ORIGINAL ARTICLE

# Absolute Risk of Suicide After First Hospital Contact in Mental Disorder

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**Context:** Estimates of lifetime risk of suicide in mental disorders were based on selected samples with incomplete follow-up.

**Objective:** To estimate, in a national cohort, the absolute risk of suicide within 36 years after the first psychiatric contact.

**Design:** Prospective study of incident cases followed up for as long as 36 years. Median follow-up was 18 years.

**Setting:** Individual data drawn from Danish longitudinal registers.

**Participants:** A total of 176 347 persons born from January 1, 1955, through December 31, 1991, were followed up from their first contact with secondary mental health services after 15 years of age until death, emigration, disappearance, or the end of 2006. For each participant, 5 matched control individuals were included.

**Main Outcome Measures:** Absolute risk of suicide in percentage of individuals up to 36 years after the first contact.

**Results:** Among men, the absolute risk of suicide (95% confidence interval [CI]) was highest for bipolar disorder, (7.77%; 6.01%-10.05%), followed by unipolar affective disorder (6.67%; 5.72%-7.78%) and schizophrenia (6.55%; 5.85%-7.34%). Among women, the highest risk was found among women with schizophrenia (4.91%; 95% CI, 4.03%-5.98%), followed by bipolar disorder (4.78%; 3.48%-6.56%). In the nonpsychiatric population, the risk was 0.72% (95% CI, 0.61%-0.86%) for men and 0.26% (0.20%-0.35%) for women. Comorbid substance abuse and comorbid unipolar affective disorder significantly increased the risk. The co-occurrence of deliberate self-harm increased the risk approximately 2-fold. Men with bipolar disorder and deliberate self-harm had the highest risk (17.08%; 95% CI, 11.19%-26.07%).

**Conclusions:** This is the first analysis of the absolute risk of suicide in a total national cohort of individuals followed up from the first psychiatric contact, and it represents, to our knowledge, the hitherto largest sample with the longest and most complete follow-up. Our estimates are lower than those most often cited, but they are still substantial and indicate the continuous need for prevention of suicide among people with mental disorders.

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ALL MENTAL DISORDERS ARE associated with increased risk of suicide,[1-6] and this risk is often reported as the increased relative risk or odds ratio for death by suicide by people with mental disorders who have contact with health services compared with those who do not. The absolute risk of death by suicide, often mentioned as lifetime risk of suicide after the onset of mental disorders, can be estimated as the percentage of a cohort expected to die by suicide before extinction. Although no studies have actually conducted lifetime follow-up, lifetime risk is mentioned in many scientific papers[7,8] and textbooks.[9] It has been estimated to be high, but these estimates have never previously been based on a large national sample with a prospective long-term follow-up. One of the most cited reports is the 1977 review conducted by Miles.[7] This review estimated that 15% of persons affected with unipolar affective disorder would die by suicide, as well as 15% of persons with alcoholism and 10% of persons with schizophrenia. However, this review was based on rather small studies with selected samples and a rather short follow-up, and several authors later concluded that, for different reasons, Miles' estimates were most likely too high.[10-14] Later meta-analyses,[12-14] based on more sophisticated statistical methods and including some large long-term follow-up studies, found clearly lower figures. Inskip et al[14] estimated the lifetime risk to be 6% for affective disorder, 7% for alcohol dependence, and 4% for schizophrenia. Bostwick and Pankratz[12] estimated the risk to



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be 4% for patients hospitalized for affective disorders and 8.6% for those hospitalized for affective disorder and suicidality. Palmer et al[13] estimated the lifetime risk to be 5.6% for schizophrenia. Recently, Dutta et al[5] estimated the lifetime risk of suicide to be 3.23% for patients 20 years after the first psychotic diagnosis.

Although the lifetime risk of suicide has been reported in many studies, most estimates were based on incomplete follow-up in selected samples or were based on rather short-term follow-up of patients with first-time treated mental disorders. In addition, the lifetime morbid risk is not well defined from an epidemiological viewpoint. We will estimate the absolute risk of committing suicide within 36 years after the first onset of the disorder, using competing risks Cox regression to account for censoring emigration and death from other causes. Omitting such censoring will bias the estimated cumulative incidences upward. By using competing risks survival analyses,[15] the absolute risks of suicide (or cumulative incidences) can be calculated as the percentages of persons in the population who had committed suicide at a given time since onset of the disorder of interest, taking into account that people may migrate or die of other causes.

For any dynamic population, the cumulative incidence of suicide is the best possible estimate of long-term absolute risk of suicide. We were able to use the unique Danish registers to estimate absolute cumulative risk of suicide for different mental disorders and to include a complete national sample of persons born after 1955 with follow-up to 51 years of age.

## METHODS

### STUDY POPULATION

The Danish Civil Registration System[16] was established in 1968, and all persons who are alive and living in Denmark are registered. Among many other variables, it includes information on personal identification number, sex, and date of birth; continuously updated information on vital status; and the personal identification number of parents. The personal identification number is used in all national registers, which enables accurate linkage between registers. Our study population included all persons born in Denmark from January 1, 1955, through December 31, 1991 (2.46 million people). A cohort of 176 347 persons who came into contact with secondary mental health services for the first time and 881 735 controls without any contact with mental health services were followed up prospectively for a maximum of 36 years, from 15 years through as old as 51 years (median follow-up, 18 years).

### ASSESSMENT OF SUICIDE AND MENTAL ILLNESS

The study population was linked with the Danish Registers of Causes of Death[17] to obtain information about any history of suicide (codes 950-959 from the *International Statistical Classification of Diseases, 8th Revision* [*ICD-8*], or codes X60-X84 from the *International Statistical Classification of Diseases, 10th Revision* [*ICD-10*]) and date of suicide, if any. The registry contains information for all residents who died in Denmark from 1970 through 2006. In Denmark, the legal regulation of death certification states that any case of sudden and unexpected death shall be reported to the police, and the death certificate may only be issued after a medicolegal examination.

The study population was also linked with the Danish Psychiatric Central Register[18] to obtain information about mental illness. The Danish Psychiatric Central Register was computerized in 1969 and contains data on all admissions to Danish psychiatric inpatient facilities; from 1995, information on outpatient visits to psychiatric departments was included in the register. The register currently includes data on approximately 630 000 persons and 2.7 million contacts. From 1969 through 1993, the diagnostic system used was the Danish modification of the *ICD-8*,[19] and from 1994, the *ICD-10*.[20] Cohort members were categorized with a history of schizophrenia (*ICD-8* code 295 or *ICD-10* code F20), schizophrenialike psychoses (*ICD-8* codes 297, 298.39, and 301.83 or *ICD-10* codes F21-F29), bipolar affective disorder (*ICD-8* codes 296.19 and 296.39 or *ICD-10* codes F30 and F31), unipolar affective disorder (*ICD-8* codes 296.09, 296.29, 296.89, 296.99, 298.09, 298.19, 300.49, and 301.19 or *ICD-10* codes F32-F34, F38, and F39), substance abuse (*ICD-8* codes 291, 294.30, 294.38, 303, and 304 or *ICD-10* codes F10-F19), anorectic disorder (*ICD-8* code 306.50 or *ICD-10* code F50.0), and any mental illness (any *ICD-8* or *ICD-10* code) if they had been admitted to a psychiatric hospital or had been in outpatient care with one of these diagnoses. For each mental disorder, the date of onset was defined as the first day of the first contact (inpatient or outpatient) with the diagnosis of interest. The National Hospital Register was established in 1977, and information about all admissions to public hospitals in Denmark was prospectively recorded. Since 1995, outpatient visits were also registered. Because some patients with substance abuse disorders are treated only in somatic departments, we decided to include patients in the National Hospital Register[21] who had a diagnosis of substance use disorders (*ICD-8* codes 291, 294.30, 294.38, 303, and 304 or *ICD-10* codes F10-F19).

Identifying deliberate self-harm in Danish registers is rather complicated because procedures have changed, and some procedures are not well complied with. We have identified deliberate self-harm in the different periods with different algorithms. From 1977 to 1986, deliberate self-harm was identified as persons with the diagnoses classified in *ICD-8* codes E9500 through E9599 in the National Hospital Register or Danish Psychiatric Central Register. From 1987 to 1993, deliberate self-harm was identified as persons admitted with a "reason for contact code" of 4 in the National Hospital Register. After 1994, suicide attempts were identified as people fulfilling at least 1 of the following criteria in the National Hospital Register or Danish Psychiatric Central Register:

1. Reason for contact code of 4;
2. Any psychiatric diagnosis (*ICD-10* chapter F) and a comorbid diagnosis of poisoning with medication and biological compounds (*ICD-10* codes T36 through T50) or nonmedical compounds, excluding alcohol and poisoning from food (T52 through T60);
3. Any psychiatric disorder (*ICD-10* chapter F) and comorbid diagnosis reflecting lesions on the forearm, wrist, or hand (*ICD-10* codes S51, S55, S59, S61, S65, or S69);
4. Any contact with a hospital because of poisoning with weak or strong analgesics, hypnotics, sedatives, psychoactive drugs, antiepileptics, and antiparkinsonian drugs or carbon monoxide (*ICD-10* codes T39, T42, T43, and T58); and
5. Any somatic or psychiatric diagnosis X60 through X84.

The classification of deliberate self-harm was identical to that used previously.[22,23]

Analyses of deliberate self-harm were only possible beginning in 1977; therefore, the follow-up for these analyses is no longer than 30 complete years.



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**Table 1. Cumulative Incidence of Suicide Up to 36 Years After First Psychiatric Contact[a]**

| Disorder | Men | | | Women | | |
|---|---|---|---|---|---|---|
| | No. of Suicides | No. Followed Up | Cumulative Incidence, % (95% CI) | No. of Suicides | No. Followed Up | Cumulative Incidence, % (95% CI) |
| Schizophrenia | 422 | 10 213 | 6.55 (5.85-7.34) | 163 | 5796 | 4.91 (4.03-5.98) |
| Schizophrenialike disorders | 413 | 11 798 | 5.90 (5.21-6.67) | 236 | 9739 | 4.07 (3.28-5.04) |
| Bipolar affective disorder | 97 | 2571 | 7.77 (6.01-10.05) | 78 | 3356 | 4.78 (3.48-6.56) |
| Unipolar affective disorder | 417 | 17 362 | 6.67 (5.72-7.78) | 292 | 28 871 | 3.77 (3.05-4.66) |
| Substance abuse at psychiatric department | 804 | 30 626 | 4.71 (4.24-5.23) | 233 | 13 469 | 3.34 (2.80-3.98) |
| Substance abuse at somatic hospital | 672 | 56 351 | 2.54 (2.20-2.93) | 202 | 27 370 | 1.71 (1.40-2.09) |
| Anorectic disorder[b] | 3 | 145 | 5.61 (1.46-21.65) | 25 | 3559 | 2.62 (1.08-6.38) |
| Any mental illness | 1679 | 80 621 | 4.33 (3.92-4.77) | 740 | 95 726 | 2.10 (1.86-2.37) |
| No mental illness | 747 | 403 105 | 0.72 (0.61-0.86) | 199 | 478 630 | 0.26 (0.20-0.35) |

Abbreviation: CI, confidence interval.

[a] Population includes the 2.46 million people born in Denmark from January 1, 1955, through December 31, 1991, and followed up from 15 years of age to 2006. Cumulative incidence measures the percentage of persons in the population who had committed suicide within 36 years after onset of the disorder of interest, taking into account that people may migrate or die of other causes.

[b] Cumulative suicide risk for men with anorectic disorder was based on only 3 suicides.

## STUDY DESIGN AND STATISTICAL ANALYSIS

For each mental disorder, cohort members were followed up from their first hospital contact as inpatients or outpatients after 15 years of age until suicide, death from other causes, emigration from Denmark, disappearance, or December 31, 2006 (whichever came first). Because we aimed to study suicidal behavior among adolescents, we excluded from the analyses individuals who had their psychiatric disorder before 15 years of age. By selecting only persons born in 1955 and later, we ensured that the cohort consisted of incident cases, as the number of persons who had their first hospital contact owing to one of the mental disorders of interest before 15 years of age is very small.[24]

Competing risks survival analyses[15] allowed us to calculate the absolute risks of suicide (or cumulative incidences) as the percentages of persons in the population who had committed suicide at a given time since the onset of the disorder of interest, taking into account that people may migrate or die of other causes. These analyses were made for each sex and were subdivided according to the age at onset of the disorder of interest. In this report, our interest is the probability of suicide. This probability, also referred to as the *cumulative incidence*, is not a simple function of the incidence rate of suicide; rather, it is estimated as the weighted integral of the incidence rates, in which the weights equal the survival function. In this situation, people born in 1955 contribute to the estimation of the incidence rate from time 0 to time 36, whereas people born in 1991 only contribute to the estimation of the incidence rate until 1 year after the first psychiatric contact. Additional details can be found in Rosthøj et al.[25]

To estimate the cumulative incidence of suicide among people with no history of mental illness, we adopted a slightly alternative strategy. For each person with a history of any mental illness (as defined in the "Assessment of Suicide and Mental Illness" subsection), we randomly selected 5 people of the same sex and same birth date who had no history of mental illness (time matched). Using the described strategy, we followed up this healthy population (881 735 persons) to provide absolute suicide risks. Because this healthy population was selected at random among all 2.46 million people included in the study population, the estimates obtained represent the absolute risk of suicide among all 2.46 million people without a mental disorder.

In addition, we performed analyses of comorbidity. Patients who had a diagnosis of substance abuse disorder plus any other mental disorder—at the same time or at different times—underwent separate analyses. Similarly, we performed analyses of comorbidity for patients with unipolar affective disorder in combination with other psychiatric disorders and any history of hospital treatment after deliberate self-harm. This study was approved by the Danish Data Protection Agency.

## RESULTS

The absolute risk of suicide according to diagnostic group is shown in **Table 1**. Among men, suicide risk was highest in bipolar disorder (7.77%; 95% confidence interval [CI], 6.01%-10.05%), followed by unipolar affective disorder (6.67%; 5.72%-7.78%), schizophrenia (6.55%; 5.85%-7.34%), schizophrenialike disorders (5.90%; 5.21%-6.67%), and substance abuse treated in a psychiatric department (4.71%; 4.24%-5.23%). Among women, the highest risk was found among women with schizophrenia (4.91%; 95% CI, 4.03%-5.98%), followed by bipolar disorder (4.78%; 3.48%-6.56%), schizophrenialike disorder (4.07%; 3.28%-5.04%), unipolar affective disorder (3.77%; 3.05%-4.66%), substance abuse treated in a psychiatric department (3.34%; 2.80%-3.98%), and anorexia (2.62%; 1.08%-6.38%). In the nonpsychiatric population, the risk was 0.72% (95% CI, 0.61%-0.86%) for men and 0.26% (0.20%-0.35%) for women. The estimate of the suicide risk for men with anorexia is based on small numbers of cases.

The cumulative incidence of suicide by time since the first psychiatric contact for each of the disorders investigated is shown in the **Figure** for men and women. The steepest increase in suicide incidence occurs during the first years after first contact. The cumulative incidences of suicide were virtually independent of age at onset of the different mental disorders (data not shown).

In **Table 2**, the cumulative incidence of suicide is presented for patients who had a diagnosis of a substance



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abuse disorder and a different additional mental disorders during the same contact or at different times. In all diagnostic groups, comorbidity with substance abuse disorder increased the cumulative incidence of suicide except among men with schizophrenia. In **Table 3**, the cumulative incidence of suicide is presented for patients who had a diagnosis of a unipolar affective disorder and a different additional mental disorder. For all mental disorders, comorbid occurrence of unipolar affective disorder increased the cumulative incidence of suicide.

In **Table 4**, the cumulative incidence for patients who had attempted suicide at least once is presented in different diagnostic groups among men and women. Overall, across all diagnostic groups, deliberate self-harm doubled the risk. The highest cumulative incidence of suicide was found among men with bipolar disorder and deliberate self-harm (17.08%; 95% CI, 11.19%-26.07%).

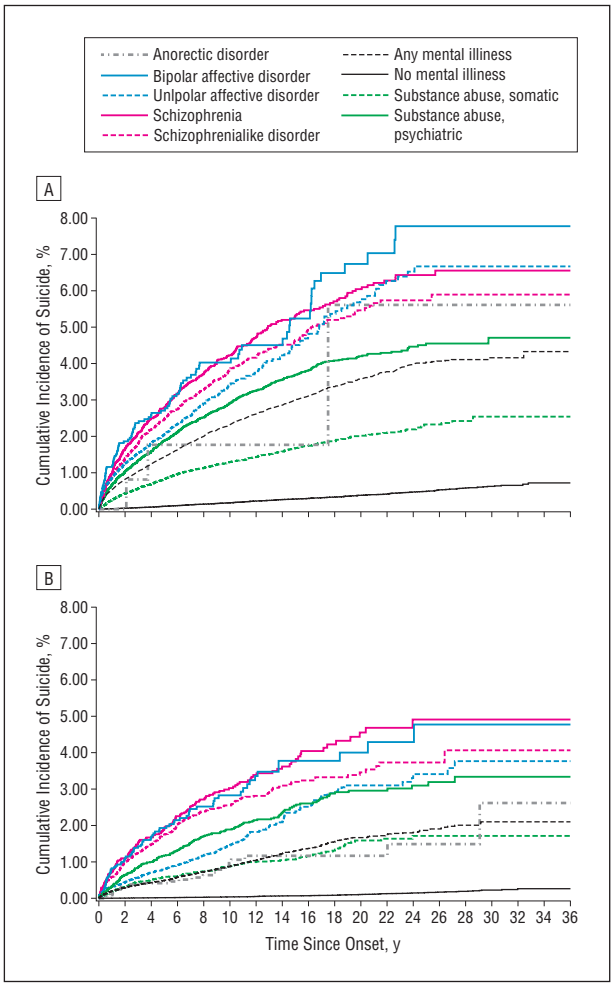


**Figure.** Cumulative incidence of suicide by time since the first psychiatric contact among men (A) and women (B).

## COMMENT

To our knowledge, this study has the hitherto largest sample and includes a long-term follow-up of a complete national sample from 15 to 51 years of age. We found the absolute risk of suicide in different psychiatric disorders to vary from 2% to 8%, higher for men than for women and highest for men and women with bipolar disorder, unipolar affective disorder, schizophrenia, and schizophrenialike disorder. For both sexes, comorbid occurrence of substance abuse and unipolar affective disorders increased the absolute suicide risk, and co-occurrence of deliberate self-harm generally doubled the risk in each diagnostic group. The suicide risk increased steeply during the first few years after first contact with psychiatric services.

Although the absolute suicide risks identified in this study are high, they are clearly lower than the often-cited figures reported by Guze and Robins[8] and Miles.[7] References to those old, exaggerated estimates should be replaced by more recent and correct ones. Estimates of the cumulative incidences in the literature have often ignored the fact that people may emigrate or die of other causes.

The strengths of this study are the large and representative number of cases investigated, the long follow-up, and the fact that we accounted for emigration and death from other causes. Omitting such censoring in our sample would bias the absolute risks upward by approximately 10%.[15,25]

**Table 2. Cumulative Incidence of Suicide Up to 36 Years After the First Psychiatric Contact Among Individuals With Comorbid Substance Abuse[a]**

| | Men | | | Women | | |
|---|---|---|---|---|---|---|
| Disorder | No. of Suicides | No. Followed Up | Cumulative Incidence, % (95% CI) | No. of Suicides | No. Followed Up | Cumulative Incidence, % (95% CI) |
| Schizophrenia | 170 | 4955 | 5.88 (4.90-7.04) | 59 | 1734 | 6.88 (4.86-9.74) |
| Schizophrenialike disorders | 197 | 5607 | 6.26 (5.23-7.51) | 82 | 2703 | 5.74 (4.41-7.49) |
| Bipolar affective disorder | 42 | 1101 | 10.01 (6.40-15.66) | 19 | 870 | 5.20 (2.81-9.60) |
| Unipolar affective disorder | 180 | 6763 | 6.74 (5.24-8.67) | 92 | 5439 | 7.12 (4.68-10.83) |
| Anorectic disorder[b] | 1 | 23 | 5.56 (0.87-35.37) | 11 | 441 | 4.95 (2.58-9.48) |
| Any mental illness | 862 | 34 539 | 4.60 (4.13-5.12) | 270 | 17 733 | 3.26 (2.75-3.87) |

Abbreviation: CI, confidence interval.

[a] Population includes the 2.46 million people born in Denmark from January 1, 1955, through December 31, 1991, and followed up from 15 years of age to 2006. Cumulative incidence measures the percentage of persons in the population who had committed suicide within 36 years after onset of the disorder of interest, taking into account that people may migrate or die of other causes.

[b] Cumulative suicide risk for men with anorectic disorder was based on only 1 suicide.



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**Table 3. Cumulative Incidence of Suicide Up to 36 Years After the First Psychiatric Contact Among Individuals With Comorbid Unipolar Affective Disorder[a]**

| | Men | | | Women | | |
|---|---|---|---|---|---|---|
| Disorder | No. of Suicides | No. Followed Up | Cumulative Incidence, % (95% CI) | No. of Suicides | No. Followed Up | Cumulative Incidence, % (95% CI) |
| Schizophrenia | 64 | 1698 | 7.02 (5.06-9.73) | 46 | 1649 | 6.18 (4.30-8.89) |
| Schizophrenialike disorders | 96 | 2521 | 9.20 (6.89-12.30) | 95 | 3140 | 5.16 (4.05-6.57) |
| Bipolar affective disorder | 60 | 1173 | 9.63 (7.10-13.06) | 42 | 1915 | 5.03 (3.12-8.11) |
| Substance abuse at psychiatric department | 159 | 5827 | 6.85 (5.34-8.79) | 81 | 4085 | 7.39 (4.86-11.26) |
| Substance abuse at somatic hospital | 94 | 3727 | 5.66 (3.68-8.69) | 58 | 3177 | 5.61 (3.56-8.85) |
| Anorectic disorder[b] | 1 | 23 | 5.59 (0.88-35.65) | 5 | 644 | 3.77 (0.93-15.23) |
| Any mental illness | 410 | 16 984 | 6.63 (5.67-7.75) | 292 | 28 307 | 3.81 (3.08-4.72) |

Abbreviation: CI, confidence interval.
[a] Population includes the 2.46 million people born in Denmark from January 1, 1955, through December 31, 1991, and followed up from 15 years of age to 2006. Cumulative incidence measures the percentage of persons in the population who had committed suicide within 36 years after onset of the disorder of interest, taking into account that people may migrate or die of other causes.
[b] Cumulative suicide risk for men with anorectic disorder was based on only 1 suicide.

**Table 4. Cumulative Incidence of Suicide Up to 36 Years After the First Psychiatric Contact Among Individuals Admitted After Deliberate Self-harm[a]**

| | Men | | | Women | | |
|---|---|---|---|---|---|---|
| Disorder | No. of Suicides | No. Followed Up | Cumulative Incidence, % (95% CI) | No. of Suicides | No. Followed Up | Cumulative Incidence, % (95% CI) |
| Schizophrenia | 193 | 2801 | 10.26 (8.36-12.58) | 111 | 2118 | 10.85 (8.43-13.95) |
| Schizophrenialike disorders | 215 | 3112 | 9.98 (8.35-11.93) | 151 | 2994 | 8.00 (6.46-9.91) |
| Bipolar affective disorder | 58 | 651 | 17.08 (11.19-26.07) | 47 | 991 | 9.39 (6.07-14.54) |
| Unipolar affective disorders | 223 | 4277 | 10.48 (8.24-13.32) | 184 | 6567 | 6.51 (5.23-8.09) |
| Substance abuse at psychiatric department | 439 | 10 461 | 6.54 (5.82-7.34) | 174 | 5999 | 5.04 (4.19-6.06) |
| Substance abuse at somatic hospital | 351 | 10 555 | 5.53 (4.68-6.53) | 155 | 6968 | 4.03 (3.32-4.90) |
| Anorectic disorder[b] | 1 | 16 | 10.42 (1.79-60.55) | 14 | 555 | 4.38 (2.48-7.75) |
| Any mental illness | 799 | 16 274 | 8.10 (7.32-8.96) | 450 | 17 993 | 4.57 (4.03-5.17) |

Abbreviation: CI, confidence interval.
[a] Population includes the 2.46 million people born in Denmark from January 1, 1955, through December 31, 1991, and followed up from 15 years of age to 2006. Cumulative incidence measures the percentage of persons in the population who had committed suicide within 30 years after onset of the disorder of interest, taking into account that people may migrate or die of other causes.
[b] Cumulative suicide risk for men with anorectic disorder was based on only 1 suicide.

The findings in our study are in agreement with the meta-analysis performed by Bostwick and Pankratz[12] and Palmer et al,[13] partly because Danish register-based studies contributed a large proportion of the patients and person-years included in their analyses. Our study population includes all the Danish patients included in the meta-analyses; in our study, they were followed up longer than in previous studies.

There are some limitations in a register-based study compared with a population-based survey. The study population includes only persons who have received some kind of treatment in psychiatric treatment facilities, and outpatient treatment was recorded only since 1995. However, most other studies have the same limitations.

Another limitation is that we were able to identify incident cases of mental illness only among people born in 1955 or later and to follow up these individuals until 2006, that is, people who had received a diagnosis of a mental illness before 51 years of age. We can only speculate whether the absolute risks reported are applicable to people with later onset of a mental disorder.

Based on our material, we cannot estimate lifetime risk because the cohort was followed up until, at most, 51 years of age. Also, because the design of the study exploits the advantages of including the longest possible historical period, there is a risk that changes in suicide risk occurred during the period investigated. Prior investigations have previously demonstrated that suicide rates for patients with schizophrenia,[26] affective disorder, and substance abuse[27] decreased and can be influenced by a range of conditions related to the treatment, as well as to other factors, such as availability of dangerous means.

The number of persons with bipolar disorder in our sample is much lower than the number of cases of schizo-



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phrenia. The explanation for the smaller figures is that many cases classified as bipolar II disorder in *DSM* terms will not be classified as bipolar disorders in *ICD-8* and *ICD-10* and also that the incidence of bipolar disorder peaks at a later age[28] compared with schizophrenia.[29] In the present, rather young cohort, some individuals have not yet developed bipolar disorder.

All persons in this study were classified according to the clinical diagnosis given at first contact with mental health services after 15 years of age. Diagnostic switch between, for instance, schizophrenialike disorder and schizophrenia or a switch between unipolar affective disorder and bipolar disorder is therefore not taken into account. Theoretically, persons who later switched from one group to another could have a different risk than those who remained in the same group, thereby artificially leveling out differences between diagnostic groups. However, diagnostic switch cannot be taken into account without introducing survival bias (healthy-worker effect).

Large prospective studies of first-onset cases with a long follow-up, such as the present study and the recent British 40-year follow-up of first-episode psychosis cases,[30] provide good estimates of suicide risk. However, an inherent problem with such studies is that, by the time the results become available, the risk for new patients with first-episode psychosis may have changed because of changes in treatment and other factors.[31] Since 2000, suicide rates in Denmark have been clearly lower than those in the previous decades, when many of the cases in the cohort died.[31]

We did find higher figures than Dutta et al[5,30] in their study of patients with first-episode psychosis, which can be partly explained by differences between the 2 countries in classification of suicide, with higher suicide rates in Denmark.[32] Other possible explanations are the higher proportion of outpatients in the British sample, differences in determination of cause of death, differences in access to data on previous treatment, or differences in the completeness of follow-up due to the Danish unique nationwide personal identifier, which ensures the most optimal conditions for selecting a true first-time-treated population and a complete follow-up. It is a limitation that the data are only available from Denmark, which might limit generalization of our findings to other countries. In the 1980s, Denmark had extraordinarily high suicide rates, most likely because of a large number of suicides with barbiturates.[33] Because some suicides in this study occurred during that period, these figures might not reflect conditions in other countries.

Despite these limitations, it is beyond doubt that the risk of suicide is high in all the investigated mental disorders, and suicide preventive measures should be a mandatory part of treatment programs, not only for affective disorders but also for schizophrenia and related disorders, for substance abuse, and for anorexia.[34] It is also evident that a history of deliberate self-harm markedly increases the risk of suicide across all diagnostic groups. In addition, as underlined in recent findings from a large Swedish study,[35] attempted suicide should be considered a very important risk factor among patients with different mental disorders.

The fact that the steepest increase in suicide risk occurs during the initial years after first contact with mental health services can serve as an argument for intensive early-intervention services. By establishing closer contact and closer monitoring of symptoms, we hope that such services can reduce suicide risk in this high-risk period and thereby ensure that the long-term risk of suicide may be influenced positively.

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