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Meta-analysis of suicide rates in the first week and the first month after psychiatric hospitalisation

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ABSTRACT

Objective To assess the magnitude of suicide rates in the first week and first month postdischarge following psychiatric hospitalisation.

Design Meta-analysis of relevant English-language, peer-reviewed papers published in MEDLINE, PsycINFO or Embase between 01 January 1945 and 31 March 2017 and supplemented by hand searching and personal communication. A generalised linear effects model was fitted to the number of suicides, with a Poisson distribution, log link and log of person years as an offset. A random effects model was used to calculate the overall pooled rates and within subgroups in sensitivity analyses.

Outcome measures Suicides per 100 000 person years in the first week and the first month after discharge from psychiatric hospitalisation.

Results Thirty-four included papers comprised 29 studies that reported suicides in the first month postdischarge (3551 suicides during 222 546 patient years) and 24 studies that reported suicides in the first week postdischarge (1928 suicides during 60 880 patient years). The pooled estimate of the suicide rate in the first month postdischarge suicide was 2060 per 100 000 person years (95% CI=1300 to 3280, I^2=90). The pooled estimate of the suicide rate in the first week postdischarge suicide was 2950 suicides per 100 000 person years (95% CI=1740 to 5000, I^2=88). Eight studies that were included after personal communication had lower pooled rates of suicide than studies included after data extraction and there was evidence of publication bias towards papers reporting a higher rate of postdischarge suicide.

Conclusion Acknowledging the presence of marked heterogeneity between studies and the likelihood of bias towards publication of studies reporting a higher postdischarge suicide rate, the first week and first month postdischarge following psychiatric hospitalisation are periods of extraordinary suicide risk. Short-term follow-up of discharged patients should be augmented with greater focus on safe transition from hospital to community care.

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INTRODUCTION

A recent meta-analysis of suicide mortality after discharge from psychiatric facilities estimated a rate of 484 per 100 000 person years among 100 studies reporting on suicides after any period of follow-up and 1132 suicides per 100 000 person years among 18 studies reporting on suicides in the first 3 months.[1] These alarming figures suggest that the suicide rate among this vulnerable patient group is up to 100 times the global suicide rate and that being a recently discharged patient confers a higher risk of suicide death than any other risk factor.[2] However, the earlier meta-analysis did not report estimates over periods shorter than 3 months[1] because the methods used excluded the duplicated patient samples with a smaller number of patient years and no steps were taken to obtain further data by personal communication. As a result, the earlier study included only two studies that reported suicide rates in the first month post hospital discharge.[1] Although several primary studies have reported on suicide in the immediate postdischarge period,[3–5] expected rates of suicide in the first week and month of transition from the hospital to the community remain uncertain. Knowledge of the extent and trajectory of the suicide risk in the weeks following

hospital discharge would inform the timing and duration of interventions aimed at reducing these tragic events.

The primary aim of this study was to calculate a pooled estimate and statistical dispersion (range, median and quartile values) of 1-week and 1-month postdischarge suicide rates. The secondary aim was to examine the possible moderators of the suicide rates over these two periods of follow-up according to the characteristics of the primary research.

METHODS

The meta-analysis was registered with PROSPERO[6] and conducted according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses[7] and Meta-analyses Of Observational Studies in Epidemiology[8] guidelines.

Search strategy and selection criteria

We included longitudinal studies that reported the number of person years and the number of suicides in the first week (1-week) and first month (or 28 days) postdischarge (1-month) from acute adult psychiatric hospitalisation. We defined acute adult psychiatric hospitalisation broadly so as to include hospitalisations of patients admitted with specific psychiatric diagnoses, psychiatric discharges of older people and after psychiatric hospitalisation in military settings. We excluded studies of postdischarge suicide after release from child and adolescent psychiatric wards, long-stay mental health wards, forensic psychiatric facilities and patients who were admitted to non-psychiatric settings (such as emergency departments or the medical or surgical wards of general hospitals). Studies were excluded if the number of suicides and the number of person years were not reported, could not be calculated or could not be obtained by email from the authors.

Two authors (DC and ML) independently searched MEDLINE, PsycINFO and Embase for relevant papers published in English between 01 January 1945 and 31 March 2017 (see figure 1, online supplementary 1). Electronic searches were supplemented by hand searches of the relevant review articles and the full-text papers located in the searches conducted for a related meta-analysis[1] were re-examined. Grey literature was not considered. DC and ML independently winnowed titles, abstracts and full-text papers. The authors of studies that met inclusion criteria except for reporting postdischarge suicide rates over periods of longer than a month were contacted by email for data regarding suicides in the 1-week and 1-month periods. Authors of papers that reported postdischarge suicide in 1-month but not reported 1-week and the converse were also contacted. A total of 27 authors were contacted.

Data extraction

SS and MW independently extracted the data and ML and DC performed a further check of the data. The number of person years was calculated using the number of discharges and the period of follow-up of 28 or 31 days

when it was not directly reported in the paper. Where the follow-up was specified to be '1-month', the length of follow-up was assumed to be 365/12=30.4 days. Separate figures were extracted for men and women and for the first and subsequent weeks of follow-up where possible.

A predetermined list of effect size and moderator variables was extracted. The variables collected were (1) number of suicides and number of patient years, (2) period of follow-up (1-month vs 1-week), (3) sex (where specified), (4) diagnostic group (where specified), (5) whether the primary study only included people admitted for suicidal thoughts and behaviours, (6) country in which the study was conducted, (7) whether the data were obtained by personal communication with the authors and (8) study quality items.

We assessed study quality using a 0–4-point scale derived from the Newcastle–Ottawa Scale for assessing the quality of non-randomised studies[9] and used in a previous meta-analysis of postdischarge suicide rates.[1] One point was awarded if the study: (1) identified suicides using coroners' records or a national mortality database (rather than using hospital records), (2) included all the postdischarge suicides in a defined geographic region (rather than suicides from a particular care setting), (3) included open verdicts in suicide numbers and (4) reported the number of discharges (rather than the number of individuals). Studies with a total quality score of three or four were regarded as being of higher quality.

Data analysis

The effect sizes of interest were the incidence rate (IR), expressed as suicides per 100 000 person years and the incidence rate ratio (IRR) between subgroups. In all analyses, a generalised linear mixed effects model was fitted to a count response (number of suicides), with a Poisson distribution, log link and log of person years as an offset allowing the inclusion of fitted values for zero suicide studies. All models included a random effect (intercept) for study. CIs were based on t-distribution with df equal to the number of studies. All models were fitted with the R package lme4. Standard errors were calculated using the delta method from the R package car. Prespecified subgroup analyses were conducted according to the period of follow-up, source of the data (published or obtained by personal communication), country of publication, sex and study quality using a mixed effects model.

Publication bias was examined by (1) comparing extracted data to that obtained by personal communication, (2) examination of funnel plots and (3) Egger's regression tests based on the fitted values.

Patient and public involvement

The results of this study were discussed with Eastern Suburbs Mental Health Service, Consumer Advisory Group.
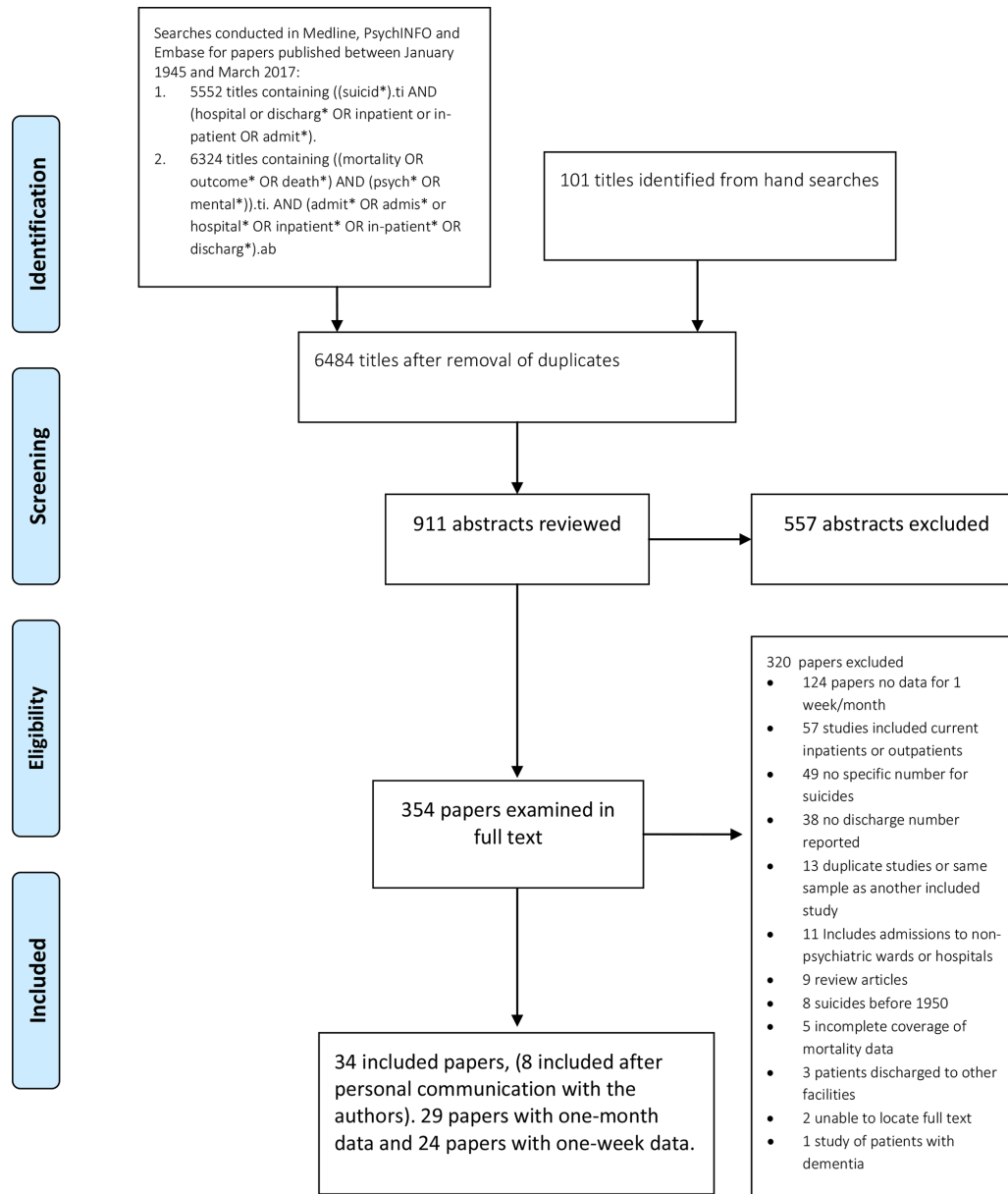
Searches conducted in Medline, PsychINFO and Embase for papers published between January 1945 and March 2017:
1. 5552 titles containing ((suicid*).ti AND (hospital or discharg* OR inpatient or in-patient OR admit*).
2. 6324 titles containing ((mortality OR outcome* OR death*) AND (psych* OR mental*)).ti. AND (admit* OR admis* or hospital* OR inpatient* OR in-patient* OR discharg*).ab

101 titles identified from hand searches

6484 titles after removal of duplicates

911 abstracts reviewed

557 abstracts excluded

320 papers excluded
- 124 papers no data for 1 week/month
- 57 studies included current inpatients or outpatients
- 49 no specific number for suicides
- 38 no discharge number reported
- 13 duplicate studies or same sample as another included study
- 11 Includes admissions to non-psychiatric wards or hospitals
- 9 review articles
- 8 suicides before 1950
- 5 incomplete coverage of mortality data
- 3 patients discharged to other facilities
- 2 unable to locate full text
- 1 study of patients with dementia

354 papers examined in full text

34 included papers, (8 included after personal communication with the authors). 29 papers with one-month data and 24 papers with one-week data.

Identification

Screening

Eligibility

Included

Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses flowchart.

RESULTS

Search results and data extraction

Independent searches (DC and ML) both identified 24 of 26 papers reporting on suicides occurring in the first week or first month after discharge. A further eight studies were included after data were provided by personal communication with the authors, such that either 1-week or 1-month data or both periods were available from 34 papers (table 1, online supplementary 21). The earliest study was published in 1983, the median year of publication was 2009 and the most recent was published in 2017. Twenty-nine papers contained data pertaining to the first month postdischarge (online supplementary 3). Twenty-four papers reported on suicides in the first week postdischarge (online supplementary 4).

There were disagreements concerning six of the 68 data points relating to either the number of suicides

or the number of patient years. All disagreements were resolved by a second examination of the data by DC and ML.

Suicides within a month of discharge

Twenty-nine studies (inclusive of four studies with no suicides) reported 3551 suicides in the first month after discharge during 222 546 person years. The mean number of suicides per study was 122 (SD=443) and the mean number of person years per study was 7674 (SD=22 581). The median sample suicide rate was 2333 per 100 000 person years with a range of 0–30 252 per 100 000 person years. The first and third quartiles were 601 and 4555 per 100 000 person years, respectively (see figure 2. Forest plot of suicide rates in 1 month following discharge from psychiatric hospitalisation.). The pooled rate of 1-month postdischarge suicide was 2060 per 100 000 person years

Table 1 List of included studies

Study	Location	Period	Suicide ascertainment	Type of patient	Discharges	Suicides in the first week	Suicides in the first month
Castelein et al (2015)[31]	Psychiatric hospitals in Groningen, the Netherlands	2000–2011	Regional psychiatric case register	Recent onset psychosis	424	1	–
De Leo and Heller (2007)[32]	Gold Coast Hospital, Queensland, Australia	2002–2005	Not specified	Previous suicide attempters	60	0	0
Deisenhammer et al (2016)[33]	Three psychiatric hospitals, Tyrol, Austria	2004–2011	Not specified	Unselected adults	65 652	25	51
Erlangsen et al (2006)[34]	All psychiatric hospitals, Denmark	1990–2001	Coronial records	Adults aged>60 years	72 701	77	–
Geddes and Juszczak (1997)[5]	All psychiatric hospitals, Scotland, UK	1968–1993	Coronial records	Unselected adults	338 013	–	367
Goldacre et al (1993)[4]	Hospitals within the Oxford Regional Health Authority, UK	1979–1986	Coronial records	Unselected adults	26 864	–	44
Hayashi et al (2012)[35]	Tokyo Metropolitan Matsuzawa Hospital, Japan	2006–2009	Not specified	Admitted suicidal patients	3450	–	0
Healy et al (2006)[36]	Unspecified hospitals, North Wales, UK	1994–2003	Coronial records	Psychotic patients	133	–	2
Ho (2003)[3]	All psychiatric wards and hospitals in Hong Kong, China	1997–2000	Coronial records	Unselected adults	21 921	–	124
Isometsa et al (2014)[37]	All psychiatric wards and hospitals, Finland	1987–2004	Coronial records	Adults with bipolar disorder	52 747	53	158
Johansson et al (1996)[38]	All psychiatric inpatients in southern Stockholm, Sweden	1984–1985	Coronial records	Unselected adults	3862	4	12
Kessler et al (2015)[39]	US Army psychiatric hospitals and wards, USA	2004–2009	Coronial records	US army psychiatric patients	53 769	5	17
Lee and Lin (2009)[40]	All psychiatric wards and hospitals in Taiwan	2001–2005	Coronial records	Patients with schizophrenia	435	22	39
Links et al (2012)[41]	St. Michael's Hospital, Toronto, Canada	2007–2009	Not specified	Patients with previous suicidal behaviour or ideation	120	–	3
Luxton et al (2013)[42]	US Military treatment facilities, USA	2001–2011	Coronial records	US service members	68 947	–	35
Madsen and Nordentoft (2013)[43]	All psychiatric wards and hospitals in Denmark	1998–2006	Coronial records	Unselected adults	287 866	175	374
Naik et al (1997)[44]	Saxondale Hospital, Nottinghamshire, England, UK	1974–1992	Local registers and NHS central register	Unselected adults	86	–	0
Nyman and Jonsson (1986)[45]	Unspecified psychiatric hospital, Sweden	1964–1968	Coronial records	Patients with schizophrenia	110	–	0
Olfson et al (2016)[46]	Psychiatric patients from 45 American states	2001–2008	Coronial records	Unselected adults	770 643	49	151
Park et al (2013)[47]	Asan Medical Centre, Seoul, South Korea	1989–2006	Coronial records	Unselected adults	8403	10	26
Pedersen et al (2014)[48]	All psychiatric hospitals and wards in Denmark	2005–2010	Coronial records	Patients with schizophrenia	7107	6	–
Pirkola et al (2007)[49]	All psychiatric hospitals and wards in Finland	1985–2001	Coronial records	Unselected adults	355 000	1164	1698
Pokorny (1983)[50]	Houston Veterans Administration Medical Centre, Texas, USA	Not specified	Coronial records	Veterans administration patients	4800	10	16

Continued

Table 1 Continued

Study	Location	Period	Suicide ascertainment	Type of patient	Discharges	Suicides in the first week	Suicides in the first month
Qurashi et al (2006)[51]	Unspecified hospital, Manchester, England, UK	Not specified	Not specified	Unselected adults	69	1	–
Riblet et al (2017)[52]	American Veterans Health Inpatient Mental Health Units	2002–2015	Coronial records	Unselected American service-people	1 126 179	141	–
Ruengorn et al (2011)[53]	Suanprung Psychiatric Hospital, Chiang Mai, Thailand	2007–2010	Hospital records	Mood disorder patients admitted for suicide attempt	235	1	1
Sani et al (2011)[54]	Belvedere Montello Hospital, Rome, Italy	1964–1998	Coronial records	Unselected adults	4441	2	–
Seemuller et al (2014)[55]	Twelve centres across Germany	Not specified	Study follow-up	Patients with major depression	1014	1	1
Tejedor et al (1999)[56]	Psychiatric Department of Santa Cruz y San Pablo Hospital, Barcelona, Spain	1983–1997	Study follow-up	Suicide attempters	150	0	1
Tsai et al (2002)[57]	Taipei City Psychiatric Centre, Taiwan	1985–1997	Coronial records	Patients with mood disorders	2133	0	24
Tseng et al (2006)[58]	Unspecified psychosomatic ward, Taiwan	2000–2002	Study follow-up	Patients with major depression	67	0	2
Valenstein et al (2009)[59]	All US veteran psychiatric inpatient facilities	1999–2004	Coronial data	American veterans with mood disorders	184 093	50	127
Winkler et al (2015)[60]	All psychiatric hospitals and psychiatric wards, Czech Republic	2006–2012	Coronial records	Unselected adults	137 290	131	258
Yim et al (2004)[61]	Pamela Youde Nethersole Eastern Hospital, Hong Kong	1996–1999	Coronial records	Unselected adults	6292	–	20

NHS, National Health Service.

(95% CI=1300 to 3280) with very high between-sample heterogeneity (Q=266.8, p<0.001, I^2=90) (table 2).

Separate data for men and women were available for 10 studies reporting 1-month postdischarge suicides including six studies obtained by personal communication. Men had almost twice the pooled rate of suicide than women (IRR=1.94, 95% CI=1.54 to 2.44; see table 2, online supplementary 5 and 6).

Studies of patients admitted for suicidal thoughts or behaviours had over three times the rate of suicide than studies of psychiatric patients who were not selected in this way (IRR=3.56, 95% CI=1.29 to 7.63), but this result was based on a small number of studies and suicides among patients presenting with suicidal thoughts or behaviours. The analysis of suicide rates according to diagnostic group was also limited by a small number of studies but suggested that groups of patients with a mood disorder might have higher rates of 1-month postdischarge suicide than groups of patients that were not selected by diagnosis (table 2).

The eight studies deemed to be of lower quality had a higher pooled suicide rate compared with the studies deemed to be of higher quality (IRR=1.99, 95% CI=1.98 to 2.01). The eight studies from Asian countries had the highest pooled suicide rate of suicide, followed by the 10 studies from European countries and the five studies from the UK, Canada, and Australia, while the six US studies had the lowest rate (table 2).

Excluding four studies that reported no suicides, 15 studies reported 1-month and 1-week suicides allowing a direct comparison of the suicide rates over the first week postdischarge to the remaining 8–31 days. Among these studies, the 1-week pooled suicide rate was almost three times the rate in the 8–31 days period (IRR=2.99, 95% CI=2.24 to 3.97; see table 2, online supplementary 7 and 8).

Data obtained from direct extraction from published papers had a significantly higher 1-month postdischarge suicide than the data obtained by personal communication (IRR=3.14, 95% CI=1.29 to 7.63). The funnel plot was characterised by eight studies with lower suicide rates than the pooled estimate and five studies with higher suicide rates than the pooled estimate lying outside the funnel (online supplementary 9). An Egger's test confirmed the likelihood of publication bias towards studies with a higher postdischarge
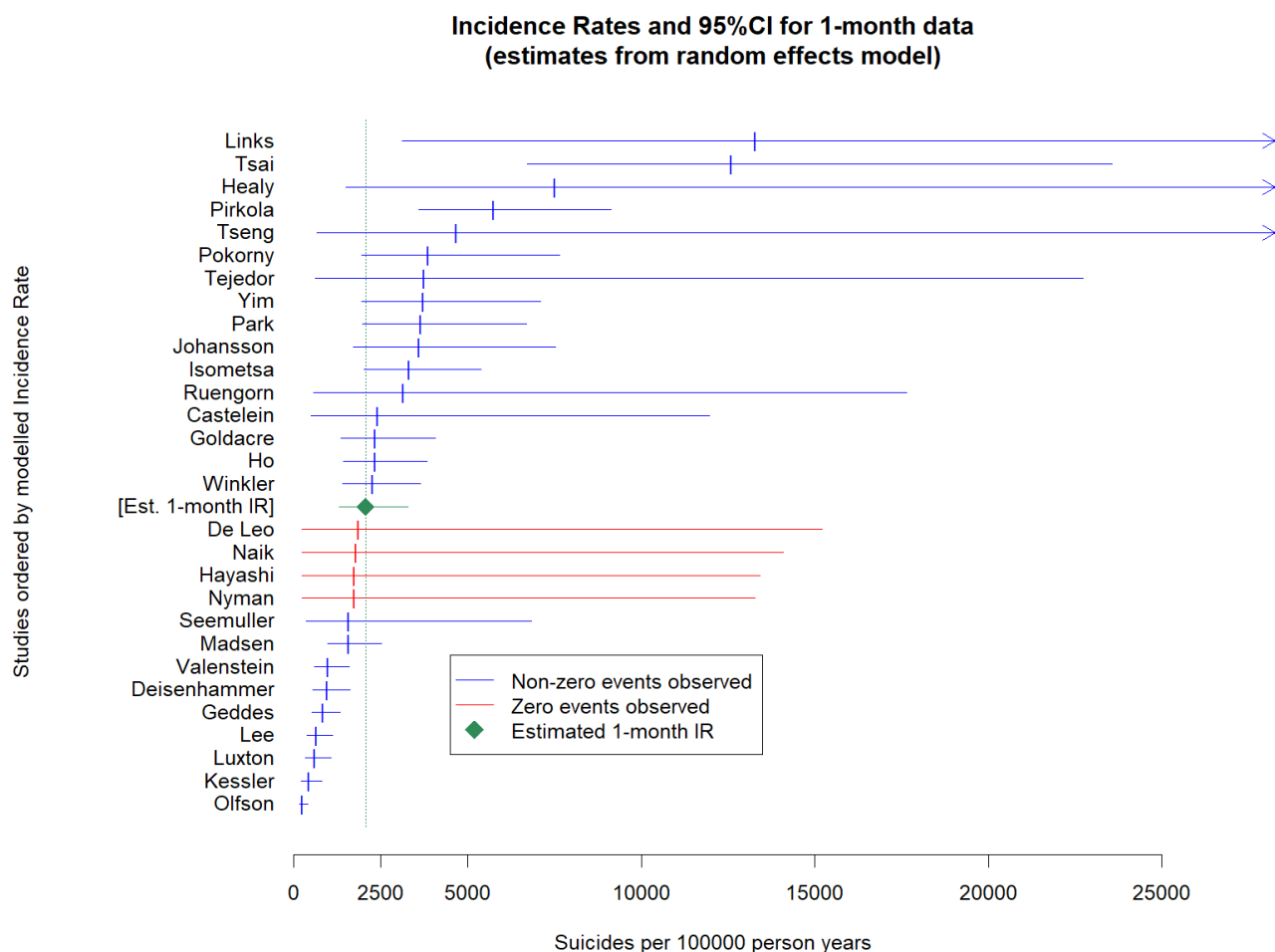
**Incidence Rates and 95%CI for 1-month data
(estimates from random effects model)**

Figure 2 Forest plot of suicide rates in 1 month following discharge from psychiatric hospitalisation.

suicide rate (Egger's bias=4.94, 95% CI=1.38 to 8.50, df=27, p<0.004)

Suicide rates in the first week postdischarge

Twenty-four studies were included in a meta-analysis of 1-week postdischarge suicide rates. These comprised 15 studies reporting suicides at both 1 month and 1 week (as above, table 2), five studies reporting suicides in 1 week but not in 1 month and four studies with no suicides. The 24 studies reported a total of 1928 suicides (mean=80.3 per study, SD=315.5 and median=8) during 60 880 person years (mean=25 360.7 per study, SD=7783 and median=174.5). The median sample suicide rate was 3186 per 100 000 person years (range 0–75 000 per 100 000, first quartile=567 and third quartile=6730).

The pooled 1-month postdischarge suicide rate was 2950 suicides per 100 000 person years (95% CI=1740 to 5000) with very high between-study heterogeneity (Q=186.4, p<0.0001, I^2=88). (See table 3, figure 3. Forest plot of suicide rates in 1 week following discharge from psychiatric hospitalisation).

Data extracted from published papers had a significantly higher rate of suicide than personally communicated data (IRR=3.63, 95% CI=1.55 to 8.49). The funnel plot was characterised by five studies with lower suicide rates than the pooled estimate and there were four studies with higher suicide rates than the pooled estimate lying outside the funnel (online supplementary 10). An Egger's test confirmed the likelihood of publication bias towards studies with a higher postdischarge suicide rate (Egger's bias=4.31, 95% CI=0.85 to 7.78, df=22, p<0.008).

Studies considered to have a lower quality had a higher rate of suicide than those assessed to have a higher quality (IRR=2.83, 95% CI=2.80 to 2.85).

DISCUSSION

This study synthesised over 30 years of research on suicide risk during the period immediately following psychiatric hospitalisation. The study builds on a previous meta-analysis of post psychiatric discharge suicide rates[1] by including unpublished data and data that were excluded from an earlier meta-analysis of suicide rates postdischarge[1] to estimate suicide rates over the first week and first month postdischarge. One-week postdischarge suicide rates were approximately 3000 suicides per 100 000 person years while 1-month rates were approximately 2000 per 100 000

Table 2 Suicide rates in the first month postdischarge from psychiatric settings

	N studies	Suicides	Patient years	Pooled estimate	Lower limit	Upper limit
One month	29	3551	222 546	2060	1300	3280
Subgroup of studies reporting follow-up at 1 week and 2–4 weeks						
One week	15	1928	60 854	3170	1710	5890
Two to four weeks	15	1229	115 858	1060	660	1070
Subgroup of studies reporting suicides by men and women						
Men	10	917	83 913	1400	780	2500
Women	10	497	82 989	720	390	1320
Subgroup of studies according to data source						
Extracted directly	22	2672	107 439	2880	1770	4670
Personally communicated	7	879	115 107	920	430	1930
Subgroups of studies according to selection for suicidal thoughts or behaviours						
Admitted with suicidal thoughts or behaviours	5	5	56	6210	1550	24 860
Unselected by suicidally	24	3546	222 490	1850	1170	2920
Subgroups of studies according to selection by diagnosis						
Patients with a mood disorder	6	312	18 201	3370	1240	9180
Patients with a schizophrenia spectrum disorder	3	41	6270	1720	330	9110
Unselected by diagnosis	20	3198	198 075	1830	1080	3110
Subgroups of studies according to study quality						
Higher quality*	8	820	73 318	1360	1350	1370
Lower quality	20	2731	149 227	2720	2690	2740
Subgroup of studies according to geographic region						
Asia	8	235	13 000	3230	1470	7100
Europe	10	2554	75 634	2340	1170	4680
USA	6	346	87 376	1030	450	2380
UK, Australia and Canada	5	416	46 535	2020	630	6490

*One study failed to converge.

person years. Rates from the beginning of the second week to the end of the fourth week or 1-month postdischarge were approximately 1000 per 100 000 person years. Rates of 2000–3000 per 100 000 person years are, respectively, about 200–300 times the global suicide rate.[10] Our results also compare with a recent meta-analysis that estimated 1132 suicides per 100 000 person years among 18 studies of the first 3 months and 484 per 100 000 person years among 100 studies of any period of follow-up.[1] This suggests a sixfold risk of suicide in the first week postdischarge compared with the long-term rates of suicide after psychiatric discharge of about 500 per 100 000 person years. It further suggests that length of time since discharge is at least as important as clinical risk factors for suicide (OR=1.50)[11] and high-risk models for suicide (OR=4.84)[12] reported in longitudinal studies.[13]

Table 3 Suicide rates in the week postdischarge from psychiatric settings

	N studies	Suicides	Patient years	Pooled estimate	Lower limit	Upper limit
One week	24	1928	60 880	2950	1740	5000
Subgroup of studies according to data source						
Extracted directly	16	1429	12 605	5090	2930	8840
Personally communicated	8	499	48 257	1400	740	2680
Subgroups of studies according to study quality						
Higher quality	5	246	26 370	3950	3910	3990
Lower quality	19	1682	34 492	1400	1380	1410

Incidence Rates and 95%CI for 1-week data (estimates from random effects model)
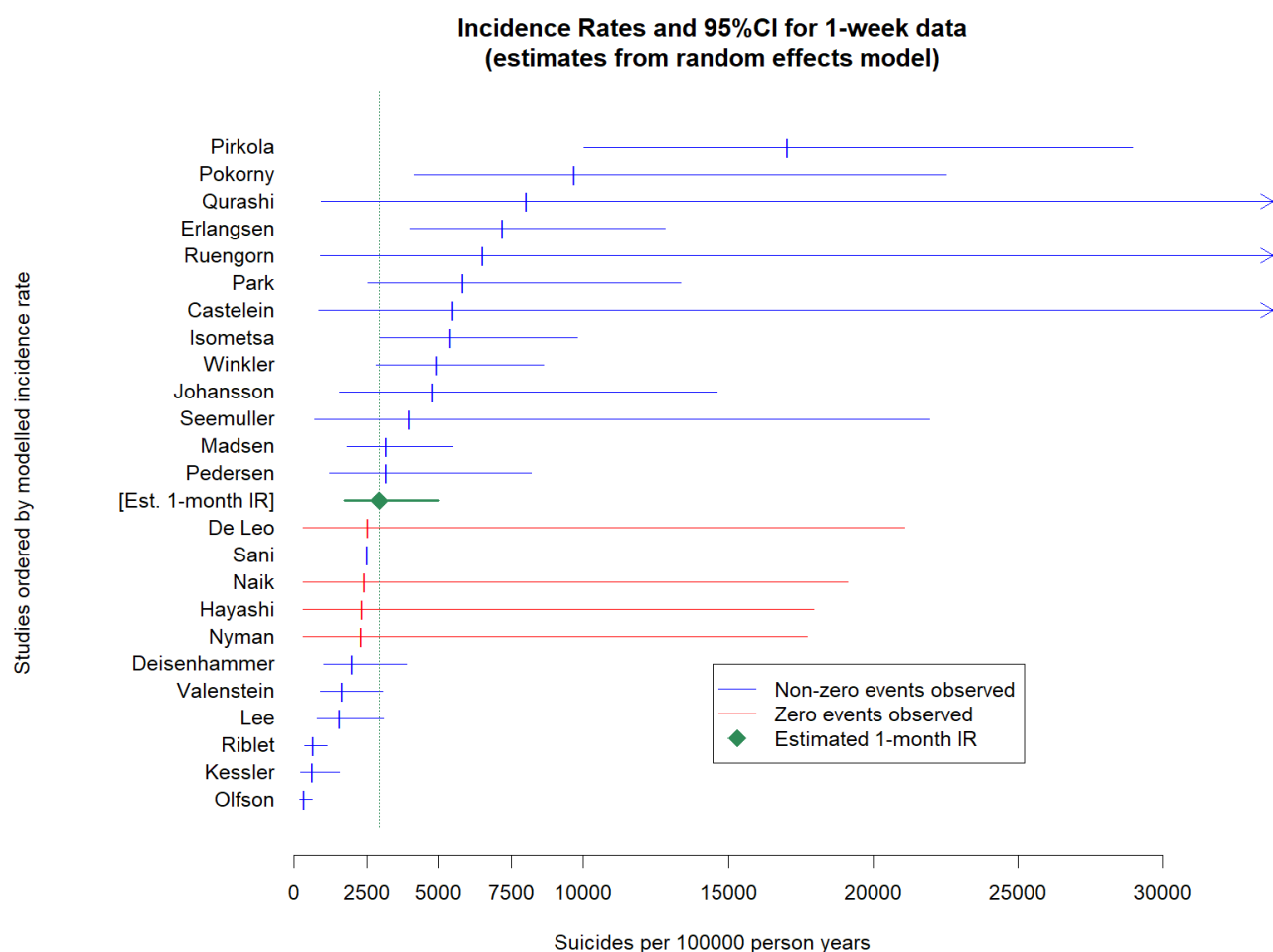
Figure 3 Forest plot of suicide rates in 1 week following discharge from psychiatric hospitalisation.

Our finding of higher rates of suicides by men in the immediate postdischarge period is unsurprising because of the preponderance of men among all suicide deaths,[10] but is in contrast with less clear gender effects on inpatient suicide rates.[14 15]

The main limitation of our study is uncertainty about the extent to which our pooled estimates can be generalised. We observed very high between-study heterogeneity that may be partially explained by publication bias towards studies with high suicide rates and aspects of study quality. However, in all likelihood, there are real differences in postdischarge suicide rates between settings that cannot be examined using the existing literature. Most importantly, this study was not able to ascertain the role of the availability and the quality of postdischarge care in determining postdischarge suicide rates.

Our findings emphasise the importance of postdischarge follow-up. Currently, in the USA, only around half of the commercially insured patients and a third of Medicare patients received a psychiatric follow-up visit within 7 days of hospital discharge for a mental illness.[16] In the UK, the National Institute for Health and Care Excellence guidelines suggest that people discharged from mental health settings should be followed-up within 7 days.[17]

While the introduction of a 7-day follow-up period is one of a suite of measures that do seem to be associated with lower suicide rates in the UK,[18] it is sobering to consider that some patients who are scheduled to be followed-up at the 7-day mark will die before they are ever reassessed.

Very high rates of suicide in the immediate postdischarge period should encourage clinicians to think carefully about the patient's transition from hospital to the community. Qualitative research suggests that the transition from hospital to home is associated with re-emergence of pre-existing social stresses and new stresses associated with hospitalisation.[19–21] Clinicians should consider strategies that might improve this transition, including predischarge and postdischarge patient psychoeducation, formal needs-based assessments, use of transitional care teams, improved communication between the inpatient team and greater involvement of the patient's outpatient team and family.[22]

The high risk of suicide during the period immediately following hospital discharge provides a clinical rationale for conceptualising the first postdischarge month as a distinct phase of recovery and treatment, especially in the context of pervasive gaps in treatment following

psychiatric hospitalisation. Traditional case management approaches to the continuity of care following psychiatric hospitalisation have not consistently yielded promising results. In one review, two of seven studies of telephone follow-up and one of five studies that involved facilitating communication between inpatient and outpatient clinicians resulted in a significant increase in continuity of care.[22] Intensive interventions that involve home visits, social support, motivational interviewing and accompanying patients to outpatient appointments have yielded more encouraging results.[23 24]

Other limitations relate to the representativeness of the included studies. All of the research came from high-income economies of Asia, Australasia, North America and Europe, and our results might not be representative of postdischarge suicide in low-income and middle-income countries. Moreover, there were an insufficient number of studies to determine whether apparent differences in suicide rates between regions were real or simply the result of available studies. Differences between rates of postdischarge suicide between countries are plausible because of differences in national suicide rates,[10] progress towards deinstitutionalisation[25] and likely national differences in the quality of mental healthcare systems[26].

Although it has been argued that one way of combatting postdischarge suicide is to focus on individual patients with clinical characteristics that signify a high suicide risk,[27 28] the very high suicide rates calculated in this study and the known limitations of suicide risk assessment[29] suggest that a narrow focus on clinical risk assessment might mislead clinicians into thinking that some recently discharged psychiatric inpatients can be regarded as being at low risk postdischarge.[30] Our findings support an approach to suicide prevention focused on whole cohorts of discharged patients.[13]

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