# The Suicide Risk of Discharged Psychiatric Patients

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**Background:** The suicide risk of psychiatric patients fluctuated along the course of their illness and was found to be high in the immediate postdischarge period in some settings. The epidemiology and psychiatric services for the suicide population in Hong Kong have differed from those of the West (i.e., low youth suicide rate, high elderly suicide rate, high female/male ratio, and heavily government-subsidized psychiatric service). This study examined the suicide rates within a year of discharge from psychiatric inpatient care in Hong Kong.

**Method:** Discharges from all psychiatric hospitals or psychiatric wards in general hospitals in Hong Kong from 1997 through 1999 were followed up for suicides (ICD-9, E950–E959) and "undetermined" causes of deaths (E980–E989) by record linkage with the Coroner's Court until their deaths or Dec. 31, 2000. The suicide rates (/1000 personyears at risk) and standardized mortality ratios (SMRs; assigning a value of 1 to the same age- and sex-specific suicide rates in the general population) were calculated.

**Results:** 21,921 patients (aged over 15 years) were discharged from psychiatric hospitals from 1997 through 1999. Two hundred eighty patients committed suicide within 1 year of discharge; 85 suicides (30%) occurred within 28 days after discharge. The SMRs for suicide in the first 28 days after discharge were 178 (95% CI = 132 to 235) for females and 113 (95% CI = 86 to 147) for males. These rates were 4.0 (95% CI = 2.7 to 5.6) times higher for females and 4.6 (95% CI = 3.2 to 6.3) times higher for males than the rate in the rest of the year. Young adults had higher SMRs than the elderly. No specific diagnoses had higher suicidal risk than others. Calculations including undetermined causes of deaths (N = 53) gave similar results.

*Conclusion:* The immediate post-discharge period carries a high risk of suicide for psychiatric patients. The high-risk groups are young adults and females. No diagnosis appears to carry a particularly high risk.

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umerous reports have consistently suggested that suicides are more common among psychiatric patients than the general population.<sup>1,2</sup> Although there has been continuous search for the risk factors of suicide, prediction of suicide has remained elusive.<sup>3</sup> The suicidal risk fluctuates, and different predictors for suicide may be found in the course of the illness.<sup>4</sup> In the search for timerelated risk factors for suicide and design of preventive strategies, it is important to identify a high-risk period and quantify the suicidal risk for different patient groups. Many clinicians have had the impression that suicide is more common after discharge from the hospital. Surveys reported that 16% to 38% of all suicides within a year of discharge occurred in the first month.<sup>1,5-7</sup> A national survey in the United Kingdom reported that the highest number of suicides occurred in the first week after leaving the hospital.8

However, there have been only 2 well-designed, population-based cohort studies that have quantified the suicidal risk of discharged psychiatric patients. Goldacre et al.<sup>5</sup> published the first article on the suicide rates of these patients. Their group found that the suicide rates in the first 28 days after discharge were higher than those in the rest of the year (7.1 times higher for males and 3 times higher for females). The high-risk groups in this immediate post-discharge period are males and nonpsychotic depressed patients. In a similar design, Geddes et al.<sup>6,9</sup> reported a much lower suicide rate in the first 28 days of discharge than that reported by Goldacre et al.,<sup>5</sup> although the rate remained excessive relative to the rest of the year (1.7 times higher for males and 1.6 times higher for females). In this study, the high-risk groups in the immediate discharge period were depressed patients and females, not males as reported by Goldacre et al.<sup>5</sup>

In a similar record linkage study of discharged psychiatric patients, Black et al.<sup>10</sup> found that discharged patients had significantly higher suicide rates than the general population in Iowa. In particular, females, young adults, and those diagnosed to have schizophrenia, depression, and alcohol abuse had higher risks. However, the small number of cases did not allow the calculation of suicide risk at the immediate discharge period.

Although the studies by both Goldacre et al.<sup>5</sup> and Geddes et al.<sup>6</sup> found that the suicide rate in the period 29 to 365 days post-discharge was multiple times higher than that of the general population, Isometsa et al.,<sup>7</sup> on the basis of their nationwide psychological autopsy study in Finland, reported that the number of observed suicides in this post-discharge period (29–365 days) was lower than expected.

The 2 cohort studies<sup>5,6,9</sup> described above were based on discharged psychiatric patients at Oxford (England) and Scotland. The study by Black et al.<sup>10</sup> was based on discharge in 1 hospital in Iowa in a span of 10 years. It is unclear whether the findings could be replicated in populations in which the epidemiology of suicides and service delivery were quite different. In view of the variations in findings, studies are required to ascertain the high-risk period and variations across different patient groups in different settings. This study aimed at examining the suicide rates of discharged psychiatric patients using a retrospective population-based cohort in Hong Kong.

## METHOD

### Subjects

The subjects were patients aged over 15 years who were discharged from psychiatric hospitals or psychiatric wards in general hospitals (hereafter abbreviated as psychiatric hospitals) in Hong Kong during the period Jan. 1, 1997, to Dec. 31, 1999. These data were obtained from the Information Technology Section of the Hospital Authority. All admission and discharge records in psychiatric hospitals in Hong Kong were computerized. On admission, the demography of patients had to be recorded in order to initiate admission procedures, allocate beds, and undertake necessary investigations. Upon discharge, the psychiatric diagnosis, date of discharge, and place discharged or transferred to were recorded. These entries were necessary for calculation of hospital fees, prescription of medication, and assignment of follow-up care. The discharge diagnoses were grouped into 5 categories: substance abuse (ICD-10, F10-F19), schizophrenia (F20-F29), mood disorders (F30-F39), neurotic disorders (F40-F48), and other diagnoses. If there were different diagnoses at different discharges, the diagnoses at the latest discharge were used for assignment of groups. In short, the computerized data were able to give the following information for each discharge: name, sex, age, identity card number (a unique number assigned to every Hong Kong resident by the Immigration Department at time of birth or subsequently), dates of admissions and discharges, psychiatric diagnoses, and status upon discharges (discharged home, transfer to another hospital, or deaths at hospitals).

#### **Outcome Measure**

All unnatural deaths in Hong Kong have to be reported to the Coroner's Court. The details of suicidal deaths (ICD-9, E950-E959) in the period Jan. 1, 1997, to Dec. 31, 2000, were obtained from the Court. Because official records might underestimate the true occurrences of suicide, cases of "undetermined" deaths (E980-E989) were obtained and the computations were repeated using a broad definition of suicide. The identities of these suicidal persons were matched with the computerized discharge records by identity card number, name, age, and sex in descending order of priority. In order to exclude suicides occurring in hospitals, those suicides and undetermined deaths within psychiatric hospitals and deaths that occurred on the date of discharge were excluded from the analysis (N = 36 subjects, 34 cases of suicide and 2 cases of undetermined death).

### **Statistical Analyses**

To facilitate comparisons across studies, the computation of suicide rates was modeled after that reported by Goldacre et al.<sup>5</sup> and Geddes et al.,<sup>6</sup> using SPSS software (SPSS 10.1 for Windows, SPSS Inc., Chicago, Ill.). Unadjusted suicide rates were calculated by dividing the number of suicides by person-years. In this study, patients were considered at risk of suicide after discharge, and calculation of person-years began at the date of discharges. The calculation of person-year ended on the earliest of the following: date of next admission, date of death, or end of study period (Dec. 31, 2000). If there were multiple admissions, separate and multiple risk periods would be calculated starting from the discharge dates. In the calculation of person-years, the period of transfer to another hospital was excluded. The standardized mortality ratio (SMR) for suicides, with reference to the rates in the same age- and sex-specific suicide rate in the general population during the study period, was calculated separately for the first 28 days, days 29 through 365, and 1 year as a whole after discharge. Ninety-five percent confidence intervals were calculated assuming the observed number of suicides followed Poisson distribution. To estimate if there was an excess of suicide in the immediate discharge period (28 days post-discharge) relative to the rest of the year (29-365 days post-discharge), a ratio of the SMRs of the 2 time periods was calculated. The suicide rates were compared by log-linear model.

#### RESULTS

A total of 21,921 patients aged over 15 years were discharged from Hong Kong psychiatric hospitals in the

Sex/Age		1–28 I	Days After Disc	harge					
	Suicides	Person- Years	Rate/1000 Person-Years	SMR (95% CI)	Suicides	Person- Years	Rate/1000 Person-Years	SMR (95% CI)	Ratio of SMRs (95% CI)
Suicides only									
Females									
15–44 y	23	1480	15.5	266 (168 to 399)	57	10451	5.4	93 (70 to 121)	2.8 (1.7 to 4.5)
45–64 y	17	729	23.3	199 (116 to 319)	24	5537	4.3	37 (23 to 55)	5.3 (2.8 to 9.7)
≥ 65 y	8	372	21.4	74 (31 to 146)	6	2818	2.1	7.3 (2.7 to 16)	10 (3.4 to 28)
≥ 15 y	48	2582	18.5	178 (132 to 235)	87	18807	4.6	44 (35 to 55)	4.0 (2.7 to 5.6)
Males									
15–44 y	37	1634	22.6	192 (136 to 265)	61	11213	5.4	46 (35 to 60)	4.1 (2.7 to 6.1)
45–64 y	18	859	20.9	101 (60 to 161)	21	6430	3.2	16 (9.8 to 24)	6.4 (3.3 to 11)
≥ 65 y	2	238	8.3	17 (2.1 to 63)	6	1806	3.3	6.9 (2.5 to 15)	2.5 (0.5 to 12)
≥ 15 y	57	2732	20.8	113 (86 to 147)	88	19450	4.5	24 (19 to 30)	4.6 (3.2 to 6.3)
Suicides and u	ndetermined	deaths							
Females									
15–44 y	27	1480	18.2	274 (180 to 400)	66	10451	6.3	95 (74 to 121)	2.8 (1.8 to 4.4)
45–64 y	18	729	24.6	185 (110 to 293)	27	5537	4.8	36 (24 to 53)	5.0 (2.7 to 8.9)
≥ 65 y	8	372	21.4	67 (28 to 132)	9	2818	3.1	9.9 (2.5 to 19)	6.7 (2.5 to 17)
≥ 15 y	53	2582	20.5	175 (131 to 231)	102	18807	5.4	46 (37 to 56)	3.7 (2.6 to 5.1)
Males									
15–44 y	48	1634	29.3	209 (155 to 276)	75	11213	6.6	47 (37 to 60)	4.4 (3.0 to 6.1)
45–64 y	21	859	24.4	103 (63 to 157)	25	6430	3.8	16 (10 to 24)	6.3 (3.4 to 10)
≥ 65 y	2	238	8.4	15 (1.9 to 57)	7	1806	3.8	7.3 (2.9 to 15)	2.1 (0.4 to 10)
≥ 15 y	71	2732	25.9	121 (95 to 154)	107	19450	5.5	25 (21 to 31)	4.7 (3.4 to 6.2)

Table 1. Age- and Sex-Specific Suicide Rates and Standardized Mortality Ratios (SMRs) in the First Year After Psychiatric Discharge in Hong Kong, 1997–1999

study period. There were 280 cases of suicides (1.27% of all discharged patients) in the first year after discharge. Another 53 cases (including suicides; N = 333, 1.51% of all discharged patients) received the verdict of injuries undetermined whether accidentally or purposely inflicted. Among the 280 suicide verdict cases, the most common methods of suicide were jumping from heights (69% for females, 60% for males) and hanging (16% for females, 25% for males). Other suicide methods included drug poisoning, gas poisoning, and electrocution. There were no sex differences in the methods of suicide ( $\chi^2 = 3.96$ , df = 2, p > .05).

In the whole first year after discharge from psychiatric hospitals, there were 135 (6.31 per 1000 person-years) and 145 (6.53 per 1000 person-years) cases of suicide for females and males, respectively. The SMR (general population rate = 1) was 60.6 for females and 35.4 for males. When the broad definition of suicide was adopted (i.e., including undetermined causes of deaths), the SMR was 61.9 for females and 37.6 for males. A total of 85 cases of suicide (124 using the broad definition) occurred in the first 28 days. This constituted 30.3% of all suicides (37.2% using the broad definition) occurring in the first year after discharge.

Table 1 lists the age- and sex-specific suicide rates and SMRs for the first year after discharge. Completed suicides within the first 28 days after discharge were 178 times more common for females and 113 times more common for males than for the general population. The corresponding figures for the period 29 to 365 days after discharge were 44 for females and 24 for males. The ratios of the suicide rates for these 2 time periods (i.e., 28 days vs. 29–365 days) were 4.0 for females and 4.6 for males. The excess of suicides in the first 28 days after discharge was evident across gender and age groups. No matter which gender and time period, young adults had higher SMRs than the elderly. Calculations based on the broad definition of suicide gave essentially the same results.

Table 2 lists the suicide rates and SMRs for the first year after discharge according to discharge diagnosis. Suicide rates within the first 28 days after discharge varied according to diagnosis. There was no clear pattern as to which diagnoses carried a higher suicide risk ( $\chi^2 = 4.5$ for females and 3.1 for males, df = 4, p > .05). For suicides occurring 29 to 365 days after discharge, there was significant variation among diagnoses for males  $(\chi^2 = 14.9, df = 4, p < .01)$ , but not for females  $(\chi^2 = 5.1, q)$ df = 4, p > .05). Examination of the figures suggested that neurotic disorders tended to carry a higher suicidal risk than other diagnoses 29 to 365 days after discharge for both sexes. However, the excess of suicides among neurotic patients was not evident in the immediate discharge period. The computations were repeated with a broad definition of suicide and a similar pattern of results was obtained.

Table 2 shows that the suicide rates in the first 28 days after discharge were multiple times higher than those 29 to 365 days after discharge for both sexes, except that in females with neurotic disorders. The ratios of rates for the 2 time periods were generally in the range of 3 to 4, although the lower confidence limits were sometimes

		1–28 Da	ys After Dis	scharge	29–365 Days After Discharge				
			Rate/1000				Rate/1000		
		Person-	Person-	SMR		Person-	Person-	SMR	Ratio of SMRs
Sex/Diagnosis	Suicides	Years	Years	(95% CI)	Suicides	Years	Years	(95% CI)	(95% CI)
Suicides only									
Females									
Substance abuse	2	67.7	29.5	284 (34 to 1025)	3	519	5.7	55 (11 to 162)	5.1 (0.8 to 29)
Schizophrenia	29	1450	20.0	171 (114 to 246)	48	10406	4.6	39 (28 to 53)	4.3 (2.7 to 6.7)
Mood disorders	14	675	20.7	199 (109 to 335)	23	4873	4.7	45 (28 to 68)	4.3 (2.2 to 8.3)
Neurotic disorders	1	124	8.0	77 (1.9 to 431)	9	1111	8.0	77 (35 to 147)	1.0 (0.1 to 7.7)
Other diagnoses	2	264	7.5	72 (8.8 to 262)	5	1895	2.6	25 (8.2 to 59)	2.8 (0.5 to 14)
Males									
Substance abuse	6	257	23.4	127 (46 to 276)	9	1814	4.9	26 (11 to 49)	4.7 (1.6 to 12)
Schizophrenia	36	1669	21.6	117 (81 to 162)	51	11739	4.3	23 (17 to 31)	4.9 (3.2 to 7.4)
Mood disorders	10	368	27.2	147 (70 to 271)	16	2745	5.8	31 (18 to 51)	4.6 (2.0 to 9.9)
Neurotic disorders	3	91.8	32.6	177 (36 to 517)	9	786	11.4	62 (28 to 117)	2.8 (0.8 to 10)
Other diagnoses	2	346	5.8	31 (3.7 to 113)	3	2364	1.2	6.8 (1.4 to 20)	4.5 (0.7 to 27)
Suicides and undeter	mined dear	ths							
Females									
Substance abuse	2	67.7	29.5	252 (30 to 911)	4	519	7.7	65 (17 to 168)	3.8 (0.7 to 20)
Schizophrenia	33	1450	22.7	194 (134 to 272)	60	10406	5.7	49 (37 to 64)	3.9 (2.5 to 5.9)
Mood disorders	15	675	22.2	189 (106 to 313)	24	4873	4.9	42 (26 to 62)	4.5 (2.3 to 8.4)
Neurotic disorders	1	124	8.0	68 (1.7 to 383)	9	1111	8.0	69 (31 to 131)	1.0 (0.1 to 7.7)
Other diagnoses	2	264	7.5	64 (7.8 to 233)	5	1895	2.6	22 (7.2 to 52)	2.8 (0.5 to 14)
Males									
Substance abuse	7	257	27.2	127 (51 to 263)	11	1814	6.0	28 (14 to 50)	4.4 (1.7 to 11)
Schizophrenia	45	1669	26.9	126 (92 to 169)	64	11739	5.4	25 (19 to 32)	4.9 (3.3 to 7.0)
Mood disorders	12	368	32.5	153 (79 to 267)	20	2745	7.2	34 (20 to 52)	4.4 (2.1 to 8.8)
Neurotic disorders	4	91.8	43.5	204 (55 to 523)	9	786	11.4	53 (24 to 102)	3.8 (1.1 to 11)
Other diagnoses	3	346	8.6	40 (8.3 to 118)	3	2364	1.2	5.9 (1.2 to 17)	6.8 (1.3 to 33)

Table 2. Sex- and Diagnosis-Specific Suicide Rates and Standardized Mortality Ratios (SMRs) in the First Year After Psychiatric Discharge in Hong Kong, 1997–1999

below 1. Similar results were obtained with a broad definition of suicide.

#### DISCUSSION

The present study examined a population-based, territory-wide dataset to investigate the age-, sex-, and diagnoses-specific suicide rates after discharge from psychiatric hospitals. The large sample allows accurate estimation of suicide rates and adequate power in examining rate variations in relation to age, sex, and diagnoses. The study period is a short interval that avoids potential contamination by period effect. There is no private psychiatric hospital/ward in Hong Kong. Because the computer record is mandatory for delivery of care and calculation of fees, the dataset should be comprehensive and representative of hospitalized psychiatric patients in Hong Kong. The use of a personal identifier (i.e., unique identity card number issued by the Immigration Department) and cross-checking with name, age, and sex allows great precision in matching the subjects from 2 data records.

A study of this design would not be able to determine if discharged patients left Hong Kong and committed suicide within the study period. Neither could those be identified who were hospitalized outside Hong Kong and committed suicide in the territory. Given the large number of patients studied, the possible errors because of the above problems were judged to be small. Special precautions were taken to avoid including cases of suicide occurring inside hospitals. The possible exclusion of cases of suicide occurring on the same date of discharge suggested that the finding of excess suicides in the immediate postdischarge period could be a conservative estimate. Transfers to other hospitals, which were not actual discharges out of hospital care, were excluded in the calculation of person-years at risk. In short, the present findings were unlikely to be due to artifacts in the data.

To the best knowledge of the author, this is the first study to document the suicide rate of a population-based cohort of discharged psychiatric patients in a non-Western setting. Two published studies, both in the United Kingdom, were directly comparable to the present study in using a population-based cohort of discharged psychiatric patients and cross-link with comprehensive suicide data to calculate suicide rates. Consistent with what Goldacre et al.<sup>5</sup> reported, this study found that SMRs in the first 28 days after discharge were more than 100 times higher than in the general population and were several times higher than for the rest of the year post-discharge. Geddes and Juszczak<sup>9</sup> reported a lower SMR in the first 28 days postdischarge, and their estimates of 95% confidence intervals (females: 51 to 69, males: 37 to 50) excluded those of the present study, although there was still excess of suicide in the immediate post-discharge period compared with the rest of the year. Possible reasons for the high suicide risk in the immediate post-discharge period include premature discharges, relapses after exposure to difficulties at home, and lack of support and supervision after discharge. Two recent case-control studies reported that reductions in care and lack of continuity of care were associated with suicide in psychiatric patients.<sup>11,12</sup> These findings could be highly relevant for patients in the post-discharge period. Future studies need to examine if there are vulnerabilities specific to the immediate post-discharge periods.

Hong Kong female psychiatric patients have higher SMRs than males in the first year after discharge. This excess among females was evident across age groups and diagnoses. It has long been recognized that Hong Kong has a relatively low male/female ratio of suicide rates compared with the West.<sup>13,14</sup> A recent study in mainland China reported that females had higher suicide rates than males, especially in young adults in rural settings.<sup>15</sup> This finding of female excess agreed with that reported by Geddes and Juszczak<sup>9</sup> in Scotland and Black et al.<sup>10</sup> in Iowa, but was not totally consistent with that reported by Goldacre et al.<sup>5</sup> in Oxford (SMR in first 28 days postdischarge: males 213 [95% CI = 137 to 317], female 134 [95% CI 67-240]; SMR in the 29-365 days postdischarge: males 30 [95% CI = 20 to 43], females 45 [95% CI = 30 to 65]). The reason for this regional difference is not known. The present study is not able to tell if an undesirable social environment to which these women returned will put them at particular risk. As far as the limited data on suicide methods could suggest, Hong Kong female patients used the same methods to kill themselves as males did. This is in contrast to the usual finding in the West that males tend to use more violent suicide methods than females.<sup>16,17</sup> It is relevant to note that guns—a widely available suicide method in the United States-are strictly prohibited in the territory, although many potentially lethal drugs could be bought over the counter. The highly lethal suicide methods these female patients used could push them beyond rescue even if the suicide act was done out of impulse.

Official statistics on the whole population found that suicide rates in the elderly in Hong Kong were the highest among all age groups.<sup>14</sup> Given this finding, most clinicians will tend to regard the elderly as a high-risk group and be more vigilant in their suicidal assessment and management. However, this is hardly the case for hospitalized psychiatric patients. The present study agreed with other similar population cohort studies<sup>5,6,9</sup> in that discharged young adult patients had higher SMRs than the elderly. While it has to be admitted that hospitalized psychiatric patients were a very special and biased sample of the whole suicidal population, these cases were highly relevant for our day-to-day practices. Young adults con-

stituted the bulk of admissions, and they carried the highest risk of suicide. In addition to a vigilant focus on the elderly, clinicians should be even more cautious and careful in assessing discharged young patients if there were any signs of distress. One may speculate that most clinicians will think about the social needs and support of elderly patients when they were discharged. However, it may not be the case for young adults, whom everyone, perhaps including the patients themselves, tend to believe should be more self-reliant. Without a reliable support sensitive enough to detect danger signals or able enough to provide help, some young patients could experience tremendous difficulties in adjusting to various problems in their post-discharge period.

Contrary to findings in the literature, depressed patients in Hong Kong did not have a higher suicidal risk than other diagnostic groups after discharge from inpatient care. There could be multiple reasons for the different findings. The present study grouped all mood disorders into 1 category, whereas the previous studies had 2 separate entities: affective psychosis and nonpsychotic depression. There could be site differences in diagnostic practices and delivery of care for depressed patients. Indeed, the proportion of person-years after discharge accounted for by mood disorders in Hong Kong was far lower compared with that reported in Oxford or Scotland.<sup>5,6,9</sup> That no specific diagnosis seems to stand out suggests that an improvement in the quality of care for all discharged patients is necessary to reduce suicide rates. Good discharge plans, adequate community support, high sensitivity to early signs of relapses, and effective prophylactic treatment could be beneficial.

Suicide is a rare but important outcome in psychiatric care. A high suicidal risk at the immediate discharge period was found in similar population-based cohort studies at different localities. Intensive psychiatric service and close monitoring of patients' well-being around the time of discharge are important to tackle this particular highrisk period, although there is so far no randomized controlled trial to prove that such service can reduce the risk. There are variations in the post-discharge suicide risk in different age, gender, and diagnostic groups in different localities. Different risk or protective factors could be in operation in different subgroups at different places. The identification of these time-related predictors is important in designing effective suicide prevention efforts.

#### REFERENCES

- Mortensen PB, Agerbo E, Erikson T, et al. Psychiatric illness and risk factors for suicide in Denmark. Lancet 2000;355:9–12
- Harris EC, Barraclough B. Suicide as outcome for mental disorders: a meta-analysis. Br J Psychiatry 1997;170:205–228
- Goldney RD. Prediction of suicide and attempted suicide. In: Hawton K, Heeringen K, eds. The International Handbook of Suicide and Attempted Suicide. Chichester, England: John Wiley & Sons Ltd; 2000:585–596
- Fawcett J, Scheftner WA, Fogg L, et al. Time-related predictors of suicide in major affective disorder. Am J Psychiatry 1990;147:1189–1194

- Goldacre M, Seagroatt V, Hawton K. Suicide after discharge from psychiatric inpatient care. Lancet 1993;342:283–286
- Geddes JR, Juszczak E, O'Brien F, et al. Suicide in the 12 months after discharge from psychiatric inpatient care, Scotland 1968–1992. J Epidemiol Community Health 1997;51:430–434
- Isometsa E, Henriksson M, Heikinnen M, et al. Suicide after discharge from inpatient psychiatric care. Lancet 1993;342:744–745
- Appleby L, Shaw J, Amos T, et al. Suicide within 12 months of contacts with mental health services: national clinical survey. BMJ 1999;318: 1235–1239
- Geddes JR, Juszczak E. Period trends in rate of suicide in first 28 days after discharge from psychiatric hospital in Scotland, 1968–1992. BMJ 1995;311:357–360
- 10. Black D, Warrack G, Winokur G. The Iowa record-linkage study, 1: suicides and accidental deaths among psychiatric patients. Arch Gen

Psychiatry 1985;42:71-75

- Appleby L, Dennehy JA, Thomas CS, et al. Aftercare and clinical characteristics of people with mental illness who commit suicide: a case-control study. Lancet 1999;353:1397–1400
- King EA, Baldwin DS, Sinclair JMA, et al. The Wessex recent in-patient suicide study, 1: case-control study of 234 recently discharged psychiatric patients suicides. Br J Psychiatry 2001:178:531–536
- 13. Yap PM. Suicide in Hong Kong. Br J Psychiatry 1958;126:266-301
- Ho TP. Changing patterns of suicide in Hong Kong. Soc Psychiatry Psychiatr Epidemiol 1996;31:235–240
- Phillips MR, Li XY, Zhang YP. Suicide rates in China, 1995–1999. Lancet 2002;359:835–840
- Crombie IK. Suicide in England and Wales and in Scotland: an examination of divergent trends. Br J Psychiatry 1990;157:529–532
- 17. Monk M. Epidemiology of suicide. Epidemiol Rev 1987;9:51–69