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Suicide and mental illness: a clinical review of 15 years findings from the UK National Confidential Inquiry into Suicide

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Introduction: Suicide risk is most commonly associated with mental illness. In particular, suicide in people under mental health care presents distinct patterns of risk and opportunities for prevention due to their close proximity to specialist care.

Sources of data: The National Confidential Inquiry into Suicide and Homicide by People with Mental Illness (Inquiry) is a unique UK-wide national database of all suicide cases in contact with mental health services in the 12 months preceding suicide. This review presents Inquiry findings from the beginning of the Inquiry in 1996 up to the present (2011) (15 years).

Areas of agreement: Suicide varies substantially by socio-demographic (age, gender) and clinical features (e.g. diagnosis; care variables). Effective suicide prevention initiatives should incorporate research findings to inform clinical practice and policy.

Areas of controversy: Risk assessment remains one of the most difficult areas of clinical practice and management although all areas of clinical practice, research and policy development would benefit from continued high-quality studies.

Growing points: The Inquiry work has positively influenced mental health practice and policy in the UK. These changes include: falling suicide rates in mental health patients, informing suicide prevention strategies and developing safety checklists for mental health services.

Areas timely for developing research: Investigating suicide in non-mental health settings, investigating suicide following different treatment services and investigating models of service delivery could usefully inform future directions for improving patient safety.

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Introduction

Suicide is the 10th leading cause of death worldwide accounting for 1.5% of all deaths equating to a rate of ~14.5/100 000 persons per year.[1] However, the incidence of suicide varies substantially according to many factors, including country, sex, age and how suicide is defined and reported.[1]

Suicide is multifaceted and rarely the result of any single cause. However, suicide risk is most commonly associated with mental illness. Approximately 90% of individuals who die by suicide have a mental illness although the role of mental illness in completed suicide varies globally.[2,3] Mental illness increases the risk of suicide between 5- and 15-fold compared with the general population.[4]

Suicide in people under mental health care presents distinct patterns of risk and opportunities for prevention due to their close proximity to specialist care. Much of what we know about suicide in individuals under the care of mental health services in the UK is a result of the National Confidential Inquiry into Suicide and Homicide by People with Mental Illness (Inquiry).[5] The Inquiry is a unique UK-wide national database of all suicide cases in contact with mental health services in the 12 months preceding suicide. The development of the Inquiry over the past decade has coincided with government policy (particularly in England) on the reduction in suicide.[6] The broad aims of the Inquiry defined at its inception remain the cornerstone of the Inquiry work programme today. These aims are to:

(i) collect national data on all suicide and homicide cases, by people in contact with psychiatric services;

(ii) recommend changes to clinical practice and policy that will reduce the risk of suicide and homicide.

Briefly, there are three main stages to data collection for suicide. First, data are collected on national suicide data irrespective of receipt of mental health care. All people receiving a coroner's verdict of suicide or undetermined death ('open verdict') at inquest are provided to the Inquiry from national sources (Office for National Statistics (ONS), the General Register Office (GRO) in Scotland and Northern Ireland). A limited amount of information is collected on all suicide cases nationally, including country of death, sex, date of birth, date of death, verdict (e.g. suicide, open verdict) and method of suicide. Secondly, individuals in recent contact with mental health services (within 12 months) are identified via administrative contacts within mental health trusts. Thirdly, detailed sociodemographic and clinical data about these individuals are collected

from clinicians via questionnaire. A detailed account of the Inquiry methodology is given elsewhere.[7]

About this review

The purpose of this review is to summarize the literature on mental illness and suicide in people with mental illness in the UK, with particular reference to the work of the Inquiry. We also make reference to the wider international literature where appropriate. The review is structured thematically around the main research areas of the Inquiry work programme since 1996. While comprehensive, this review is not intended to be exhaustive.

Suicide in the general population

Suicide accounts for ~5000 deaths per year in England although the number and rate of suicide have decreased over the last decade.[8] Although there has been a more substantial decrease in male suicide cases in the past decade, suicide is still more common among males than females, in line with the global gender pattern of suicide.[9] Notably, however, China (excluding Hong Kong) has fewer male than female suicide deaths.[9]

Generally, suicide rates increase with advancing age although age-specific rates have changed significantly over recent decades [10,11] Recent data for England show a welcome decline in the rates of suicide among the younger age groups where rates of suicide have fallen among all age groups, particularly the youngest age groups (under 25s; 25–44 year olds).[8] Windfuhr *et al.*[7] reported a 23% decline in the number of child and adolescent suicide cases (10–19 years) between 1997 and 2003, with a 28% decrease in suicide rates during this same time period. This compares to an 8% decrease in those 20 years and older during the same time period. This is in line with findings from other research showing a substantial decline—particularly among young males—over recent decades throughout the UK.[12,13]

In line with the international literature, common methods of suicide in England include hanging/strangulation, self-poisoning (primarily overdose) and jumping from a height or in front of a moving vehicle (multiple injuries).[8,14] Method varies by gender and age. Males more often engage in violent or 'active' methods of suicide (e.g. hanging), while younger individuals (under 25 years) more often die by hanging or jumping (multiple injuries) compared

with older individuals (65 years and older), who are more likely to die by self-poisoning or drowning. Although this variation by gender and age is similar internationally, there is more variability between countries than by any other factor. For both males and females, availability of method is an important factor.[15] Reducing method availability can reduce method-specific suicide although method substitution may be an unintended consequence of this.[15] Robust monitoring of all suicide deaths is important to identify trends.

UK comparisons of suicide in the general population

Suicide rates vary within the UK with overall rates lowest in England and Wales (10.2 per 100 000 population),[14,17] highest in Scotland (18.7 per 100 000 population)[16,17] and rates in Northern Ireland falling between other UK countries (13.9 per 100 000 population).[17] Although the incidence of suicide is higher in Scotland than in England and Wales, there has been a decline in the number and rate of Scottish suicide since 2002. In contrast, rates of suicide are not falling in Northern Ireland.[17] The reasons underpinning the UK variation in suicide rates have been explored with respect to Scotland and England since the 1970s although there is currently no definitive explanation.[18]

The rate of suicide among different age groups varies substantially throughout the UK. Scotland and Northern Ireland have a higher suicide rate across all ages except in the oldest age groups.[16,17] In particular, the magnitude of the difference is greatest in the youngest age groups (under 18s) – 5.2 per 100 000 in Scotland, 1.4 per 100 000 population in England/Wales and 4.2 in Northern Ireland.[17]

General patterns of suicide method are similar across the UK, including a general rise in deaths by hanging, although there is some variation. For example, drowning is more common in Scotland and Northern Ireland compared with England and Wales.[17] In England specifically, cutting and stabbing have also increased although self-poisoning, carbon monoxide poisoning, drowning and firearms deaths have decreased.[8] The most striking difference in Scotland is the prevalence of substance misuse both in the general and patient populations. For example, alcohol and drug dependence were between two and three times as common in Scotland compared with England and Wales (alcohol misuse: 17 vs. 8% and drug misuse: 9 vs. 3%).[16] Alcohol misuse is also a particular problem in Northern Ireland.[17]

Suicide among people in receipt of mental health care

Approximately 25% of individuals are in contact with mental health services prior to death. Over recent years, there has been a decline in patient suicide numbers (6% decrease) and rates (12% decrease) in England.[8] It is encouraging that patient suicide cases are declining in some parts of the UK, which may reflect improvements in mental health services.

Geographical and spatial variation

As in the general population, patient suicide varies geographically. For example, a proportion of individuals die away from their usual place of residence (i.e. non-resident suicide deaths) (Fig. 1). In England, this represents 12% of the general and mental health patient populations.[19]

Windfuhr *et al.*[19] found that the method of suicide was associated with geographical location, particularly for non-resident suicide cases. For example, although drowning was a common method of suicide in coastal areas, it was a more common method of suicide among non-resident suicide cases. Further, a greater proportion of non-resident suicides occurred in a geographical area with a nationally known suicide hotspot, and died by the method of suicide associated with that hotspot.

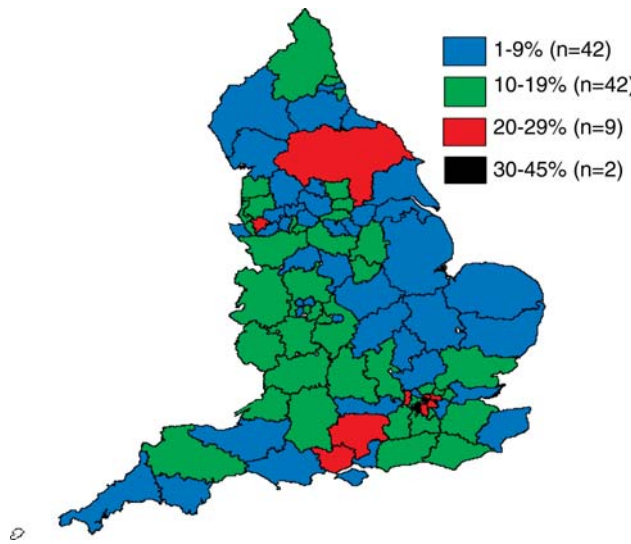

Fig. 1 The proportion of general population out of district suicide cases by Health Authority (1997–2001). *Source*: Windfuhr *et al*.[19]

The study also explored the relationship of geographical size of health authorities (HAs) among general population non-resident suicide cases where an inverse relationship was found—non-resident suicide deaths increased with decreasing geographical size of an HA. Non-resident patient suicide cases were also characterized by specific social and clinical features (e.g. ethnic minority background, homelessness, psychiatric in-patient status, last in-patient admission was not a re-admission, recent contact with mental health services (<7 days) and a primary diagnosis of schizophrenia). In summary, area- and individual-level factors are associated with suicide deaths that occur distant from home. An awareness of these factors may aid suicide prevention, particularly monitoring hotspots and restricting access to means.[20]

Suicide also clusters both geographically and temporally, termed point clusters (i.e. clustering in terms of space and time) and mass clusters (i.e. clustering in terms of time only).[21] Broadly defined, a cluster is considered to have occurred where the suicide rate increases temporarily.[21] Imitation is thought to play a central role in the clustering of suicide, in line with Bandura's social learning theory, which postulates that individual behaviour is in part shaped by imitating a model that the individual identifies with.[22] The suicide contagion (the suicidal behaviour) can be transmitted via social networks or exposure to the media (i.e. the Werther effect).[22] To a lesser extent, it has also been postulated that point clustering can be explained in terms of homophily, the tendency of similar individuals to associate with one another.[21]

McKenzie *et al.*[23] investigated clustering of suicide in relation to space, time and method among patient suicides in the UK over ~4 years. Space was defined as the mental health trust in which the suicide occurred (105 mental health trusts at the time the study was carried out). Different thresholds for closeness in time were studied, ranging from 30 to 360 days; the same method of suicide was required for inclusion as a time-space-method pairing. The findings of this study show significant spatio-temporal and time-space-method clustering among individuals who had been in contact with mental health services in the 12 months prior to death. The proportion of suicide clusters increased steeply from 30 to 210 days (1–7 months) or 300 days (10 months) for spatio-temporal and time-space-method pairs, respectively. Imitation was estimated to account for ~13% of spatio-temporal, and ~10% of time-space-method clustering. This study is one of the few studies showing any evidence for clustering among a mental health population.[24] Further research is required to better understand the role of imitation and other mechanisms underpinning suicide clustering in the patient population.

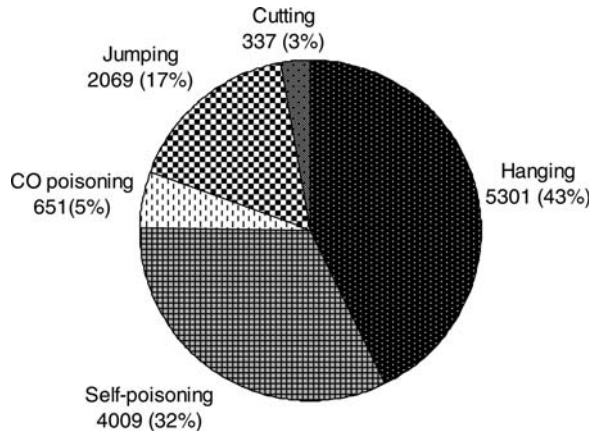

Fig. 2 Patient suicide cases in England and Wales (1997–2007). *Source*: Annual Report.[8]

Method of suicide

Among patient suicide cases, hanging/strangulation, self-poisoning and jumping or multiple injuries are the most common methods of suicide, accounting to over-three quarters of deaths in England and Wales (Fig. 2).[8] Differences in methods of suicide between genders and age groups are similar to patterns seen in the general population although jumping is more common in patient suicides and has increased over the decade.[8]

Hunt and colleagues recently reported the method of suicide for all patient suicide cases, describing the factors associated with suicide by different methods (Box 1).[25] The findings of this study can inform suicide prevention measures in at least two ways. First, this study identifies the method of suicide most commonly associated with specific patient sub-groups. Method restriction may be possible in some cases. Second, the findings may increase awareness of the clinical care that may help to prevent suicide in the patient population.

Socio-demographic and cultural characteristics of patient suicide

Gender and age

Suicide is more common among males than females in the patient population although this is less pronounced than in the general population.[14] In England and Wales, the number of male and female patient suicide cases has decreased across the decade in England and Wales.

Box 1: Summary of risk factors associated with suicide method (2000–2004)

Hanging (n = 2288)
Male sex
Age under 25 years
Short duration of illness
Primary diagnosis of affective disorder
Self-poisoning (n = 1720)
Female sex
Older age (over 25)
Social isolation/adversity: (unmarried, unemployed, living alone)
History of self-harm, alcohol misuse
Primary diagnosis of drug dependence
Co-morbid psychiatric disorder
Carbon monoxide poisoning (n = 281)
Male sex
Aged 25–44
Short illness history
Primary diagnosis of affective disorder and personality disorder
Jumping (n = 901)
Aged under 25 years
From an ethnic minority group
Primary diagnosis of schizophrenia
Non-compliant with treatment
Under the Care Programme Approach (CPA)
Recent contact with mental health services
Drowning (n = 402)
Female sex
Older age (45 years and over)
From an ethnic minority group
Primary diagnosis of schizophrenia
Multiple previous in-patient admissions
Psychiatric in-patient
Burning (n = 119)
From an ethnic minority group
Multiple previous in-patient admissions
Recent discharge from an in-patient ward

Source: Hunt *et al.*[25]

In particular, numbers of suicide cases among young patients under 25 years of age have fallen by 57% between 1997 and 2007 (Fig. 3), especially among 20–24 year olds. There is a particularly low rate of

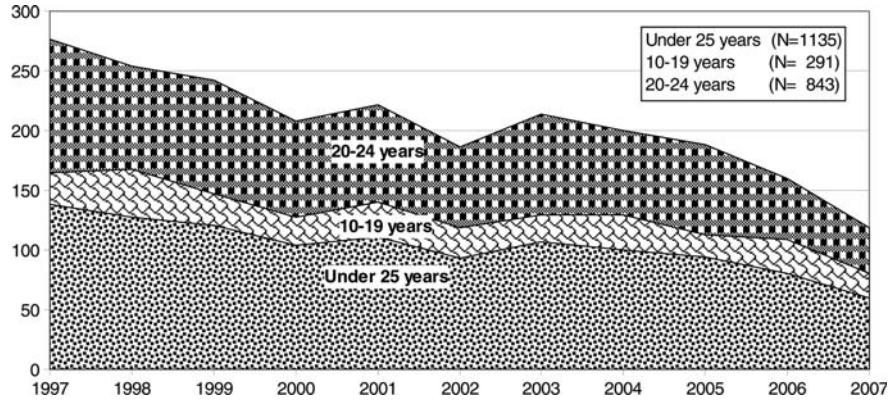

Fig. 3 Frequency of patient suicide in the under 25s (1997–2007). *Source*: Annual Report.[8]

contact with mental health services among children and adolescents (10–19 years). Windfuhr *et al.*[7] found that 14% of young people had been in contact prior to suicide compared with 26% of patients 20 and older. Further, rates of contact varied substantially among youths by both gender and age. In line with these findings, Hunt *et al.*[26] identified low rates of contact among the youngest (under 25s) and oldest (over 75s) patient suicide cases. The low rate of service contact is interesting, given the high levels of psychiatric morbidity in young people who die by suicide.[27] Speculatively, reasons for the low levels of contact among young people may include a reluctance to access health services and difficulties in identifying and managing mental illness in this young population.[7] Identifying the barriers to help seeking in young people, particularly young males, may support appropriate service contact among children and adolescents.[28]

The socio-demographic and clinical characteristics of suicide cases vary across the lifespan and these have implications for suicide prevention.[8,14,16,17,29] For example, features associated with young suicide suggest a need to improve engagement with services, with a specific focus on the management of severe mental illness (i.e. schizophrenia) and behavioural problems (e.g. substance misuse, self-harm). For older individuals, identification and management of depression, support with physical health problems and bereavement are indicated.

Ethnicity

Between 6 and 7% of patient suicides are from an ethnic minority in England and Wales, equating to ~70 deaths per year.[14,30] The proportion of patient suicides from an ethnic minority in Scotland and Northern Ireland is smaller, between 1 and 2%. South Asians, including individuals from India, Pakistan and Bangladesh, represent the

largest proportion of ethnic minority patient suicide deaths (34%).[30] Ethnic minority patient suicide cases are characterized by specific socio-demographic and clinical features compared with white patient suicide cases.[30] Importantly, features of patient suicide differ between ethnic groups. For example, Black Caribbean and Black African suicide cases are more likely than others to have a primary diagnosis of schizophrenia while South Asian suicide cases are more likely to have affective disorder as their primary diagnosis.[30] Suicide cases of mixed ethnicity are younger, and more likely to have a diagnosis of personality disorder compared with other ethnic groups.[14,30] These findings are consistent with the wider literature on ethnic minority suicides, which identify different rates and risk profiles among individuals from ethnic minority groups both in the UK and internationally.[31,32]

Homelessness

There are increased rates of mental illness, suicidal behaviour and completed suicide among the homeless.[33] In the UK, between 1 and 3% of patient suicide cases are homeless.[14,16,17,29,34] The method of suicide is most often hanging/strangulation, followed by self-poisoning. This group has high rates of social isolation (e.g. unmarried), adversity (e.g. unemployment) co-morbidity—most often substance misuse—and a history of violence. Increased substance misuse, deterioration in physical health, emotional distress and recent self-harm are common symptoms reported at last contact with mental health services. Social problems such as homelessness are intractable, difficult to effect and outside the remit of mental health services. Given the broad social and health difficulties faced by homeless individuals, good interprofessional working between the voluntary sector, social services and health services would provide the most support for this vulnerable population. Specific measures that mental health services could consider are improving community, outreach and dual diagnosis services to better engage and manage the mental health problems of homeless individuals.[34]

Clinical features and care variables associated with patient suicide

Psychiatric diagnosis

In the UK, the most common diagnoses among patient suicide deaths are: affective disorders (32–47%), schizophrenia (15–20%), alcohol dependence (8–17%), personality disorder (8–11%) and drug dependence (3–9%) (Fig. 4).[8,14,16,17,26,29,35] Dementia is one of the most uncommon diagnoses, accounting for 1% of all patient suicide deaths.[34] There has been a decrease in the number of patient suicide

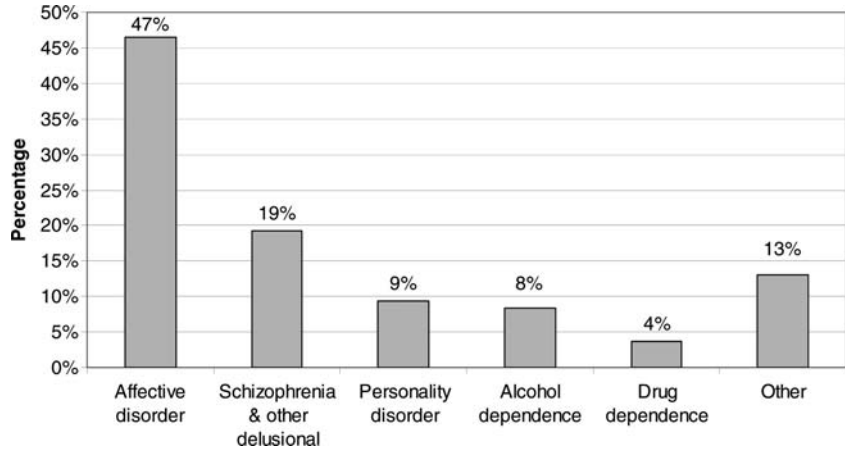

Fig. 4 Primary psychiatric diagnoses by year for England and Wales (1997–2007). *Source*: Annual Report.[8]

deaths who have a primary diagnosis of schizophrenia, personality disorder and substance dependence, while suicide deaths have increased among individuals with other diagnoses, such as adjustment disorder.[8]

It is well established that suicide risk is substantially elevated in the context of psychiatric disorder although rates and risk factors for suicide differ by diagnosis.[4,37] For example, lifetime risk of suicide in individuals with schizophrenia has previously been estimated to be between 5 and 10%.[38] Patients with a primary diagnosis of schizophrenia are characterized by specific features such as young age, male sex, family history of suicide, depressive disorders and co-morbid substance misuse, previous history of suicide attempts and hallucinations.[38] Hunt *et al*.[35] found that over 60% of individuals with schizophrenia had been in contact with mental health services within a week of suicide. The close proximity of this patient group to service provision offers a specific opportunity for suicide prevention, including improved follow-up care after discharge from an in-patient unit as well as closer supervision while on an in-patient ward. This is consistent with Hor and Taylor[38] who found that only good adherence to treatment for schizophrenia and co-morbid disorders were protective factors.

Unlike other mental disorders, risk of suicide in the context of dementia is considered to be low. Purandare *et al*.[36] found suicide cases with a primary diagnosis of dementia accounted for only 1% of all patient suicide cases, who had been in recent contact with mental health services. Three key findings emerge from this study. First, some behavioural and clinical characteristics associated with suicide (e.g. self-harm) were not as common among individuals with dementia. Secondly, one-fifth of individuals were under 65 years of age. It may be that suicide risk is elevated in young (under 65 years) dementia

patients. Indeed, this young group had more features associated with high suicide risk compared with older dementia suicide cases such as a complex psychiatric history, history of substance misuse and dependence and comprehensive psychiatric care. Alternatively, it may be that younger individuals are more likely to be in contact with mental health services, in line with findings showing a steady decrease in the rate of mental health service contact with increasing age.[26] Thirdly, there was a low prevalence of suicide in the first 12 months following diagnosis. This may mean that disclosure of diagnosis is not necessarily a risk factor although there is some evidence to suggest that disclosure may increase suicide risk in some patients.[39] Further research is required to clarify the risk factors and periods of high risk in this patient group.

In-patient suicide

The number of in-patient suicide deaths has decreased over the past decade. Kapur *et al.*[40] reported a fall in rates between 9 and 28% over a 7-year period (1997–2003). Numbers of in-patient suicide have also fallen by 46%, equating to 101 fewer deaths over the last decade (1997–2007).[8]

There is good evidence to show that risk of suicide is elevated in this patient group.[41] Important features of in-patient suicide include the method, timing and death following absconding.[42] Hanging and strangulation continue to be the most common methods of in-patient suicide although there has been a 69% fall in deaths on the ward by this method since 1997.[8] Periods of transition into and out of in-patient wards have been identified as particularly vulnerable periods for patients.[42,44,45]

Hunt *et al.*[46] found that 25% of in-patient suicides occurred after absconding; of all suicides occurring off the ward, 38% had absconded (absconding here defined as an in-patient leaving the ward without prior agreement with a member of staff). There are on average 50 deaths per year following an absconsion although these numbers have decreased over the last decade. Individuals who absconded prior to suicide were characterized by young age were more likely to die by violent methods, and non-compliance with treatment. Absconding is clearly a challenge although the literature on how to effectively reduce absconding is equivocal.[47,48]

Post-discharge suicide

The risk of suicide after discharge from mental health in-patient care has been reported to be 100 times that of the general population.[49] Factors associated with risk include self-discharge, self-harm, lack of continuity of care although psychiatric aftercare in the community has been less researched in this patient population.[45] Patients are at

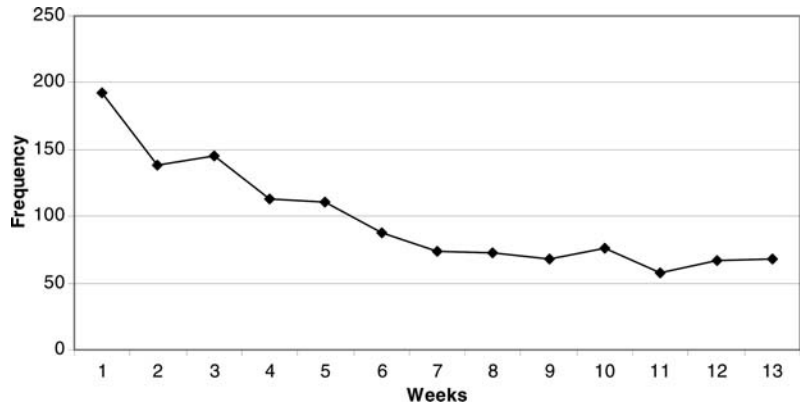

Fig. 5 Number of Inquiry suicide cases per week following discharge from an in-patient psychiatric ward. *Source*: Avoidable Deaths.[14]

increased risk of suicide in the first 3 weeks of discharge into the community. Within this period, the greatest number of deaths occurs during the first week, particularly the first 3 days, following discharge (Fig. 5).[14] Nearly half of all early suicide deaths (i.e. within 1 month of discharge into the community) occur before the first follow-up appointment with services.[45]

The number of post-discharge suicide has not changed substantially although there has been a slight fall in the proportion of deaths occurring in the first 3 weeks post-discharge (out of all post-discharge suicide deaths) over the decade.[14,29] Trends in the rates of post-discharge suicide are also equivocal. Rates appear to be increasing although this increase is not significant.[40]

Independent risk factors for in-patient and post-discharge suicide

The Inquiry is a national case series of all suicide deaths occurring in a patient population. National clinical surveys such as this are vital in monitoring data longitudinally to identify trends, identifying characteristics associated with suicide in the patient population and identifying patient suicide deaths that need to be prevented in order to reduce the incidence of suicide. However, this methodology cannot identify independent risk factors associated with increased risk of suicide.

An alternative methodology, a case–control study, was carried out to identify the independent factors associated with increased risk of suicide in the in-patient population. This methodology matches cases of in-patient suicide (cases) with in-patients who were on the ward, but did not die by suicide (controls). In the case of post-discharge suicide cases, controls were those individuals who had also been discharged from an in-patient unit but did not die by suicide. Building on the previous case–control literature, Hunt *et al.*[44] identified three risk

factors as independently contributing to increased risk of suicide in the in-patient population: male sex, a diagnosis of affective disorder and previous self-harm episodes. Further, a larger proportion of in-patients had multiple or all risk factors compared with control patients. Interestingly, being unemployed or on long-term sick leave conferred a protective effect, reducing the risk of suicide.[44]

Independent risk factors for suicide risk in the immediate post-discharge period included eight factors: male sex, history of self-harm, a diagnosis of affective disorder, psychiatric co-morbidity, suicidal ideation, recent last contact with mental health services, patient initiated discharge from in-patient stay and missed last appointment with mental health services.[45] As with the in-patient population, suicide cases were more likely to have multiple risk factors compared with controls.[45]

Suicide pacts

Suicide pacts are rare although the impact of these multiple deaths is great.[50] Hunt and colleagues (2009) identified 278 individuals who died in a pact in the general population, of whom 77 were patient suicide cases.[50] Pact suicide cases were most often female–male suicide pairings although 32% of patient pact suicide cases were male–male pairings and 21% female–female pairings, a higher frequency of same-sex pairings than previously reported in the literature.[51]

Compared with solitary patient suicide cases, pact suicide cases more often died by carbon monoxide poisoning, were older, female, and experienced adverse life events in the preceding months (including family difficulties and bereavement). Generally, there were few distinguishable clinical characteristics of pact patient suicide cases although there was a lower prevalence of individuals with a primary diagnosis of schizophrenia, and a greater prevalence of dementia. Over half of pact suicide cases had been in contact with mental health services within a week of suicide, providing an opportunity for suicide prevention. Greater awareness of the broader circumstances (e.g. physical health problems in self or others) in patients, particularly older patients, may inform assessment of suicide risk.

Treatment

Electroconvulsive therapy (ECT) is considered an effective short-term treatment, particularly for severe depressive illness although guidance regarding its use as a first-line or end-stage treatment varies internationally.[52,53] In a recent study of patient suicide deaths, Hunt *et al.*[54] reported that 1% of all patient suicide deaths had been receiving ECT prior to death (71 deaths over the time period, ~9 deaths per year), indicating that suicide following ECT was rare. Of most interest was

the rate of suicide (10 per 10 000 ECT admissions). Despite a reduction in the use of ECT over the time period, there was no increase in the suicide rate among this patient population.[54] However, neither was there a decrease in the rate, which might have been anticipated given the decrease in suicide among the general and patient population.[8] Features characterizing this patient population included older age, in-patient status or having been recently discharged into the community. Suicide prevention measures may therefore include creating a positive ward environment and good follow-up care in the community for patients.

Disengagement with mental health services

Disengagement with services is a feature across the patient population, varying in degree by clinical and socio-demographic characteristics of patients. Disengagement in the context of Inquiry findings includes both non-compliance with medication and missing the final contact with mental health services. Patients who were non-compliant with medication prior to suicide constitute ~14% of the patient population as a whole, of whom over one-third had also missed their final contact with mental health services.[14]

Overall, however, the number of individuals non-compliant with treatment has decreased over the decade.[14] For example, numbers have decreased significantly by 71 from 258 in 1997 to 187 in 2004, equating to a 28% reduction. The reduction in deaths following non-compliance with medication has also been significant among individuals with a primary diagnosis of schizophrenia, with 25 fewer deaths over the same time period, equating to a 32% decrease.

Risk assessment

Patient suicide cases are characterized by high rates of mental illness and self-harm although clinical assessment of immediate and long-term risk of suicide is generally viewed as low. Clinicians report immediate high risk in ~2% of patients and high long-term risk in 9% of patients, even for patients in recent contact (within 7 days) with services.[14] However, accurate assessment of suicide risk is difficult and there may be several reasons for this paradox.[5] First, the findings may be an artefact of reporting—clinicians report findings retrospectively and assessment of risk may be subject to defensive reporting or recall bias. Alternatively, risk is dynamic and changes continually—it may be that at last contact risk was low but changed in the time period between last contact with services and suicide. It may also be that mental health staff adapt to the high risk in the mental health population generally, distorting their

perception of high and low risk. Finally, it could reflect the fact that the predictive value of risk assessment is poor.[5]

There is also poor agreement in risk assessment between primary and secondary care. For example, Pearson *et al.*[55] found that moderate/high risk was identified in only 4 of 139 patient suicide cases for whom GP and risk assessment data from mental health teams were obtained. Given the methodological limitations of this study, the risk assessment data should be interpreted cautiously. However, poor assessment of risk at final consultation with clinicians indicates a need for improved training in risk assessment for primary care as well as specialist mental health practitioners.[56] Importantly, improved communication between healthcare staff about patients would help to improve patient care.[57]

Pathways through care

Individuals with a mental health history are in contact with their GP prior to suicide and consultations are often frequent.[58] Pearson and colleagues[55,59] reviewed patient records ($n = 247$) and interviewed the GPs of 159 patient suicide cases. A high proportion (91%) of individuals had been in contact with their GP in the year prior to suicide; 47 and 16% of individuals had been in contact with GPs in the month and week prior to suicide, respectively. Individuals had presented on average eight times prior to suicide. Approximately 20% of individuals had consulted with their GP following an episode of self-harm, although suicidal intent was communicated in less than one-fifth of all patients at final non-fatal consultation.

A proportion of individuals who die by suicide have also been in contact with emergency departments (EDs) prior to suicide, some of whom also present frequently.[60,61] DaCruz *et al.*[62] found 43% of patient suicide cases had been in contact with an ED and the last non-fatal presentation was most often for self-harm (39%). A proportion (28%) of patients had attended frequently (i.e. on more than three occasions). Frequent attenders were more often unemployed, and had a history of self-harm and alcohol abuse. This patient group was more likely to attend the ED for psychological reasons (including self-harm) than other ED attenders. Predictors of suicide within 1 month of ED presentation included: history of alcohol misuse (OR, 2.89) and frequent attendance (OR, 2.57). Despite government guidance, a documented psychosocial assessment of self-harm patients was not carried out routinely although patients did receive further care from ED services, including admission to hospital or discharge from hospital but with follow-up services.

Individuals who present to ED departments are a particularly vulnerable group of individuals with increased mortality risk.[62] The group of patients who attend frequently may be particularly difficult to manage but has characteristics which suggest that they could be at higher risk of suicide than other patients.

Taken together, the high frequency of contact in primary care and EDs suggest an additional opportunity for suicide prevention in non-mental health service settings. Good communication between healthcare providers about patients is essential to providing continuity of care for this vulnerable patient population.

Health service changes

There have been notable changes to clinical practice and policy over the last decade and the Inquiry findings have helped to shape these changes. Inquiry recommendations have widely been taken up by mental health services, and the greatest fall in patient suicide has been in patient groups whose risk we have highlighted (e.g. in-patients, recently discharged patients). In England, our recommendations on ward safety, including the removal of ligature points, have been followed by a 46% fall in in-patient suicides and a 69% fall in suicides by hanging on the ward.[8] These findings support the wider literature that reducing access to means is effective in suicide prevention although staff need to be aware of continually changing patterns of suicide method to inform their practice.[63] Further, Inquiry recommendations on suicide prevention have been followed by improvements in the care of other patient groups, including patients refusing treatment and patients discharged from an in-patient ward (see National Service Framework (NSF) Standard 7 (suicide prevention), the NHS Plan, Care Programme (CPA) Approach guidance, the national suicide prevention strategies in England (and Scotland), safety checklist for mental health services ('12 points to a Safer Service'), and forthcoming Safer Mental Health Checklist, to be published by the National Patient Safety Agency).[14,29,64–66]

Summary and future directions

The Inquiry is a unique, UK-wide national database. The past 15 years of Inquiry work has positively influenced mental health practice and policy in the UK, and has contributed to the international literature on suicide and suicide prevention. Selected key Inquiry findings are detailed in Box 2.

Box 2: Key Inquiry findings (1996–2011)

1. A 46% decrease in in-patient suicide, equating to ~100 fewer deaths over the time period[8]
2. A 69% decrease in deaths by hanging on in-patient wards, equating to 37 fewer deaths over the time period[8]
3. A 57% decrease in the number of young (under 25) patient suicide deaths, equating to 78 fewer deaths over the time period[8]
4. A 28% decrease in the rate of child and adolescent suicide in the general population[7]
5. Identifying periods of high suicide risk in the post-discharge population in the first week following discharge (Fig. 5) and in the first week of an in-patient stay[43–45]
6. Other important findings include:
   - patient suicide deaths varied by space, time and method of suicide; imitative suicidal behaviour accounted for between 10 and 13% of deaths[23]
   - 12% of the general and patient population travelled away from home to die by suicide[19]
   - 28% of patient suicide deaths were involved in a suicide pact[50]
   - there were high rates of contact with other health services prior to suicide in the patient population—91% of patients in contact with general practitioners, 43% were in contact with EDs[55,59,62]

Following a competitive tendering process, the Inquiry work programme will continue to be based at the Centre for Suicide Prevention (University of Manchester) over the coming years. Future research directions may include investigating suicide in non-mental health settings, continuing the work we have already carried out in this area.[55,59,62] Following recent mental health reforms, investigating suicide following different treatment services (e.g. crisis resolution, assertive outreach, early intervention) could provide data on the number and antecedents of suicide, informing recommendations about the role of these services in caring for high-risk patients. Finally, investigating models of service delivery is an important development area. Assessing the take-up and impact of Inquiry recommendations on suicide numbers and rates in trusts (or other health geographies) will inform future directions for improving patient safety.

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