SUICIDE MORTALITY IN NSW: CLIENTS OF MENTAL HEALTH SERVICES

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This is the third in a series of articles on the epidemiology of suicide in NSW by the Mental Health Epidemiology Group (MHEG)[1]. This article examines suicide by clients of mental health services in NSW. Since April 1992 the Mental Health Branch of the NSW Health Department[2] has operated an incident monitoring system which requires all public mental health services in NSW to report unexpected deaths, including suicides, of current or former clients. Part I of this article describes the information collected through this monitoring system, and Part II estimates mental health service clients' risk of suicide, compared with that of the NSW population.

Suicide is more common among people with a history of a psychiatric disorder[3,4]. It is estimated from psychological autopsy studies that at least 88 per cent of all people committing suicide suffered from a diagnosable mental illness[5,6,7]. Depression, alcohol dependence, schizophrenia and personality disorders are strongly associated with suicide[6].

Overseas studies estimate standardised mortality ratios (SMRs) for suicide of about 10 (SMR=1 for the relevant standard population group) for current or former psychiatric inpatients or outpatients[8]. For compatibility with the literature, we report risk as an SMR in which SMR=1 (rather than the usual SMR=100) for the relevant standard population group. There is little Australian information on the risk of suicide in mental health clients, but the risk appears to be consistent with that reported in overseas studies. In the NSW Psychiatric Case Register (1966-67 – 1972-73), the estimated suicide SMR for psychiatric inpatients was 13. Psychiatric patients thus have an elevated chronic risk of suicide.

The period after discharge from inpatient care is associated with a much higher risk. The Oxford Record Linkage Study found the suicide risk or SMR in the first 28 days after discharge was about 100 for females and 200 for males, compared with that of the population served by the Oxford Regional Health Authority[3]. In the remaining 11 months of a 12-month follow-up period the suicide SMR decreased to about 40 for females and 30 for males[3].

In this context, self-injury and suicide must be monitored in mental health clients to ensure the NSW Health Department is discharging its responsibility to provide protection from serious physical harm[9].

PART I: THE NSW MENTAL HEALTH CLIENT INCIDENT MONITORING SYSTEM

The NSW Mental Health Client Incident Monitoring System requires all public inpatient psychiatric facilities and community mental health facilities to report the death by suicide of any client to Area and District Health Services within 24 hours of being informed of the death. The Area or District notifies the NSW Health Department of these deaths at the end of each month[10]. Psychiatric inpatient facilities comprise psychiatric hospitals and psychiatric inpatient units in general hospitals, and community mental health facilities comprise community mental health teams, crisis/extended hours teams, living skills centres and staff responsible for the running of supported accommodation.

Contents

☐ *Articles*

Correspondence

Data items collected in the Incident Monitoring System include information on the facility reporting the suicide; the demographic characteristics of the client; the client's diagnoses; information on the last contact with health services; the date, place and method of death; information on any warning of suicide; previous suicide attempts; and details of the death[11].

Results
A total of 259 deaths was reported to the Incident Monitoring System between April 1992 and June 1995. Eleven of the deaths were not from suicide. The remaining 248 were reported as 'probable suicides'. For 237 of these 'probable suicides', suicide was reported as the only cause, while suicide was the most likely cause for the other 11. For the analysis in this report we included all 248 deaths where 'probable suicide' was the cause given[12].

The 248 'probable suicides' represented about 10 per cent of all suicides in NSW during the reporting period. The rate of reported 'probable suicide' was consistent over the time period and was fitted by a single-rate Poisson distribution with a mean of 6.35 cases a month[13].

Most clients whose deaths were reported as 'probable suicides' were male (75 per cent). Most were born in Australia (70 per cent) or another English-speaking country (5 per cent). Seven (3 per cent) were Aboriginal or Torres Strait Islander people. Most of the suicide reports (63 per cent) came from community mental health centres, while 36 per cent were from psychiatric inpatient facilities[14] and 1 per cent from residential facilities.

Most 'probable suicides' were reported as occurring at home (46 per cent). The locations of the rest were as follows: 10 per cent occurred at railway stations, 26 per cent in other public areas, 6 per cent in residential institutions and 12 per cent at other places. Three-quarters (76 per cent) of reported 'probable suicides' died before being found, 8 per cent died before reaching a hospital, and 11 per cent died in hospital. (No information was available for 5 per cent of reports.)

The most common methods of committing suicide were reported as poisoning[15] (27 per cent) and hanging (25 per cent). For 10 per cent of suicides the method was reported as jumping in front of a train. The train deaths represented 17 per cent (15/88) of all reports from hospital facilities compared to 7 per cent (11/160) of all reports from community facilities. In males the most common method of suicide was hanging (27 per cent – 51/186), while in females poisoning was the most common (45 per cent – 26/62). Of the 29 reported 'probable suicides' involving firearms, only one report was of a female.

Seventy per cent of 'probable suicides' were by violent means, involving hanging, firearms, or cutting or jumping acts. This is consistent with a review of studies by Appleby[4], who concluded that although no age- and sex-controlled comparison study between psychiatric clients and the general population had been done "there is a general consensus that psychiatric patients use more violent means".

Most of the clients who committed suicide (64 per cent) did not give any warning of their intention, but one-quarter gave a written or a verbal warning. (No information was available for 10 per cent of reports.) A history of parasuicides or previous suicide attempts is a known risk factor for suicide. More than half the reported 'probable suicides' (53 per cent) had attempted suicide previously, while 24 per cent of individuals had no known history of suicide attempts. (No information was available for 23 per cent of reports.) This parallels information from England and Wales that in 30-47 per cent of cases of suicide the individual had made a previous suicide attempt (SMR=10-30)[5,16].

Only 13 per cent of reports of 'probable suicides' were of clients who had been out of contact with the mental health service for more than a month. (No information was available for 2 per cent of reports.) This ascertainment of clients is much lower than that reported in a record linkage study in Western Australia[17] and suggests strongly that services were not very likely to be advised of suicides of their clients who had not been in contact for more than one month. The remaining 85 per cent (n=208) were reported as having had contact with mental health services in the month before death (26 per cent on the day of death, 44 per cent in the previous week and 15 per cent in the previous month). These 208 'probable suicides' represented about 8 per cent of all suicides in NSW during the reporting period. This finding is consistent with the proportion of all suicides in Western Australia for whom contact with public mental health services within the previous month was established by record linkage[17]. The rate of reported 'probable suicide' of clients who had contact with mental health services in the previous month was the same in all three years and fitted a single-rate Poisson distribution with a mean of 5.33 cases a month[13].

PART II: ESTIMATING THE RISK OF SUICIDE IN MENTAL HEALTH CLIENTS
A case was defined as a report of 'probable suicide' from a psychiatric inpatient facility or community mental health facility between April 1992 and June 1995, where last contact with services was stated to have been within one month.

For the purposes of estimating risk, we included only the 208 'probable suicides' reported as having had contact with a mental health service in the month before death. This decision was made because of the poor ascertainment of clients who had not recently been in contact with services, and because the immediate post-discharge period for inpatients is known to be one of unusually high risk[3,4].

Reports were received both from psychiatric inpatient and community mental health facilities[18] which had contact with mental health clients in the month before their death. These reports represented two different client groups, a 'hospital contact' and a 'community service contact' group, so the data were analysed separately. Because the 'hospital contact' group included not only clients who had been discharged, but also clients who were on leave or were absent without leave, we refer to this period as the peridischarge period.

On each suicide report, the psychiatric diagnoses were recorded in free text by the person reporting the suicide. These descriptive diagnoses were classified using ICD9-CM[19] codes, verified by a psychiatrist[20], and primary diagnoses were identified[21]. The primary diagnoses were then grouped into seven diagnostic groups:

- schizophrenia (including schizo-affective disorders);
- depression (including both the major affective disorders, affective psychoses and unspecified depression[22]);
- manic-depressive disorder;
- neuroses (including neurotic depression);
- adjustment problems and stress-related disorders;
- substance abuse (including alcohol and drug usage, dependence and abuse); and
- other mental disorders.

The populations at risk ('special population'[23]) were estimated from NSW Inpatient Statistics Collection (ISC) and community mental health census data[24] by estimating the total number of clients who would have been in contact 'within the last month' with the relevant inpatient and community mental health services. Diagnostic groups were identified using the classification methods described above to provide comparable denominator data. The estimated rate of death in the special population is then the ratio of the number of cases to the estimated number of individuals whose vital status could have been reported. The detailed estimation procedures of the at-risk populations are described in the appendix.

Age-, sex- and diagnosis-specific mortality rates per 100,000 person months of risk were calculated for 'hospital contact' and 'community service contact' groups. These rates were indirectly standardised to a pooled NSW population (1979-1992)[25], excluding the age range 0-9 years. SMRs and 99 per cent confidence intervals (CIs) were estimated. To permit comparison with the Oxford Record Linkage Study the rates were converted to deaths per 1,000 person years and scaled to SMR=1 for NSW as a whole.

Results
The crude NSW suicide mortality rate in the general population aged >9 years for the years (SMR=1) 1979-1992 was 0.2 per 1,000 person years for males and 0.05 per 1,000 person years for females.

There were 208 cases where clients had been in contact with a mental health service in the previous month and these comprised 81 'hospital contact' cases and 127 'community service contact' cases.

'Hospital contact' group
The crude suicide rates in the 'hospital contact' group were 23.8 per 1,000 person years for males and 9.6 per 1,000 person years for females. Age-standardised rates for males and females respectively were 23.3 and 9.4 per 1,000 person years.

The SMR was 112 (99 per cent CI: 75-149) for males and 157 (99 per cent CI: 60-254) for females respectively. By comparison, in the Oxford Record Linkage Study the SMR was 213 (95 per cent CI: 137-317) for male patients and 134 (95 per cent CI: 67-240) for female patients in the first 28 days post discharge[3].

'Community service contact' group
The crude suicide rates in the 'community service contact' group were 2.1 per 1,000 person years for males and 0.7 per 1,000 person years for females. Age-standardised rates for males and females were 2.0 and 0.6 per 1,000 person years respectively.

The SMR was 9 (99 per cent CI: 7 to 12) for males and 10 (99 per cent CI: 6 to 15) for females. By comparison, in the

Oxford Record Linkage Study the SMR was 30 (95 per cent CI: 20-43) for male patients and 45 (95 per cent CI: 30-65) for female patients in the 29-365 days post discharge[3]. The Missouri Institute of Psychiatry three-year follow-up study of public mental health patients reported an SMR of 5 for males and 8 for females[26]. A comparison of SMRs in seven studies comprising a mixture of inpatients and outpatient studies (including an Australian inpatient study[27]), demonstrated a reasonable agreement on a SMR of about 5 for male patients[26]. For female patients a SMR of about 9 was suggested, dependent on the population[26]. Our 'community service contact' SMRs lie generally between those in the Oxford and Missouri studies.

Diagnoses
The SMRs varied according to psychiatric diagnosis. In Table 1 the results for the different diagnostic groups are compared with other results in the literature[3,26] and presented on the same scale. Our 'hospital contact' group's results are similar to the results of the Oxford Record Linkage Study except for males with schizophrenia, where we found a higher rate. Our 'community service contact' group's results lie generally between those in the Oxford and Missouri studies.

All the comparisons are shown graphically in Figure 1 ('community service contact' group) and Figure 2 ('hospital contact' group). In Figure 1 we have carried over the two most extreme groups from our previous comparison of geographic variations in population suicide rate[25]. Most of the data reported for the Areas and Districts in NSW are represented by the heavy bar for SMRs around 1.0, and even the elevated risks for Eastern Sydney Area Health Service (SMR=1.4) and the Far West District Health Service (SMR=2.0) are small in comparison with the risks in mental health clients. In Figure 2 we have carried over the most extreme 'community service contact' group from Figure 1 to show that even the risk in this group is low relative to 'hospital contact' clients and recently discharged clients.

Discussion
Our results show that NSW mental health clients in community care have much the same suicide risk as mental health clients in systems of care overseas. There is no evidence that mental health clients in NSW are at unusually high risk of suicide in community care compared to inpatient care, but this risk is 10 times that of the general population (Figure 1).

We found a much higher risk of suicide (about 100 times that of the general population) for mental health clients around the time of discharge from inpatient care, again similar to findings of recently discharged inpatients in studies overseas (Figure 2). Not all cases reported by hospitals in our study were necessarily newly discharged inpatients; the reports included individuals who were on leave or absent without leave as well as discharged inpatients, and the elevated risk might be explained by the mixed levels of precaution and supervision for patients around the time of discharge (the peridischarge period) and the risk associated with discharge from hospital. This is a vulnerable time for patients because of perceived loss of support, reduced supervision, possible relapse due to exposure to home circumstances, and the fact that the patient may not be fully recovered[3].

TABLE 1

SUICIDE RATES AND SMRs BY PSYCHIATRIC DIAGNOSIS

| | Peridischarge risks | | | | Chronic risks | | | | | |
| | Hospital contact group | | Oxford[3] 28-day follow-up | | Community contact group | | Oxford[3] 29-365-day follow-up | | Missouri[24] 3-year follow-up | |
	Rate/ 1,000 py	SMR (99%CI)	Rate/ 1,000 py*	SMR (95%CI)	Rate/ 1,000 py	SMR (99%CI)	Rate/ 1,000 py*	SMR (95%CI)	Rate/ 1,000 py	SMR
Males										
Schizophrenia	27.4	132 (60-204)	9	46 (1-258)	1.8	9 (5-12)	6	30 (11-66)	2.1	7
Depression – Other depression	121	581 (271-891)	116	519 (260-929)	12.1	58 (33-83)	12	55 (28-990)	1.9	6
– Major depression	n.a.	n.a. n.a.	60	268 (98-585)	n.a.	n.a. n.a.	9	42 (18-83)	4	14
Other	9.5	46 (15-76)	n.a.	n.a. n.a.	1.1	6 (3-8)	n.a.	n.a. n.a.	n.a.	n.a.
Females										
Schizophrenia	10.4	173 (0-372)	10	92 (2-515)	0.7	12 (4-21)	3	30 (6-88)	0.9	10
Depression – Other depression	16.5	282 (0-605)	19	147 (40-375)	1.7	28 (5-50)	5	43 (21-79)	0.7	8
– Major depression	n.a.	n.a. n.a.	14	96 (19-282)	n.a.	n.a. n.a.	6	40 (19-74)	1.8	18
Other	6.8	113 (4-222)	n.a.	n.a. n.a.	0.3	5 (1-9)	n.a.	n.a. n.a.	n.a.	n.a.
All										
Schizophrenia	21	158 (80-236)	n.a.	n.a. n.a.	1.4	10 (7-14)	n.a.	n.a. n.a.	n.a.	n.a.
Depression	59.4	447 (231-663)	n.a.	n.a. n.a.	4.1	31 (18-44)	n.a.	n.a. n.a.	n.a.	n.a.
Other	8.4	63 (28-97)	n.a.	n.a. n.a.	0.6	5 (3-7)	n.a.	n.a. n.a.	n.a.	n.a.

Suicide mortality in NSW

In general, male patients were more at risk than female patients – a finding consistent with the results of other studies[3,8]. Although the standardised suicide rate for males was higher than that for females in the 'hospital contact' group, the SMR for females indicates that in the peridischarge period the risk increased more for female patients than for males. The vulnerability of women in this period has been reported in other studies[26].

The risk of suicide was greatest for patients with depression, especially during the peridischarge period. Although the assignment of diagnoses in the current reporting system was less than perfect, the risk for clients with depression is consistent with that reported in overseas studies[3,4,8,26]. This finding underlines the importance of maintaining effective antidepressant therapy, adequate community support and vigilance for early signs of relapse in depression[4].

Our results show that only about 8 per cent of all people committing suicide in NSW had recent contact with mental health services. By contrast there is evidence that at least 88 per cent of people attempting suicide suffered from a diagnosable mental disorder during the period preceding the attempt[5,6,7]. Studies based on case registers have shown that 40-50 per cent of people who commit suicide have at some time been in the care of mental health services[8]. These reports, together with our findings, suggest most people who commit suicide do not come to the attention of NSW mental health services at the most critical time.
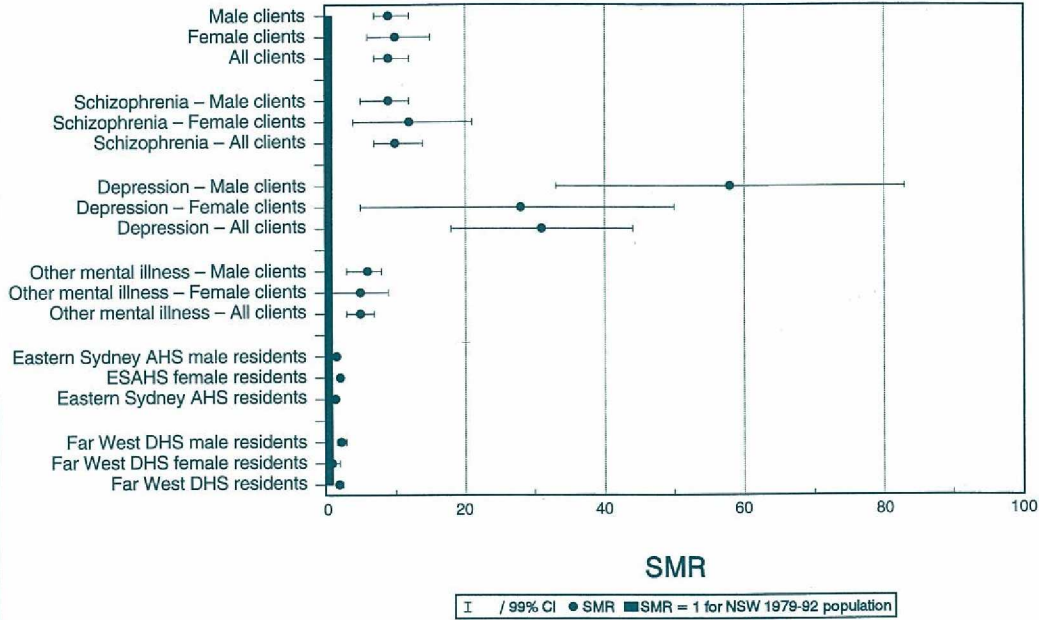
Conclusions and recommendations

Mental health clients are clearly at increased risk of suicide compared to the general population, especially in the peridischarge period. Even so, the implications for clinical decision-making are limited by the fact that suicide is still a rare outcome. Our findings are consistent with those of the Oxford Record Linkage Study in which the greatest risk was experienced by males suffering from depression in the first 28 days after discharge from hospital (SMR=519). This represented a very small number of events; one patient in 122 from that group committed suicide within 28 days, and over the full 12 months post-discharge, one other patient
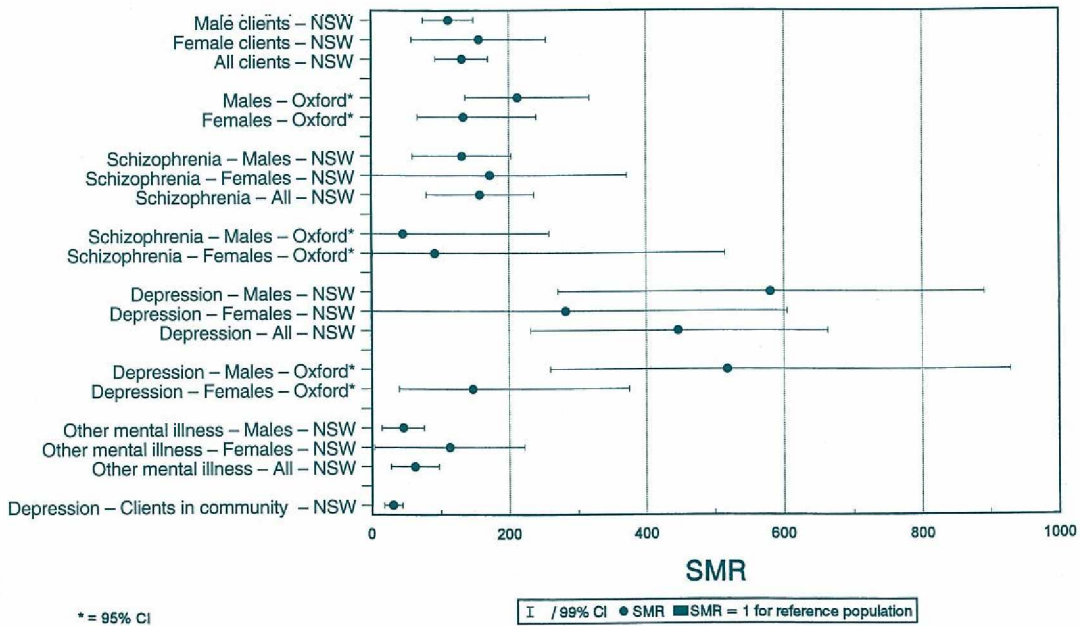
FIGURE 1

SMRs FOR PROBABLE SUICIDES OF COMMUNITY CONTACT MENTAL HEALTH CLIENTS

Male clients
Female clients
All clients

Schizophrenia – Male clients
Schizophrenia – Female clients
Schizophrenia – All clients

Depression – Male clients
Depression – Female clients
Depression – All clients

Other mental illness – Male clients
Other mental illness – Female clients
Other mental illness – All clients

Eastern Sydney AHS male residents
ESAHS female residents
Eastern Sydney AHS residents

Far West DHS male residents
Far West DHS female residents
Far West DHS residents

SMR

I / 99% CI ● SMR ■ SMR = 1 for NSW 1979-92 population

Source: Epidemiology Branch, ABS deaths 1979-92, registered by 1993; NSW Suicide Incident Monitoring System

FIGURE 2

SMRs FOR PROBABLE SUICIDES OF HOSPITAL CONTACT MENTAL HEALTH CLIENTS

Male clients – NSW
Female clients – NSW
All clients – NSW

Males – Oxford*
Females – Oxford*

Schizophrenia – Males – NSW
Schizophrenia – Females – NSW
Schizophrenia – All – NSW

Schizophrenia – Males – Oxford*
Schizophrenia – Females – Oxford*

Depression – Males – NSW
Depression – Females – NSW
Depression – All – NSW

Depression – Males – Oxford*
Depression – Females – Oxford*

Other mental illness – Males – NSW
Other mental illness – Females – NSW
Other mental illness – All – NSW

Depression – Clients in community – NSW

SMR

* = 95% CI

I / 99% CI ● SMR ■ SMR = 1 for reference population

Source: Epidemiology Branch, ABS deaths 1979-92, registered by 1993; NSW Suicide Incident Monitoring System

committed suicide. There is no method of suicide risk assessment which is known to improve the performance of clinicians in identifying this one patient[28]. Risk reduction is therefore an issue for a whole system of care, not an issue of individual decision-making.

The phases of transition between the levels of care are areas where surveillance and interventions should be focused. The following possible areas for improvements in the monitoring of groups at elevated risk are suggested:

- *Review of NSW Mental Health Client Incident Monitoring System.* The NSW Mental Health Client Incident Monitoring System is being revised. The revised system will include information on levels of supervision, discharge status of patients, primary diagnoses, risk factors and precipitating stressors. It may also be important to monitor all hospitalised suicide attempts as well as deaths, and to extend the reporting to include private hospitals.

- *Clinical audit.* We recommended in a previous article[11] that clinical audit is a valuable tool to collect more relevant information on suicides. Some mental health services already conduct reviews of suicides and serious suicide attempts by mental health clients as part of the post-suicide management protocol. These reviews are conducted to formally debrief staff and relatives and to identify ways of improving the management of mental health clients. They do not usually include systematic collection of data describing suicide risk factors. Rather, ad hoc risk information is collected in the context of counselling of bereaved relatives. For consistent data collection it would be desirable to formalise this process[29].

- *Case registers.* The monitoring system captures information on about 10 per cent of all suicides in NSW. To monitor all suicides would require a case register and linkage to death reports. Case registers operate successfully in Western Australia and Victoria. A case register operated in NSW between 1964 and 1977. Case registers allow monitoring of suicide and other outcomes, such as accidental injury and other aspects of 'harm'.

- *Protocols.* The existing NSW protocol for the management of suicide attempts[30] requires facilities to have policies and procedures for the assessment of the risk of suicide in specific settings, such as community health services, accident and emergency departments, general hospital wards and psychiatric inpatient units. These include procedures on how to manage suicidal patients whether they are newly admitted, established patients on leave, or discharged. The Richmond District Health Service is implementing mandatory 'At Risk' guidelines on the management of suicide attempts and will be reporting on these by the end of this year[31]. However, there are no specific protocols for the management of the group most at risk – recently discharged patients with depression. Strategies offering help and support for people at high risk could be included in these protocols[32]. It is important to monitor the sequence of care for this group. Care may require protocols, supported by resources and training to ensure proper implementation and evaluation.

APPENDIX

The cases were compared with a 'special population' of all those who had been in contact with a reporting mental health facility in 'a month'.

Estimation of inpatient mental health facilities population at risk

The NSW Mental Health Client Incident Monitoring System applies only to public psychiatric hospitals and to psychiatric inpatient facilities in public general hospitals. Inpatient episodes are recorded in the NSW Inpatient Statistics Collection (ISC) via a 'psychiatry flag' which is set in response to the query "Was patient admitted to a psychiatric unit during this episode of care?", or automatically in the case of public psychiatric hospitals.

Across NSW inpatient facilities as a whole there is no consistent way of identifying individual clients, so there may be multiple records of any individual in the Statewide collection for each separate episode of care. Readmissions were excluded because multiple contacts within 28 days constitute only one person month of risk within a month of contact.

We estimated this population by selecting records from the 1993-94 ISC which met all the following criteria:

- Hospital role is public.
- Stay diagnosis in the ICD9-CM code range 290-319 inclusive.
- Psychiatry flag set to yes.
- Age >9 years.
- Readmission within 28 days flag set to no[33].

The monthly average number of separations for 1993-94 was used in all analyses.

Estimation of community health facilities population at risk

There is no standardised Statewide reporting from community mental health facilities[34], so Statewide estimates were based on census data. The size of this population was estimated by applying a suitable weighting factor to the data obtained in a one-day census of community mental health facilities. These censuses were conducted in 1991[35], 1992 and 1993, on the last Wednesday in October. Each census included drug and alcohol facilities as well as mental health facilities, which often operate from the same community health centre and share staff with mental health services. There is significant comorbidity between mental health problems and drug and alcohol problems, and a client may receive a mixture of services. Reporting of deaths is required only of community mental health teams, crisis/extended hours teams[36], living skills centres and "staff responsible for the running of supported accommodation" so we excluded records where the primary team membership of the staff member completing the census form was "Drug & Alcohol Team", and included all others.

We treated month as a period of 28 days, or 20 working days, and we estimated the sampling weight associated with each client seen on the census day. These weights took account of frequency of contact, previous contacts with the agency and age.

The census form included three variables which were used in deriving weights:

- *Frequency of contact:* coded as 1=daily, 2=more than once a week, 3=weekly, 4=fortnightly, 5=monthly, 6=quarterly, 7=as required. This generated weights of 20.0 for clients seen monthly, on the assumption that a different group of clients seen at this rate would be obtained in a census on each of the other 19 working days in a month. In the same way, weights of 10.0, 5.0 and 1.0 were respectively associated with clients seen fortnightly, weekly and daily. It was assumed that contact more than once a week could be interpreted as twice a week on average, with a weight of 2.5. All groups seen less frequently than once a month receive the same weight as those seen monthly.
- *Previous sessions / contacts (this agency):* coded as 1=first contact, 2=0-9 contacts, 3=10-19, 4=up to 49, 5=up to 99, 6=100 or more. First contact clients received a weight of 20.0 irrespective of frequency of contact. Clients in daily contact but with only 0-9 previous sessions received a weight of 2.0, since average treatment duration would be 11 working days.
- *Age:* was coded as 1=0-4, 2=5-9, and thence in successive 10-year intervals to 11=80+. Age was used to assign weights for about 200 clients being treated as required and who were not first contact clients. Based on data from the Victorian Department of Health & Community Services[37], 'as required' treatment was taken to mean once every 1.5 weeks for adults, once every three weeks for children and once every two weeks for aged clients, leading to weights of 7.5, 15.0 and 10.0 respectively.

The estimated contact population per calendar month in 1993 was used in all analyses.

1. Membership of MHEG is open to people with a professional interest and expertise in mental health epidemiology who are willing to contribute to the planning and production of a series of publications and reports on important mental health topics. The policy of MHEG is joint publication by the group as a whole in which authors are listed in order of their contribution to the particular report. The contact address for MHEG is Mental Health Epidemiology Group, Centre for Research & Development, Public Health Division, NSW Health Department, Locked Bag 961 PO North Sydney 2059 (Fax: 391-9041, Internet email jchip@gwsm.doh.health.nsw.gov.au).
2. This system was established by Chris Terpaj, Senior Policy Analyst of the Review and Evaluation Section of the Mental Health Branch (now the Centre for Mental Health).
3. Goldacre M, Seagroatt V and Hawton K. Suicide after discharge from psychiatric inpatient care. *Lancet* 1993; 342:283-286.
4. Appleby L. Suicide in psychiatric patients: risk and prevention. *Br J Psychiatry* 1992; 161:749-758.
5. Henriksson MM, Aro HM, Heikinnen ME, Isometsa ET, Kuoppasalmi KI and Lonnqvist JK. Mental disorders and comorbidity in suicide. *Am J Psychiatry* 1993; 150 (6):935-40.
6. Davis AT and Schrueder C. The prediction of suicide. *Med J Aust* 1990; 153:552-554.
7. Cheung P. Suicide precautions for psychiatric inpatients: a review. *Aust NZ J Psychiatry* 1992; 26:592-598.
8. Gunnell D and Frankel S. Prevention of suicide: aspirations and evidence. *Br Med J* 1994; 308:1227-1233.
9. The NSW Mental Health Act (1990) criteria for formal involuntary admissions require a decision that either owing to a mental illness or to behaviour which for the time being is irrational, "… care, treatment or control of the person is **necessary**: (a) for the person's **own protection from serious physical harm**; or (b) for the **protection of others from serious physical harm**." There is no specific mention of self-harm or suicide, but clearly it is included.
10. Letter sent to Area and (then) Regional services dated March 10, 1992.
11. Chipps J, Stewart G and Sayer G. Suicide mortality in NSW: An introduction to the clinical audit. *NSW Public Health Bulletin* 1995; 6(7):68-70.
12. It should be stressed that the additional information supplied with a number of these cases makes it likely that an open finding would be returned by the coroner because of the absence of any clear evidence of intent. Thus the data really represents the opinions of the mental health workers making the reports, and it may be reasonable to describe the

data analysed as 'probable suicides' once the ambiguous cases have been excluded.
13. Models were fitted to the event rate data using the SAS procedure GENMOD, and allowing a different rate parameter each year or the same parameter for all years. The multiple risk model produced a non-significant improvement in fit.
14. Using the information available to us, we are unable to determine whether the reported suicides were active clients, inpatients, discharged patients, on leave, absent without leave or a person who is unknown to the service.
15. The current reporting system does not distinguish between carbon-monoxide poisoning, drug overdoses and poisoning with other substances.
16. Gunnel DJ, Peters TJ, Kammerling, RM and Brooks J. Relation between parasuicide, suicide, psychiatric admissions and socioeconomic deprivation. *Br Med J* 1995; 311:226-230.
17. The Health Department maintains a Mental Health Case Register which has been linked to the WA Coroner's database (Silburn S. Institute for Child Health Research, Western Australia, personal communication, 1995.) We wish to thank Mr Sven Silburn for conducting specific analyses of this data at our request.
18. Including residential services (n=3).
19. ICD-9-CM, 1978, WHO. Ninth edition 1992.
20. We wish to thank Drs Victor Storm and Titia Sprague of the Centre of Mental Health for verifying the diagnoses.
21. Primary diagnoses were identified if more than one diagnosis was reported. Diagnoses of schizophrenia took precedence over other diagnoses; major affective diagnoses over neurosis. Personality disorders and substance abuse were classified as comorbidity if in conjunction with other diagnoses. All other diagnoses were grouped together.
22. 'Depression' was often stated without specification and therefore was coded as ICD 311.
23. We have followed the terminology used by Armitage B and Berry G, Statistical Methods in Medical Research, Second Edition. Oxford: Blackwell Sientific Publications, 1987. To quote: "The basic idea in standardization is that we introduce a *standard population* with a fixed age structure. The mortality for any *special population* is then adjusted to allow for discrepancies in age structure between the standard and special populations." (p 400).
24. This is a one-day census of community mental health and drug and alcohol facilities and was developed by Ms Christina Terpaj of the Review and Evaluation section of Mental Health Services Branch of Public Health Division.
25. Stewart G, Chipps JA and Sayer G. Mortality in NSW: Geographic variations. *NSW Public Health Bulletin* 1995; 6(6):49-52.
26. Evenson RC, Wood JB, Nutall EA and Cho DW. Suicide rates among mental health patients. *Acta Pscychatrica Scandinavica* 1982; 66:254-264.
27. James IP and Levin S. Suicide following discharge from psychiatric hospital. *Archives of General Psychiatry* 1964; 10: 43-46.
28. Pokorny AD. Prediction of suicide in psychiatric patients. *Archives of General Psychiatry* 1983; 40:249-257.
29. A more detailed report which will review the practicality of implementation of clinical audits on a State level is in preparation. Protocols for data to be collected, ethical and legal issues affecting the audit and the feasibility of implementing this on a local level will be discussed. Suggestions are invited.
30. Policy guidelines on suicidal behaviour – key assessment criteria for NSW Health Area & District Staff. Circular 94/54.
31. North Coast Public Health Unit. Health Outcomes Council: Suicide Prevention Progress Report, 1992-94. Interim Report March 1995.
32. Morgan HG, Jones EM and Owen JH. Secondary prevention of non-fatal deliberate self harm: The green card study. *Br J Psychiatry* 1993; 165:111-112.
33. This flag is available in the NSW Inpatient Statistics Collection only for 1993-94 and subsequent years. This data set is also the most appropriate since it covers the middle of the period of operation of the client suicide reporting system. No adjustment was made for the fact that readmission within 28 days is not quite the same as readmission within a month.
34. By contrast, the Victorian Department of Health and Community Services operates a uniform system of client identifiers across both inpatient and community facilities, and collects standard data from both on a Statewide basis. The situation in NSW is expected to change within a few years, as the Community Health Information Development Project (CHIDP) moves to the implementation phase. Details about this development may be obtained from Ms Christina Terpaj, Acting Manager, Information Development Unit, Information and Data Services Branch, Information and Business Services Division, NSW Health Department.
35. Summary data from the 1991 census, without weighting, has been reported in Census of Community Mental Health Services 1991, Mental Health Information Series, Terpaj C and Starkey G, NSW Department of Health State Publication No. MHSB 92/121 ISBN 0 7310 0415 9.
36. Because the censuses cover a 24-hour period on a Wednesday, they underestimate the workload of extended hours/crisis teams, since their busiest periods are over the weekend, from ordinary closing time on Friday. There was no way of adjusting for this with the available data.
37. Health and Community Services Annual Report 1993-94, Victorian Government Department of Health and Community Services, Melbourne, 1994. We thank Ms Jillian Hitchcock from the Mental Health Library for supplying this information at short notice.