Schizophrenics Kill Themselves Too: A Review of Risk Factors for Suicide

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Abstract

Suicide rates among schizophrenic individuals are disturbingly high. At present, suicide is the number one cause of premature death among schizophrenics, with 10 to 13 percent killing themselves. Recent studies place the risk of suicide for persons with schizophrenia at a level comparable to that for persons with affective disorder. Depression, especially the symptom of self-reported or perceived hopelessness, is an important comorbidity factor in assessing this risk. Young white schizophrenic men with high levels of premorbid functioning and high expectations are at particularly high risk. Schizophrenic women, unlike women in the general population, behave more like men when it comes to choosing suicide. This article reviews recent studies reporting suicide rates and risk factors for suicide among schizophrenic patients. Current issues concerning the prediction, prevention, and treatment of suicidality among persons with schizophrenia are also discussed.

Affective disorder is well known for conveying an increased risk for suicide. Guze and Robins (1970) estimated that 15 percent of patients with a major affective disorder commit suicide and that the risk for patients with primary affective disorders is over 30 times greater than the risk for the general population. However, the high risk of suicide among persons with schizophrenia has received less public attention, and only relatively recently has depression, and especially its psychological features, been widely recognized as an important comorbidity factor in the increased risk for suicide among this population (Roy et al. 1983; Hirsch and Galdi 1986; Johnson 1986; Roy

1986a, 1986b, 1989; Bartels and Drake 1988; Leff et al. 1988; Drake et al. 1989). Roy (1985) has said that "depression is probably the most common reason for suicide in chronic schizophrenics" (p. 230). Even though not all schizophrenic patients who commit suicide are depressed, the focused treatment for depression in those who are depressed may reduce the probability of chronic disability and suicide (Hermann 1987; Drake et al. 1989).

As early as 1911, E. Bleuler (1950) identified "the suicidal drive" as the "most serious of all schizophrenic symptoms" (p. 488). With the decline of tuberculosis as the main cause of premature death among persons with schizophrenia and with the advent of rampant deinstitutionalization and mass homelessness (Caton 1981; Haugland et al. 1983; Lamb 1984; Drake and Sederer 1986; Torrey 1988), suicide has emerged as perhaps the most serious clinical problem in the management of schizophrenic patients (Lindelius and Kay 1973) and the main cause of increased mortality among them (Allebeck 1989). Suicide was found to be the leading cause of death among schizophrenic patients in a World Health Organization (WHO) 5-year followup of 1,065 patients exhibiting symptoms of psychotic illness on first contact with any type of "helping agency" (Sartorius et al. 1986, 1987). Of the 19 patients who committed suicide during the follow-up period, 14 were diagnosed as having schizophrenia, leading the authors to conclude that "the risk of suicide in schizophrenia is as great, if

not greater, than the risk of suicide associated with affective disorders" (Sartorius et al. 1987, p. 110).

The exact magnitude of the problem is not clear. Suicide is typically underreported (Tsuang and Simpson 1985; Robins and Kulbok 1988; Simpson 1988); many actual suicides are recorded by coroners as accidental deaths (Brooke and Atkinson 1974; Walsh et al. 1975) or open verdicts, that is, verdicts indicating possible but not proved suicide (Shaw and Sims 1984). In their study of suicide in Brighton, England, Jacobson and Jacobson (1972) estimated that "the real incidence of suicide may be at least 20% to 30% higher than verdicts established by coroners" (p. 376). Variability in defining and reporting cases has called into question the reliability of official rates in some countries (Sainsbury and Jenkins 1982; Farmer 1988). Nonetheless, empirical studies indicate that sources of reporting error are randomized "at least to an extent that allows epidemiologists to compare rates between countries and districts within them, between demographic groups, and over time" (Sainsbury and Jenkins 1982, p. 43).

Schizophrenic patients share some risk factors for suicide with the general population. Other risk factors for suicide among schizophrenic patients, however, appear to be diagnosis-specific. Several major reviews of risk factors for suicide among this population are available (Drake et al. 1985; Johns et al. 1986; Roy 1986a, 1986b; Simpson 1988). The present review includes articles published in the late 1970's and 1980's that report rates or risk factors for suicide among persons with schizophrenia. These were identified through a computer search using the MedLine data base.

Suicide Rates Among Schizophrenic Patients

There are large variations in the calculated suicide risk among persons with schizophrenia. Having reviewed all followup studies available to him in the mid 1970's, Miles (1977) estimated that 10 percent of schizophrenic persons die by suicide and that approximately 3,800 schizophrenic persons commit suicide annually in the United States. The rates Miles reported, however, range from a low of 0.03 percent to a high of 18 percent. In 1939, before effective symptomatic treatments, Rennie (1939) reported that 11 percent of 500 schizophrenic patients had committed suicide during a 20-year followup. More recently, Tsuang (1978) reported that 4.1 percent of 200 schizophrenic patients had committed suicide after a 40-year followup in Iowa. In recent studies (table 1), estimated rates range from a low of 1 percent for women (Tsuang 1978) to a high of 12.5 percent for men (Nyman and Jonsson 1986).

M. Bleuler (1978) reported that 70 (32 men and 38 women) of the 208 schizophrenic probands in his long-term Swiss followup study died between 1942 and 1965. Of those who died, 12 percent (4 of 32) of the men and 13 percent (5 of 38) of the women were suicides. As compared with the age-specific general population estimates of 3 percent for males and 1 percent for females, the frequency of suicide in Bleuler's sample was significantly elevated, and the ratio of male to female suicides was approximately 1:1 in marked contrast to the general population sex ratio of 3:1.

On the basis of a sample of 834 schizophrenic patients (804 men and 30 women) admitted to the Houston

Veterans Administration (VA) Medical Center, 19 of whom (all male) committed suicide, Pokorny (1983) estimated that the suicide risk for schizophrenic patients was 456/100,000 per year, sexes combined, 473/100,000 for all males, and 592/100,000 for nonblack males. He also reported a rate of 851/100,000 for a group of nonblack "high-risk" male subjects with a "profile" of current or past suicidal behavior and a diagnosis of affective disorder; when the "high risk" group included blacks, the rate was 1,008/100,000. Evenson et al. (1982), based on their sample of State hospital-diagnosed white schizophrenic patients in Missouri, calculated a risk rate of 210/100,000 per year for men, 90/100,000 per year for women, and 147/100,000, sexes combined, whereas Wilkinson (1982), in a first-admission sample of British schizophrenic patients, estimated an annual rate of suicide of between 500 and 750/100,000 per year. By contrast, in the *Statistical Abstracts of the United States* (1988), published by the U.S. Bureau of the Census (1987), the 1985 age-adjusted estimated risk for suicide in the general "normal" population was 18.8/100,000 per year for males, 4.9/100,000 per year for females, and 11.5/100,000 per year, sexes combined. Although the magnitude of increased risk for completed suicides among schizophrenic patients is far from consistent across studies, due in part to sample selection and variation in methodology and reporting (Drake et al. 1985), it is clear that risk for people with schizophrenia is dramatic when compared with that for the general population, and in some studies, it approaches the suicide risk for people with major affective disorders.

Table 1. Suicide rates and standardized mortality ratios (SMRs) in recent followup studies of schizophrenic patients

Author/ publication date	Location/ time period of study	Number of schizophrenics	Length of followup (in years)	Committing suicide (%)	Rate per 100,000 per year	SMR
Weiner & Marvit 1977	Hawaii 1962–72	1689 (866 men, 823 women)	10			12.0 Japanese men 6.8 Japanese women 7.7 Caucasian men 13.8 Caucasian women 32.7 Chinese men
Bleuler 1978	Switzerland 1942–65	100 men 108 women	24	4.3[1] 4.0 men 4.6 women		
Tsuang 1978	Iowa 1934–74	100 men (100 traced) 100 women (95 traced)	30–40	4.1 7.0 men 1.0 women		6.4 men 3.3 women
Evenson et al. 1982	Missouri 1972–74		2		147 210 men 90 women	7.2 white men 9.5 white women
Wilkinson 1982	Camberwell 1965–79	43 (39 traced)	10–15	7.7 10.0 men 4.3 women	500–750	55.6–83.3[2]
Copas & Robin 1982	England & Wales 1967–73		6			6.1 men 3.0 women
Pokorny 1983	Houston VA Medical Center	804 men 30 women	4–6	2.3 2.4 men 0.0 women	456 473 men 592 nonblack men 851 nonblack 'high risk'[3] men 1008 'high risk' men	19.8[4] 20.6 men 26.7 nonblack men 37.0 nonblack 'high risk' men 43.8 'high risk' men
Black et al. 1985	Iowa 1972–81	668 (379 men, 309 women)	10	2.1 2.4 men 1.6 women		31.0 men 62.5 women
Nyman & Jonsson 1986	Sweden	110 (72 men, 38 women)	14–17	9.0 12.5 men 2.6 women		

Table 1.   Suicide rates and standardized mortality ratios (SMRs) in recent followup studies of schizophrenic patients—Continued

Author/ publication date	Location/ time period of study	Number of schizophrenics	Length of followup (in years)	Committing suicide (%)	Rate per 100,000 per year	SMR
Barner- Rasmussen 1986	Denmark 1971–81	337	During hospital- ization and 1 year af- ter dis- charge	3.6 4.3 men 1.9 women		
Dingman & McGlashan 1986	Chestnut Lodge, Maryland 1950–75	163	14.8	8.0		
Roy et al. 1986	Maryland	100	4.5	6.0		
Allebeck & Wistedt 1986	Stockholm, Sweden 1971–81	1190 (572 men, 618 women)	10	2.8 3.1 men 2.4 women		12.3 9.9 men 17.5 women
U.S. Bureau of the Census 1988	Washington, DC 1985				11.5 18.8 men 4.9 women	

[1]Bleuler reports that 12% of the 32 men and 13% of the 38 women who died during followup were suicides.

[2]Standardized Mortality Ratio (SMR) calculated from rate derived from sample divided by the general population. The 1976 Camberwell rate of 9/100,000 was used as the base rate.

[3]'High risk' refers to individuals with current or past suicidal behavior and a history of depressive disorder.

[4]Pokorny cites 23/100,000 as the 1960 age- and sex-adjusted suicide rate among veterans. We used Pokorny's figure as a base rate for the calculation of the SMRs for his sample.

Standardized Mortality Ratios, Relative Risk, and Odds Ratios

Three statistics are particularly useful in highlighting the increased risk for suicide among schizophrenic patients. The standardized mortality ratio (SMR), which is calculated by dividing the observed number of suicides in a specific subpopulation by the expected number of suicides based on the reference population rates, reflects the risk for a particular subpopulation compared with the reference population. Relative risk (RR), on the other hand, estimates the likelihood of suicide among patients who have or have been exposed to various risk factors, compared with persons without those factors. In case-control studies, an odds ratio (OR) provides an estimate of RR. Several recent studies have reported SMRs or the information needed to compute them. Table 1 presents the SMRs for recent followup studies of schizophrenic patients that are reviewed in this article. Table 2 summarizes the reported risk factors and their respective RR and OR estimates. Only Allebeck and colleagues (1987) report

RRs. For the case-control studies reviewed in this article, we calculated the ORs presented in table 2; Woolf's method (1955) was used to compute standard errors for the estimated ORs.

In a 10-year followup study of a multiethnic schizophrenic population in Hawaii, Weiner and Marvit (1977) obtained SMRs of 12.0 and 6.8 for Japanese-American men and women, respectively; of 7.7 and 13.8 for Caucasian men and women, respectively; and of 32.7 for Chinese-American men. Pokorny (1983) reported the 1960 age- and sex-adjusted

Table 2. Relative risk (RR) or odds ratio (OR) for some risk factors for suicide among schizophrenic patients[1]

Author/ publication date	Subjects	Risk factor	RR[2] or OR[3] (95% confidence interval)
Breier & Astrachan 1984	20 schizophrenic suicides 81 schizophrenic nonsuicides 18 nonschizophrenic suicides	Male White Non-Protestant	OR = 6.2 (1.3, 28.5) OR = 6.8 (1.5, 31.5) OR = 5.9 (1.3, 27.1)
Roy 1982b	30 suicides (24 men and 6 women) 30 controls (24 men and 6 women)	Past depressive episode Past treatment for depression Last admission for depression or suicidal ideation Unemployed Chronic course with acute exacerbations	OR = 6.5 (2.0, 21.7) OR = 2.9 (0.9, 8.7) OR = 7.4 (2.1, 26.6) OR = 3.1 (1.0, 9.7) OR = 4.0 (1.3, 12.6)
Dingman & McGlashan 1986	38 schizophrenic suicides 413 schizophrenic nonsuicides	Identity disturbance Elevated or irritable affect Decreased need for sleep	OR = 35.2 (2.0, 1603.9)[4] OR = 5.1 (1.4, 19.1) OR = 14.7 (2.6, 82.4)
Drake et al. 1984	15 schizophrenic suicides 89 schizophrenic nonsuicides	Depressed mood Hopelessness Feelings of inadequacy Suicidal ideation Awareness of pathology Fear of mental disintegration High self-expectations College-educated Explicit suicide threats Living alone	OR = 4.3 (1.1, 16.2) OR = 4.1 (1.3, 12.6) OR = 7.1 (1.9, 27.1) OR = 4.4 (1.3, 19.1) OR = 6.9 (2.1, 23.2) OR = 44.0 (4.7, 415.1) OR = 6.2 (1.9, 20.5) OR = 6.7 (1.9, 22.8) OR = 5.1 (1.6, 16.5) OR = 4.1 (1.3, 12.6)
Allebeck et al. 1987	33 schizophrenic suicides 1157 schizophrenic nonsuicides	Suicidal ideation (women) Previous suicide attempts (women) Previous suicide attempts (men & women) Unmarried, divorced, or widowed women	RR = 6.3 (1.4, 28.0) RR = 8.2 (2.1, 31.0) RR = 4.9 (2.0, 22.0) RR = 9.6 (1.5, 62.0)

[1]Allebeck et al. (1987) reported relative risk (RR). Odds ratios (OR) were calculated from information presented by Breier & Astrachan (1984), Dingman & McGlashan (1986), Drake et al. (1984), and Roy (1982b).
[2]Relative risk (RR) is defined as the ratio of the incidence of the disease in the exposed group divided by the corresponding incidence of the disease in the nonexposed group.
[3]Odds ratio (OR) is an estimate of relative risk from a case-control study. Woolf's (1955) method was used to compute standard errors for the OR.
[4]Following Haldane (1956) and Fleiss (1979), 0.5 was added to each cell to adjust for an empty cell.

suicide rate among veterans as 23/100,000; his estimates of suicide rates among veterans suggest that schizophrenic males (whites and blacks combined) were about 21 times as likely to commit suicide as was the general population of veterans, and that a history of suicidal behavior and affective disorder further increased their risk (SMR = 43.8). Rates for nonblack schizophrenic veterans indicated that being white is an additional risk factor (SMR = 26.7), but that a history of suicidal behavior and affective disorder did not raise the suicide risk as much for whites as for blacks (SMR = 37.0). Based on an Iowa study, Tsuang (1978) reported that the observed-to-expected ratio for males was 7:1.10 (SMR = 6.4) and 1:0.30 (SMR = 3.3) for females. Copas and Robin (1982), in a study of suicide risk among psychiatric inpatients in England and Wales from 1967 through 1973, cited similar SMRs of 6.1 for men and 3.0 for women. The SMRs for Evenson's Missouri study (1982) using State hospital chart diagnoses before *DSM-III* (American Psychiatric Association 1980) were somewhat higher: 7.2 for white men and 9.5 for white women. On the basis of the Iowa Record–Linkage Study, Black et al. (1985) reported SMRs of 31.0 and 62.5 for men and women, respectively; he attributed these very high SMRs to short followup. A 10-year followup study of the Stockholm County Inpatient Register (Allebeck and Wistedt 1986) yielded SMRs of 9.9 for men and 17.5 for women. Underscoring the increased risk for suicide among first-admission schizophrenic patients, Wilkinson's (1982) estimates suggest that such persons are between 56 and 83 times more likely to commit suicide than are persons in the general population (using the southeast Lon-

don area of Camberwell suicide rate of 9/100,000 in 1976 to calculate the appropriate base rate).

While in several of the studies cited above the SMRs for women exceeded those for men, this is not an indication that schizophrenic women kill themselves more frequently than schizophrenic men. Rather, the higher SMRs are a function of the lower base rate for suicide among women generally. In reviewing the 1980's literature on gender differences in schizophrenia, Seeman (1986) underscored the greater frequency with which men commit suicide worldwide. 'The same factors," Seeman concluded, "that result in men in general taking their lives more often than women (impulsivity, aggressiveness, frustration intolerance, and especially, the use of more lethal means) also make schizophrenic men more likely to suicide than schizophrenic women" (pp. 613–614). However, even though schizophrenic women do not kill themselves more frequently than schizophrenic men, schizophrenia appears to diminish the inhibition to suicide seen in women generally and thus to reduce the sex ratio for suicide (2:1 in the schizophrenic population versus 3:1 in the general population) and raise the SMRs for schizophrenic women.

Timing and Place

Several studies have reported an excess mortality risk for psychiatric patients after discharge during the early followup period (Hoenig and Hamilton 1966; Innes and Millar 1970; Rosman 1974; Tsuang and Woolson 1977; Black et al. 1985). There is evidence of an increased risk of suicide among schizophrenic patients early in the course of illness or

hospitalization, or soon after discharge (Pokorny 1960; Cohen et al. 1964; Temoche et al. 1964; Warnes 1968; Sletten et al. 1972; Pokorny and Kaplan 1976; Roy 1982b, 1986a, 1986b; Stein 1982; Drake et al. 1984; Allebeck et al. 1986; Barner-Rasmussen 1986). Although the majority of the studies point to a concentration of suicides among schizophrenic patients in the first 10 years of the disorder (Johns et al. 1986), there is also evidence that an increased mortality risk exists across the life span. M. Bleuler (1978) observed that the timing of suicide among his probands was distributed throughout the course of the illness. Based on his clinical experience, Bleuler rejected the "fallacy" of what he called the "outmoded assumption" that older schizophrenic patients are too burned out to experience suicide-precipitating suffering (p. 306). In a similar vein, Tsuang and Woolson (1978) reported that an excess mortality due to suicide was found throughout the 40-year followup of 200 schizophrenic patients: 44 percent of the schizophrenic patients who suicided did so in the first decade, 22 percent in the second decade, and another 22 percent in the third decade.

On the basis of the Iowa Record–Linkage Study, Black and Winokur (1986a, 1986b) reported separate SMRs for the first 2 years of followup and for the period following the initial 2-year interval. The SMRs for the early followup period were 66.7 among men, 160.0 among women, and 76.9 for the sexes combined. While the SMRs remained high after the initial followup period (beyond 2 years), the rates were comparatively lower: 15.0 for men, 18.2 for women, and 16.7 for the sexes com-

bined. For the total 10-year followup period, the SMR for men was 31.0 and 62.5 for women.

Schizophrenics kill themselves both inside and outside the hospital (Roy 1986a, 1986b). Crammer (1984) has reported the results of a previously unpublished study of 84 inpatient suicides collected by Barraclough from eight British hospitals and spanning a period from 1957 to 1980. Of the 84 inpatient suicides, one-third were diagnosed as having schizophrenia. Barraclough found that 18 percent killed themselves on the ward, 18 percent did so elsewhere in the hospital, 19 percent at home, and 31 percent away from home and hospital; the site of 14 percent of the suicides was unknown. Crammer (1984) emphasized that 31 percent of the psychiatric inpatients suicided on leave, a figure comparable to that reported by Niskanen and colleagues (1974) in a study of 71 inpatient suicides in Helsinki, Finland.

Mortality Studies and Risk Factors

Tsuang and Simpson (1985) have stated that mortality studies are the cornerstone of "prevention of premature death through the analysis of risk factors for mortality" (p. 98). Mortality studies provide mental health professionals and service delivery systems with information useful for monitoring and evaluating clinical treatment methods and psychosocial interventions. Through mortality studies, some putative risk factors have been disconfirmed while others have found empirical support. Ideally, risk factors are identified through carefully designed case-control studies with blind raters and appropriate control groups. However, clinical reports of observed

commonalities among patients with similar outcomes also have a place in the literature as they may provide the impetus for future case-control studies.

Two common beliefs about suicide among schizophrenic persons have not been borne out by mortality studies. With the introduction of neuroleptics in the 1950's came the fear that the combination of neuroleptics and hospital liberalization policies might result in an increase in depression and suicide among schizophrenic patients (Saugstad and Ødegård 1979). However, early reports (Beisser and Blanchette 1961; Hussar 1962) of an increase in suicide among schizophrenic patients treated with neuroleptics have not persisted over time. In fact, only one study (Warnes 1968) has found a significant difference between suicide and control groups with regard to neuroleptics, reporting that significantly more control subjects were on higher doses of phenothiazines. Other studies (Cohen et al. 1964; Roy 1982a, 1982b, 1986a, 1986b; Hogan and Awad 1983; Wilkinson and Bacon 1984) found no significant difference in neuroleptic treatment between suicide and control groups. In reviewing the literature, Johns and colleagues (1986) reported that they found little support for the notion that neuroleptics precipitated suicide by the mechanism of depression induction.

Although there is little evidence to suggest that neuroleptics have increased actual suicides among persons with schizophrenia, there are case examples in the literature which associate akathisia, a common side effect of neuroleptics, with suicidal behavior (although not necessarily with completed suicides) among schizophrenic persons (Raskin 1972; Drake et al. 1989). There are several

reports in the literature of suicidal behaviors among extremely agitated schizophrenic patients, including agitation secondary to medication or substance abuse (e.g., Farberow et al. 1965; Planansky and Johnston 1971; Van Putten 1975; Shear et al. 1983; Drake et al. 1984; Drake and Ehrlich 1985; Schulte 1985).

Another popular belief—that persons with schizophrenia commit suicide in response to command hallucinations—is seldom correct. There is little doubt that psychotic episodes do precipitate suicide (and homicide) attempts in some schizophrenic persons (Levy and Southcombe 1953; Falloon and Talbot 1981); yet these appear to be rare. Roy (1982b) found in his study that for only 2 of 30 suicides did it seem reasonable to assume that suicide had been committed as a result of such hallucinations. Neither Breier and Astrachan (1984) nor Drake et al. (1984) had reason to believe that any of the suicides in their respective studies had committed suicide as a consequence of command hallucinations. Wilkinson and Bacon (1984) found no difference between control group and schizophrenic suicide regarding auditory hallucinations.

The schizophrenic population has several risk factors for suicide in common with the general population (Tomb 1984; Kaplan and Sadock 1985; Waldinger 1986). In both populations, being male, white, and socially isolated brings added risk of suicide (table 3). The two populations also share numerous personal risk factors, and they are given in table 4.

However, the schizophrenic population also has specific risk factors that appear to be more a function of the schizophrenic disorder and are not characteristic of the general population (table 5). The most salient

Table 3. Common risk factors for suicide in general and schizophrenic populations

Factor	Studies
Male	Warnes (1968); Virkkunen (1974); Noreik (1975); Tsuang (1978); Copas & Robin (1982); Roy (1982b); Hogan & Awad (1983); Breier & Astrachan (1984); Drake et al. (1984); Black et al. (1985); Dingman & McGlashan (1986); Nyman & Jonsson (1986)
White	Yarden (1974); Breier & Astrachan (1984); Beck et al. (1985)
Socially isolated	Dublin (1963); Flood & Seager (1968); Barraclough et al. (1974); Roy (1982b); Drake et al. (1984); Nyman & Jonsson (1986)

Table 4. Personal risk factors common to general population and schizophrenic suicides

Factor	Studies
Depression or depressed mood	Roy (1982b); Drake & Cotton (1986)
Sense of hopelessness	Warnes (1968); Yarden (1974); Pokorny et al. (1975); Virkkunen (1976); Wetzel et al. (1976); Drake et al. (1984); Beck et al. (1985); Prasad (1986)
Past history of suicide attempts	Pokorny (1960); Cohen et al. (1964); Warnes (1968); Shaffer et al. (1974); Tefft et al. (1977); Wilkinson (1982); Breier & Astrachan (1984); Dingman & McGlashan (1986)
Family history of suicide	Roy (1983)
Unmarried	Cohen et al. (1964); Roy (1982b); Hogan & Awad (1983); Breier & Astrachan (1984)
Unemployed	Roy (1982b); Dingman & McGlashan (1986)
Deteriorating health with high level of premorbid functioning	Farberow et al. (1965); Sletten et al. (1972); Drake et al. (1984); Dingman & McGlashan (1986); Nyman & Jonsson (1986)
Recent loss or rejection	Yarden (1974)
Parental loss during childhood	Lloyd (1980); Adam et al. (1982)
Limited external support	Yarden (1974); Pokorny & Kaplan (1976)
Family stress or instability	Yarden (1974)

and well-documented of these schizophrenic-specific risk factors are being young and male, experiencing chronicity of illness with numerous acute exacerbations and remissions, postdischarge course with high levels of psychopathology and functional impairment, realistic awareness of the deteriorative effects of schizophrenia and a nondelusional assessment of the future (during a nonpsychotic phase), fear of further mental deterioration, excessive treatment dependence, or loss of faith in treatment.

Whereas being middle-aged or elderly is a high-risk factor for the general population (Dublin 1963; Barraclough et al. 1974), being young elevates suicide risk among people with schizophrenia, especially males. In their study of suicide among white mental health patients in Missouri, Evenson and colleagues (1982) found that schizophrenic patients aged 20–39 had the greatest age-specific mortality ratios (209/100,000 for ages 20–29 and 220/100,000 for ages 30–39, sexes combined), while schizophrenic patients over 60 had the lowest (40/100,000 for ages 60–69 and 0/100,000 for ages over 70, sexes combined). Copas and Robin (1982) found high SMRs for younger schizophrenic patients: 39.0 for males younger than 19, 19.3 for males aged 20–29, 14.9 for females aged 20–29, 8.6 for males aged 30–39, and 7.5 for females aged 30–39. Roy (1986a, 1986b) reviewed six studies of schizophrenic patients known to have committed suicide and found that of the 161 pooled patients in the studies, the mean age at suicide was 33.1 years. Roy also cited three studies that found schizophrenic patient suicides to be younger than other psychiatric patient suicides. One such study (Langley and Bayatti 1984) re-

Table 5. Specific risk factors for suicide among schizophrenics

Factor	Studies
Young and male	Virkkunen (1976); Copas & Robin (1982); Breier & Astrachan (1984); Langley & Bayatti (1984); Black et al. (1985)
Chronicity of illness with numerous exacerbations	Yarden (1974); Tsuang (1978); Roy (1982b); Wilkinson (1982); Breier & Astrachan (1984); Drake et al. (1984); Barner-Rasmussen (1986); Nyman & Jonsson (1986)
Postdischarge course with high levels of psychopathology and functional impairment	Lindelius & Kay (1973); Dingman & McGlashan (1986)
Realistic awareness of deteriorative effects of illness and a nondelusional assessment of the future (during a nonpsychotic phase)	Farberow et al. (1965); Warnes (1968); Drake et al. (1984); Cotton et al. (1985)
Fear of further mental deterioration	Drake et al. (1984)
Excessive treatment dependence or loss of faith in treatment	Farberow et al. (1965); Cohen et al. (1964); Virkkunen (1976)

ported that of the 40 inpatient suicides that occurred at Exe Vale Hospital in Exeter, England, during the 10-year period of 1972-81, 12 (10 males, 2 females) had schizophrenia. The mean age of the 10 male schizophrenic patients who committed suicide was 31, compared with the 12 male depressive suicides, whose mean age was 52. The authors concluded that "young male schizophrenics and middle-aged depressives (particularly males) should be regarded as being at high risk; but in contrast with the population as a whole, the elderly in this hospital do not seem particularly at risk" (p. 466).

Chronicity of illness has been linked to increased risk of suicide in schizophrenic patients. In reviewing 20 schizophrenic inpatient suicides from the Jacobi Unit of Bronx State Hospital during a 5-year period, 1967-72, Yarden (1974) reported that "most had a rather chronic course with periodic exacerbations and remissions with numerous discharges and readmissions" (p. 326). He further observed that rather than committing suicide in the context of a florid psychosis with threatening auditory hallucinations, most of the 20 suicides were "burned out, passive, and docile and seen as emotionally blunted; some were in what appeared to be remission" (p. 332). In a matched controlled study of 30 chronic schizophrenic suicides, Roy (1982b) found that 80 percent of suicides versus 50 percent of nonsuicide controls had a chronic schizophrenic illness with acute exacerbations, suggesting that suicides were four times as likely as controls to have a chronic course with acute exacerbations.

In a recent study of suicide among psychiatric patients in Denmark, 1971-81, Barner-Rasmussen (1986) used the nationwide Central Psychiatric Register to analyze hospital usage and timing of suicide among psychiatric patients. He found that schizophrenic patient suicides had multiple and lengthy hospitalizations and that their suicide frequency seemed remarkably constant as compared with other psychiatric patients. Schizophrenic suicides ($n = 337$) had an average length of hospitalization between 400 and 550 days, measured in units of bed/day consumption (95 percent confidence interval). Manic depressives had the next highest bed/day consumption, with their average number of bed days between 300 and 450. Although, on average, among all the diagnostic categories women had longer hospitalizations than men, among schizophrenic patients the men remained hospitalized longer than the women.

Barner-Rasmussen (1986) also investigated suicide rates among psychiatric patients during hospitalization, after discharge, and during the year after first admission, whether the patient was in or out of hospital at the time of suicide. Of all suicides committed by psychiatric patients in the study, 25.6 percent of the male suicides and 20.2 percent of the female suicides were committed on the day of or shortly after first admission. By contrast, of the 337 schizophrenic patient suicides, only 4.3 percent of the male schizophrenic suicides and 1.9 percent of the female schizophrenic suicides died during the year after their first admission. However, 39.2 percent died during hospitalization and 60.8 percent died less than 1 year after discharge, as compared with an average

percentage for psychiatric patients of 21.6 and 78.4, respectively. Of the schizophrenic patients who committed suicide during hospitalization, 26 percent died during the first 2 weeks and 35 percent died after the first month, as compared with an average of 44 percent within 2 weeks and 60 percent after 1 month for psychiatric patients as a whole. The schizophrenic person continues to be at risk during hospitalization as 9 percent who commit suicide do so after more than 1 year of hospitalization. After discharge, for the first 3 to 4 months, the suicide rates of all groups of psychiatric patients decrease at roughly the same rate; however, the rate for schizophrenic patients does not decline as rapidly after that initial period.

Barner-Rasmussen (1986) found that 9.9 percent of the male schizophrenic patients and 20.2 percent of the female schizophrenic patients had a prior history of suicide attempts. Significantly more women than men had previously registered suicide attempts, as might be expected. Also noted was the fact that psychotic, as compared with nonpsychotic, patients rarely gave a warning of attempted suicide, and this was particularly true of the schizophrenic men. Barner-Rasmussen concluded that the suicide rates among schizophrenic patients were slightly above average in the younger groups and very low among the old.

Nyman and Jonsson (1986) analyzed patterns of self-destructive behavior in Sweden among 110 consecutively admitted young schizophrenic patients (72 men, 38 women), 9 percent of whom (9 men, 1 woman) committed suicide during a followup period 14–17 years after first admission. The mean age at suicide was 30.4 years. All 10 cases were chronically ill and had multiple admissions.

When the suicides were compared with the rest of the sample, the variables relating to suicide included being male, experiencing a chronic course, social isolation, dependence, work incapacity, and a high frequency of previous suicidal acts. Nyman and Jonsson cited misery, hopelessness and despair, anxiety, inability to feel and achieve, feelings of being different, experience of intellectual decline, and affective isolation as motives for the suicides. Few self-destructive acts were directly linked to psychotic experiences.

Using their sample, Nyman and Jonsson (1986) divided suicides into two types, early and late. The early suicides occurred at the height of suicide attempts among initially nonregressive probands. The late suicides occurred in cases characterized by severe residual states or chronic overt psychotic symptomatology. Nyman and Jonsson observed that the late suicides seemed premeditated, but they allowed that the suicides might have been triggered by psychosocial stressors such as object loss, fear of losing a pension, or plans for vocational training that were perceived by the patient as demeaning. Although suicide warnings and death by suicide were found to be statistically associated, Nyman and Jonsson felt that few of the suicides could have been prevented. Immediate warnings were few or absent, and those given were not sufficiently provocative to mobilize adequate preventive measures.

In a matched, controlled study of 20 schizophrenic patients who committed suicide, Breier and Astrachan (1984) found that only being male differentiated schizophrenic individuals who committed suicide from both schizophrenic subjects who did not kill themselves and nonschizophrenic subjects who did. Compared with

nonsuicide schizophrenic controls, schizophrenic suicides were about six times as likely to be male and non-Protestant, and seven times as likely to be white. Breier and Astrachan (1984) noted that schizophrenic patients tended not to communicate directly about their suicidal intent and that their suicides were less likely to be associated with stressful life events than was the case with the nonschizophrenic suicide controls. The authors viewed their schizophrenic patients' choice of highly lethal means of suicide as indicative of a lesser ambivalence about their suicide plans than is considered characteristic of the general population. Breier and Astrachan (1984) concluded that schizophrenic patients represent a distinct subgroup of patients who commit suicide and that suicidality should be assessed on an individual, case-by-case basis.

In a 25-year followup study of psychiatric patients admitted to Chestnut Lodge, a private psychiatric hospital serving a well-to-do population, Dingman and McGlashan (1986) reported that 13 of 163 schizophrenic patients (8%) committed suicide. A comparison between the suicide group ($n = 13$) and a control group ($n = 413$) resulted in a "profile" in which suicides were more likely to have experienced better parenting and higher levels of premorbid functioning. Their illness developed later, and they were more frequently characterized by elevated or irritable affect (OR = 5.1), decreased need for sleep (OR = 14.7), and identity disturbance (100% of the suicides vs. 43% of the controls; OR = 35.2). The suicide group spent less time in prior hospitalization, was less likely to have received electroconvulsive therapy, and retained a greater ability to think abstractly and conceptually. Dingman and McGlashan (1986)

concluded that "the greater the loss in level of functioning during the course of an illness, particularly in those who have previously achieved more than the average inpatient, the greater the likelihood of suicide. . . . [T]he suicidal act in these patients may be viewed as an ultimate and final response to a chronic and deteriorating situation" (p. 96).

Depression and a sense of hopelessness about future prospects, in painful contrast to high premorbid expectations for achievement, is a risk factor for persons with schizophrenia. In the Clarke Institute study mentioned earlier, in which 30 subchronic or chronic schizophrenic suicides were matched for sex, age, and type of schizophrenia, Roy (1982b) found that significantly more of the suicides than the controls had a history of a depressive episode (OR = 6.5), past treatment for depression (OR = 2.9), their last admission for depression or suicidal ideation (OR = 7.4), and were unemployed (OR = 3.1). Significantly more of the male suicides had never been married. The suicides were also more likely to be unemployed (OR = 3.1) and to have suffered a past depressive episode (OR = 6.5).

Drake and colleagues (1984) compared a group of 15 schizophrenic suicides hospitalized in the Cambridge-Somerville's mental health system between 1976 and 1980 with a control group of schizophrenic patients (n = 89) who did not commit suicide. The schizophrenic suicides differed significantly from controls on several variables: 73 percent attended college as compared with 29 percent of the control group (OR = 6.7); 67 percent had made explicit suicide threats versus 28 percent of the controls (OR = 5.1); and 60 percent lived alone versus 27 percent of controls (OR =

4.1). Depressed mood was experienced by 80 percent of the suicides versus 48 percent of the controls (OR = 4.3); 60 percent of the suicides experienced hopelessness versus 27 percent of the controls (OR = 4.1); and suicides experienced feelings of inadequacy (80% vs. 36%; OR = 7.1) and suicidal ideation (73% vs. 38%; OR = 4.4) significantly more often than did controls. More of the suicides than the controls had an awareness of their own pathology (47% vs. 11%; OR = 6.9), fear of mental disintegration (33% vs. 1%; OR = 44.0), and high self-expectations (47% vs. 12%; OR = 6.2). However, multivariate analysis of the data found just three of these variables to be significant: fears of mental disintegration, suicide threats, and feelings of hopelessness.

Drake and Cotton (1986) reanalyzed the data reported above to determine which depressive features were associated with completed suicide in schizophrenia and to clarify the role of hopelessness in schizophrenic suicides. Based on a comparison between suicide and control groups on variables of severity of depression, somatic symptoms, and psychological symptoms, significantly more of the suicides were found to have had a persistent depressed mood lasting at least 2 weeks; a psychomotor disturbance; and psychological symptoms of a sense of worthlessness, self-reproach, or guilt; suicidal ideas; and hopelessness. The authors calculated the probability of suicide, given the presence of depression and hopelessness. Although the presence of depressed mood or a major depressive episode increased the probability of suicide 1.6 times, the presence of hopelessness increased the probability 2.6 times. The authors concluded that although schizophrenic suicides often

seem depressed, only a minority of them experience major depressive episodes. Instead, suicides are more likely to experience hopelessness defined as negative expectancies about the future and other psychological features of depression. By themselves, neither somatic symptoms nor depressed mood was seen as indicating a high risk of suicide. Without hopelessness, Drake and Cotton (1986) believe, depressed schizophrenic patients are at no greater risk for suicide than nondepressed patients.

The importance of the degree of hopelessness as an indicator of long-term suicidal risk in hospitalized depressed patients was also the subject of a 10-year prospective study of patients hospitalized with suicidal ideation. Beck et al. (1985) reported that of 207 patients initially hospitalized for suicidal ideation, 14 committed suicide during a followup period of 5 to 10 years. Of all the data collected at the time of hospitalization, only the Hopelessness Scale (Beck et al. 1974) and the pessimism item of the Beck Depression Inventory (Beck et al. 1961) predicted the eventual suicides. Beck and colleagues (1974) found that a score of 10 or more on the Hopelessness Scale correctly identified 91 percent of the eventual suicides; a cutoff score of 10, however, also yielded 88 percent false positives. The results of the study substantiate the position that depression is not significantly related to suicidal intent when hopelessness is statistically controlled for by partial correlation procedures (Minkoff et al. 1973; Wetzel et al. 1976).

In a 10-year followup study of all patients with schizophrenia discharged from all Stockholm County hospitals during 1971, as compared with a control group of schizo-

phrenic patients who did not commit suicide (n = 64), Allebeck and colleagues (Allebeck and Wistedt 1986; Allebeck et al. 1986, 1987) found that a history of prior suicide attempts was the factor most strongly associated with suicide (n = 32) and increased the risk for suicide about five times (RR = 4.9, sexes combined). Among the females in the suicide group, 82 percent had a history of previous suicide attempts as compared with 36 percent in the control group; the suicide risk was eight times as great for those female patients with prior suicide attempts (RR = 8.2). Documented suicidal thoughts increased the suicide risk for female schizophrenic patients about six times (RR = 6.3). Allebeck et al. (1987) also found that living alone or being unmarried, divorced, or widowed increased the suicide risk among women 10 times (RR = 9.6).

Prediction

Although research permits detection of a set of characteristics shared by some schizophrenic suicides, this "profile" of a special population has not translated into a set of predictors useful for prevention (MacKinnon and Farberow 1976; Robins and Kulbok 1988). To date, there has been no successful attempt to identify effective and efficient predictors (Shaffer et al. 1974; Motto 1979; Murphy 1983; Pokorny 1983; Pallis et al. 1984). This is the case not only with the schizophrenic population but with the general population as well. As Rosen (1954) explained in his classic article, even within diagnostic groups such as persons with schizophrenia in which the occurrence of suicide is higher than in the general population, effective identification is impeded by three factors.

First, the rate of suicide is still low. Second, the likelihood of correct diagnostic identification in a restricted group is reduced by the limited reliability of diagnosis and by the occurrence of suicide in diagnostic categories not included in the restricted population. Third, the relative homogeneity within a diagnostic subgroup makes the identification of variables differentiating suicide and nonsuicide patients more difficult.

Symptom scales, such as the Beck Depression Inventory, have low predictive power (Gottesman and Prescott 1989) and typically identify far too many false positives to make them useful in identifying particular patients who need suicide-specific interventions. Although the identification of risk factors for suicide among schizophrenic patients (e.g., being young, male, white, educated with high expectations) may be helpful in assessing acute suicide risk (Roy 1986b), what seems needed for long-range prediction is a set of structured assessment tools that are both reliable and valid. However, such ideal instruments would still, as Rosen (1954) pointed out, identify so many false positives as to limit their utility severely.

There are four general problems in research on completed suicide that make long-term prediction more difficult (Pokorny 1983). Perhaps most important is the low base rate for suicide: since suicide is an extremely rare event, there are few positive cases to study. Second, subjects are not available for direct study after a suicide. Third, there is a high probability of distortion in retrospective data. Fourth, evidence that suicide is imminent in a subject results in an all-out attempt to abort the behavior.

One recent effort in the area of prediction is Pokorny's (1983) pro-

spective study among psychiatric patients. The sample consisted of 4,800 patients consecutively admitted to the inpatient psychiatric service of a VA hospital. A wide variety of instruments was used to assess suicidality. Even though many items were found to have positive and substantial correlations with subsequent suicides and/or suicide attempts, nonetheless, all efforts to identify individual subjects were unsuccessful. Pokorny (1983) reported that there were many false negatives and far too many false positives. The low sensitivity and specificity of available identification procedures, in the context of the low base rate of suicide, were cited as reasons for the poor predictive power of the indicators.

Prevention and Psychotherapy

A number of recommendations have been made to minimize suicide risk and to reduce the number of suicides among the schizophrenic population. Drake et al. (1984), mindful of the great risk of suicide during the nonpsychotic, depressed phase of the illness, recommended that decisions about passes and discharges be made carefully, especially for young patients with chronic and relapsing illness, good educational background, high performance expectations, painful awareness of illness, fears of further mental disintegration, suicidal ideation or threats, and hopelessness about the future. Drake et al. (1989) stress the importance of assessing secondary depression and agitation and of using somatic treatments for those conditions, once medication for the primary schizophrenia has been established. Crammer (1984) highlights the importance of taking environmental factors into account when thinking proactively about suicide

among inpatients. He points to the potentially disruptive effects of transitions—for example, initial acclimation to ward life or plans for discharge or rehabilitation. He also emphasizes the environmental impact of staff variables, such as low morale or the absence of key personnel, as well as the need for effective communication among relevant staff about patients judged at increased risk of suicide. Crammer also underscores the wisdom of constructing wards with an eye toward the architecture. Yarden (1974) draws attention to the importance of suitable discharge plans. Supportive, supervised living arrangements are the ideal. Adverse circumstances, such as single-occupancy rooms or the return to a family in which the patient's presence represents a severe emotional or financial strain, most probably add to the suicide risk for a schizophrenic patient (Vaughn and Leff 1976).

Nyman and Jonsson (1986) suggest that intensive therapeutic measures be invoked during the initial and nonregressive phases of illness in all young patients who give suicidal warnings. With chronic, incapacitated patients, surveillance should be increased in times of personal crisis and impending environmental change, including staff, therapist, or contact person changes, and hospitalizations, discharge, or rehospitalization. Moreover, patients need to be counseled about anhedonia. They should be advised that loss of pleasure is not necessarily a chronic condition and that it is important to continue activities even if they seem meaningless.

To provide guidelines for preventive psychotherapy with suicidal schizophrenic patients, Cotton et al. (1985) enlisted the help of 20 therapists from two Boston teaching hospitals who had provided psychother-

apy for schizophrenic patients who committed suicide. The therapists participated in semistructured interviews in which they discussed their clinical work with the patient, their understanding of the suicide in retrospect, and the impact of the suicide on their current clinical work. Six critical treatment issues arose from the interviews: realizing the importance of assessing self-esteem, appreciating the "protective function" of psychosis, differentiating the inability to function from unwillingness to function, sharing the burden of despair, monitoring familial relationships, and dealing with loss of a therapist. The study emphasized the centrality of eroded self-esteem in the suicidal schizophrenic patient and the necessity of acknowledging the patient's losses realistically and of working through those losses with the patient. In many cases, the therapists felt that the current trend in treatment toward emphasizing high expectations, performance skills, and mastery with schizophrenic patients was contraindicated for young, chronic schizophrenic patients with high premorbid levels of functioning and equally high expectations. These "high expectations–awareness" patients, it was felt, did not need a cheerleader or a taskmaster, but an ally with whom to share existential despair and to develop new, more modest, and more realistic life goals. The study also underscored the importance of monitoring the schizophrenic patient's relationships, especially with family, since some suicidal schizophrenic patients seem to abandon all hope when the emotional lifeline to their families is threatened or severed. For some persons with schizophrenia, being told by their parents that they may no longer return home is the final blow to an eroded self-esteem.

Drake and colleagues have reviewed the literature on inpatient psychosocial treatment of chronic schizophrenia (Drake and Sederer 1986) and on clinical approaches to suicide among schizophrenic persons (Drake et al. 1989). With regard to inpatient psychosocial treatment, they emphasize the potential negative effects of the failure of treatment programs to modulate environmental stimulation effectively (Wing 1978), the most tragic of these potential negative treatment effects being homelessness and suicide. Whereas neglect and understimulation are associated with a "deteriorated syndrome characterized by apathy, withdrawal, dependency, and autism," overstimulation is linked "with clinical relapse or regression in florid psychosis" (Drake and Sederer 1986, p. 898). Drake and Sederer (1986) identify intensive, confrontive, self-disclosure-oriented psychotherapy, whether in the context of individual, group, milieu, or family treatment, as one common source of overstimulation. They recommend a psychosocial treatment approach that rejects a drive-oriented, interpretative psychotherapy in favor of an ego-oriented, ego-enhancing psychotherapy that is both supportive and existential. Maintenance and enhancement of self-esteem are considered of prime importance, as is accurate empathy in addressing the sense of helplessness and hopelessness that often accompanies a realistic awareness of the devastating effects of schizophrenia.

Drake et al. (1989) advise clinicians to address the patient's issues about suicide directly and to "acknowledge empathetically the patient's view that death is one solution to the problem of unbearable psychological pain" (p. 178). Psychotherapy with the suicidal patient

aims to help the patient bear the despair, mourn the loss of expectations, and establish a new identity. The approach is ecological in that the treatment orientation is supportive and existential for the patient, the patient's family, and community supports, as well as for the professional caregivers both within and outside the hospital. The authors advocate a respectful, nonthreatening, and ego-enhancing approach for supporting patient and caregivers alike. Special care should be taken not to alienate the family and other caregivers through a confrontational, emotionally evocative stance. Both patient and caregivers need assistance in adopting new, more modest expectations for the patient. Such expectations should be realistic and not just further occasion for increased frustration and disappointment for patient and caregivers. Caregivers are advised to adopt an active, educative, and reassuring position that facilitates reality testing and problem solving, and that endorses an active role for the patient in learning about stress management and the development of self-mastery and a sense of personal competence.

In a comparison of attempters and completed suicides among schizophrenic patients, Drake and colleagues (1986) found that condition at discharge, suicide history, living situation, and mental state differentiated the two groups. Suicides tended to be improved at discharge, to have made explicit suicide threats, to be living alone, and to have experienced an "overwhelming depression, withdrawal, and despair" (p. 786). By contrast, attempters were more likely to be living with their family of origin and to make their attempt in the context of interpersonal conflict or an antecedent

state of agitation or psychosis. The authors conclude:

> Some young schizophrenic patients, particularly when they have separated from their families of origin, will develop depression, worthlessness, hopelessness, fears of further disintegration, suicidal ideation, and social isolation. This profile is a more dangerous indicator of suicide risk than a history of suicidal behavior or a current suicide attempt. We suggest that these high-risk patients be monitored carefully and considered for more intensive intervention, such as a period in hospital, day treatment, family therapy, and structured, group-living situations. [p. 786]

Weiner and Marvit (1977) have called attention to the possibility that societal attitudes toward the mentally ill may be a determinant of increased premature mortality among persons with schizophrenia. They underline the need schizophrenic patients have for a supportive social network, especially in economically developed societies where they are likely to be labeled earlier and are expected to be more self-reliant. The authors cite data from the International Pilot Study of Schizophrenia (IPSS) (Sartorius et al. 1986, 1987), which indicate a more favorable course and outcome in developing as opposed to developed, industrialized countries. Their own data from a 10-year followup study of a multiethnic schizophrenic population support the IPSS findings. The risk of suicide was significantly elevated among schizophrenic patients from Japanese, Caucasian, and Chinese ethnic groups, but the risk was within general population limits among the Filipino and part-Hawaiian groups.

Summary

Suicide is currently the main cause of increased mortality risk among per-

sons with schizophrenia. Recent studies have reported that between 2 and 13 percent of schizophrenic patients kill themselves. For example, in a 10-year followup study using the Stockholm County Register, the risk for suicide among schizophrenic women was about 18 times greater than that for women in the general population; the risk for schizophrenic men was about 10 times that for men in the general population. Whereas in the general population of the United States the ratio of male to female suicides is about 3:1, in the schizophrenic population the ratio is closer to 1:1.

Among schizophrenic patients, young white males with psychological features of depression and a prior history of suicide attempts are at particularly high risk; such high-risk patients are more than twice as likely to commit suicide as patients in the schizophrenic population as a whole.

The schizophrenic patient shares certain risk factors for suicide with the general population. Among these are living alone, a sense of hopelessness, a past history of depression or of suicide attempts, and being unmarried or unemployed. As in the general population, males in the schizophrenic population are at higher risk for suicide than females. Whites are also at increased risk in both populations.

Schizophrenic suicides also have certain distinctive characteristics that differentiate them from suicides in the general population. These include youth, a college education, chronic illness with numerous exacerbations and remissions, realistic awareness of the deteriorative effects of schizophrenia and a nondelusional negative assessment of the future, identity disturbance, and fear of further mental disintegration.

While schizophrenia by itself conveys a dramatically elevated risk for suicide, the presence of additional risk factors further elevates the patient's risk of suicide. Relative risk or odds ratio statistics can aid the clinician who must evaluate the suicide risk of schizophrenic patients on a case-by-case basis. However, there remains a pressing need for well-designed case-control studies to help identify risk factors for suicide among the schizophrenic population generally, as well as in particular settings or with particular schizophrenic subpopulations.

Although clinical experience has provided useful suggestions for the case management of suicidal schizophrenic persons and research has supplied information about relative risk and "profiles" of schizophrenic persons at high risk for suicide, efforts to predict individual suicides have not yet proven fruitful. All attempts have produced numerous false negatives and far too many false positives to be useful in identifying which schizophrenic patients need extraordinary suicide prevention precautions. For the foreseeable future, suicide among people with schizophrenia promises to remain a major, persistent, and distressing management problem.

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