Polari Andrea (Orcid ID: 0000-0002-0680-3192)
Chen Eric (Orcid ID: 0000-0002-5247-3593)
Lavoie Suzie (Orcid ID: 0000-0001-8372-2399)

Title:Prediction of clinical outcomes beyondpsychosis in the Ultra-High Risk for psychosis population

Andrea Polari[1];HokPan Yuen[2,3]; Paul Amminger[2,3]; Gregor Berger[4]; Eric Chen[5]; Lieuwe deHaan[6]; Jessica Hartmann[2,3]; Connie Markulev[2,3]; Patrick McGorry[2,3]; Dorien Nieman[7]; Merete Nordentoft[8]; Anita Riecher-Rössler[9]; Stefan Smesny[10]; John Stratford[1;] Swapna Verma[11]; Alison Yung[2,3];Suzie Lavoie[2,3]; Barnaby Nelson[2,3]

Running Title: Prediction besides transition in UHR

Authors names and affiliations:

1 OrygenSpecialist Programs, Melbourne, Australia

2 Orygen,Parkville, Victoria, Australia

3 Centre for Youth Mental Health, The University of Melbourne, Parkville, Victoria, Australia

4Department of Child and Adolescent Psychiatry and Psychotherapy, University Hospital of Psychiatry Zurich, University of Zurich, Switzerland

5 Department of Psychiatry, the University of Hong Kong, Hong Kong, China

6 Academic Medical Centre, University of Amsterdam and Arkin Institute for Mental Health, Amsterdam, The Netherlands

7 Academic Medical Centre, Department of Psychiatry, Amsterdam, The Netherlands

8 Psykiatrisk Center København, Forskningsenheden, København, Denmark

9University of Basel, Department of Psychiatry, Basel, Switzerland

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10Universitätsklinikum Jena, Department of Psychiatry, Jena, Germany

11 Early Psychosis Intervention Programme (EPIP), Institute of Mental Health, Singapore

Corresponding author

Dr Andrea Polari
Orygen
35 Poplar Rd
Parkville, 3052 Victoria, Australia
Phone: +61-3-93422800, Fax: +61-3-93873003
Andrea.polari@orygen.org.au

Abstract

Background: Several prediction models have been introduced to identify young people at greatest risk of transitioning to psychosis. To datenone have examined the possibility of developing a clinical prediction model of outcomes other than transition. The aims of this study were to examine the association between baseline clinical predictors and outcomes including, but not limited to, transition to psychosis in young people at risk for psychosis, and to develop a prediction model for these outcomes.

Method: Several evidence-based variables previously associated with transition to psychosis and some important clinical comorbidities experienced by Ultra-High Risk (UHR) individuals were identified in 202 UHR individuals. Secondary analysis of the Neurapro clinical trial were conducted to investigate the associations between these variables and favourable (remission and recovery) or unfavourable (transition to psychosis, no remission, any recurrence and relapse) clinical outcomes. Logistic regression, best subset selection, Akaike Information Criterion and Receiver Operating Characteristic curves were used to seek the best prediction model for clinical outcomes from all combinations of possible predictors.

Results: When considered individually, only higher general psychopathology levels (p=0.023) was associated with the unfavourable outcomes. Prediction models suggest that general psychopathology and functioning are predictive of unfavourable outcomes.

Discussion: The predictive performance of the resulting modelswas modest and further research is needed. Nonetheless, when designing early intervention centres aiming to support individuals in the early phases of a mental disorder, the proper assessment of general psychopathology and functioning should be considered in order to informinterventions and length of care provided.

Keywords: Prediction, Outcomes, UHR, Transition, BPD, Non-psychotic Outcomes

1 Introduction

Over the last two decades, there has been an increasing academic and clinical interest in young people presenting with an increased risk of transitioning to a full-threshold psychotic episode. This clinical pre-psychotic syndrome or stage 1b following the staging model conceptualised by McGorry et al (2006; 2010), has been defined as the"at-risk mental state"(ARMS, Yung et al., 1996)and operationalised with the "ultra-high risk"criteria(UHR, Yung, Phillips, Yuen, & McGorry, 2004).When the UHR concept was established, the initial goal was to identify individuals at incipient risk of transitioning to psychosis and provide them with interventions that would delay, or even prevent, the development of psychotic disorders(Yung et al., 1996).

A number of clinical variables have been linked to increased risk of transition to psychosis (Hartmann, Nelson, Ratheesh, Treen, & McGorry, 2019), such as severity of attenuated positive psychotic symptoms (Cannon et al., 2008; Hengartner et al., 2017; Lemos-Giraldez et al., 2009; Lencz, Smith, Correll, & Cornblatt, 2003; Ruhrmann et al., 2010; Yung et al., 2003), thought disorder(Addington et al., 2015; Brucato et al., 2017; Cornblatt et al., 2015; Demjaha, Valmaggia, Stahl, Byrne, & McGuire, 2012; DeVylder et al., 2014; Klosterkotter, Hellmich, Steinmeyer, & Schultze-Lutter, 2001; Nelson et al., 2013), unusual thought content(Addington et al., 2015; Brucato et al., 2017; Cannon et al., 2008; Lencz et al., 2003; Thompson, Nelson, & Yung, 2011), distress related to attenuated psychotic symptoms(Rapado-Castro, McGorry, Yung, Calvo, & Nelson, 2015; Rekhi, Rapisarda, & Lee, 2019), depression(Yung et al., 2003; Yung et al., 2004), negative symptoms(Amminger et al., 2006; Demjaha et al., 2012; Lemos-Giraldez et al., 2009; Nelson et al., 2013; Piskulic et al., 2012; Schlosser et al., 2012; Valmaggia et al., 2013),poor social functioning(Cannon et al., 2008; Cornblatt et al., 2012; Cornblatt et al., 2015; Fusar-Poli et al., 2010; Nieman et al., 2014; Schlosser et al., 2012; Valmaggia et al., 2013; Velthorst et al., 2010), substance use disorders(SUD, Cannon et al., 2008; Haroun, Dunn, Haroun, & Cadenhead, 2006; Kristensen

& Cadenhead, 2007)and long duration of untreated symptoms (DUS, Nelson et al., 2016; Nelson et al., 2013; Yung et al., 2004).

Borderline personality disorder has been identified as an important concurrent pathology in UHR individuals with prevalence rate of personality disorders in UHR patients up to 39.4% (Boldrini et al., 2019)andmore general personality pathology in 25.2% of individuals (Ryan, Graham, Nelson, & Yung, 2017). Although it does not seems that BPD pathology may be linked with increased risk of transition to full-blown psychosis (Boldrini et al., 2019; Ryan et al., 2017; Schultze-Lutter, Klosterkotter, Michel, Winkler, & Ruhrmann, 2012), the impact of BPD pathology on outcomes beyond transition to psychosis has not been investigated.

Several transition-to-psychosis prediction modelshave been developed, including dynamic prediction using joint modelling (Yuen et al., 2018), latent class growth analysis (Hartmann et al., 2020), individualized risk calculator (Cannon et al., 2016), clinically based risk calculator (Fusar-Poli et al., 2017), probabilistic assessments (Clark, Schubert, & Baune, 2015), polyenviromic risk scores(Padmanabhan, Shah, Tandon, & Keshavan, 2017) and automated language analysis(Corcoran et al., 2018).

Recently, there has been an increased focus on outcomes in UHR individuals who do not transition to full-blown psychosis(Lin et al., 2015; P. McGorry, Hartmann, Spooner, & Nelson, 2018; Rutigliano et al., 2016).Arecent systematic reviewshowed the persistence of UHR status in 28-71% of individuals and the presence of at least one clinical diagnosis in 22-82% of participants within a timeframe of 2-7.5 years (Beck et al., 2019), indicating the clinical complexities that UHR individual are experiencing.

There has been a paucity of studies that have looked at outcomes beyond transition to psychosis and to our knowledge, none have developed a clinical prediction model for these outcomes. Zhang et al (2019) identified unusual thought content, suspicion/paranoia and decline in functioning as predictors of non-recovered UHR individuals. The risk calculator used (Cannon et al., 2016) was not deemed suitable for clinical use yet and looked at poor functioning, symptoms level and clinical treatment received but did not evaluate broad psychopathology. Allswede et al (2020) looked at the identification of clinical trajectories

beyond transition to psychosis in a large UHR sample but only focused on group-based multidirectory modelling without identifyingthe predictors of those outcomes. Finally, Hartmann et al (2020)looked at longitudinal symptoms, and functional trajectories and predictors of class memberships but did not include the development of a prediction model." The identification of clinical outcomes beyond transitionbased on clear definitions of remission, recurrence, recovery and relapse (Allswede et al., 2020; Hartmann et al., 2020; Polari, Lavoie, et al., 2018a) formed the background of the current study.

The aim of the current studywasto examine the association betweenbaseline clinical factors known to be related to poor outcomes and frequently experienced by UHR individualsand favourable or unfavourableclinical outcomes, and todevelop a multifactorial clinical prediction model ofthose outcomes.Developing a prediction model for these outcomes could possibly form the basis of a predictive clinical tool.

2 Methods

2.1 Design and setting

The data used for the current study werederivedfrom the Neurapro study, an international multi-site double-blind, randomized placebo-controlled trial of omega-3 polyunsaturated fatty acids (PUFA). The trial's methodologyand clinical outcomes have been described in detail elsewhere(Markulev et al., 2015; P. D. McGorry et al., 2017; Nelson et al., 2018). The main results of the Neurapro study indicated no differences in transition rates, symptomatology and functioning between the PUFAs and Placebo groups at month-12 (P. D. McGorry et al., 2017; Polari, Lavoie, et al., 2018b) and at medium-term follow-up (Nelson et al., 2018), allowing for the pooling of the two treatment groups for the purpose of the current study, an approach that has been used elsewhere (Berger et al., 2019; Hartmann et al., 2017; Hartmann et al., 2020; Nelson et al., 2020)."

2.2 Participants

Individuals aged between 13 and 40 years old were identified as being at UHR for psychosis by fulfilling one or more of the following criteria: 1) Vulnerability— individuals diagnosed with a schizotypal disorder or with a first-degree relative with a psychotic disorder, 2) Attenuated Psychotic Symptoms— individuals who have experienced subthreshold, attenuated forms of positive psychotic symptoms during the past year, and/or 3) Brief Limited Intermittent Psychotic Symptoms (BLIPS)— individuals who have experienced episodes of frank psychotic symptoms that have spontaneously abated within a week(Yung et al., 2004). Individuals had also experienced a 30% decrease in functioning within the past 12 months or a chronic low functioning (score < 50) for the past 12 months or longer, as indicated by the Social and Occupational Functioning Assessment Scale (SOFAS, Goldman, Skodol, & Lave, 1992).

Exclusion criteria were: past history of treated or untreated psychotic episode of one week duration or longer, organic brain disease, abnormal coagulation profile parameters or thyroid function test results > 10% above or below the limits of the normal range, any physical illness with psychotropic effect, current treatment with any mood stabilizer, or recreational use of ketamine, past neuroleptic exposure equivalent to a total lifetime haloperidol dose of > 50 mg, a diagnosis of a serious developmental disorder, premorbid IQ < 70 and a documented history of developmental delay or intellectual disability, current acute suicidality/self-harm or aggression/dangerous behaviour, current pregnancy, current attenuated symptoms explained by acute intoxication, and greater than four weeks of regular omega-3 supplementation within the past 6 months.

2.3 Baseline Variables

Based on the evidence-based variables previously associated with transition to psychosis (Hartmann, Nelson, Ratheesh, et al., 2019) and to poor outcomes (Hartmann et al., 2020;

Zhang et al., 2019), the following variables, all part of the Neurapro assessment battery, have been included in this study: depression (Montgomery-Åsberg Depression Rating Scale (MADRS, Montgomery & Asberg, 1979)), negative symptoms, (Scale for Assessment of Negative Symptoms (SANS, Andreasen, 1984)), general psychopathology (Brief Psychiatric Rating Scale (BPRS, Overall & Gorham, 1962))attenuated psychotic symptoms (APS) and distress associated with APS (ComprehensiveAssessment of At-Risk Mental States(CAARMS, Yung et al., 2005),social functioning (Social and Occupational Functioning Assessment Scale;SOFAS (Goldman et al., 1992)), substance use disorders(SCID, M. B. First, Spitzer, Gibbon, & Williams, 2002), duration of untreated symptoms(DUS, Nelson et al., 2016). Additionally, the diagnosis ofborderline personality disorder(BPD, M. First, Gibbon, Spitzer, Williams, & Benjamin, 1997) has been also included in the evaluation given its frequency as co-occurring morbidity in UHR individuals.

2.4 Outcomes

Outcomes were evaluated at month 12 and were defined based on Polari et al.'s criteria (2018). Remissionwas defined as no longer presenting with APS along with good (SOFAS score of at least 70) or improved functioning(increase of at least five points in SOFAS).Recurrenceis the presence of UHR status after remission.Recoveryis remission maintained for at least six months, while relapseis the presence of UHR status after recovery. Transition to psychosis was defined asmeeting the CAARMS exit criteria of daily full-threshold positive symptoms for a week or longer.Outcomes were grouped in a binary way as favourable (remission,recovery) and unfavourable outcomes (recurrence, relapse, no remission, transition to psychosis).

3 Statistical Analyses

The association betweenbaseline clinical predictors and the favourable vs unfavourableclinical outcomeswas assessed using Fisher's exact testsfor categorical

predictors and t-tests for continuous predictors.These tests gave an indication as to whether each predictor had a significant association with the outcomes when considered by themselves.

Logistic regressions were used to develop clinical multifactorialprediction models in conjunction a strategy called best subset selection (Bertsimas, King, & Mazumder, 2016) to seek the best prediction models. This strategy looks at all the possible models and evaluates which ones provide the best fit to the data according to a suitable criterion. In this analysis, all possible models refer to all of the logistic regression models corresponding to all possible combinations of the potential predictors. The models were compared using the Akaike Information Criterion (AIC, Burnham & Anderson, 2002). AIC is a measure of the relative fit between models; the smaller the AIC the better. AIC does not measure the absolute quality of a model by itself and it does not indicate the significance of the predictors in a model. The significance of the predictors involved in the models was determined using Wald's test and the predictive performance of the candidate models was compared using receiver operating characteristic (ROC) curves. The difference between ROC curves of different models was tested using Venkatraman's test (Venkatraman & Begg, 1996).

The software used for the analyses was the R statistical software (version 3.4.3, RCoreTeam, 2017). In particular, the glmulti R package (Calcagno, 2013) for automated model selection, was used to implement the best subset selection strategy. The Venkatraman's test for comparing ROC curves was conductedusing the pROC R package (Robin et al., 2011).

4 Results

Data were available for 202 patients of the 304 recruited to theNeurapro study (P. D. McGorry et al., 2017). Table 1. Participants' characteristics at study entry (n=202). Within a 12-month period, 37% of individuals recovered, 7.5% remitted, 20% showed any recurrence, 17.3% did not remit, 4.0% had a relapse and 15.8% transitioned to psychosis. Favourable and

unfavourable trajectories represented 43.2% and 57.1% respectively(Polari, Lavoie, et al., 2018b).

4.1 Association of baseline variables and outcomes

Table 2summarizes the association betweenbaseline variables and the binary outcome (favorable vs unfavorable outcomes).The only statistically significant association with these outcomes was with BPRS total and DUS. However, the significance of DUSwas not maintained after log-transformationdue to the skewness of the DUS data.

Table 2. Association of baseline variables and outcomes

4.2 Prediction model for the outcomes

In order to deal with the varying amount of missing data in different variables, four sets of measures based on all of the potential predictors were considered in turn:

- Set 1. All the measures with 0 to 5 missing cases. These were the measures that pertained to all or nearly all of the cases concerned. They were: MADRS total, SANS total, BPRS total, SOFAS, the five APS measures and BPD.
- Set 2. All the measures with up to 9 missing cases. They were all of the Set 1 measures plus DUS.
- Set 3. All the measures with up to 24 missing cases. They were all of the Set 2 measures plus the distress measures.
- Set 4. All the measures, i.e., all of the Set 3 measures plus SUD. SUD was a measure with a considerable number of missing cases.

Going from Set 1 to Set 4, more and more measures were included as potential predictors, but the sample size also decreased in size. The aim was to apply the best subset selection strategy to each set to find a prediction model. Then the prediction models from each set were examined to see if any similarity or pattern emerged.

Four best prediction models were identified with logistic regression. The smallestAkaike Information Criterion(AIC) for each set of predictors indicated that there was consistency between the 4 sets in that BPRS total and SOFAS appeared in the best prediction model of each set. The only extra measure was DUS which appeared in the best prediction models of Set 2 and Set3. Therefore, two candidates for the best model have been considered: (1) BPRS total, SOFAS and DUS and (2) BPRS total, SOFAS.

The significance of each predictor in the shortlisted models was examined and is shown in Table 3. A positive model coefficient indicates that a higher score is associated with higher likelihood of producing an unfavorable outcome.After logistic regression, the effect of SOFASon the outcome was negative, indicating that the higher the SOFAS, the lesser the chance of getting a good outcome.

Table 3. Odds ratios and significance of the predictors in the shortlisted models.

The ROC curves of the two shortlisted models are presented in Figures 1. There was no significant difference between the two curves (p=0.375). Both curves are above the diagonal line suggesting that both models could perform better than just random guessing. However, none of the curves extend near the ideal point of (0,100). In other words, for a reasonably high true positive rate, the corresponding false positive rate is also high.

Figure 1. ROC curves of the candidate models

5 Discussion

Of all the baseline variables evaluated, only general psychopathology (BPRS total score) was significantly associated with unfavourable outcomes. BPRS total is reflective of general psychopathology rather than being specific to emerging psychotic disorder. Our results are consistent with the observation by Nelson et al.(2018) that BPRS total scores seem to be one of the strongest independent predictors of transition to psychosis over a mean 3.4

years follow-up period. By extension, these results seem to indicate that the more unwell an individual is trans-diagnostically (severity of general psychopathology) when entering a specialised clinic, the less favourable the clinical course may be, regardless of specific diagnosis. This could be an argument for research concerning identification and intervention prior to development of severe general psychopathology. This is in line with the conceptualisation of mental disorders following a clinical staging framework (P. D. McGorry et al., 2006; P. D. McGorry et al., 2010)adopted by the Australian headspace model(P. D. McGorry et al., 2007; D. Rickwood et al., 2019; D. J. Rickwood, Telford, Parker, Tanti, & McGorry, 2014). Broadening of the 'at-risk'construct beyond psychosis in the earlier phases of mental illnesses(Hartmann, Nelson, Spooner, et al., 2019; P. McGorry et al., 2018)represents a subtle way of identifying these sub-threshold condition early and provide adequate support to prevent transition to stage 2 disorders.However, contrary to Zhang et al (2019), functioning and attenuated psychotic symptoms did not seem to be correltated with the likelihood of poor outcome.

The current results indicate no correlation with negative outcomes for UHR individuals presenting with an additional diagnosis of BPD. This is in line with previous results indicating no increased risk in transition to psychosis in UHR individuals having an additional diagnosis of BPD(Ryan et al., 2017; Schultze-Lutter et al., 2012). This lack of correlation seems surprising given the clear correlation between increased stress, emotional dysregulation and intensity of psychotic symptoms conceptualised in the stress-vulnerability model (Zubin & Spring, 1977)and potentially heightened in individuals suffering form BPD with potential repercussions on prolonged recovery. Contrary to the postulation byBoldrini et al (2019) that personality disorders may contribute to an unfavourable outcome, it is nonetheless important to underline their potential contribution to significant morbidity, complexity an difficulties in the provision of care and the need for further evaluation of the relationship between UHR and personality disorders more globally.

The associationbetweengeneral psychopathology and unfavourable outcomes could be related to the high rate of comorbidities seen in individuals with an at-risk syndrome (Lim et al., 2015; Lin et al., 2015). Indeed, these individuals may be presenting with multiple at-risk syndromes not limited to psychosis (pluripotent or transdiagnostic risk (Hartmann, Nelson, Spooner, et al., 2019)) that may influence the course of the illness in an unfavourable way (Hartmann, Nelson, Spooner, et al., 2019; Polari, Lavoie, et al., 2018a). This isconsistent with the notion of a general 'p' factor(Caspi & Moffitt, 2018)which suggests that different aspects or types of psychopathology group together to form a single high order factor ('p' factor). Identifying this general 'p' factor in UHR samples could be indicative of risk for poor outcomes broadly defined(recurrence, persistence, relapse, transition to psychosis).

The aim of the study was to develop a multifactorial clinical prediction model for outcomes beyond transition to psychosis. Results indicated that the higher the SOFAS, the lesser the chance of getting a good outcome. This may be related to a ceiling effect, indicating that the higher the baseline SOFAS, the harder it is to get at least a 5-point improvement in SOFAS. Furthermore, because both BPRS total and SOFAS are not strong predictors of the outcome (p-values being just close to 5% and also by the mediocre ROC curves), there may other influences on the outcome which are not manifested by the data.Although BPRS total and SOFAS appear to be predictive of unfavourable outcomes, the predictive performance of the resulting models was modest and requires improvement.

Nonetheless, the results of the current study may hold some clinical value and generate some reflections for clinical governance issues related to services dealing with UHR individuals. Firstly, the results further strengthen the notion that care for UHR individuals should be provided in a holistic and broad manner given the presence of important general psychopathology. Secondly, functioning impairment represents an important target of intervention and should be included in research outcomes in UHR-related studies. Our results also support the use of 'low functioning' or 'decreased functioning' as a criterion for the identification of the at-risk status in an individual as currently used when evaluating

UHR individuals using the CAARMS (Yung et al., 2005). The strength of current study is the utilisation of previously published definitions of favourable and unfavourable outcomes, also used in a large sample in Allswede et al.(2020) in an attempt to introduce a useful clinical prediction tool beyond transition to psychosis. Furthermore, the current study aimed at identifying predictive variables for the range of UHR trajectories, not just transition and has relevance for helping designing early intervention centres aiming to support individuals in the early phases of a mental disorder and narrowing down on highest risk sub groups (risk for range of unfavourable outcomes) by proposing the enhancement of assessment of general psychopathology and functioning which should be considered in order to inform interventions and length of care provided.

This study has several limitations. The definitions of outcomes is only based on attenuated positive symptoms and functioning and it can be argued that a more global or multifactorial approach should be used as postulated by Lieberman (2017) when reflecting on outcomes for individuals suffering from schizophrenia. There are some missing data in the baseline predictors evaluated potentially influencing association significance with outcomes. Finally, alonger evaluation should be considered given individuals can transition to psychosis later in the illness process (Nelson et al., 2013) and therefore, some of the observed favorable outcomes may indeed be unfavorable.

6 Conclusion

Although general psychopathology and functioning appear to be predictive of unfavourable outcomes in the UHR population, the predictive performance of the resulting model requires improvement and further research is needed. For instance, by combining clinical data with other data modalities such as neurocognition, neurophysiology or polygenic risk scores to develop multimodal prediction models.Nonetheless, when designing early

intervention centres aiming to support individuals in the early phases of a mental disorder, the proper assessment of general psychopathology and functioning should be considered in order to inform interventions and length of care provided.

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Figures Legend

Figure 1. ROC curves of the candidate models

Tables

Table 1. Participants' characteristics at study entry (n=202)

Table 2. Association of baseline variables and outcomes

Table 3. Odds ratios and significance of the predictors in the shortlisted models.

Table 1. Participants' characteristics at study entry (n=202)

Characteristics	
Gender, no. males (%)	95 (47%)
Age (years, mean ± SD)	19.1 ± 4.6
Duration of Untreated Symptoms (Days, mean ± SD)	892.1 ± 1074.4
SOFAS (mean, ± SD)	54.0 ± 11.7
Highest level of education completed (%) . Primary school . Secondary school, discontinued prior to final year . Secondary school, completed final year . Trade or technical training . Undergraduate university course . Missing	 37.1 18.3 27.2 9.9 6.4 1.0
MADRS score (mean ± SD)	54 ± 11.7
UHR Groups, no. (%) . Vulnerability . Attenuated Psychotic Symptoms . BLIPS . Vulnerability + Attenuated Psychotic Symptoms . Vulnerability + Attenuated Psychotic Symptoms + BLIPS	 13 (6%) 161 (80%) 18 (9%) 3 (1.5%) 3 (1.5%)

6.1.1 SOFAS: Social Occupation and Functioning Assessment Scale

6.1.2 MADRS: Montgomery–Åsberg Depression Rating Scale

BLIPS: Brief Limited Intermittent Psychotic Symptoms

Table 2. Association of baseline variables and outcomes

	Outcome	mean	SD	n	Missing data	p-value
MADRS total	Unfavourable	20.2	8.5	115	0	0.092
	Favourable	18.0	9.4	87	0	
SANS total	Unfavourable	19.8	13.3	113	2	0.302
	Favourable	17.7	14.8	87	0	
BPRS total	Unfavourable	42.7	10.9	114	1	0.023*
	Favourable	39.4	9.2	87	0	
SOFAS	Unfavourable	54.3	12.3	115	0	0.443
	Favourable	53.0	12.4	87	0	
APS-UTC	Unfavourable	5.0	4.0	115	0	0.125
	Favourable	4.1	3.7	87	0	
APS-NBI	Unfavourable	6.8	3.3	115	0	0.671
	Favourable	7.0	2.8	87	0	
APS-PA	Unfavourable	6.0	2.5	114	1	0.802
	Favourable	6.1	2.7	87	0	
APS-DS	Unfavourable	3.8	3.3	111	4	0.096
	Favourable	3.1	3.2	87	0	
APS total	Unfavourable	21.6	8.0	110	5	0.250
	Favourable	20.3	7.8	87	0	
UTC distress	Unfavourable	37.7	37.7	109	6	0.559
	Favourable	34.5	36.5	86	1	
NBI distress	Unfavourable	55.9	32.4	109	6	0.541
	Favourable	58.6	28.4	83	4	
PA distress	Unfavourable	47.4	36.3	106	9	0.556
	Favourable	44.5	32.7	87	0	
DS distress	Unfavourable	23.6	30.3	103	12	0.357
	Favourable	19.7	28.0	86	1	
APS distress	Unfavourable	167.7	88.6	96	19	0.448
	Favourable	158.0	80.7	82	5	
DUS	Unfavourable	1033.3	1207.2	110	5	0.042*
	Favourable	729.1	856.5	83	4	
log(DUS)	Unfavourable	6.2	1.6	110	5	0.212
	Favourable	5.9	1.3	83	4	
		Count	%	n	Missing Data	p-value
BPD	Unfavourable	6	5.3	114	1	>0.999
	Favourable	4	4.6	87	0	

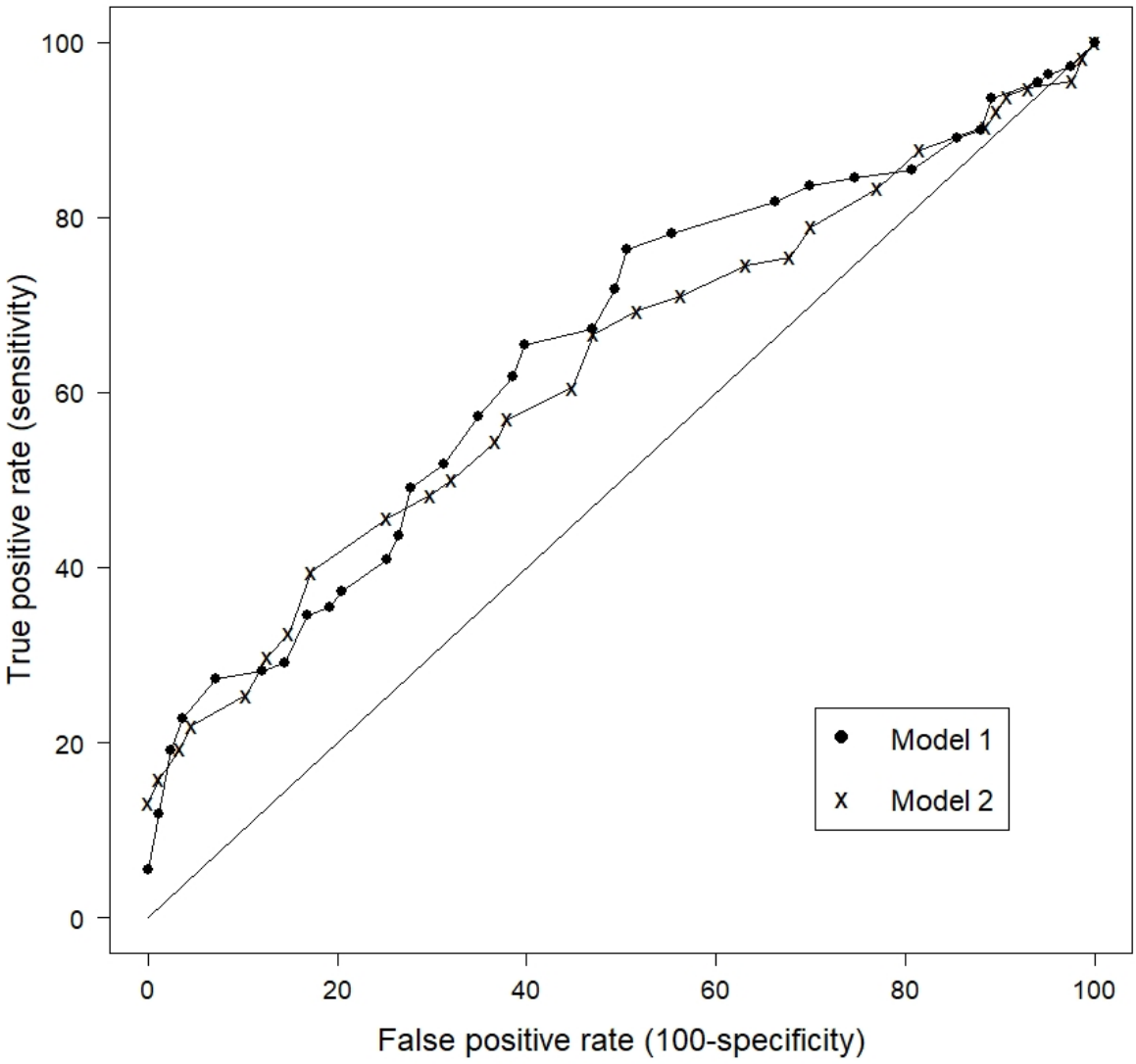
SUD	Unfavourable	6	7.5	80	35	>0.999
	Favourable	5	8.5	59	28	

* Alpha value set at .05. Statistically significant (p<0.05)

Table 3. Odds ratios and significance of the predictors in the shortlisted models.

		P-value	Model coefficient	Standard error	95% confidence interval of odds ratio
Model 1	BPRS total	0.021	0.041	0.018	(1.006, 1.078)
	SOFAS	0.040*	0.029	0.014	(1.001, 1.058)
	DUS	0.103	0.00026	0.00016	(1.000, 1.001)
Model 2	BPRS total	0.006*	0.047	0.017	(1.014, 1.085)
	SOFAS	0.052	0.027	0.014	(1.000, 1.056)

* Statistically significant ($p<0.05$)



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	Favourable	5.9	1.3	83	4	
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Author/s:
Polari, A;Yuen, HP;Amminger, P;Berger, G;Chen, E;deHaan, L;Hartmann, J;Markulev, C;McGorry, P;Nieman, D;Nordentoft, M;Riecher-Roessler, A;Smesny, S;Stratford, J;Verma, S;Yung, A;Lavoie, S;Nelson, B

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