Using real-world data and AI to understand and personalize depression treatment

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INTELLIGENT HEALTH 2024

PhenoM

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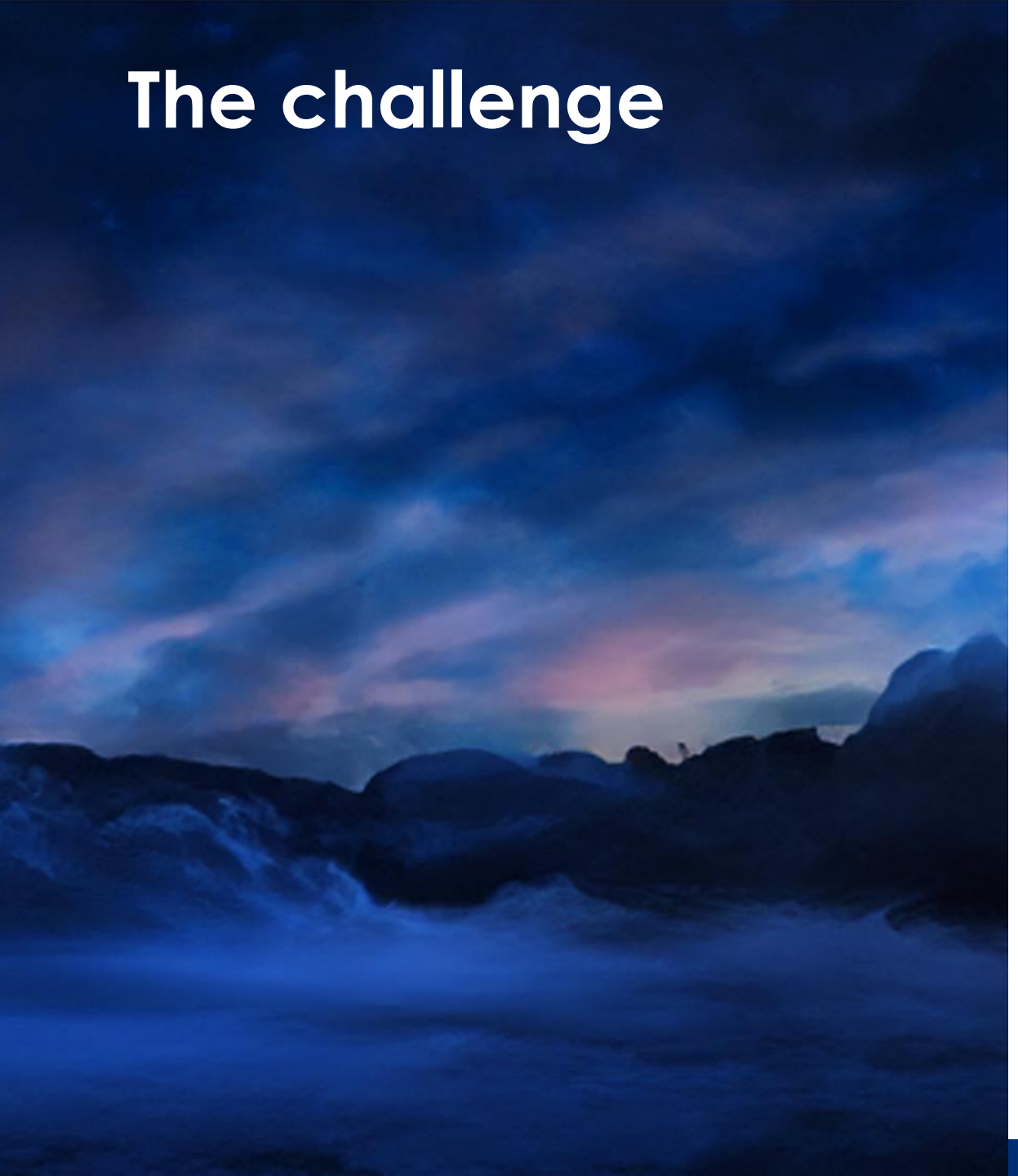
The challenge



Between **20% and 60%** of patients with major depressive disorder experience treatment resistance (TRD).

These patients need help, and can benefit from new and advanced treatments…

…but we don't always know who they are, or how to find them.

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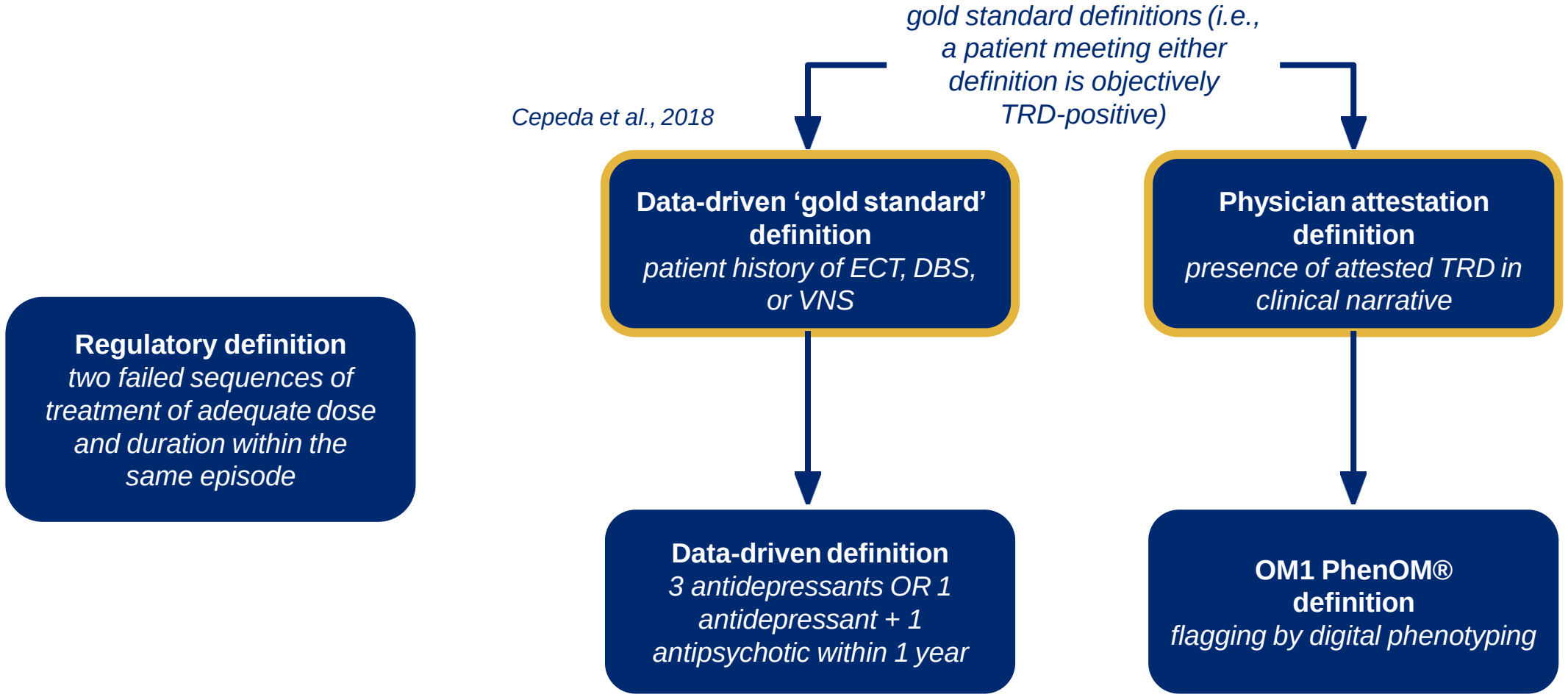
Defining TRD in real-world data

Do these definitions actually capture the same patients?



Using digital phenotyping to identify TRD

(Digital) phenotyping is the use of AI to **identify and synthesize patterns** in patients' structured health history data **associated with characteristics of interest** – isolating 'fingerprints' in the data that can be used to identify and label previously overlooked patients.

Translating patterns in the data

AI-powered digital phenotyping tools like OM'1s PhenOM® isolate signaling and highlight patients in real-world datasets. Using PhenOM, we identify complex patterning in patients' data, and **translate** it for real-world personalization.

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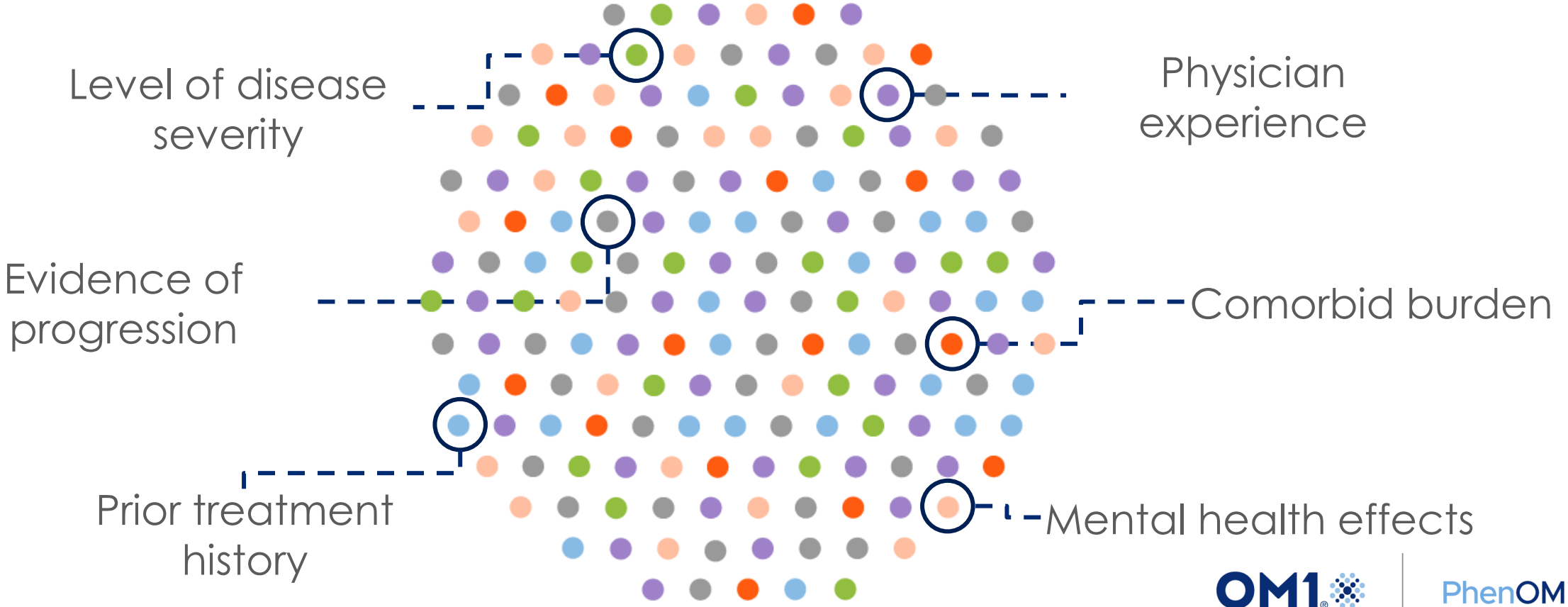
Phenotypic fingerprints

PhenOM® uses phenotypic signatures to highlight patients of interest in real-world datasets.



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Using clinical notes to establish a gold standard

We relied on psychiatrists' assessments of TRD to label a TRD-positive cohort.

- 3,771 TRD-positive patients based on qualifying physician attestation
- 15,084 non-positive patients based on presence in the MDD dataset and absence of any physician attestation of TRD
- 80%-10%-10% calibration-testing-validation split

Continue Xanax 0.5 mg PO PRN Qhs for anxiety/insomnia. [CR][LF](uses sparingly) [CR][LF][CR][LF]4. Continue Abilify to 7.5mg PO QHS for treatment resistant depression symptoms and irritability/agitation

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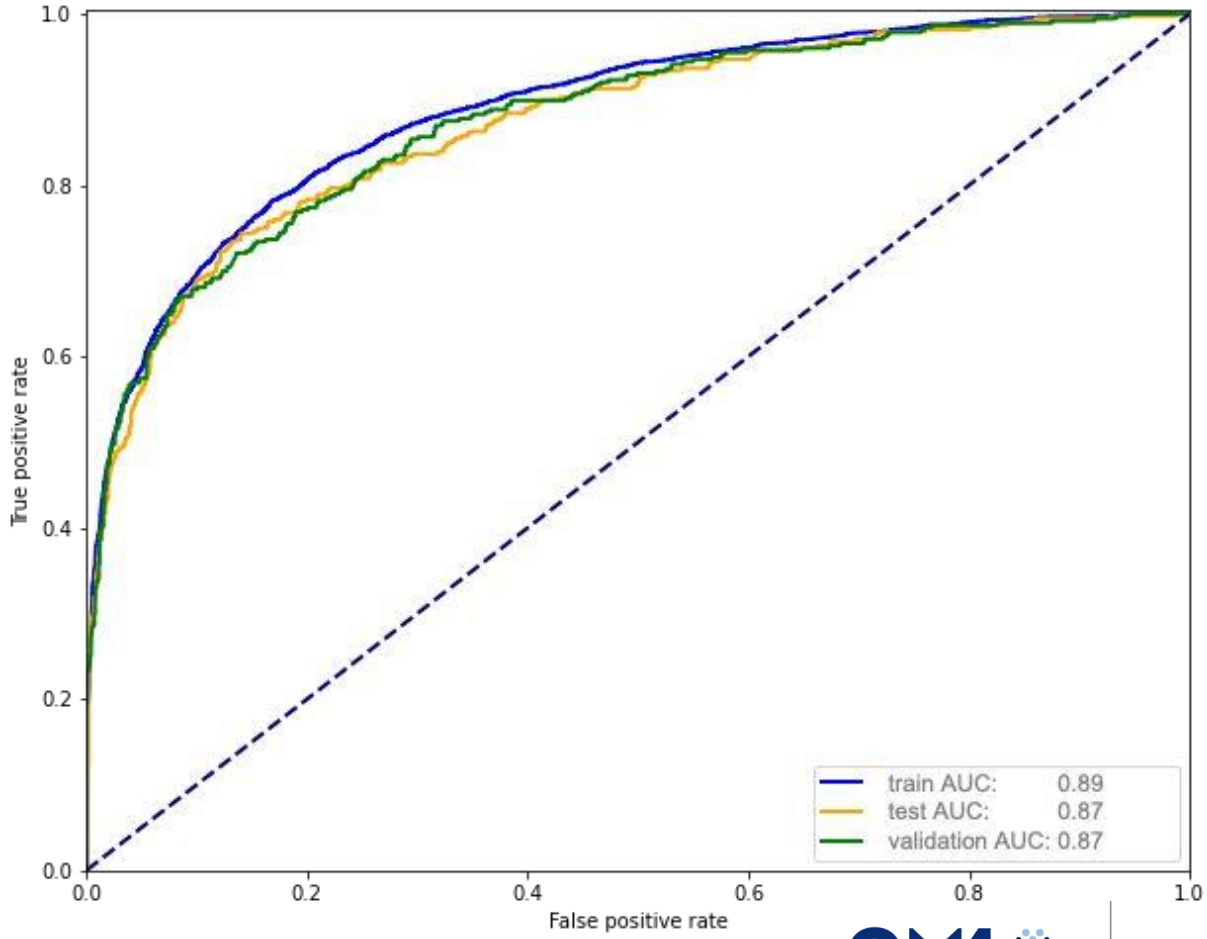
Analytic results

The TRD phenotype identified performed well in isolating TRD patients.

AUC reflects how well the model balances sensitivity and specificity: 0.5 is no better than a coin flip, and 1.0 represents a perfect model.



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Finding TRD in real-world healthcare data

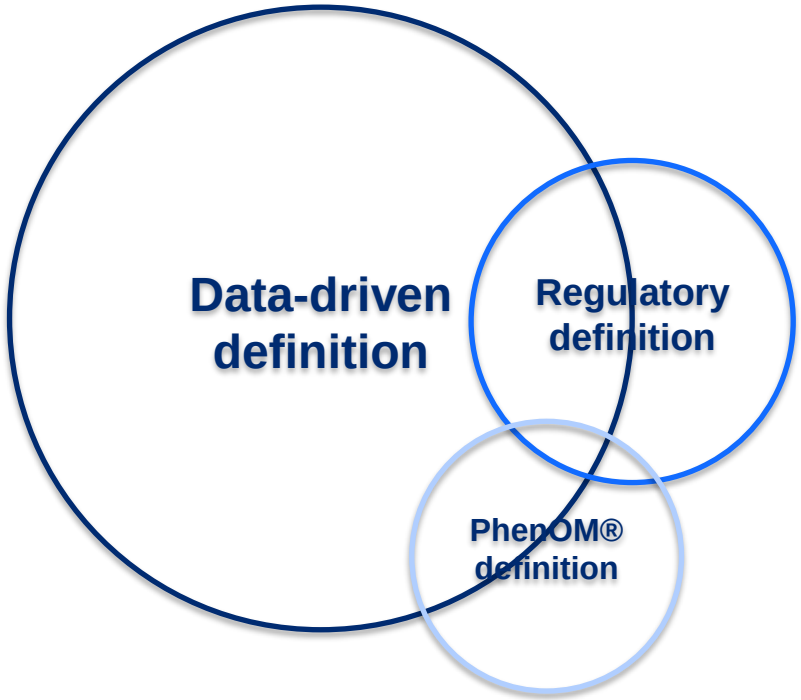
Despite a common intent of capturing TRD, these definitions tag different MDD patients!

83%
met one definition

16%
met two definitions

1%

The implication: we can label patients 'like' those psychiatrists identify as TRD-positive using PhenOM® – but these patients are not usually captured by other definitions when implemented in real-world data.



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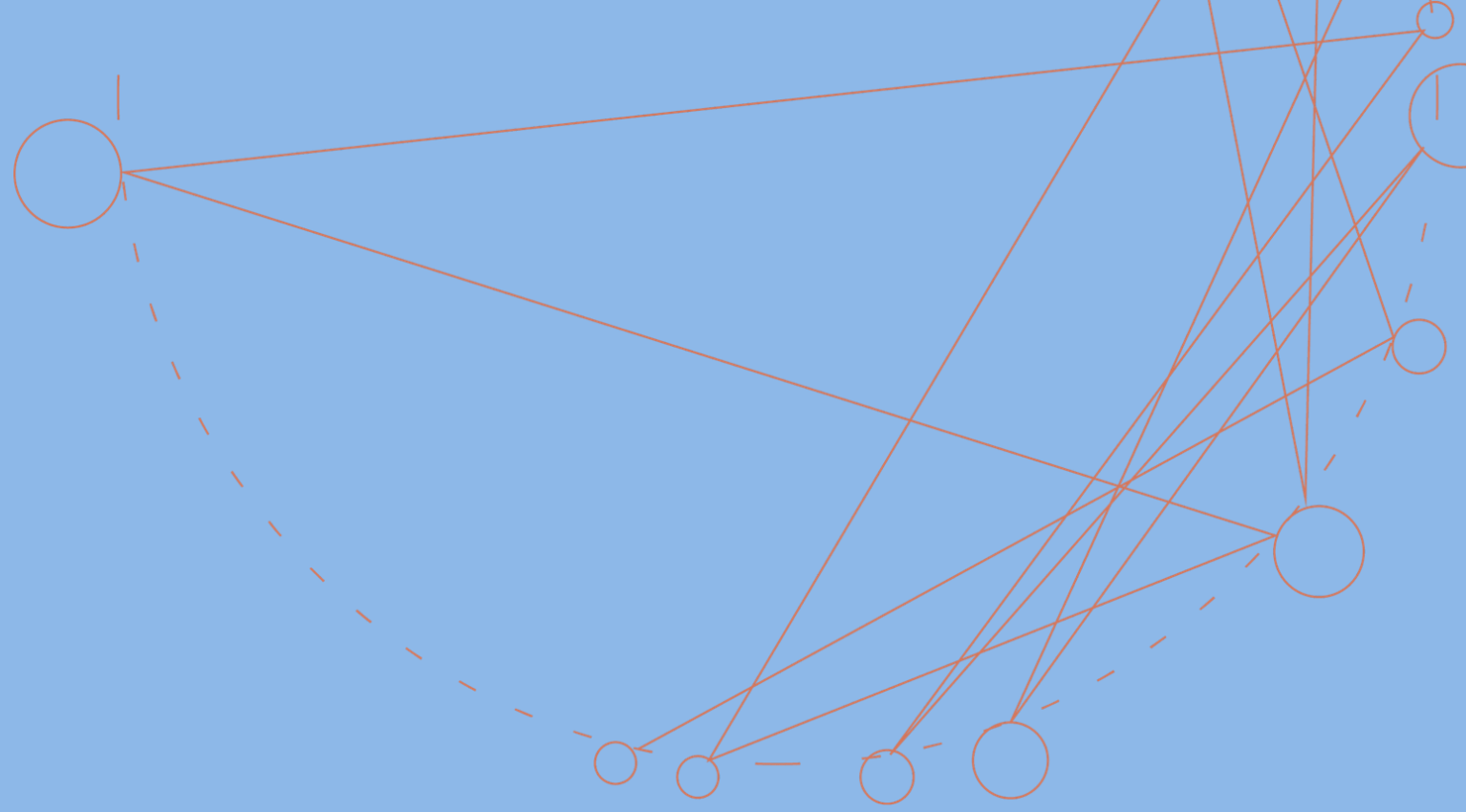
We can use existing real-world healthcare data and digital phenotyping to identify ‘hidden’ patients.

Once we can find these patients, we can accelerate access to new and effective treatment options.

This process replicates across disease areas and applications – **a new way of finding patients we couldn’t otherwise access.**

Thank you



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