Culture of Care

Personalised approaches to risk in mental health in-patient settings

Launch Event
July 2024

Professor Nav Kapur

NATIONAL COLLABORATING CENTRE FOR MENTAL HEALTH

Neurodiverse Connection

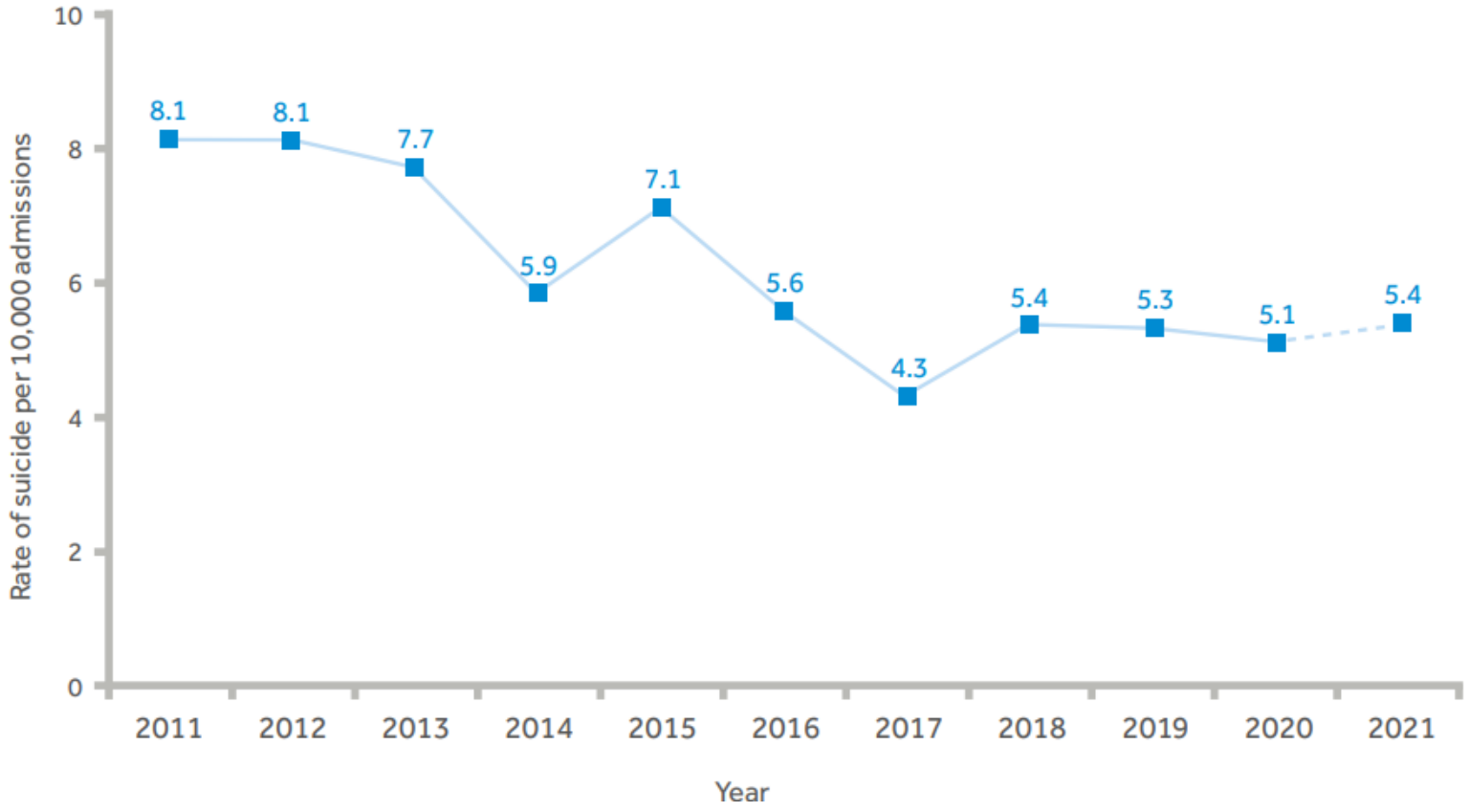
Global Black Thrive

NCISH

NIHR | Greater Manchester Patient Safety Research Collaboration

In-patient suicide

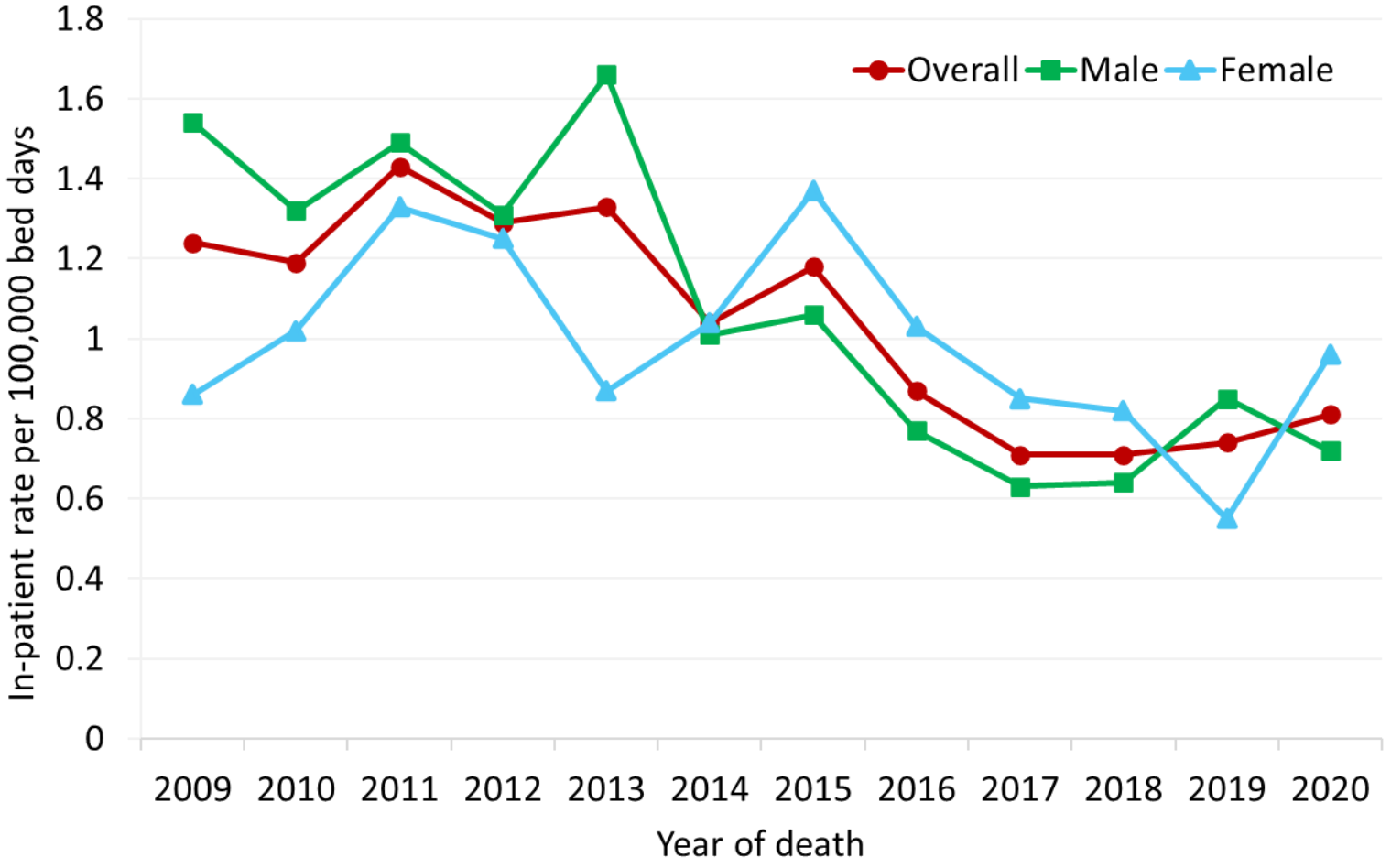
Figure 15: Patient suicide in the UK: rate of in-patient suicide per 10,000 admissions



- **38%** on ward
- **51%** on agreed leave
- **11%** off ward without agreement

Source: NCISH, https://documents.manchester.ac.uk/display.aspx?DocID=71818

Psychiatric in-patient care in England: as safe as it can be?

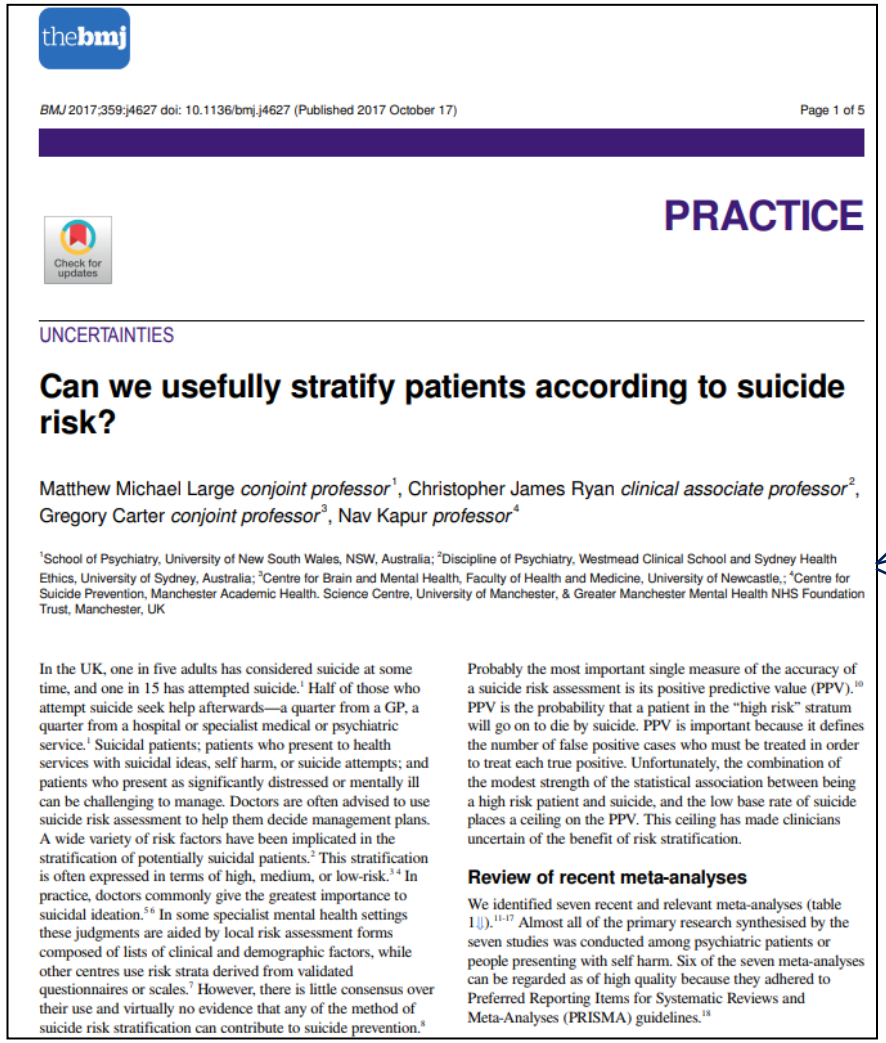


Falling inpatient suicide rates over the last decade:

- A long-term trend
- Has levelled off since 2016?
- Less apparent in **women**, **younger** in-patients and those with **depression**
- More in-patients in recent years had **psychiatric comorbidity**

Source: Hunt IM, Baird A, Turnbull P, Ibrahim S, Shaw J, Appleby L, Kapur N. Psychiatric in-patient care in England: as safe as it can be? An examination of in-patient suicide between 2009 and 2020. Psychological Medicine. 2024 Jan 12:1-7.

Risk assessment for suicide



thebmj

BMJ 2017;359:j4627 doi: 10.1136/bmj.j4627 (Published 2017 October 17)

PRACTICE

Check for updates

UNCERTAINTIES

Can we usefully stratify patients according to suicide risk?

Matthew Michael Large *conjoint professor*[1], Christopher James Ryan *clinical associate professor*[2], Gregory Carter *conjoint professor*[3], Nav Kapur *professor*[4]

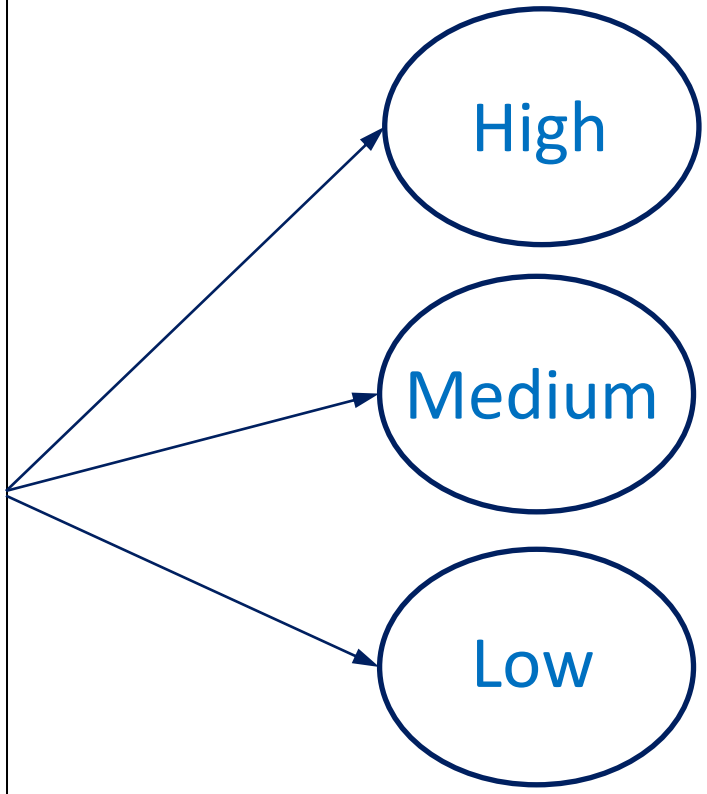
[1]School of Psychiatry, University of New South Wales, NSW, Australia; [2]Discipline of Psychiatry, Westmead Clinical School and Sydney Health Ethics, University of Sydney, Australia; [3]Centre for Brain and Mental Health, Faculty of Health and Medicine, University of Newcastle,; [4]Centre for Suicide Prevention, Manchester Academic Health. Science Centre, University of Manchester, & Greater Manchester Mental Health NHS Foundation Trust, Manchester, UK

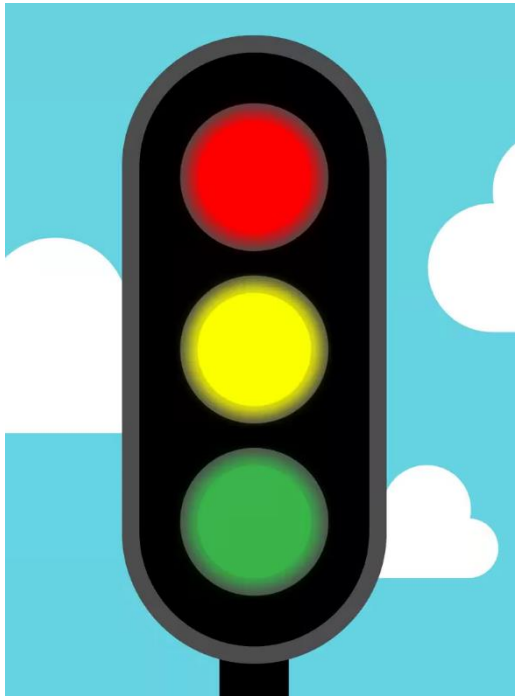
In the UK, one in five adults has considered suicide at some time, and one in 15 has attempted suicide.[1] Half of those who attempt suicide seek help afterwards—a quarter from a GP, a quarter from a hospital or specialist medical or psychiatric service.[1] Suicidal patients; patients who present to health services with suicidal ideas, self harm, or suicide attempts; and patients who present as significantly distressed or mentally ill can be challenging to manage. Doctors are often advised to use suicide risk assessment to help them decide management plans. A wide variety of risk factors have been implicated in the stratification of potentially suicidal patients.[2] This stratification is often expressed in terms of high, medium, or low-risk.[3 4] In practice, doctors commonly give the greatest importance to suicidal ideation.[5 6] In some specialist mental health settings these judgments are aided by local risk assessment forms composed of lists of clinical and demographic factors, while other centres use risk strata derived from validated questionnaires or scales.[7] However, there is little consensus over their use and virtually no evidence that any of the method of suicide risk stratification can contribute to suicide prevention.[8]

Probably the most important single measure of the accuracy of a suicide risk assessment is its positive predictive value (PPV).[10] PPV is the probability that a patient in the "high risk" stratum will go on to die by suicide. PPV is important because it defines the number of false positive cases who must be treated in order to treat each true positive. Unfortunately, the combination of the modest strength of the statistical association between being a high risk patient and suicide, and the low base rate of suicide places a ceiling on the PPV. This ceiling has made clinicians uncertain of the benefit of risk stratification.

Review of recent meta-analyses

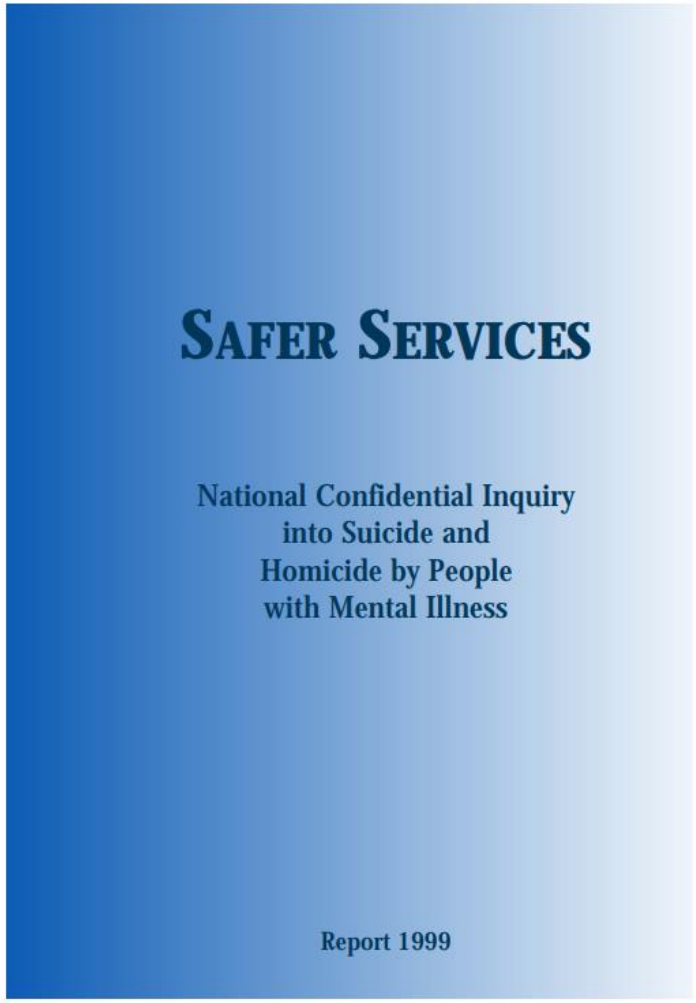
We identified seven recent and relevant meta-analyses (table 1⇓).[11-17] Almost all of the primary research synthesised by the seven studies was conducted among psychiatric patients or people presenting with self harm. Six of the seven meta-analyses can be regarded as of high quality because they adhered to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.[18]

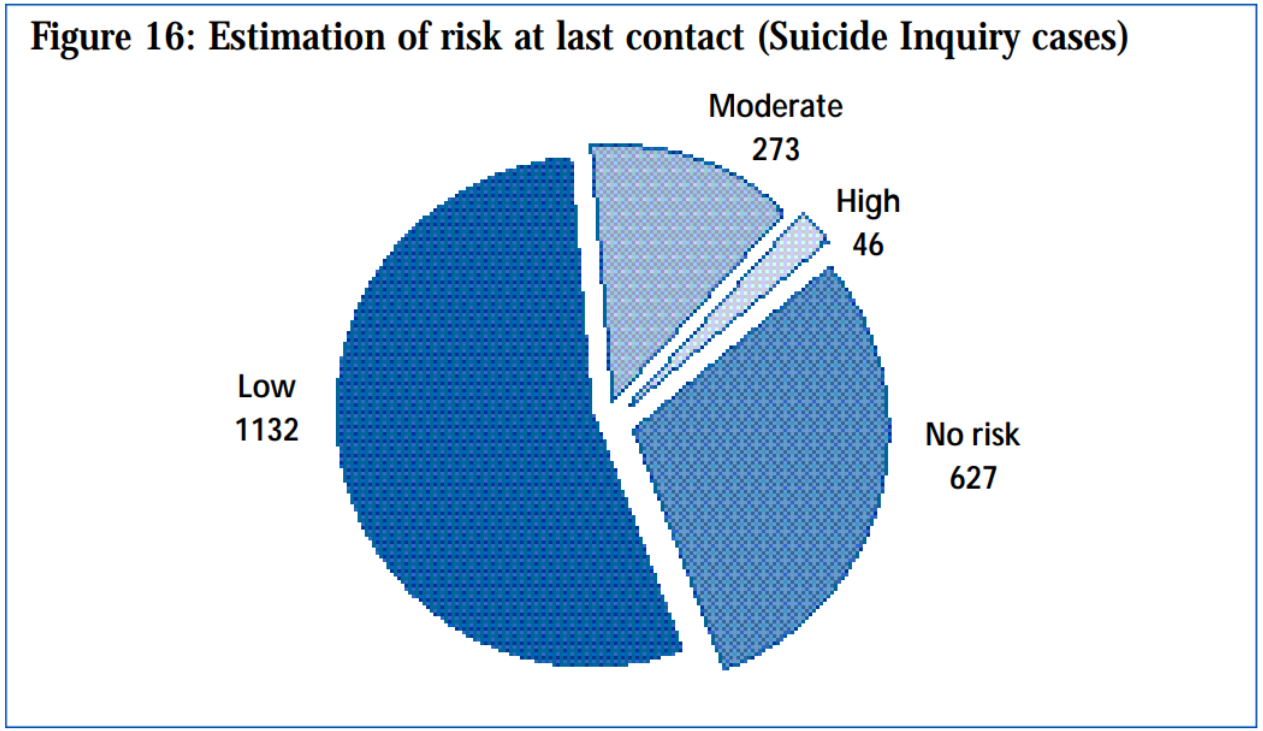




Source: Large M M, Ryan C J, Carter G, Kapur N. Can we usefully stratify patients according to suicide risk? BMJ 2017; 359

Assessment of risk prior to suicide

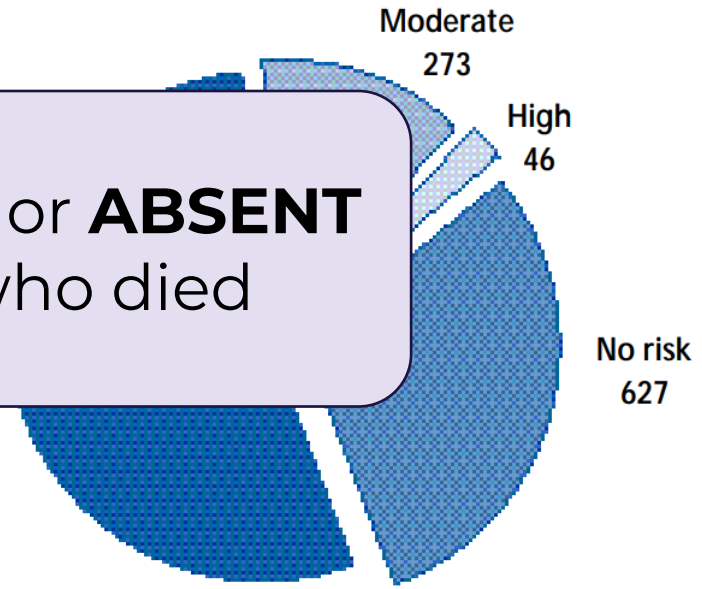




Source: NCISH, https://documents.manchester.ac.uk/display.aspx?DocID=37604

Assessment of risk prior to suicide

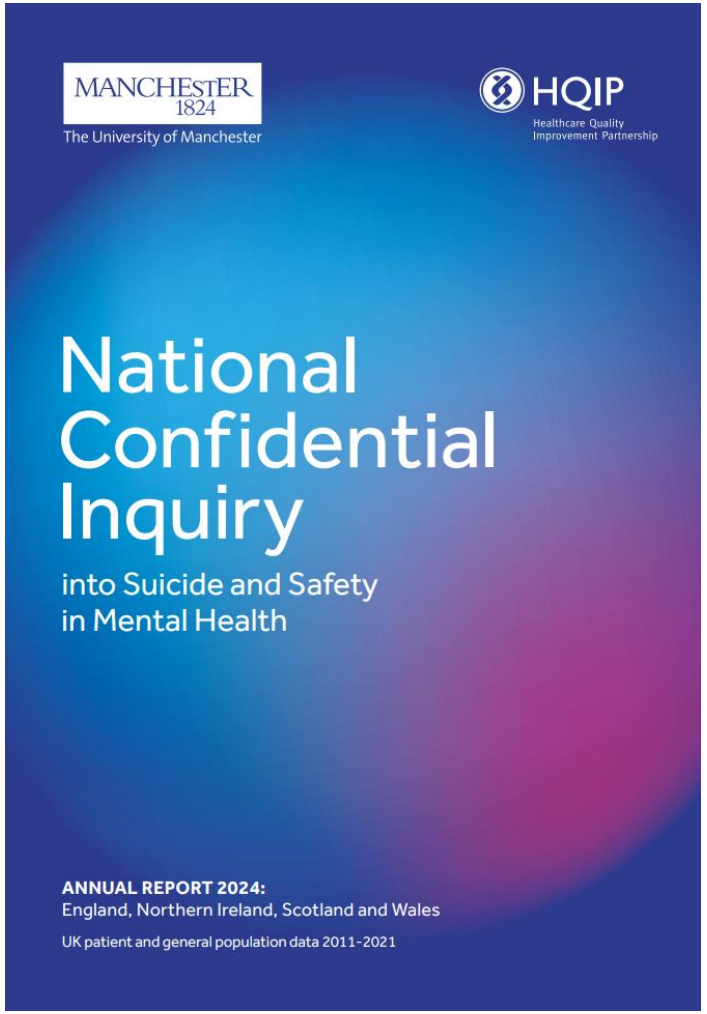
Figure 16: Estimation of risk at last contact (Suicide Inquiry cases)



Risk was rated as **LOW** or **ABSENT** in **85%** of patients who died

Source: NCISH, https://documents.manchester.ac.uk/display.aspx?DocID=37604

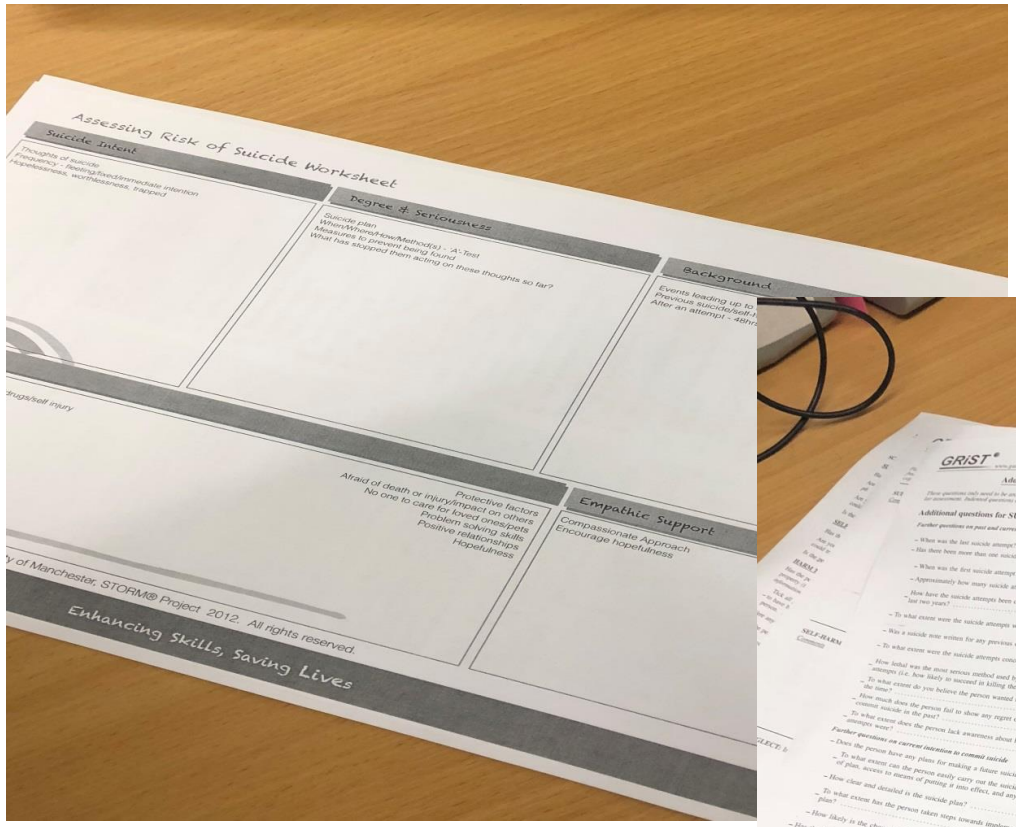
Assessment of risk prior to suicide

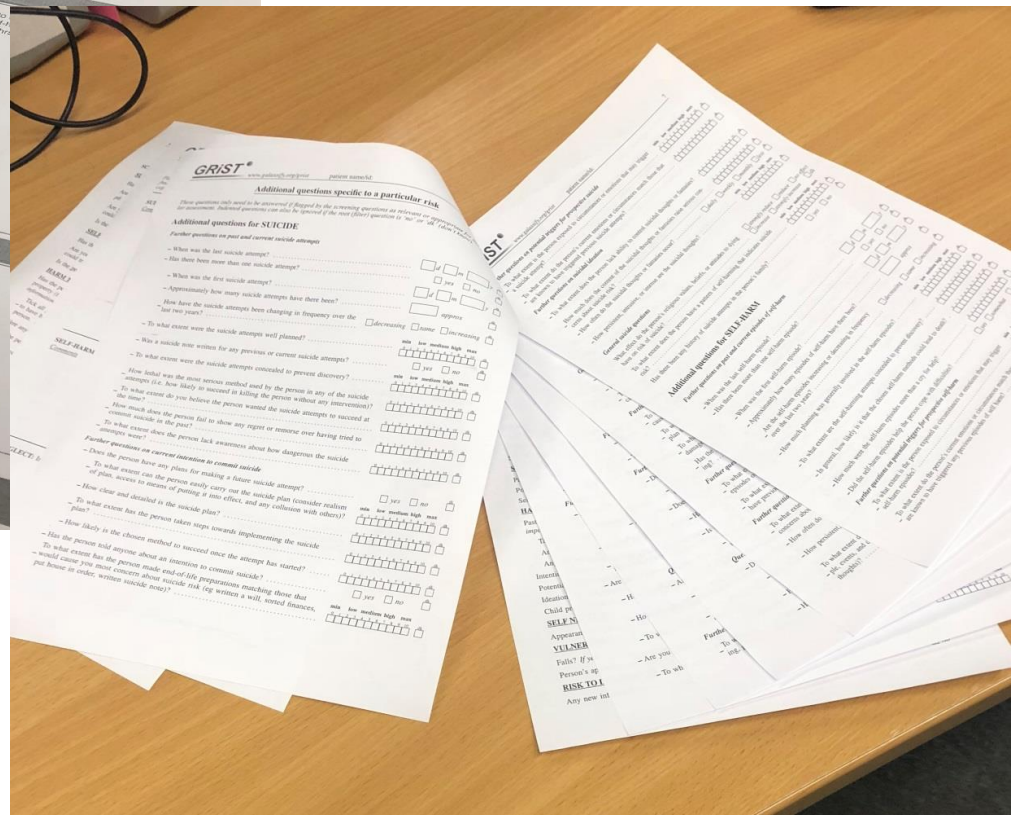


The immediate risk of suicide at the time of final service contact was judged by clinicians to be low or not present for the majority (82%) of patients who died by suicide. In our report "The assessment of clinical risk in mental health services" we recommended that management of risk should be personalised and that risk assessment tools should not focus on predicting suicidal behaviour.

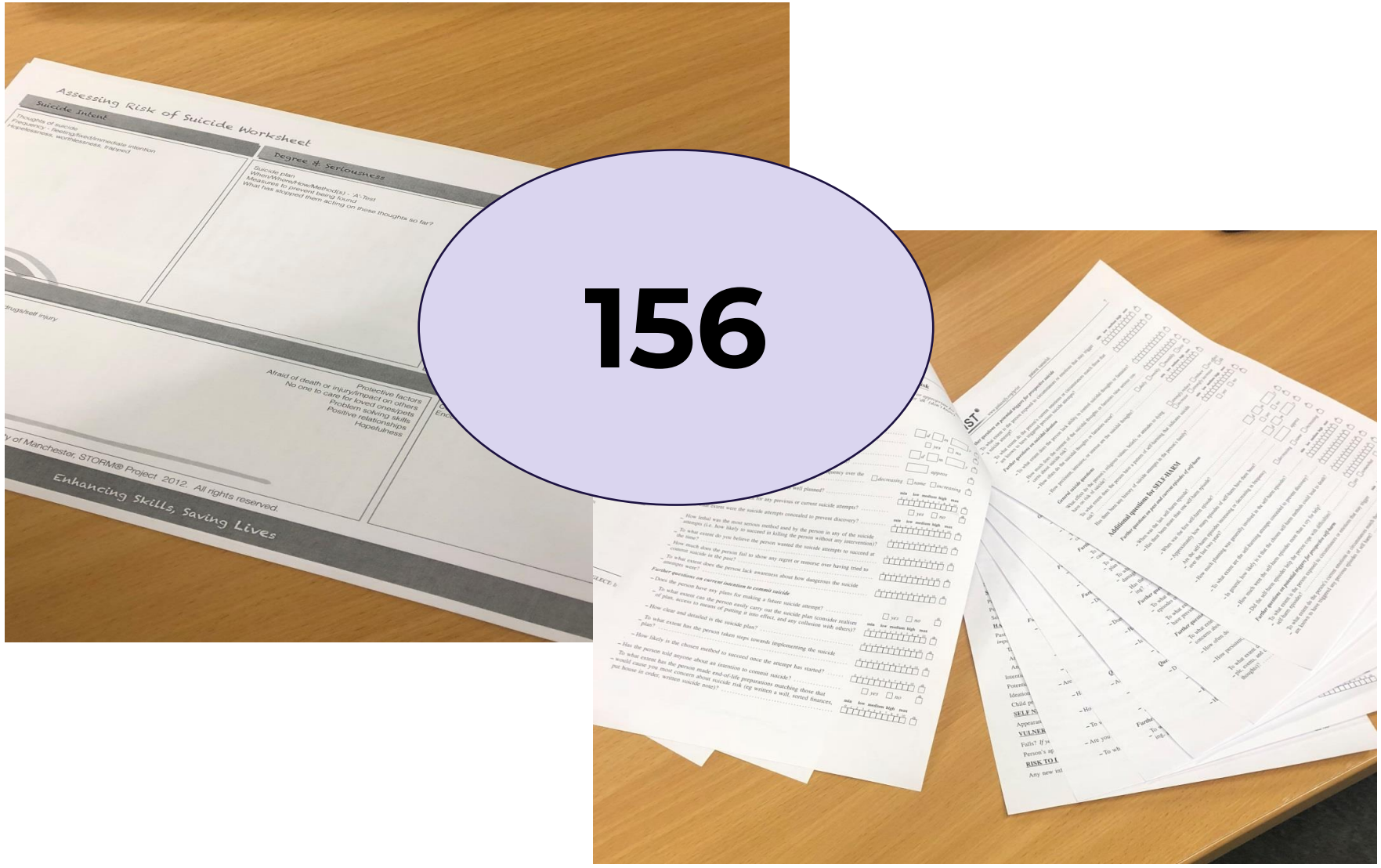
Source: NCISH, https://documents.manchester.ac.uk/display.aspx?DocID=71818

Current practice

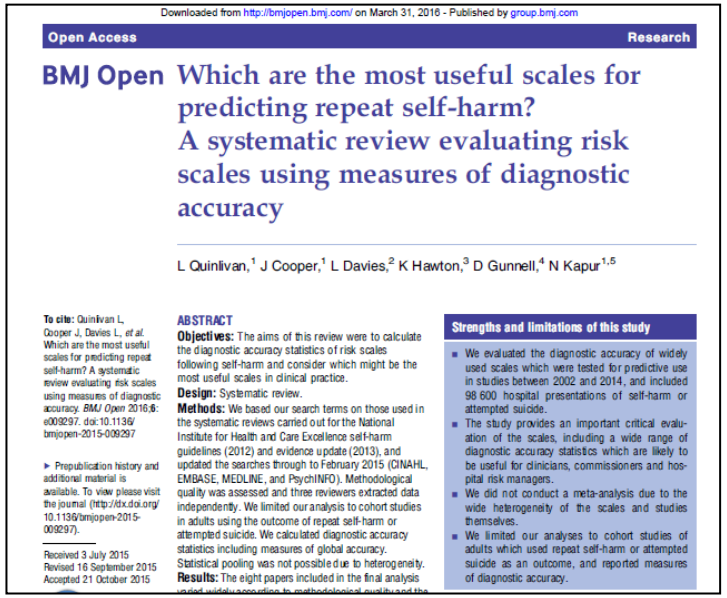




Current practice



Risk tools and scales



Open Access Research

BMJ Open

Which are the most useful scales for predicting repeat self-harm? A systematic review evaluating risk scales using measures of diagnostic accuracy

L Quinlivan,[1] J Cooper,[1] L Davies,[2] K Hawton,[3] D Gunnell,[4] N Kapur[1,5]

To cite: Quinlivan L, Cooper J, Davies L, *et al*. Which are the most useful scales for predicting repeat self-harm? A systematic review evaluating risk scales using measures of diagnostic accuracy. *BMJ Open* 2016;**6**: e009297. doi:10.1136/bmjopen-2015-009297

► Prepublication history and additional material is available. To view please visit the journal (http://dx.doi.org/10.1136/bmjopen-2015-009297).

Received 3 July 2015
Revised 16 September 2015
Accepted 21 October 2015

ABSTRACT

Objectives: The aims of this review were to calculate the diagnostic accuracy statistics of risk scales following self-harm and consider which might be the most useful scales in clinical practice.

Design: Systematic review.

Methods: We based our search terms on those used in the systematic reviews carried out for the National Institute for Health and Care Excellence self-harm guidelines (2012) and evidence update (2013), and updated the searches through to February 2015 (CINAHL, EMBASE, MEDLINE, and PsychINFO). Methodological quality was assessed and three reviewers extracted data independently. We limited our analysis to cohort studies in adults using the outcome of repeat self-harm or attempted suicide. We calculated diagnostic accuracy statistics including measures of global accuracy. Statistical pooling was not possible due to heterogeneity.

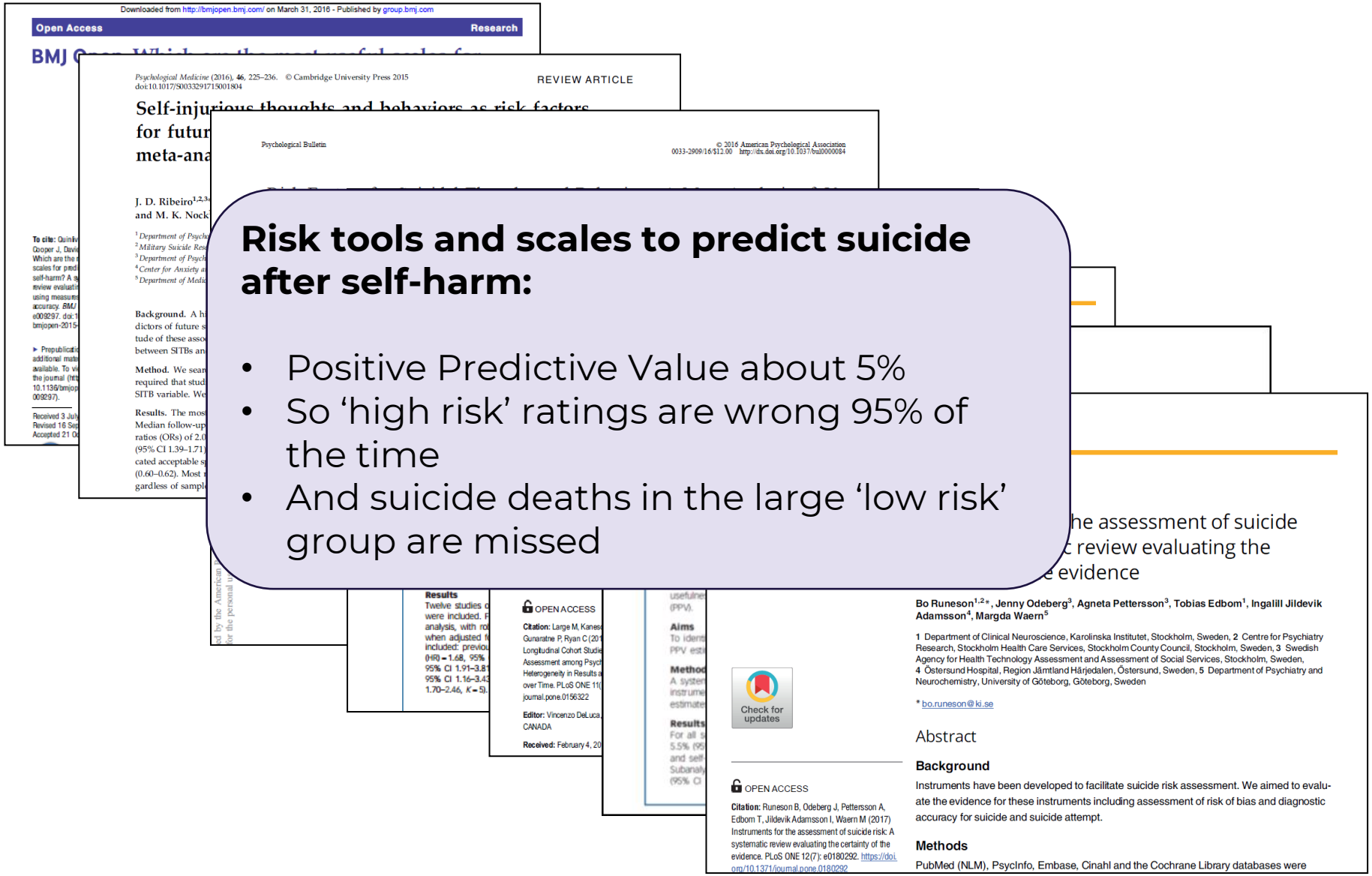
Results: The eight papers included in the final analysis

Strengths and limitations of this study

- We evaluated the diagnostic accuracy of widely used scales which were tested for predictive use in studies between 2002 and 2014, and included 98 600 hospital presentations of self-harm or attempted suicide.
- The study provides an important critical evaluation of the scales, including a wide range of diagnostic accuracy statistics which are likely to be useful for clinicians, commissioners and hospital risk managers.
- We did not conduct a meta-analysis due to the wide heterogeneity of the scales and studies themselves.
- We limited our analyses to cohort studies of adults which used repeat self-harm or attempted suicide as an outcome, and reported measures of diagnostic accuracy.

Risk tools and scales

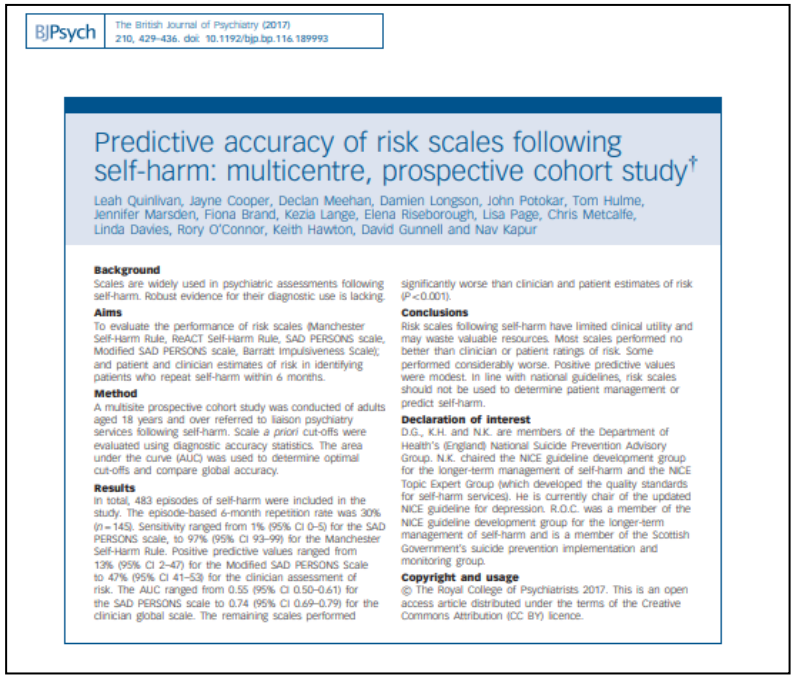
Risk tools and scales



Risk tools and scales to predict suicide after self-harm:

- Positive Predictive Value about 5%
- So ‘high risk’ ratings are wrong 95% of the time
- And suicide deaths in the large ‘low risk’ group are missed

What is the best scale?



BJPsych The British Journal of Psychiatry (2017) 210, 429–436. doi: 10.1192/bjp.bp.116.189993

Predictive accuracy of risk scales following self-harm: multicentre, prospective cohort study†

Leah Quinlivan, Jayne Cooper, Declan Meehan, Damien Longson, John Potokar, Tom Hulme, Jennifer Marsden, Fiona Brand, Kezia Lange, Elena Riseborough, Lisa Page, Chris Metcalfe, Linda Davies, Rory O'Connor, Keith Hawton, David Gunnell and Nav Kapur

Background
Scales are widely used in psychiatric assessments following self-harm. Robust evidence for their diagnostic use is lacking.

Aims
To evaluate the performance of risk scales (Manchester Self-Harm Rule, ReACT Self-Harm Rule, SAD PERSONS scale, Modified SAD PERSONS scale, Barratt Impulsiveness Scale); and patient and clinician estimates of risk in identifying patients who repeat self-harm within 6 months.

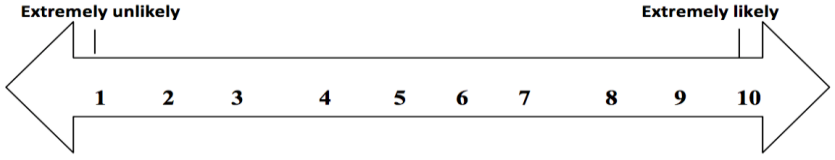
Method
A multisite prospective cohort study was conducted of adults aged 18 years and over referred to liaison psychiatry services following self-harm. Scale *a priori* cut-offs were evaluated using diagnostic accuracy statistics. The area under the curve (AUC) was used to determine optimal cut-offs and compare global accuracy.

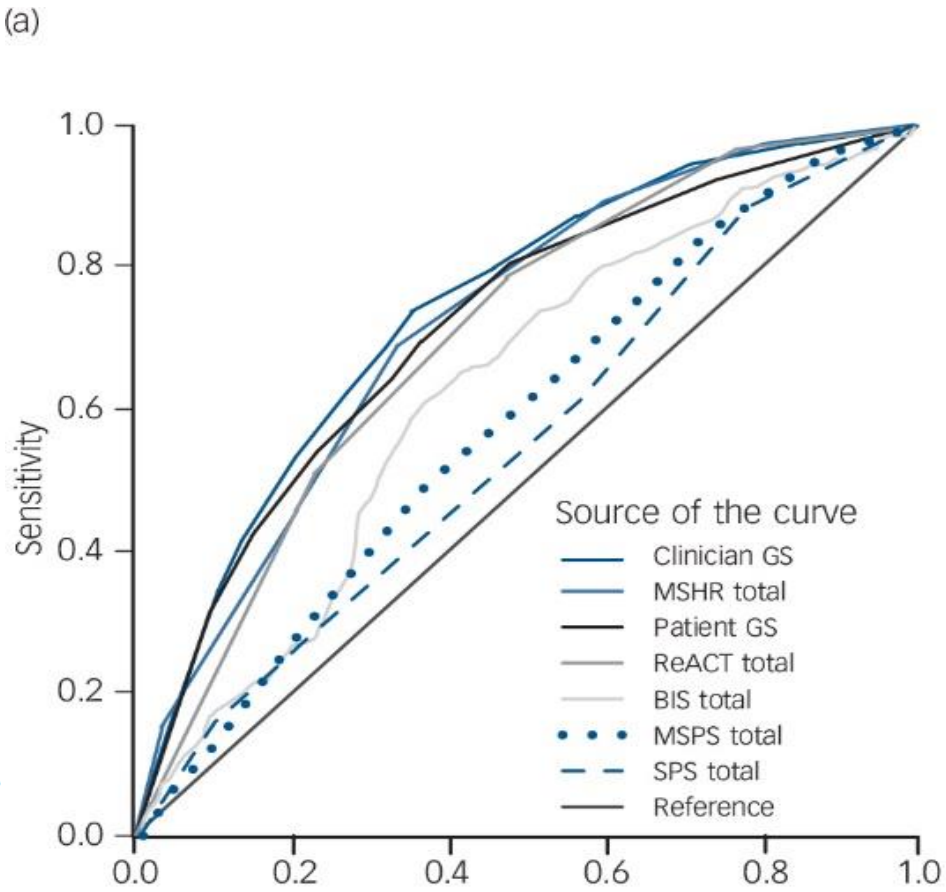
Results
In total, 483 episodes of self-harm were included in the study. The episode-based 6-month repetition rate was 30% ($n=145$). Sensitivity ranged from 1% (95% CI 0–5) for the SAD PERSONS scale, to 97% (95% CI 93–99) for the Manchester Self-Harm Rule. Positive predictive values ranged from 13% (95% CI 2–47) for the Modified SAD PERSONS Scale to 47% (95% CI 41–53) for the clinician assessment of risk. The AUC ranged from 0.55 (95% CI 0.50–0.61) for the SAD PERSONS scale to 0.74 (95% CI 0.69–0.79) for the clinician global scale. The remaining scales performed significantly worse than clinician and patient estimates of risk ($P<0.001$).

Conclusions
Risk scales following self-harm have limited clinical utility and may waste valuable resources. Most scales performed no better than clinician or patient ratings of risk. Some performed considerably worse. Positive predictive values were modest. In line with national guidelines, risk scales should not be used to determine patient management or predict self-harm.

Declaration of interest
D.G., K.H. and N.K. are members of the Department of Health's (England) National Suicide Prevention Advisory Group. N.K. 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). He is currently chair of the updated NICE guideline for depression. R.O.C. was a member of the NICE guideline development group for the longer-term management of self-harm and is a member of the Scottish Government's suicide prevention implementation and monitoring group.

How likely do you think it is, that you will repeat self-harm within the next six months? Please indicate this scale (with 1 as extremely unlikely and 10 and extremely likely)





Source: Quinlivan L, Cooper J, Meehan D, et al. Predictive accuracy of risk scales following self-harm: Multicentre, prospective cohort study. British Journal of Psychiatry. 2017;210(6):429-436

Risk tools and scales

NICE National Institute for Health and Care Excellence

1.6 Risk assessment tools and scales

1.6.1 Do not use risk assessment tools and scales to predict future suicide or repetition of self-harm.

1.6.2 Do not use risk assessment tools and scales to determine who should and should not be offered treatment or who should be discharged.

1.6.3 Do not use global risk stratification into low, medium or high risk to predict future suicide or repetition of self-harm.

1.6.4 Do not use global risk stratification into low, medium or high risk to determine who should be offered treatment or who should be discharged.

1.6.5 Focus the assessment (see the section on principles for assessment and care by healthcare professionals and social care practitioners) on the person's needs and how to support their immediate and long-term psychological and physical safety.

1.6.6 Mental health professionals should undertake a risk formulation as part of every psychosocial assessment.

Source: NICE, https://www.nice.org.uk/guidance/ng225/chapter/Recommendations#risk-assessment-tools-and-scales

Option 1: We don’t need to change …its better than nothing….?

- Distracts from and dehumanises assessment
- Provides false reassurance
- Little consistency

Option 1: We don't need to change …its better than nothing….?

- Distracts from and dehumanises assessment
- Provides false reassurance
- Little consistency

So why does their use persist?

- Culturally imbedded ritual for decreasing institutional anxiety
- Intended to protect clinicians and health services
- Clinical shorthand or Clinical shortcut
- Helps justify decision making

Option 2: We need to improve things

Patients' suggestions to improve risk assessment

- A personalised approach, not based on the completion of a checklist.
- Assessment by staff who are better trained and who value the answers given.
- To focus on suicidal thoughts, i.e. encourage staff to confidently tackle difficult questions.
- Involve carers/families
- Provide information on local support options

Source: NCISH, https://documents.manchester.ac.uk/display.aspx?DocID=37604

New horizons?

REVIEW

Can machine-learning methods really help predict suicide?

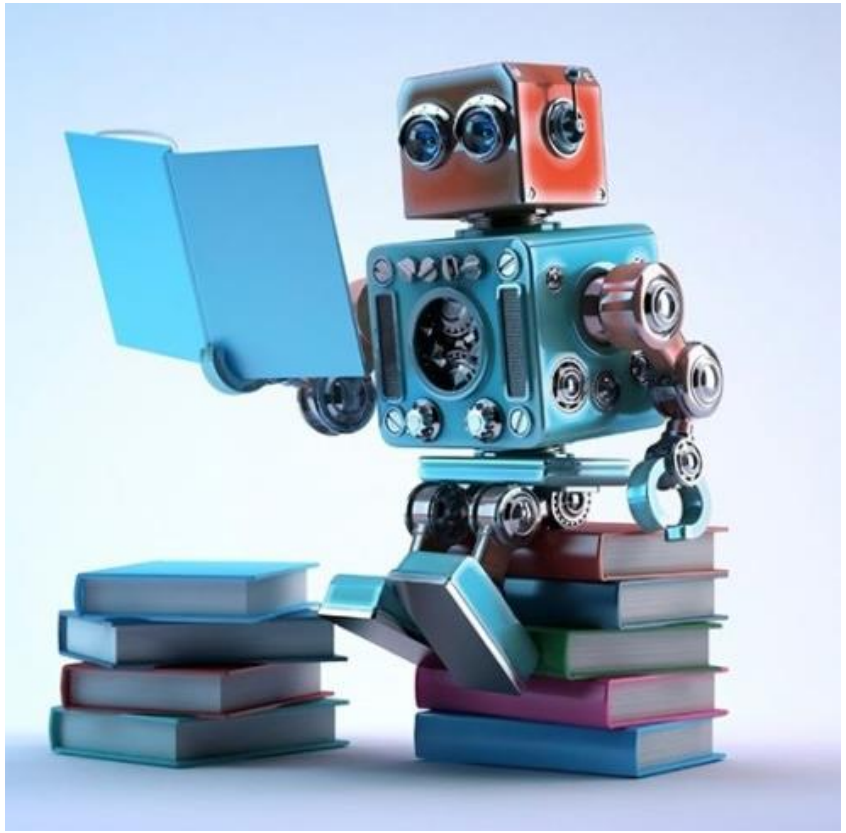
Catherine M. McHugh[a] and Matthew M. Large[b]

Purpose of review
In recent years there has been interest in the use of machine learning in suicide research in reaction to the failure of traditional statistical methods to produce clinically useful models of future suicide. The current review summarizes recent prediction studies in the suicide literature including those using machine learning approaches to understand what value these novel approaches add.

Recent findings
Studies using machine learning to predict suicide deaths report area under the curve that are only modestly greater than, and sensitivities that are equal to, those reported in studies using more conventional predictive methods. Positive predictive value remains around 1% among the cohort studies with a base rate that was not inflated by case–control methodology.

Summary
Machine learning or artificial intelligence may afford opportunities in mental health research and in the clinical care of suicidal patients. However, application of such techniques should be carefully considered to avoid repeating the mistakes of existing methodologies. Prediction studies using machine-learning methods have yet to make a major contribution to our understanding of the field and are unproven as clinically useful tools.

Keywords
artificial intelligence, machine learning, prediction, suicidal behaviour, suicide



Source: McHugh, C. and Large, M. Can machine-learning methods really help predict suicide?. Current Opinion in Psychiatry 33(4): 369-374, 2020

New horizons?

REVIEW

Can machine-learning methods really help predict suicide?

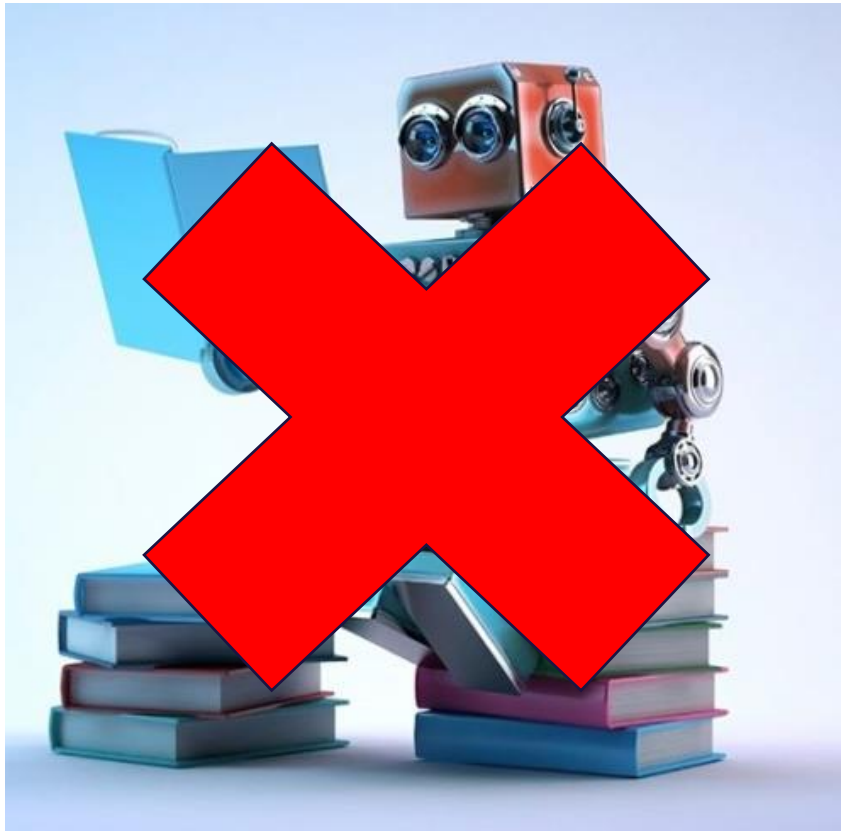
Catherine M. McHugh[a] and Matthew M. Large[b]

Purpose of review
In recent years there has been interest in the use of machine learning in suicide research in reaction to the failure of traditional statistical methods to produce clinically useful models of future suicide. The current review summarizes recent prediction studies in the suicide literature including those using machine learning approaches to understand what value these novel approaches add.

Recent findings
Studies using machine learning to predict suicide deaths report area under the curve that are only modestly greater than, and sensitivities that are equal to, those reported in studies using more conventional predictive methods. Positive predictive value remains around 1% among the cohort studies with a base rate that was not inflated by case–control methodology.

Summary
Machine learning or artificial intelligence may afford opportunities in mental health research and in the clinical care of suicidal patients. However, application of such techniques should be carefully considered to avoid repeating the mistakes of existing methodologies. Prediction studies using machine-learning methods have yet to make a major contribution to our understanding of the field and are unproven as clinically useful tools.

Keywords
artificial intelligence, machine learning, prediction, suicidal behaviour, suicide

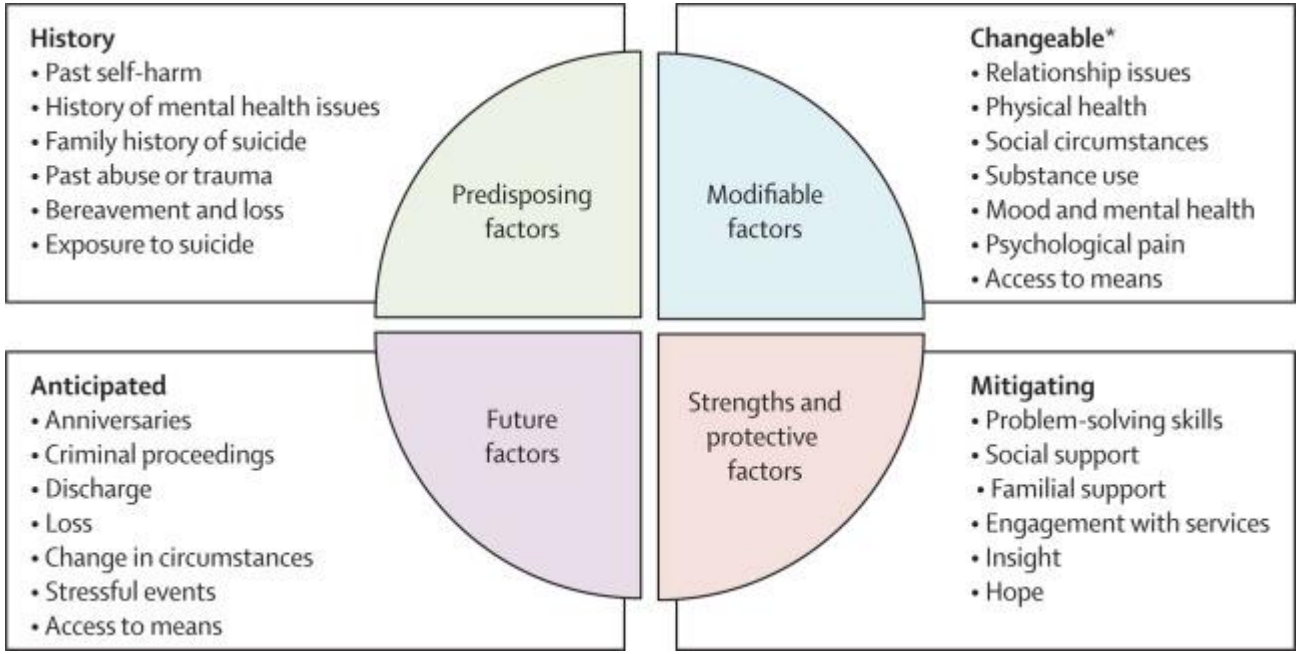


Source: McHugh, C. and Large, M. Can machine-learning methods really help predict suicide?. Current Opinion in Psychiatry 33(4): 369-374, 2020

Option 3: What can do we do instead?

- Recognise that risk prediction is a fallacy
- Address patient needs with an emphasis on modifiable factors
- Focus on the therapeutic aspects of the assessment
- Individualised assessment and assessments which inform management

Therapeutic risk assessment and formulation



"This approach relies on investing time in gaining therapeutic alliance rather than ticking boxes, leveraging this alliance to uncover unmet needs and identify modifiable risk factors, and building a collaborative care plan as the therapeutic assessment unfolds"

Source: Hawton K, Lascelles K, Pitman A, Gilbert S, Silverman M. Assessment of suicide risk in mental health practice: shifting from prediction to therapeutic assessment, formulation, and risk management. Lancet Psychiatry 2022;9:922-8.

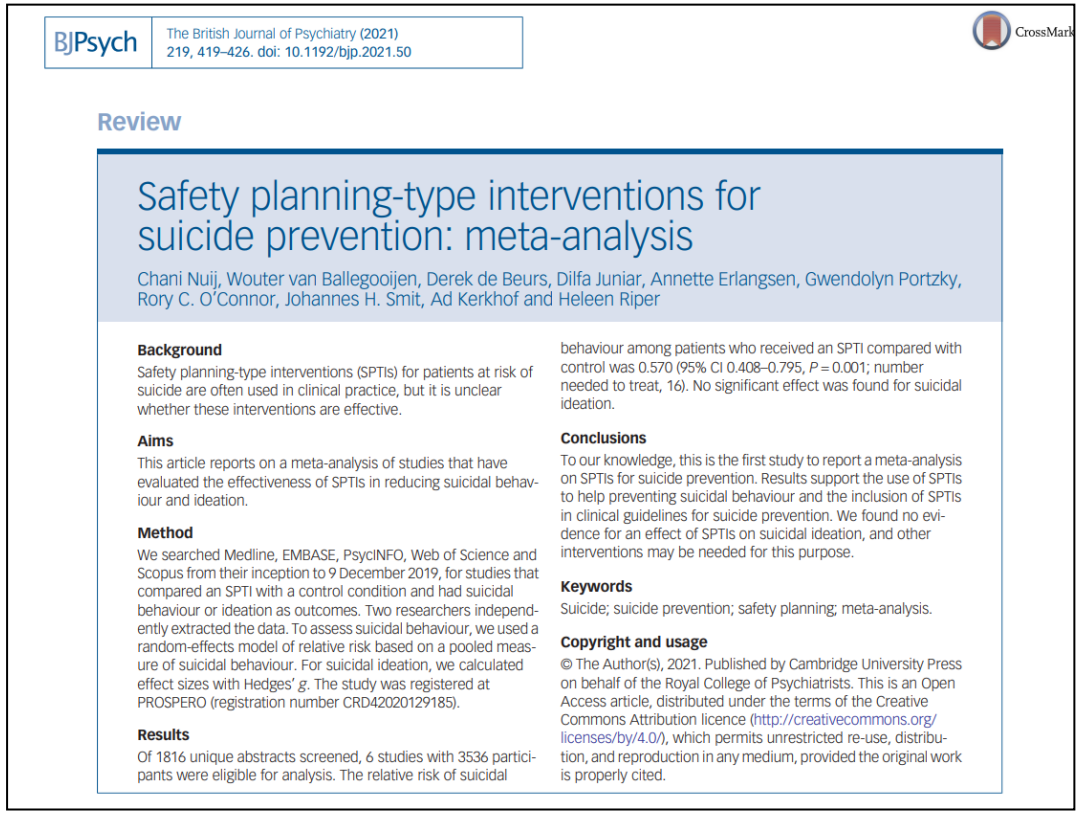
Option 3: What can do we do instead?

- Recognise that risk prediction is a fallacy
- Address patient needs with an emphasis on modifiable factors
- Focus on the therapeutic aspects of the assessment
- Individualised assessment and assessments which inform management
- Use clinical guidelines and make evidence-based treatments available

The NICE guideline

Source: NICE, https://www.nice.org.uk/guidance/NG225

Safety plans



BJPsych The British Journal of Psychiatry (2021) 219, 419–426. doi: 10.1192/bjp.2021.50

Review

Safety planning-type interventions for suicide prevention: meta-analysis

Chani Nuij, Wouter van Ballegooijen, Derek de Beurs, Dilfa Juniar, Annette Erlangsen, Gwendolyn Portzky, Rory C. O'Connor, Johannes H. Smit, Ad Kerkhof and Heleen Riper

Background
Safety planning-type interventions (SPTIs) for patients at risk of suicide are often used in clinical practice, but it is unclear whether these interventions are effective.

Aims
This article reports on a meta-analysis of studies that have evaluated the effectiveness of SPTIs in reducing suicidal behaviour and ideation.

Method
We searched Medline, EMBASE, PsycINFO, Web of Science and Scopus from their inception to 9 December 2019, for studies that compared an SPTI with a control condition and had suicidal behaviour or ideation as outcomes. Two researchers independently extracted the data. To assess suicidal behaviour, we used a random-effects model of relative risk based on a pooled measure of suicidal behaviour. For suicidal ideation, we calculated effect sizes with Hedges' *g*. The study was registered at PROSPERO (registration number CRD42020129185).

Results
Of 1816 unique abstracts screened, 6 studies with 3536 participants were eligible for analysis. The relative risk of suicidal behaviour among patients who received an SPTI compared with control was 0.570 (95% CI 0.408–0.795, $P = 0.001$; number needed to treat, 16). No significant effect was found for suicidal ideation.

Conclusions
To our knowledge, this is the first study to report a meta-analysis on SPTIs for suicide prevention. Results support the use of SPTIs to help preventing suicidal behaviour and the inclusion of SPTIs in clinical guidelines for suicide prevention. We found no evidence for an effect of SPTIs on suicidal ideation, and other interventions may be needed for this purpose.

Keywords
Suicide; suicide prevention; safety planning; meta-analysis.

ARCHIVES OF SUICIDE RESEARCH
https://doi.org/10.1080/13811118.2021.1915217
Routledge Taylor & Francis Group
Check for updates

The Effectiveness of the Safety Planning Intervention for Adults Experiencing Suicide-Related Distress: A Systematic Review

Monika Ferguson, Kate Rhodes, Mark Loughhead, Heather McIntyre, and Nicholas Procter

ABSTRACT
The safety planning intervention (SPI) is gaining momentum in suicide prevention practice and research. This systematic review sought to determine the effectiveness of the SPI for adults experiencing suicide-related distress. Systematic searches of international, peer-reviewed literature were conducted in six databases (Cochrane Trials, Embase, Emcare, Medline, PsycINFO and Web of Science), including terms for safety planning, suicide, and suicide-related outcomes. A total of 565 results were included for screening. Result screening (title/abstract and full-text), data extraction and critical appraisal were conducted in duplicate. Twenty-six studies met the inclusion criteria. Studies were primarily quantitative ($n = 20$), largely with general adult or veteran samples; a small number of studies explored the perspectives of staff and significant others. Half of the studies included the SPI as a standalone intervention, while the other half examined the SPI in combination with other interventions. Most interventions were delivered in-person, with a hard-copy safety plan created, while a smaller number explored internet-based interventions. Primary measures included: suicidality (ideation, behavior, deaths; 10 studies), suicide-related outcomes (depression, hopelessness; 5 studies) and treatment outcomes (hospitalizations, treatment engagement; 7 studies). The evidence supports improvements in each of these domains, with complementary findings from the remaining quantitative and qualitative studies suggesting that the SPI is a feasible and acceptable intervention. While positive, these findings are limited by the heterogeneity of interventions and study designs, making the specific impact of the SPI difficult to both determine and generalize. Conversely, this also points to the flexibility of the SPI.

KEYWORDS
Safety planning; suicide; suicide prevention; systematic review

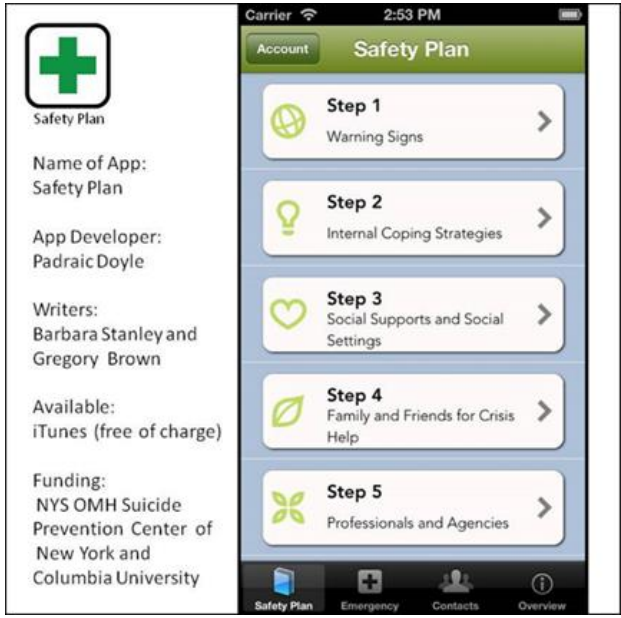
Sources: Nuij C, van Ballegooijen W, de Beurs D, et al. Safety planning-type interventions for suicide prevention: meta-analysis. The British Journal of Psychiatry. 2021;219(2):419-426.

Ferguson M, Rhodes K, Loughhead M, McIntyre H, Procter N. The Effectiveness of the Safety Planning Intervention for Adults Experiencing Suicide-Related Distress: A Systematic Review. Archives of Suicide Resarch. 2022;26(3):1022-1045

Safety plans

1.11.8 The safety plan should be in an accessible format and:

- be developed collaboratively and compassionately between the person who has self-harmed and the professional involved in their care using shared decision making (see the NICE guideline on shared decision making)
- be developed in collaboration with family and carers, as appropriate
- use a problem-solving approach
- be held by the person
- be shared with the family, carers and relevant professionals and practitioners as decided by the person
- be accessible to the person and the professionals and practitioners involved in their care at times of crisis.



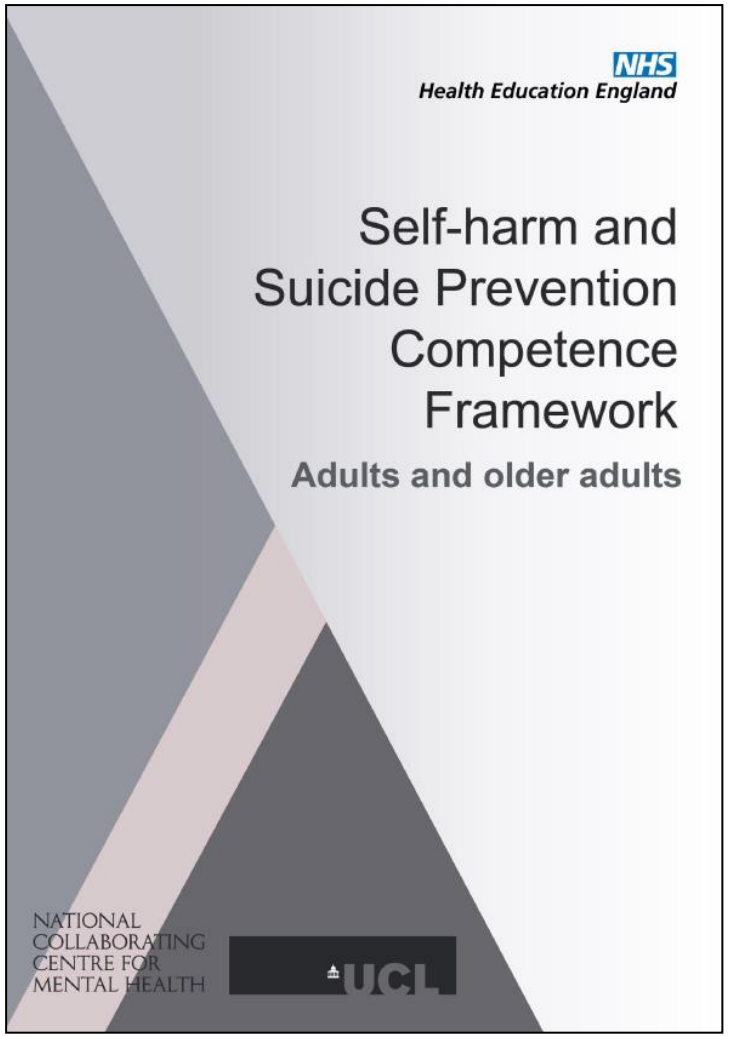
Option 3: What can do we do instead?

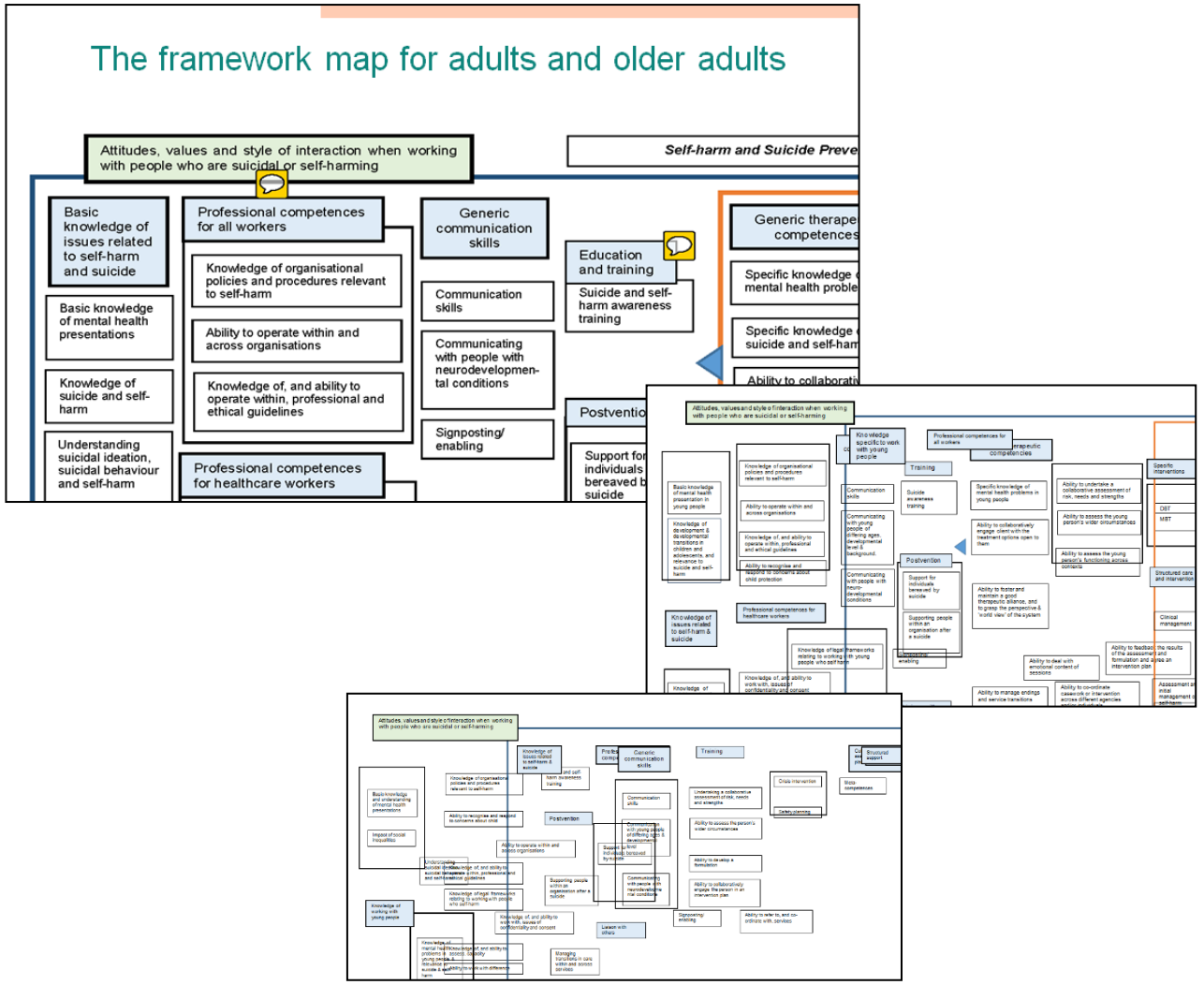
- Recognise that risk prediction is a fallacy
- Address patient needs with an emphasis on modifiable factors
- Focus on the therapeutic aspects of the assessment
- Individualised assessment and assessments which inform management
- Use clinical guidelines and make evidence-based treatments available
- Adopt population approaches to prevention – ‘something for everyone’

Safer systems

Source: NCISH

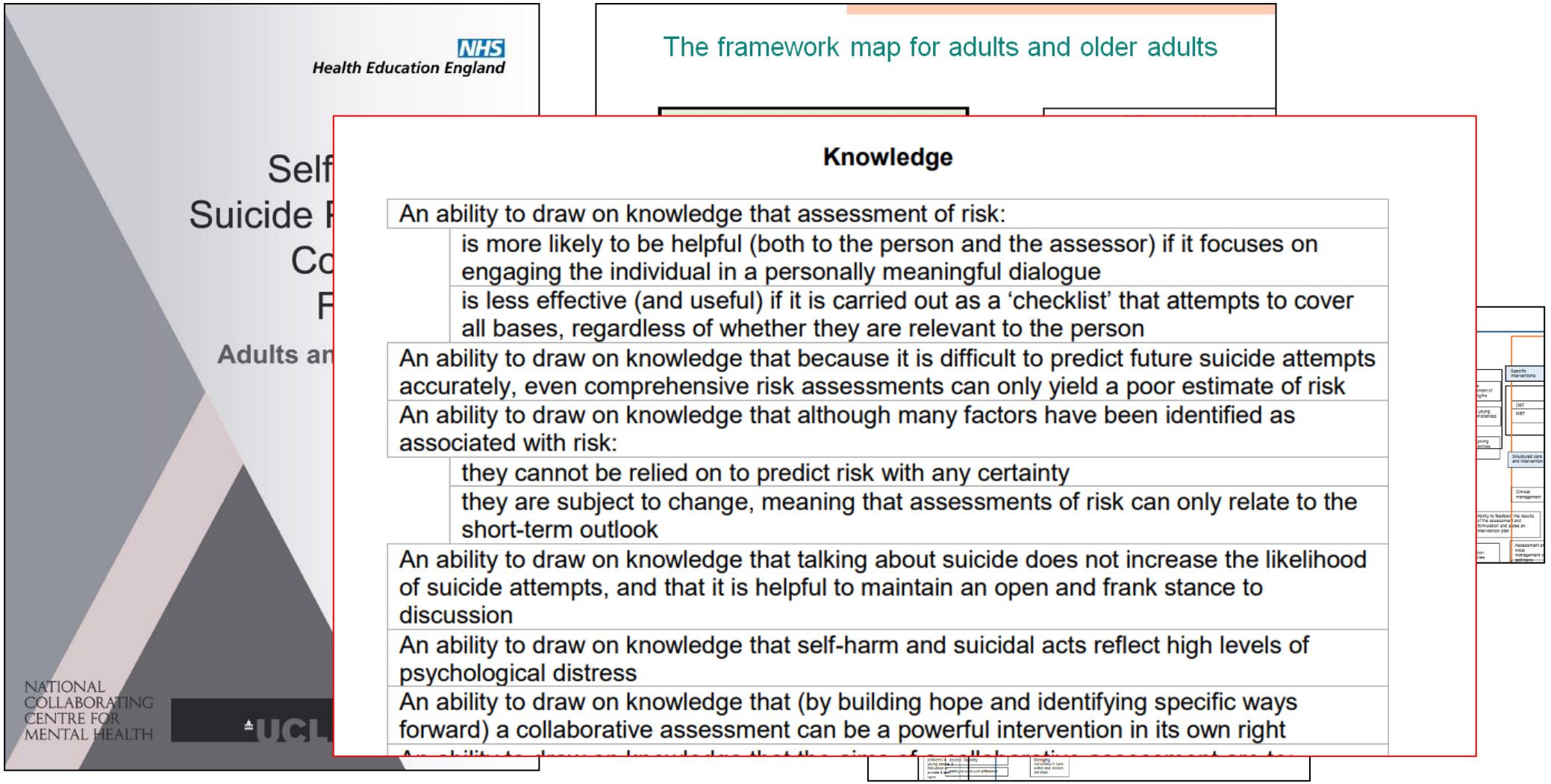
A trained and supervised workforce





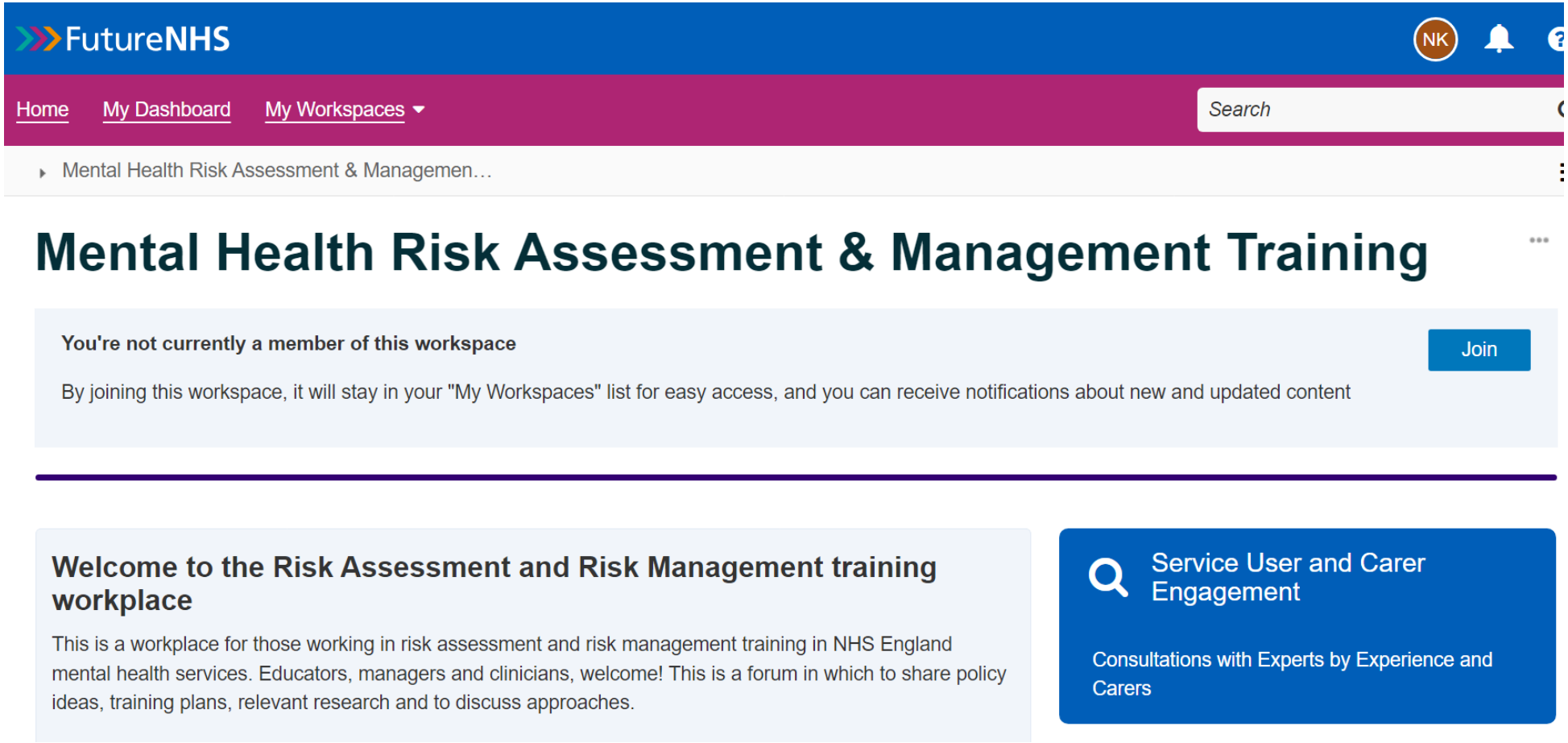
Source: https://www.ucl.ac.uk/pals/research/clinical-educational-and-health-psychology/research-groups/core/competence-frameworks/self

A trained and supervised workforce



Source: https://www.ucl.ac.uk/pals/research/clinical-educational-and-health-psychology/research-groups/core/competence-frameworks/self

Future NHS – Training



Summary

- Inpatient wards are **key settings** for mental health patient safety
- There is a **lack of consistency** in current approaches to risk assessment
- In clinical studies, most people who die by suicide were **rated as 'low risk'**
- Risk tools have **poor predictive value** and can lead to people being **excluded** from services
- A **personalised, collaborative, inclusive, comprehensive** approach to assessment and management might be better
- **Clinical guidelines, high quality services, training** are key

NCISH – our role

Site visits (in-person/virtual) with follow ups

Regular email contact

Help with reviewing your QI plans

Interactive ‘clinics’

Outputs – infographics, webpages, resources

Lived experience central

Centre for Mental Health and Safety

The Manchester Self-Harm Project

@mashproject

NCISH

@NCISH_UK

NIHR | Greater Manchester Patient Safety Research Collaboration

@GM_PSRC