# Suicide in psychiatric in-patients

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## INTRODUCTION

Approximately 25–40% of suicide victims are in contact with psychiatric services in the year before death.[1] Fourteen per cent receive in-patient care during this year, and around one-fifth of these (3–4% of all suicides) die while in hospital.[2] Suicide rates (based on deaths per admissions per year) among psychiatric in-patients may have increased over the last 50 years.[3]

The causes of this possible increase have not been determined, but some explanations include structural changes in psychiatric hospitals; differences in the patient groups admitted to hospital; and increased patient liberty on the ward.[3] It is notoriously difficult to predict suicide risk in psychiatric patients accurately, as factors associated with suicide are also associated with mental illness. Relatively few factors specific to in-patient suicide have been identified, and they have limited predictive value.[4]

This paper summarizes previous work on the features of in-patients that kill themselves, examines the clinical value of recent research findings derived from case-control studies, and concludes with an account of recent recommendations on the prevention of in-patient suicide.

## PSYCHOPATHOLOGICAL FEATURES OF IN-PATIENT SUICIDES

For many years, most work on the features of in-patient suicides has been based on the 'psychological autopsy' method, in which the medical notes of the patient have been inspected, and interviews with relatives and staff members are conducted. This can lead to a wealth of detailed information, but the findings may be subject to recall bias, and the lack of a control group means that it is not possible to see if those 'characteristics' also occur in other patients who do not kill themselves.

Wolfersdorf has reviewed the psychopathological risk factors for in-patient suicide, based on audits of clinical practice.[3] Some of these are listed below:

- Depressed mood
- A sense of hopelessness
- Depressive delusions (e.g. delusions of guilt)
- Persecutory delusions
- Auditory hallucinations of voices urging suicide
- Restlessness and agitation
- Long-standing insomnia
- Previous suicide attempt
- Suicidal thoughts or attempts during the hospital stay
- An illness course with rapid deterioration
- Rapidly relapsing illness

It is claimed that schizophrenic patients may be disproportionately more likely to kill themselves than patients with other diagnoses.[3]

***"It is notoriously difficult to predict suicide risk in psychiatric patients accurately, as factors associated with suicide are also associated with mental illness."***

The *National Confidential Inquiry into Suicide and Homicide by People with Mental Illness*[5] permits a detailed description of the features of those who kill themselves whilst in hospital in the UK, but the absence of a control group has limited the strength of the findings. The key findings relating to inpatient suicide are shown in Box 1.

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Sixteen per cent of suicide Inquiry cases in England and Wales, 12% in Scotland and 10% in Northern Ireland, were psychiatric in-patients

In-patient suicides, particularly those occurring on the ward, were most likely to be by hanging, most commonly from a curtain rail and using a belt as a ligature

Around one-quarter of in-patient suicides died during the first week of the admission

Around one-fifth of in-patient suicide were under non-routine observation (constant or intermittent)

Around one-third of in-patient suicides in England and Wales and Scotland, and almost half of in-patient suicides in Northern Ireland, were on agreed leave at the time of death

Mental health teams regarded in-patient suicides as preventable more often than out-patient suicides

**Box 1.** National Confidential Inquiry: key findings regarding in-patient suicides[5]

## RECENT CASE-CONTROL STUDIES OF SUICIDE IN PSYCHIATRIC IN-PATIENTS

Accurate delineation of the risk factors for in-patient suicide requires a case-control design. Two recent retrospective case-control studies of in-patient suicides in the UK have been published.[4, 6]

In the first,[6] the Oxford Record Linkage Study was used to identify all people who died while in-patients (except those who died more than a year after admission) in psychiatric hospitals in Oxfordshire, Berkshire and Buckinghamshire, during the period 1963–92. A total of 112 cases were compared with 112 controls, matched for the year of admission. Univariate and multivariate analyses were used to estimate odds ratios, and then likelihood ratios for these factors were calculated, after adjusting for suicidal thoughts. Likelihood ratios express the predictive value of each factor, by comparing the probability that a patient who committed suicide had that feature, with the probability in a control.

Using this technique, five risk factors with likelihood ratios greater than 2 were identified:

- Previous planned suicide attempt
- Previous suicide attempt
- Presence of delusions
- Chronic mental illness
- Family history of suicide

An in-patient with all five of these risk factors would have a probability of committing suicide of 37%. However, only one patient had all five risk factors, and each factor had a low predictive value. If a probability of suicide of 5% or more is considered to constitute a 'high risk' of suicide, only 2% of the patients who killed themselves have been identified as being at high risk before their death. The clinical utility of these five factors is therefore limited by their low specificity and sensitivity: if used routinely, most patients thought to be at high risk of suicide would have been identified incorrectly.

In the second case-control study,[6] data from the Wessex Suicide Audit[7] was used to identify 75 patients who died whilst in psychiatric hospitals in Hampshire, Dorset and the Isle of Wight during the period 1989–96. The medical notes of 59 of these were examined, and compared to 106 controls, matched for gender, age, diagnostic group, ward type and date of admission. Using univariate and multiple regression analyses, seven independent risk factors for in-patient suicide were identified:

- History of deliberate self-harm
- Admission under the Mental Health Act
- Involvement of the police in admission
- Depressive symptoms
- Violence towards property
- Going absent without leave
- A significant care professional being on leave

No patient who committed suicide had all seven risk factors; and only two had five factors. Again, the risk factors for suicide had low sensitivity and specificity, limiting their value in clinical practice.

As the same method had been used to identify 234 'recent in-patient suicides' (i.e. patients who died within 1 year of discharge from hospital) and 431 controls, matched on the same basis as the in-patients,[8] it was also possible to compare the characteristics of in-patient with out-patient suicides. There were no significant differences between in-patient and out-patient suicides in the presence of depressive symptoms at admission (76.3% compared with 71.4%) or the absence of a significant healthcare professional at the time of the event leading to death (2.8% compared with 0.9%). Certain social factors associated with an altered risk of suicide after discharge (e.g. loss of employment, loss of a relationship) did not appear to affect the risk of in-patient suicide.

The findings of these case-control studies bear some resemblance to those from previous research into in-patient suicide. Previous deliberate self-harm, particularly during the index admission, has been identified consistently as one of the most potent risk factors.[9] Compulsory admission to hospital has also been identified in previous research.[10–12] Other studies have indicated that male patients with schizophrenia constitute a high proportion of those who kill themselves whilst in hospital.[13,14]

## IMPLICATIONS OF THESE FINDINGS FOR CLINICAL PRACTICE

Taken together, the two case-control studies have identified over 10 factors that are linked to an increased risk of suicide whilst in psychiatric hospital. All but one (significant professional on leave) are

patient-related, rather than related to the delivery of mental health services. Most of these factors are recorded routinely on admission to hospital; two (violence to property, going absent without leave) are recorded during admission. Typically, an assessment of suicide risk is performed at the time of hospital admission. Continuing the risk assessment process throughout hospital care may allow the identification of further risk factors.

However, although the odds ratios for certain risk factors are high, they occur in only a small number of patients and thus the sensitivity of individual risk factors is low. But if the conscientious assessment of risk is coupled with thoughtful implementation of healthcare procedures, some fatal outcomes might be prevented.

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## RECOMMENDATIONS FOR THE PREVENTION OF IN-PATIENT SUICIDE

Previous recommendations for the prevention of suicide have been focused on four target patient groups: patients with severe depressive illness and suicidal thoughts; patients with acute schizophrenic episodes, often with a relapsing course and accompanying depressive symptoms; patients who have lost employment or major relationships; and patients with an accompanying physical illness.[3]

It has been argued[3] that suicide prevention in psychiatric in-patients should include the following measures:

- Detailed assessment of risk at time of admission;
- Formation of close therapeutic relationships with staff;
- Repeated assessment of risk, especially at times of crises;
- Adequate treatment of mental illness;
- Elimination of environmental risk factors (e.g. hooks on walls).

The National Confidential Inquiry has made a number of recommendations in an attempt to prevent in-patient suicide.[5] These relate mainly to the degree of observation and supervision of patients (Box 2).

In-patient units should remove (or make inaccessible) all likely ligature points

In-patient teams should, in consultation with local service user representatives, develop protocols that allow the removal of potential ligatures from patients who are at high risk

In-patients going on leave should have close community follow-up

Patients under non-routine observations should not normally be allowed time off the ward or leave

In-patient services should ensure that there are no gaps, however brief, in one-to-one observation

All discharged in-patients who have severe mental illness or a recent (less than 3 months) history of deliberate self-harm should be followed up within 1 week

**Box 2.** National Confidential Inquiry: recommendations regarding in-patients[5]

However, there is substantial uncertainty about suicide prevention in people with mental illness. Suicide is a rare event, even in psychiatric hospitals: future prospective case-control studies would have to be very large indeed if suicide were used as an 'outcome measure' in evaluation of service interventions.

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The recently launched *National Suicide Prevention Strategy for England*[15] has six main goals (Box 3). The current and future implementation of these goals has many implications on clinical practice with psychiatric in-patients, some of these are listed below:

- Women who require admission following childbirth should be admitted to a specialist mother and baby unit together with the infant;
- Staff training in suicide risk assessment and management every 3 years;
- Regular environmental audit in all psychiatric wards;
- Removal of non-collapsible bed or shower curtain rails;
- Removal of all likely ligature points;
- Use of better tolerated medication in those who are non-compliant with other treatments, due to adverse effects.

- Reduction of risk in high risk groups
- Promotion of mental well-being in the wider population
- Reduction of availability and lethality of suicide methods
- Improvement of reporting of suicidal behaviour in the media
- Promotion of research on suicide and suicide prevention
- Improved monitoring of progress towards suicide prevention targets

**Box 3.** Goals of the National Suicide Prevention strategy for England[15]

## CONCLUSIONS

Identification of suicide risk is an important part of psychiatric practice. The National Confidential Inquiry permits a description of the features of those psychiatric patients who kill themselves whilst in hospital, but recent case-control studies have shown that identified patient risk factors have limited utility in clinical practice. As such, improved staff training in risk assessment and management may have only a limited impact on suicide rates among psychiatric in-patients. Prevention of suicide might be better achieved through some simple modifications to the design and environment of wards: the effect of these changes will only become apparent in some years.

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