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PAPER

PSYCHIATRY

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Suicide Behind Bars: Trends, Inconsistencies, and Practical Implications

ABSTRACT: The results of two comprehensive approaches are compared: the nationwide surveys of suicides in U.S. jails by Hayes and the international meta-analyses of suicides in jails and prisons by Fazel et al. Factors are classified as demographic, situational, clinical, and methodical. More than 50% of U.S. jail suicide victims were men, white, unmarried, under 28 years of age, charged with minor or drug-related offenses, and intoxicated with drugs or alcohol. Suicides significantly occurred in isolation. Suicide victims in the international study were significantly ($p < 0.001$) men, white, married, pretrial, and charged with or convicted of violent offenses. Psychiatric diagnosis, alcohol abuse, taking psychotropic medication, and suicidal ideation were also positively correlated in the international study, but suicide victims were distributed more evenly over age-groups. Results of other studies illustrate the near universality of some findings. Three theories of suicide are briefly discussed.

KEYWORDS: forensic science, forensic psychiatry, forensic psychology, correctional psychiatry, correctional mental health care, suicide prevention, jail suicide, prison suicide

The serious problem of suicides in correctional custody has been long overlooked. Earlier in the history of criminal detention and imprisonment, inmates were regarded somewhat like "slaves" who were repaying their debt to society and for whom society owed nothing. Courts tended not to interfere as the view shifted to one that facility administrators were more familiar with and better able to handle problems than courts, a view that supported a "hands off" policy by courts in the U.S. Eventually, social changes occurred in the U.S. Mental health advocates and social scientists such as Danto (1) and Hayes (2,3) brought attention to jail suicides in particular, and courts began to allow wrongful death action for jail suicides. Increasingly, research over the last quarter of the 20th century examined jail suicides and eventually prison suicides as well. Successive national studies of custodial suicides in England and Wales (4–6) and studies of suicide in prisons in other European and non-European countries contributed to the growing body of literature and knowledge on carceral suicides.

Questions of generalizability will always bedevil the interpretation of data concerning institutional suicides. In this article, the issue is addressed by comparing the findings from the two nationwide studies of jail suicides in the U.S. conducted by Hayes (2,3) through the National Center on Institutions and Alternatives (NCIA) in the 1970s and 1980s with the more recent meta-analyses by Fazel et al. (7) of controlled studies in prisons and jails over a time span of about half a century and without linguistic or national limitation. Those positive findings common to both approaches should be highly generalizable to jail and prison suicides at least in Western, developed countries. Individual national and local studies are referenced in commentary to further illustrate the meaning, limitations, and potential practical application of these comparative findings.

Some definitions should be helpful. In the U.S., jails are local facilities that hold defendants while they are awaiting trial as well as some offenders who are found guilty of a minor offense and sentenced to a brief, up to a 1 or 2 year, period of confinement. Prisons are large state or federal correctional facilities that house offenders who are found guilty of a serious offense, a felony, and sentenced to more than a year or two of imprisonment. Individuals in U.S. jails, or in pretrial detention, where the distinction is clear, are referred to here as "detainees" even though some jail residents will have been sentenced, whereas individuals in prisons are denoted as "prisoners." Residents of either jails or prisons or both, where the distinction is unclear or immaterial, are termed "inmates." In other countries, such a sharp distinction between jails and prisons, detainees and prisoners, is not generally made, and facilities are referred to as prisons even though they may serve the dual purpose of housing both "detainees" awaiting trial and convicted offenders serving their sentence. In this article the descriptors "custodial," "carceral," and "correctional" refer generically to jails, prisons, and the dual-purpose facilities.

The Hayes Epidemiological Surveys of Jail Suicides in the U.S.

In 1979, the NCIA attempted to study all suicides in U.S. jails (2). Directed by Hayes, this study identified 419 jail suicides. In a second, similar study the NCIA identified 453 jail suicides in 1985 and 401 in 1986, respectively (3). Frequently repeated findings in these two studies suggested a profile of the typical jail suicide as a young (8), single, white male who is detained for a minor offense related to drug and alcohol abuse. Within 24 h after entering the jail, this man commits suicide by hanging.

These two seminal studies helped to bring attention to the national problem of jail suicide, a problem that had been obscure

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and neglected. Moreover, these two nationwide, epidemiological studies of suicide, together with studies of custodial deaths in individual jails, suggested the special importance of screening individuals for the risk of suicide upon booking into jail. The Hayes nationwide studies and many studies in individual jails, which consistently showed that most jail suicides occurred soon after jail entry and were accomplished by hanging, further informed preventive strategies. Although a similar nationwide study of jail suicides has not been carried out in the past two decades, early screening and other preventative measures have been widely implemented, and some local jails (9) and regions have shown substantial reduction in suicide rates, presumably as a result of such measures. Suicide rates in state prisons dropped from 34 per 100,000 inmates in 1980 to 16 per 100,000 in 1990 and have since stabilized. From 1983 to 2002, jail suicide rates fell from 129 per 100,000 to 47 per 100,000 (10), no doubt as a result of more effective screening upon booking into jails.

The Hayes/NCIA studies showed frequently registered characteristics of those who killed themselves in jail and the attending circumstances. Because these studies were not controlled, the studies did not well demonstrate which factors would single out those who kill themselves from all others who are arrested and jailed. The findings could not be generalized to U.S. prison suicides or to carceral studies outside the U.S. Also, unclear was whether these same characteristics would be as frequently associated with jail suicides one or two decades later, after many jails implemented effective suicide prevention policies. All of the frequently reported characteristics and circumstances in the Hayes surveys were not invariably as frequently co-occurring in studies of suicides in individual jails. Studies of prison suicides showed not only some commonalities but also some notable differences from common trends and patterns of jail suicides. Comparison of many studies confirms the universality of some features of jail suicides in the early studies by Hayes, but also differences, the proper understanding of which could lead to even more effective suicide prevention strategies.

The Fazel International Meta-Analysis of Jail and Prison Suicides

Fazel et al. (7) recently published a meta-analysis of prisoner suicides that resulted in remarkably similar, yet strikingly different results compared with the seminal studies of suicides in U.S. jails by Hayes over two decades ago. Fazel et al. conducted an on-line literature search from 1950 to February of 2007 in all languages, resulting in studies from English-speaking countries in Western Europe. The analysis was limited to controlled studies with either a matched or randomly selected control group (Group 1), or the average or total prison population (Group 2). Using this approach, their analyses included 34 studies from 12 countries and a total of 4780 carceral suicides. In this comparison, factors associated with risk for suicide were categorized as demographic, criminologic (situational), and clinical. For this present comparison, all factors that correlated with carceral suicide with $p < 0.001$ were included.

Comparison of the Hayes Nationwide Surveys of Jail Suicides in the U.S. with the International Meta-Analyses of Jail and Prison Suicides by Fazel et al. and Commentaries

The Hayes nationwide surveys identified factors that are frequently associated with U.S. jail suicides, but do not distinguish whether such factors are disproportionately high in jail inmates in general. The international meta-analyses of controlled studies of suicides corrected for the deficiency in the Hayes studies without diminishing the importance of the Hayes studies, which comprehensively included most suicides in U.S. jails at the time of the surveys. The premise offered here is that those factors that occurred together with at least 50% of the US jail suicides and that had a significant odds ratio in the Fazel international meta-analyses should be especially significant, if not nearly universal correlates of carceral suicides (Tables 1–3).

This discussion then also examines that other factors, which seem to overlap in significance, are highly significant or frequent in one study method and not the other, as well as the striking discrepancies in the findings to draw tentative conclusions of practical use to correctional psychiatrists and other mental health professionals.

Before drawing comparisons, major differences in the studies by Hayes and that by Fazel et al. must be emphasized. The Hayes studies were only of jail suicides in the United States, whereas the Fazel study was international and included subjects in jails and prisons and facilities with both pretrial detainees and postsentencing prisoners. The time span between the first and last NCIA studies was short, 7 years, with the studies having been conducted in the years 1979, 1985, and 1986, respectively, whereas the Fazel study extended over half a century beginning in 1950. The Hayes studies examined reports directly from facilities, whereas the Fazel study was a meta-analysis that relied upon data gathered from primary studies which in turn drew from data from respective facilities. Initial screening for suicide risk was presumably one of the several procedural deficiencies in jails at the time of the Hayes jail surveys. Today, in European prisons, initial mental health screening is the rule, even if the method varies between countries (11), and is presumably now widely the admission protocol for jails in the United States and other English-speaking countries. Finally, the Hayes study was epidemiological, descriptive, and without controls, whereas the Fazel study included only controlled studies of jail and prison suicides.

Demographic Factors

Gender—Most who committed suicide in jail in the Hayes studies were men, 96.5% in the 1979 study and 94% in 1986. The controlled meta-analyses by Fazel et al. confirmed the generalizability of the disproportionate percentage of male suicides ($p < 0.001$), even allowing for the fact that most jail and prison inmates are men.

Commentary—The Hayes percentages were not surprising given that about 92% of the total US jail population at that time was men. More recent nationwide data indicate that male detainees in US jails are 56% more likely to commit suicide than female detainees (10). In a number of local studies of jail suicides, 100% of the victims were men (12–17). Yet women also commit suicide in jail, 3.0% of the suicides in the 1979 study by Hayes and Kajdan (2), 6.0% in the 1986 study (3), and 2.7% of 37 suicides in a US county jail, for example (18).

In US state prisons, most, in some studies all (19), suicide victims are men. In studies of all suicides in US federal prisons from 1983 to 1987 ($n = 43$), and from 1993 to 1997, all ($n = 62$) were men, and from 1970 to 2002, there was not a single female suicide in US federal prisons (20,21). This is consistent with the preponderance of male suicides in the general population.

Liebling's study (22) of female prisoners in England and Wales who killed themselves during a period spanning 20 years ($n = 14$), serves as a caution against the generalization that male sex is a risk factor for suicide behind bars. The high incidence of male suicides

TABLE 1—*Comparison of the results of the NCIA surveys of suicides in US jails with the Fazel international meta-analyses of controlled studies in jails and prisons: demographic factors.*

	1976 NCIA Survey (n = 419)				1986 NCIA Survey (n = 339)		Fazel Meta-Analysis (Study from 1950 to February 2007)			
Demographic Factors	Pct	n	d	>50%	Pct	>50%	Odds Ratio	Group	p	Significance
Male	97	332	334	+	94	+	1.9	1 and 2	<0.001	+
White	67	231	343	+	72	+	1.9	1 and 2	<0.001	+
Black							0.04	1 and 2	<0.001	+↓
Young										
Under 28	59	196	335	+	47	−				
21–30								2	0.81	−
31–40								2	0.89	−
41–50								2	1.00	−
Married/common law	30	87	288	−	30	−	1.5	1 and 2		+
Unmarried	70	201	288	+	70	+				−

NCIA, National Center on Institutions and Alternatives; n, numerator; d, denominator.

Group 1: studies with randomly selected or matched control group. Group 2: studies controlled with average or total prison population over a corresponding period of time. Demographic factors listed include all that were found in over 50% of both NCIA jail surveys and all in the Fazel meta-analyses with $p < 0.001$. Note that the significant relationship with black race/ethnicity is inverse. Though below 50% in both surveys, married/common law status is included from the NCIA surveys for comparison with the highly positive association with suicide in the Fazel study. Although age under 28 occurred in over 50% only in the 1979 NCIA survey and no age-group was significantly associated in the Fazel study, age parameters are added for comparison.

TABLE 2—*Situational factors.*

	1976 NCIA Survey (n = 419)				1986 NCIA Survey (n = 339)		Fazel Meta-Analysis (Study from 1950 to February 2007)			
Situational Factors	Pct	n	d	>50%	Pct	>50%	Odds ratio	Group	p	Significance
Cell occupancy										
Single cell							9.1	1	<0.001	+
Isolation	68	228	337	+	67	+				
Holding status										
Detained/remanded							4.1	1 and 2	<0.001	+
Time of incarceration										
≤24 h	51	165	322	+	51	+				
Severity of offense										
Minor or drug offense	51	173	337	+	52	+				
Murder/manslaughter							3.6	1 and 2	<0.003	+
Violent offenses (not murder, manslaughter, sexual)							3.5	1 and 2	<0.009	+
Sentenced							0.2	2	<0.001	+↓

NCIA, National Center on Institutions and Alternatives; n, numerator; d, denominator.

Group 1: studies with randomly selected or matched control group. Group 2: studies controlled with average or total prison population over a corresponding period of time. Situational factors listed include all that were found in over 50% of both NCIA jail surveys and all in the Fazel meta-analyses with $p < 0.001$. Note that the status of having been sentenced is inversely associated with suicide. All situational factors that occurred in at least 50% of both NCIA surveys are included. Although short of the $p < 0.001$ level of significance ($p < 0.009$), violent offense is included from the Fazel study as are other positively associated offense groups that contrast with results of the NCIA surveys concerning nature of index offense. Situational parameters are not the same in the NCIA and Fazel studies, but several are similar. Most jail inmates in the NCIA surveys who committed suicide were in an ''isolated'' housing status, and ''single-cell'' occupancy was highly correlated in the Fazel study. The Fazel increase in suicide among ''detained/remanded'' inmates corresponds with the high rate of suicide in pretrial jail inmates.

in comparison is because of the fact that most prisoners are men. In comparison with a control group, male gender was not a distinguishing demographic of 94 suicides in the Dutch prison systems (8). As with race/ethnicity, gender distribution in particular facilities and prison systems may help identify trends that can inform policies, but gender should carry little if any weight in assessing suicide risk of individual inmates (19).

Race/Ethnicity—Both the Hayes and Fazel ($p < 0.001$) studies found white race to be a risk factor for suicide; thus, the generalizability of this finding across time and boarders appears to be strong.

Commentary—This is consistent with the overrepresentation of whites among those who commit suicide generally (23). (To simplify for international comparison, ''white'' and ''black'' are used rather than ''Caucasian'' and ''African American''.) Black, Asian/Pacific Islander, and Latino race/ethnicity are protective factors against suicide (23) in the general population.

Local US jail studies also report a greater percentage of whites among jail suicides, 77% in North Carolina jails (24) and 88.5% in Los Angeles jails (25), for example. Recent nationwide surveys of suicides in US jails demonstrate the continued predominance of whites. In 2000–2002, nearly three-fourths of all jail suicides were by whites, with a suicide rate of 96 per 100,000 inmates. This is

TABLE 3—*Clinical factors.*

Clinical Factors	1976 NCIA Survey (n = 419) Pct	n	d	>50%	1986 NCIA Survey (n = 339) Pct	>50%	Fazel Meta-Analysis (Study from 1950 to February 2007) Odds Ratio	Group	p	Significance
Psychiatric diagnosis	29	73	248	−						
Current							3.9	1	<0.001	
Alcohol abuse							3.0	1	<0.001	
Intoxicated with drug/alcohol at time of incarceration	59	126	213	+	60	+				
On psychotropic medication							4.2	1	<0.001	
Prior suicide attempt	17	37	217	−			8.4	1	<0.001	
Suicidal ideation							15.2	1	<0.001	
Stressors										
Initial arrest/jailing	51	165	322	+	51	+				
Sentence over 1 year										

NCIA, National Center on Institutions and Alternatives; n, numerator, d, denominator.
Group 1: studies with randomly selected or matched control group.

more than triple the rate of suicides among Hispanic detainees and six times that for black detainees (10). Nonetheless, in at least some uncontrolled local studies in US jails, <50% of jail suicide victims were white (26–28). In some jail studies, the majority of suicide victims were black (15,27). Hayes and Kajdan (2) suggested that the rate of white suicides, in comparison with black suicides, is lower in those jails that serve metropolitan areas with large black populations.

Some studies found suicide to be higher among Hispanic inmates (29,30), but this finding was not consistent across studies. In New York City jails, the percentage of suicides that were committed by Hispanic detainees was disproportionately elevated in the early 1970s (29) and then diminished years later (17). Among the 43 suicides in the US federal prison system from 1983 to 1987, the percentage of Hispanic suicides was disproportionately elevated (35% vs. 24% of the inmate population) (10). Especially high among Hispanic inmates was the rate of suicide among Cuban detainees with a rate of about 75 per 100,000 (20). In the federal prison study that followed, the rate of Hispanic suicides subsided (21). It is hypothesized that the improved rate of suicide among Hispanics in New York jails was secondary to effectively integrating them into the rest of the inmate population, whereas the improvement among Cuban federal prisoners was related to their less hopeless outlook. In both instances, modified circumstances dissolved the racial/ethnic discrepancy.

US prison studies show a plurality of white suicides. An early (1980–1985) study of all suicides in Texas prisons (19) showed a disproportionate percentage of white suicide victims (53% of 38 victims: 38% of the prison population). In a California statewide prison study, 40% of suicides were by whites (n = 62), compared with 36% Hispanics (n = 55), and 16% blacks (n = 25) (31), but without the racial/ethnic distribution of the entire prison population, the meaning of this finding is limited. In their study of prison suicides in Texas, He et al. (32) took into account the ethnic racial distribution of the entire prison system and found suicide to be slightly overrepresented among whites and underrepresented among blacks. A recent New York statewide prison study also found whites to constitute a plurality of suicides and to be overrepresented when compared with the total prison population (36.8%, χ^2 = 19.6; df = 1, <0.001) (33). Whites were not, however, overrepresented within those on the mental health caseload who committed suicide. Both within the caseload and in comparison with the prison population, blacks were significantly underrepresented (χ^2 = 13.3; df = 1, $p < 0.001$ and χ^2 = 22.3; df = 1, $p < 0.001$, respectively). Also, in the US federal prison system, whites are overrepresented among suicide victims, and blacks underrepresented relative to their percentages within the general prison population (21).

When gender and race/ethnicity are considered together, white male prisoners are at highest risk for suicide, twice as likely as black male prisoners in a Maryland statewide prison study (34), comparable to the high rate of suicides among white males in the general population (35).

In the general population of the United States, the racial/ethnic grouping with the highest rate of suicide (15.2/100,000) is among Native Americans (American Indians and Alaska Natives), followed by white, non-Latinos (11.8/100,000) (23). However, a corresponding elevation in suicide rates among inmates who are Native Americans has not been established (21), perhaps because of the small to absent numbers of such inmates. The question remains as to whether there are other ethnic/racial minorities that commit suicide in correctional settings with exceptionally high suicide rates that have gone unnoticed because there are so few of them who are incarcerated.

Because of the large numbers of inmates who are white and the small numbers who commit suicide, race/ethnicity does not help to identify individuals at high risk for suicide (19). Despite the limitations in using race/ethnicity to weigh the risk of suicide in individual inmates, an examination of social dynamic factors associated with racial/ethnic suicide trends can conceivably point to preventive systemic changes. For example, the high rate of suicide among Hispanic inmates in New York City jails was high when Hispanics were segregated, perhaps to provide mutual support, in the facilities, and abated after Hispanic inmates were integrated into the rest of the inmate population. A potential explanation is that the elevated risk of suicide among Hispanic inmates was because of the language barrier. Once Hispanics were integrated with English-speaking inmates, they received better access to social and medical services despite the language barrier (9).

Age—The 1979 NCIA survey showed most US jail suicide victims to be young, 59% were under 28, with an average age of 28 (2). In the 1986 survey, 47% were under 28 (3). In contrast, carceral suicide victims in the Fazel study (7) were evenly distributed in age between the third, fourth, and fifths decades and 50 years and older.

Commentary—Of 154 suicides in California prisons from 1999 to 2004 (31), nearly half of the victims were in their fourth decade of life (47%, $n = 73$, 31–40), whereas little over a quarter (27%, $n = 42$) were in their third decade (8,19–30). The earlier statewide study of suicide in Texas prisons (19) showed most to be under 30 (60%, 23/38), but two-thirds of the Texas prison population was at that time under 32 (19). Suicide victims in the He Texas prison study (2001) (32) ranged from 23 to 56 years in age with an average of 33. In a study of suicides in Maryland prisons ($n = 37$, 1979–1987), prisoners from 25 to 34 were at twice the risk for suicide in comparison with the Maryland general population in the same age-group, and older prisoners had lower rates of suicide compared with this younger group (34).

Perhaps in part reflecting an older population in prisons in comparison with jails, studies of only prison suicides show the victims to be older than those of the Hayes jail surveys. However, recent nationwide data from the US Department of Justice (2005) (10) demonstrates that the highest rate of suicide in local jails is among detainees who are under 18 (101 per 100,000). With this notable exception, however, the general rule that advancing age is associated with increased risk of suicide is confirmed among US jail detainees in 2000–2002. Suicide rates increased progressively from 38 per 100,000 among those who were 18–24 years old to 58 per 100,000 for detainees 55 and older (10).

In contrast, the studies of all suicides in US federal prison facilities from 1993 to 1997 showed the percentages of suicides to be about the same as the percentages in each age-group of the general jail population except ages 26–30, in which the percentage of suicides (10% of suicides) was underrepresented relative to the inmate population in this age-group (18%) (21).

A recent study of Dutch prisoners showed that age of 40 and above tended to be associated with suicide in comparison with a control group (8). An early German study demonstrated that of most prisoners who commit suicide are young, and this is because most prisoners are young. Just as in the general, noncustodial population (35), however, increasing age was a risk factor in prison (36).

From these inconsistent results, younger suicides behind bars largely represent the younger incarcerated population. Those who are under 18 may represent a higher risk. Otherwise, all inmates should be screened and evaluated with equal scrutiny regardless of age.

Marital Status—Most commonly in the Hayes studies, the suicidal victim was unmarried, 69.8% in the 1979 survey (2), 70% in the 1986 survey (3), whereas marriage was the more common condition in the Fazel meta-analyses (7) ($p < 0.001$).

Commentary—The contrasting findings of the Hayes and Fazel studies regarding marital status begs for an explanation. Suicide in general tends to be associated with unmarried status (8), and the early US jail suicides are consistent with this general finding. As most jailed inmates in the United States are unmarried, the Hayes finding may simply reflect a common characteristic of the study population, but then why would the Fazel study yield different results? The answer to the discrepancy may lie in the different typologies that reflect some difference in the two incarcerated populations that are studied. The Hayes victims were typically charged with a minor offense related to substance abuse, and their suicides occurred almost immediately after booking: This suggests that the suicide might have been impulsive and caused by the initial shock of detainment. The Fazel subjects who committed suicide tended to have committed more serious offenses such as homicide that were associated with lengthier sentences.

Relative to the prison population, most suicide victims in the Anno Texas prison system were single (53%) or divorced (26%) (19). The Dutch study by Blaauw et al. (8) showed that prisoners who committed suicide tended to be separated, divorced, or widowed. They lacked a stable home and tended not to have been living with others. The "predictive profile" arising from this study included homelessness to which marital status did not add predictive value. A potential dynamic is that the disruption of a marital relationship occasioned by the offense itself or the threat of prolonged separation through incarceration contributes to the sense of loss and hopelessness of many inmates who take their lives. The practical implication here is that marriage per se is not necessarily a protective factor against suicide among inmates, and its actual role in creating the suicide state must be assessed on a case-by-case basis when clinicians evaluate potentially suicidal inmates. The nature of the relationship (e.g., steadfast and supportive or the inmate's experience of being supportive and loved) may be more significant than the legal status of marriage per se.

Situational Factors

Relationship to Time of Incarceration—The national surveys of jail suicide by Hayes demonstrated that most suicides occur soon after entering the jail, many within the first 24 h after booking, over 50% in the first national jail suicide survey with 27% occurring within the first 3 h (2), in the 1986 survey (3) 57% within 24 h and 29% within the first 3 h. Especially, telling was the finding that over 88% of inmates who committed suicide were under the influence of drugs or alcohol took their lives within 48 h of entering jails, and over half of these deaths occurred within the first 3 h (2). Although time parameter was not addressed in the Fazel study, remand or detainment, that is, pretrial status, was associated with carceral suicide ($p < 0.001$).

Commentary—An earlier study of 70 jail and prison suicides in North Carolina from 1972 to 1976 found that 34 occurred within 12 h of confinement, and of these, 85% were intoxicated at the time (24). Sixty-two percent were arrested on charges related to alcohol. Again in 2000–2002, 20 years after the first nationwide study national data on jail suicides indicate that nearly one-half (48%) occurred within the first week of entering jail, and nearly a quarter (23%) occurred within the first 48 h (10). These findings pointed to the importance of early suicide risk screening to prevent jail suicides.

The timing with entry is not expected to be so strongly associated in prison suicides because the change from jail to prison existence is less extreme, compared with total freedom in the community to jail detainment. Indeed, studies of suicides in prisons alone show less if any trend toward early suicides. The Texas prison study by He et al. (32) and the Maryland prison study by Salive et al. (34), for example, found no association with time of entry, although any potential association may have been diminished by the initial diagnostic screenings that are conducted on all individuals when they first enter the prison system. In 2001–2002, nationwide data showed that only 7% of suicides in US state prisons occurred within the first month of imprisonment, 65% took place within the first year, and 33% after 5 years (10).

In the national US study, 32% or 55 of 122 suicides occurred within the first 7 days of prison entry and 19 or 11% within the first 24 h. Unlike US prison studies, a U.K. study included "remand" inmates (49%) who were awaiting trial and whose legal situation corresponded with that of US jail inmates. As in the Texas prison study, however, all prisoners would have been

interviewed upon entry, presumably preventing some suicides that would have occurred early during incarceration. In the U.K. study, 22% or 59% of suicides victims who were drug dependent committed suicide within the first 7 days, suggesting that intoxication or more likely, withdrawal and/or the psychological distress of withdrawal was a common factor in early suicides. In the U.K., around half of the suicide deaths occurred within the first month of imprisonment (5,37,38), and those who were drug dependent were more likely to die by suicide within the first week (5,37).

Although outside of the central focus of this review, carceral studies, increasingly recent research points to the periods during arrest and after release from a correctional setting as a time of increased risk for suicide. From 2003 to 2005, 2002 arrest-related deaths occurred in 47 US states and the District of Columbia, most of which were homicides by law enforcement officers (55%). Twelve percent ($n = 240$, or an average of 80 per year) of the arrest-related deaths were suicides (39). Shaw et al. (5) cite a 4-year study of 354 suicides that occurred within 1 year of release from a correctional facility, averaging 88 cases per year. Of these, 23% ($n = 80$) clustered within the first month and 40 within the first week after release. Kennedy (40) postulated that the risk of suicide is high soon after entering jail and possibly just before release as well owing to the stresses of readjustments or anticipation of readjustment to dramatically different circumstances. This can be modified to include the shock of arrest even prior to detainment and the stress of readjustment to living outside of custody.

Relationship to Trial—The jail inmates in the Hayes study had not been to trial, and most were charged with minor, substance-related offenses. The generalizability of the finding was confirmed by the meta-analyses of Fazel et al. who found a higher odds ratio for inmates who were detained or remanded (i.e., pretrial) ($p < 0.001$). The Fazel report suggests that the legal status of awaiting trial could contribute as much if not more to the variance of suicide rates in jails and prisons, respectively.

Commentary—It has been consistently observed that the suicide rates in US jails are much higher than rates in US prisons, suggesting that facing the uncertainties of trial is far more distressful than adjusting to prison, although other factors may be involved. In contrast to the generally strong association between jail placement and pretrial status with suicide, not all jails show the highest incidence of suicide soon after booking. In the study by Marcus and Alcabes (41) of suicide in New York City jails, 50% of suicides occurred within 3 days after appearing in court. The percentage of suicides was still elevated within the first 30 days of booking (42%), but the vast predominance of suicides that occurred within the first 24 h of the Hayes studies was not found in the study of Marcus and Alcabes. An unknown but reasonable explanation for this discrepancy is that once effective screening is put in place and early suicides are prevented, the next most suicidogenic stressor for many, going to trial, comes to the fore.

The nationwide study of suicides among inmates of US federal facilities from 1993 to 1997 included a small subgroup who were detained pretrial (20). Although only 8% of the total federal population, pretrial federal detainees constituted 19% of all federal suicides. In an earlier study, 1983–1987, when Mariel Cuban detainees constituted 6% of the federal inmate population, this group too was overrepresented, amounting to 19% of all suicides; however, this group was not overrepresented in the latter federal study. This suggests the possibility that after the Cuban ''detainees'' legal situation was disambiguated their risk of suicide subsided.

The third most overrepresented group was those inmates who were serving over 20 years (18% of suicides among 13% of the population) (20), consistent with the results of earlier nationwide federal suicide studies (20,21). Both studies taken together indicate a bimodal distribution of risk for suicide with the highest risk for pretrial detainees, and the second increase in risk for inmates sentenced to over 20 years. Inmates serving 20 years to life typically committed suicide after 4–5 years of imprisonment (20).

Relationship to Severity of Offense—With regard to the relationship between severity of offense and suicide, the Hayes studies of US jail suicides and the Fazel meta-analyses of suicides in jails and prisons yielded contrasting results. Hayes found that many who committed suicide in US jails had been charged with only a minor crime (21.1%, 1979 study) or an offense associated with substance misuse (30%), and only 27% had been charged with a crime of personal violence. In 73.6% of jail suicides, the most serious offense was nonviolent (2). The findings 7 years later were essentially the same (28% minor offense, 27% alcohol or drug related, and 25% personal violence) (3). When the 1979 study of jail suicides (2) examined specific offenses, public intoxication was the most common ($n = 37$) followed closely by murder ($n = 35$). Fazel et al. (7) in contrast found suicide to be associated with violent but nonsexual offenses ($p < 0.009$) and with murder ($p < 0.003$). Longer sentences, over 18 months, were also associated with higher rates of suicide in the Fazel meta-analytic studies of carceral suicide.

Commentary—Also, in the Dutch study by Blaauw et al. (8), violent offenses were strongly associated with inmate suicides ($p < 0.001$). In the Maryland prison study (34), most who committed suicide (62%, $n = 37$) had committed crimes against persons such as murder, manslaughter, and rape. Similarly, in the Anno Texas prison study, almost three-fifths of suicide victims were charged with crimes against persons such as murder (19). In the earlier British study of carceral suicides between 1972 and 1987 (42), a significantly higher proportion of the inmates who committed suicide had been charged with sexual or violent offenses ($\chi^2 = 12.21$, $p < 0.01$), whereas the recent British study showed that 26% of prisoners who committed suicide were charged with or convicted of a violent offense (6). Although only 6% ($n = 11$) of suicide victims in the last national study in England and Wales were charged with or convicted of murder, over half of these ($n = 16$) were serving life sentences at the time (5). Life sentence, including the sentence of death, has been associated with a high suicide rate, 146.0 per 100,000 prisoner years, in the Maryland prison study (34).

Most of the jail suicides studied by Hayes occurred pretrial, so the victims would not yet have been sentenced. To some extent, this finding can be accounted for by the fact that far more individuals, suicidal or not, are charged with minor or substance-related offenses than with homicide and other violent offenses. Further considerations are the shock of initial incarceration and the diminished impulse control in states of intoxication, withdrawal, or dread of withdrawal.

The study of jail suicides by Marcus and Alcabes (41) provides an exception to the finding by Hayes that jail suicides in the United States are associated with minor criminal offenses. Even though in a jail, these suicides were associated with more serious, violent offenses. Although their report did not describe the procedures for initial screening in New York City jails, it is possible that by the 1990s, New York metropolitan jails had begun to screen individuals for suicide risk at booking thereby effectively preventing many

suicides that would have corresponded to the typology in the Hayes studies. This improvement in suicide prevention, while preventing suicides associated with minor drug-related offenses that occur soon after booking, would not have prevented suicides that occur later during detention and that are associated with serious, violent offenses and with lengthier sentences. Not known is the extent to which jails and prisons in various countries over the past half century actually implemented effective early screening procedures. However, most European countries now have in place mental health screens upon entry into correctional facilities (11).

Moreover, one would expect the Hayes typology to be less frequently represented in studies that also included prisons. For example, in the second study of suicides in the Texas prison system, only 12% of victims were convicted of drug-related offenses, whereas 44% were sentenced for violent offenses including 16% of all suicide victims whose offense was murder. Without providing supporting numbers, Patterson and Hughes (31) noted that suicides in the California prison system occurred after the prisoner incurred new charges or received an unexpected sentence.

Interestingly, nationwide data 20 years after the first nationwide study by Hayes showed suicide to be highest among violent offenders (92 per 100,000) and lowest among drug offenders (18 per 100,000) (10). Thus, early screening may have differentially reduced the number of suicides associated with drug-related offenses, even though the majority of jail inmates continued to occur early in incarceration. Among the violent offenses, kidnapping was associated with the highest rate of jail suicides (275 per 100,000), but rates for rape and homicide (252 and 182 per 100,000, respectively) were also high. Those who violated probation or parole had the highest suicide rate among the nonviolent offenders (100 per 100,000). The rate of suicide among alleged rapists was over two and one-half times that for those accused of other types of sexual assault (95 per 100,000) (9). Not available in this nationwide data is the relationship between offender and victim.

Although not examined in jail and prison suicide studies, the literature on combined homicide–suicide would suggest that those who kill a close relative or loved one and those who commit mass murder would be at higher risk for suicide (43,44). Not noted in the Hayes and Fazel studies or other studies of inmate suicides for that matter is where the type of criminal offense is already associated with suicide. One who kills an intimate partner, members of the immediate family, or a number of people at the same time is at higher risk for taking his or her life afterward (43,44). Even though not supported by jail and prison studies per se, it would be unwise to overlook the risk of suicide in such cases (2). Although conventional wisdom suggests that sexual offenses are associated with suicide, most of the data do not support this (7,32).

Single-Cell Occupancy—Occupancy in a single cell is one of the most consistent correlates of jail and prison suicides. ''Isolation placement'' was a common finding in the epidemiological studies of jail suicides by Hayes, although the precise meaning of the term is unclear even with terms like ''bullpen.'' In the 1979 survey, 67.7% of jail suicides occurred in isolation (2). The predominance of jail suicides in inmates in isolation was confirmed 7 years later, 67% (3). Single-cell placement was confirmed as a significant correlate in the controlled meta-analyses of jail and prison studies of Fazel (7) ($p < 0.001$).

Commentary—Local studies also demonstrate that single-cell placement is associated with suicide (32). Regardless whether in single or shared cells, most jail (80%) and prison (87%) suicides in the United States occur in the inmate's cell or room (10). In the early study in Texas prisons (19), all suicide victims had been assigned to single cells, many in solitary confinement, and three single-cell victims were on ''suicide watch.''

A facile conclusion from this consistent finding is that the isolation in a single cell causes suicide through either stress or diminished observation. With this logic, one might conclude that inmates, and especially inmates who are identified as potentially suicidal, should not be placed in single cells. This important issue has been previously discussed in some detail (45) and can be treated only briefly here. Without further analysis, these conclusions are misleading and not very helpful.

Both the Hayes and Fazel studies dichotomized placements into single or isolation cells and those that are not isolation cells. In Copeland's 1989 study of jail suicide, placements are classified into seven different types; results suggest that the dichotomization may be inaccurate or may provide insufficient descriptions of placement (14). Inmates may more often successfully kill themselves when no one is around to intervene, for example, in a national study of prisoner suicides in England and Wales (6), 58 of 172 suicides occurred in shared cells but in 30 of these when the cellmate was not present at the time of the suicide. In the recent national study of carceral suicides in England and Wales, most (63%) occurred in single cells and of those that occurred in double cells, about half occurred when the cellmate was absent (5). The corollary is that the other half managed to successfully take their lives even with the cellmate present. Although unusual, carceral suicides can occur in areas shared by inmates in both jails and prisons such as libraries, cafeterias, and recreational areas (10). Whether a ''single'' cell promotes suicide may differ according to whether the ''single cell'' is in the general population and the inmate enjoys plenty of time out of his cell, in the infirmary, and requires the increased inmate observation of suicidal precautions or in disciplinary lockdown where conditions are most austere, isolative, distressful, and without precautionary measures.

No doubt the finding that suicides tend to occur in single cells will be replicated in future studies of suicide behind bars. For some but not all inmates isolation is unbearably stressful. Exceptions to the rule must be considered. The Netherlands makes extensive use of single cells, yet the suicide rate is low in Dutch prisons, presumably because the Dutch facilities are more comfortable than those in other countries. Depending on other contextual circumstances, having one's ''private room'' can be a plus. US prisons and jails have over time achieved substantially low rates of suicide despite use of single cells. Suicides can and do occur in multiple occupancy cells (45). What is needed for more informed suicide prevention policy and clinical risk assessment and management is greater detail in reported studies about the circumstances of suicides than simply whether or not they occurred in a single cell.

The single best protection against suicide when an inmate is acutely suicidal is constant observation, but this option is often not used in correctional settings. Without constant observation, sufficient disarmament together with frequent checks becomes the default practice that is customarily employed (9). Inmates have strangled themselves even with constant observation, although the quality of observation is questionable, when the inmates are allowed to cover themselves completely with a blanket and thereby conceal their act. To the author's knowledge, no inmate with all potential lethal instruments removed has successfully killed himself regardless of whether placed in a single cell. Derisively termed ''strip cells,'' such precautionary conditions, though effective, compromise the inmate's dignity, comfort, and sometimes physical health. Depending upon the quality of climate control and the inmate's general health, death from hypothermia can

be a rare but possible adverse effect of total disarmament. The important point to be made here however, a point not discussed in the many reports that found an association between single cell and suicide, is that whether a single cell serves to promote or prevent suicide depends upon other attendant circumstances. If single-cell placement serves to remove potentially lethal instruments and includes sufficient observation, it is likely preventive, but information about observation and disarmament is typically not included in published reports. If single-cell placement is disciplinary lockdown, this can contribute to both the stress and opportunity of successful suicide.

Evidence suggests that the single-cell isolation of disciplinary lockdown is a risk factor for suicide (33,46). In a recent statewide prison study, 32 of the total of 132 prison suicides occurred in disciplinary lockdown. The median number of days spent in lockdown before suicide was 63. Thus, most prison suicides that occurred in lockdown occurred within the first 8 weeks of lockdown, although a minority ($n = 5$) had been in lockdown for more than a year (46).

Nationwide studies of suicide among US federal prisoners demonstrated an increased rate of suicide in a special locked unit such as for disciplinary segregation or administrative segregation (20, 21). In the most recent federal study (21), 53% of suicides occurred in such lock units, comparable to the 63% reported in the earlier two studies. Of special note, one-third of the suicides in special lockdown units occurred within 72 h of being placed in the unit. The Maryland prison study (34) found the highest rate of suicide among prisoners who were confined in the state's maximum security facility (131.5 per 100,000 prisoner years). Some have argued that disciplinary lockdown causes deterioration in mental functioning (47,48); however, according to several reports, at least short periods of isolation do not result in psychological deterioration (49). Likely contributors to the increased risk of suicide in disciplinary lockdown are its "selection" of inmates with poor coping abilities and the stressful factors of lockdown regardless whether measurable psychological deterioration occurs. Moreover, supportive contacts and even informal observation by both correctional officers and fellow inmates tend to be less than in the general jail population. Because of the risk of suicide, especially within the first 8 weeks, Way et al. (46) recommend increased professional attention to inmates during this initial period of disciplinary isolation (49–52).

Clinical Factors

Mental Disorders—Results of the Hayes studies indicated that drug or alcohol abuse, especially when related to the offense, is associated with suicide in US jails, but a prior history of treatment for a mental disorder is not. The meta-analytical comparison studies by Fazel et al. confirmed the association with alcohol abuse ($p < 0.001$), and the authors noted that, at least in single studies, substance abuse (OR = 2.3) and use of multiple drugs (OR = 3.1) were associated with an increased risk of suicide. Additionally, the meta-analysis showed the risk of suicide to be increased with a history of a psychiatric diagnosis ($p < 0.001$) and use of psychiatric medication ($p < 0.001$), respectively. In single studies, depression was associated with increased risk of suicide (OR = 6.6), whereas the diagnosis of personality disorders (OR = 0.6) was not associated.

Commentary—In general and apart from jail/prison suicides, depression, alcoholism, and schizophrenia have a long and well-established risk of suicide (8,23,24,53–56). In the general population, the association between suicide and depression increases with advancing age (23,57). Literature suggests an association between antisocial personality disorder and conduct disorder and suicide in the general population (28). It is therefore curious that antisocial personality disorder, a common disorder in jails and prisons, is typically not registered among inmate suicides. The association between alcohol abuse and suicide in both the Hayes and Fazel studies is consistent with the finding that alcoholism is associated with suicide generally.

In the Texas prison study by He et al. (32), 68% of those who committed suicide had a history of illicit drug abuse or dependence. Although one victim was positive for propoxyphen from an unknown source on postmortem toxicology, the other 25 suicide victims had no evidence of recent illicit drug abuse. In contrast to the many jail suicide victims who had used illicit drugs just prior to booking and may have been influenced by intoxication or withdrawal at the time of their suicide, intoxication or withdrawal would not have contributed to the mental state of suicidal prisoners. It cannot be said that the history of illegal drug use alone distinguishes suicidal from nonsuicidal inmates, as such history is common among jail and prison inmates generally.

The lack of an association between depression and jail suicides in the Hayes studies is inconsistent with the general association, but a positive association was confirmed only in the individual studies reviewed by Fazel et al., this was not a finding of the large meta-analyses. No doubt the history of any mental disorder is more elusive via "secondary" methods of study than is drug or alcohol abuse that is associated with the crime itself. Another possible explanation for the negative findings in the Hayes studies is that the "shock" factor is such a powerful determinate in the most common typology of jail suicides that it overshadows any contribution from mental disorders.

Neither in the nationwide surveys by Hayes nor in the meta-analytical reviews of Fazel et al. was schizophrenia identified as a disorder associated with suicide. This negative finding must be reconciled with the knowledge that the rate of suicide is elevated among those with schizophrenia generally. An exceptional jail study in contrast to the studies by Hayes and Fazel was that by Copeland (13) in Miami, Florida wherein schizophrenia was a common disorder among the jail suicide victims. In the federal prison study by Schimmel et al. (20), nearly one-third of the suicide victims (30%) had schizophrenia as a previous primary diagnosis. Perhaps quality data on precise diagnosis is simply unavailable via secondary studies and even among primary studies conducted in jails.

Nationwide studies of suicides show that among federal prisoners, the percentage with a mental disorder diagnosis is at least 44% (21). Those with a psychotic condition amounted to between 19 (21) and 36% suicide victims in the federal studies (20), whereas the percentage with mood disorders such as depression was between 9 (20) and 16% (21). In all three studies of federal inmates, not only psychotic and mood disorders were highly represented among those who committed suicide, but also remarkable were the substantial percentages without the diagnosis of a mental disorder, 56% in the most recent federal study (21).

Among the 25 suicides in the Texas prison study, 28% were known to have been psychotic prior to incarceration and 44% at sometime during their current imprisonment. Not further defined according to specific diagnosis, thought disorders may have well been included among the suicide victims known to have been psychotic. That psychosis was more common in suicide victims during incarceration in comparison with before could reflect an actual increased incidence related to the stresses of custodial conditions or

simply the passage of time, but as suggested earlier, diagnosis based on history may be more elusive than that based on direct evaluation.

The most striking discrepancy between the Hayes and Fazel studies is whether mental illness in general exists at a higher rate among those who commit suicide behind bars. The Hayes surveys did not find an elevation in mental illness, aside from recent substance abuse, among jail suicide victims, whereas the Fazel studies reported an increased risk of suicide with a history of psychiatric illness and with a history of having taken psychiatric medication, but only from the review of individual studies. In the United States, greater opportunity for medical history and psychiatric assessments exists in prisons than in jails. In the later Texas study (32), after excluding personality disorders and substance abuse disorders, 60% ($n = 15$) were identified at the time of entering prison as having been mentally ill, and most of these had been ill prior to 18 years of age (67%, $n = 10$). A greater percentage (76%, $n = 19$) were diagnosed with a mental disorder at some time during their imprisonment. Although the Texas study by He et al. (32) did not compare these figures with percentages of all Texas prisoners with mental disorders, these figures are substantially higher than rates of mental disorders among jail and prison populations as reported elsewhere.

The most prudent and realistic interpretation of the data is to assume that incarceration does not lessen any effect that depression, psychosis, and alcoholism have in predisposing to suicide and to ensure that appropriate treatment is provided for mental disorders behind bars, including appropriate attention to states of intoxication and withdrawal upon entering the jail.

Although history of psychiatric problems was not found in the original surveys by Hayes and not specifically mentioned in the Fazel studies, history, together with mental status exam, is used to establish diagnosis. History may simply not have been available in the Hayes surveys and was not tested in the Fazel comparisons. History of prior psychiatric care was, however, highly correlated with inmate suicide in the Dutch study (χ^2 [1] = 91.1, $p = 0.000$) (8). The Texas prison study by He et al. (32) usefully distinguished between diagnoses made based on history, or made prior to incarceration, and those that were established during imprisonment. The presence of all categories of mental disorders—psychosis, mood disorders, anxiety disorders, impulse disorders, and personality disorders—was diagnosed more often during incarceration than historically, and this difference was most striking for personality disorders; only 4% of the suicide victims had a history of personality disorders at the time of admission, whereas 56% of the suicide victims were determined to have had a personality disorder during incarceration. Without controls for comparison, the high incidence of personality-disordered prisoners whose suicide may not be significant given the high percentage of prisoners in general who tend to have cluster B personality disorders. Whether by history or current assessment, however, the association with psychosis and mood disorder is supported by the He study and by suicide studies in general.

Prior Suicide Attempts—In the Fazel study, but not in the Hayes studies, a history of prior suicide attempt was strongly associated with suicide in jails and prisons ($p < 0.001$).

Commentary—Also in the Dutch study (8), prior suicide attempts were not associated with inmate suicides. In the studies among US federal inmates, little less than half of those who committed suicide had histories of prior suicide attempts or gestures, 42% and 44%, respectively, in the two studies (20,21).

Like all things historical and prejail, this information would likely not have been available in national surveys of all jails. This would be an expected finding in prisons and perhaps jails too where history of prior suicide attempts is obtained routinely or as a matter of policy and practice and where this item is included in local studies in such facilities.

The He Texas prison study (32) is a confirmatory example. In this study, most prisoners who committed suicide had attempted suicide prior to entering jail, and most had made multiple, that is, over three, attempts (77%). Moreover, most (56%) made multiple suicide attempts during incarceration. Smaller numbers and percentages of prisoners had made no attempt prior to (48%) or during (36%) incarceration. An association between prior suicide attempts and completed suicides among jail and prison inmates is to be expected because a history of suicide attempts is well established as increasing the risk of suicide in the general population (23), an association that is increased with advancing age (23).

In studies of suicide, ''suicide attempt'' is often not defined and distinguished from self-injurious or self-endangering behaviors that were not motivated by an intent to kill oneself. In the study by He et al., most who attempted suicide while in prison (63%) employed methods that resulted in hospitalization and included hanging, burning, swallowing a razor blade, strangling, and neck cutting. The balance (37%) used methods considered to be less lethal: wristcutting, overdosing on small amounts of medications, and refusing food and water.

Without determining whether prior acts were suicidal in intent, an often difficult judgment to make categorically, the recent national study in England and Wales (5), found that most carceral suicides ($n = 78$, 53%) were committed by inmates who had harmed themselves in the past. However, those who killed themselves within the first week of entering the correctional facility were no more likely to have attempted to have harmed themselves in the past, in comparison with those who took their lives later during incarceration.

An early investigation of jail suicides suggested that suicidal behavior in general can serve as a ''dress rehearsal'' for the final act (1). According to Joiner's (58,59) interpersonal psychological theory of suicide to be described later, an individual must first overcome the natural fear of death before deliberately and effectively taking one's life. Prior suicidal and self-destructive acts can serve over time to desensitize one to the fear of death. Consistent with this theory is the substantial data that demonstrate a correlation between self-injurious behavior generally and suicide (60). Thus, one of the most common practices in clinical risk assessment, asking about prior suicidal and self-injurious behaviors, should be considered an important component of risk assessment behind bars. Although supporting research findings in jails and prisons is lacking, one would expect that a serious suicide attempt such as hanging, in like circumstances such as in custody, would be even more significant than low lethality behavior in an altogether different situation. Not just a dichotomous present-or-not history of such behaviors, but a detailed account of such acts should be most useful in assessment of severity of risk and the relevant and modifiable dynamic factors.

Recent Thoughts of Suicide—The meta-analytic study of Fazel et al. found a high association between recent thoughts of suicide and suicidal risk with an odds ratio of 15.2 ($p < 0.001$). The Hayes surveys of US jails lacked information on this item.

Commentary—For the many who killed themselves soon after entering jail, it is understandable that such data were not available;

otherwise, many of those suicides might well have been prevented. The Fazel study then confirms the common wisdom that suicidal thoughts precede the acts. This finding underlines the importance of asking individuals whether they are having thoughts of suicide when assessing their risk for suicide.

Suicidal thoughts that prepare one for committing suicide pertain to the important clinical question of whether a suicide was impulsive or premeditated. An impulsive suicide would involve little aforethought, whereas premeditated suicide is planned in advance. An association between impulsivity and destructive behaviors has long been recognized (60). Recently, several authors have argued, however, that the assumption that many suicides are impulsive is a misconception. Even though many who commit suicide show the trait of impulsivity, suicide itself is not impulsive but preplanned (61,62).

The finding by Hayes and other investigators that most jail suicides occur soon after jail entry suggests to this author that they are impulsive. Impulsive acts are not necessarily done with no thought whatsoever, but with very little thought compared with premeditated acts. If the individuals who commit suicide soon after coming into the jail had not been jailed, it seems reasonable that many would not have committed suicide at that point in their lives. Where a stressor and response are so closely associated in time, the opportunity for deliberation is diminished.

Two arguments are given against the conclusion that suicides occurring soon after jailing are impulsive. The first is that inmates who commit suicide had been at higher risk for suicide throughout their lives, not just at the moment of detainment (63). They carry with them other risk factors for suicide such as mental illness and substance abuse. Thus, they enter the jail with a preexisting diathesis for suicide, which is then triggered by the stressors of arrest and conditions of detainment (62). In this author's view, this explanation does not refute the impulsive nature of such suicides. The stress–diathesis dynamic is well accepted for desperate, destructive acts in general, and suicide in particular, regardless whether committed impulsively or with premeditation.

A more interesting, though incomplete, argument against the impulsivity of early jail suicides could be referred to as the postulate of "contingency planning." Just because suicide occurs soon after entering jail does not mean that it was not at all considered until then (62). The victim may have thought to himself or herself well in advance, "If I end up in jail, then I will kill myself." Famous for contingency suicides were the leaders of Nazi Germany during World War II who had cyanide capsules to be used in the event of capture, and then, they actually killed themselves by this means after apprehension and detainment (64). Contingency planning is for some jail suicides plausible, although it is hard to know exactly how long the suicide victim had thought of suicide in advance, as the victim is not available for interview after the fact. Some individuals attempt or commit suicide once they realize that they are on their way to jail, but they are not there yet. "Suicide by cop" raises these two contrasting possibilities. Once trapped, and jail appears certain, the offending individual impulsively attempts to provoke the police to shoot him to prevent his arrest and jailing. Or alternatively, the individual had already decided in advance that he would not be taken alive, as it were, so once in the process of apprehension, true to his earlier resolution, he provokes the police to kill him.

A third possibility that does not involve clearly thought through contingency planning is based on the concept of "priming." Because of prior experiences and beliefs, such as having been raped in prison before, having been beaten by police, or simply having a strong hatred/fear of police and a pattern of responding to suddenly occurring, unbearable situations with little or no thought, suicide is impulsive, but "primed" in advance. Priming could just as well play a role in suicides that occur soon after booking and detainment. In either case, suicide by priming or contingency planning, the suicide had not become an irrevocable decision made in advance and might not have occurred if the final precipitating event, threat or event of arrest or jailing, had not taken place.

Although the empirical data remain elusive, the author is familiar with both contingency and impulsive thought processes of suicidal ideation, especially in jailed subjects. It is not uncommon for an inmate who made a serious suicide attempt to say that the idea occurred suddenly and spontaneously; others explain that they had been thinking of suicide for a long time in advance. Also far from unusual is the inmate who expresses determination to take his life if eventually at trial he is sentenced to a lengthy prison term. Of those who suicide soon after sentencing, the percentage who had made this contingency determination in advance cannot now be known from published reports.

Likewise, available research on suicide in jails contributes virtually nothing about the quality and content of recent thoughts of suicide. Nonetheless, the clinical practice of ferreting out the details of such thoughts, when conducting suicide risk assessments, should be considered important. Are such thoughts about passive or active suicide? How long had the inmate been considering suicide and in connection with what particular contingencies or stressors? What methods were entertained? How far had suicidal intentionality developed? Was the plan to commit suicide deterministic, to be completed regardless, and/or absolutistic without consideration of alternative options? How forthright is the inmate? Is he feigning or exaggerating suicidal intent for a desired outcome such as placement in a more desirable section of the jail? Is he denying or minimizing suicidal intent so his eventual attempt will not be thwarted by others? Unfortunately, these critically important aspects of risk assessment and management are not well informed by available research. At least the Fazel study confirms the importance of looking for thoughts of suicide when assessing the risk.

Stressors—Systematic study of types of stresses that predispose toward or trigger carceral suicides was not considered by either the Hayes jail suicide surveys or the meta-analyses by Fazel et al. Situational factors, already discussed as such, and important to the dynamics of suicide are those factors that create the stressors that would cause an inmate to want to commit suicide and those factors that enable the inmate to carry out suicide once the inmate determines to do so.

Results of the Hayes surveys suggest that stressors associated with initial arrest and jailing can serve as the triggers that set off the lethal decision. Association with lengthy sentencing, as found in the Fazel analyses, points to the severity of sentencing as the lethal stressor in vulnerable individuals.

Commentary—Among youthful suicides in the general population, stressors associated with suicide include interpersonal conflict, disruption in a romantic relationship, and legal or disciplinary problems (13,65–67), stressors that correspond to situations often encountered by jail and prison inmates.

Like suicidal thoughts, suicidal stressors as such are not typically addressed in studies of carceral studies. These factors are elusive because the victims cannot be interviewed afterward and psychological postmortems are not conducted on most carceral suicides. Without providing numbers or percentages, the 2002 nationwide study of suicide by federal inmates (21) identified legal problems such as lengthy sentences, marital or relationship difficulties (e.g.,

loss of family ties through divorce or death), and inmate-related conflicts as potential precipitating stressors. Stressors may vary with the conditions of confinement. Legal and family problems were reported for pretrial detainees who commit suicide, whereas those serving lengthy sentences were more likely to be troubled by conflicts with other inmates or upon learning of an outside distressing event such as the death of a family member (20).

In the recent national study in England and Wales (5), 21% (n = 30) of 172 carceral suicide victims had been subjected to bullying by other inmates, 42% (n = 51) received no visits just before committing suicide, and 18% (n = 19) had become aware of death or terminal illness of a family member. Suggesting the possibility of medical illness as a stressor, 34% (54) had a physical health problem or disability upon entering the facility, and epilepsy and asthma were the most common illnesses (5).

The He Texas study of prison suicides (32) attempted to examine retrospectively documented premortem conditions that could have been stressful. Stressors were categorized by nature and acuity/chronicity. Four categories according to nature were conflicts within the institutional environment, interpersonal conflicts, legal processes, and medical conditions. Most common of the environmental stressors were disciplinary confinement, work assignment, and unit placement. Interpersonal conflicts involved fellow inmates and family members outside of the prison, such as the death of loved ones. Several committed suicide soon after having been assaulted by other inmates. Legal stressors included court hearings and lengthy prison sentence. Medical conditions could have contributed to suffering and/or diminished ability to cope and included frequent seizures, severe insomnia, delirium, end-stage diabetes, AIDS with central nervous system involvement, heart disease, and hypertension. Chronicity of stressors was arbitrarily set at 6 months prior to the suicide. The number of suicide victims who experienced stressors in each category was not robust enough to attach weight and generalize, but this study provided a method for future study of a factor that could contribute to understanding the dynamic causation of suicide and formulating preventive strategies.

Method of Suicide—The US national surveys by Hayes found hanging to be the most common method of suicide by far (95.9% in the first jail study by Hayes and 94% in the 1986 survey). The Fazel meta-analyses did not examine the method of suicide.

Commentary—In a number of local studies of suicide in US jails, hanging was the only method of suicide (14,15,18,26,29,68). In nearly all local jail studies, the percentage of jail suicides that are committed by hanging is at least 90% (12,16,17,69,70). As a rule in US state and federal prisons, in contrast to jails, a greater percentage of suicides are by means other than hanging; nonetheless, hanging is also the most common method of suicide in prison (8,19–32,34). Also, in non-U.S. studies of suicide in facilities with both remand and sentenced inmates, hanging represents the vast majority of suicides. For example, in the recent national study in England and Wales, 92% of inmates who killed themselves did so by hanging (5). By including self-strangulation in arriving at 92% of all carceral suicides by hanging or self-strangulation, the British study by Shaw et al. (6) illustrates that an inmate can commit suicide with a ligature without a fixture for suspension.

The national jail suicide studies by Hayes were further useful in identifying the materials or instruments used for suicide. The most common items were articles of bedding such as sheets (43% of cases) and of clothing (30%), virtually all of which were used for hanging (2). Bedding (“bed clothes”) provided the most common material for ligatures in the British national study by Shaw et al. (6) (n = 89, 56%), and most hangings in the two Texas prison studies (19,32) were also accomplished with bed linens. The He Texas study (32), with hangings from an elastic strip from underpants and a bandage from wound dressing, respectively, demonstrates the challenge of creating safe conditions for the acutely suicidal inmate.

The author is unaware of any successful carceral suicide wherein all potentially lethal materials, including all cloth items, were removed and made unavailable. Although not observed in the jail suicide literature, the author has heard of unintended carceral death from hypothermia after all clothing and bedding was removed. Hypothermia would be a rare cause of carceral death and also due presumably to otherwise poor physical health and/or poor climate control within the facility.

Window bars were the most common attachments in the recent national study in England and Wales (5). Large-scale surveys and meta-analyses, indeed most local studies, do not provide richness of detail as to how suicide was accomplished. An exception was Stone’s 1990 study of all suicides in the state of Texas from 1986 to 1988 (70). This study included among other data, the type of fixture to which a ligature was attached to commit suicide by hanging. Crossbars in cells with vertical bars would be expected, but the Stone study demonstrated that virtually any fixture to which one could tie a ligature and that would bear weight was used with deadly effectiveness. Similarly, the national British study by Shaw et al. (6), a large-scale study, showed the main fixtures for ligature attachment to be window bars (76, 48%), beds (17, 11%), toilets, doors, pipes, cupboards, sinks, and lights. This study confirms not only the risk of cell bars but also importantly that the fixture need not be high enough for total body suspension.

From available evidence then, suicide would be less likely in a cell with no crossbars (19), that is, no bars and nothing from which an inmate can attach a ligature for hanging. In his report of nationwide jail suicides, Hayes and Kajdan recommended bar-less jail cells (2), and since then, some modern jails have been constructed without accessible bars. Cells with iron bars built into the cell walls but not exposed should also minimize the risk of inmates on precautions receiving proscribed materials from other inmates through the spaces between the bars. Most practical for suicide prevention cells or infirmary cells all manner of other fixtures from which an inmate can hang oneself can be methodically excluded from the construction. A potential, troublesome exception is the fire-suppression sprinkler required by building ordinances or fire codes. Sprinklers have been designed to give way with the vertical pull of sufficient weight. Two undesired consequences can occur. Those who unsuccessfully attempt hanging from a cell sprinkler, cause the sprinkler to break loose, breaking the sprinkler head and causing a flood at the same time. Regardless whether intended for suicide or a nonlethal objective, such as transfer to the infirmary or hospital, the inmate can and often is charged with the destruction of public property and subjected to further punishment and restriction. Worse yet, such sprinklers have withstood the weight of a body without giving way. Safer alternatives that would not impair building safety from fire are to create the uncommon special needs or “padded cell” without a sprinkler device and to install at least in infirmary, if not in lockdown cells, the type of sprinkler that is used in hospital seclusion cells, that is, with tapering, smooth heads, and located on room walls at lower height, not from the ceiling.

In addition to the commonest method of carceral suicide, other methods of taking one’s life in jails and prisons have included setting oneself on fire (6), electrocution, poisoning (6), ingesting items or substances, suffocation (6), strangulation including stuffing a cloth object down one’s own throat (21,71), exsanguination from cutting

(6,31), shooting with a firearm, overdosing (31), and jumping from a height (2,12,13,17,20,21,36,70–72). For lack of definition, it is unclear in published reports whether poisoning and overdosing are the same. Neither is it evident in publications whether strangulation and suffocation denote the same means of suicide.

Methods and materials of carceral suicides depend upon physical circumstances and availability. Death by shooting should be rare behind bars in comparison with the community where firearms are far more available. Where death by shooting is registered, more detailed information is needed such as, for example, whether the shooting occurred in custody but before booking or prior to custody but associated with apprehension and arrest. Jumping would be expected to occur more commonly in a prison unit with at least two tiers of cells facing an open area in comparison with jails without such interior construction. In the He Texas study (32), for example, one inmate killed himself by jumping from a third floor, 30 feet above the ground floor. The only substance used for lethal overdose in this study was tricyclic antidepressant medication with which three inmates ended their lives. Likewise, the only substance by which inmates died from overdose in the Maryland prison study (34) was antidepressant medication, which before 1988 would most likely have been tricyclics. The lethality of tricyclic antidepressants is also well recognized (73) outside of the correction settings. When managed care enterprises entered jails and prisons, they attempted to control cost by favoring the use of tricyclic over safer, but costlier selective serotonin reuptake inhibitor antidepressants. These examples of suicide by overdose with tricyclics, few as they are, demonstrate the importance of considering potential lethality from overdose when selecting an antidepressant for inmates.

Theoretical Models of Carceral Suicides

Neither the jail surveys of Hayes nor the meta-analyses of Fazel present a theory of suicide behind bars. Studies of carceral suicide in general tend to be empirical and atheoretical. Some reports promote the concept of one or more profiles of inmates who commit suicide, but profiles per se do not explain the act of killing oneself. Understanding how an individual is ultimately driven to the final suicidal state of mind should usefully inform both suicide risk assessments and suicide prevention policies. Before briefly summarizing two theoretical frameworks for understanding suicide, Joiner's interpersonal psychological theory and the stress–ego-deficit vector model, the psychology of intent is summarized as it can apply to carceral suicide.

The Psychology of Intent

Largely missing from attempts to understand carceral suicides is the psychology of intention. The psychological process of developing an intention to be translated into behavior can importantly apply to inmates who develop the intention to take their lives. Evolving theoretical explanations of psychological processes are premised on the concept of a "cognitive unconscious" (74–77), wherein much of human behavior, especially habitual or automatic routines, are not consciously decided at the time of implementation. Whether impulsive, compulsive, or premeditated, suicide is a conscious, intentional act, even if some apparent suicides are accidental or miscalculated deaths. With regard to suicide, application of this psychology of intent is complicated by the finding that the degree of suicidal intent is not highly associated with the degree of lethality of the intent. Only where individuals have an accurate assessment of the likelihood of death resulting from the attempt is the degree of intent associated with the degree of lethality (78).

In developing a psychological theory of intention, Gollwitzer (79) and Heckhausen (80,81) describe a multiphase process of intention formation, which could apply to suicide as well as other intentional actions. It would far exceed the purposes of this article to provide an adequate explanation of the psychology of intention or the Gollwitzer–Heckhausen conceptual formulation in particular. Of potentially useful application to understanding the psychology of intention of unusual acts such as criminal acts (82) and suicide are the two critical phases of intentionality, predecisional motivation, or goal formation, and preactional volitional, or planning phases, respectively. During the predecisional phase, the individual consciously considers the factors that favor and disfavor suicide as a course of action. It is during this phase of indecision or active consideration when professional intervention is desired with the hope of biasing the decisional process toward life and higher level adaptive alternatives to the experienced stresses, losses, and emerging hopelessness. Once the decision has been made, the individual's thinking is focused only on how to carry out the intention, in this instance, of suicide. Intervention at this phase is critical, but not always facile; once fully determined, the individual may no longer show the distress that draws the attention of others, and may no longer share the decision, anticipating but not wanting preventive intervention. Not fully accounted for in this "action phase" of "crossing the *Rubicon*" model is the confluence of motivations often observed in suicide attempts. The inmate seriously cuts himself or even hangs himself, for example, with the hope of being transferred to a hospital, but with the realization that death could result, and in either case, leaving the jail is preferable to the inmate's current predicament.

Interpersonal Psychological Theory

The second theoretical framework for understanding suicide in general and carceral suicides in particular is the interpersonal psychological theory of Joiner (58,62). According to this model, three mental conditions must exist before an individual will take his life. The individual must have (i) lost a sense of belonging, (ii) developed a sense of being a burden to others, and (iii) overcome the natural fear of death. This can be understood as an experiential risk–benefit approach to the decision to die: Is there reason enough to die that seems to outweigh any reason to go on living? In assessing the potentially suicidal individual's state of mind, other subjective states such as worthlessness, powerlessness, and especially hopelessness should also be relevant. Particular stresses can contribute to the three mental conditions of Joiner's theory. For example, family rejection around the time of jailing can cause one to feel that he no longer belongs to anyone or anything. Prior suicide attempts can over time desensitize one to death. Liebling (83) notes that once a person has inflicted self-injury, the risk of suicide increases by a factor of 10 to 100 (84).

An interesting but less convincing postulate of Joiner is that the vast majority of suicides are premeditated even if the trait of impulsivity is a risk factor and even if the suicide was apparently precipitated by a sudden stressor such as the arrest and jailing event. A more useful and realistic assumption, however, is that most people basically want to live, but before settling on a decision to commit suicide, they go through a period of indecision, as discussed with the psychology of intent. It is during this period of indecision when the possibility for intervention and prevention is favorable. Once the decision is made, the suicidal individual is absolutistic and deterministic: The person experiences no further restraint on the suicidal impulse sees and no other alternative. Yet, individuals can commit suicide successfully who have not yet completely resolved to die.

The Stress–Diathesis Vector Model

A model for explaining extreme, fatal behavior, which attempts to take into account existing empirical data, is an extension of the stress–diathesis concept. Three components of such acts are stresses, ego weaknesses, and motivational/ideational vectors, respectively. Conditions that contribute to ego weaknesses are basically mental conditions or disorders that can be acute (intoxication, withdrawal, and craving) or chronic (depression and schizophrenia). Substance abuse, schizophrenia, and depression, for example, compromise an inmate's capacity for handling stress adaptively.

The sociological theories of "deprivation" and "importation" correspond to the psychological stress–diathesis component of this model, respectively. The deprivation of entering a total institution reshapes a person's social life (84–87). This transition is most dramatic upon first entering jail, a phenomenon termed "prisonization," and can precipitate suicide soon after booking (40,84). The concept of "importation" emphasizes a hypothetical transport of social life from the community into the correctional facility (88,89). If what is imported is the vulnerability to suicide whether from a mental disorder or simply inability to cope, these early sociological approaches complement the psychological stress–diathesis model as applied to suicide in correctional settings.

Stress itself can reduce an individual's capacity to flexibly make adaptive decisions. Stress also can be acute or chronic. The shock of initial arrest and jailing is a common acute stress among jail inmates, whereas the stress of prolonged seemingly endless incarceration can serve as a chronic stress. Types of stressors that precede carceral suicides were described earlier. Animal and human studies suggest that the elevation of cortisole from chronic stress can directly diminish the capacity to make adaptive decisions (90). If the stress is sufficiently severe, the ego weakness need not be extreme to drive an inmate to take his or her life. The acutely suicidal state of mind is the sum product of the strength of the stress experienced and the individual's incapacity to deal with it.

By itself however, the stress–diathesis concept does not explain why the individual would select suicide of all approaches. Here, the concept of a "vector" that suggests suicide in particular becomes an important element. Circumstances contribute to this vector by enabling suicide and dis-enabling alternative actions. An inmate locked in the cell is unable to escape and unable to kill an object of rage, but cloth materials and attachment fixtures allow him to take his life. If the inmate has thought of specific methods of suicide before or attempted in the past, the idea of suicide and specific methods(s) can occur while distressed and in jail. The phenomenon of "cluster suicides" and "copy cat" carceral suicides illustrates how other suicides can promote the idea of suicide among inmates.

The interpersonal psychological theory model of Joiner and the stress–diathesis (or ego weakness) vector models are not incompatible. The latter is especially useful in organizing data and identifying trends and profiles and suicide prevention policies. The former more specifically helps to identify the suicidal mental state, even if data about the suicidal mental state are absent from the many studies of carceral suicides.

Finally, we return to the question of profiles. The Hayes studies with its common correlates, young, men, minor or drug-related charge, soon after jailing, etc., present a profile. Other studies have confirmed this profile, but still others present contrasting profiles. The Fazel study finds suicides associated with court hearing, violent offenses, and lengthy sentences. A third potential profile is the "burned out" lifer who has already been in prison for some time. As prevention policies, such as early screening, reduce the incidence of suicides associated with the most common profile, others can emerge as constituting the main profiles in a given facility or correctional system.

To the extent that profiles of suicidal inmates exist, they may correspond to "pathways" to the suicidal state, which are associated with various custodial experiences (83). Younger suicidal inmates may be more prone to impulsive suicide with the sudden "shock" of arrest, confinement, disruption of family contact, fear of an uncertain future, etc., whereas long-term prisoners are likely to be older and suffering from depression (83). Suicides that occur around the time of trial are more likely associated with violent, personal criminal charges or convictions with serious penalties.

Importantly, inmates can become suicidal who do not fit an identified profile, and many characteristics of a given profile are common among nonsuicidal inmates as well and, therefore, not helpful in distinguishing who will and who will not commit suicide. The clinician must ultimately rely on basic skills in conducting diagnostic and risk assessments. The integrated model of suicide intent should be useful in assessing risk regardless to which "profile" a potential victim corresponds.

Conclusions

To concisely summarize, factors common to both the US jail studies by Hayes and the international meta-analysis of suicides in jails and prisons by Fazel et al. and therefore highly generalizable include: white race/ethnicity, male gender. Other mutually consistent if not identical findings include occurrence of suicide soon after initial detainment or detained/remanded status, that is, pretrial status, placement in a single cell or isolation, and history of alcohol and/or drug abuse. Even though strongly associated with inmate suicides, race/ethnicity and gender are not helpful in determining which inmates are at high risk for suicide; however, pronounced deviation from expected distribution of suicides can inform institutional policy makers of an associated race/ethnicity circumstance, such as segregated housing, that can be improved. Other commonalities can suggest preventive measures, such as more effective early screening, but the meaning of such commonalities is best appreciated by considering additional information provided by other studies in the literature.

Differences in results of the Hayes and Fazel studies are predominance of youthful suicides in the Hayes studies versus evenly distributed rates of suicides among age-groups in the Fazel report, slight predominance of unmarried victims in the Hayes studies versus mostly married victims in the Fazel report; the predominance of minor, nonviolent, substance abuse-related criminal charges among the victims in the Hayes studies versus that of violent offenses such as murder in the Fazel study; and greater presence of prior suicide attempts and recent suicidal thoughts among victims in Fazel study versus absence of such findings in the Hayes studies. This later discrepancy is likely best explained by the lack of available historical information at jails surveyed by Hayes.

The other discrepancies are likely due to two profiles as it were; the Hayes profile of most US jail suicides were young white men who were unmarried, charged with a minor, substance abuse-related, nonviolent crime and who were most distressed over the circumstances of the initial arrest and jailing. The Fazel study included prison suicides and suicides in later decades, in studies many of which were conducted when presumably more uniform initial screening was practiced thereby reducing the incidence of suicide among those who met the Hayes profile. This allowed a somewhat different profile to stand out in relief: not so

predominately young, similarly white men, who were, however, more often married, whose offenses were typically violent and included murder, and who had been sentenced to lengthy sentences.

Factors associated with carceral suicide in a given facility may or may not be associated within most facilities. On the other hand, factors associated at most facilities may or may not be associated at a given jail or prison. The factors that were found to be common among the jail suicides in the Hayes nationwide studies and that were also associated with suicide in the controlled, international meta-analyses that extended over a greater time period should have high generalizability especially when consistently supported by individual local and regional studies.

Demographic factors are most easily and objectively determined, most universally available and recorded, but they are least helpful in identifying who is at high risk for suicide. In a given local facility, however, they can help to identify trends that may require an institutional response. Common methods and situations suggest preventive policies and effective interventions, for example, the value of constant observation, removing ligature material, and placing in a setting without attachment fixtures for those identified as suicidal. The Hayes studies were useful in identifying the risk of jailing for those who were stressed by the initial arrest and jailing and the critical importance of early screening of all new inmates. In contrast, the Fazel studies showed carceral suicides to be associated with violent and homicidal offenses and lengthy sentences. Individual studies demonstrate increasingly that a secondary risk period of suicide is around the time of trial. As the common profile of ''shock'' suicides on initial jail entry, identified so prevalently by Hayes, is recognized and prevented, secondary profiles, the violent offender at the time of trial and the already long imprisoned lifer, become more prominent.

Potentially useful to understanding the differences and commonalities in inmates' suicides, if not all suicides, is a trilevel theoretical model that includes: the psychology of intention; relevant interpersonal dynamics; and psychological stresses, psychological vulnerabilities, and specific strengthened associations that point to suicide as the chosen ''solution'' to an unbearable existence.

For obvious reasons, information about the suicide victim's experienced stressors, state of mind, and failed decision-making processes, most important in understanding and preventing suicidal behavior, is not so available and objectively determined. Clearly, more research is needed to address the dimensions that would most powerfully explain and identify the final suicidal state. Meanwhile, three models that are useful in eliciting and classifying most relevant clinical data are the psychology of intention formation, the interpersonal psychological theory of Joiner, and the stress–ego weakness-vector model.

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