Safety of patients under the care of crisis resolution home treatment services in England: a retrospective analysis of suicide trends from 2003 to 2011

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Summary

Background Community care provided by crisis resolution home treatment teams is used increasingly as an alternative to admission to psychiatric wards. No systematic analysis has been done of the safety of these teams in terms of rates of suicide. We aimed to compare the rate and number of suicides among patients under the care of crisis resolution home treatment teams with those of psychiatric inpatients. We also assessed the clinical features of individuals who died by suicide in both home and hospital settings.

Methods We did a retrospective longitudinal analysis between 2003 and 2011 of all adults (aged 18 years or older) treated by the National Health Service in England who died by suicide while under the care of crisis resolution home treatment services or as a psychiatric inpatient. We obtained data from the National Confidential Inquiry into Suicide and Homicide by People with Mental Illness and from the Mental Health Minimum Dataset.

Findings 1256 deaths by suicide (12% of all patient suicides) were recorded among patients cared for under crisis resolution home treatment teams, an average of 140 deaths per year. Different denominators meant that direct comparison between groups was difficult, but the average rate of suicide under crisis resolution home treatment services (14·6 per 10 000 episodes under crisis care) seemed higher than the average rate of suicide among psychiatric inpatients (8·8 per 10 000 admissions). The number of suicides in patients under the care of crisis resolution home treatment teams increased from an average of 80 per year (in 2003 and 2004) to 163 per year (in 2010 and 2011) and were twice as frequent as inpatient suicides in the last few years of the study. However, because of the growing number of patients under the care of crisis resolution home treatment teams, the average rate of suicide fell by 18% between the first and last 2 years of the study. 548 (44%) patients who died by suicide under the care of crisis resolution home treatment teams lived alone and 594 (49%) had had a recent adverse life event. In a third of patients (n=428) under the care of crisis resolution home treatment teams, suicide happened within 3 months of discharge from psychiatric inpatient care.

Interpretation Although the number of suicides under the care of crisis resolution home treatment teams has risen since 2003, the rate has fallen. However, suicide rates remain high compared with the inpatient setting, and safety of individuals cared for by crisis resolution home treatment teams should be a priority for mental health services. For some vulnerable people who live alone or have adverse life circumstances, crisis resolution home treatment might not be the most appropriate care setting. Use of crisis resolution home treatment teams to facilitate early discharge could present a risk to some patients, which should be investigated further.

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See Online for a podcast about the concept and management of risk in mental health care

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Introduction

Crisis resolution home treatment teams provide intensive treatment for psychiatric patients who are acutely ill and who might otherwise be admitted to inpatient care. Previous research has suggested that such teams could be cost effective and highly acceptable to patients.[1,2] These services have been instigated in Australia,[3] Europe, and the USA.[4] Internationally, the most extensive implementation has been in the UK, underpinned by policy initiatives[5,6] and recommendations from the National Institute for Health and Care Excellence (NICE).[7]

Although the configuration of crisis resolution home treatment services varies widely,[8] some salient features are extended working hours, time-limited involvement with patients, provision of treatment in the community, and potentially a reduction in the use of hospital beds.[9] In other words, these teams provide a hospital-at-home service for people with acute episodes of mental illness. Furthermore, most crisis resolution home treatment teams also provide gate-keeping functions for admissions into psychiatric services and facilitate early discharge into the community.

Owing to the inherent risk associated with psychiatric crises and potential fragmentation of continuity of care, concerns have been raised about the safety of crisis resolution home treatment teams,[10] but without any conclusive evidence.[11] Recent data from the National Confidential Inquiry into Suicide and Homicide by People with Mental Illness (NCISH) indicated that the number of suicides in people under the care of these

teams has been increasing[12,13] and suggested that more suicides are now happening in patients under the care of these services than in those admitted to inpatient care.[13] However, is this increase a function of increasing caseloads of these teams or a genuine increase in rates?

The main aim of our study was to measure the incidence of and trends in suicide in patients under the care of crisis resolution home treatment teams in England since their implementation in 2003. A secondary aim was to assess the psychosocial and clinical features of people who died by suicide while under the care of crisis resolution home treatment teams and compare them with those of inpatients who died by suicide, with a view to informing specific preventive strategies.

Methods

Study setting

In England, specialist mental health services (generally referred to as mental health trusts) provide care to individuals seeking treatment. Similar to other services provided by the National Health Service (NHS), this treatment is free at the point of use and ranges from inpatient services and community care to day centres and rehabilitation clinics. Over the past decade, several new services have been made available to mental health patients, such as early intervention services, assertive outreach teams, and crisis resolution and home treatment teams.

Data collection

We used data from the NCISH to identify all individuals aged 18 years and older who died by suicide between 2003 (the year that crisis resolution home treatment services were implemented in England) and 2011, inclusive. NCISH methods have been described in detail elsewhere.[14,15] Briefly, data collection took place in three stages. First, information on all deaths in England receiving a verdict of suicide or an open verdict at a coroner's inquest was obtained from the Office for National Statistics (ONS). ONS data comprise method of death, age, sex, verdict received, and area of death. Open verdicts were included because most deaths are thought to be by suicide and, by convention, are used to estimate the rate of suicide in the UK.[16] Second, information on whether the deceased individual had been in contact with mental health services in the 12 months before death was obtained from the hospitals and community services providing mental health care in the deceased's district of residence and adjacent districts. Third, demographic and clinical data about people who had been in contact with services (termed patient suicides) were obtained by sending a questionnaire to the responsible consultant psychiatrist. Items in the questionnaire encompassed the treatment that individuals were receiving at the time of death, including community care provided by crisis resolution home treatment teams or inpatient care.

We obtained ethics approval for our study from the North West Research Ethics Committee. NCISH also has ethics approval under Section 60 of the Mental Health and Social Care Act.

Procedures

To calculate the rate of suicide under crisis resolution home treatment teams, we used the number of referrals for care under this system (termed episodes; the same individual could be referred more than once) in England as the denominator, which we obtained from local delivery plan returns—ie, reports made four times a year by NHS primary care trusts—that are gathered by the national Health and Social Care Information Centre. These returns are sent to the Department of Health in England and were introduced to monitor progress against centrally set target allocations, such as provision of home treatment teams.

To provide some context to these figures, we calculated the rate of suicide among inpatients in psychiatric wards, using the number of admissions for adult mental illness as the denominator. Furthermore, we calculated the rate of suicide in the community, using the number of people in contact with NHS secondary mental health services (excluding admissions) as the denominator. We obtained these data (for both inpatient and community suicides) from the Mental Health Minimum Dataset (MHMDS),[17] which gathers individual-level data about contact with NHS mental health services. MHMDS data were not available for 2002–03; therefore, we calculated rates of inpatient suicide for 2004–11 only. However, changes in MHMDS methodology led to a substantial escalation in the recorded number of people in contact with mental health services for 2011–12. The rate of community suicide in 2011 is, therefore, not directly comparable with earlier years. All denominator data were provided according to financial year and we converted the information to calendar years to ensure consistency with the numerator.

Statistical analysis

Because crisis resolution home treatment teams were introduced as an alternative to inpatient care, and a pronounced shift of resources into the community took place as a result, we judged that comparison of suicides while under the care of crisis resolution home treatment teams with inpatient suicides was most appropriate. We presented the main findings as proportions with 95% CIs. We did subgroup analyses with χ^2 tests, unless any variable had an expected frequency less than five, in which case we used Fisher's exact test. We judged a two-sided p value less than 0·05 significant. If an item of information was not known for a suicide case, the case was removed from the analysis of that item; the denominator in all estimates is, therefore, the number of valid cases for every item. To assess the association between individual factors and suicide under the care of

crisis resolution home treatment teams or inpatient suicide, we did bivariate analyses by logistic regression. For example, the outcome was the binary variable of interest against the three patient groups, with suicides in the community as the reference group. We used Stata 12.0 (College Station, TX, USA) to calculate odds ratios and their 95% CIs.

The overall response rate for questionnaires was 97%; however, data were less complete for the final year (2011) of the study (81%) because of time delays inherent in the notification process. When calculating rates, to make numerator data comparable across the study period, we uplifted the number of deaths by suicide in 2011 on the basis of data completeness in previous years—ie, we adjusted to an assumed final figure of 97%. We fitted calendar year as a continuous variable in a Poisson regression model (with denominator data as the offset) to test for linear trends in the rates of suicide over time.[18] Since completeness was lower in 2011, and concerns had been raised about reliability of denominator data, we also did a sensitivity analysis and tested for trends excluding 2011 data.

Role of the funding source

The funder had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Results

Between Jan 1, 2003, and Dec 31, 2011, we received notifications of 39 361 deaths by suicide of people aged 18 years and older, including 28 693 cases in which the coroner's verdict was suicide and 10 668 open verdicts or deaths from undetermined cause. Of these, 10 744 (27%) individuals had been in contact with NHS mental health services in the year before death. Completed questionnaires were received for 10 497 people, a response rate of 98%. 1057 (10%) individuals were current inpatients. Of the remaining 9440 patients, 1256 (12% of the total sample) were receiving care under crisis resolution home treatment teams at the time of death. The community treatment setting was not known for 358 (4%) people, and these cases were excluded from our analysis.

The mean number of suicides per year of people cared for under crisis resolution home treatment teams was 140 deaths (SD 38·7), versus a mean per year of 117 inpatient suicides (SD 37·8). The overall suicide rate during the whole study period among patients cared for by crisis resolution home treatment teams was 14·6 (95% CI 13·8–15·4) suicides per 10 000 episodes. Although it is difficult to make direct comparisons because of different denominators, this rate seems consistently higher than the overall inpatient suicide rate (8·8 suicides per 10 000 admissions, 95% CI 8·2–9·5) and the rate of suicide in the community (7·8 suicides per 10 000 people in contact with mental health services, 95% CI 7·6–8·0).

Over the study period, a significant increase was recorded in the annual number of suicides among patients cared for under crisis resolution home treatment teams, from a mean of 80 in 2003 and 2004 to 163 in 2010 and 2011 ($p<0·0001$ for the trend from 2003 to 2011; figure 1). By contrast, the mean number of inpatient suicides fell by more than half, from 163 in 2003 and 2004 to 76 in 2010 and 2011 ($p<0·0001$ for the trend from 2003 to 2011). Despite the escalation in the number of suicides of people cared for by crisis resolution home treatment teams, the suicide rate fell from a mean of 15·3 suicides per 10 000 episodes in the first 2 years of

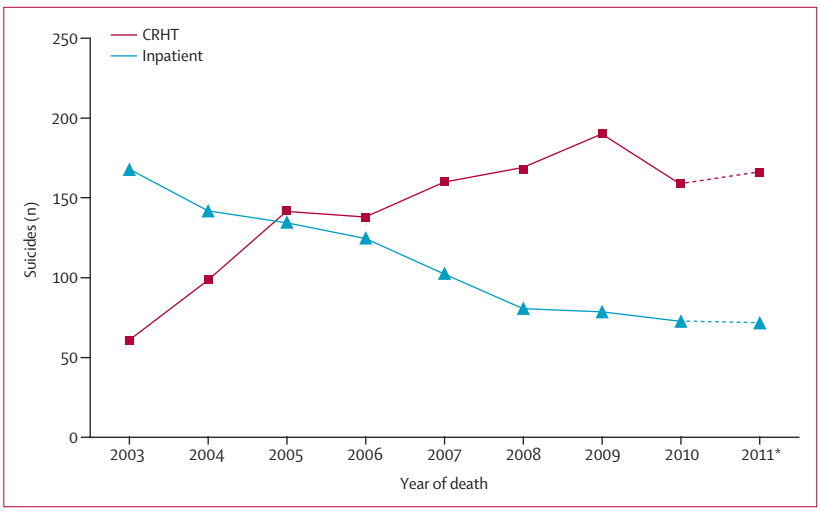

Figure 1: **Number of suicides among community patients under CRHT and psychiatric inpatients in England, from 2003 to 2011**
Data completeness by year was 81–99%. CRHT=crisis resolution home treatment. *Figures in 2011 have been uplifted by a factor so that the estimated numbers reflect the average completeness of all years (97%).

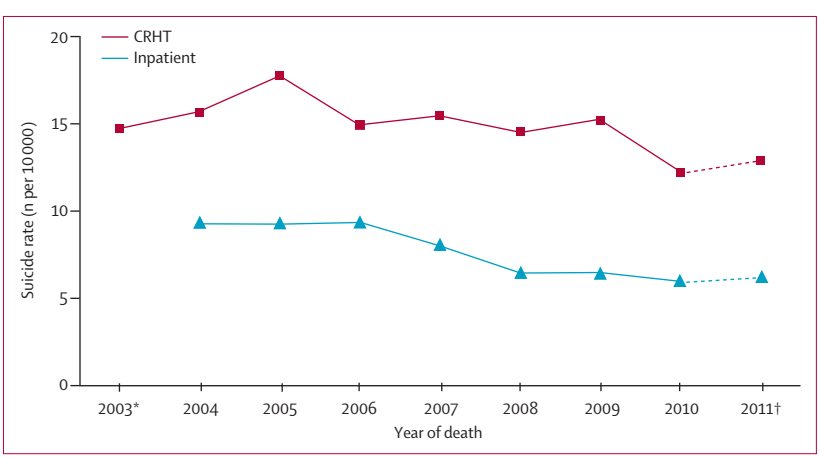

Figure 2: **Rate of suicide among community patients under CRHT and psychiatric inpatients in England, from 2003 to 2011**
Data completeness for patient suicides by year was 81–99%. Rate of suicide was per 10 000 episodes for CRHT and per 10 000 admissions for inpatient treatment. CRHT=crisis resolution home treatment. *Data from the Mental Health Minimum Dataset were not complete in 2003; therefore, inpatient suicide rates are presented for 2004–11 only. †Figures in 2011 have been uplifted by a factor so that the estimated numbers reflect the average completeness of all years (97%).

the study to 12·5 suicides per 10 000 episodes in the final 2 years, an 18% reduction (p=0·0048 for the trend from 2003 to 2011; figure 2). Rates of suicide also decreased significantly among inpatients (from an average of 9·9 suicides per 10 000 admissions in 2004 and 2005 to 6·3 suicides per 10 000 admissions in 2010 and 2011; p<0·0001 for the trend from 2004 to 2011) and among those who died in the community (from 9·4 suicides per 10 000 people in contact with mental health services in 2004 and 2005 to 7·0 suicides per 10 000 people in contact with mental health services in 2010 and 2011; p<0·0001 for the trend from 2004 to 2011). A sensitivity analysis,

	Other suicides in the community (n=7826)	Suicides in the care of crisis resolution home treatment teams (n=1256)		Inpatient suicides (n=1057)	
	n (%)	n (%)	Odds ratio (95% CI)	n (%)	Odds ratio (95% CI)
Method of suicide					
Hanging	3046 (39%)	569 (45%)	1·3 (1·1–1·5)	464 (44%)	1·2 (1·1–1·4)
Self-poisoning	2329 (30%)	265 (21%)	0·6 (0·5–0·7)	89 (8%)	0·2 (0·2–0·3)
Carbon monoxide poisoning	204 (3%)	27 (2%)	0·8 (0·5–1·2)	13 (1%)	0·5 (0·3–0·8)
Jumping from height or in front of a vehicle	1111 (14%)	193 (15%)	1·1 (0·9–1·3)	292 (28%)	2·3 (2·0–2·7)
Drowning	408 (5%)	76 (6%)	1·2 (0·9–1·5)	91 (9%)	1·7 (1·3–2·2)
Other	700 (9%)	124 (10%)	1·1 (0·9–1·4)	107 (10%)	1·1 (0·9–1·4)
Sociodemographic factors					
Age >45 years	3812 (49%)	699 (56%)	1·3 (1·2–1·5)	507 (48%)	1·0 (0·9–1·1)
Female sex	2587 (33%)	509 (41%)	1·4 (1·2–1·6)	389 (37%)	1·2 (1·0–1·3)
Unmarried	5457 (71%)	808 (65%)	0·7 (0·7–0·8)	723 (69%)	0·9 (0·8–1·0)
Living alone	3653 (48%)	548 (44%)	0·8 (0·7–0·95)	437 (42%)	0·8 (0·7–0·9)
Black and minority ethnic group	607 (8%)	68 (6%)	0·7 (0·5–0·9)	93 (9%)	1·1 (0·9–1·4)
Unemployed	3274 (44%)	437 (36%)	0·7 (0·6–0·8)	453 (43%)	1·0 (0·9–1·1)
Long-term sickness	1243 (17%)	185 (15%)	0·9 (0·8–1·1)	189 (18%)	1·1 (0·9–1·3)
Behavioural					
History of self-harm	5150 (67%)	864 (70%)	1·1 (1·0–1·3)	806 (77%)	1·7 (1·4–1·9)
History of violence	1657 (22%)	179 (15%)	0·6 (0·5–0·7)	275 (26%)	1·3 (1·1–1·5)
History of alcohol misuse	3642 (47%)	443 (36%)	0·6 (0·6–0·7)	383 (37%)	0·6 (0·6–0·7)
History of drug misuse	2517 (33%)	273 (22%)	0·6 (0·5–0·7)	327 (32%)	0·9 (0·8–1·1)
Clinical					
Primary diagnosis					
Affective disorder	3420 (44%)	730 (59%)	1·8 (1·6–2·0)	511 (49%)	1·2 (1·0–1·4)
Schizophrenia and other delusional disorders	1317 (17%)	166 (13%)	0·8 (0·6–0·9)	325 (31%)	2·2 (1·9–2·5)
Alcohol dependence	745 (10%)	56 (5%)	0·4 (0·3–0·6)	18 (2%)	0·2 (0·1–0·3)
Drug dependence	368 (5%)	11 (1%)	0·2 (0·1–0·3)	6 (1%)	0·1 (0·1–0·3)
Personality disorder	726 (9%)	86 (7%)	0·7 (0·6–0·9)	97 (9%)	1·0 (0·8–1·2)
Any secondary diagnosis	4160 (54%)	658 (53%)	1·0 (0·9–1·1)	544 (52%)	0·9 (0·8–1·0)
Illness onset <12 months	1374 (18%)	373 (30%)	2·0 (1·7–2·3)	215 (21%)	1·2 (1·0–1·4)
Recent adverse life event	2817 (41%)	594 (49%)	1·4 (1·3–1·6)	426 (42%)	1·0 (0·9–1·2)
Recent drug treatment refusal	1011 (14%)	175 (14%)	1·0 (0·9–1·2)	125 (12%)	0·8 (0·7–1·0)
Died within 3 months of discharge	1401 (18%)	428 (34%)	2·4 (2·1–2·7)	..	..
Missed last appointment	2038 (26%)	289 (23%)	0·8 (0·7–1·0)	..	..
Contact with services					
Any symptoms at last contact	4741 (63%)	907 (75%)	1·7 (1·5–2·0)	607 (59%)	0·9 (0·8–0·98)
Emotional distress	2579 (34%)	556 (46%)	1·6 (1·4–1·8)	292 (28%)	0·8 (0·7–0·9)
Depressive illness	2200 (29%)	547 (45%)	2·0 (1·8–2·3)	307 (30%)	1·0 (0·9–1·2)
Recent self-harm	847 (11%)	176 (14%)	1·3 (1·1–1·6)	137 (13%)	1·2 (1·0–1·5)
Hopelessness	973 (13%)	274 (23%)	2·0 (1·7–2·3)	153 (15%)	1·2 (0·97–1·4)
Suicidal ideation	1031 (14%)	272 (23%)	1·8 (1·6–2·1)	125 (12%)	0·9 (0·7–1·1)
Short-term risk moderate-to-high	828 (12%)	316 (27%)	2·8 (2·4–3·3)	187 (18%)	1·7 (1·5–2·1)
Long-term risk moderate-to-high	2599 (37%)	580 (50%)	1·7 (1·5–2·0)	519 (52%)	1·9 (1·7–2·2)

Table: **Characteristics of patients dying by suicide while under the care of crisis resolution home treatment teams or as an inpatient, compared with other deaths by suicide in the community**

with the final year of data excluded, showed the same significant linear trends in the number and rate of suicides in these patient groups.

The median age of patients who died by suicide while under the care of crisis resolution home treatment teams was 48 years (IQR 38–58). Hanging or strangulation (45%) and self-poisoning (21%) were the most common methods of suicide in this group (table). For 548 (44%) suicides, the patient lived alone, and for 373 (30%), the person had been ill for less than a year. Adverse life events in the 3 months before death were reported for nearly half of all patients in the care of crisis resolution home treatment teams; 167 (28%) reported multiple life events. The most common adverse life events were a relationship break-up (133 cases, 22%), problems in the workplace (113 cases, 19%), and financial difficulties (65 cases, 11%). A third of all suicides under crisis resolution home treatment teams happened within 3 months of the patient's discharge from psychiatric inpatient care and 168 (40%) of these deaths were within the first 2 weeks of the patient leaving hospital. Short-term and long-term risk of suicide was viewed by clinicians as moderate-to-high for 27% and 50% of patients, respectively.

By comparison with inpatient suicides, fewer patients who died under the care of crisis resolution home treatment teams had a history of self-harm (70% *vs* 77%; p<0·0001), violence (15% *vs* 26%; p<0·0001) or drug misuse (22% *vs* 32%; p<0·0001), but they were more likely to have been ill for less than a year (30% *vs* 21%; p<0·0001) and to have experienced recent adverse life events (49% *vs* 42%; p<0·0001). At the last contact with services, more patients under crisis resolution home treatment teams had shown symptoms of mental illness compared with inpatients, particularly emotional distress (46% *vs* 28%; p<0·0001) and depression (45% *vs* 30%; p<0·0001). Clinicians were more likely to view patients in the care of crisis resolution home treatment teams as at moderate-to-high short-term risk of suicide compared with inpatients (27% *vs* 18%; p<0·0001).

Discussion

Our findings show that, between 2003 and 2011, the number of people dying by suicide while under the care of crisis resolution home treatment teams was high, with an average of 140 deaths reported a year—20% higher than the number dying while admitted for psychiatric inpatient care over the whole period of the study, and increasing to twice as many in the last 5 years of the study. The rate of suicide in patients under the care of crisis resolution home treatment teams was also high, and individuals cared for under these services seemed at higher risk than those who were admitted. Despite an apparent fall in the rate of suicide under crisis resolution home treatment teams (attributable to a rise in the number of patients served by these teams), a significant escalation in the number of deaths was noted since 2003. This increase is clearly important and is a target for augmented safety awareness by services. Our findings also indicated that 44% of people under the care of crisis resolution home treatment teams who died by suicide were living alone at the time of their death and 34% died within 3 months of discharge from inpatient care.

The fall in the rate of suicide among patients cared for under crisis resolution home treatment teams has happened despite an increase in the transfer to home care of high-risk patients who would usually be admitted, suggesting better attention to safety in this setting. However, the number of patients dying by suicide while under the care of crisis resolution home treatment care is growing, and the rate is consistently higher than that among psychiatric inpatients, suggesting that inpatient care might reduce suicide risk more effectively than crisis resolution home treatment. Alternatively, the caseloads of crisis resolution home treatment teams might include individuals with acute illness at highest risk. It is noteworthy that patients under the care of crisis resolution home treatment teams were more likely than inpatients to be rated by clinicians as at high or moderate short-term risk of suicide at their last appointment. This finding could reflect the fact that crisis resolution home treatment is used at times of emergency or that inpatient care could be perceived as an easier environment in which to manage risk.

How might we improve patients' safety while under the care of crisis resolution home treatment teams? One consideration is whether crisis resolution home treatment is the most appropriate care setting for an individual who lives alone. Furthermore, the prevalence of adverse life events is important because problems within the home environment could exacerbate symptoms. In some areas, a function of crisis resolution home treatment teams is to facilitate early discharge from hospital. In our study, a high proportion of patients receiving care under crisis resolution home treatment teams died shortly after leaving hospital. Use of crisis resolution home treatment teams as a means to reduce the length of stay in hospital could, therefore, be a risk for some patients.

Our national study included robust case ascertainment and represents the first comprehensive effort to investigate rates of suicide and characteristics of patients under the care of crisis resolution home treatment teams. Several methodological limitations must be highlighted. First, the absence of a comparison group means we cannot draw conclusions about the causes of or risk factors for suicide. However, the clinical features we identified might help crisis resolution home treatment services to focus their prevention efforts. Second, information obtained from clinicians was based on case records and clinical judgment, rather than on standardised methods. This approach accords with methods used in other suicide studies; moreover, the accuracy of NCISH questionnaire

Panel: Research in context

Systematic review

We searched Medline, Embase, and PsychINFO, with no date restriction, with the terms "suicid*" and "self-harm" combined with "crisis resolution home treatment", "crisis teams", or "home-based crisis intervention" or "cris*". We identified only three UK studies in which the number of suicides or attempted suicides was reported over the period that crisis resolution home treatment teams were implemented.[1,21,22] In two of these studies, no change was reported in the number of suicides or attempted suicides since the availability of crisis home treatment,[1,22] and in the third, an increase was noted.[22] However, all studies included small numbers of patients and were restricted to local geographical settings. We did not identify any studies reporting rates of suicide under crisis home treatment services nor did we find reports of nationally representative data for rates of suicide under crisis resolution home treatment teams.

Interpretation

As far as we are aware, our study is the first to examine the incidence and rate of suicide under crisis resolution home treatment teams in England. The number of suicides among patients under the care of crisis resolution home treatment teams has risen between 2003 and 2011. Despite a fall during this period in the rate of suicide with crisis resolution home treatment services, rates are consistently higher than those for inpatients with psychiatric disorders. Safety of patients under the care of crisis resolution home treatment teams should be a priority for mental health services, to reduce the high number of suicides. Specific groups of high-risk patients—eg, those who live alone or who have been recently discharged from hospital—might not be appropriate for crisis resolution home treatment.

data is good.[19] Third, awareness of a patient's outcome by clinicians completing questionnaires might have introduced bias. Fourth, we used national denominators that are available widely; we did not attempt to link different datasets because this approach was beyond the scope of the current investigation. The strategy of using widely available denominator data has been used in much of our previous work.[12,20] Moreover, we did not adjust for repeated admissions. However, data from the MHMDS represent the most complete source available. Fifth, robust longitudinal data were not available to estimate time at risk; thus, differences between the crisis resolution home treatment team and inpatient setting could have been attributable to variations in duration of care. Sixth, we were unable to ascertain whether an inpatient had been under the care of crisis resolution home treatment teams before admission. Finally, service configurations vary,[8] which could limit the comparability of crisis resolution home treatment across different areas and service providers in England.

To our knowledge, our study is the first detailed investigation of patients who die by suicide while under the care of crisis resolution home treatment teams—arguably the most important safety concern in this group of patients (panel). Our findings suggest that care provided by crisis resolution home treatment teams is associated with a high suicide risk. Future studies should investigate self-harm or serious violence in addition to suicide, and include long-term follow-up of randomised controlled trials,[1] to provide an understanding of the relation between crisis resolution home treatment teams and suicide. The effects of care-provision levels—such as bed availability—and indices of social deprivation on suicide rates could also be analysed. The sustained fall in inpatient suicides provides good evidence that safety measures in the hospital setting can have a positive effect. The same efforts now need to focus on safety of home treatment.

Contributors

IMH and NK designed the study, with input from all authors. Staff at the NCISH obtained data, supervised by KW, JS, NK, and LA. IMH and DW prepared data and did final analyses, supervised by NK, with further input from all authors. IMH, MSR, and NK wrote the initial draft, and all authors contributed to the final report. NK and LA are joint study guarantors.

Declaration of interests

LA chairs the Suicide Prevention Advisory Group at the Department of Health (England), and he is a non-executive director for the Care Quality Commission. NK was chair of the NICE Guideline Development Group for longer term management of self-harm guidelines, and he is a member of the Suicide Prevention Advisory Group. All other authors declare no competing interests.

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