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Psychiatric disorders in male prisoners who made near-lethal suicide attempts: case-control study

Adrienne Rivlin, Keith Hawton, Lisa Marzano and Seena Fazel

Background

Although male prisoners are five times more likely to die by suicide than men of a similar age in the general population, the contribution of psychiatric disorders is not known.

Aims

To investigate the association of psychiatric disorders with near-lethal suicide attempts in male prisoners.

Method

A matched case-control study of 60 male prisoners who made near-lethal suicide attempts (cases) and 60 prisoners who had never carried out near-lethal suicide attempts in prison (controls) was conducted. Psychiatric disorders were identified with the Mini International Neuropsychiatric Interview (MINI), and information on sociodemographic characteristics and criminal history was gathered using a semi-structured interview.

Results

Psychiatric disorders were present in all cases and 62% of controls. Most current psychiatric disorders were associated

with near-lethal suicide attempts, including major depression (odds ratio (OR)=42.0, 95% CI 5.8–305), psychosis (OR=15.0, 95% CI 2.0–113), anxiety disorders (OR=6.0, 95% CI 2.3–15.5) and drug misuse (OR=2.9, 95% CI 1.3–6.4). Lifetime psychiatric disorders associated with near-lethal attempts included recurrent depression and psychoses. Although cases were more likely than controls to meet criteria for antisocial personality disorder, the difference was not statistically significant. Comorbidity was also significantly more common among cases than controls for both current and lifetime disorders.

Conclusions

In male prisoners, psychiatric disorders, especially depression, psychosis, anxiety and drug misuse, are associated with near-lethal suicide attempts, and hence probably with suicide.

Declaration of interest

None.

Reducing the incidence of suicide by prisoners is part of national strategies for suicide prevention in the USA,¹ UK,² Ireland³ and other countries,⁴ and is highlighted in a recent World Health Organization statement on mental health in prisons.⁵ Relative to age-adjusted rates in the general population, suicide rates in male prisoners are five times higher in England and Wales,⁶ and large proportionate excesses have been found in the USA⁷ and some mainland European countries.⁸ Potentially modifiable factors have been the focus of suicide prevention guidelines in prisons,^{9,10} although there has been little attention to specific psychiatric disorders. A recent systematic review showed that clinical factors have strong associations with suicide in prison, but which diagnoses and their relative contributions were uncertain.¹¹ Part of the reason for this is that investigating risk factors for prison suicide has principally been based on examination of official records, or use of the psychological autopsy approach, which aims to build a retrospective picture of the deceased's mental state at the time of death in order to develop a profile of the prisoner.¹² As this method relies primarily on medical records for information on clinical factors, it is limited by the quality of these.^{13–15}

In this study, we addressed this limitation by assessing psychiatric disorders in male prisoners who made near-lethal suicide attempts and comparing them with those of a matched control group of prisoners who had never made a similar attempt in prison.¹⁶ The validity of the near-lethal method is supported by two pieces of evidence. First, survivors of medically serious suicide attempts are epidemiologically similar to individuals who die by suicide.^{17,18} Second, individuals who have made a medically serious suicide attempt are twice as likely as other people who have attempted suicide to subsequently complete suicide.¹⁹ Furthermore, the near-lethal method has been piloted in prisons.²⁰ However, the pilot study only included 15 male

prisoners, there was no control group and psychiatric morbidity was not investigated.

Method

Participating prisons

We requested information from the Ministry of Justice Safer Custody and Offender Policy Group on prisons within 100 miles of Oxford that had relatively high rates of serious suicide attempts and completed suicides. Nineteen prisons were identified, including three young offenders' institutes (prisoners aged 18–21), three Category A (maximum security) prisons, 12 Category B prisons (establishments for those who do not require maximum security but for whom escape must be made difficult) and one Category C prison (for prisoners who cannot be housed in open conditions but who are unlikely to try to escape).

Participant identification

Near-lethal suicide attempts were defined as acts that could have been lethal had it not been for intervention or chance, and/or involved methods that are associated with a reasonably high chance of death.²¹ Detailed criteria were developed to aid prison officers refer suitable cases to the study (Appendix). The criteria are based on the physical danger and consequences of the act, an approach that is in line with that used in previous investigations of near-lethal suicide attempts in the community.²¹ They intentionally do not include suicidal intent. This is because basing the criteria only on the lethality of the act includes in the study both those with high suicidal intent and those whose actions may have very nearly caused death but may not have been motivated by suicidal intentions. Such cases would be recognised

by most researchers as being within a broad conceptualisation of suicide.

Cases were interviewed within 4 weeks of the suicide attempt. Controls were prisoners who had not made a near-lethal suicide attempt while in prison. They were matched with cases by age (5 years older or younger) and by type/category of prison. Identification of controls was done randomly from the Ministry of Justice's daily list of prisoners using these two matching criteria. All participants were aged 18 years and over.

Prisoners making a near-lethal suicide attempt were excluded from the study if they declined to take part (15 individuals), could not speak English (8), were considered too dangerous (4) or too seriously mentally ill (1), or because staff shortages or absences meant that the 4-week time limit within which an interview had to be conducted had been missed (6). A further eight prisoners were released from prison or transferred to a non-participating prison before an interview could be arranged. Those included in the case group were significantly more likely than those excluded to be White (52/60 (87%) *v.* 25/42 (60%), odds ratio (OR) = 4.4, 95% CI 1.7–11.6) and to be on a life sentence (13/39 (33%) *v.* 2/23 (9%) OR = 5.1, 95% CI 1.0–24.9). Other recorded socio-demographic and criminological characteristics did not differ significantly between the included and excluded prisoners.

Interviews

Following training in use of the instruments and questionnaires employed in the research, and piloting at a large adult male local prison, one of the authors (A.R.) conducted semi-structured face-to-face interviews with 60 cases and 60 controls. A total sample size of 120 was calculated to provide sufficient power to determine important differences in psychiatric characteristics. After participants' written consent had been obtained, the interviews took place in private in the prison and lasted for 90–120 min. Participants were offered support both before and after the interviews from a prison officer, chaplain, Samaritan, Listener (trained peer support) or psychologist.

Sociodemographic and criminal history information was gathered using an adapted version of a structured questionnaire used in the Oxford Monitoring System for Attempted Suicide.²² The following information regarding a participant's medical and psychiatric history was collected: history of in-patient or out-patient psychiatric treatment, current psychotropic medication, current contact with a mental health professional (including a psychiatrist, psychologist, counsellor or community psychiatric nurse), and previous self-harm (with and without suicidal intent). For cases, we also administered the Beck Suicide Intent Scale (SIS) to assess severity of suicidal intent associated with near-lethal acts.²³

Psychiatric morbidity was assessed with the Mini International Neuropsychiatric Interview (MINI),²⁴ which includes Axis I (psychiatric) and II (personality) disorders for DSM-IV²⁵ and ICD-10²⁶ diagnoses. The MINI has been demonstrated to have good to very good validity, reliability (intrater and test-retest), and sensitivity and specificity indices.^{27–29} When compared with the Structured Clinical Interview for DSM-III-R (SCID),³⁰ the MINI had good to very good kappa values (apart from current drug dependence, which was the only diagnosis with a $\kappa < 0.5$). Except for dysthymia, obsessive-compulsive disorder, and current drug dependence, sensitivity was 0.70 or above for all disorders. For major depression, lifetime mania, current and lifetime panic disorder, lifetime agoraphobia, lifetime psychotic disorder, anorexia and post-traumatic stress disorder (PTSD), positive predictive values have been found to be above 0.75. Other advantages of the MINI include its relatively brief administration time (15–20 min) and ease of use.^{28,29} The MINI has also been

used in prisons.^{31–33} However, previous research in prisoners³³ and our pilot work suggested that the MINI may overdiagnose certain disorders. We therefore made the following modifications: a diagnosis of mania (current or lifetime) was only made when prisoners met criteria for elation/expansiveness (i.e. irritable mood alone was insufficient to reach a diagnosis); and a diagnosis of obsessive-compulsive disorder was dependent on meeting criteria for both obsessions and compulsions.

Ethical approval

The study had ethical approval from the Central Office for Research Ethics Committees (Ethics number 06/MRE12/83), and the Prison Service (Reference PG 2006 063).

Statistical analyses

All analyses were conducted using the Statistical Package for the Social Sciences (SPSS, Version 15.0 for Windows) and STATA (Version 9.0 for Windows). A 95% ($P < 0.05$) significance level was adopted. In the results, unless otherwise specified, denominators for both cases and controls are 60. Odds ratios, 95% confidence intervals and associated *P*-values for analyses of categorical factors were calculated using McNemar's test to account for matching of cases and controls. For continuous data, paired sample *t*-tests and Wilcoxon signed ranks tests (for non-normally distributed data) were used.

Possible confounders (ethnicity, marital status, prior employment, educational qualifications, index offence, remand status, previous prison spells, and sentence length greater than 18 months) were assessed using conditional logistic regression. We examined whether confounders were each independently associated with having made a near-lethal attempt in prison and with specific psychiatric disorders. Confounders were then introduced and left in the model if they altered the odds ratio by more than 10%.^{34,35} No confounder fulfilled both these criteria.

We looked at risk of near-lethal suicide attempts according to diagnostic subgroups using conditional logistic regression (as the data were matched on age and prison type/category). Where the number of discordant pairs of cases and controls was less than 10, we do not report odds ratios.

Results

Near-lethal suicide attempts

Hanging or ligaturing accounted for two-thirds ($n = 40$, 67%) of the near-lethal suicide attempts. There were also 12 (20%) incidents of severe cutting, 3 (5%) self-asphyxiations, 3 (5%) overdoses of paracetamol and/or ibuprofen, 1 (2%) ingestion of foreign objects (plastic knives) and 1 (2%) self-immolation.

All but one incident (59, 98%) took place in the prisoners' own cells. Most of these were in the prisoners' normal location (46, 77%), ten (17%) were in segregation units and four (7%) were in the prison healthcare centre. The majority of prisoners in the case group were not identified as 'at risk' at the time of the incident. Only 24 (40%) were on an open ACCT (Assessment, Care in Custody and Teamwork) document, which is the formal system for registering and monitoring prisoners thought to be at risk of suicide and self-harm in prisons in England and Wales.³⁶ Over one-third (18/49, 37%) of individuals in the case group were withdrawing from drugs or alcohol at the time of the incident. The mean Beck Suicide Intent score was 19.0 (s.d. = 5.4, range 2–29). By comparison, the mean score for males assessed at a general hospital in England following an incident of self-harm or self-poisoning has been reported to be 10.6.³⁷

Sociodemographic and criminological variables

Near-lethal suicide attempts were associated with being White, having no educational qualifications, having been in prison previously, having been imprisoned for less than 30 days and having been in the current prison for less than 30 days (Table 1).

Psychiatric history

Near-lethal suicide attempts were associated with a history of psychiatric treatment and self-harm (Table 1).

Current psychiatric disorder

Psychiatric disorders were present in all cases and 62% of controls (Table 2). Excluding substance use disorders, 58 (97%) cases and 21 (35%) controls had a psychiatric disorder (OR = 38.0, 95% CI 5.2–277). Comorbidity of disorders was particularly prevalent in cases. Most psychiatric diagnoses were associated with near-lethal suicide attempts, especially depression, psychosis, panic disorder and any anxiety disorder. Alcohol misuse was related to near-lethal suicide attempts but this association did not reach statistical significance.

Lifetime psychiatric disorders

Recurrent depression and all psychoses were associated with near-lethal suicide attempts (Table 3). Although cases were more likely than controls to meet criteria for antisocial personality disorder, the difference was not statistically significant.

Psychiatric treatment at the time of the interview

Significantly more cases than controls were receiving psychiatric treatment and psychotropic medication at the time of the interview (Table 4). However, there was a discrepancy between the number of cases diagnosed using the MINI with a current episode of major depression (52, 87%) and those being prescribed antidepressants (22, 37%).

Discussion

We used a standardised diagnostic instrument in an interview study of 120 male prisoners in 19 prisons in England to investigate associations with near-lethal suicide attempts. We found that clinical factors were strongly associated with near-lethal suicide attempts, particularly current and recurrent depression, current and lifetime psychosis, current anxiety disorders and previous self-harm.

Current psychiatric disorders

Cases were significantly more likely to be suffering from any mood disorder (particularly major depression) than controls, anxiety (notably panic, PTSD and social anxiety), psychotic disorders, and to have comorbid disorders. In the general population, completed suicide is also associated with these disorders.³⁸ However, although alcohol misuse is a risk factor for suicide in the general population,³⁹ it was not strongly associated with near-lethal suicide attempts in this prisoner population. In previous research on suicide by prisoners, similar associations were identified with any psychiatric diagnosis in an Austrian case-control study¹³ and with psychosis in a recent US investigation.⁴⁰ However, the findings on the role of comorbidity and anxiety disorders have not, to our knowledge, been previously reported.¹¹

After depression, alcohol and drug disorders, PTSD was the most prevalent disorder in the cases, and was also associated with a near-lethal suicide attempt. Post-traumatic stress disorder has received little attention in suicide research in prisons⁴¹ and, considering its potential treatability, further research investigating its role in suicide risk is warranted.

Lifetime psychiatric disorders

Apart from hypomania, all lifetime Axis I diagnoses, and comorbidity, were associated with near-lethal suicide attempts in

Table 1 Sociodemographic, criminological and psychiatric history characteristics of male prisoners who made near-lethal suicide attempts (cases) and those who had not (controls)

Variable	Cases <i>n</i> = 60		Controls <i>n</i> = 60		χ^2	OR (95% CI)	<i>P</i>
	<i>n</i>	(%)	<i>n</i>	(%)			
<i>Sociodemographic</i>							
Age (years)							
18–21	11	(18)	10	(17)			
22–29	20	(33)	21	(35)			
30–39	22	(37)	17	(28)			
40–49	5	(8)	11	(18)			
50+	2	(3)	1	(2)			
White ethnicity v. Black and minority ethnic	52	(87)	42	(70)		2.7 (1.0–6.8)	0.040
Single ^a	41	(68)	46	(77)		0.7 (0.3–1.5)	0.321
Parent or guardian of children	35	(58)	31	(52)		1.3 (0.6–2.8)	0.451
Educational qualifications (none v. any)	21	(35)	11	(18)		2.4 (1.0–5.9)	0.048
Unemployed ^b	35	(58)	29	(48)		1.6 (0.7–3.3)	0.261
<i>Criminological</i>							
Previous prison spell(s)	54	(90)	40	(67)		4.5 (1.5–13.3)	0.007
Remand status	21	(35)	12	(20)		2.3 (0.9–5.6)	0.068
Less than 30 days since being imprisoned	17	(28)	1	(2)		17.0 (2.3–127)	0.006
Less than 30 days in current prison	25	(42)	1	(2)		25.0 (3.4–185)	0.002
<i>Psychiatric history</i>							
Previous psychiatric in-patient treatment	20	(33)	3	(5)		9.5 (2.2–40.8)	0.002
Previous psychiatric out-patient treatment	21	(35)	5	(8)		5.0 (1.7–14.6)	0.003
Previous self-harm ^c in prison ^d	41	(68)	5	(8)	36.0		<0.0001
Previous self-harm ^c outside prison	38	(63)	20	(33)		3.3 (1.5–7.2)	0.004

a. Including divorced, widowed and separated.

b. Including sick/disabled.

c. Any self-inflicted act, regardless of method, severity or intent.

d. Odds ratios (ORs) undefined because there is a 0 in one or more cells; McNemar's chi-squared and associated *P* reported when observed values are equal to or greater than 10.

prison. Antisocial personality disorder is a risk factor for suicide in the general population,⁴² and we found a non-significant trend to this effect in prisoners who had made near-lethal suicide attempts. This is in line with previous research findings

regarding the association between antisocial personality disorder and suicidal behaviour in prisoners⁴³ and probably reflects the high frequency of this disorder in the general prison population.

Table 2 Comparisons of current psychiatric disorders between male prisoners who made near-lethal suicide attempts (cases) and those who had not (controls)

Disorder	Cases <i>n</i> = 60		Controls <i>n</i> = 60		Odds ratio (95% CI)	<i>P</i>
	<i>n</i>	(%)	<i>n</i>	(%)		
<i>Mood disorders</i>						
Major depression	52	(87)	11	(18)	42.0 (5.8–305)	<0.001
With melancholic features	43	(71)	9	(15)	35.0 (4.8–255)	<0.001
Dysthymia ^a	2	(3)	1	(2)		
Mania ^b	0	(0)	0	(0)		
Hypomania ^b	0	(0)	1	(2)		
Any	54	(90)	13	(22)	42.0 (5.8–305)	<0.001
<i>Anxiety disorders</i>						
Panic	11	(18)	2	(3)	10.0 (1.3–78)	0.028
Agoraphobia ^a	6	(10)	2	(3)		
Social anxiety	19	(32)	2	(3)	9.5 (2.2–40.8)	0.002
Generalised	18	(30)	1	(2)		
Non-generalised	1	(2)	1	(2)		
Obsessive–compulsive ^a	4	(7)	2	(3)		
Post-traumatic stress	21	(35)	3	(5)	7.0 (2.1–23.5)	0.002
Generalised anxiety ^a	1	(2)	3	(5)		
Any	37	(62)	12	(20)	6.0 (2.3–15.5)	<0.001
<i>Substance use disorders</i>						
Alcohol	22	(37)	14	(23)	1.9 (0.8–4.2)	0.123
Drug	42	(70)	27	(45)	2.9 (1.3–6.4)	0.010
Any	46	(77)	31	(52)	3.5 (1.4–8.7)	0.007
<i>Psychotic disorders</i>						
With mood disorder ^b	4	(7)	0	(0)		
Without mood disorder	11	(18)	1	(2)	11.0 (1.4–85)	0.022
Any	15	(25)	1	(2)	15.0 (2.0–113)	0.009
<i>Eating disorders</i>						
Anorexia ^b	0	(0)	0	(0)		
Anorexia (binge eating/purging type) ^b	1	(2)	0	(0)		
Bulimia ^b	1	(2)	0	(0)		
Any ^b	2	(3)	0	(0)		
Any current disorder ^b	60	(100)	37	(62)		
2+ current disorders	52	(87)	20	(33)	17.0 (4.1–70)	<0.001
3+ current disorders	40	(67)	8	(13)	9.0 (3.2–25.3)	<0.001
4+ current disorders	27	(45)	3	(5)	9.0 (2.7–29.7)	<0.001

a. Odds ratios undefined when there is a 0 in one or more cells.
b. Odds ratios not calculated for disorders where number of discordant pairs is less than 10.

Table 3 Comparisons of lifetime psychiatric disorders between male prisoners who made near-lethal suicide attempts (cases) and those who had not (controls)

Disorder	Cases <i>n</i> = 60		Controls <i>n</i> = 60		OR (95% CI)	<i>P</i>
	<i>n</i>	(%)	<i>n</i>	(%)		
<i>Mood disorders</i>						
Major depression	30	(50)	6	(10)	9.0 (2.7–29.7)	<0.0001
Mania	16	(27)	5	(8)	3.8 (1.2–11.3)	0.019
Hypomania	8	(13)	4	(7)	2.0 (0.6–6.6)	0.258
Any	41	(68)	13	(22)	5.0 (2.2–11.3)	<0.0001
<i>Psychotic disorders</i>						
With mood disorder ^a	4	(7)	2	(3)		
Without mood disorder	13	(22)	1	(2)	13.0 (1.7–99)	0.013
Any	17	(28)	3	(5)	8.0 (1.8–34.8)	0.006
Any lifetime disorder	47	(78)	16	(27)	5.4 (2.4–12.2)	<0.0001
2+ lifetime disorders	18	(30)	2	(3)	17.0 (2.3–128)	0.006
3+ lifetime disorders ^b	6	(10)	0	(0)		
Antisocial personality disorder	36	(60)	27	(45)	1.7 (0.9–3.4)	0.133

a. Odds ratios (ORs) undefined when there is a 0 in one or more cells.
b. Odds ratios not calculated for disorders where number of discordant pairs is less than 10.

Table 4 Comparisons of current psychiatric treatment and current medication between male prisoners who made near-lethal suicide attempts (cases) and those who had not (controls)

Variable	Cases <i>n</i> = 60		Controls <i>n</i> = 60		χ^2	OR (95% CI)	<i>P</i>
	<i>n</i>	(%)	<i>n</i>	(%)			
<i>Current psychiatric treatment</i> ^{a,b}	14	(23)	1	(2)	13.0		<0.001
Psychiatrist only ^c	3	(5)	1	(2)			
Mental health nurse only ^c	6	(10)	0	(0)			
Psychiatric and mental health nurse ^c	4	(7)	0	(0)			
Psychologist only ^c	1	(2)	0	(0)			
<i>On medication</i>	40	(67)	13	(22)		28.0 (3.8–206)	0.001
Psychotropic medication ^a	33	(55)	4	(7)	29.0		<0.001
Antidepressants ^a	22	(37)	4	(7)	18.0		<0.001
Mood stabilisers ^c	4	(7)	0	(0)			
Major tranquillisers ^a	11	(18)	0	(0)			
Benzodiazepines and other sedatives	17	(28)	2	(3)		16.0 (2.1–121)	0.007
Medication for physical disorders	12	(20)	4	(7)		5.0 (1.1–22.8)	0.038
Opiates ^c	6	(10)	6	(10)			
Other ^c	4	(7)	2	(3)			

a. Odds ratios undefined when there is a 0 in one or more cells; McNemar's chi-squared and associated *P* reported when observed values are equal to or greater than 10.
b. Excluding pharmacological treatment.
c. Odds ratios not calculated for disorders where number of discordant pairs is less than 10.

Psychiatric treatment at the time of the interview

There was a discrepancy between the number of cases experiencing a current episode of major depression (52, 87%) and those being prescribed antidepressants (22, 37%). Research in the general population has also shown inconsistencies between the prevalence and treatment of depression,^{44,45} which is equally marked in people who have died by suicide.⁴⁶ Nevertheless, unmet needs in relation to psychiatric illness in prison are considerable.⁴⁷ The reasons for this may include inadequate methods of detection, scarce resources and limited staff training.^{48,49}

Only 14 (23%) cases were currently being seen by a mental health professional (psychiatrist, mental health nurse or psychologist), despite having made a serious suicide attempt less than 4 weeks previously. In addition to treatment for depression, unmet treatment needs for anxiety disorders, especially PTSD, social anxiety and panic disorder appear substantial.

Strengths and limitations of the study

Previous research investigating risk factors for suicide in prison has had a number of methodological limitations. These include the use of routinely collected cross-sectional data from variable quality prison and medical records¹³ that contain limited information on specific psychiatric diagnoses, particularly for controls. An advantage of this study was the ability to assess clinically the individual who undertook the act. In order to do this, we used the Mini International Neuropsychiatric Interview (MINI) for assessment of Axis I and Axis II diagnoses. However, although the MINI has several important strengths, including its validity, relatively brief administration time, acceptability to participants, ease of use and use in other prison research,^{28,29,31–33} the only Axis II diagnosis it includes is antisocial personality disorder, which was not found to be associated with near-lethal suicide attempts in this study. Further studies could seek to clarify the role of other personality disorders in near-lethal suicide attempts in prison since previous research is somewhat inconsistent. Limited previous research in prison has shown that personality disorders do not increase the risk of suicide^{50,51} whereas research in the community has shown that personality disorders (especially borderline, and possibly avoidant and schizoid) do increase risk of suicide.^{42,52}

The prevalence rates in the control group for most psychiatric diagnoses generated by the MINI were approximately equivalent

to those calculated in systematic reviews in the general male prison population.⁵³ However, the rate of depression in the control group was higher than has been found in other studies using different diagnostic tools.⁵³ This may be a consequence of the MINI overdiagnosing this disorder as other studies using it have also reported high rates of depression in prisoners.^{31,32}

A disadvantage of face-to-face clinical assessment may include recall and self-presentation biases, and corroboration of information with key informants would have strengthened the study.¹² Also, psychiatric diagnoses were made based on information obtained through interview usually some weeks after the near-lethal suicide attempt and may not necessarily equate to those present at the time of the act. Although our sample size allowed for testing of associations with the main psychiatric diagnoses, it was underpowered to test significance for less frequent disorders. We did not have access to data about how many of the control participants were registered as being at risk of suicide (i.e. had 'open' ACCT documents).

We included 19 prisons of differing types and categories, which should make the study's findings generalisable in England and Wales.

Implications

A number of potential implications arise from our findings. First, the high rate of psychiatric morbidity among suicidal prisoners suggests that many might benefit from alternative disposals, including hospital and community treatment orders.^{54,55} In addition, the marked difference in prevalence of psychiatric disorders between cases and controls contrasts with some expert opinion that has downplayed the role of mental illness in attempted and completed suicide in prisoners.^{56,57}

Second, in a population where self-harming and suicide attempts, and mental health problems, are relatively common, identifying those most likely to take their own lives may be difficult. Nevertheless, the finding that only 24 (40%) of the cases were identified as being 'at-risk' for suicide at the time of their attempt indicates that there may be scope for improving detection of those at risk of suicide, perhaps with a structured suicide screening tool.^{9,58} Our findings suggest that such an instrument should include questions regarding prisoners' history of psychiatric contact, previous self-harming and suicidal behaviour (especially if this occurred while in prison), and current

psychiatric disorders. However, further research is needed to test the predictive value of such a tool and, in particular, to what extent false positives are identified. Furthermore, detection should be considered an ongoing process occurring at various stages of custody, rather than only at reception. This may be important if a prisoner's circumstances change, for example, if he is transferred or about to be released, since there is evidence of increased psychological distress before release⁵⁹ and elevated risk of suicide shortly after release.⁶⁰

Third, the discrepancy between the proportion of prisoners with psychiatric problems and those receiving pharmacological and/or psychological interventions suggests that in addition to better risk assessment, reviewing the treatment and management of common psychiatric disorders in at-risk prisoners should be considered. In the UK, responsibility for prison healthcare has recently been devolved to NHS primary care trusts (since April 2006). One possible area that may warrant further research is the efficacy and cost-effectiveness of interventions incorporating either pharmacological and psychosocial interventions or both. Any such research will be relevant to mental healthcare in prisons in other countries.

Although suicide and severe self-harming behaviours in prisoners are major problems in many countries, potentially modifiable risk factors have been little researched. We have attempted to assess the potential role of psychiatric disorders using a novel method, that of interviewing survivors of near-lethal suicide attempts, the findings of which should have relevance outside the UK.

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Appendix

Criteria for the identification of 'near-lethal' cases

Method

Attempted hanging
Ligature use
Self-strangulation

Self-asphyxiation
Suffocation

Inclusion criteria

Unconscious after attempting to hang or use a ligature, or not unconscious but:
(a) witnessed in suspension or using a ligature and physical evidence of asphyxiation; or
(b) physical evidence of suspension or using a ligature
Witnessed self-asphyxiating, or any other physical evidence of self-asphyxiation

Cutting Stabbing Wound aggravation or insertion	Sustained a puncture wound penetrating body cavity or major organ, or lacerations that damaged or severed tendons, arteries or large veins, or came very close to doing so
Ingesting, inhaling, injecting (a) level of consciousness	(a) objective evidence of altered level of consciousness, or unconscious at presentation or prior to medical facility
(b) biochemical abnormalities	(b) transferred or admitted to a prison healthcare unit, any outside hospital or accident and emergency department
Jumping from a considerable height	Witnessed jumping or any physical evidence of having jumped from a considerable height, likely to have led to serious injury
Other (e.g. setting fire to self)	Case referral determined on a case-by-case basis

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