Introduction: The comorbidity between cardiometabolic and psychotic disorders develops early. This is a crucial window of opportunity to reduce excess morbidity and mortality. Recently, a cardiometabolic risk prediction algorithm for young people with psychosis, the psychosis metabolic risk calculator (PsyMetRiC) was developed and externally validated in the UK. However, its international transportability is unknown.
Objectives: We performed the first international validation study of PsyMetRiC in Lausanne, Switzerland, and examined whether additional variables (clinical and/or genetic) may improve the predictive performance of the algorithm
Methods: We included people aged 16-35y with psychosis from the PsyMetab cohort, who did not have MetS at baseline, and who had 1-6y follow-up data. The PsyMetRiC partial (age, sex, ethnicity, body mass index, smoking status, and prescription of a metabolically-active antipsychotic) and full (also including high-density lipoprotein and triglycerides) algorithms were applied. Predictive performance was assessed using measures of discrimination (C-statistic) and calibration (calibration plots). Recalibration steps included refitting the intercept and/or slope if necessary. Additional variables (e.g. speed of weight gain, polygenic risk scores) were added to the model and predictive performance was reassessed.
Results: We included 545 participants. The discrimination performance of both PsyMetRiC algorithms was good (C>0.75), and calibration plots showed good agreement between observed and predicted risk. Additional analyses to be conducted.
Conclusions: PsyMetRiC is likely to be generalizable for use in Switzerland, suggesting that PsyMetRiC may also be suitable for use in other European populations. While additional international validations are required, these findings are an encouraging step toward an international cardiometabolic risk prediction algorithm for young people with psychosis.

Disclosure: No significant relationships.
Keywords: Psychosis; risk prediction; young adults; cardiometabolic

EPV1031

Personalization of virtual reality for treatment of mental disorders by using a unified morphometric indicator

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Introduction: The search for approaches to creating a precision personalized virtual reality for the treatment of mental disorders is urgent. (Belkasim, 2005; Park M.J. et all., 2019).
Objectives: To develop a new approach to personalize the form of virtual reality content to the neurophysiological and anatomical parameters of the patient's brain, to improve the quality of precision VR therapy for mental disorders.
Methods: The MRI study was carried out on a GE Optima 450w apparatus with a magnetic field induction of 1.5 Tesla. We used a radio frequency coil for the head. T1-weighted images were obtained with a field of view (FOV) of 24.4 x 14.8 cm and a slice thickness of 0.5 mm. Later, the images were built in three standard mutually perpendicular planes. Measurements were carried out using standard tools on an eFilm 4.0 WorkStation. FreeSurfer 4.5.0 was used to calculate the surface area of the cerebral hemispheres. To estimate the surface area of the room and the design of the shape in VR closed environment Autodesk AutoCAD 2018.
Results: A new approach to personalization of the form of virtual reality content has been developed (Patent No. RU (11) 2 668 697 (13) C1, 2018;Patent No. RU (11) 2 753 234 (13) C1, 2020). It is based on the use a single morphometric indicator for a closed VR space and brain.
Conclusions: Research and applied analysis of the developed approach is required. The development of this area will make it possible to create precision products for the therapy and rehabilitation of mental disorders.

Disclosure: No significant relationships.
Keywords: treatment of mental disorders; precision virtual reality; personalized virtual reality; a unified morphometric indicator

EPV1032

Genetic and epigenetic variations in BDNF gene involved in Anorexia Nervosa

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Introduction: Anorexia nervosa (AN) is a chronic psychiatric disorder resulting from abnormal eating habits with a high prevalence (0.5%). AN involves genetic and epigenetic factors supporting that AN is a metabo-psychiatric disorder. One candidate gene for AN, validated by meta-analyzes, is *BDNF* which encodes the brain-derived neurotrophic factor. BDNF negatively modulates the central control of food intake and its injection in rodents induces weight loss and anorexia. In humans, we observed an association of its functional variant Val66Met/rs6265 and electrodermal response to images of thinness suggesting an association between rs6265 and a reward effect of weight loss in AN.
Objectives: This work study the impact of the functional polymorphism at risk rs6265, epigenetic variations in DNA methylation of *BDNF* gene and consequences on the concentrations of BDNF in AN patients.
Methods: DNA was isolated from 24 AN patients and 48 controls. DNA methylation was measured for sites spanning the BDNF gene using Infinium HumanMethylation450 BeadChip technology. The genotyping of rs6265 was performed by Taqman-SNP assay. The BDNF was dosaged by ELISA from plasmas.
Results: We observe that several sites are significantly hypermethylated in AN patients compared to controls. AN patients show significantly higher BDNF levels than controls. Finally, this BDNF concentration is significantly higher in AN carrying the risk Met66 allele.
Conclusions: This work demonstrates the effects of genetic and epigenetic variations of *BDNF*, which could constitute relevant diagnostic biomarkers of AN, and their likely consequences in the pathophysiology of AN. *This work was supported by the Nestlé Foundation.*

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

Disclosure: No significant relationships.

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