



CENTER FOR PRECISION PSYCHIATRY

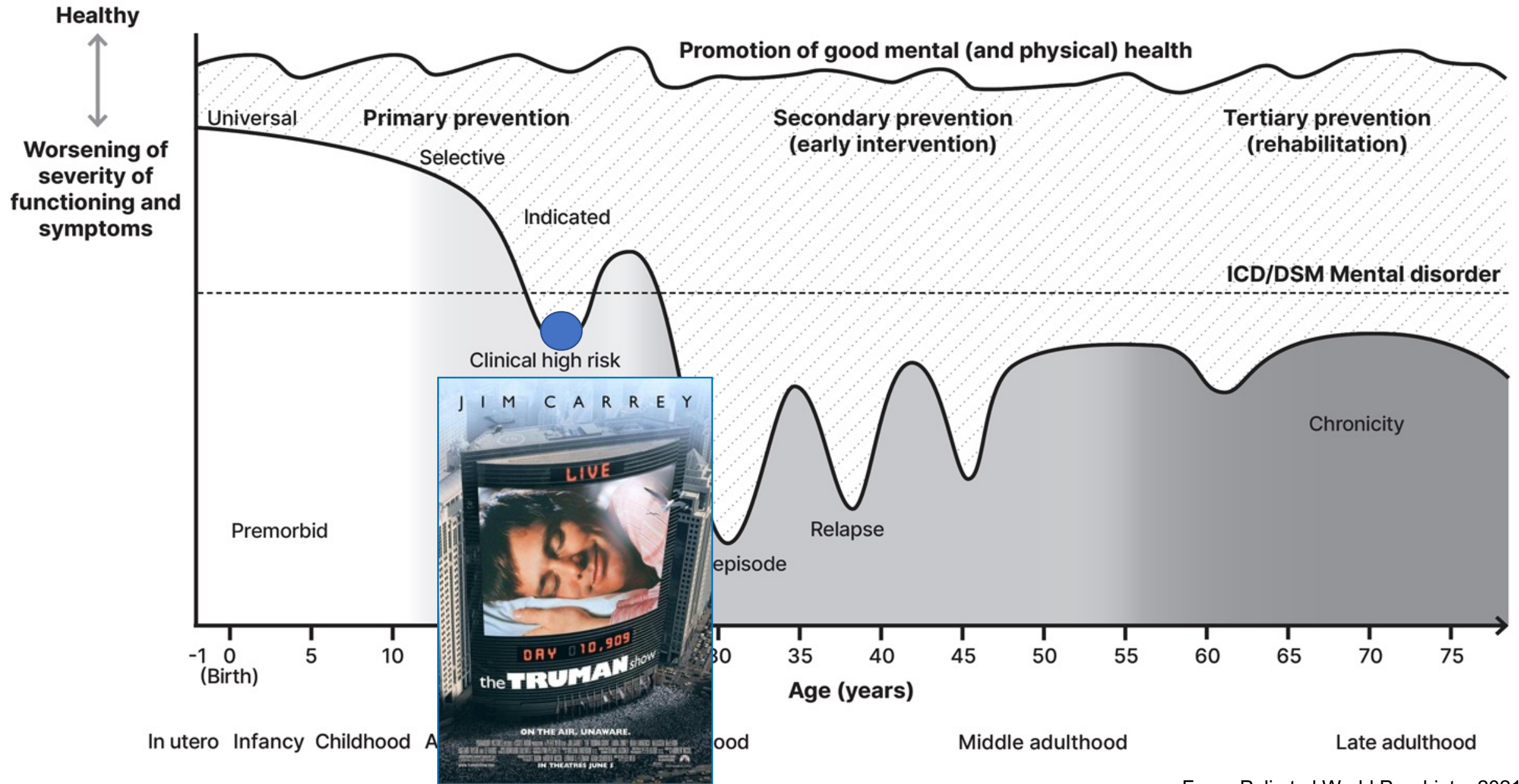
In partnership with the Psychiatric & Neurodevelopmental
Genetics Unit, MGH Center for Genomic Medicine

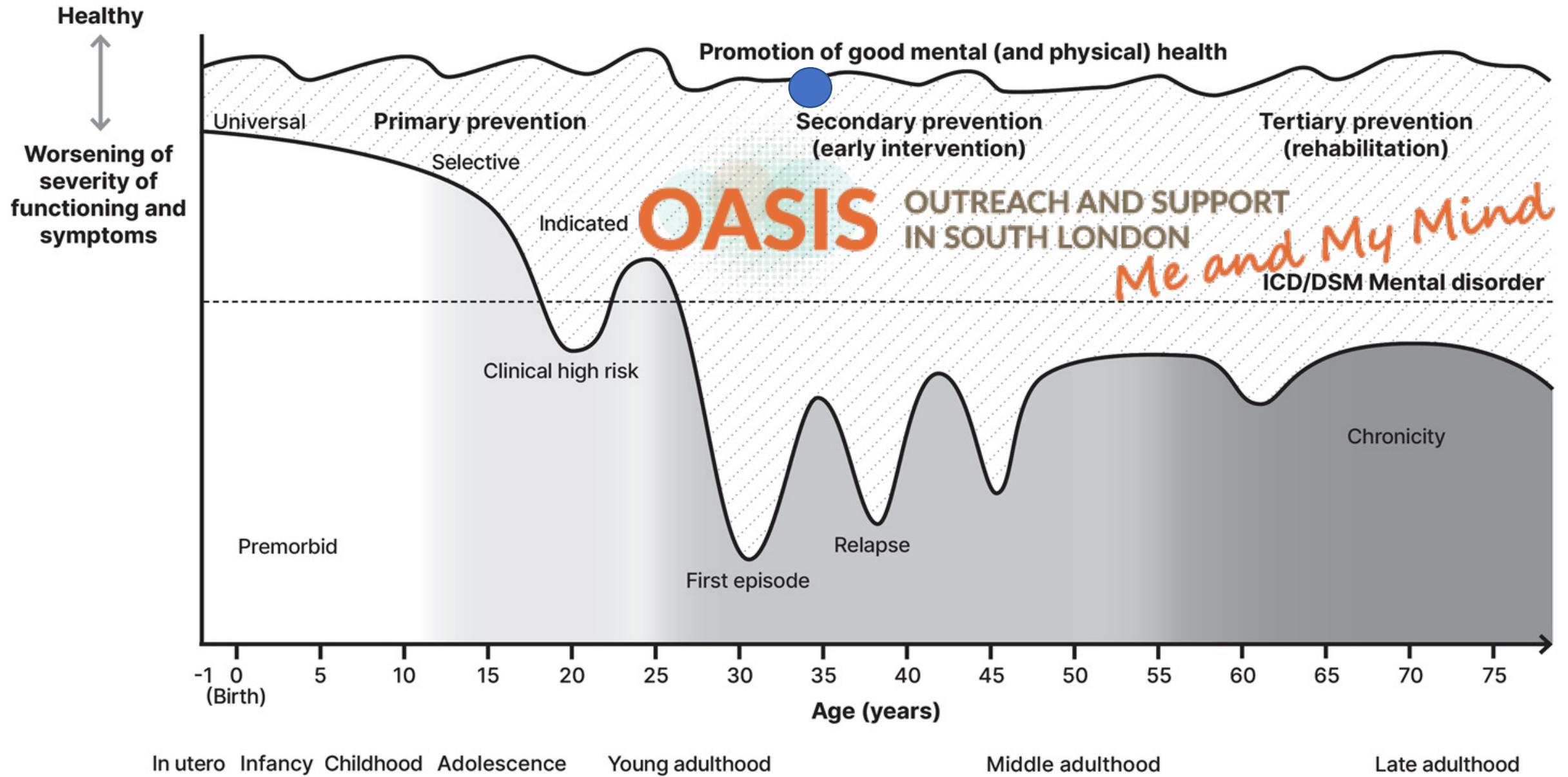
The First Annual Conference on Precision Psychiatry September 2021

Individualised detection models for individuals at risk of psychosis

Prof. Dr. Paolo Fusar-Poli, PhD, RCPsych

*Professor of Preventive Psychiatry, Department of Psychosis Studies, King's College London;
Honorary consultant in Adult Psychiatry, OASIS team, SLaM NHS Foundation Trust;
Associate Professor, Department of Brain and Behavioral Sciences, University of Pavia.*





- Outreach service for help-seeking people
- (14-35 yrs old) with 'at risk' symptoms



1. Reduce 'at risk' symptoms and disability
2. Prevent transition to psychosis
3. Improve outcome if psychosis develops

Improving the Detection of Individuals at Clinical Risk for Psychosis in the Community, Primary and Secondary Care: An Integrated Evidence-Based Approach

Paolo Fusar-Poli^{1,2,3,4*}, Sarah A. Sullivan⁵, Jai L. Shah^{6,7,8} and Peter J. Uhlhaas^{9,10}

REVIEW

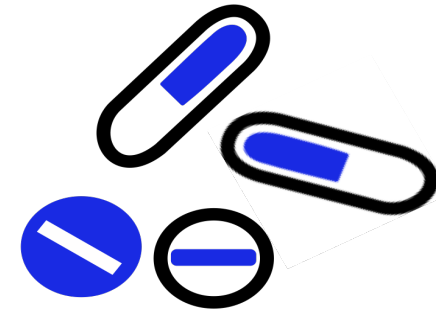
published: 24 October 2019
doi: 10.3389/fpsy.2019.00774



Detection of at
risk individuals



Prognosis of
outcomes



Preventive
Treatment

The OASIS logo features the word "OASIS" in a bold, orange, sans-serif font. To its left is a circular graphic composed of a grid of dots in shades of blue and green.

OUTREACH AND SUPPORT
IN SOUTH LONDON

Me and My Mind

Do you need immediate help?



NHS
South London and Maudsley
NHS Foundation Trust

ABOUT

UNUSUAL EXPERIENCES

GETTING HELP

SELF HELP

REAL STORIES

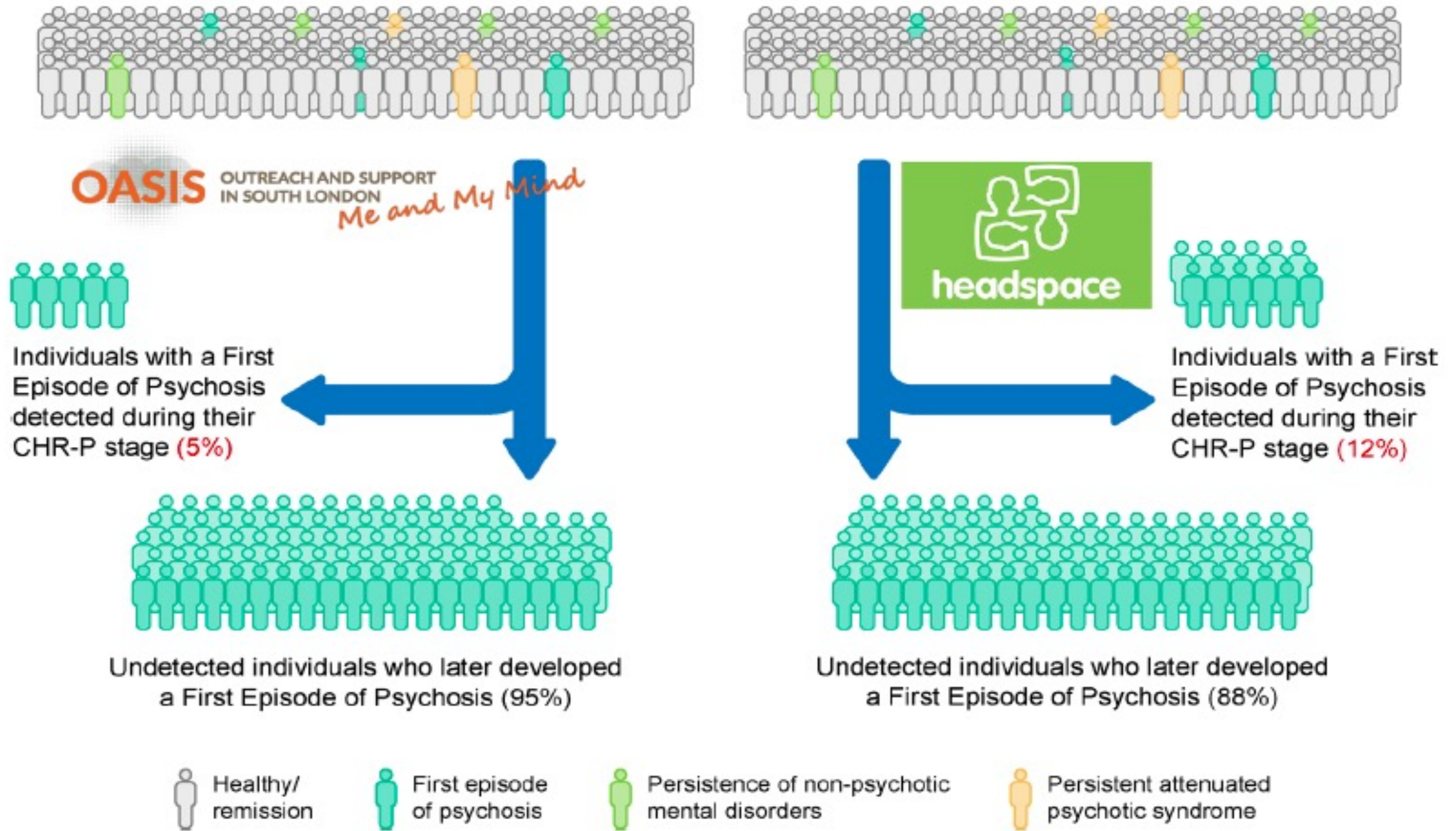
CONTACT

Me and My Mind is a website for OASIS: an NHS service providing mental health support for young people struggling with unusual experiences - like feeling paranoid or hearing voices.

We aim to help people get their lives back on track and fulfil their potential.

FIND OUT MORE

<https://www.meandmymind.nhs.uk>





The Science of Prognosis in Psychiatry

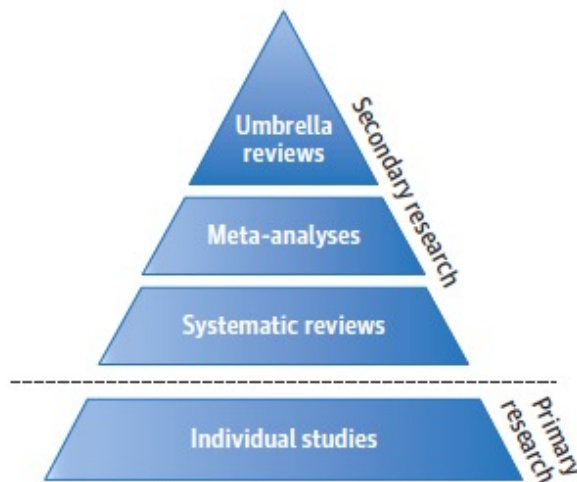
A Review

Paolo Fusar-Poli, MD, PhD; Ziad Hijazi, MD, PhD; Daniel Stahl, PhD; Ewout W. Steyerberg, PhD

JAMA Psychiatry. doi:10.1001/jamapsychiatry.2018.2530

Published online October 17, 2018.

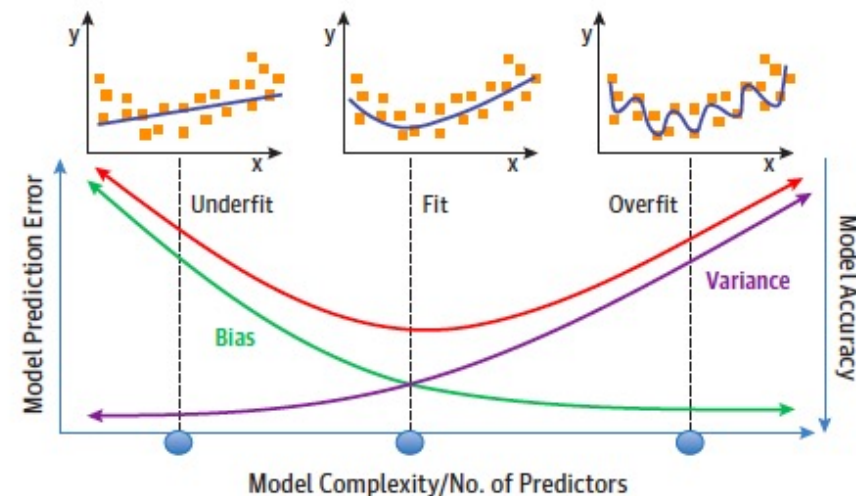
A Select predictors



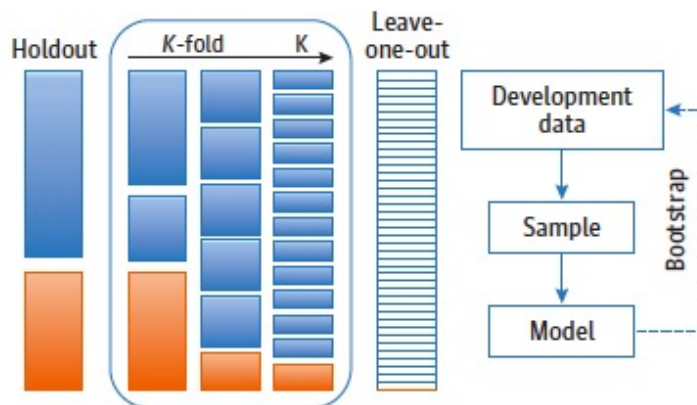
B Prepare data



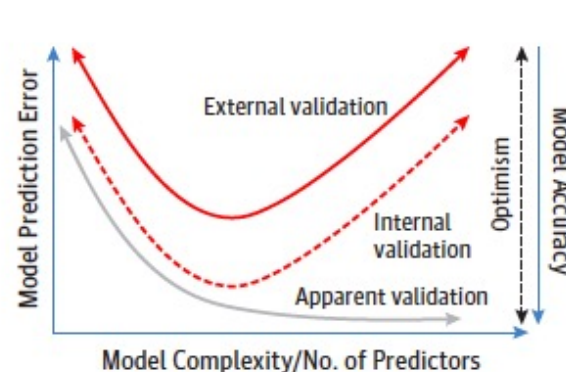
C Model development



D Internal validation



E External validation



F Implementation and impact



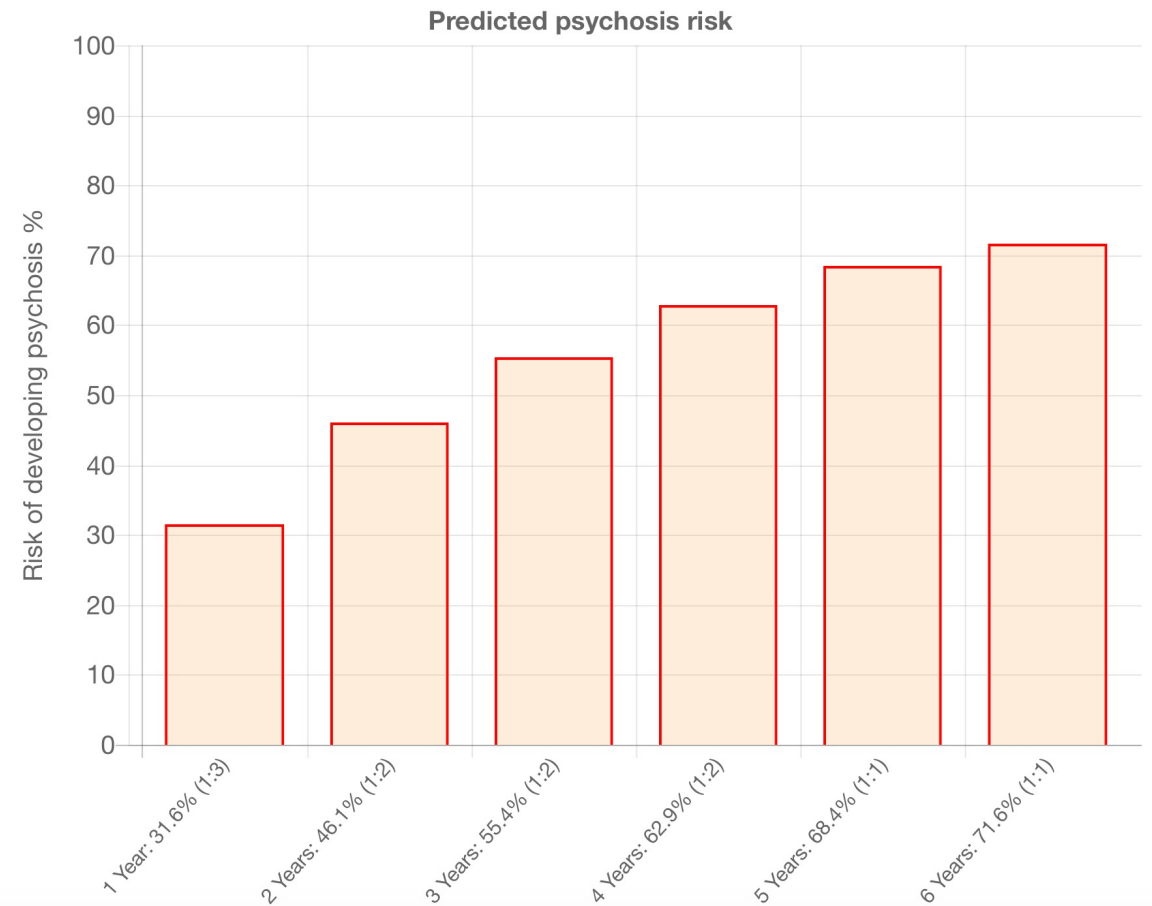
What causes psychosis? An umbrella review of risk and protective factors

Joaquim Radua¹⁻³, Valentina Ramella-Cravaro^{1,4}, John P.A. Ioannidis⁵⁻⁸, Abraham Reichenberg⁹⁻¹², Nacharin Phiphophatsanee¹, Taha Amir¹, Hyi Yenn Thoo¹, Dominic Oliver¹, Cathy Davies¹, Craig Morgan^{9,13}, Philip McGuire^{9,13}, Robin M. Murray^{9,13}, Paolo Fusar-Poli^{1,13,14}

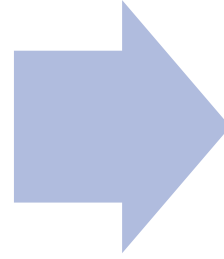


Cox model:

- Age
- Gender
- Age by gender
- Ethnicity
- Index diagnosis



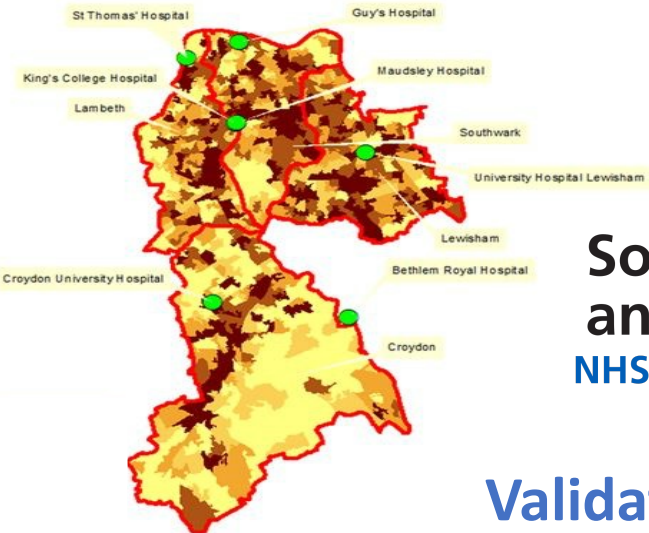
Development & Validation



Replication

Development

Lambeth & Southwark
33,820 patients



NHS
**South London
and Maudsley**
NHS Foundation Trust

Validation

Croydon & Lewisham
54,716 patients
Harrell's C=0.79

Camden & Islington

13,702 patients
Harrell's C=0.73

NHS
Camden and Islington
NHS Foundation Trust



Oxford

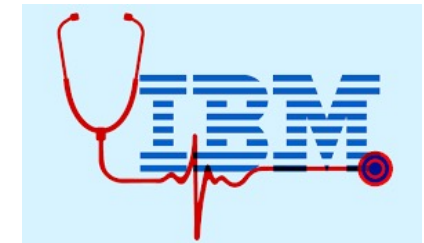
41,167 patients
Harrell's C=0.79

NHS
Oxford Health
NHS Foundation Trust



USA

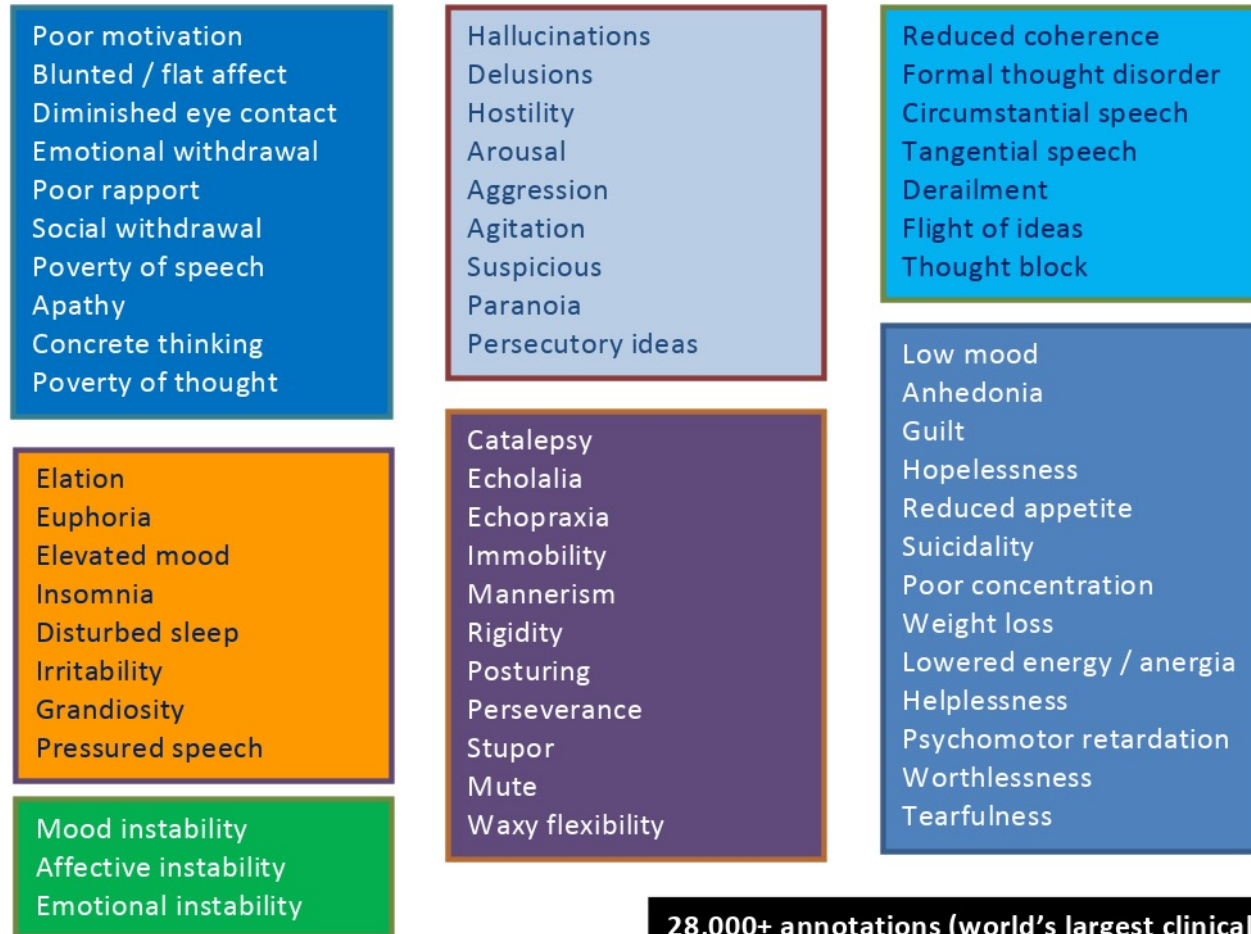
2,430,333 patients
Harrell's C=0.68



Core characteristics of the model

Clinically-based	Predictors selected through a-priori clinical knowledge
Transdiagnostic	Works across all ICD-10 diagnostic spectra
Individualised	Individual subject-level risk estimates
Cheap	Predictors routinely collected by clinicians
Automatable	Electronic Health Records (as well as manual entry) of predictors
e-Health	Implemented online
Scalable	Screens large Electronic Health Records (e.g. CRIS at SLaM)
Optimisable	Further refined by the inclusion of other predictors incl. dynamic
Sequential testing	Staged assessment framework

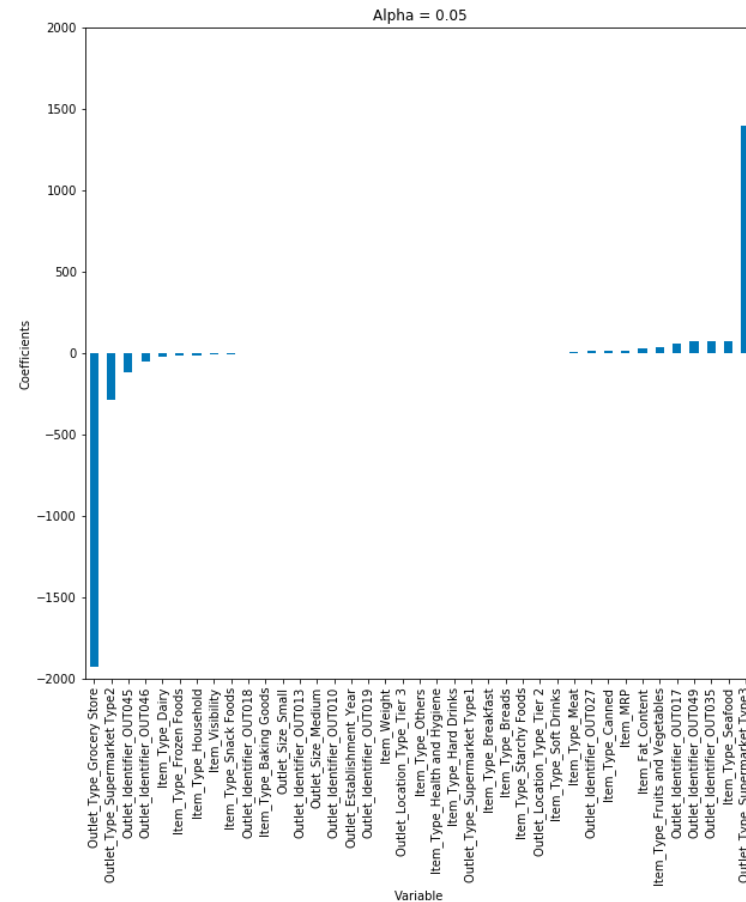
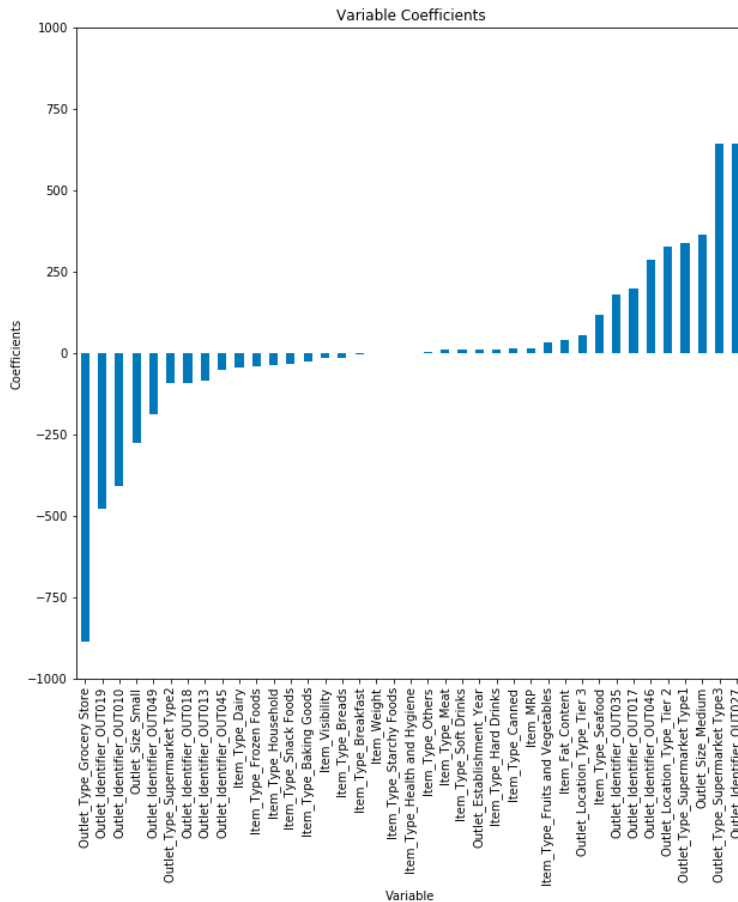
Natural Language Processing (NLP) apps



- Over 50 symptoms shown here grouped by symptom type
- The symptom apps range in precision from 65% - 99%

New Natural Language Processing predictors

- Large number of predictors → LASSO regularization to select out 'redundant' predictors

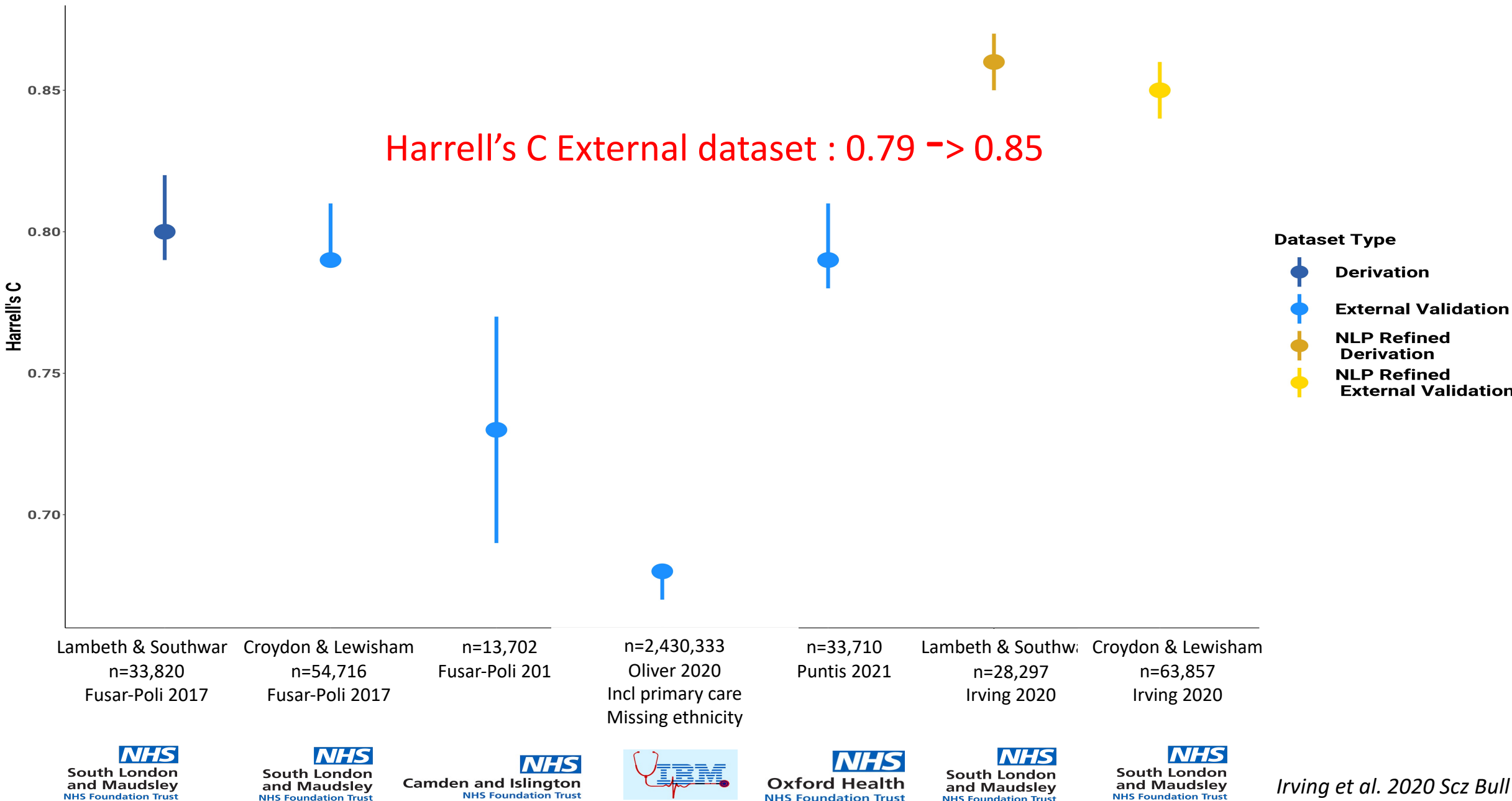


14 NLP predictors

Tearfulness
Appetite loss
Cocaine use
Cannabis use
Weight loss
Insomnia
Guilt
Irritability
Delusions
Hopelessness
Disturbed sleep
Lack of insight
Agitation
Paranoia

All with
precision >
80% and
non-near-
zero-variance

New Natural Language Processing predictors

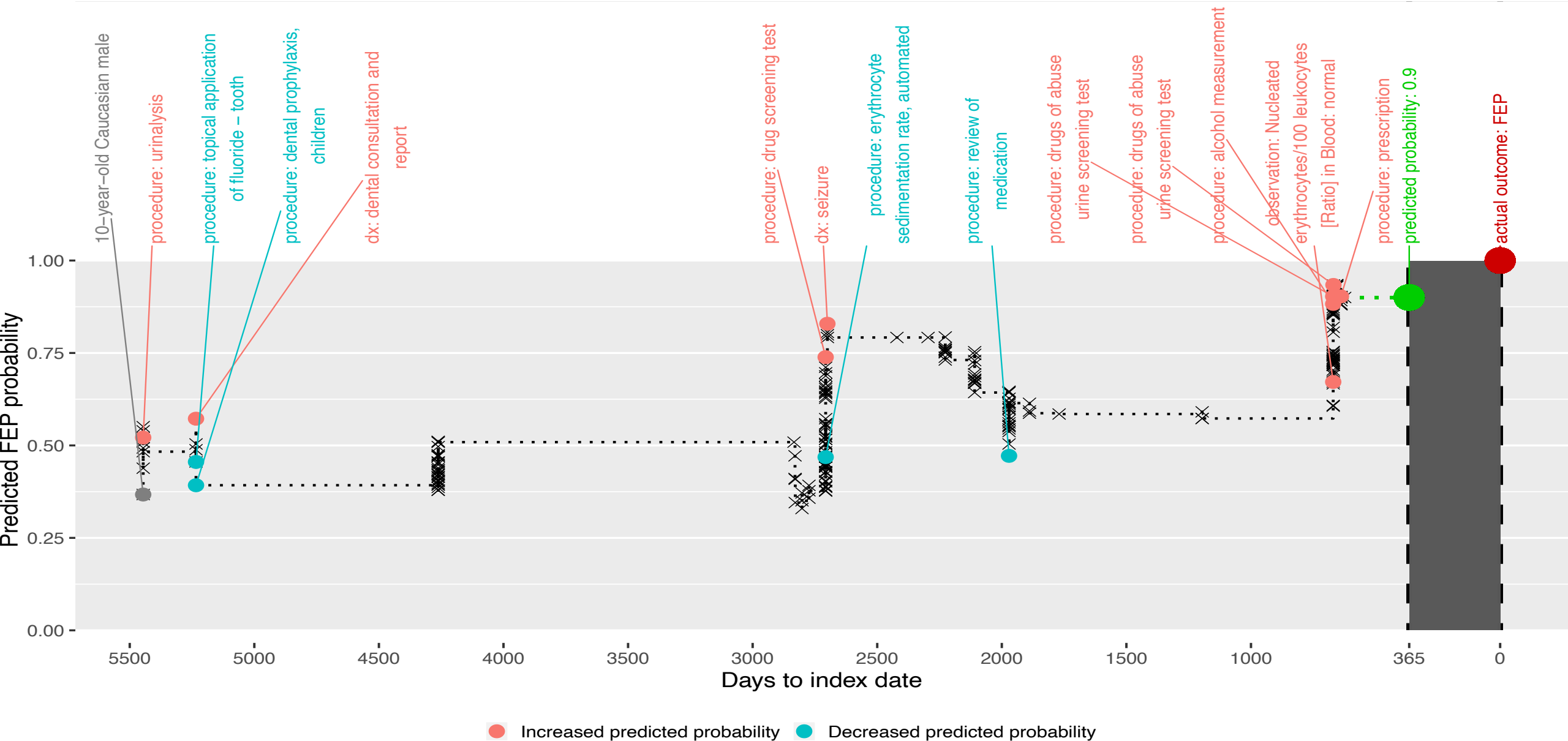


Lancet Digital Health 2020;
2: e229–39

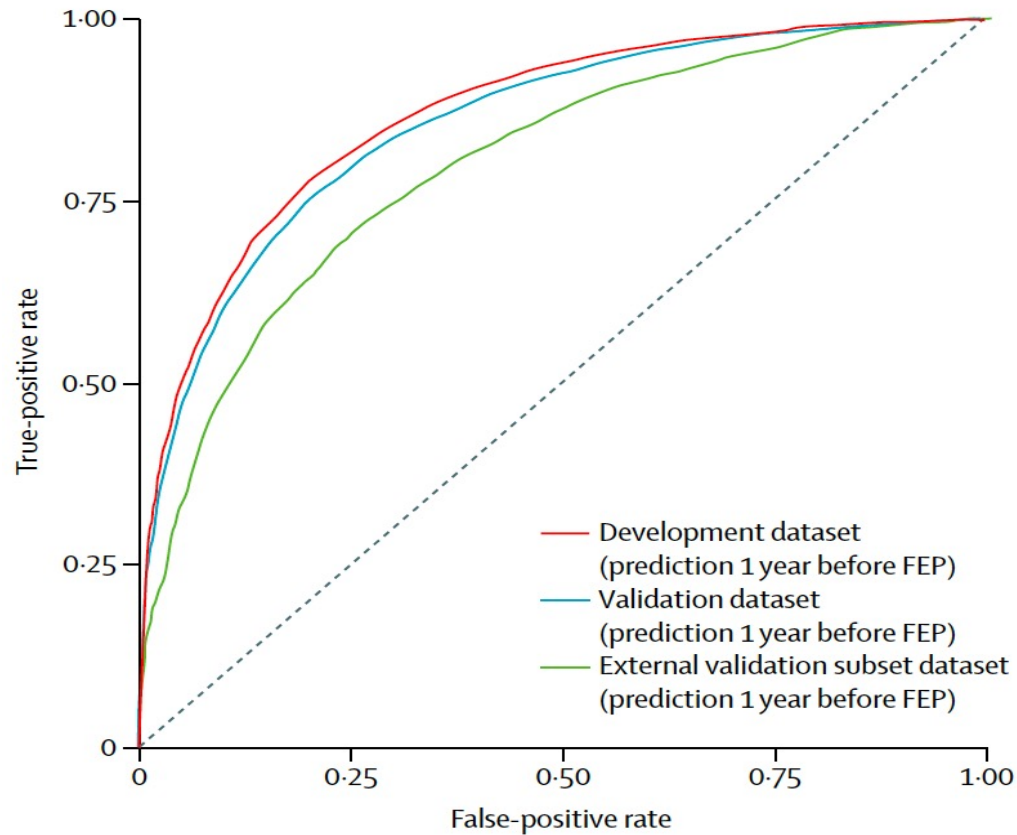
2: e229–39

- [illegible]

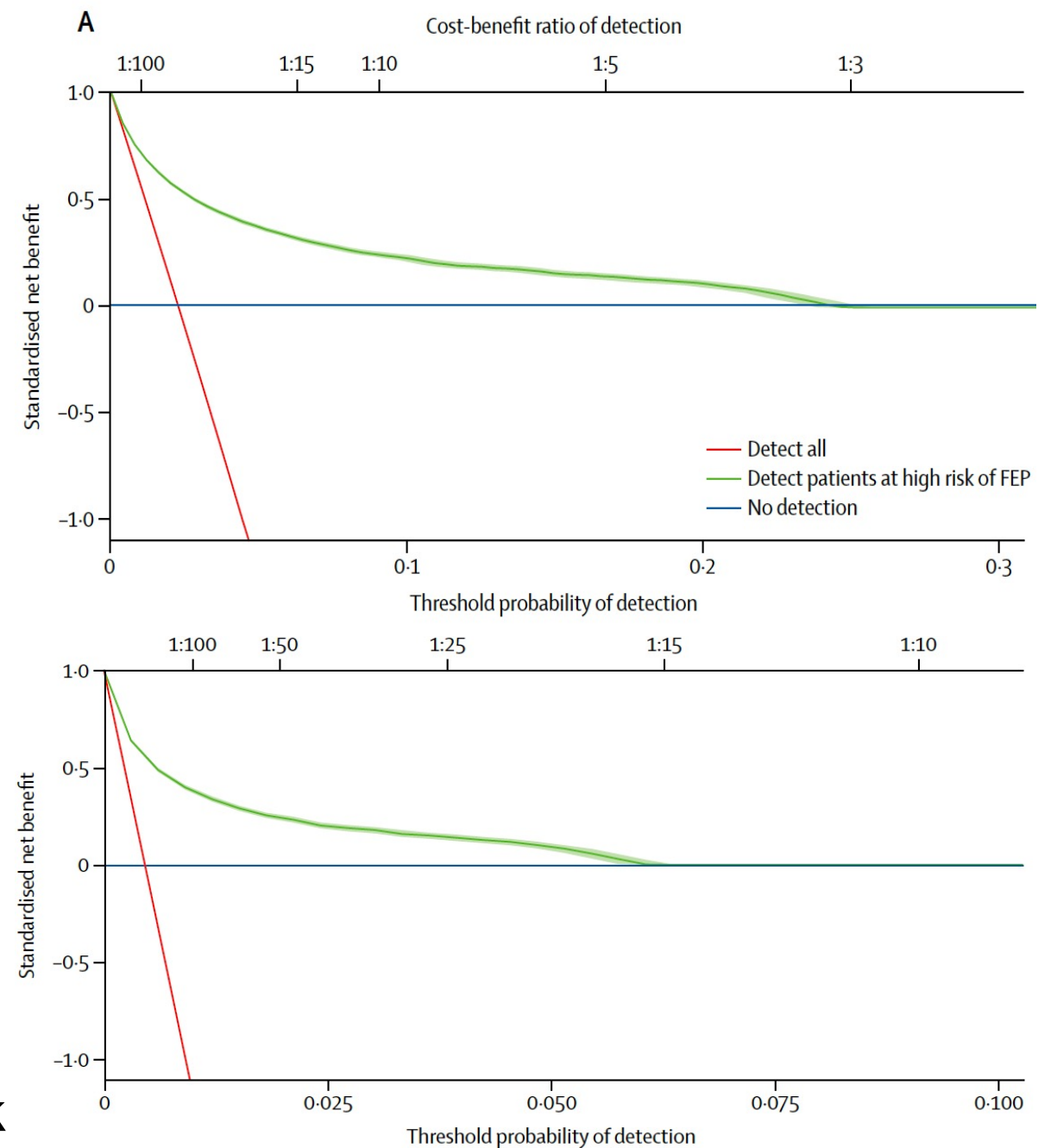
DETECT –case study



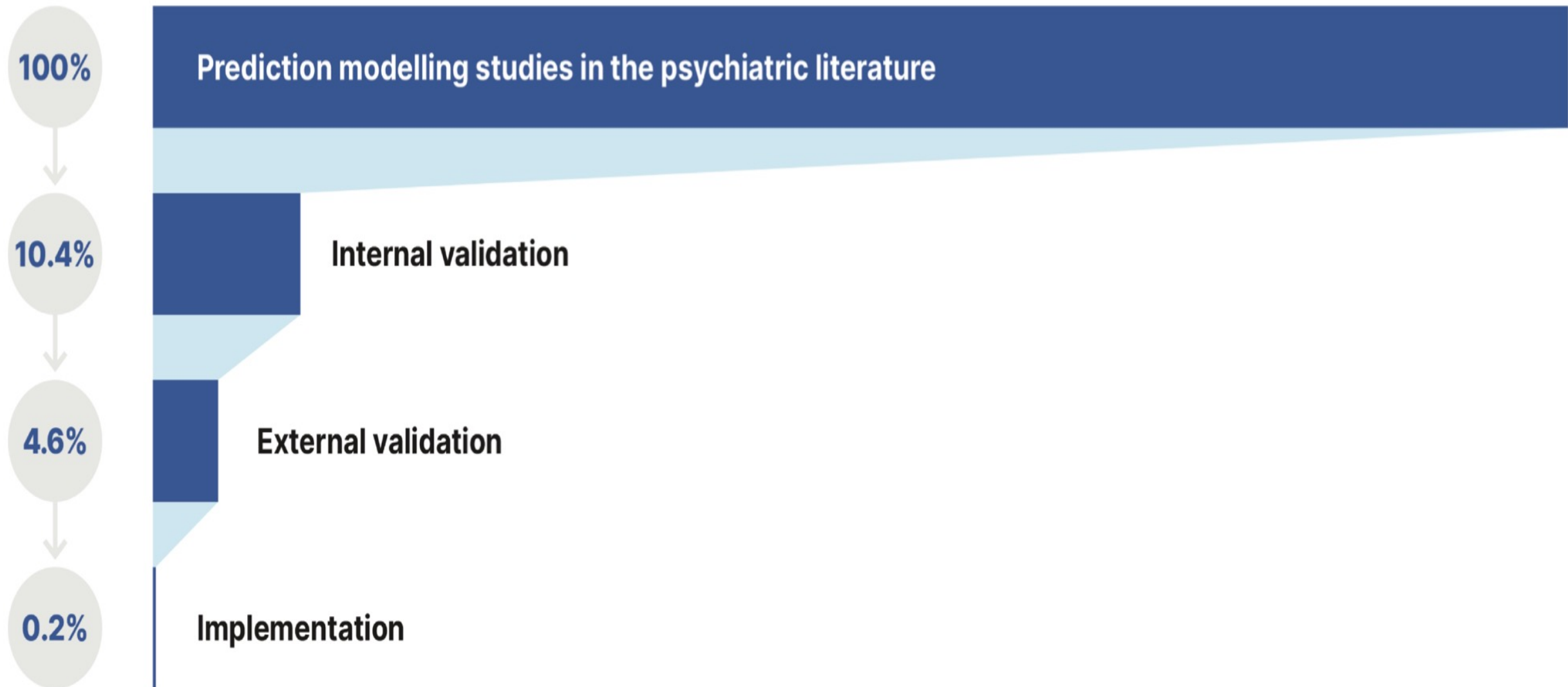
DETECT –performance



- BAC 0.72, AUROC 0.80
- Positive net benefit for cost benefit ratios $< 1:3$ (static, A) and $< 1:16$ (dynamic) risk assessment



584 prediction modelling studies: 68.2% prognostic and 13.6% predictive



IN VITRO PHASE



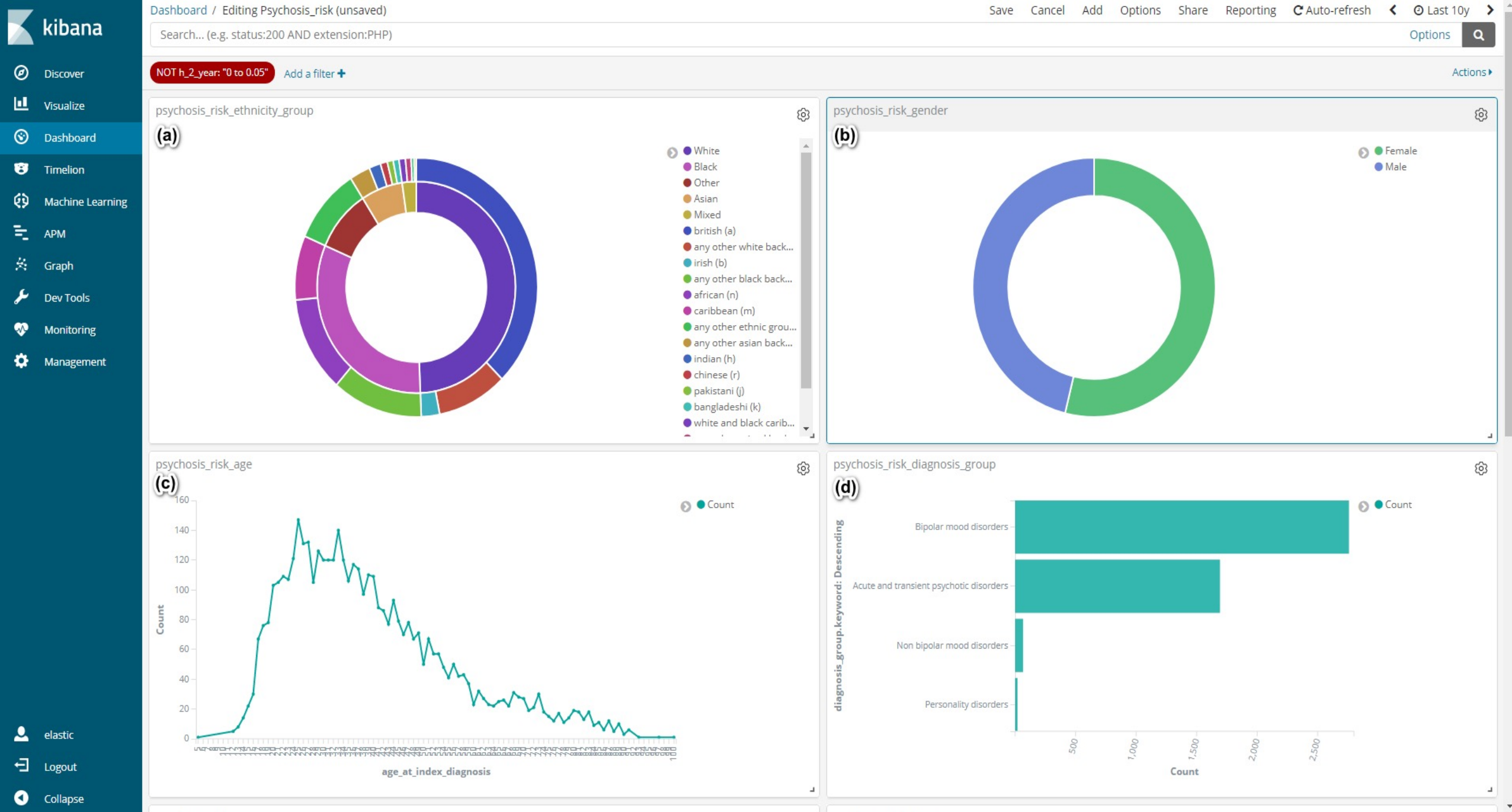
Integrated risk calculator in
local EHR for prospective
use



Consulted with patient
support groups



Consulted with local
clinicians





New patients



Automatic
screening



Alerts to
clinicians



Referral to early
detection service





Contents lists available at ScienceDirect

Schizophrenia Research

journal homepage: www.elsevier.com/locate/schres



Real-world implementation of precision psychiatry: Transdiagnostic risk calculator for the automatic detection of individuals at-risk of psychosis

Dominic Oliver^a, Giulia Spada^a, Craig Colling^b, Matthew Broadbent^b, Helen Baldwin^{a,b}, Rashmi Patel^c, Robert Stewart^{d,f}, Daniel Stahl^h, Richard Dobson^{b,d,e,g}, Philip McGuire^{c,i}, Paolo Fusar-Poli^{a,b,i,j,*}

- Governance pathway deployed
- Good clinicians/patients' qualitative endorsement
- 3722 screened in 6mo
- 77% clinicians adherent to recommendations made by the risk calculator
- 85% adherence if outreach deployed

HELP US IMPROVE YOUTH MENTAL HEALTH.

We want you to help us improve the early detection of young people experiencing mental distress by taking part in the E-Detection Tool for Emerging Mental Disorders (ENTER) study.

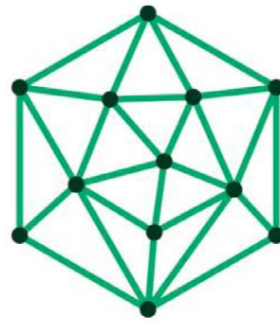
GET INVOLVED



KING'S
College
LONDON

NHS
**South London
and Maudsley**
NHS Foundation Trust

*EPIC (Early Psychosis:
Interventions &
Clinical detection) Lab*



Prevention of Mental Disorders & Mental Health Promotion

ECNP Network

- Paris
- Oxford, London
- Madrid
- Berlin, Dresden, Freiburg, Lubeck, Mannheim, Munich
- Basel, Lausanne
- Naples, Pavia
- Copenhagen, Valby
- Amsterdam, Maastricht



Powered by Bing
© GeoNames, HERE, MSFT, Wikipedia

<https://www.ecnp.eu>

