk assessment tools for managing the risk of violence by the Risk Management Authority (2006). The aims of this current study were to assess the feasibility of using the HCR–20 in general adult psychiatric admissions and to examine its clinical utility. We compare our HCR–20 scores with those reported in other studies.

## Method

The Tayside Area Research and Ethics Committee granted ethical approval for the study, which was based in the general adult psychiatry wards at Murray Royal Hospital, Perth. The hospital serves a mixed urban and rural population of just over 135 000. The general adult psychiatric service has two single-sex admitting wards, each having 22 beds. Patients can be admitted from several sources, including GP referrals, accident and emergency, police referrals, self-referrals, community mental health teams and occasionally the courts. All emergency referrals were assessed by the senior house officer on call, with consultant advice.

Patients were included in the study if they were admitted to either of the two general adult wards. There were a total of 144 admissions to the hospital during the 5-month study period, although nine patients had to be excluded (six were discharged from hospital before the tool was completed, one was unable to give informed consent and two were transferred to another hospital with their documentation). The total study population thus comprised 135 participants.

Following a patient being admitted their medical and nursing notes would be examined and demographic details collected, including age, gender, age at first symptoms, diagnosis, comorbidity and number of

previous admissions. An HCR–20 was then attempted. If the information was incomplete then informed consent would be obtained from the patient and a further interview would be conducted to obtain the missing information. The information in regard to the clinical and risk management items was generally complete; the historical items proved more difficult, unless past medical records were available. The HCR–20 was completed by a single rater (H.S.). The Psychopathy Checklist Revised (PCL–R) or screening version (PCL–SV) was omitted from the HCR–20 as it was thought that this would lengthen the assessment. The total possible score was therefore 38 rather than 40. The diagnosis was recorded from the medical notes as described by consultant psychiatrists.

The feasibility of the study was measured by taking the date of admission to the date of the completion of the HCR–20 to the nearest day.

The group difference between patients who remained in hospital for more or less than 10 days was assessed using the Student *t*-test and the results for patients with a diagnosis of schizophrenia were compared with those of patients with other diagnoses. Chi-squared tests were used to assess the discrete data, and logistic regression analysis was used to assess which factor predicted high risk or a longer period of time in hospital.

## Results

There were 75 males and 58 females included in the study. The diagnostic and historical variables of the group are summarised in Table 1. There was no difference between men and women with regards to their ages (males, mean age 37.8 years, females 38.1), age at first symptoms (males 27.4 years (13–62, *s.d.* = 14.6; females, 26.2 years (10–60, *s.d.* = 15.4) and previous number of admissions (see Table 1). Male patients were more likely to have a primary diagnosis of schizophrenia and acute psychosis (male, 45.9%; females, 18%), and were more likely to have a comorbid diagnosis of drug and alcohol misuse (males, 43.9%; females, 21.6%), whereas female patients were much more likely to have a primary



diagnosis of affective disorder (males, 31.7%; females, 57.4%).

The average total HCR–20 score for all patients was 18 (s.d.=7.3). The average total score for males was 19.2 (s.d.=6.4) and for females 16.0 (s.d.=8.2); this was statistically significant ( $P=0.04$ ).

The total group was dichotomised around a total score of 25 into high- and low-risk groups. The high-risk group had 28 participants and the low-risk group had 105. The high-risk group were just as likely to be female as male. They were more likely to have a primary diagnosis of personality disorder ( $P<0.001$ ), much less likely to have an affective diagnosis ( $P<0.001$ ), and more likely to have a comorbid substance problem. In terms of differences in the total and sub-scale scores, all of these were highly statistically significant between the two groups ( $P<0.001$ ).

The differences in HCR–20 scores related to diagnosis are shown in Table 2. Patients with a diagnosis of depression scored significantly less than those with schizophrenia. Examining the total HCR–20 score and comparing the other diagnoses with schizophrenia,

affective disorders scored significantly less ( $P=0.009$ ) and patients with a personality disorder scored much higher ( $P<0.001$ ). The total HCR–20 score was highest in those patients with a diagnosis of personality disorder; this is particularly seen in the historical sub-scale. The clinical sub-scale is similar across the spectrum of diagnoses. The risk management sub-scale was highest in those with a personality disorder diagnosis.

To examine the clinical utility of the HCR–20 we explored the relationship between HCR–20 scores and length of stay in hospital, presuming that those with the greatest risk would stay in hospital longer. Patients were divided into those that stayed in hospital for  $\leq 10$  days ( $n=74$ ) and those that stayed in hospital for  $>10$  days ( $n=63$ ). The differences in the HCR–20 scores are shown in Table 3. The results were paradoxical in that the patients that stayed in hospital for  $\leq 10$  days had a statistically significant higher historical sub-scale score whereas the patients that were in hospital longer had a significantly higher score on the clinical sub-scale. It is noticeable that no patients admitted with a primary diagnosis of personality disorder stayed more than 10 days as in-patients; the average length of stay for a patient with a personality disorder was 3.9 days. Similarly if the patient had a primary substance misuse diagnosis, 80% were discharged before 10 days. Logistic regression was performed to assess which factors might predict a longer length of stay. Factors that were not significant were comorbidity, number of previous admissions, and age at first symptoms. The total HCR–20 score did not predict length of stay. The one variable that did predict length of stay was a diagnosis of personality disorder, which predicted a short stay in hospital. This remained significant when considered with the total HCR–20 score ( $P=0.05$ ) or being defined as high risk ( $P=0.01$ ). Data on the frequency of the use of control and restraint techniques were collected but the numbers were so low that useful analysis could not be undertaken.

The feasibility of completing the HCR–20 was assessed. It was possible to complete 11.7% of HCR–20 scales at the admission interview, 72.3% were completed via medical and nursing documentation at the next earliest opportunity (usually the following day) and 16.1% required further medical note examination or interview. It was therefore possible to complete a structured risk

**Table 1. Diagnosis and comorbidity status of participants (75 men, 58 women)**

	Males <i>n</i> (%)	Females <i>n</i> (%)	Total %
<b>Diagnosis</b>			
Schizophrenia	25 (30)	10 (16.4)	25.5
Bipolar disorder	11 (13.4)	12 (19.7)	16.8
Depression	15 (18.3)	23 (37.7)	27.7
Acute psychosis	13 (15.9)	1 (1.6)	10.2
Alcohol misuse	7 (8.5)	2 (3.3)	6.5
Drug misuse	2 (2.4)	2 (3.3)	2.9
Schizoaffective disorder	2 (2.4)	6 (9.8)	5.8
Personality disorder	7 (8.5)	2 (3.3)	6.5
<b>Comorbidity</b>			
Nil	37 (45.1)	40 (66.6)	53.8
Alcohol and drugs	36 (43.9)	13 (21.6)	34.3
Personality disorder	4 (4.9)	5 (8.2)	6.3
<b>Previous admissions</b>			
0	19 (26.4)	14 (24.6)	25.4
1–5	39 (53.4)	24 (42.1)	48.5
> 5	12 (16.4)	15 (26.3)	20.8
> 10	7 (9.6)	4 (7)	8.5

**Table 2. HCR–20 total and sub-scale scores related to primary diagnosis of the patient**

Diagnosis	Total score (s.d.)	Historical score (s.d.)	Clinical score (s.d.)	Risk score (s.d.)
Schizophrenia/psychosis	18.7 (5.4)	8.4 (3.4)	6.1 (1.6)	4.1 (1.9)
Affective	15.9 (6.6)	6.8 (3.8)	6.1 (1.7)	3.1 (2.3)
Substance misuse	20.9 (5.6)	10.3 (3.0)	5.7 (1.7)	5.0 (1.7)
Personality disorders <sup>1</sup>	28.3 (3.2)	14.9 (1.9)	7.2 (1.0)	6.1 (2.1)
Others <sup>2</sup>	16.8 (4.3)	7.5 (5.2)	5.5 (1.9)	3.8 (1.7)

1. Includes antisocial and borderline personality disorders only.

2. Two patients with intellectual disability, Huntington's chorea and neurological consequences of HIV infection.



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**Table 3. HCR–20 score comparison between patients staying ≤ 10 days and those staying > 10 days in hospital**

Variable	≤ 10 days	> 10 days	P
HCR–20, total score (s.d.)	19.0 (7.0)	17.5 (6.2)	NS
Historical, score (s.d.)	9.0 (4.4)	7.5 (3.6)	0.01
Clinical, score (s.d.)	5.8 (1.6)	6.4 (1.6)	0.02
Risk management, score (s.d.)	4.1 (2.4)	3.7 (2.2)	NS

assessment tool in 83.9% of admissions within 24–48 h of admission to an acute psychiatric ward.

## Discussion

We found that it was feasible to perform a modified HCR–20 (without the PCL–R) within 48 h of admission to a busy general adult admission site. Male patients were more likely to suffer from psychosis and have a comorbid diagnosis than females. The high-risk group was more likely to have a diagnosis of personality disorder and paradoxically spend a shorter time in hospital. Patients with personality disorder scored higher on the historical sub-scale.

In a study of general adult out-patients ( $n=156$ ) detained under civil mental health legislation Douglas (1996) found a total HCR–20 score of 12.7, which is lower than the total found in our study population. A more recent study (Dowsett, 2005) was conducted in Lambeth in a community forensic setting. This population did differ from our study sample in that 94% were male, and 74% were from a minority ethnic group. The majority of the group (89%) also had a psychotic disorder. The mean total HCR–20 score was 21.65, with a historical sub-scale score which was considerably higher, at 13.4 (compared with 8.1). Our finding that the highest-risk group was discharged earliest goes against the Dowsett (2005) finding that HCR–20 score correlated with the level of support and care required by the patient.

The paradoxical finding in our study that patients who had a higher total HCR–20 were discharged earlier could be explained by the fact that all the patients with personality disorders and 80% of those with a substance misuse diagnosis were discharged before 10 days. The early discharges may result in part from a traditional reluctance in Scotland to use the mental health legislation to keep these patients in hospital and the lack of specialised facilities. This may change with the introduction of the Mental Health (Care and Treatment) (Scotland) Act 2003, which now classifies personality disorder as a separate criterion for detention under the Act. The Mental Health (Scotland) Act 1984 and the Mental Health (Care and Treatment) (Scotland) Act 2003 make it impossible to detain in hospital people with a primary diagnosis of substance or alcohol misuse. We did not record whether these patients discharged themselves against medical advice and would have stayed longer in hospital if they could have been detained under legislation.

Although the completion of the HCR–20 (without the PCL–R or PCL–SV) is feasible its clinical utility and predictive accuracy will require longitudinal studies. The decision to complete the HCR–20 without the PCL–R or PCL–SV was made for a number of reasons. There is a debate about what would be an appropriate diagnostic threshold in a European population. The average score on the PCL–R of Scottish prisoners was 13.02, which is considerably less than the 23.63 scored by North American prisoners (Cooke, 2003). If, in a prison population, few meet diagnostic criteria for psychopathy then it would be expected that even fewer would in a general adult psychiatric population. In a community sample of the general adult psychiatric population less than 2% scored above the threshold on the PCL–SV (unpublished data available from the authors). It would be the decision of individual services to conclude that the extra expense and training time needed to complete the scale was of benefit if the number of patients scoring positively on this item is low. In Scotland the systematic risk assessment has reached prominence because of a recent Mental Welfare Commission for Scotland (2006) report into the murder of a patient by another patient. The inquiry heavily criticised the forensic service for not completing a structured risk assessment tool in a systematic and multidisciplinary way. It would be unfortunate if general adult psychiatry services had to wait for a similar incident before a structured risk assessment became part of standard clinical care.

## Declaration of interest

None.

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