

## Original Article

**Cite this article:** Hunt IM, Baird A, Turnbull P, Ibrahim S, Shaw J, Appleby L, Kapur N (2024). Psychiatric in-patient care in England: as safe as it can be? An examination of in-patient suicide between 2009 and 2020. *Psychological Medicine* 1–7. <https://doi.org/10.1017/S0033291723003628>

Received: 3 August 2023  
Revised: 17 November 2023  
Accepted: 23 November 2023

**Keywords:**

in-patients; mental health; prevention; suicide rates; suicide; trends

**Corresponding author:**

Isabelle M. Hunt;  
Email: [isabelle.m.hunt@manchester.ac.uk](mailto:isabelle.m.hunt@manchester.ac.uk)

# Psychiatric in-patient care in England: as safe as it can be? An examination of in-patient suicide between 2009 and 2020

Isabelle M. Hunt<sup>1</sup>, Alison Baird<sup>1</sup>, Pauline Turnbull<sup>1</sup>, Saied Ibrahim<sup>1</sup>, Jenny Shaw<sup>1</sup>, Louis Appleby<sup>1</sup> and Nav Kapur<sup>1,2</sup>

<sup>1</sup>NCISH, Centre for Mental Health and Safety, Faculty of Biology, Medicine and Health, University of Manchester, Manchester, UK and <sup>2</sup>NIHR Greater Manchester Patient Safety Translational Research Centre, University of Manchester, Manchester; and Mersey Care NHS Foundation Trust, Prescot, UK

**Abstract**

**Background.** Psychiatric in-patients have a greatly elevated risk of suicide. We aimed to examine trends in in-patient suicide rates and determine if characteristics of in-patients who died by suicide have changed over time.

**Methods.** We identified all in-patients in England who died by suicide between 2009 and 2020 from the National Confidential Inquiry into Suicide and Safety in Mental Health. Suicide rates were calculated using data from Hospital Episodes Statistics.

**Results.** The rate of in-patient suicide per 100 000 bed days fell by 41.9% between 2009–2011 and 2018–2020. However, since 2016 the rate has remained static with no significant fall. Rates fell in men, those aged 30–59, and those with schizophrenia and other delusional disorders or personality disorder. Rates also fell for suicide by hanging (including hanging on the ward) and jumping. No falls were seen in suicide rates among women, younger and older age groups, and those with affective disorder. There was no indication of a transfer of risk to the post-discharge period or to home treatment/crisis care. More in-patients in the latter part of the study were aged under 25, were on authorised leave, and had psychiatric comorbidity.

**Conclusions.** In-patient suicide has significantly fallen since 2009, suggesting patient safety may have improved. The recent slowdown in the fall in rates, however, highlights that renewed preventative efforts are needed. These should include a greater focus on women, younger and older patients, and those with affective disorder. Careful reviews prior to granting leave are important to ensure a safe transition into the community.

**Background**

Psychiatric in-patient care is associated with a high risk of suicide and is a top patient safety priority in mental health services worldwide. There has been a reduction in mental health in-patient beds over the past two decades in many countries and a shift towards more community-based intensive care. Despite fewer admissions, rates of in-patient suicide fell in England between 1997 and 2008 (Kapur et al., 2006, 2013). Falls in in-patient suicide rates in England have been noted across genders, age groups, methods of suicide, and main psychiatric diagnoses (Kapur et al., 2013). This may, in part, be explained by falling general population suicide rates, but also by major policies to improve ward safety including responding to patient absconding (Bailey, Page, Ndimande, Connell, & Vincent, 2019), removal of ligatures and ligature points (National Patient Safety Agency, 2009), and reducing out-of-area placements (Department of Health & Social Care, 2016). Continued efforts are also included in the NHS Long Term Plan (NHS, 2019) to improve the therapeutic environment and make mental health in-patient care as safe as possible. However, given the reduction of in-patient beds, a transfer of risk to other acute care settings, such as the post-discharge period and crisis resolution home treatment (CRHT) services, has also been suggested (Hunt et al., 2014; Kapur et al., 2013). Whether suicide rates have changed in specific in-patient subgroups or by suicide method is unknown.

International reports have generally indicated falls in in-patient suicide rates (Madsen & Nordentoft, 2013; Tseng, Chang, Liao, & Yeh, 2019; Wolfersdorf et al., 2016) but increasing trends have been noted in Israel and Denmark (Goldberger, Haklai, Pugachova, & Levav, 2015; Madsen, Erlangsen, Hjorthøj, & Nordentoft, 2020). In the UK, recent work has suggested the year-on-year fall in the number of in-patient suicide deaths may have ceased (NCISH, 2023). In this study, we undertook a nationwide investigation of in-patient suicide in order to examine recent trends and identify where future preventative efforts might be focussed. Our specific objectives were to: (1) investigate trends in in-patient suicide rates in England between 2009 and 2020; (2) investigate trends by age, gender, and diagnosis in

© The Author(s), 2024. Published by Cambridge University Press. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution and reproduction, provided the original article is properly cited.

order to identify patient sub-groups where falls in suicide rates were more or less evident; (3) determine if there had been any transfer of risk to the post-discharge period or CRHT settings; (4) describe the characteristics of in-patients who died by suicide and whether these had changed over time.

## Methods

### Study dataset

We used the database held by the National Confidential Inquiry into Suicide and Safety in Mental Health (NCISH) to identify individuals aged 15 and above who died by suicide while under psychiatric in-patient care in England during the years 2009 and 2020, inclusive. The NCISH methodology has been described in detail elsewhere (Appleby *et al.*, 2006). In brief, there are three stages to data collection. First, NCISH is notified by the Office for National Statistics (<http://www.ons.gov.uk>) of all unnatural deaths in England with a coronial verdict of suicide or of undetermined intent ('open' conclusion). Deaths that were assigned an open conclusion are included in the NCISH database, as is conventional in suicide research in the UK (Gunnell *et al.*, 2013), and are hereon referred to as 'suicides' in this paper. Second, details of the deceased are sent to mental health services in the individual's residential district to identify those who had been in service contact in the 12 months before death ('patient suicides'). Third, sociodemographic and clinical data on patient suicides are collected via a questionnaire completed by the responsible clinician. The questionnaire collects detailed information on in-patient suicide, including length of admission, nature of admission (voluntary or detained for treatment or assessment), leave status at the time of death, and observation levels. In-patient suicide was defined as in-patient deaths that occurred physically on the ward or off the ward, for example, during periods of authorised or unauthorised leave. This definition has been used in previous studies (Bowers, Banda, & Nijman, 2010; Lieberman, Resnik, & Holder-Perkins, 2004). The questionnaire also included details of whether the death by suicide had occurred within 3 months of discharge from psychiatric in-patient care and whether the patient was receiving care under crisis resolution home treatment (CRHT) services. Primary and secondary mental health diagnoses were provided by the treating clinician according to ICD-10 criteria. Comorbidity refers to the occurrence of a primary diagnosis and at least one secondary diagnosis.

Over the study period, the overall response rate for questionnaires was 92%, but was lower for the calendar years 2018 (78%), 2019 (72%), and 2020 (61%) due to time delays inherent with legal processes and data collection. To enable comparable numerator data across the study period, the number of deaths by suicide from 2018 to 2020 was estimated using the average proportion in recent years of all patient suicides that were in-patients, recently (<3 months) discharged, or under CRHT services and adjusting for expected questionnaire returns.

### Denominator data

To calculate suicide rates in the general population we used mid-year population estimates for England from ONS ([www.ons.gov.uk](http://www.ons.gov.uk)) as the denominator. For overall patient suicide rates, we used the number of mental health service users from NHS Digital's Mental Health Services Dataset (MHSDS). Certain changes in the MHSDS methodology, e.g. inclusion of learning disability services, means rates between 2009–2011 and 2011–2020 are not

directly comparable. For in-patient suicide rates, we used hospital activity denominator data from the Hospital Episodes Statistics (HES) data warehouse collected by NHS Digital. HES is a data set containing records of all patients admitted to NHS hospitals in England, including admission and discharge information collected directly from healthcare providers. In-patient suicide rates were calculated by gender and age group using the number of in-year bed days for mental illness as the denominator – these included specialties for adult mental illness, forensic psychiatry, psychotherapy, and old age psychiatry but excluded learning disabilities and day cases. Bed days were available for those aged  $\geq 15$  in 2009–2013 but changed to those aged  $\geq 16$  in 2014–2020; we therefore adjusted the denominator data in 2009–2013 to ages 16 and older to ensure consistency across the study period. Suicide rates in the youngest age group (16–29 years) were therefore calculated by excluding patients aged 15 from the numerator.

Suicide rates by diagnosis were calculated using HES data which provides ICD-10 codes of the main diagnosis at admission. We examined three mutually exclusive primary diagnoses: schizophrenia and other delusional disorders; affective disorder (depressive illness or bipolar disorder); and personality disorder. In line with the questionnaire data where personality disorder is not collected by subtypes, we calculated suicide rates using the broad categorisation (ICD-10 code F60) of personality disorder. We did not examine patients with drug or alcohol dependence/misuse due to small numbers. Rates of suicide within 3 months of discharge and those under CRHT services were calculated using HES denominator data of the annual number of discharges from NHS mental health in-patient care and the annual number of CRHT attendances, respectively. Suicide rates for patients under CRHT were calculated from 2012 onwards due to available denominator.

### Statistical analysis

Annual in-patient suicide rates per 100 000 in-year bed days were calculated overall, and by gender, age group (16–39, 40–59, 60+), method of suicide (hanging/strangulation, self-poisoning, and jumping/multiple injuries), and diagnosis (schizophrenia and other delusional disorders, affective disorder, and personality disorder). To test for linear temporal trends in the in-patient suicide rate over time, calendar year was fitted as a continuous variable in a Poisson regression model (Gardner, Mulvey, & Shaw, 1995). Poisson models were tested for evidence of significant overdispersion, using the likelihood ratio test ( $\chi^2$ ). Where tests indicated inadequate goodness of fit, the parameters from the negative binomial model were reported instead of those from the Poisson model (Gardner *et al.*, 1995). Trend tests were summarised by comparing the average annual rates in the first 3 years of the study (2009–2011) with those in the last 3 years (2018–2020). As data completeness was lowest in the final year of the study (2020) we carried out sensitivity analysis by examining trends with this year excluded.

Descriptive statistics of in-patient characteristics were carried out on actual cases and excluded estimated figures in 2018–2020. Comparison of patient characteristics between the first (2009–2013) and last (2016–2020) 5 years of the study were conducted with chi-squared tests. Statistical significance was indicated at the two-sided 5% level. All statistical analysis was performed using STATA version 16.1 software (Statacorp, 2019).

Ethical approval was obtained from the North West – Greater Manchester South Research Ethics Committee (reference: ERP/96/136). NCISH also has Section 251 approval under the NHS Act 2006 (reference: PIAG 4-08(d)/2003).

## Results

Over the study period 2009–2020, there were 57 796 suicides in the general population, 15 533 (26.9%) of whom were by people in contact with mental health services in the 12 months before they died ('patient suicides'). Of these, 937 were in-patients, 6.0% of all patient suicides.

### Suicide rates

Table 1 shows the rate of general population suicide, patient suicide, and in-patient suicide by calendar year 2009–2020. The general population suicide rate fluctuated during the study period but there was a 15.2% increase between the first (2009–2011) and last (2018–2020) 3 years of the study (LR  $\chi^2$  test [linear trend [1df] 18.82,  $p < 0.0001$ ]). By contrast, the rate of patient suicide per 100 000 mental health service users fell by 47.8% over this period with a significant linear trend (LR  $\chi^2$  test [linear trend [1df] 32.57,  $p < 0.0001$ ]). The average annual rate of in-patient suicide per 100 000 bed days fell significantly from 1.29 in 2009–2011 to 0.75 in 2018–2020, a 41.9% decrease (LR  $\chi^2$  test [linear trend [1df] 40.19,  $p < 0.0001$ ; Fig. 1]). However, since 2016 the rate has remained relatively static, with no statistically significant falls.

### Rates of in-patient suicide by subgroup

The average annual in-patient suicide rate in men fell by 49.0% between 2009–2011 and 2018–2020, with a highly significant linear trend (LR  $\chi^2$  test (linear trend; 1df = 46.3;  $p < 0.0001$ ; Fig. 1). The corresponding fall in rates for women was smaller (around 27%) and the linear trend was not statistically significant (LR  $\chi^2$  test [linear trend; 1df = 2.96;  $p = 0.09$ ; Fig. 1]). Although rates fluctuated the in-patient suicide rates in women were generally higher than those for men from 2014 onwards. Between 2009 and 2014 suicide rates were generally higher in those aged 30–59 but since 2015 the highest rates have been in those aged 16 to 29 (Table 2). There was a fall in the rate (LR  $\chi^2$  test [linear trend; 1df = 58.1;  $p < 0.0001$ ]) of suicide in those aged 30–59 but no change in those aged 16 to 29 or aged 60 and above.

Table 3 shows the rate of in-patient suicide by the most common methods. Significant falls were seen in deaths by hanging/strangulation (36.5%), including those that occurred on the ward (33.3%), and jumping from a height or in front of a moving vehicle (48.5%). Rates of suicide by self-poisoning were low and did not change over the study period. With respect to diagnostic group, there were significant falls in the rate of suicide among patients with schizophrenia and other delusional disorders (24.2%, LR  $\chi^2$  test [linear trend; 1df = 4.69;  $p = 0.03$ ]) and personality disorder (36.7%, LR  $\chi^2$  test [linear trend; 1df = 6.17;  $p = 0.01$ ]). There was no change in the suicide rate among patients with affective disorder (LR  $\chi^2$  test [linear trend; 1df = 0.25;  $p = 0.62$ ]).

### Suicide in the post-discharge period and under crisis resolution home treatment (CRHT) services

The average annual rate of post-discharge suicide per 1000 discharges fell from 1.76 (in 2009–2011) to 1.25 (in 2018–2020), a 29.0% decrease with a significant linear trend (LR  $\chi^2$  test [linear trend; 1df = 12.1;  $p < 0.001$ ]). There was no statistically significant change in the average rate of suicide per 10 000 CRHT attendances, at 1.08 in 2012–2014 and 1.18 in 2018–2020 (LR  $\chi^2$  test [linear trend; 1df = 0.20;  $p = 0.66$ ]).

**Table 1.** Suicide rates by calendar year, England (2009–2020)

Year	In-patient suicides $n^a$	Patient suicide rate per 100 000 mental health service users <sup>b</sup>	In-patient suicide rate per 100 000 bed days	General suicide rate per 100 000 population <sup>c</sup>
2009	100	92.8	1.24	9.44
2010	92	98.5	1.19	9.46
2011	101	87.6	1.43	9.59
2012	93	86.5	1.29	10.35
2013	97	77.4	1.33	10.01
2014	77	68.4	1.04	9.63
2015	90	69.5	1.18	9.89
2016	66	51.6	0.87	9.73
2017	54	49.4	0.71	10.00
2018	56	50.5	0.71	10.95
2019	56	47.8	0.74	10.98
2020	55	47.2	0.81	10.54

<sup>a</sup>Data completeness for patient and in-patient samples by year was 61–100%. Annual figures in 2018–2020 have been uplifted to reflect 100% completeness.

<sup>b</sup>Rates calculated using the Mental Health Services Data Set (MHSDS).

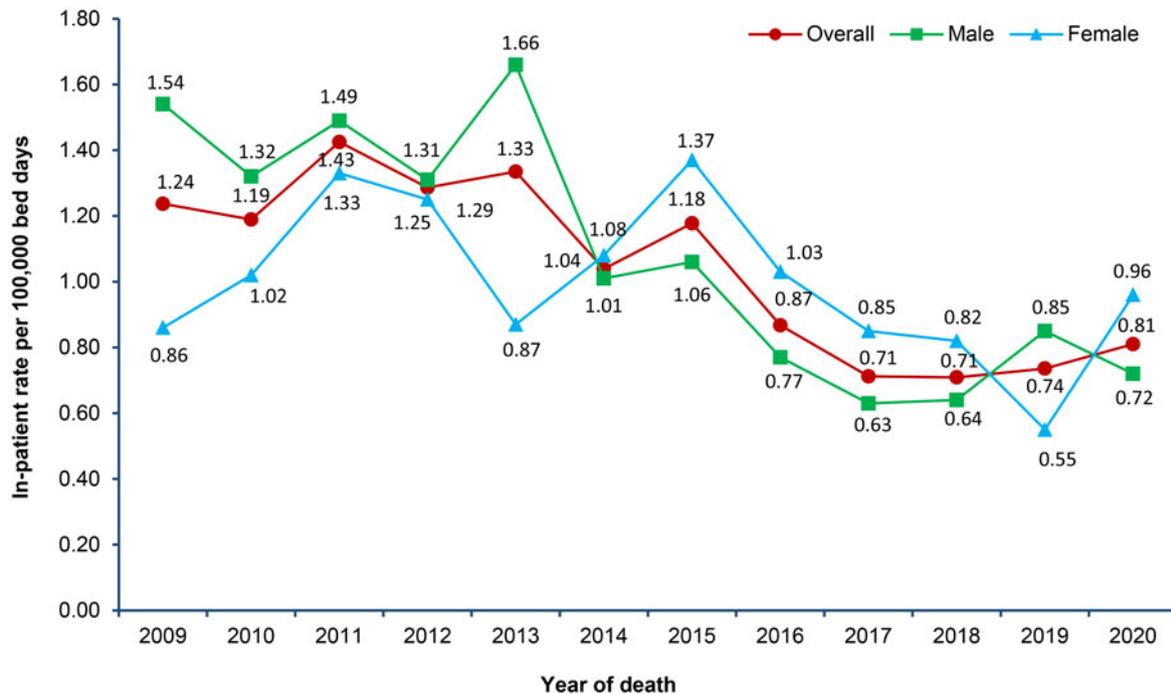
<sup>c</sup>General population suicide rates differ slightly from official figures (ONS, 2021) which are age-standardised to the 2013 European population.

### Sensitivity analysis

When we excluded 2020 from the trend analysis, similar results to the main analyses were found. A further sensitivity analysis using the denominator for those aged 15 and over in 2009–2013 (as opposed to those aged 16 and over) found no difference in trends of in-patient suicide by age group.

### Characteristics of in-patient suicides

The median age (interquartile range) of in-patients who died by suicide was 46 years (32–57 y) and most were men (534, 61%), unmarried (616, 72%), and unemployed (405, 48%). Affective disorder (369, 43%) and schizophrenia and other delusional disorders (237, 27%) accounted for 70% of primary diagnoses among all in-patients. Over half (456, 53%) had a comorbid psychiatric disorder and 643 (76%) had previously self-harmed. The majority were under routine care, being on a general psychiatry open ward (620, 75%), and under low levels of observation (341, 68%) at the time of suicide. There were 73 in-patients aged 70 and above, of whom only half (36, 51%) were in an older person's psychiatric unit. Nearly a third (207, 32%) of all in-patients had been detained under the Mental Health Act (MHA) and a similar proportion (275, 33%) had been admitted to a non-local in-patient unit. Most (568, 66%) in-patients died off the ward, the majority (417, 80%) after leaving the ward with staff agreement. Duration of admission was significantly longer for those who had been granted leave, the average length being 6 weeks compared to 4 weeks among other in-patients ( $p < 0.001$ ). Of the 113 (13%) in-patients who died in the first week of admission, half (58, 51%) died on the ward itself. Short-term suicide risk was viewed by clinicians as low or not present in 585 (75%) of all in-patients, but particularly in those who were off the ward with staff agreement (331, 86%).



**Figure 1.** Rates of in-patient suicide by gender, England 2009–2020.

### Changes in patient characteristics over the study period

When patient characteristics were compared between the first (2009–2013) and last (2016–2020) five years of the study, there were a greater proportion of patients in the later period who were aged under 25 (17% *v.* 8%,  $p = 0.001$ ) and had a comorbid psychiatric diagnosis (62% *v.* 48%;  $p = 0.001$ ). Of those patients who died off the ward, a greater proportion were on agreed leave

between 2016 and 2020 than in the earlier period (89% *v.* 74%;  $p < 0.001$ ). Fewer patients in 2016–2020 were on a general psychiatry open ward (68% *v.* 82%,  $p < 0.001$ ), were under a medium or high level of observation (25% *v.* 35%,  $p = 0.05$ ), and had died after absconding from the ward (11% *v.* 26%,  $p = 0.001$ ).

## Discussion

### Main findings

Our results have shown that in-patient suicide has become less common, with the rate falling by 41.9% over the current study period or by 68.4% if we combine with our earlier study and take the average in-patient suicide rate in 1997–1999 (2.37 per 100 000 bed days; Kapur *et al.*, 2013). However, there appears to be a slowdown in the decline in recent years, and since 2016 rates have stayed broadly similar, with an indication that rates may have increased in 2020. We did not find a transfer of risk to other settings such as the early post-discharge period or CRHT services. The falling rates of in-patient suicide could suggest patient safety has improved over the study period or may reflect a broader range of people accessing secondary mental health services. However, the reductions in suicide have not been uniform. Rates in women, younger and older patients (those aged 16–29 years and aged 60 years and above), and patients with a diagnosis of affective disorder fell less quickly or not at all. In the latter part of the study, we observed changes in certain in-patient characteristics, with more patients being aged under 25, having psychiatric comorbidity, and being on authorised leave at the time of suicide. Taken together these findings suggest where we might focus future suicide prevention efforts in the in-patient setting.

### Strengths and limitations

This was a large and national study based on reliable case ascertainment and represents the most up-to-date examination of in-patient

**Table 2.** Rates of in-patient suicide per 100 000 in-year bed days by age-group and calendar year, England (2009–2020)

Year	Age 16–29		Age 30–59		Age ≥ 60	
	<i>n</i>	Rate	<i>n</i>	Rate	<i>n</i>	Rate
2009	15	1.08	66	1.74	19	0.65
2010	18	1.33	54	1.50	20	0.72
2011	10	0.85	65	1.90	26	1.05
2012	20	1.68	55	1.53	18	0.74
2013	19	1.51	58	1.58	20	0.85
2014	15	1.09	47	1.24	15	0.67
2015	23	1.56	50	1.26	17	0.78
2016	18	1.16	33	0.84	15	0.73
2017	16	1.02	26	0.65	12	0.61
2018	16	0.97	26	0.62	14	0.73
2019	15	0.94	28	0.69	12	0.64
2020	10	0.71	33	0.90	12	0.73
LR $\chi^2$ test (linear trend; 1df)	2.50 ( $p = 0.11$ )		58.1 ( $p < 0.0001$ )		0.37 ( $p = 0.54$ )	

LR, likelihood ratio; df, degrees of freedom.

**Table 3.** Rates of in-patient suicide per 100 000 in-year bed days by method of suicide and calendar year, England (2009–2020)

Year	Hanging/strangulation		Hanging/strangulation on the ward		Self-poisoning		Jumping from a height/moving vehicle	
	<i>N</i>	Rate	<i>N</i>	Rate	<i>N</i>	Rate	<i>N</i>	Rate
2009	43	0.53	28	0.35	8	0.10	30	0.37
2010	51	0.66	25	0.32	3	0.04	23	0.30
2011	49	0.69	23	0.32	14	0.20	22	0.31
2012	50	0.69	32	0.44	5	0.07	18	0.25
2013	42	0.58	24	0.33	4	0.06	32	0.44
2014	43	0.58	27	0.36	<3	–	13	0.18
2015	42	0.55	19	0.25	14	0.18	25	0.33
2016	33	0.43	16	0.21	<3	–	18	0.24
2017	24	0.32	13	0.17	6	0.08	16	0.21
2018	31	0.39	16	0.20	7	0.09	13	0.16
2019	30	0.39	16	0.21	3	0.04	13	0.17
2020	29	0.43	16	0.24	5	0.07	12	0.18
LR $\chi^2$ test (linear trend; 1df)	15.76 ( $p < 0.001$ )		11.27 ( $p < 0.001$ )		0.41 ( $p = 0.52$ )		12.48 ( $p < 0.001$ )	

LR, likelihood ratio; df, degrees of freedom.

suicide rates in England. However, there are a number of limitations to be considered. First, in-patient status was based on the knowledge of clinicians and case notes and there may have been some misclassification between in-patient and post-discharge patients, particularly for those who died on the day of discharge. Similarly, the retrospective data collection was based on clinical judgement and case records, as opposed to standardised assessments. However, the reliability and validity of NCISH questionnaire data have been shown to be good (Appleby et al., 2006). Second, our projected figures for 2020 (the most incomplete year) may be over- or underestimates. However, excluding this year in the sensitivity analysis still showed a strong downward trend in the rate of in-patient suicide overall and by patient subgroups. Third, denominator data were obtained from HES and the MHSDS and were not specifically collected for the purpose of conducting this study. Some of the aggregate denominators may have contained multiple admissions or discharges that we were unable to adjust for, potentially affecting the accuracy of rate calculations. We were also unable to stratify the results by duration of in-patient admission. However, HES and the MHSDS provide the most complete source of national denominator data on mental health activity in England. Fourth, we did not examine suicide rates in less common diagnoses such as anxiety and eating disorders, admissions for which have both increased in recent years (Degli Esposti et al., 2022). Finally, the findings were based on patients in England only and may not be generalisable to other countries, though the increased focus on issues surrounding in-patient safety are likely to be universal.

### Interpretation of findings and implications

The well-documented reduction in in-patient suicide in England should be regarded as a patient safety success. However, the fact that in-patient suicide rates are no longer falling is concerning. It is worth noting that our observed increase in the general

population suicide rate since 2017–2018 coincides with a legal change in lowering the threshold for suicide conclusions at inquest. As a result, the number of suicide deaths in some groups has risen (Appleby, Turnbull, Kapur, Gunnell, & Hawton, 2019; ONS, 2022) and this may have also affected recent in-patient suicide rates. Nonetheless, a renewed preventative focus on in-patient safety is warranted. This may take the form of targeting patient groups that have shown a deceleration in rates, including women, both young and older patients, and those with affective disorder. The overall slowdown in the fall in rates may also reflect a change in morbidity among patients selected for admission and a greater illness severity, as postulated in Denmark where in-patient suicide rates have increased (Madsen et al., 2020). However, we found no change in the rates among those with affective disorder, i.e. the diagnosis which carries the highest risk of suicide. Examination of treatment received was beyond the scope of this study but non-adherence, psychotropic side effects and treatment resistance among patients with affective disorder who died by suicide have previously been highlighted (Gianatsi et al., 2020; Gitlin, 2006). This warrants further investigation in the in-patient setting. Our finding of an increase in psychiatric comorbidity suggests patients admitted may now have greater clinical complexity and receive treatments for concomitant disorders which exacerbate risk (Bachmann, 2018; Holmstrand, Bogren, Mattisson, & Brådvik, 2015). Effective management of comorbid disorders is therefore essential to reduce mortality levels among an already at-risk patient population.

Recent reports have indicated a rise in suicide rates among women in both general and clinical populations (NCISH, 2023; ONS, 2022). This rise has been particularly evident in women aged under 25 and may be associated with an increase in suicide by hanging/strangulation in this group (NCISH, 2023). Our evidence has added to this by showing the previous fall in in-patient suicide rates among women (Kapur et al., 2013) has not continued, perhaps highlighting the need for gender-specific intervention

programmes. With regard to vulnerable age groups, we found no reduction in suicide in those aged under 25, perhaps reflecting the increased in-patient hospital activity among young people (Degli Esposti et al., 2022). We also found only half of in-patients aged 70 and above were being treated under older person's psychiatric services. Reducing suicide among older people may require a different emphasis with wider use of dedicated old age psychiatric care, known to be better placed to meet their needs (Abdul-Hamid, Lewis-Cole, Holloway, & Silverman, 2015).

Our observed reduction in the number of deaths by hanging both on and off the ward has occurred against a backdrop of increasing numbers of suicide by hanging in general and clinical populations (NCISH, 2023). Whilst falls in death by hanging on the ward may be indicative of enhanced ward safety and improved monitoring, this method continues to account for the majority of in-patient deaths in hospital (Hunt, Windfuhr, Shaw, Appleby, & Kapur, 2012; Meehan et al., 2006). Many die from low-lying ligature points (NCISH, 2023) and vigilance is needed where removal of low anchor points is not possible or self-strangulation (without a ligature point) may occur. Environmental risk audits are central to national and local ward safety guidance but effective engagement and high quality therapeutic relationships are also likely to improve the in-patient experience and promote recovery (Evans, Edwards, & Chick, 2022; Staniszewska et al., 2019).

Our study indicates that most deaths off the ward are by patients on authorised leave and that this proportion has increased over the study period. We are unable to determine whether discharge was being planned for these patients but this is worth further study to examine the risk management processes during the transition to the community. A period of short-term leave is an important part of treatment and apparent recovery, but careful reviews are needed to ensure leave processes are robust (NHS England, 2023). Consideration is needed for self-management away from the ward, which should include crisis-resolution plans and provision of accessible community support. Systematic evaluation of suicidal ideation prior to and during leave is important in establishing any changes in risk. For example, the Chronological Assessment of Suicide Events (CASE) (Shea, 1998) and the Collaborative Assessment and Management of Suicidality (CAMS) (Swift, Trusty, & Penix, 2021) approaches may help to ensure a timely response from crisis care when risk escalates. In addition, greater involvement of family and carers can help determine potential stressors the patient may face, including their socioeconomic environment where financial hardship is likely to exacerbate risk (Huikari, Miettunen, & Korhonen, 2019).

These are challenging times for mental healthcare services and system-wide approaches are needed to reduce hospital strain which has been exacerbated by the COVID-19 pandemic (NHS England, 2023; Tyler et al., 2021). The use of both ward-based and therapeutic interventions has been shown to reduce suicide risk in psychiatric wards (Nawaz, Reen, Bloodworth, Maughan, & Vincent, 2021) but easing the pressure on other parts of the healthcare system is also likely to have an impact on in-patient safety. Evidence from national studies, for example, has shown that improvements to community services can lead to reduced patient suicide rates (Kapur et al., 2016; Pirkola, Sund, Sailas, & Wahlbeck, 2009). Addressing the wellbeing of clinical staff should also be made a priority in renewed efforts to reduce in-patient suicide (Johnson et al., 2018).

**Acknowledgements.** The study was carried out as part of the National Confidential Inquiry into Suicide and Safety in Mental Health (NCISH)

and we thank the other members of the research team: Cathryn Rodway, Su-Gwan Tham, Jane Graney, Lana Bojanić, Pauline Rivart, Jodie Westhead, James Burns, Rebecca Lowe, Phil Stones, and India Garry. We thank the administrative staff in NHS Trusts who helped with the NCISH processes and the clinicians and nurses who completed the questionnaires.

**Funding statement.** The study was supported by the Healthcare Quality Improvement Partnership (HQIP NCA 2069, Mental Health Clinical Outcome Review Programme) and was carried out as part of the NCISH. All researchers are independent from the funders. The funders of the study had no role in study design, data collection and analysis, interpretation of data, preparation of the manuscript, or decision to publish. N.K. is supported by the National Institute for Health Research (NIHR) Greater Manchester Patient Safety Translational Research Centre (Grant Reference Number PSTRC-2016-003). N.K. is also funded by Mersey Care NHS Foundation Trust.

**Competing interests.** N.K. is a member of the Department of Health and Social Care (England) National Suicide Prevention Advisory Group. He chaired the NICE Guideline Development Group for the Longer-Term Management of Self-Harm and the NICE Topic Expert Group (which developed the quality standards for self-harm services). N.K. is currently chair of the updated NICE Guideline for Depression and topic advisor for the current NICE Guideline Development Group for the Longer-term Management of Self-harm and is also supported by Mersey Care NHS Foundation Trust. L.A. is Chair of the National Suicide Prevention Strategy Advisory Group, DHSC.

**Ethical standards.** The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

## References

- Abdul-Hamid, W. K., Lewis-Cole, K., Holloway, F., & Silverman, A. M. (2015). Comparison of how old age psychiatry and general adult psychiatry services meet the needs of elderly people with functional mental illness: Cross-sectional survey. *British Journal of Psychiatry*, 207, 440–443. doi: 10.1192/bjp.bp.114.145706
- Appleby, L., Shaw, J., Kapur, N., Windfuhr, K., Ashton, A., Swinson, N., ... While, D. (2006). Avoidable Deaths. Five Year Report of the National Confidential Inquiry into Suicide and Homicide by People with Mental Illness. 2006. Department of Health: London. Retrieved from: <https://sites.manchester.ac.uk/ncish/reports/>
- Appleby, L., Turnbull, P., Kapur, N., Gunnell, D., & Hawton, K. (2019). New standard of proof for suicide at inquests in England and Wales. *British Medical Journal*, 366, l4745. doi: 10.1136/bmj.l4745
- Bachmann, S. (2018). Epidemiology of suicide and the psychiatric perspective. *International Journal of Environmental Research and Public Health*, 15, 1425. doi: 10.3390/ijerph15071425
- Bailey, J., Page, B., Ndimande, N., Connell, J., & Vincent, C. (2016). Absconding: Reducing failure to return in adult mental health wards. *British Medical Journal Open Quality*, 5, u209837.w5117. doi: 10.1136/bmjquality.u209837.w5117
- Bowers, L., Banda, T., & Nijman, H. (2010). Suicide inside: A systematic review of inpatient suicides. *Journal of Nervous and Mental Disease*, 198, 315–328. doi: 10.1097/nmd.0b013e3181da47e2
- Degli Esposti, M., Ziauddeen, H., Bowes, L., Reeves, A., Chekroud, A. M., Humphreys, D. K., & Ford, T. (2022). Trends in inpatient care for psychiatric disorders in NHS hospitals across England, 1998/99–2019/20: An observational time series analysis. *Social Psychiatry and Psychiatric Epidemiology*, 57(5), 993–1006. doi: 10.1007/s00127-021-02215-5
- Department of Health and Social Care. (2016). Out of area placements in mental health services for adults in acute inpatient care. <https://www.gov.uk/government/publications/oaps-in-mental-health-services-for-adults-in-acute-inpatient-care/out-of-area-placements-in-mental-health-services-for-adults-in-acute-inpatient-care> (accessed 4th March 2023).

- Evans, N., Edwards, D., & Chick, P. (2022). Managing suicidality in inpatient care: A rapid review. *Journal of Mental Health Training, Education and Practice*, 17(6), 479–494. doi: 10.1108/JMHTEP-05-2020-0023
- 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(3), 392–404. doi: 10.1037/0033-2909.118.3.392
- Gianatsi, M., Burns, H., Hunt, I. M., Ibrahim, S., Windfuhr, K., While, D., ... Kapur, N. (2020). Treatment of mental illness prior to suicide: A national investigation of 12909 patients, 2001–2016. *Psychiatric Services*, 71(8), 772–778. doi: doi.org/10.1176/appi.ps.201900452
- Gitlin, M. (2006). Treatment-resistant bipolar disorder. *Molecular Psychiatry*, 11, 227–240. doi: 10.1038/sj.mp.4001793
- Goldberger, N., Haklai, Z., Pugachova, I., & Levav, I. (2015). Suicides among persons with psychiatric hospitalizations. *Israel Journal of Psychiatry and Related Sciences*, 52(1), 25–31. Retrieved from: <https://pubmed.ncbi.nlm.nih.gov/25841107/>
- Gunnell, D., Bennewith, O., Simkin, S., Cooper, J., Klineberg, E., Rodway, C., ... Kapur, N. (2013). Time trends in coroners' use of different verdicts for possible suicides and their impact on officially reported incidence of suicide in England: 1990–2005. *Psychological Medicine*, 43(7), 1415–1422. doi: 10.1017/S0033291712002401
- Holmstrand, C., Bogren, M., Mattisson, C., & Brådvik, L. (2015). Long-term suicide risk in no, one or more mental disorders: The lundby study 1947–1997. *Acta Psychiatrica Scandinavica*, 132(6), 459–469. doi: 10.1111/acps.12506
- Huikari, S., Miettunen, J., & Korhonen, M. (2019). Economic crises and suicides between 1970 and 2011: Time trend study in 21 developed countries. *Journal of Epidemiology & Community Health*, 73(4), 311–316. doi: 10.1136/jech-2018-210781
- Hunt, I. M., Rahman, M. S., While, D., Windfuhr, K., Shaw, J., Appleby, L., & Kapur, N. (2014). Safety in crisis resolution home treatment services in England: An investigation of suicide trends 2003–2011. *The Lancet. Psychiatry*, 1, 135–141. doi: 10.1016/S2215-0366(14)70250-0
- Hunt, I. M., Windfuhr, K., Shaw, J., Appleby, L., & Kapur, N. (2012). Ligature points and ligature types used by psychiatric in-patients who die by hanging: A national study. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, 33, 87–94. doi: 10.1027/0227-5910/a000117
- Johnson, J., Hall, L. H., Berzins, K., Baker, J., Melling, K., & Thompson, C. (2018). Mental healthcare staff well-being and burnout: A narrative review of trends, causes, implications, and recommendations for future interventions. *International Journal of Mental Health Nursing*, 27(1), 20–32. doi: 10.1111/inm.12416
- Kapur, N., Hunt, I. M., Webb, R., Bickley, H., Windfuhr, K., Shaw, J., & Appleby, L. (2006). Suicide in psychiatric inpatients in England, 1997 to 2003. *Psychological Medicine*, 36, 1485–1492. doi: 10.1017/S0033291706008373
- Kapur, N., Hunt, I. M., Windfuhr, K., Rodway, C., Webb, R., Rahman, S., ... Appleby, L. (2013). Suicide in psychiatric in-patients in England, 1997–2008: Longitudinal study. *Psychological Medicine*, 43, 66–71. doi: 10.1017/S0033291712000864
- Kapur, N., Ibrahim, S., While, D., Baird, A., Rodway, C., Hunt, I. M., ... Appleby, L. (2016). Mental health service changes, organisational factors, and patient suicide in England in 1997–2012: A before-and-after study. *The Lancet. Psychiatry*, 3(6), 526–534. doi: 10.1016/S2215-0366(16)00063-8
- Lieberman, D. Z., Resnik, H. L. P., & Holder-Perkins, V. (2004). Environmental risk factors in hospital suicide. *Suicide and Life-Threatening Behaviour*, 34, 448–453. doi: 10.1521/suli.34.4.448.53740
- Madsen, T., Erlangsen, A., Hjorthøj, C., & Nordentoft, M. (2020). High suicide rates during psychiatric inpatient stay and shortly after discharge. *Acta Psychiatrica Scandinavica*, 142, 355–365. doi: 10.1111/acps.13221
- Madsen, T., & Nordentoft, M. (2013). Changes in inpatient and postdischarge suicide rates in a nationwide cohort of Danish psychiatric inpatients, 1998–2005. *Journal of Clinical Psychiatry*, 74(12), e1190–4. doi: 10.4088/JCP.13m08656
- Meehan, J., Kapur, N., Hunt, I. M., Turnbull, P., Robinson, J., Bickley, H., ... Appleby, L. (2006). Suicides in mental health in-patients and within 3 months of discharge: National clinical survey. *British Journal of Psychiatry*, 188, 129–134. doi: 10.1192/bjp.188.2.129
- Mental Health Services Data Set. <https://data.gov.uk/dataset/mental-health-services-monthly-statistics> (Accessed 25th January 2023).
- National Confidential Inquiry into Suicide and Safety in Mental Health. (2023). Annual Report: UK patient and general population data, 2010–2020. The University of Manchester. Retrieved from: <https://sites.manchester.ac.uk/ncish/reports/>
- National Patient Safety Agency. (2009). Never events. Framework 2009/10. Process and action for primary care trusts 2009/10. London. Retrieved from <https://assets.publishing.service.gov.uk>
- Nawaz, R. F., Reen, G., Bloodworth, N., Maughan, D., & Vincent, C. (2021). Interventions to reduce self-harm on in-patient wards: Systematic review. *British Journal of Psychiatry Open*, 7(3), e80. doi: 10.1192/bjo.2021.41
- NHS. (2019). The NHS long term plan. Retrieved from <https://www.longtermplan.nhs.uk/>
- NHS England. (2023). Acute inpatient mental health care for adults and older adults. July 2023. <https://www.england.nhs.uk/long-read/acute-inpatient-mental-health-care-for-adults-and-older-adults/> (accessed 2nd August 2023).
- Office for National Statistics. (2021). Suicides in England and Wales: 2020 registrations. <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/suicidesintheunitedkingdom/2020registrations> (Accessed 23 February 2023).
- Office for National Statistics. (2022). Suicides in England and Wales: 2021 registrations. <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/suicidesintheunitedkingdom/2021registrations> (Accessed 12 April 2023).
- Pirkola, S., Sund, R., Sailas, E., & Wahlbeck, K. (2009). Community mental health services and suicide rate in Finland: A nationwide small-area analysis. *Lancet (London, England)*, 373(9658), 147–153. doi: 10.1016/S0140-6736(08)61848-6
- Shea, S. C. (1998). The chronological assessment of suicide events: A practical interviewing strategy for the elicitation of suicidal ideation. *Journal of Clinical Psychiatry*, 59(Suppl 20), 58–72. PMID: 9881539.
- Staniszewska, S., Mockford, C., Chadburn, G., Fenton, S., Bhui, K., Larkin, M., ... Weich, S. (2019). Experiences of in-patient mental health services: Systematic review. *British Journal of Psychiatry*, 214(6), 329–338. doi: 10.1192/bjp.2019.22
- StataCorp (2019). *Stata statistical software: Release 16*. College Station, TX: StataCorp LLC.
- Swift, J. K., Trusty, W. T., & Penix, E. A. (2021). The effectiveness of the Collaborative Assessment and Management of Suicidality (CAMS) compared to alternative treatment conditions: A meta-analysis. *Suicide & Life-Threatening Behavior*, 51, 882–896. doi: doi.org/10.1111/sltb.12765
- Tseng, M. M., Chang, C. H., Liao, S. C., & Yeh, Y. C. (2019). Rates and trends of psychiatric inpatient and postdischarge suicides in Taiwan, 2002–2013: A national register-based study. *Social Psychiatry & Psychiatric Epidemiology*, 54(5), 591–598. doi: 10.1007/s00127-019-01656-3
- Tyler, N., Daker-White, G., Grundy, A., Quinlivan, L., Armitage, C., Campbell, S., & Panagioti, M. (2021). Effects of the first COVID-19 lockdown on quality and safety in mental healthcare transitions in England. *British Journal of Psychiatry Open*, 7(5), E156. doi: 10.1192/bjo.2021.996
- Wolfersdorf, M., Vogel, R., Vogl, R., Grebner, M., Keller, F., Purucker, M., & Wurst, F. M. (2016). Suizid im psychiatrischen Krankenhaus : Ergebnisse, Risikofaktoren, therapeutische Maßnahmen [Suicide in psychiatric hospitals: Results, risk factors and therapeutic measures]. *Nervenarzt*, 87(5), 474–482. German. doi: 10.1007/s00115-016-0111-3