Submitter Name: Maria Niarchou
Submitted e-mail: maria.niarchou@vumc.org
PI Name: Lea K. Davis
PI email: lea.k.davis@vumc.org

Identifying the medical phenome of patients with a prescription of buprenorphine in the Electronic Health Record (EHR) and the role of genetic risk

Maria Niarchou[1], Sandra Sanchez-Roige[2,4], David Marcovitz[3], Lea K. Davis[1,4,5,6,7]

[1]Vanderbilt Genetics Institute, Vanderbilt University Medical Center; [2]Department of Psychiatry, University of California San Diego; [3]Division of Addiction Psychiatry, Vanderbilt University Medical Center; [4]Division of Genetic Medicine, Department of Medicine, Vanderbilt University Medical Center; [5]Department of Biomedical Informatics, Vanderbilt University Medical Center; [6]Department of Psychiatry and Behavioral Sciences, Vanderbilt University Medical Center; [7]Department of Molecular Physiology and Biophysics, Vanderbilt University

Background: For patients with opioid use disorder (OUD), previous research on the impact of co-occurring medical, psychiatric and other substance use disorders (SUD) on buprenorphine treatment duration (BTD) has yielded mixed results. It is also unknown whether polygenic risk scores (PRS) for Alcohol Use Disorder predict BTD.

Rationale: We examined the medical and psychiatric comorbidities of individuals with a buprenorphine prescription that lasted for less than a year (N=7,786) compared to individuals with a buprenorphine prescription that lasted for more than a year (N=1,463) in Vanderbilt's electronic health record (EHR). We generated PRS for Problematic Alcohol Use (PAU) trained on summary statistics from the latest PAU genome-wide association study (N=435,563) and applied them to 985 individuals that had been prescribed buprenorphine and had genotype data available from the Vanderbilt Biobank.

Aims: Examine the association between medical and psychiatric comorbidities and BTD and whether PRS for PAU is associated with BTD.

Results: 262 medical diagnoses were associated with a longer duration of buprenorphine prescription, including substance use and other addictive disorders (OR=2.0, p=2x10^{-197}), mood disorders (OR=1.74, p=7.6 x 10^{-123}), and chronic pain (OR=1.8, p=1.89 x 10^{-74}). The duration of buprenorphine prescription in years was also significantly associated with higher PRS of PAU (OR=1.18, p=0.004).

Discussion: Co-occurring psychiatric and substance use disorders are associated with increased BTD in this cohort, and genetic liability for alcohol use disorder was also associated with longer treatments.