

# Genetic variation increases risk of metabolic side effects in children on some antipsychotics

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Researchers have found a genetic variation predisposing children to six-times greater risk of developing metabolic syndrome when taking second-generation anti-psychotic medications. Metabolic syndrome is a cluster of conditions that are risk factors for cardiovascular disease. The study showed a close association with two conditions in particular: high blood pressure and elevated fasting blood sugar levels, which is a precursor to diabetes. The research is published today in the medical research journal *Translational Psychiatry*.

"This is the first report of an underlying biological factor predisposing children to complications associated with second-generation anti-psychotic medication use," says Dr Dina Panagiotopoulos, study co-author, clinician scientist at the Child & Family Research Institute (CFRI), pediatric endocrinologist at BC Children's Hospital, and assistant professor, Department of Pediatrics, University of British Columbia (UBC).

"It's concerning because these children take medications to treat a chronic disease – mental illness – and then develop risk factors for a second chronic disease," says Dr. Angela Devlin, study co-author, CFRI scientist and assistant professor in the UBC Department of Pediatrics.

Second-generation anti-psychotics are prescribed to approximately 5500 children and youth in British Columbia for psychotic disorders, mood

and anxiety disorders, attention deficit hyperactivity disorder, autism spectrum disorders, adjustment disorders and substance abuse. Of these medications, the two most commonly prescribed in B.C. are quetiapine (Seroquel) and risperidone (Risperdal).

For the study, researchers assessed 209 children who were inpatients between April 2008 and June 2011 at the Child & Adolescent [Psychiatry](#) Department at BC Children's Hospital, an agency of the Provincial Health Services Authority. Their average age was 13 years, and 105 of the children were treated with second-generation anti-psychotics while 112 did not use these drugs. DNA analysis showed that eight per cent of children from both groups had a [genetic variation](#) called C677T on the MTHFR gene. Children with the MTHFR C677T variant who used these medications were six-times more likely to have metabolic syndrome.

The researchers targeted the MTHFR C677T variant because it is known to be associated with [metabolic syndrome](#) in adults who have schizophrenia, and with cardiovascular disease in adults who don't have psychiatric illness.

Dr. Devlin and Dr. Panagiotopoulos say their discovery is an important step to preventing and managing metabolic complications associated with second-generation antipsychotic medications. It is critical to reduce these risks in childhood because adults with mental illness have a 19 per cent increased mortality rate that is largely due to cardiovascular disease risk.

The MTHFR gene is involved in metabolizing the B-vitamin folate.

"We now plan to assess B vitamin status and dietary intake in children who take these medications to gain a better understanding of this association," says Dr. Panagiotopoulos.

**More information:** This study was funded by CFRI and the Canadian Diabetes Association. Dr. Panagiotopoulos's previous research on the metabolic side effects of anti-psychotics in children led to national recommendations for clinicians on monitoring and managing the care of children who take these medications. The recommendations were published in the *Journal of the Canadian Academy of Child and Adolescent Psychiatry* in August 2011 and in *Pediatrics and Child Health* in November 2011.

Provided by Child & Family Research Institute

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