

SUPPLEMENT

Contents

Table S1. Prevalence of OxSATS predictors in the Oxford Monitoring System for Self-harm dataset, overall and stratified by whether individuals commit suicide within 1 year	2
Table S2. Mean calibration metrics when randomly assigning the missing predictor as 1 or 0 to individuals in the study population following a Bernoulli distribution with $p=0.557$, compared to the main analysis	3
Table S3. OxSATS model parameters and formula for probability of dying by suicide after self-harm presentation.....	4
Figure S1. Calibration of the original OxSATS tool in the Oxford Monitoring System for Self-harm data	5
Figure S2. Calibration of OxSATS model in the Oxford Monitoring data when receipt of any psychotropic medication is changing from 0 to 1.....	6

Table S1. Prevalence of OxSATS predictors in the Oxford Monitoring System for Self-harm dataset, overall and stratified by whether individuals commit suicide within 1 year

	Participants without suicide within 1 year (N=16019)	Participants with suicide within 1 year (N=101)	All participants (N=16120)
Age, years: Mean (SD)	31.5 (±15.1)	42.6 (±16.9)	31.5 (±15.2)
Female	9588 (59.9%)	32 (31.7%)	9620 (59.7%)
Problems* with alcohol	2592 (16.2%)	19 (18.8%)	2611 (16.2%)
Problems* with other substances	1104 (6.9%)	3 (3.0%)	1107 (6.9%)
Index self-harm: overdose with psychotropic medication	4241 (26.5%)	35 (34.7%)	4276 (26.5%)
Index self-harm: hanging, strangulation, or suffocation	262 (1.6%)	3 (3.0%)	265 (1.6%)
Lifetime history of self-harm prior to index	5692 (35.5%)	44 (43.6%)	5736 (35.6%)
History of self-harm in last 12 mos prior to index	2943 (18.4%)	30 (29.7%)	2973 (18.4%)
Index self-harm: overnight admission	12912 (80.6%)	86 (85.1%)	12998 (80.6%)
Problems* with mental health	1954 (12.2%)	20 (19.8%)	1974 (12.2%)

Note: * Problems = "the problem which may have precipitated the episode of SH or is associated with it in the clinician's judgment."

Table S2. Mean calibration metrics when randomly assigning the missing predictor as 1 or 0 to individuals in the study population following a Bernoulli distribution with $p=0.557$, compared to the main analysis

	Main analysis	Mean of 1000 simulations
O:E (95% CI)	0.63 (0.51, 0.75)	0.59 (0.58, 0.59)
Intercept	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)
Slope	0.57 (0.37, 0.79)	0.45 (0.36, 0.53)

Table S3. OxSATS model parameters and formula for probability of dying by suicide after self-harm presentation

		Parameter (β)	95% confidence interval	
	General demographics			
	(Age at index/10) ²	-4.20	-5.32	-3.08
	Sex, female	-0.70	-0.87	-0.53
	Substance misuse			
	Current or lifetime alcohol use disorder (excluding alcohol intoxication)	-0.03	-0.22	0.17
	Current or lifetime drug use disorder (including drug intoxication)	0.31	0.12	0.50
	Treatment in the past three months			
	Any psychotropic medication	0.76	0.52	1.01
	History of self-harm			
	Any psychotropic medication overdose	0.42	0.02	0.82
	Hanging, strangulation, or suffocation	0.97	0.35	1.59
	History of self-harm in the last 12 months prior to index, 1+ vs none	0.31	0.07	0.55
	Overnight admission	0.57	0.38	0.75
	Mental health in the past 12 months			
	Any psychiatric disorder except substance use disorders	0.51	0.31	0.70
Other parameters in the model – original model				
	Intercept	-6.49	-6.79	-6.20
	Shape parameter	0.60	0.55	0.65
Other parameters in the model – recalibrated model				
Recalibrated model	Intercept	4.37	1.77	6.98
	Multiplier for linear predictor (original intercept + sum of risk factors multiplied by their parameters)	1.70	1.15	2.26
	Shape parameter	0.57	0.47	0.70

Binary risk factors are coded as 1 if present and 0 if absent

In the original OxSATS tool, the risk for death by suicide within t months of presentation to specialist service with self-harm is calculated by the following formula:

$$\Pr(\text{suicide within } t \text{ months}) = 1 - \exp(-\exp(\text{linpred}) t^{0.60})$$

where $\text{linpred} = -6.49 + \sum \beta * \text{Risk Factor}$ and $t = 6$ or 12

In the recalibrated tool, the risk for death by suicide within t months of self-harm is given by:

$$\Pr(\text{suicide within } t \text{ months}) = 1 - \exp(-\exp(4.37 + 1.70 \times \text{linpred}) t^{0.57})$$

where $\text{linpred} = -6.49 + \sum \beta * \text{Risk Factor}$ and $t = 12$

In the recalibrated tool, the baseline survivor function is given by

$$S_0 = \exp(-\exp(-6.66) * t^{0.57})$$

At 12 months this is $S_0(12) \approx 0.995$

Figure S1. Calibration of the original OxSATS tool in the Oxford Monitoring System for Self-harm data

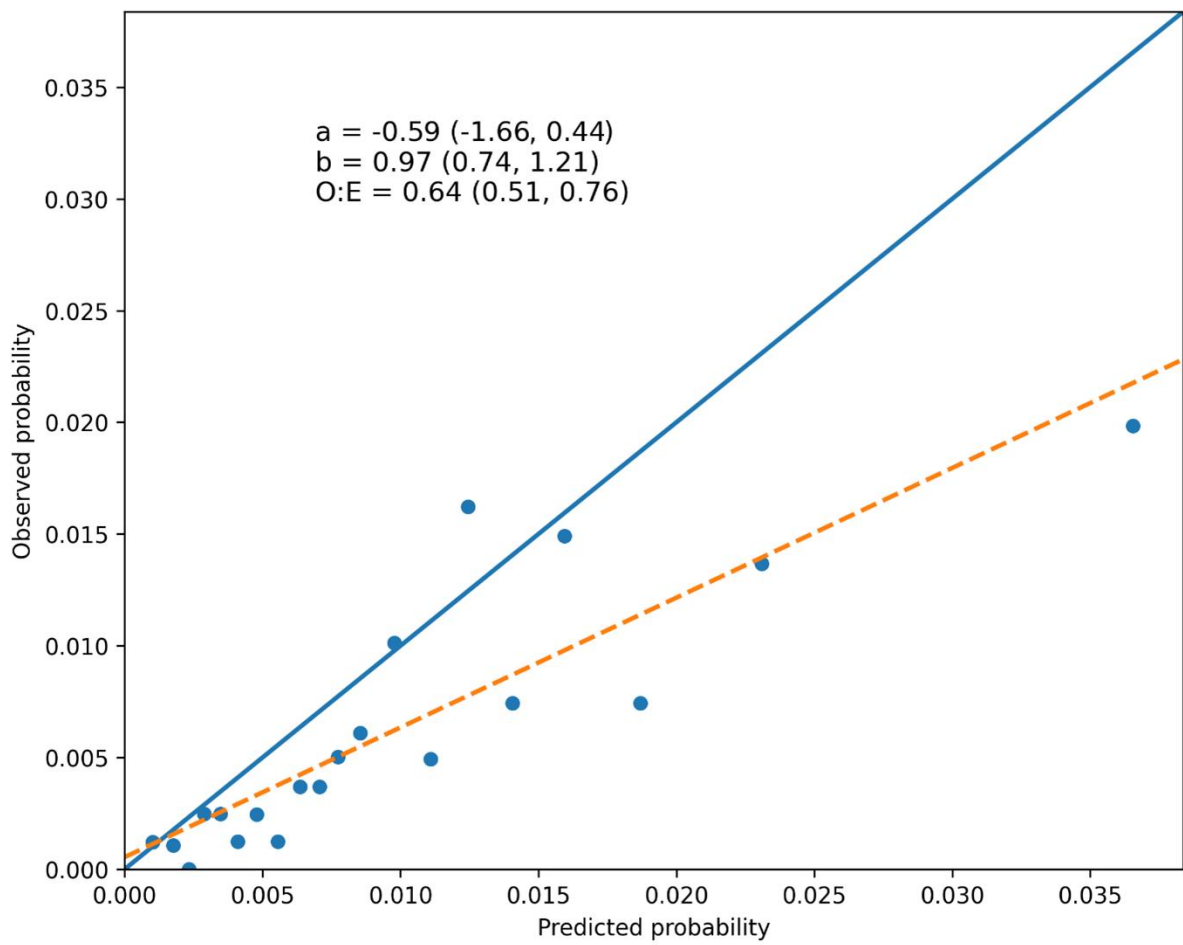


Figure S2. Calibration of OxSATS model in the Oxford Monitoring data when receipt of any psychotropic medication is changing from 0 to 1.

