# Online Calculator May Predict Individual Psychosis Risk

The overall 6-year risk of developing a psychotic disorder was 3.02 (95% confidence interval [CI], 2.88 - 3.15), which was higher than the 6-year risk for psychosis in the local general population (0.62).

In the derivation data set, 1001 patients transitioned to psychosis. The multivariable model significantly predicted psychosis onset.

Age and male sex were significantly associated with an increased risk for psychosis. In men, risk for psychosis decreased with increasing age.

Being of black, Asian, mixed, or other races/ethnicities was associated with an increased risk of developing psychosis in comparison with being white.

Compared to those with the ARMS designation, most ICD-10 mental disorders were associated with a lower risk of developing psychosis. For example, substance use disorders had a hazard ratio (HR) of 0.146, anxiety disorders had an HR of 0.107, and nonbipolar mood disorders had an HR of 0.152 (all $P < .001$).

There were two exceptions. Bipolar mood disorder was associated with a similar risk for psychosis as ARMS (HR, 0.839; $P = .31$), and acute and transient psychotic disorders were associated with a higher risk (HR, 2.682; $P < .001$).

The ARMS designation accounted for only a small proportion of transitions to psychosis (5.19%), indicating the need for psychosis prediction in secondary mental health care that goes beyond ARMS – what Dr Fusar-Poli describes as "transdiagnostic."

"This is highlighting a kind of window for missed opportunity, because 95% of patients who had developed psychosis were under the care of mental health services, but for some reason, they had never been referred

for preventive assessment and treatment."

The analysis also suggests that the use of ICD-10 categories of comorbid mental disorders such as anxiety and depression is unlikely to be clinically useful for predicting psychosis, the authors note.

In the external validation data set, there were 1010 transitions to psychosis, of which 12 (1.19%) were in the ARMS. This value, said the authors, "greatly exceeds the minimum of 100 events required for robust external validation."

The researchers built an online version of the risk calculator. It is easy to use and provides individualized estimates of risk over a 6-year period, both in percentages and graphically.

On the basis of these risks, physicians may decide on further assessment and psychosis prevention interventions, said Dr Fusar-Poli.

Psychotherapy is the gold standard first-line therapy to prevent psychosis, he said.

He noted that once psychosis develops, the possibilities for treatment are limited. That is why prevention is so important.

**"Woefully Inadequate"**

Commenting on the findings for *Medscape Medical News*, Jeffrey A. Lieberman, MD, past president of the American Psychiatric Association and chair, Department of Psychiatry, Columbia University Medical Center, New York City, was not impressed.

Dr Lieberman noted that this calculator follows on the heels of an American version – developed from data in the North American Prodrome Longitudinal Study (NAPLS).

Although the two risk calculators are "well-intended efforts," both "are woefully inadequate," said Dr Lieberman.

One of the problems with the NAPLS calculator is that it requires assessments that are not routine in most clinical evaluations – for example, neurocognitive and stress response assessments, said Dr Lieberman.

Developers of the current risk calculator use a "really limited" number of variables, such as age, sex, and race, he said. "If you're going to try to develop an instrument, a screening technique, why would you restrict yourself to that?"

He noted that the average age of patients was 33 years, whereas "most high-risk populations are in their late teens or early 20s."

Both calculators are not sufficiently supported by the data to be very useful, added Dr Lieberman. "They don't really provide a level of predictive validity that would be needed to make it clinically applicable."

Risk predictor profiles that use demographic features and clinical variables such as types of expected symptoms "fall short of having sufficient precision and reliability to predict without too many false positives who is going to become ill with a psychotic disorder in the foreseeable future," said Dr Lieberman.

"My feeling is that we have taken phenomenology and demographic variables as far as we can in terms of this identification process. What we really need is a laboratory measure or a biomarker that can provide additional diagnostic confirmation."

Dr Lieberman believes that an imaging procedure may in the future be able to "confirm and predict" psychosis. Such a procedure would involve measuring hyperactivity in the CA1 region of the hippocampus, which research has linked to psychosis risk.

*Dr Fusar-Poli has disclosed no relevant financial relationships.*

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Researchers have developed an individualized psychosis risk calculator psychiatrists can use in the setting of secondary mental health care.

The calculator has been shown to identify patients at risk for psychosis who may be missed using the At Risk Mental State (ARMS) designation.

"The problem isn't that we don't know how to assess or prevent psychosis; the problem is detecting those patients at risk, and that's where this risk calculator may be particularly useful," lead study author Paulo Fusar-Poli MD, PhD, Department of Psychosis Studies, Institute of Psychiatry, Psychology and Neurosciences, London, United Kingdom, told *Medscape Medical News*.

"If we can do that, we can extend the benefits of psychosis prevention and therefore improve the outcome of patients with severe psychiatric conditions," he added.

Dr Paulo Fusar-Poli

The study was published online March 29 in *JAMA Psychiatry*.

**Prevention Is Critical**

Although not an *International Classification of Disease*, 10th edition (ICD-10) diagnosis, ARMS has been used by psychiatrists for about 20 years to identify people experiencing brief or mild perceptual or functional changes that may be early signs of psychosis.

It can reliably identify young people at increased risk for psychotic disorders such as schizophrenia, but the overall clinical impact of ARMS on psychosis prevention in secondary mental health care is not clear.

To develop and validate their model, researchers identified 91,199 patients who accessed South London and the Maudsley (SLaM) National Health Services Foundation Trust services from 2008 to 2015 and who had received a first index primary diagnosis of a nonorganic and nonpsychotic

mental disorder and who did not develop psychosis within the next 3 months.

The investigators included 33,820 patients in a derivation data set, which included patients from two boroughs, and created a validation data set of 54,716 patients from all other boroughs.

There were some socioeconomic differences between these data sets, particularly with respect to race/ethnicity and index diagnosis, but these were relatively minor, said Dr Fusar-Poli.

The outcome was risk of developing any psychotic disorder. Predictors, including index diagnosis, age, sex, race/ethnicity, and age by sex interaction, were preselected on the basis of previous meta-analytical clinical knowledge. Continue Reading