Disclosure: No significant relationships.
Keywords: DNA methylation; Neuropsychiatry; biomarker; Dosage

EPV1033

Predicting Cardiovascular Disease in Psychiatric Patients: Machine Learning with Electronic Health Records

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Introduction: Cardiovascular disease (CVD) causes staggering losses in quality adjusted life years worldwide.[1] Among patients in the Danish psychiatric hospital setting, heart disease is associated with a decrease in life expectancy of 5.1 years.[2] The causes underlying this association are likely manifold. For example, severe mental illness is associated with unhealthy lifestyle.[3] Furthermore, psychiatrists may focus predominantly on the treatment of mental illness and have less emphasis on detection and prevention of physical illness.[4] If patients at elevated risk of CVD are pointed out automatically, this may lead to better preventive medicine.
Objectives: To predict which patients develop cardiovascular disease using machine learning.
Methods: We obtained data on all psychiatric hospital contacts in the Central Denmark Region since the initiation of the current EHR system (MidtEPJ). These span from 2011 to 2021 and cover 120,000 patients, of which 3,000 patients developed severe CVD (stroke or coronary event) follow-up. We will train a variety of models (random forests, SVM, deep neural nets) to predict CVD within one year from a planned contact to hospital.
Results: The modelling is currently underway, intermediary results are expected in January.
Conclusions: We explore whether predicting CVD is feasible using state-of-the-art technologies and a uniquely detailed dataset. This may pave the way for machine learning to act as a clinical support decision system, since we're only training on data that is available in a live, clinical context.
References
1: Khan 2019
2: Erlangsen 2017
3: Scott 2011
4: Fagiolini 2009

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EPV1034

Precision Medicine & Pharmacogenomics: Personalized Medication in Neuropsychiatric Disorders using AI and telepsychiatry

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Introduction: The term "personalised therapy" refers to the use of genetic data to better treat or determine the predisposition to a specific genetic disease, with the ultimate goal of improving quality of life. Telepsychiatry and AI are key to support it..
Objectives: Determine benefits of pharmacogenomic analysis (PGx) in CNS diseases regarding: - cost effectiveness - adverse drug reactions - reduced hospitalizations -drug interactions - efficacy - quality of life - "trial and error" approach avoidance
Methods: Questionnaires before and after the treatment provided using PGX tests Telepsychiatry for consultation along face to face sessions were conducted. Artificial intelligence in data analyses
Results: Benefits of pharmacogenomic analysis (PGx) in CNS diseases: - cost effective savings - prediction and prevention of adverse drug reactions - reduced hospitalization due to ineffectiveness of medication - reduced risk of drug interactions - more effective treatments - better quality of life for the patient - with the analysis (PGx) the "trial and error" approach is avoided
Conclusions: In a number of studies in patients with mental disorders, pharmacogenomic analysis (PGx) has led to an increase in both clinical response and remission, better tolerated treatments, fewer side effects, and reduced treatment costs. In conclusion, pharmacogenomic analysis is ideal for patients with CNS diseases: a) Not responding to treatment b) Who in their history have many relapses and hospitalizations c) They show serious side effects d) Who do not comply with the treatment e) Taking many medications and suffering from serious illnesses f) Who are wary of taking psychotropic drugs

Disclosure: No significant relationships.
Keywords: Precision Psychiatry; e-mental health; telepsychiatry; Artificial intelligence

EPV1035

Clinical effects of Cariprazine and their relationship with polymorphisms of dopamine and serotonin receptors: preliminary results from a prospective study on schizophrenia and bipolar disorder

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Introduction: Cariprazine (CAR) is a D2, D3, 5HT1A receptor partial agonist and a 5HT2A, 5HT2B antagonist, used to treat Schizophrenia and Bipolar disorder. Interindividual variability in therapeutic and side effects of antipsychotics is difficult to predict, due to non-genetic and genetic factors. Single nucleotide polymorphisms (SNPs) are the main source of genetic variability, the ones in dopamine and serotonin receptors to which CAR binds are indeed likely to determine response to treatment.
Objectives: The aim of the study is to define a relationship between CAR clinical efficacy and SNPs in dopamine and serotonin receptors genes of patients affected by schizophrenia and bipolar disorder.
Methods: We recruited 16 patients starting a monotherapy with CAR, evaluated at baseline and after 2, 4 and 8 weeks through BPRS rating scale. We selected a panel of SNPs in DR2, DR3, 5HT1A and 5HT2A receptors, with a frequency higher that 10% in Caucasians