Suicide in psychiatric in-patients in England, 1997 to 2003

NAVNEET KAPUR[1]*, ISABELLE M. HUNT[1], ROGER WEBB[2], HARRIET BICKLEY[1], KIRSTEN WINDFUHR[1], JENNY SHAW[1] AND LOUIS APPLEBY[1];
The National Confidential Inquiry into Suicide and Homicide

[1] *National Confidential Inquiry into Suicide and Homicide by People with Mental Illness, Centre for Suicide Prevention and* [2] *Centre for Women's Mental Health Research, Department of Psychiatry and Behavioural Sciences, Williamson Building, University of Manchester, Manchester, UK*

ABSTRACT

Background. Psychiatric in-patients are at particularly high risk of suicide but few studies have investigated trends in in-patient suicide over time.

Method. We conducted a prospective study of all patients admitted to National Health Service (NHS) in-patient psychiatric care in England (1997–2003). The study was carried out as part of the National Confidential Inquiry into Suicide. The main outcome measure was death by suicide. Suicide rates were determined using Hospital Episode Statistics (HES) as the denominator.

Results. Between the first 2 years of the study (1997 and 1998) and the last 2 years of the study (2002 and 2003) the annual number of in-patient deaths from suicide fell from 187 to 156 (a 17% reduction). The rate of in-patient suicide fell by between 9% and 28% depending on which denominator was used. This fall was observed for both males and females, and was most marked for those aged 15–44 years. Reductions were also observed for the three most common methods of death (hanging, jumping, poisoning), but the trend for hanging did not reach statistical significance. Although the number of post-discharge suicides fell, the risk of post-discharge suicide (using admissions as a denominator) may have increased by as much as 10% during the study period.

Conclusion. The rate of suicide among psychiatric in-patients appears to have fallen. The fall may reflect falling general population rates, changes in in-patient case mix, service improvements, or a transfer of risk to the post-discharge period. Services need to be aware of the importance of providing high quality aftercare following discharge from hospital.

INTRODUCTION

Suicide is an important cause of premature mortality (Gunnell & Middleton, 2003). Those in contact with mental health services are a key priority group for suicide prevention (Department of Health, 2002a). There is evidence from a number of countries to suggest that psychiatric in-patients are at particularly high risk of suicide (Lieberman *et al.* 2004; Casells *et al.*

* Address for correspondence: Dr N. Kapur, Centre for Suicide Prevention, Williamson Building, University of Manchester, Oxford Road, Manchester M13 9PL, UK.
(Email: nav.kapur@manchester.ac.uk)

2005; Qin & Nordentoft, 2005), but few studies have investigated trends in in-patient suicide over time.

There have been major changes in the provision of psychiatric services in England recently that have resulted in fewer in-patient beds (Priebe *et al.* 2005) and a more severely ill in-patient population with higher numbers of involuntary admissions (Hotopf *et al.* 2000; Priebe *et al.* 2005). These changes might be expected to lead to increased rates of suicide among psychiatric in-patients (Casells *et al.* 2005; Qin & Nordentoft, 2005). However, at the same time there has been a fall in the general

population suicide rate (National Institute for Mental Health in England, 2005) and a number of recommendations and policy initiatives that have aimed to improve the physical environment and quality of care for psychiatric in-patients (Appleby *et al*. 1999*a*, 2001; Department of Health, 2000, 2002*b*). Although preliminary data indicate that the numbers of deaths by suicide may be falling in in-patients (National Institute for Mental Health in England, 2005), it is unclear whether there has been a corresponding rise in the incidence of suicide shortly after discharge from hospital.

In the current study we aimed to investigate suicide in psychiatric in-patients over a 7-year period using a comprehensive national sample. We had three specific objectives. First, to examine trends in the rate of in-patient suicide. Second, to examine these trends by age, sex and method of suicide. Third, to examine trends in the rate of suicide among those recently discharged from in-patient care.

METHOD

Data were collected as part of the National Confidential Inquiry into Suicide and Homicide by People with Mental Illness. The Inquiry had ethical approval from South Manchester Medical Research Ethics Committee as well as approval under Section 60 of the Mental Health and Social Care Act.

Case ascertainment

We used the National Confidential Inquiry database to identify individuals aged 16 years and over who died by suicide in the calendar years 1997 (the first full year of Inquiry data collection) to 2003 inclusive. The Inquiry methods have been described in detail elsewhere (Appleby *et al*. 1999*a*, 2001). In brief, data collection occurred in three stages. First, information on all deaths in England receiving a verdict of suicide (ICD-10 Codes X60–X84 and Y87.0) or an open verdict [ICD-10 Codes Y10–Y34 (excluding Y33.9 verdict pending) and Y87.2] at the coroner's inquest was obtained from the Office for National Statistics. Second, information on whether the deceased had been in contact with mental health services in the 12 months before death was obtained from the hospitals and community trusts providing

mental health services in the deceased's district of residence. Third, clinical data about people who had been in contact with services ('Inquiry cases') were obtained by sending a questionnaire to the responsible consultant psychiatrist.

The questionnaire included sections collecting information on a number of priority groups, including psychiatric in-patients and those who died within 3 months of discharge from in-patient care. We included only National Health Service (NHS) hospitals in the current study. In-patient deaths included both those that occurred physically on the ward and those that occurred off the ward (for example, during periods of authorized or unauthorized leave). This definition has been used in a number of previous studies (Appleby *et al*. 1999*a*; Powell *et al*. 2000; King *et al*. 2001; Lieberman *et al*. 2004). The completeness of Inquiry case ascertainment has been shown to be good (Hunt *et al*. 2003) and the response rate to the questionnaire was 97% in the period covered by this study. Annual response rates varied between 92% and 99%. To make the numerator data comparable across the study period, the number of deaths by suicide in the Inquiry were uplifted to account for the different levels of data completeness in each year.

Denominator data

For deaths by suicide in the general population and Inquiry cases we used mid-year population estimates for England based on the 2001 census as the denominator (National Statistics, 2005).

For rates of in-patient suicide the number of NHS bed days per year for adult mental illness was used as the denominator. We obtained two sets of bed days data from Hospital Episode Statistics (HES) – total bed days and in-year bed days. In-year bed days excluded admissions that had started in the previous financial year and hence may have been less likely to include duplicate cases. The denominator included mental illness, forensic psychiatry, psychotherapy, and old age psychiatry categories, excluded day patients and was based on both finished and unfinished consultant episodes.

HES are based on admission and discharge information for individuals collected directly by hospital providers and collated centrally by the Department of Health (Hospital Episode Statistics, 2005). They probably represent the most complete denominator data available.

Table 1. *Suicide rates by calendar year* (*England 1997–2003*). *Data completeness for Inquiry and in-patient samples by year was 92–97%. Annual figures have been uplifted by a factor so that the estimated numbers reflect 100% completeness*

Year	n	General suicide rate per 100 000 population[a]	Inquiry suicide rate per 100 000 population	Rate per 100 000 total bed days	95% CI	Rate per 100 000 in-year bed days	95% CI	Rate per 1000 occupied beds	95% CI
1997	200	11·9	2·87	1·65	1·43–1·89	2·51	2·17–2·88	6·50	5·63–7·46
1998	175	12·3	2·98	1·18	1·01–1·37	2·10	1·80–2·43	5·66	4·85–6·56
1999	178	11·6	2·98	1·18	1·01–1·37	2·08	1·79–2·41	5·98	5·13–6·92
2000	184	11·1	2·93	1·11	0·95–1·28	2·20	1·89–2·54	6·23	5·37–7·20
2001	173	10·5	2·97	1·09	0·93–1·27	1·99	1·70–2·31	5·99	5·13–6·95
2002	152	10·5	2·87	1·03	0·88–1·21	1·89	1·60–2·22	5·36	4·54–6·28
2003	161	10·3	2·83	1·02	0·87–1·19	2·02	1·72–2·36	5·74	4·88–6·69
LR χ^2 test[b] (linear trend; 1 df)				19·54 ($p<0.001$)		5·26 ($p=0.02$)		1·45 ($p=0.23$)	

CI, Confidence interval; LR, likelihood ratio.

[a] The rates of suicide in the general population reported here are somewhat higher than official figures (National Institute for Mental Health in England, 2005). Official figures are based on European standardized populations and 3-year rolling averages.

[b] Generated by fitting calendar year as a continuous variable in an exponential log-linear Poisson model.

We also used the average daily number of occupied adult mental illness beds in each year as an alternative denominator. These data were obtained from Hospital Activity Statistics and are based on the annual return of form KH03 by all health-care providers (Department of Health, 2005). This form asks Trusts for an aggregated total of the number of available and occupied overnight beds by speciality during a 12-month period. These data were not available by age and sex and so were used only to calculate overall rates of in-patient suicide. Both bed days and occupied beds were provided on the basis of the financial year and were then converted to calendar years to ensure consistency with the numerator.

To estimate the risk of suicide in the first 3 months after discharge from hospital we used the annual number of NHS adult mental illness admissions as the denominator, obtained from the Department of Health.

Statistical analyses

Overall annual in-patient suicide rates were estimated as incidence rates using total bed days and in-year bed days as true denominators. Rates were estimated by gender, age and method of suicide. Calendar year was fitted as a continuous variable in a Poisson regression model to test for linear trends in the in-patient suicide rate over time (Gardner *et al.* 1995). We tested the Poisson models for evidence of significant over-dispersion using the likelihood ratio test

of $\alpha=0$, which is generated by the negative binomial model. If the test indicated goodness-of-fit problems in the Poisson model, the parameters from the negative binomial model were reported instead (Gardner *et al.* 1995).

If linear trends were present, simply comparing rates in the first year of the study with rates in the last year of the study could over-estimate the degree of change over time. To summarize the findings, we therefore decided that for all trends we would compare the mean rate in the first 2 years of the study (1997 and 1998) with the mean rate in the last 2 years (2002 and 2003).

We did not adjust the in-patient figures for trends in the general population suicide rate as the incidence of suicide and the risk factors associated with it differ between mentally ill and general population samples (Powell *et al.* 2000; King *et al.* 2001).

RESULTS

Table 1 shows estimated rates of suicide by calendar year. There was a 14% reduction in the general population suicide rate between the first 2 years of the study and the last 2 years. The fall in the rate of Inquiry cases was less marked during this time period (2·6%).

The annual number of deaths by suicide in psychiatric in-patients fell from an average of 187 (in 1997 and 1998) to 156 (in 2002 and 2003) (a 17% reduction). The corresponding fall in

Table 2. *Rates of in-patient suicide per 100 000 bed days by sex and calendar year,*
England (1997–2003)

	Male					Female				
Year	n	Rate[a]	95% CI	Rate[b]	95% CI	n	Rate[a]	95% CI	Rate[b]	95% CI
1997	125	2·11	1·76–2·51	3·29	2·74–3·92	75	1·21	0·95–1·52	1·80	1·42–2·25
1998	111	1·50	1·23–1·80	2·76	2·27–3·33	64	0·86	0·66–1·10	1·48	1·14–1·89
1999	104	1·39	1·14–1·68	2·52	2·06–3·06	74	0·97	0·76–1·22	1·67	1·31–2·09
2000	115	1·39	1·14–1·66	2·83	2·34–3·40	68	0·82	0·64–1·04	1·57	1·22–2·00
2001	112	1·41	1·16–1·70	2·62	2·15–3·15	61	0·77	0·59–0·99	1·38	1·05–1·77
2002	102	1·38	1·12–1·67	2·56	2·09–3·11	50	0·68	0·51–0·90	1·23	0·92–1·63
2003	100	1·24	1·01–1·51	2·51	2·05–3·06	61	0·79	0·60–1·01	1·53	1·17–1·96
LR χ^2 test (linear trend; 1 df)		11·62 ($p<0.001$)		3·45 ($p=0.06$)			8·84 ($p=0.003$)		2·52 ($p=0.11$)	

LR, Likelihood ratio.
[a] Rate per 100 000 total bed days.
[b] Rate per 100 000 in-year bed days.
The total number of deaths by suicide may differ slightly from Table 1 due to rounding of figures.

Table 3. *Rates of in-patient suicide per 100 000 bed days by age group in England (1997–2003)*

	Age 15–44			Age 45–64			Age 65+		
Year	n	Rate[a]	Rate[b]	n	Rate[a]	Rate[b]	n	Rate[a]	Rate[b]
1997	128	2·44	3·75	54	2·17	3·34	18	0·41	0·61
1998	109	1·64	3·05	49	1·55	2·84	16	0·32	0·53
1999	94	1·46	2·60	66	2·03	3·68	18	0·33	0·57
2000	103	1·42	2·94	59	1·65	3·29	21	0·36	0·68
2001	89	1·32	2·41	60	1·73	3·14	25	0·44	0·80
2002	88	1·42	2·55	45	1·39	2·58	19	0·36	0·67
2003	84	1·25	2·45	59	1·68	3·40	18	0·32	0·64
LR χ^2 test (linear trend; 1 df)		21·42 $p<0.001$	11·29 $p<0.001$		2·30 $p=0.13$	0·15 $p=0.70$		0·01 $p=0.92$	0·64 $p=0.42$

LR, Likelihood ratio.
[a] Rate per 100 000 total bed days.
[b] Rate per 100 000 in-year bed days.
The total number of deaths by suicide may differ slightly from Table 1 due to rounding of figures.

the rate of suicide among in-patients using total bed days as a denominator was 1·41 to 1·02 per 100 000 bed days (a 28% reduction, with a highly significant linear trend). Using in-year bed days as a denominator, the rate fell from 2·30 per 100 000 bed days in the first 2 years of the study to 1·95 in the final 2 years (a 15% reduction, with a significant linear trend). The fall in rates was sharper in the earlier years of the study. When we based the rate of in-patient suicide on occupied beds, the rate fell from 6·08 (in 1997 and 1998) to 5·74 (in 2002 and 2003) per 1000 occupied beds (a 9% reduction, but with no significant linear trend).

The rate of in-patient suicide was higher in males than in females (Table 2). The rate fell in both groups, although the trends did not reach statistical significance for rates calculated using the in-year bed days denominator, probably because of a lack of power. Suicide rates were highest in the youngest age group in the first 2 years of the study (Table 3). Thereafter, they were generally highest in those aged 45–64 years. Rates were lowest in those aged 65 years and over. The fall in rates was only significant in the youngest age group (reductions in rates of 26–28% between 1997/1998 and 2002/2003, with a highly significant linear trend, $p<0.001$).

Table 4 shows the rate of in-patient suicide by method. There were significant linear falls in deaths by drug poisoning, carbon monoxide poisoning and jumping. Although the rate of

Table 4. *Rates of in-patient suicide by method in England (1997–2003)*

Year	Hanging (including strangulation)			Self-poisoning[c]			Carbon monoxide poisoning			Drowning			Jumping from height/moving vehicle			Other[c,d]		
	n	Rate[a]	Rate[b]	n	Rate[a]	Rate[b]	n	Rate[a]	Rate[b]	n	Rate[a]	Rate[b]	n	Rate[a]	Rate[b]	n	Rate[a]	Rate[b]
1997	70	0·58	0·88	36	0·30	0·45	7	0·06	0·09	11	0·09	0·14	58	0·48	0·73	18	0·15	0·23
1998	76	0·51	0·91	14	0·09	0·17	5	0·03	0·06	20	0·14	0·24	48	0·32	0·58	10	0·07	0·12
1999	73	0·48	0·85	13	0·09	0·15	7	0·05	0·08	16	0·11	0·19	52	0·34	0·61	17	0·11	0·20
2000	68	0·41	0·81	19	0·11	0·23	3	0·02	0·04	14	0·08	0·17	50	0·30	0·60	29	0·17	0·35
2001	69	0·44	0·79	22	0·14	0·25	3	0·02	0·03	21	0·13	0·24	51	0·32	0·59	8	0·05	0·09
2002	72	0·49	0·90	13	0·09	0·16	2	0·01	0·03	8	0·05	0·10	38	0·26	0·47	18	0·12	0·22
2003	67	0·42	0·84	12	0·08	0·15	1	0·01	0·01	18	0·11	0·23	49	0·31	0·61	13	0·08	0·16
LR χ^2 test (linear trend; 1 df)	2·99 p=0·08		0·15 p=0·70	4·4 p=0·04		3·3 p=0·07	9·30 p=0·002		7·26 p=0·007	0·23 p=0·63		0·02 p=0·89	5·59 p=0·02		1·52 p=0·22	0·44 p=0·51		0·05 p=0·83

LR, likelihood ratio.
[a] Rate per 100 000 total bed days.
[b] Rate per 100 000 in-year bed days.
[c] Includes cutting/stabbing, suffocation, burning, firearms, electrocution and other specified.
[d] Because of evidence of overdispersion in the Poisson model, test result generated by the negative binomial model (see statistical analysis).
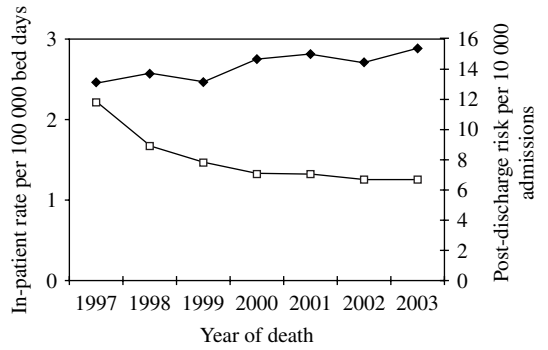The total number of deaths by suicide may differ slightly from Table 1 due to rounding of figures.

FIG. 1. Rate of in-patient suicide (–□–) and risk of post-discharge suicide (–◆–), England 1997–2003.

hanging fell by over 16% between 1997/1998 and 2002/2003 (using the total bed days denominator), this trend failed to reach statistical significance.

Fig. 1 shows the rate of suicide in in-patients (using total bed days as the denominator) and the risk of suicide within 3 months of discharge (using admissions as a denominator). The different denominators mean that the two sets of figures should not be compared directly. The rate of in-patient suicide fell by 28% between the first 2 years of the study and the last 2 years. The number of post-discharge suicides fell from an average of 268 (in 1997 and 1998) to 248 (in 2002 and 2003), a 7% reduction. However, because of a decline in the number of admissions, the risk of post-discharge suicide rose from 13·4 to 14·7 per 10 000 admissions (a 9·7% increase between the first 2 years of the study and the last 2 years). These figures are not true rates but proportions. We attempted to construct a true bed years denominator by obtaining the number of discharges per year and multiplying by 0·25 (because we were interested in deaths within 3 months of discharge). This showed a smaller increase in the rate of post-discharge suicide from 5·6 per 1000 post-discharge years (in 1997 and 1998) to 5·8 per 1000 post-discharge years (in 2002 and 2003), a 3·6% increase. The contrived nature of this denominator means that these estimates should be interpreted cautiously.

DISCUSSION

Our results suggest that suicide in psychiatric in-patients is becoming less common. We estimate

that 39 fewer individuals died as in-patients in 2003 than in 1997. Using a number of available denominators we estimate that the rate of suicide among psychiatric in-patients has fallen by between 9% and 28% during the study period. This fall was observed for both males and females and may have been most marked for the youngest age group (aged 15–44 years). A significant fall was also observed in two of the three most common methods of suicide among in-patients, but the trend for hanging failed to reach statistical significance. Although the number of deaths by suicide in the immediate post-discharge period also fell, the risk of post-discharge suicide (using admissions as a denominator) may have increased by as much as 10%.

Methodological issues

Our principal source of denominator data was information routinely collected by Trusts and not collected specifically for the purposes of this study. Errors in the various denominators may have influenced our findings. With respect to total bed days, although admission and discharge data are among the more reliable HES fields, one possible source of error is long-stay patients being counted twice if their length of stay is over 12 months. This error will potentially inflate the denominator, and rates based on these data may underestimate true rates. An alternative denominator that overcomes some of these difficulties is in-year bed days. However, this denominator does not include admissions that began before the beginning of the financial year. As such, these figures underestimate true bed days, and rates based on these data should be regarded as overestimates. Rates based on occupied beds are based on aggregate data (not data on individuals) submitted annually by hospital Trusts and should be interpreted in this context. Of course, errors in denominators will only affect trends if they vary systematically by year. All three denominators showed reductions in suicide rate, but the linear trend was only significant with the two bed-days denominators. For the risk of post-discharge suicide we used admissions as a denominator because figures were reliably recorded and easily available. The possible impact of using admissions (rather than persons) on the post-discharge figures

would be an increase in the denominator (due to multiple admissions) and mean that our reported rates of post-discharge suicide are in fact underestimates.

Our study highlights some of the difficulties of obtaining robust denominator data using existing information systems. It may be that new systems introduced as part of the National Programme for Information Technology in the NHS ('Connecting for Health') may improve the accessibility and reliability of data (Department of Health, 2006).

The findings of this study also need to be interpreted in the context of a number of other methodological limitations. First, case ascertainment was based on a three-stage process that relied on the return of information from Trusts and clinicians. However, the Inquiry consistently obtains high response rates (Appleby *et al.* 2001). Second, we determined in-patient status on the basis of the responses of clinicians. It is possible that some patients were incorrectly identified as community patients when they were in fact in-patients and vice versa but we think this is unlikely to have been a major source of bias. Third, because of the system of Inquiry data collection, the numerators had to be estimated to account for the different levels of data completeness in each year. For most years data were almost complete (97–99%) but 2003 data were 92% complete. It is possible that the actual number of in-patient suicide deaths for 2003 was higher than reported (if in-patient deaths were over-represented in the sample for which we did not yet have information), but equally it could have been lower. The absolute figures for 2003 should be interpreted cautiously, but even excluding this year there was a strong downward linear trend in the rate of in-patient suicide. Fourth, we included only individuals who received a suicide or open verdict at inquest. A small number of in-patient suicide deaths might have received other verdicts (for example, accidental death or misadventure). Fifth, although we obtained a complete national sample, the findings may not be generalizable to other countries. However, suicide among psychiatric in-patients is a topic of international interest and many of the issues in preventing suicide in this group are universal (Lieberman *et al.* 2004; Casells *et al.* 2005; Qin & Nordentoft, 2005). We believe our findings

will be relevant to those working in other centrally managed health-care systems.

Interpretation of findings

It seems likely that the rate of in-patient suicide has fallen. This drop has occurred at a time of declining rates of suicide in the general population but fewer in-patient beds and a more severely morbid in-patient population. What might be the explanation?

The risk factors for suicide among in-patients are different from those in the general population (Gardner *et al.* 1995; Powell *et al.* 2000) but our findings might simply reflect falling suicide rates generally. A large population-based study from Denmark found that the reduction in the rate of suicide in those with schizophrenia closely mirrored the reduction in the general population (Nordentoft *et al.* 2004). However, in the current study the fall in the suicide rate for Inquiry cases (individuals who died within 12 months of contact with mental health services) was much less marked than the fall for in-patients (2·6% *v.* 9–28% for psychiatric in-patients). We also carried out a *post hoc* analysis adjusting trends for changes in the general population rate (by including the general population rate as a confounder in the Poisson model). The downward trend for rates based on total bed days as a denominator remained significant [likelihood ratio (LR) χ^2 test for linear trend 11·08 (1 df), $p < 0.001$] but the trend for rates based on in-year bed days no longer reached statistical significance [LR χ^2 test for linear trend 2·91 (1 df), $p = 0.088$].

It could be that falling rates reflect changes in the case mix of the in-patient population. Although the reduction in admissions may have led to a concentration of more severely ill patients in hospital, severity is only one marker of risk. It is possible, for example, that the proportion of patients admitted with severe affective disorder (who have the highest risk of suicide) relative to those with schizophrenia declined throughout the study period. However, from Inquiry data we are able to determine that the proportion of individuals with an affective disorder or schizophrenia diagnosis (expressed as a proportion of all in-patient deaths) remained relatively constant throughout the study period (at approximately 50% and 30% respectively).

It seems plausible that guidance and policy initiatives could have raised awareness of the problem of in-patient suicide and contributed to falling rates (Appleby *et al.* 1999*a*, 2001; Department of Health, 2000, 2002*a,b*). These documents highlighted the importance of adequate service provision for mental health patients generally (including recommendations such as 'Twelve Points to a Safer Service'; Appleby *et al.* 2001), as well as particular issues for in-patient safety such as access to lethal means of suicide (e.g. hanging) and appropriate observation by staff. Previous work has been unable to demonstrate a convincing association between service-level factors and suicide rates (Desai *et al.* 2005) but there is evidence that aspects of clinical care do influence an individual's risk of suicide (Appleby *et al.* 1999*b*; King *et al.* 2001; Lieberman *et al.* 2004).

Ligature points have been the focus of recent guidance (Department of Health, 2000). The fall in the rates of suicide by hanging in this study (which included deaths by both hanging and strangulation) was no greater than the falls in the rates by other methods. Indeed, the linear trend did not reach statistical significant. This might reflect more general improvements to in-patient safety. In addition, the guidance referred specifically to non-collapsible bed or shower curtain rails (Department of Health, 2000). In-patients may use a variety of ligatures and ligature points (Gunnell *et al.* 2005). The National Confidential Inquiry now records details of ligatures and ligature points and this may help to focus preventive efforts in this area. It is notable that the trends in in-patient hanging have occurred against a background of generally increasing rates of suicide by hanging in the wider population (Gunnell *et al.* 2005).

The trend for the fall in rates was statistically significant for those aged 15–44 only. This warrants further investigation. Different measures might be required to prevent suicide in different age groups (Hunt *et al.* 2006).

It is possible that there has been an increase in risk associated with the post-discharge period, and this might be due to earlier discharge from hospital. Available data would seem to suggest that lengths of stay for most age groups have stayed stable or even increased in the time period covered by this study (Hospital Episode Statistics, 2005). However, the apparent increase

in post-discharge suicide is of concern and should be monitored closely. Services need to be aware of the importance of providing prompt and appropriate follow-up after discharge from in-patient care (Appleby *et al.* 2001; Qin & Nordentoft, 2005).

ACKNOWLEDGEMENTS

DECLARATION OF INTEREST

Louis Appleby is the Director of Mental Health in England. He also chairs the Suicide Prevention Advisory Group at the Department of Health.

REFERENCES

Appleby, L., Dennehy, J. A., Thomas, C. S., Faragher, E. B. & Lewis, G. (1999*b*). Aftercare and clinical characteristics of people with mental illness who commit suicide: a case-control study. *Lancet* **353**, 1397–1400.

Appleby, L., Shaw, J., Amos, T., McDonnell, R., Kiernan, K., Davies, S., Harris, C., McCann, K., Bickley, H. & Parsons, R. (1999*a*). Safer Services. Report of the National Confidential Inquiry into Suicide and Homicide by People with Mental Illness. Stationery Office: London.

Appleby, L., Shaw, J., Sherratt, J., Robinson, J., McDonnell, R., Wren, J., Hunt, I., Davies, S., Harris, C., McCann, K., Parsons, R., Burns, J., Bickley, H. & Kiernan, K. (2001). *Safety First*. Department of Health: London.

Casells, C., Paterson, B., Dowding, D. & Morrison, R. (2005). Long and short term risk factors in the prediction of in-patient suicide: a review of the literature. *Crisis* **26**, 53–63.

Department of Health (2000). An organisation with a memory. Report of an expert group of learning from adverse incidents in the NHS chaired by the Chief Medical Officer. Department of Health: London.

Department of Health (2002*a*). *National Suicide Prevention Strategy for England.* Department of Health: London.

Department of Health (2002*b*). *Mental Health Policy Implementation Guide: Adult Acute In-patient Provision.* Department of Health: London.

Department of Health (2005). (www.performance.doh.gov.uk/ hospitalactivity/about_data/kh03.htm). Accessed 16 September 2005.

Department of Health (2006). (www.connectingforhealth.nhs.uk/). Accessed 5 April 2006.

Desai R., Dausey, D. & Rosenheck, R. (2005). Mental health service delivery and suicide risk: the role of individual patient and facility factors. *American Journal of Psychiatry* **162**, 311–318.

Gardner, W., Mulvey, E. P. & Shaw, E. C. (1995). Regression analyses of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. *Psychological Bulletin* **118**, 392–404.

Gunnell, D., Bennewith, O., Hawton, K., Simkin, S. & Kapur, N. (2005). The epidemiology and prevention of suicide by hanging: a systematic review. *International Journal of Epidemiology* **34**, 433–442.

Gunnell, D. & Middleton, N. (2003). National suicide rates as an indicator of the effect of suicide on premature mortality. *Lancet* **362**, 961–962.

Hospital Episode Statistics (2005). (www.hesonline.nhs.uk). Accessed 16 September 2005.

Hotopf, M., Wall, S., Buchanan, A., Wessely, S. & Churchill, R. (2000). Changing patterns in the use of the Mental Health Act 1983 in England, 1984–1996. *British Journal of Psychiatry* **176**, 479–484.

Hunt, I., Kapur, N., Robinson, J., Shaw, J., Flynn, S., Bailey, H., Meechan, J., Bickley, H., Parsons, R., Burns, J., Ames, T. & Appley, L. (2006). Suicide within 12 months of mental health service contact in different age and diagnostic groups. National Clinical Survey. *British Journal of Psychiatry* **188**, 135–142.

Hunt, I., Robinson, J., Bickley, H., Meehan, J., Parsons, R., McCann, K., Flynn, S., Burns, J., Shaw, J., Kapur, N. & Appleby, L. (2003). Suicides in ethnic minorities within 12 months of contact with mental health services. National Clinical Survey. *British Journal of Psychiatry* **183**, 155–160.

King, E., Baldwin, D., Sinclair, J. & Campbell, M. (2001). The Wessex recent in-patient suicide study. 2. Case control study of 59 in-patient suicides. *British Journal of Psychiatry* **178**, 537–542.

Lieberman, D. Z., Resnnik, H. L. P. & Holder-Perkins, V. (2004). Environmental risk factors in hospital suicide. *Suicide and Life-Threatening Behavior* **34**, 448–445.

National Institute for Mental Health in England (2005). *National Suicide Prevention Strategy for England: Annual Report 2004*. Department of Health: London.

National Statistics (2005). (www.statistics.gov.uk/CCI/nscl.asp?ID = 7433). Accessed 3 September 2005.

Nodentoft, M., Laursen, T. M., Agerbo, E., Qin, P., Hoyer, E. H. & Mortensen, P. B. (2004). Changes in suicide rates for patients with schizophrenia in Denmark, 1981–97: nested case–control study. *British Medical Journal* **329**, 261–265.

Powell, J., Geddes, J., Deeks, J., Goldacre, M. & Hawton, K. (2000). Suicide in psychiatric hospital in-patients – risk factors and their predictive power. *British Journal of Psychiatry* **176**, 266–272.

Priebe, S., Badesconyi, A., Fioritti, A., Hansson, L., Kilian, R., Torres-Gonzales, F., Turner, T. & Wiersma, D. (2005). Reinstitutionalisation in mental health care: comparison of data on service provision from six European countries. *British Medical Journal* **330**, 123–126.

Qin, P. & Nordentoft, M. (2005). Suicide risk in relation to psychiatric hospitalization. Evidence based on longitudinal registers. *Archives of General Psychiatry* **62**, 427–432.