

Improved early psychosis detection system may halve risk in young people

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Doctors have developed a new data mining method to detect many young people with emerging psychosis. The new methods, based on advanced data mining to pick up early risk sign from schools, hospitals, and general doctors, will be presented at the ECNP virtual congress, and is in press with a peer-reviewed journal *Schizophrenia Bulletin*.

Psychosis is a condition which causes you to lose touch with reality, causing you to suffer from hallucinations or delusions. There are a variety of possible causes, including migration and social stress, trauma,

[substance abuse](#), etc. It represents a significant care burden, affecting about 20 million people and costing Europe around €94 billion European every year (2011 estimate).

Clinical experience has shown that the best way to manage it is to stop it developing. Over the last 25 years doctors have developed ways of detecting young people at risk of developing psychosis and predicting which young people might go on to develop the disorder, and so have been able to take steps to lower risk. However the way clinicians were detecting young people was not systematic and may have missed many at-risk people. Now doctors in the UK have developed new data mining methods which can potentially detect most people who are at risk of developing psychosis. This, in turn would allow to offer them preventive psychological interventions that can halve their risk of developing full-blown psychosis.

Research leader Professor Paolo Fusar-Poli, of the institute of Psychiatry at King's College, London, said "Prevention is the most promising way of improving [mental health](#) of young people. This generation's mental health is particularly under stress, especially facing the ongoing COVID-19 worry, and we need to intervene urgently. The future for those at risk of psychosis is to intervene before the disorders strike".

"We have developed a data mining method (using Natural Language Processing), to search [medical records](#) for those at risk of progressing to psychosis. Many medical records are fairly unstructured, with information of mental health being hidden in sections which do not allow systematic research. Our data-mining system does a more complete search of the records people who have been referred to hospital (secondary care), looking for keywords such as weight loss, insomnia, cocaine, guilt, etc. We can look for 14 different terms which we then evaluate for the risk of psychosis. At that point patients might

be invited for a one-to-one interview. We have found that prevention can halve the risk of psychosis developing".

The systems have evaluated 92,151 patients over a long follow up period. They were able to confirm that their method worked well to detect young people at risk, although Professor Fusar-Poli cautioned that "these results need further replication in other countries before they can enter clinical routine but they look very promising. Replication will be facilitated by international research consortia such as the ECNP-funded Prevention of Mental Disorders and Mental Health Promotion Network".

Prof. Fusar-Poli suggested that detection of these young people is the first step towards prevention. Preventive interventions in these people can translate in several benefits:

"This translates into real benefits. Although the initial cost for establishing specialised services detecting young people at risk of psychosis is greater, intervening before the onset of psychosis is associated with fewer treatments, fewer days in hospital, in addition to the tangible and social health benefits, meaning that the NHS saved around £1000 per patient diagnosed. Our detection systems can extend these benefits to many other young people who might be at risk of psychosis"

Professor Fusar-Poli will present the work while chairing a session on the prevention of mental disorders (see below) at the ECNP congress.

He continued "We have been working with the ECNP special group on Prevention of Mental Disorders and Mental Health Promotion, and with the EU-Funded European Brain Research Area (EBRA) to set up a Europe-wide system of advance warning for [young people](#) at risk of psychosis. It is essential that we bring the best expertise to bear on this

problem, and we can all learn from the experience of others"

Commenting, Professor Andreas Meyer-Lindenberg (Mannheim), member of the ECNP executive board said: "This work is an excellent example of the transformative role of artificial intelligence and big data processing in psychiatry. While much attention in this field has been focused on biological data and biomarkers, this result shows the gains that can be made if the wealth of written information that clinicians produce in their daily work is mined using innovative approaches."

Professor Meyer-Lindenberg was not involved in this work.

More information: Using natural language processing on electronic health records to enhance detection and prediction of psychosis risk, *Schizophrenia Bulletin*, 2020.

Provided by European College of Neuropsychopharmacology

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