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Background The study aimed to define the characteristics and assess the clinical predictability and possible prevention of psychiatric in-patient suicides.

Method The coroner's files on all suicides in the Greater Montreal Region from 1 April 1986 to 31 March 1991 were examined. The medical records of each case of suspected in-patient suicide were then reviewed and rated for predictability and preventive measures taken.

Results A total of 3079 suicides were recorded over this five-year period (mean annual rate of 16.4 per 100,000 inhabitants). Of these, 104 (3.4%) involved hospital in-patients. Nearly half (48%) of these in-patient suicides occurred outside the hospital setting. The methods most frequently employed were hanging (36%) and jumping from high places (24%). Patients suffering from an affective disorder (45%) or schizophrenia (35%) comprised the majority of the sample. Suicides were significantly more predictable in general hospital psychiatric wards. Suicide prevention measures did not differ significantly across settings.

Conclusions The majority of in-patient suicides were not highly predictable. For highly predictable suicides, the results underline the importance of actively treating and protecting these patients.

In-patient suicide is defined by Oehmichen & Staak (1988) as the "suicide of a patient during in-patient treatment, both inside and outside the hospital setting, e.g. during a leave, an outing, a trial discharge, or a stay in another hospital with concurrent in-patient psychiatric treatment". A review of the scant literature on the subject reveals that it is a relatively rare event representing approximately 5% of all completed suicides (Crammer, 1984; Oehmichen & Staak, 1988). However, it has been reported that the frequency of in-patient suicides is on the rise in many countries, a trend explained in part by higher patient turnover rates due to shorter lengths of stay (Wolfersdorf et al., 1988), the liberalisation of coercive hospital policies, and the diminished use of electroconvulsive therapy (ECT) (Crammer, 1984).

Issues regarding the clinical predictability and prevention of in-patient suicide have not been compared extensively between different settings. Study samples have been restricted usually to a single hospital or to one type of hospital setting (Shapiro & Waltzer, 1980; Copas & Robin, 1982; Goh et al., 1989; Morgan & Priest, 1991) and have been small in size (Shapiro & Waltzer, 1980; Morgan & Priest, 1991).

The study presented in this paper was undertaken in an attempt to redress these shortcomings. It is a retrospective epidemiologically-based study conducted with a view to describing the characteristics of inpatients who committed suicide, comparing these characteristics across different hospital settings, and assessing the clinical predictability of suicide and the preventive measures in place at the hospital at the time of the event.

METHOD
Sampling
In the Province of Québec, all violent or suspicious deaths are investigated by a coroner who then delivers a verdict regarding cause of death. The files of all deaths from 1 April 1986 to 31 March 1991 classified as suicide by the coroners of the Greater Montreal Region (population of 3 772 258 inhabitants in 1986) were examined at the Office of the Coroner-in-Chief in order to identify potential cases of in-patient suicide.

The medical records of each case of suspected in-patient suicide were then obtained and examined on site at the 35 hospitals concerned. These included five psychiatric hospitals, 26 general hospitals and four long-stay hospitals. The files were thoroughly reviewed by one of the investigators (F. P.) using an inventory designed specifically for the study (available from the author upon request). Hospitalised patients and those who were on leave or had absconded from hospital were included. Patients discharged on the same day as, or prior to, the suicide were excluded, as were those whose medical records presented substantial data loss.

Scales
On the basis of a review of the literature, two scales were designed specifically for the purpose of assessing both the clinical predictability of suicide and the preventive measures in place at the time of the event (available from F. P. upon request). Each item of these scales was weighted according to its relative clinical importance. The clinical predictability scale contained 23 items covering the following topics:

(a) behaviour and mental status, namely suicidal threats and gestures, psychotic symptoms and/or depressed mood;
(b) diagnoses received, such as major depression with psychotic features, schizophrenia, and borderline personality disorder; and
(c) other factors related to untreated depression and negative patient-staff relationship (e.g. patient regarded as demanding and/or manipulative).

The preventive measures scale contained 17 items covering the following:

(a) type of commitment (involuntary, detaining order);
(b) type of room and ward, such as isolation room and locked ward;
(c) degree of supervision (constant, close);
(d) use of restraints or special clothing such as a hospital robe;
(e) restricted access to personal belongings; and
Higher scores on the scales indicate a higher degree of clinical predictability and of suicide prevention measures. For example, on the clinical predictability scale, a suicidal gesture in the seven days prior to suicide warrants the maximum single score of 4; a diagnosis of major depression with psychotic features scores a 3, and depression alone a 1. On the preventive measures scale, placement in an isolation room scores a 2, and one-to-one supervision a 3.

Overall clinical opinion
In addition, an overall clinical opinion was agreed upon by consensus regarding clinical predictability and adequacy of suicide prevention. This afforded the opportunity to calibrate the configuration of items for a given patient. This assessment was performed after two psychiatrists (F. P. and F. G.) reviewed in detail the information contained in the file of each case. Suicide predictability was rated on a scale of 0 to 3, with 3 representing a highly predictable suicide, and 0 a totally unpredictable suicide. A similar scoring system was used to assess suicide prevention overall, with 3 indicating very tight preventive measures, and 0 no preventive measures at all.

Data analysis was performed using SPSS (Statistical Package for the Social Sciences), version 6.0.

RESULTS
A total of 3079 suicides were recorded in the Greater Montreal Region over the five-year period covered by the study (mean annual rate of 16.4 per 100 000 inhabitants). Of these, 104 (3.38%) were hospital in-patients, 63 (2.05%) were prison inmates, 72 (2.34%) were nursing home residents, and the remaining 2840 (92.24%) were general population suicides. The population-based mean annual rate of in-patient suicides in the Greater Montreal Region was, therefore, 0.55 per 100 000. Four cases were excluded from the in-patient suicide group owing to missing medical records. The remaining 100 cases were subdivided into three groups. The first (n=22) consisted of in-patients at psychiatric hospitals (PH), the second (n=48) included in-patients of general hospital psychiatric wards (PW), and the third (n=30) comprised patients admitted to medical-surgical wards (MW) in general or long-stay hospitals.

Sociodemographics
The ratio of male to female suicides was 1.6 to 1. The MW group was the oldest of the three (mean age: MW group=47.7 years (95% CI 41.5—53.9); PH group=40.6 (95% CI 35.2—46.1); PW group=35.1 (95% CI 31.2—39.0)). The proportion of single individuals was significantly higher in the PH (68.2%) and PW (66.7%) groups than in the MW group (23.3%; 43.3% married; 33.3% divorced/widowed) (χ²=17.7; d.f.=4; P=0.001). Subjects in the PH and PW groups were significantly more likely to be unemployed (70 and 78%, respectively) than those in the MW group (52.2%; 30.4% retired; 17.4% employed) (χ²=11.1; d.f.=4; P=0.03).

Circumstances of in-patient suicide
The three groups did not differ significantly regarding location or method of suicide. Approximately half (48%) of the in-patient suicides took place outside the hospital. The method of suicide most commonly used was hanging (36%), followed by jumping from high places (24%). No significant differences were found regarding day of the week or time of day of suicide.

Clinical features
The most common diagnoses among in-patient suicide victims were affective disorders (45%) and schizophrenia (35%). An axis II diagnosis (personality disorder) was found in 32% of the cases and represented the only diagnosis for 9% of the sample. Fifty-four patients (54%) had a lifetime history of at least one previous suicide attempt and 21% had committed a suicidal gesture in the past seven days. Twenty-five patients (25%) made suicidal threats in the 24 hours preceding the event. Depressed mood in the seven days prior to suicide was more frequently identified among PW patients (72.9%) than among PH (45.5%) or MW (53.3%) patients (χ²=5.8; d.f.=2; P=0.05). Similarly, psychotic symptoms were significantly more often present in the PH (59.1%) and PW (43.8%) groups than in the MW (16.7%) group (χ²=10.5; d.f.=2; P=0.005).

Length of stay
Length of stay covered a wide range and did not differ significantly from group to group. The mean length of stay was 946.4 days for the PH group (range 3—8459; 95% CI 34.2—1838.6), 92.7 for the PW group (range 0—1558; 95% CI 26.0—159.4) and 156.0 for the MW group (range 0—3598; 95% CI 87.7—400). However, significant differences emerged when length of stay was broken down into the following categories, as per the literature: (a) 0—7 days; (b) 8—28 days; and (c) more than 28 days (χ²=10.0; d.f.=4; P=0.04). Forty per cent of MW suicides occurred within seven days of admission and another 30% within 8—28 days. In contrast, most of the PH (72.7%) and PW (56.3%) suicides occurred after 28 days following admission.

Clinical predictability
The PW group received significantly higher scores on the clinical predictability scale (mean 11.3; 95% CI 9.6—13.1; range 2—25) compared with the PH group (mean 7.4; 95% CI 5.6—9.2; range 2—14) and the MW group (mean 6.9; 95% CI 5.5—8.4; range 0—15). Significant differences also emerged regarding the overall clinical opinion scores for the clinical predictability of in-patient suicides. There were significantly more highly predictable suicides (i.e. score of 3) in the PW group (15/48) compared with the MW (3/30) and the PH (0/22) groups (χ²=18.1; d.f.=6; P=0.006).

Preventive measures
The three groups did not differ significantly on the preventive measures scale, nor were there significant differences regarding the overall clinical opinion of preventive measures. Moreover, the degree of suicide prevention measures taken did not vary significantly over time; there was no evidence that the level of prevention diminished as length of stay increased.

A total of 56 cases were assessed as fairly or highly predictable in-patient suicides. We found that preventive measures had been relaxed prematurely (i.e. before treatment became effective) in particular for five patients with schizophrenia and three others suffering from depression. We also estimated that 17 in-patients (12 with psychotic depression) might have benefited from ECT for relieving agitation and/or lessening suicide ideation.

DISCUSSION
This epidemiologically-based study of 100 in-patient suicides is one of the largest ever undertaken. All the cases for this study were drawn from a five-year period and their
medial records thoroughly reviewed using independent clinical judgement. Unlike previous studies, ours addressed specifically the issues of clinical predictability and preventive measures across multiple settings, namely psychiatric, general and long-stay hospitals.

Comparisons with other studies
The sociodemographic and clinical findings are similar to those in other studies that reported a prevalence among in-patient suicides of single young adult males diagnosed with an affective disorder or schizophrenia (Copas & Robin, 1982; Goh et al., 1989). Our findings, however, ran counter to those of other studies (Farberow, 1981; Crammer, 1984; Goh et al., 1989). Our findings, however, ran counter to those of other studies (Farberow, 1981; Copas & Robin, 1982) on one important count. We found no significant evidence of an over-representation of inpatient suicides in the first seven days or in the first four weeks of hospitalisation in the PH and PW groups. This may be explained by the fact that longer-stay psychiatric inpatients are less responsive to treatment and remain at high risk for suicide. However, there was no evidence that suicide prevention measures were relaxed over time.

Clinical predictability and prevention
The in-patient suicide clinical predictability scale used in our study demonstrated that suicides in general hospital psychiatric wards were more predictable. This was probably because of the nature of the items considered, as the scale was designed primarily to measure suicide risk in acute care settings. Our overall clinical opinion may have been similarly influenced. This then points out the difficulty of assessing and caring for chronically suicidal patients, for whom suicide warning signs change little over time. Also, the prevention measures scale rated on the basis of medical records may not have been able to demonstrate differences in the way orders were carried out in the three hospital settings.

Validity of in-patient suicide risk assessment scale
This raises the issue of the validity of any retrospective assessment of in-patient suicide predictability and, ultimately, of just how preventable these suicides were. All the signs of an impending suicide can be spotted with hindsight. However, we must not neglect the fact that only a very small percentage of patients considered at risk actually attempt suicide. The development of suicide risk scales has always been impeded by the large number of false positives generated.

Preventive measures and preventable suicides
Stepping up preventive measures would place a high demand on scarce resources. Moreover, these measures could be counter-therapeutic, as illustrated by the well-known problem of regression in personality-disordered or chronically suicidal patients. Very strict standards could interfere with proper treatment and lower the quality of care by imposing antitherapeutic restrictions on too many patients (Perr, 1983).

CONCLUSIONS
In the interests of the patient and of sound psychiatric practice, one has to take calculated risks in order to achieve certain therapeutic goals. The following generally accepted principle holds: a physician is expected to meet the same standards of care and clinical skill as any conscientious colleague working under similar circumstances. It remains imperative, then, to assess carefully individuals presenting with suicidal thoughts or gestures, using, if necessary, information from the patient’s family members or significant others. Suicide precautions should be detailed precisely, and decisions to grant patients increased freedom carefully documented. We stress the importance of actively treating and protecting in-patients presenting a high risk of suicide, especially those suffering from psychotic depression. The duty of the clinician is to ensure that all appropriate
means and measures are employed; even this, however, does not always guarantee results.

REFERENCES


