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1. Implicit emotion regulation across the lifespan of patients with bipolar disorder		
Presenting Author:	Alexandra Adamis	Brigham & Women's Hospital

Implicit emotion regulation across the lifespan of patients with bipolar disorder

Alexandra M. Adamis BS1*; Caitlin Millet, PhD1; Candice Roquemore Bonner, MS1; Alexandra A. Corrigan MD1; Stephan T. Palm, BS1; Faith M Gunning PhD2; Katherine E. Burdick PhD1

1 Mood and Psychosis Research Program, Department of Psychiatry, Brigham and Women's Hospital, Harvard Medical School

2 Department of Psychiatry, Joan & Sanford I. Weill Medical College of Cornell University, New York

* presenting author

Background: Emotion regulation refers to the ability to flexibly and dynamically respond to affectively-valenced stimuli in the service of goal-directed behavior. Emotion regulation is intricately linked to a person's well-being and state of mental health. A substantial body of evidence suggests that emotion regulation improves across the lifespan and that a positivity effect, or a switch from a negative to a positive implicit attentional bias, emerges sometime in mid-to late-life. Bipolar disorder is defined by emotion regulation deficits, including an exaggerated, mood-congruent negativity bias. Little is known about emotion regulation across the lifespan in patients with bipolar disorder. In this study, we explored the hypothesis that a negativity bias will persist across the lifespan for individuals with bipolar disorder, such that they do not experience the normative positivity effect as they age. Methods: This was a cross-sectional study in 55 healthy controls and 215 affectively stable patients with bipolar disorder, ages 18-65, with a mean age of 43.43 (SD=12.05). Participants were administered the Structured Clinical Interview for DSM-IV to confirm diagnosis of bipolar disorder, and the Clinical Global Impression of Severity in Bipolar, Young Mania Rating Scale, and Hamilton Rating Scale for Depression to assess affective stability. Participants completed a neurocognitive battery including the Cambridge Neuropsychological Test Automated Battery Emotion Recognition Task to assay implicit emotion regulation. The sample was evaluated across three age cohorts to represent early (20-40 years; n=86); mid-(41-50 years; n=57) and late life (51-65 years; n=72). Using a multivariate ANOVA, these groups were analyzed by age cohort to compare scores in the happiness and sadness subsections of the Emotion Recognition Task. Results: We found a significant main effect of age on the recognition of sadness ($p=.006$), but not happiness. Consistent with a negativity bias in younger adults, both patients and controls in the younger cohorts performed better on negative trials relative to positive trials. This negativity bias decreased slightly with age. We found a differential trend for positive stimuli, with control subjects evidencing a positivity effect with age – a steep and specific increase in capacity to recognize happy faces in late life ($p<0.05$). This trend was not observed in the bipolar disorder patients. There was a significant interaction effect between diagnosis and age, only for the recognition of happiness ($p=.021$). Independent of valence and across all mood states, albeit dependent on age, patients with bipolar disorder exhibited enhanced attentional interference by all emotional stimuli. Conclusions: Results showed that negative stimuli are more salient in patients with bipolar disorder than in healthy controls. This may contribute to the onset and maintenance of mood episodes, as patients are less capable of shifting their attention away from perceived negative stimuli and experiences. On the other hand, as healthy individuals aged, they tended to assign greater salience to positive stimuli. The capacity to attend to affectively salient stimuli appeared to be impacted by the availability of regulatory resources. From a clinical standpoint, this demonstrates a clear and relevant understanding of cognitive changes in aging patients with bipolar disorder that may be future targets for intervention.

2. Subjective Experiences and Beliefs Related to Intravenous Ketamine for Treatment Resistant Depression: A Preliminary Qualitative Analysis

Presenting Author: Ellie Ahearn University of Michigan

Subjective Experiences and Beliefs Related to Intravenous Ketamine for Treatment Resistant Depression: A Preliminary Qualitative Analysis

Authors: Ellie Ahearn, Daniela Lopez, Adrienne Lapidos, Cortney Sera, Erica Vest-Wilcox, and Sagar Parikh

Abstract

Introduction: Intravenous (IV) ketamine holds great promise for improving outcomes in treatment-resistant depression (TRD). However, patient experiences and attributions related to the subjective experience of obtaining IV ketamine for TRD are not fully understood. A better understanding of TRD patients' experiences with ketamine – including those whose depression remitted fully, partially, or not at all – can help clinics develop best practices in setting patients' expectations and guiding their experiences before and after obtaining infusions. The aim of the current study is to characterize the subjective experiences and expectations with IV ketamine of TRD full remitters, partial remitters, and non-remitters in order to provide best practice guidance for clinics planning to offer IV ketamine for TRD.

Methods: The current qualitative study, entitled the "Talk-K Study," is ancillary to the "Bio-K Study," a biomarker development study analyzing response of intravenous racemic ketamine delivered at 100- or 40-minute durations at .5mg/kg for TRD across four national sites. To develop a better understanding of patient subjective experiences in Bio-K, the Talk-K investigators developed an in-depth, nine-item interview which was conducted after the participants completed the main study across all four sites. Participants were interviewed between 8 and 49 months after participating in Bio-K. One qualitative researcher trained two additional research staff members to interview the participants alongside note-takers. After the study team reviews all transcripts and discusses preliminary codes, a codebook will be developed based on study aims and emerging data and applied to approximately 3-5 transcripts by two coders. Discrepancies will be resolved by discussion and consensus, and the remaining transcripts will be coded by one coder. Codes will then be reviewed to discover themes. Coders will be blind to the remission status of interview participants. After coding, the participants will be characterized as full remitters, partial remitters, or non-remitters based on MADRS scores and self-report, and these categories will be compared for thematic differences.

Results: Of the 20 participants interviewed to date, 9 are full remitters (less than or equal to nine on MADRS), 4 are partial remitters (50% reduction on MADRS scores), and 7 are non-remitters. The study team plans to continue to recruit partial and full remitters, as non-remitter themes have reached saturation. Preliminary topics based on review of transcripts include hope, expectations (both realistic and unrealistic), and patient attributions for ketamine's mechanism of action (e.g., that the psychedelic experience is itself psychologically healing, versus the psychedelic experience being side-effect of a biological healing of the brain by ketamine medication).

Conclusion: Once interviews are analyzed, we will achieve a more nuanced understanding of participants' subjective experiences and will be able to provide best practice guidelines on setting patient expectations for the experience. We may also use interview data to enhance the main paper which will explore biomarkers of remission after IV ketamine infusions.

3. In patients diagnosed with major depressive disorder (MDD) and comorbid vitamin D deficiency, does supplementation with vitamin D help reduce depressive symptoms determined by an improvement in objective screening tool scores?

Presenting Author: Natalie Amante University of Texas Medical Branch

In patients diagnosed with major depressive disorder (MDD) and comorbid vitamin D deficiency, does supplementation with vitamin D help reduce depressive symptoms determined by an improvement in objective screening tool scores?

Natalie Amante, PA-S3[1], Isaac Kurian, PA-S3[1], Amber Blissett, PA-S3[1], Julie Kutac, MA, PhD[1]

[1]Department of Physician Assistant Studies at The University of Texas Medical Branch, Galveston, TX

Background: Major depressive disorder (MDD) is the leading cause of disability and increases morbidity and mortality worldwide. Despite several available therapies, depression is often treatment resistant. MDD has been associated with vitamin D deficiency, so supplementation may be considered as monotherapy or adjunct therapy in treatment. The purpose of this review is to evaluate the effects of vitamin D supplementation on improving depressive symptoms in patients with vitamin D deficiency and MDD. **Methods:** Research was conducted using PubMed, Google Scholar, and Ovid to search the keywords “vitamin d deficiency”, “major depressive disorder”, “vitamin d supplementation”, and “25-hydroxyvitamin D3”. Parameters included human subjects with MDD and vitamin D deficiency and full access to text in the English language omitting articles older than 10 years, meta-analyses, and systematic reviews. 24 articles met inclusion criteria. **Results:** 14 of the 24 studies concluded that patients with vitamin D deficiency and MDD had overall improvement in both objective screening tool scores and depressive symptoms after supplementation. While several studies did not show significant improvement, anecdotal responses from family members and clinicians indicated moderate improvement in depressive symptoms. **Conclusions:** Supplementation of vitamin D as monotherapy or adjunct therapy in patients with MDD and vitamin D deficiency improved depressive symptoms in most studies. However, there is some conflicting evidence on the significance of these improvements. Further research is needed with larger sample sizes and longer study durations evaluating the best route of administration, dosage, timing, and frequency of supplementation.

4. The Effect of Lidocaine on Seizure Parameters in Electroconvulsive Therapy: A Retrospective Chart Review

Presenting Author: Jesse Burson University of Florida

The Effect of Lidocaine on Seizure Parameters in Electroconvulsive therapy: A Retrospective Chart Review

Jesse Burson BS, Brent Carr MD[1,2], Srinath Gopinath[1,3]

1. Department of Psychiatry, University of Florida, Gainesville, FL, 36210
2. UF Health Psychiatry Hospital, Gainesville, FL, 32606
3. Malcom Randall VA Medical Center, Gainesville, FL 32608

Background: The use of Lidocaine in the setting of electroconvulsive therapy is proposed to prevent angialgia (vascular pain) during administration of anesthesia induction agents. However, the effect of lidocaine on seizure parameters and the antidepressant effect of ECT remain inconclusive. Since the 1960's it was reported that the use of lidocaine in ECT led to diminished seizure duration, lower seizure frequency, the loss of polyspikes[1], a finding supported by more recent studies[2,3]. To the contrary, there have been additional studies which have demonstrated no effect of lidocaine on seizure parameters in ECT[4], while others have found improved indices[5] such as post-ictal suppression, ictal irregularity, and ictal stereotypy. A retrospective chart review was performed on 3 patients who had ECT treatments at the UF Health Psychiatry Hospital to assess how administration of lidocaine impacted seizure parameters. **Methods**: The charts of 3 patients were reviewed to assess the effect of lidocaine administration on seizure duration and seizure adequacy. Patients were treated for a total of 28 total seizures (7,7, and 12 per patient) with 6 (1, 3, and 2 per patient) incidences of lidocaine use in anesthesia induction. Measures included total charge produced by ECT, EEG seizure duration, ECT session number, administration of lidocaine, and administered dose of lidocaine. **Results**: The effects of lidocaine on seizure parameters demonstrated a possible dose-dependent relationship. At doses at or below 40mg, lidocaine had no effect on the duration or amplitude of the seizures. Doses of lidocaine at or above 100mg decreased seizure amplitude with no change in duration. Two instances of lidocaine administration of doses at 20mg resulted in status epilepticus which were subsequently terminated with propofol administration. **Conclusions:** We report the effect of lidocaine administration for ECT anesthesia on seizure duration and amplitude. We observe that at doses above 100mg of lidocaine, there is a decrease in seizure amplitude with no effect in seizure duration. We also report the administration of lidocaine can lead to an increased propensity to develop status epilepticus during ECT treatment. Further research would help establish the dose-dependent relationship of lidocaine's effect on seizure amplitude, and assess the relationship between lidocaine use in ECT and status epilepticus.

References

1. OTTOSSON, J.-O. (1960). EFFECT OF LIDOCAINE ON THE SEIZURE DISCHARGE IN ELECTROCONVULSIVE THERAPY. Acta Psychiatrica Scandinavica, 35(S145), 7–32. doi:10.1111/j.1600-0447.1960.tb08348.x
2. Devanand DP, Sackeim HA. Seizure elicitation blocked by pretreatment with lidocaine. Convuls Ther. 1988; 4: 225–229
3. Wajima Z, Yoshikawa T, Ogura A, et al. The effects of intravenous lignocaine on haemodynamics and seizure duration during electroconvulsive therapy. Anaesth Intensive Care. 2002; 30: 742–746
4. MacPherson RD, Lawford J, Simpson B, et al. Low dose lignocaine added to propofol does not attenuate the response to electroconvulsive therapy. J Affect Disord. 2010; 126: 330–333
5. Simpson KH, Halsall PJ, Sides CA, et al. Pain on injection of methohexitone: the use of lignocaine to modify pain on injection of methohexitone during anaesthesia for electroconvulsive therapy. Anaesthesia. 1989; 44: 688–689

5. Exploring Relationships of GABA and Glutamate with Negative Valence Systems

Presenting Author: Katherine Coleman Brigham & Women's Hospital

Exploring Relationships of GABA and Glutamate with Negative Valence Systems

Katherine Coleman[1], Jessica N. Busler[1,2], Sarah Rose Slate[1], Eduardo Coello[1], Monica B. Foneska[1], Vicky Liao[1], Alexander P. Lin[1], Pamela B. Mahon[1]

[1]Brigham & Women's Hospital, Harvard Medical School, Boston, MA, USA

[2]Harvard T. H. Chan School of Public Health, Boston, MA, USA

Background: Negative valence systems are defined by the NIMH as systems responsible for responses to aversive situations or context, and includes constructs such as fear, anxiety and loss. Dysregulation of negative valence systems is a characteristic of mood disorders and is observed in other mental disorders, as evidenced by difficulties in affective processing and emotion regulation, with corresponding alterations in emotion regulation neurocircuitry. Dysregulation in GABAergic (primary inhibitory) and glutamatergic (primary excitatory) systems within this neurocircuitry has been implicated in mood and other disorders. However, the relationship of neurometabolic dysregulation to negative valence systems is not well understood. We aimed to examine brain markers of GABAergic and glutamatergic function in a brain region involved in emotion regulation (dorsolateral prefrontal cortex (DLPFC)) and their relationship to function in negative valence systems, measured at the self-report and behavioral levels. **Methods:** Twenty participants (14 women and 6 men) were recruited at Brigham & Women's Hospital, including both healthy participants and participants with mood disorder in order to enrich the sample for a range of function within negative valence systems. Participants were ages 35-61 (M=46.50, SD=8.50). Self-report negative affect summary score from NIH Toolbox was assessed, along with a behavioral measure using an affective go/no-go task with positive, neutral, and negative valenced stimuli. Attentional bias toward negative stimuli was measured by comparing number of commission and omission errors and reaction time to negative stimuli against responses to positive and neutral stimuli. MR spectroscopy, using STEAM at 7 Tesla (TE = 20ms, TM = 10ms, TR = 3000ms), was used to measure markers for GABA and glutamate in the DLPFC and LCModel was used for neurometabolite quantification. Spectroscopy results were filtered to exclude results with a CRLB > 20. We conducted separate correlation analyses of each neurometabolic marker with negative affect scores from NIH Toolbox and with measures of attentional bias from the affective go/no-go task. **Results:** We observed a significant inverse correlation between DLPFC GABA and the negative affect summary score (r=-0.670, p=0.009). For analyses involving negative attentional bias we observed that for the contrast comparing response time to negative and positive stimuli, DLPFC GABA was significantly inversely correlated with response time, consistent with bias towards negative stimuli (r=-0.632, p=.027). Further, results showed that DLPFC GABA was significantly inversely correlated with omission errors for negative versus neutral stimuli, consistent with bias towards negative stimuli (r=-0.634, p=.027). We did not observe a significant association between DLPFC GABA and commission errors. No other significant results were observed in testing relationships of glutamate in the DLPFC with either negative affect scores or measures of negative affective bias. **Conclusions:** These results suggest that GABAergic function, measured in the DLPFC, is inversely correlated with negative affect and negative attentional bias. Specifically, lower levels of GABA in the DLPFC were associated with higher negative affect scores and increased attentional bias toward negative stimuli. This finding is in line with studies implicating lower GABA in individuals with mood disorders. Accordingly, our findings suggest a role for DLPFC GABA in negative valence systems functioning more generally. Despite the promising nature of these findings, they are preliminary in nature and should be interpreted with caution given the small sample size. If confirmed, these findings have the potential to inform clinical care regarding the use of GABAergic medications to improve outcomes in disorders involving negative valence systems.

6. Whole genome sequencing implicates genes leading to risk of suicide death

Presenting Author: Hilary Coon University of Utah

Title: Whole genome sequencing implicates genes leading to risk of suicide death

Authors: Hilary Coon,1 Elliott Ferris,2 Andrey Shabalin,1 Emily DiBlasi,1 Eric Monson,1 Anne Kirby,3 Michael Staley,4 Erik D. Christensen,4 W. Brandon Callor,4 Sheila Crowell,5 Amanda Bakian,1 Brooks Keeshin,6 Douglas Gray,1 Qingqin Li,7 Virginia Willour,8 Anna Docherty.1

1. University of Utah Department of Psychiatry & Huntsman Mental Health Institute, Salt Lake City, UT. 2. University of Utah Department of Neurobiology, Salt Lake City, UT. 3. University of Utah Department of Occupational and Recreational Therapies, Salt Lake City, UT. 4. Utah State Office of the Medical Examiner, Utah Department of Health, Salt Lake City, UT. 5. University of Utah Department of Psychology, Salt Lake City, UT. 6. University of Utah Department of Pediatrics, Salt Lake City, UT. 7. Neuroscience Therapeutic Area, Janssen Research & Development, LLC, Titusville, NJ. 8. University of Iowa Department of Psychiatry, Iowa City, IA.

While development of effective suicide preventions remains an urgent public health crisis, the task is daunting due to the complexity of suicide risk. In particular, more work is required to understand specific risks associated with suicide death, where risk prediction remains challenging. Suicide attempts, which occur at 10-25 times the rate of suicide deaths, are currently the strongest predictor of suicide death, but attempts are a highly imperfect predictor. Fewer than 8% of individuals with a prior attempt go on to die by suicide, and more than 50% of suicide deaths occur without a documented prior attempt. Dramatic epidemiological differences in suicide outcomes also suggest underlying risk differences: 2-4 times the number of suicide attempts occur in women, but 3.6 times more men die by suicide. Recent work in large multi-national samples has revealed genetic variance specific to suicide death, and differing patterns of polygenic associations across suicide outcomes. Our work on a large population-ascertained, genetically informative cohort of suicide deaths has identified demographic, clinical, and genetic risks specific to suicide death, and allows ongoing comparisons to risks associated with studies of suicide attempts. Better understanding of risks associated with suicide death is required to further the development of targeted preventions for those at highest risk.

Suicide deaths who linked to multi-generation, extended, high-risk families in our data resource defined a subset of 1,634 suicides. Compared to 1,865 other Utah suicides without high familial risk, these suicides showed markedly younger age at death ($p<0.0001$), more documented suicide attempts ($p=0.03$), and more documented exposure to trauma ($p=0.03$). In addition, compared to other suicide deaths in our cohort, this high-familial-risk subgroup had significantly increased polygenic risk of suicide death (OR=3.10, $p<0.0001$), suicide attempt (OR=1.13, $p=0.01$), PTSD (OR=1.20, $p=0.004$), and risk-taking (OR=1.10, $p=0.02$). We prioritized suicides from this high-familial-risk group for whole genome sequencing (WGS). WGS from 669 selected suicides was jointly processed with WGS from 420 non-psychiatric Utah controls; frequencies were also compared to publicly-available data in the Genome Aggregation Database.

Analyses included a genome-wide screen and gene burden test of variants within coding regions with annotations implicating functional effects on genes, and genome-wide burden tests including variants with regulatory annotation, including publicly-available gene expression results from post-mortem brain tissue. Results revealed high-impact

variants in genes in pathways associated with neuronal function, brain development, and neurodegeneration. Interaction of the presence of WGS variants with demographics, clinical data, and background polygenic risks will be discussed.

A strong genetic contribution to suicide risk has been well documented, and genome-wide association studies have begun to reveal polygenic associations. Our analyses of sequence data in suicide deaths selected for genetic risk provides complementary evidence of the additional contribution of rare genetic variation. Variants with potential functional consequences increase our understanding of biological risk mechanisms, and may lead to the development of future personalized treatments.

7. Epigenetic GrimAge acceleration in bipolar disorder

Presenting Author: Gabriel Fries University of Texas Health Science Center at Houston

Epigenetic GrimAge acceleration in bipolar disorder

Camila N. C. Lima, PhD[1], Giselli Scaini, PhD[1,2], Valeria A. Cuellar, MD[1], Consuelo Walss-Bass, PhD[1,2], Jair C. Soares, MD, PhD[1,2,3], Joao Quevedo, MD, PhD[1,2,3], Gabriel R. Fries, PhD[1,2,4]

[1]Translational Psychiatry Program, Faillace Department of Psychiatry and Behavioral Sciences, McGovern Medical School, The University of Texas Health Science Center at Houston, TX

[2]Neuroscience Graduate Program, The University of Texas MD Anderson Cancer Center UTHealth Graduate School of Biomedical Sciences, Houston, TX

[3]Center of Excellence in Mood Disorders, Faillace Department of Psychiatry & Behavioral Sciences, The University of Texas Health Science Center at Houston.1941 East Rd, 77054 Houston, TX

[4]Center for Precision Health, School of Biomedical Informatics, The University of Texas Health Science Center at Houston. 7000 Fannin St, 77030 Houston, TX

Background: Bipolar disorder (BD) has been previously associated with functional impairment and accelerated epigenetic aging, although the link between these two variables is still unknown. We aimed to investigate the relationship between epigenetic aging acceleration measures with functioning and clinical outcomes in patients with BD and controls. **Methods:** Blood genome-wide DNA methylation (DNAm) levels were measured in BD patients (N=90) and matched healthy controls (N=40) with the Infinium EPIC BeadChip (Illumina). Epigenetic age estimates were calculated using an online tool, including the recently developed lifespan predictor GrimAge. The association between multiple epigenetic aging acceleration indexes with clinical variables and functioning status was tested by linear models while controlling for chronological age, sex, race/ethnicity, smoking status, and blood cell count estimates. **Results:** BD was significantly associated with greater GrimAge acceleration (GrimAgeAccel) in unadjusted (β=0.18, p=0.015) and minimally-adjusted models (β=2.574, p=0.013, controlled for age, sex, and race), but not after controlling for use of the tobacco and blood cell counts (p=0.345). Greater length of illness (β=0.205, p=0.03), any comorbid substance abuse or dependence (β=2.484, p=0.011), and medication status (β=-4.454, p=0.016) significantly predicted GrimAgeAccel in all models. Finally, a greater GrimAgeAccel predicted poorer functional outcomes measured by the Functioning Assessment Short Test and Global Assessment of Functioning (p<0.05) in both groups. **Conclusion:** Epigenetic aging, as measured by the lifespan predictor GrimAge, is accelerated by comorbid substance use and longer length of illness in BD, with a protective effect of medication. Moreover, this acceleration may contribute to functional decline in patients with BD.

8. Admixture Mapping Implicates ROBO2 as Bipolar Disorder Risk Gene in African Americans

Presenting Author: Suzanne Gonzalez Penn State Milton S. Hershey Medical Center

Admixture Mapping Implicates ROBO2 as Bipolar Disorder Risk Gene in African Americans

Suzanne Gonzalez, PhD[1], J. Dylan Weissenkampen, PhD[2], Tesfaye Mersha, PhD[3], and Dajiang Liu, PhD, MA[1].

[1]Penn State Milton S. Hershey Medical Center, Hershey, PA.

[2]Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA.

[3]Cincinnati Children's Hospital Medical Center, Cincinnati, OH.

Background: Great strides have been made in identifying the genetic underpinnings of bipolar disorder (BD) in populations with European ancestry; however, there has been a great paucity of studies focused on admixed population such as African Americans. Populations of European descent contain only a subset of human genetic variation, and populations vary in terms of disease-allele frequencies, linkage disequilibrium (LD) patterns, disease prevalence, and effect size; therefore, diverse populations are needed to reveal the underlying biological variation in complex genetic disorders such as BD. Studies focusing on admixed populations present unique opportunities to explore the genetic etiology of BD and may identify ancestry specific risk loci using genetic methods such as admixture mapping. **Methods:** Data was obtained from the GAIN study through the database of genotypes and phenotypes (dbGaP) platform (study accession: phs000017.v3.p1). Subjects were filtered for African American ancestry, resulting in to 686 African American controls, 265 African Americans with BD and 150 with schizoaffective, bipolar type (SABP). Genotype data was formatted using PLINK and intersected with the 1000 Genome project and the Human Genome Diversity Project reference panels and overlapping SNPs retained using BCFtools. Global African and European ancestry was estimated using the ADMIXTURE software. Local ancestry at each SNP was estimated using the ELAI software. We performed genome-wide admixture mapping to identify local African or European ancestry regions associated with BD in African Americans using linear regression models in R, adjusting for sex. P-value threshold analysis was performed with *STEAM* (Significance Threshold Estimation for Admixture Mapping), an R package for estimating genome-wide significance thresholds for admixture mapping studies. Power analysis was conducted using AdmixPower. **Results:** 1,084 individuals and 810,371 variants were retained for analyses following filtering. Analytical p-value threshold of significance was 7.57e-6. The top associated ancestry specific SNP was rs4327364 (Z= -4.147, p= 3.36e-5). Power analysis indicated a sample size of 2,540 is needed to achieve 80% power. **Conclusions:** Although no variants reached statistical threshold of significance, we report suggestive evidence that rs4327364 within the ROBO2 gene is associated with BD risk in African Americans. ROBO2 encodes the Roundabout Guidance Receptor 2 protein, which functions in axon guidance and cell migration and is critical for the maintenance of inhibitory synapses in the adult brain. Previous GWAS indicate that variants within the ROBO2 are associated with schizophrenia, depression and depressive symptoms, response to ketamine in bipolar disorder/major depression, brain volume, and chronotype. Our findings suggests that population-specific genetic variation contributes to BD in African Americans, and that the genetic underpinnings of BD may differ between racial/ethnic groups. Future, larger studies utilizing independent and joint admixture mapping/association techniques may elucidate novel population specific susceptibility loci in BD as well as common loci associated with BD across diverse ancestral populations.

9. Sex-based animal model studies identifying effective therapeutics for SSRI-resistant depression at altitude.

Presenting Author: Shami Kanekar University of Utah

Sex-based animal model studies identifying effective therapeutics for SSRI-resistant depression at altitude. S. Kanekar[1,2], R.E. Ettaro[1], M.D. Hoffman[1] and P.F. Renshaw[1,2]. [1]Dept of Psychiatry, University of Utah, Salt Lake City, UT; [2]VISN19 Rocky Mountain MIRECC & US Department of Veterans Affairs, Salt Lake City, UT.

Background: Living at altitude increases risk for major depressive disorder (MDD). People living at altitude are exposed to chronic hypobaric hypoxia. Healthy people at 4,500ft exhibit lower arterial oxygen and forebrain hypometabolism vs. those at sea level, and MDD is linked to forebrain hypometabolism. We established a sex-based animal model to study depression at altitude. When rats are housed at moderate altitudes (4,500ft or 10,000ft) vs. at sea level, those at altitude exhibit lower levels of brain energetic markers, lower serotonin or dopamine, and increased depression-like behavior in the forced swim (FST) and sucrose preference tests (SPT). Females are more vulnerable, while male response varies with time at altitude. Selective serotonin reuptake inhibitors (SSRIs) form >80% of US antidepressant prescriptions, and the SSRIs fluoxetine (Prozac®), paroxetine (Paxil®) and escitalopram (Lexapro®) lose function in rats of both sexes at altitude. SSRI treatment-resistance may thus worsen burden of depression at altitude. In this study, we tested novel compounds which may correct altitude related brain deficits, for antidepressant efficacy at altitude. The intermediate serotonin precursor, 5-hydroxytryptophan (5HTP), bypasses the oxygen-dependent first step in serotonin synthesis, and may improve brain serotonin levels at altitude. We also tested the energy compounds creatine, an endogenous molecule involved in brain energy metabolism, and its synthetic lipophilic analog cyclocreatine (CyCR). CyCR has higher brain bioavailability and greater sustainability vs. creatine and can replace creatine in brain energetic pathways.

Methods: Rats housed at 4,500ft were given dietary treatment with 5HTP (3wks, 0.2%, 0.5%, 1% or 2%w/w), creatine monohydrate (CR, 5wk, 4%w/w) or dietary CyCR (3wks, 1%w/w) in powdered food vs. powdered food alone. Rats were then tested for depression-like behavior in the FST and SPT. Effective antidepressants decrease immobility in the FST (to increase active stress-coping behavior), and increase sucrose preference in SPT (to reduce anhedonia). Brain creatine and serotonin were assayed in regions linked to MDD. Impact of dietary CR was also tested on efficacy of the SSRI fluoxetine.

Results: (1) 5HTP: In pilot studies, only the highest dose of 5HTP (2%w/w) improved brain serotonin, but 5HTP did not improve depression-like behavior in either sex at any dose tested. In addition, 5HTP significantly reduced food intake and body weight gain at all doses in both males and females, and due to these detrimental effects, was not tested further. (2) CR: Dietary CR improved creatine levels all brain regions in a sex-based manner. Oral CR improved serotonin in the female prefrontal cortex and striatum, but reduced male hippocampal serotonin. Dietary CR was antidepressant in the FST and SPT in only females at altitude. However, oral CR improved SSRI efficacy in only males at altitude. (3) CyCR: After CyCR treatment, CyCR was detected in all brain regions in both sexes. Like dietary CR, CyCR improved serotonin in the female prefrontal cortex but reduced male hippocampal serotonin. Despite this, CyCR was antidepressant in the FST in both sexes at altitude and improved anhedonia in females.

Conclusions: Our studies show that chronic hypoxia exposure via living at altitude may alter brain physiology to worsen MDD and treatment-resistant depression. This pattern may also be true for people with chronic hypoxic disorders such as COPD, asthma, cardiovascular diseases and smoking, who are exposed to chronic normobaric hypoxia and also show higher risk for MDD. We find that treatment with brain bioenergetic compounds may be an effective antidepressant strategy for chronic hypoxia-related depression.

10. MyMD-1 – Potential treatment for MS Depression

Presenting Author: Anupama Kumar Johns Hopkins University

MyMD-1 – Potential treatment for MS Depression

Anupama Kumar, MBBS, Chantelle Terrillion, PhD, Mansoor Malik, MD

Introduction: Lipopolysaccharide (LPS) has been used for over 45 years in preclinical and ex-vivo models of MS. LPS is a cell-wall immunostimulatory component of gram-negative bacteria and was first identified as a Toll-like receptor 4 (TLR-4) ligand. TLR-4 is primarily expressed on microglia but also CD4+ T cells in the central nervous system, which once activated, produce proinflammatory cytokines, including TNF-α, IL-6 and IL-17. LPS has been shown to not only model key aspects of MS, but also to be intimately linked to the pathophysiology of this autoimmune CNS disease. LPS has also been implicated in MS depression through an inflammatory pathway. Blood cells purified from MS patients with depression produced much higher levels of various cytokines in response to LPS stimulation, including IL-6 and IL-17, than cells purified out of non-depressed MS patients. Moreover, acute activation of the peripheral innate immune system in laboratory animals, through the administration of the cytokine inducer LPS has been previously studied and shown to induce depressive-like behavior, as measured by increased immobility in the forced swim test (FST). The sensitivity to a broad range of antidepressant drugs that makes the FST a suitable screening test and is one of its most important features leading to its high predictive validity.

To demonstrate the scientific rationale to support the use of MYMD-1, a synthetic cannabinoid, as an effective treatment for MS Depression, we needed to develop a model that recapitulated key aspects of MS and simultaneously provided a means of testing antidepressant activity. We chose LPS-induced immune activation associated with depressive behavior in mice, assessed using FST to demonstrate antidepressant activity of MYMD-1 as a model for the treatment of MS Depression. TNF-α, IL-6 and IL-17 are potently inhibited by MYMD-1, making LPS a potentially ideal model.

Objectives: We set out to test the following paradigm to see if MYMD-1 would effectively treat MS Depression in a preclinical paradigm: 1) we employed LPS to model the inflammatory changes found in MS, 2) we utilized the FST that has been shown to model antidepressant effects of various drugs, 3) we predicted that MYMD-1 would not behave like an antidepressant in untreated mice (because it is not an antidepressant for all types of depression), 4) we further predicted that in LPS treated mice that MYMD-1 would have antidepressant-like effects (thereby demonstrating that our drug only works in a subset of depression modeled after the inflammatory changes seen in MS).

Protocol: Male and female C57Bl/6 mice were tested between 10-12 weeks of age. Each group had n=5-7. Mice were administered an i.p. injection of saline or 100mg/kg MyMD-1 at 10am each morning for four consecutive days. On the fourth day, 1 hour after injection of saline or 100mg/kg MyMD-1, mice were administered saline or 1mg/kg LPS. 24 hours following injection mice were weighed and tested in the open field and forced swim test. No additional injections were given on the fifth day. Open field: Locomotor activity was assessed over 30 minutes in a 40x40cm activity chamber with infrared. Horizontal activity, as well as time spent in the center or periphery of the chamber, was automatically recorded. Forced Swim test: Mice were placed in a cylinder of water for six minutes. Mobility time during the last four minutes of the test was scored, and immobility time was calculated.

Results: the addition of LPS by itself had no effect on immobility time. The addition of MYMD-1 by itself had no effect on immobility time compared to saline injected mice for 4 consecutive days. Treatment with MYMD-1 decreased immobility when LPS was given, consistent with it having an antidepressant response. To rule out pharmacological effects on general motor activity that might account for behavioral patterns in the forced-swim test, the open-field test is often used in conjunction with the forced-swim test to assess locomotor activity. MYMD-1 treatment had no effect on open field testing.

Conclusion: Since an antidepressant response to MYMD-1 was only seen in LPS treated mice, which models inflammatory changes seen in MS, these results are consistent with MYMD-1 demonstrating effective antidepressant effects in a subset of depression—i.e., depression associated with MS.

11. The Impact of Lifetime Interpersonal-Intentional Trauma on Psychosis Proneness and Cognition in Bipolar Disorder

Presenting Author: Julia Lebovitz Brigham & Women's Hospital

The Impact of Lifetime Interpersonal-Intentional Trauma on Psychosis Proneness and Cognition in Bipolar Disorder

[1]Lebovitz, J.G*, [1,2]Millett, C.E.*, [1]Shanahan, M., [1,2]Levy-Carrick N.C., [1,2]Burdick, KE

**Authors contributed equally to this work.*

[1]Mood and Psychosis Research Program, Department of Psychiatry, Brigham and Women's Hospital, Boston, MA.

[2]Department of Psychiatry, Harvard Medical School, Boston, MA

Background: Studies have shown that over half of individuals with bipolar disorder (BD) experience early-life trauma, which may influence clinical outcomes, including suicidality and presence of psychotic features. Interpersonal traumas, such as physical abuse and sexual assault, specifically have been correlated with poorer clinical outcomes.[1] However, studies report inconsistent findings regarding the effect of trauma on cognitive outcomes in BD. Our study explores the impact of lifetime trauma on psychosis-proneness severity and cognitive performance in participants with BD through utilizing structured clinical interviews to assess lifetime history of trauma and its effect on cognitive ability and psychosis-proneness. **Methods:** We evaluated lifetime trauma history in 236 participants with a diagnosis of BD-I or BD-II using the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders (SCID-IV) and the Childhood Trauma Questionnaire (CTQ). We classified trauma types based on the Substance Abuse and Mental Health Services Administration's (SAMHSA) concept of trauma, which characterizes the type of experienced trauma (e.g., interpersonal-intentional, accidental, or naturally occurring).[2] Our primary outcome measures of interest were cognitive performance (MATRICS Consensus Cognitive Battery) and psychosis-proneness (Schizotypal Personality Questionnaire, SPQ). **Results:** Most BD participants reported a lifetime history of trauma (n=189, 80%). Of those, most reported a history of only interpersonal intentional trauma (IT, n=119) and 52 participants reported a history of accidental and intentional combined trauma (IAT). Physical abuse and/or neglect and sexual abuse and/or abuse were the two most common ITs reported, and car accidents were the most common natural or accidental trauma (NAT) reported. Multivariate analysis of covariance (MANCOVA) showed a significant effect of trauma type on the SPQ Cognitive-Perceptual domain ($F(3)=6.7$, $p<0.001$). The No Trauma group had lower Cognitive-Perceptual schizotypal features compared to the IAT ($p<0.001$) and the IT groups ($p=0.01$). Participants who reported IATs and ITs showed increased schizotypal symptoms compared to participants with No Trauma, marked by higher scores on the SPQ. **Conclusions**: Our study is consistent with prior work that suggests that participants with mood disorders are exposed to multiple traumas over their life course.[3] While many studies have demonstrated the dose-response effect of *childhood* adverse experiences on clinical outcomes in BD, few studies have found a correlation between number of *lifetime* traumas and clinical outcomes. Our results highlight the need for careful trauma inquiry in patients with BD

and consideration of how trauma-focused or trauma-informed treatments may be integral to treatment planning to improve outcomes in BD.

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[1] Mauritz MW, Goossens PJJ, Draijer N, van Achterberg T. Prevalence of interpersonal trauma exposure and trauma-related disorders in severe mental illness [Internet]. Vol. 4, European Journal of Psychotraumatology. Co-Action Publishing; 2013 [cited 2020 Jul 28]. Available from: /pmc/articles/PMC3621904/?report=abstract

[1] Samhsa. Trauma-Informed Care in Behavioral Health Services TIP 57 A TREATMENT IMPROVEMENT PROTOCOL. Vol. 57, Behavioral Health Services TIP. 2014.

[1] Lu W, Mueser KT, Rosenberg SD, Jankowski MK. Community Effectiveness of Virtual Reality Job Interview Training for Adults with Severe Mental Illness View project Berner Job Coach Project View project. 2008 [cited 2020 Jul 28]; Available from: https://www.researchgate.net/publication/23223951

12. Prevalence Rate of Antidepressant Exposure in a Community Based Cohort

Presenting Author: Nicole Leibman Mayo Clinic

Prevalence Rate of Antidepressant Exposure in a Community Based Cohort

Nicole I. Leibman M.D.[1,2], Nicholas B. Larson, M.S. Ph.D.[3], Aysegul Ozerdem M.D.[1], Ph.D., Richard Weinshilboum, M.D.[2], Liewei Wang, M.D., Ph.D.,[2] Mark A. Frye M.D.[1]

Department of Psychiatry & Psychology, Mayo Clinic, Rochester, MN[1]

Department of Molecular Pharmacology & Experimental Therapeutics, Mayo Clinic, Rochester, MN[2]

Department of Quantitative Health Sciences, Mayo Clinic, Rochester, MN[3]

Background: Major depressive disorder (MDD) is the tenth leading cause of death in the United States as well as the third leading cause of disability worldwide. While the overall lifetime risk of developing MDD stands at approximately thirty percent; females are consistently two times more likely to be prescribed treatment for MDD than men and perimenopausal women are especially more likely to be prescribed antidepressants. Recall, that women endorse different symptoms of MDD than men. Also, there is often overlap in the signs and symptoms of MDD and perimenopause as well as an increased risk of MDD while going through perimenopause.

Methods: We performed a retrospective observational study on 11,087 long-term patients of Mayo Clinic to gain a greater understanding of diagnosis and prescribing practices surrounding antidepressant use in Olmstead County, Minnesota. Logistic regression was used to determine any statistically significant differences in prescribing practices between males, females and perimenopausal women. A 16-year cumulative prevalence rate was captured (2004-2020) and a 1-year prevalence rate was captured for the 12-month period prior to entry to the Mayo Clinic Biobank study and DNA collection.

Results: Of the 11,087 subjects in our study, 6,682 were female and 4,405 were male. Our results showed consistently by both individual drug and by drug class that females were more than twice as likely to be prescribed antidepressants. The results also showed that females in the standard perimenopausal age range were more than three times as likely to be prescribed venlafaxine. Recall, venlafaxine is also used to manage the symptoms of perimenopause.

Conclusions: In the United States more than two-thirds of mental health care is provided in the primary care setting as opposed to in the psychiatric specialty environment. Women are more than two times as likely to be prescribed antidepressants over the course of 1-year as well as over the course of 16-years. Females are also more likely to be prescribed multiple unique antidepressants than males over the course of 1-year and 16-years. Perimenopausal women are approximately three times more likely to be prescribed venlafaxine than men.

1. Zhong W, Maradit-Kremers H, St Sauver JL, et al. Age and sex patterns of drug prescribing in a defined American population. Mayo Clin Proc. 2013;88(7):697-707.

2. Bielinski SJ, Olson JE, Pathak J et al. Preemptive genotyping for personalized medicine: design of the Right Drug, Right Dose, Right Time-using Genomic Data to Individualize Treatment Protocol. Mayo Clin Proc. 2014; 89:25–33.

3. Olson JE, Ryu E, Johnson KJ et al. The Mayo Clinic Biobank: a building block for individualized medicine. Mayo Clin Proc. 2013; 88:952–62.

13. Clinical and Genetic Evaluation of Suicide Death among Young Individuals Exposed to Trauma

Presenting Author: Eric Monson University of Utah

Title: Clinical and Genetic Evaluation of Suicide Death among Young Individuals Exposed to Trauma

Authors: Eric Monson[1], Andrey Shabalin[1], Emily DiBlasi[1], Anna Docherty[1], Qingqin Li[2], Amanda Bakian[1], Hilary Coon[1], Brooks Keeshin[3].

1. University of Utah Department of Psychiatry & Huntsman Mental Health Institute, Salt Lake City, UT. 2. Neuroscience Therapeutic Area, Janssen Research & Development, LLC, Titusville, NJ. 3. University of Utah Department of Pediatrics, Salt Lake City, UT.

Background: Suicide is the second leading cause of death in the United States for individuals aged 10-24 and remains difficult to predict despite being inherently preventable. Exposure to trauma is known to be a risk factor for suicidal behavior and to worsen mental health clinical trajectories. This study leverages a unique collection of individuals who have died from suicide as part of the Utah Population Database (UPDB) to evaluate clinical and genetic risk factors for death by suicide in young individuals (aged 12-25) who have a history of exposure to trauma.

Methods: A total of 9,052 UPDB deidentified individuals who died from suicide and had linked medical records were evaluated. Individuals aged 12-25 with a diagnosis of post-traumatic stress disorder (PTSD) or medically documented trauma were selected (N=156; “YTS”). YTS were compared with remaining individuals who died by suicide (N=8,869; “AS”) by common comorbid diagnoses (found in ≥5% of all subjects). Significant findings were used to direct polygenic risk score assessment of a subset of genotyped European individuals (YTS N=85; AS N = 3,766). All statistics utilized logistic regression and were adjusted for critical covariates and multiple tests.

Results: Clinical analyses yielded several diagnoses that were overrepresented within the YTS group as compared with AS. These included major depressive disorder (OR = 4.7, 95%CI = 3.1-7.2), generalized anxiety disorder (OR = 3.4, 95%CI = 2.0-5.6), bipolar disorder (OR = 3.0, 95%CI = 1.8-5.0), tobacco use disorder (OR = 2.9, 95%CI = 1.8-4.4), and unspecified psychosis (OR = 2.6, 95%CI = 1.4-4.7). Polygenic risk scores were calculated based on large studies of anxiety, PTSD, major depressive disorder, bipolar disorder, and smoking, but none survived correction, noting nominal significance of PTSD PRS.

Conclusions: These results identify several comorbid diagnoses that may serve as combined risk factors for suicide death in the setting of young, trauma-exposed individuals, as compared with other suicide deaths. A particular enrichment of major psychiatric diagnoses and substance use were observed. These findings may be helpful in directing future screening and research efforts targeted toward identifying unique risk features of specific suicide phenotypes.

14. Sex-dependent effects of progesterone on nicotine withdrawal and neural response to smoking cues during brief abstinence

Presenting Author: Andrew M. Novick CU Anschutz Medical Campus

Sex-dependent effects of progesterone on nicotine withdrawal and neural response to smoking cues during brief abstinence

Andrew M. Novick MD PhD[1], Korrina A. Duffy PhD[1], Rachel L. Johnson MS[2], Mary D. Sammel ScD[1,2], Wen Cao MS[3], Andrew A. Strasser, PhD[3], Mehmet Sofuoglu MD PhD[4], Alexandra Kuzma BS[5], James Loughead PhD[3], C. Neill Epperson MD[1,6]

1. Department of Psychiatry, University of Colorado-Anschutz Medical Campus, Aurora, CO 80045, USA

2. Department of Biostatistics and Informatics, Colorado School of Public Health, University of Colorado-Anschutz Medical Campus, Aurora, CO 80045, USA

3. Department of Psychiatry, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA 19104, USA

4. Department of Psychiatry, Yale School of Medicine, Yale University, New Haven, CT 06511

5. Larner College of Medicine, University of Vermont, Burlington, VM 05405

6. Department of Family Medicine, University of Colorado-Anschutz Medical Campus, Aurora, CO 80045, USA

Introduction:

Although exogenous progesterone may hold promise as a treatment for nicotine use disorders, it is unclear whether it is similarly effective in males and females. This study examined the effects of progesterone on nicotine use disorder comprehensively using behavioral, psychological, and neural measures in male and female smokers exposed to brief abstinence.

Methods:

Thirty-four male and 32 female non-treatment seeking smokers participated in a double-blind, randomized, placebo-controlled crossover study of 200mg of progesterone or placebo daily over a four-day abstinence period. Smoking behavior and subjective effects of nicotine were assessed at baseline and after final drug administration. Nicotine withdrawal, smoking urges, mood states, and neural response to smoking cues were measured at baseline, after the first drug administration, and after the final drug administration.

Results:

No main effect of drug (progesterone vs. placebo) emerged for any outcome. Significant sex by drug interactions emerged for nicotine withdrawal ($p = 0.016$), lingual gyrus response to smoking cues ($p = 0.021$), and perceived strength of nicotine ($p = 0.017$). Males receiving progesterone reported worse nicotine withdrawal ($p = 0.039$) and experienced higher activation of the lingual gyrus in response to smoking cues ($p = 0.012$). Females on progesterone perceived nicotine's effects as being stronger relative to placebo ($p = 0.025$).

Conclusions:

Progesterone causes sex-dependent effects on smoking-related outcomes during brief abstinence. Specifically, progesterone in males may increase rather than decrease nicotine withdrawal and salience to smoking cues, potentially hindering efforts to quit smoking.

15. Prevalence and Trajectory of Depressive Symptoms Among Sexual Minority Physicians During Training

Presenting Author: Tejal Patel University of Michigan

Prevalence and Trajectory of Depressive Symptoms Among Sexual Minority Physicians During Training

Tejal H. Patel[1], Jennifer L. Cleary MS[2,3], Srijan Sen MD PhD[2,4], Elena Frank PhD[2]

[1]Department of Biology, University of Michigan, Ann Arbor, MI

[2]Michigan Neuroscience Institute, University of Michigan, Ann Arbor, MI

[3]Department of Psychology, University of Michigan, Ann Arbor, MI

[4]Department of Psychiatry, University of Michigan Medical School, Ann Arbor, MI

Background: Medical training is a period associated with high stress and risk of depression. As depression rates among the general LGBTQ+ population are higher than among heterosexual individuals, sexual minority trainees may be at particular risk. However, differences in the prevalence and trajectory of depressive symptoms between sexual minority and heterosexual physicians during training are unknown. **Methods:** Participants were drawn from the 2016, 2017, and 2018 cohorts of the Intern Health Study, a prospective cohort study assessing stress and depression during the first year of residency training. Depressive symptoms were measured using the Patient Health Questionnaire-9 (PHQ-9) before internship and quarterly throughout intern year. We used two-sample t-tests to assess differences in mean PHQ-9 score quarterly, and a linear mixed model with random effects for within-person dependence and fixed effects for sex, specialty, sexual orientation, work hours, sleep hours, and time to determine differences in trajectories of depressive symptoms between sexual minority and heterosexual physicians. **Results:** 7612 participants (92.8%) identified as heterosexual and 589 (7.2%) identified as a sexual minority ("gay or lesbian", "bisexual", "other"). Sexual minority interns came into internship with higher PHQ-9 scores than their heterosexual peers (3.44 vs. 2.60, $t = -5.76$, $p<0.001$). Trajectories of depressive symptoms differed significantly between sexual minority physicians and heterosexual physicians (0.19, 95% CI [0.05, 0.32], $p = 0.006$), even when controlling for specialty, sexual orientation, work hours, sleep hours, and sex. **Conclusions:** Sexual minority interns not only have higher rates of depressive symptoms throughout intern year, but also experience a steeper decline in mental health compared with heterosexual interns. Given increasing diversity in medical trainees, it is especially important to identify and address factors that impact physician wellness and, in turn, patient care. Further investigation is warranted to address potential modifiable factors in sexual minority mental health during training.

16. The Role of Loneliness and Social Support in Social Functioning in Postmenopausal Women with Major Depressive Disorder: Preliminary Analysis

Presenting Author: Julia Potter Brigham & Women's Hospital

The Role of Loneliness and Social Support in Social Functioning in Postmenopausal Women with Major Depressive Disorder: Preliminary Analysis

Potter, J.P.[1], Millett, C.E.[1,2], Burdick, K.E.[1,2]

[1]Mood and Psychosis Research Program, Department of Psychiatry, Brigham and Women's Hospital, Boston, MA

[2]Department of Psychiatry, Harvard Medical School, Boston, MA

Background: Social isolation detrimentally impacts long term mental and physical health trajectories. While the impact of positive relationships is well understood to protect against morbidity and promote quality of life, the relationship between social factors and quality of life in postmenopausal women with major depressive disorder is less clear. **Method:** 19 postmenopausal women with major depressive disorder (MDD) completed the following questionnaires: Menopause-Specific Quality of Life (MENQOL), Pittsburgh Sleep Quality Index (PSQI), UCLA Loneliness Scale, Interpersonal Support Evaluation List (ISEL), World Health Organization Disability and Adjustment Scale (WHODAS), and Social Adjustment Scale Self-Report (SAS-SR). For preliminary analyses, we performed bivariate Pearson correlations. **Results:** Several aspects of quality of life in the context of menopause including *Dissatisfaction with Personal Life* (r = .59), *Difficulty Sleeping* (r = .76,) and *Decreased Stamina* (r = .63) were associated with self-reported loneliness. Impaired *Social Function* (r = .72) and *Familial Function* (r = .64), both of which are derived from the SAS-SR, were associated with self-reported loneliness. The WHODAS domain score, *Difficulty in Participating in Society* (r = .59), was associated with self-reported loneliness. Domain scores from the PSQI, *Reduced Sleep Quality* (r = .58), *Sleep Latency* (r = .62), and *Daytime Dysfunction Due to Sleepiness* (r = .68) were associated with self-reported loneliness. Likewise, *Dissatisfaction with Personal Life* (r = .73), *Difficulty Sleeping* (r = .86), *Decreased Stamina* (r = .62), and *Feeling a Lack of Energy* (r = .65) were associated with low levels of social support. Impaired *Social Function* (r = .76), *Familial Function* (r = .59), and *Difficulty Participating in Society* (r = .59) were associated with low levels of social support. Lastly, *Sleep Latency (r* = .76), *Daytime Dysfunction Due to Sleepiness* (r = .46), and *Sleep Quality* (r = .64) were associated with low levels of social support. **Conclusion:** The findings suggest that there is a relationship between loneliness, social support, and quality of life features related to lack of energy, poor sleep, and social functioning. In a follow up analysis, a larger sample size will permit a more rigorous examination and opportunity to control for demographics.

17. Flexible Bayesian models for personalized characterization of the evolution of cognitive function in older adults with mood disorders

Presenting Author: Boyu Ren McLean Hospital

Individuals with mood disorders (MDs), such as depression and bipolar disorder, have been observed to have distinct changes in cognition with advancing age compared to healthy controls. However, the temporal evolution of these cognitive changes, especially amongst an older population, has not been well characterized at the individual level due to the limitations of currently employed analytic approaches, which are insufficient to capture the complex relationship between mood disorders and cognitive impairment with advancing age. We propose to utilize novel Bayesian statistical methods to better characterize longitudinal trajectories of cognitive function in older patients with mood disorders (MD) at the individual level. We first describe a Bayesian hierarchical linear model for longitudinal data to test whether older adults with MDs have a significantly greater rate of cognitive decline compared to healthy controls (i.e., accelerated cognitive aging), and to identify the specific age range where accelerated cognitive aging is most pronounced. We then extend the hierarchical model to incorporate population subgroups for personalized predictions of cognitive function using baseline variables (demographics, medical history, etc.). We further employ an ensemble learning approach to integrate information from other data sources, potentially from studies with different designs, into the Bayesian personalized prediction model to enhance its accuracy and generalizability. Finally, we present some initial results of our approaches based on a longitudinal dataset from the McLean Geriatric Mood Disorders Database and a cross-sectional dataset from the McLean Neuropsychology Research Database.

18. Ketamine Associated Anterior Cingulate Gamma-aminobutyric Acid Increase and Depression Remission: Preliminary Data with Dynamic Sliding-Window Functional MR Spectroscopy

Presenting Author: Balwinder Singh Mayo Clinic

Title: Ketamine Associated Anterior Cingulate Gamma-aminobutyric Acid Increase and Depression Remission: Preliminary Data with Dynamic Sliding-Window Functional MR Spectroscopy

Balwinder Singh MD, MS[1], John D. Port, MD, PhD[1,2], Jennifer L. Vande Voort, MD[1,] Brandon J. Coombes, PhD[3], Jennifer R. Geske, MS[3], Ian R. Lanza, PhD[4], Mark A. Frye, MD[1]

[1]Department of Psychiatry and Psychology; [2]Departments of Radiology; [3] Department of Quantitative Health Services; [4]Division of Endocrinology and Metabolism, Department of Internal Medicine, Mayo Clinic, Rochester, MN.

Background: Gamma-aminobutyric acid (GABA) and glutamate (Glu) neurotransmission has been implicated in the pathophysiology of treatment-resistant depression (TRD) and are mechanistically linked to ketamine's antidepressant response. While anterior cingulate cortex (ACC) has shown to be associated with antidepressant treatment response and thus may represent a central target for engagement, peripheral, not central targets/potential biomarkers, may have greater generalizability for clinical development. In this innovative comparative study, utilizing functional magnetic resonance spectroscopy (fMRS) and liquid chromatography-mass spectrometry (LCMS), we investigated the relationship between GABA and Glu levels, measured centrally and peripherally respectively, with change in depression symptoms utilizing the Montgomery Asberg Depression Rating Scale (MADRS), after a single infusion of IV ketamine in TRD patients.

Methods: This was an open-label feasibility trial that enrolled 12 adults with TRD (failure to respond to two trials of antidepressive treatments in the current episode) who received a single IV ketamine infusion (0.5 mg/kg, infused over 40 minutes) while in an MRI scanner. We used a novel dynamic sliding-window fMRS method at 3T using the MEGA-PRESS sequence to generate continuous measurements of central Glu, glutamate+glutamine (Glx), and GABA in the ACC during the 40-min infusion. Corresponding peripheral metabolites were measured with LCMS methodology at baseline and at 24 hours post-infusion. Treatment response was measured with change in MADRS scores from baseline to 24 hours post-infusion. We conducted Spearman correlation analysis to test for a relationship between percent change in central (from baseline to peak) and log2 change in peripheral biomarkers (from baseline to 24 hours) with change in MADRS.

Results: Of the 12 subjects who completed the study, five were excluded from analysis: excessive patient motion (3) and scanner/IV pump failure (2). The remaining 7 subjects (4 females and 3 males) were on average 45 years old (SD=11.7) with mean MADRS at baseline and at 24 hours post-infusion of 23.1±3.6 and 14.0±8.6, respectively, with 3 remitting at 24 hours. The peak ACC GABA levels were significantly higher in the remitters compared to non-remitters (182.9% vs 23.2% increase, respectively, p=0.034), and inversely correlated with change in MADRS (rho= -0.85; p=0.019). There was a non-significant peak increase of Glu and an inverse correlation between change in Glu and MADRS. No significant correlations were observed between the central and peripheral metabolite changes.

Conclusion: Increase in peak ACC GABA levels with ketamine is associated with remission in TRD. These novel findings provide insights into the underlying neurobiological mechanisms of ketamine and if confirmed, in larger studies, would be encouraging for further development of GABAergic biomarkers associated with ketamine response.

Reference: Singh B, Port JD, Voort JLV, et al. A preliminary study of the association of increased anterior cingulate gamma-aminobutyric acid with remission of depression after ketamine administration. Psychiatry Res. 2021;301:113953.

19. Lack of Racial Diversity in Bipolar Disorder Biobanking: Implications for Addressing Health Disparities

Presenting Author: Monica Taylor-Desir Mayo Clinic

Lack of Racial Diversity in Bipolar Disorder Biobanking:

Implications for Addressing Health Disparities

Monica J. Taylor-Desir, MD, MPH[1], Joyce E. Balls-Berry, PhD, MPE[2], Susan L. McElroy, MD[3], David J. Bond, MD[4], Eric J. Vallender, PhD[5], Mark Ladner MD[5], Brandon J. Coombes PhD[6], Linsey Jackson, BS[7], Danielle Arceo[8], Felicia V. Caples, PhD[9], Colin Colby[6], Christi A. Patten, PhD[1], Joanna M. Biernacka, PhD [1,6], and Mark A. Frye, MD[1]

[1]Department of Psychiatry and Psychology, Mayo Clinic, Rochester, MN; [2] Department of Neurology, Washington University, St. Louis, MO; [3] Lindner Center of HOPE & University of Cincinnati College of Medicine, Cincinnati, OH; [4] Department of Psychiatry, University of Minnesota, Minneapolis, MN; [5] Department of Psychiatry and Human Behavior, University of Mississippi Medical Center, Jackson, MS; [6] Department of Quantitative Health Sciences, Division of Computational Biology, Mayo Clinic, Rochester, MN; [7] Division of Gastroenterology, Mayo Clinic, Rochester, MN; [8] Kirk Kerkorian School of Medicine, University of Nevada, Las Vegas, NV, USA; [9] Department of Health Policy and Management, College of Health Sciences, Jackson State University, Jackson, MS

ABSTRACT

AIM: Genetic studies of bipolar disorder (BD) have almost exclusively been conducted in persons of European ancestry. While reducing genetic heterogeneity, the lack of under-represented minority populations in genomic bipolar disorder research represents a missed opportunity to assess generalizability of research findings. This study quantified and compared demographic and clinical features of BD in persons of African Ancestry (AA) and European Ancestry (EUR).

METHODS: Participants enrolled in the Mayo Clinic Bipolar Biobank from 2009-2015. The Structured Clinical Interview for DSM-IV was used to confirm the diagnosis of BD and a questionnaire was developed to collect data on clinical course of illness. Descriptive statistics and bivariate analyses were completed to compare AA vs EUR participants.

RESULTS: Of 1865 participants enrolled in the bipolar biobank, 65 (3.5%) self-identified as AA. The clinical phenotype for AA participants, in comparison to EUR participants was more likely to include a history of PTSD (39.7% vs 26.2%), cocaine use disorder (24.2% vs 11.9%), and tardive dyskinesia (7.1% vs 3%).

CONCLUSION: The low rate of AA enrollment is consistent with other genetic studies. While clinical features of bipolar disorder are largely similar, this study identified differences in rates of trauma, substance use, and tardive dyskinesia that may represent health disparities in bipolar patients of African Ancestry. Future bipolar biomarker studies with larger sample sizes focused on underrepresented populations will provide greater ancestry diversity in genomic medicine with greater applicability to diverse patient populations, serving to inform health care policies to address disparities in bipolar disorder.

20. A Combinatorial Pharmacogenomic Algorithm is Predictive of Sertraline Metabolism in Patients with Major Depressive Disorder

Presenting Author: Michael Thase University of Pennsylvania

A Combinatorial Pharmacogenomic Algorithm is Predictive of Sertraline Metabolism in Patients with Major Depressive Disorder

Authors: Sagar V. Parikh,[a] Rebecca A. Law,[b] Daniel T. Hain,[b] Anthony J. Rothschild,[c] Michael E. Thase,[d*] Boadie W. Dunlop,[e] Charles DeBattista,[f] Brent P. Forester,[g] Richard C. Shelton,[h] Matthew Macaluso,[h] Elizabeth S. Cogan,[i] Krystal Brown,[i] David J. Lewis,[b] Michael R. Jablonski,[b] John F. Greden,[a]

a. University of Michigan Eisenberg Family Comprehensive Depression Center and Department of Psychiatry, and National Network of Depression Centers, 4250 Plymouth Rd, Ann Arbor, MI 48109

b. Myriad Neuroscience, 6960 Cintas Blvd, Mason, OH 45040

c. University of Massachusetts Medical School and UMass Memorial Healthcare, 55 N Lake Ave, Worcester, MA 01655

d. Perelman School of Medicine of the University of Pennsylvania and the Corporal Michael Crescenz VAMC, 3400 Civic Center Blvd, Philadelphia, PA 19104

e. Emory University School of Medicine, Department of Psychiatry and Behavioral Sciences, 12 Executive Park Dr NE, 3rd Floor, Atlanta, GA 30329

f. Stanford University School of Medicine, Department of Psychiatry and Behavioral Sciences, 401 Quarry Rd, Stanford, CA 94305

g. McLean Hospital, Division of Geriatric Psychiatry, 115 Mill St, Belmont, MA 02478; Harvard Medical School

h. The University of Alabama at Birmingham, Department of Psychiatry and Behavioral Neurobiology and School of Medicine, 1720 2nd Ave S, Birmingham, AL

i. Myriad Genetics, Inc., 320 Wakara Way, Salt Lake City, UT 84108

*Presenting author

Background: Pharmacogenomic testing can aid in treatment selection for patients with Major Depressive Disorder (MDD) by identifying gene-drug interactions that may impact medication metabolism. Although there have been rapid advancements in this field, there is not a consensus about the approach to pharmacogenomic testing or even what genes are relevant for many antidepressants. Here we assessed the ability of a combinatorial pharmacogenomic test (weighted assessment of multiple genes) to predict meaningful variations in sertraline blood levels relative to the Clinical Pharmacogenetics Implementation Consortium (CPIC) guidelines for *CYP2C19*.

Methods: All patients were enrolled in the **G**enomics **U**sed to **I**mprove **DE**pression **D**ecisions (GUIDED) trial – a large, patient- and rater-blinded, randomized, controlled trial that included patients diagnosed with MDD who had an inadequate response to ≥1 psychotropic medication (N=1,167). A subset of 124 patients reported taking sertraline within 2 weeks of the screening blood draw and had sertraline blood concentrations quantified using LC-MS/MS. The combinatorial pharmacogenomic test reported a weighted assessment of individual phenotypes based on multiple pharmacokinetic genes relevant for medications included on the test. For sertraline, this included *CYP2C19, CYP2B6*, and *CYP3A4*. Medications were categorized according to the predicted level of gene-drug interactions (GDI) and change in metabolism (increase, decrease). Sertraline log-transformed concentration/dose ratios were compared

between combinatorial pharmacogenomic test categories and CPIC *CYP2C19* phenotypes. Tests were linear trend tests.

Results: Sertraline concentration/dose ratios were significantly different between *CY2C19* phenotypes (p=0.0003) and gene-drug interaction categories from the combinatorial pharmacogenomic test (p=5.8e-06). Sertraline blood levels were 71% lower when the combinatorial pharmacogenomic test predicted significant GDI with increased metabolism compared to no GDI (p=0.001). Similarly, sertraline blood levels were 134% higher when the combinatorial pharmacogenomic test predicted significant GDI with decreased metabolism compared to no GDI (p=2.7x10-5). In a multivariate analysis that included *CYP2C19* and the combinatorial pharmacogenomic algorithm, only the combinatorial pharmacogenomic algorithm remained significant (p=3.8x10-5).

Conclusion: Combinatorial pharmacogenomic testing was a significant predictor of sertraline blood levels for patients within the GUIDED trial, accounting for all variance predicted by *CYP2C19* alone and adding significant, independent information. This suggests that the combinatorial pharmacogenomic test may provide more clinically relevant information to inform medication decisions regarding sertraline compared to phenotypes based on *CYP2C19* alone.

21. Childhood physical abuse is associated with neurocognitive impairment in patients with bipolar disorder

Presenting Author: Rachel Van Boxtel Brigham & Women's Hospital

Childhood physical abuse is associated with neurocognitive impairment in patients with bipolar disorder

Van Boxtel, R.A. [1,2], Millett, C.E. [1,2], and Burdick, K.E. [1,2]

[1]Mood and Psychosis Research Program, Department of Psychiatry, Brigham and Women's Hospital, Boston, MA

[2]Department of Psychiatry, Harvard Medical School, Boston, MA

Background: Early-life trauma is prevalent in bipolar disorder (BD) and plays a major role in the course of the disease. Early-life stressors can adversely affect regions in the developing brain, particularly hippocampal circuity. Another common feature of bipolar disorder is cognitive deficits, namely in executive function, working memory, attention, and processing speed. Prior work has indicated that childhood trauma is associated with neurocognitive impairment in adult BD patients, but with modest sample sizes. In this study, we further investigated the impact of childhood trauma on performance on neurocognitive measures. **Methods:** 259 Adults with DSM-IV BD-I and II were recruited from the Icahn School of Medicine at Mount Sinai Hospital and Brigham and Women's Hospital. Diagnostic eligibility was confirmed using The Structured Clinical Interview for the DSM-V (SCID-V). Cognitive performance was assessed using a battery of neurocognitive assessments. Statistical analysis included a multivariate analysis of covariance to assess strength and significance of associations between childhood abuse and performance on neurocognitive measures (controlled for level of education, sex, age, race, and current mood severity). **Results:** A sizable portion of our participants with BD (N=259) reported emotional abuse (43%), physical abuse (31%), sexual abuse (35%), emotional neglect (33%), and physical neglect (45%) on the Childhood Trauma Questionnaire (CTQ). A multivariate analysis of covariance revealed significant effects of physical abuse (PA) ($F(10, 207) = 2.2$, $p=0.02$) on cognitive performance across neurocognitive domains. PA was negatively associated with performance on the Stroop ($F=7.4$, $p=0.007$), MCCB reasoning and problem solving ($F=4.3$, $p=0.04$), and Reading Mind in the Eyes ($F=3.5$, $p=0.06$). **Conclusions:** BD patients with self-reported severe childhood physical abuse have marked changes in neurocognitive performance. These findings indicate that trauma history should be considered a risk factor for poor outcomes in BD and further emphasize the clinical importance of careful and consistent trauma history assessments.

22. Religious/Spiritual Struggles and Suicide Risk Among Adult Psychiatric Outpatients: A 12-Month Longitudinal Study		
Presenting Author:	Vitaliy Voytenko	Michigan State University & Pine Rest Christian Mental Health Services

Religious/spiritual struggles and suicide risk among adult psychiatric outpatients: A 12-month longitudinal study

Austin W. Lemke, MA[1], Vitaliy L. Voytenko, PsyD[2,3]*, Edward B. Davis, PsyD[1], Richard G. Cowden, PhD[4], John M. McConnell, PhD[1], Kenneth I. Pargament, PhD[5], Kenneth P. Phillips, MD[3], Robert Marseilles, MD[3], Richard P. Wolff, MD[3]

[1]School of Psychology, Counseling, and Family Therapy, Wheaton College, Wheaton, IL

[2]Division of Psychiatry and Behavioral Medicine, Michigan State University College of Human Medicine, Grand Rapids, MI

[3]Alliance Clinical Associates, Wheaton, Illinois

[4]Human Flourishing Program, Institute for Quantitative Social Science, Harvard University, Boston, MA

[5]Department of Psychology, Bowling Green State University, Bowling Green, OH

*presenting author

Background: Religion and spirituality play an important role in the lives of many people, but research on the role of religion/spirituality in suicidality has been limited. A growing body of literature links religious/spiritual (R/S) struggles to suicidality. However, few longitudinal studies have examined the temporal associations of R/S struggles and suicidality, and none have focused on treatment-seeking individuals. **Methods**: We assessed R/S struggles and suicide risk in adult psychiatric outpatients (N = 120) at their initial psychiatric evaluation appointment, 6-month follow-up, and 12-month follow-up. We used outcome-wide regression analyses to examine the direction of longitudinal associations between R/S struggles and suicide risk, controlling for baseline levels of R/S struggles, suicide risk, depression, and demographics. We also calculated E-values to assess the robustness of associations against unmeasured confounds. **Results:** A mutually reinforcing pattern (i.e., complex struggles) emerged between changes in overall R/S struggles and suicide risk. The reciprocal association between meaning-related struggles and suicide risk was especially pronounced, both in the overall sample and a subsample of 59 individuals who indicated recent suicide ideation at baseline. **Conclusions:** Findings support assessing R/S struggles as part of suicide risk assessment and using clinical interventions that enhance one's sense of ultimate meaning or purpose.

23. Potential Paths to Suicidal Ideation and Suicide Attempts among High-Risk Women

Presenting Author: Sandra Weiss, University of California San Francisco

Potential Paths to Suicidal Ideation and Suicide Attempts among High-Risk Women

Sandra Weiss, PhD, DNSc;[1] Aysegul Ozerdem, MD, PhD[2]; Hristina Koleva, MD[3]; Maria Muzik, MD[4]; Diana Simeonova, PhD, Dipl.-Psych[5]; Kristen Clark, PhD[1]; Sara Carlini, MD[6]; Robert Ammerman, PhD[7]

[1] Department of Community Health Systems, University of California, San Francisco; [2] Department of Psychiatry and Psychology, Mayo Clinic; [3] Department of Psychiatry, University of Iowa; [4] Department of Psychiatry, University of Michigan; [5] Department of Psychiatry & Behavioral Sciences, Emory University; [6] Department of Psychiatry, Zucker Hillside Hospital, Northwell Health; [7] Department of Pediatrics, University of Cincinnati and Cincinnati Children's Hospital

Background: Women experience a greater rate of suicidal ideation (SI) than men and are 3 times more likely to attempt suicide. Although men overall are more likely to complete suicide, women who have a diagnosis of Major Depressive Disorder are twice as likely as men to complete. According to the CDC, the age-adjusted suicide rate among women has increased by 55% compared to a 28% increase in men over the last 20 years. Despite this increased risk, little is known about factors that may contribute to SI or suicide attempts (SA) among women. Our aims were to: 1) determine potential predictors of risk for SI and SA among women, 2) identify mood-related symptoms that may differentiate women who attempt suicide from those who report never attempting suicide. **Methods:** The data for this study stem from research conducted by the Women & Mood Disorders Taskgroup of the National Network of Depression Centers (NNDC). We acquired information from approximately 6000 women at elevated risk for depression at 17 sites affiliated with the NNDC*. Data included sociodemographic and reproductive status, behavioral and mental health history, and exposure to adversity. Women also completed the PHQ-9 and GAD-7. We used structural equation modeling and logistic regression to examine the aims. **Results:** The sample for this analysis (having complete data for SA and SI) included 3372 women, with a mean age of 42.78 (range 18 – 90). Seventeen percent reported a suicide attempt at some point during their lives and, of those, 44% reported current suicidal ideation. Two major symptoms distinguished women who attempted suicide from those who did not: their degree of 'feeling down, depressed or hopeless' and the extent to which they 'felt bad about themselves, a failure, or let their family down.' The strongest predictors of a SA were the frequency of suicidal thoughts (OR=3.3, p=0.000), a family history of a depression diagnosis (OR=1.6, p=0.000) and exposure to violence (OR=1.9, p=0.000). For SI, the primary predictor was severity of depression, with women who reported more severe depression having 5.2 times greater odds of frequent suicidal thoughts (p=0.000). Greater perceived life stress also contributed to increased odds of SI (OR=1.2, p=0.000). Although exposure to adversity in life contributed to both SI and SA, childhood abuse/trauma, stress, and exposure to violence appeared to have a stronger relationship to SA than SI. Younger age was associated with both SI and SA while lack of social support predicted only SI. **Conclusions:** There has been controversy regarding the actual value of assessing SI in preventing SA. Our results suggest that frequency of suicidal thoughts do play a key role in predicting vulnerability to SA, reinforcing the importance of assessing SI in the clinical setting. The strong predictive role of familial depression in suicide attempts combined with stressful/traumatic life experiences supports previous stress-diathesis models of suicide behavior. Further studies are needed to identify unique biological and psychological mechanisms that may mediate these effects for women. The salience of childhood abuse and domestic/community violence to suicide risk for women reinforces previous findings of our group and others that these adversities may differentiate suicide risk for women versus men. Lastly, our results demonstrate that different factors may influence SI and SA. Continued research is essential to understand varied paths that may lead to suicidal behavior among women, some of which may not relate to the frequency or intensity of their suicidal thoughts.

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24. The Role of Neuroactive Steroid Metabolism in Early Pregnancy Depression and Anxiety

Presenting Author: Elizabeth Wenzel University of Illinois at Chicago

The Role of Neuroactive Steroid Metabolism in Early Pregnancy Depression and Anxiety

Wenzel ES[1,2], Pinna G[2], Eisenlohr-Moul T[2], Penalver Bernabe B[3], Davis J[2], Maki PM[1,2,4]

[1]Department of Psychology, University of Illinois at Chicago, Chicago, IL

[2]Department of Psychiatry, University of Illinois at Chicago, Chicago, IL

[3]Department of Bioengineering, University of Illinois at Chicago, Chicago, IL

[4]Department of Obstetrics & Gynecology, University of Illinois at Chicago, Chicago, IL

Background: The perinatal period is a time of increased vulnerability to affective disorders, with rates of perinatal depression (PND) between 6.5%-12.9% and comorbid perinatal anxiety (PNA) in as many as 50% of PND cases. In women of color, we find rates to be even higher (20% PND, 10% PNA). Serum levels of progesterone and its neuroactive steroid (NAS) metabolites change significantly across the perinatal period. Allopregnanolone (ALLO) is a key NAS implicated in mood disorders and is a positive allosteric modulator at the $GABA_A$ receptor. Lower concentrations of ALLO have been associated with perinatal depression in third trimester and postpartum women. However, investigation of this relationship in early pregnancy and in relation to anxiety in racially and ethnically diverse populations is lacking. Additionally, investigation of additional neuroactive steroid isomers is lacking. We investigated a variety of NAS in depressed or anxious, and non-depressed or anxious women at two early perinatal timepoints. **Methods:** Fifty pregnant women (56% Black, 28% Latina) provided blood samples for NAS GC-MS analysis grouped into two general categories: positive allosteric modulators (ALLO, Pregnanolone) and negative allosteric modulators (Isoallopregnanolone and Epipregnanolone). Ratios of each of these metabolites to Progesterone (P4) served as a marker of NAS metabolism, the primary predictor variables. Women also completed a computerized adaptive test of mental health (CAT-MH™) which yielded diagnoses of major depressive disorder (MDD) or generalized anxiety disorder (GAD), the primary dependent variables. Both NAS and mood measures were obtained at two timepoints, ~10 weeks and ~27 weeks gestation. Logistic mixed effects models assessed the relationship between ratios of NAS metabolites to P4 and MDD and GAD. **Results:** Eighteen women (36%) screened positively for PND at one or both visits. Overall, higher ALLO:P4 (p=.03) and PA:P4 (p=.04) ratios were associated with MDD. At Visit 1 only, these relationships were not significant. At Visit 2, ALLO:P4 (p=.03), ISO:P4 (p=.05), and PA:P4 (p=.03) ratios were *higher* in depressed women compared to non-depressed women. Associations were particularly strong among women who were depressed at both visits compared to just one visit (p<.05). Twelve women (24%) screened positively for PNA at one or both visits. At Visit 2 only, significantly higher ratios of PA:Progesterone (p=.02) in women with anxiety were found. These associations were particularly strong in women with GAD at both timepoints. **Conclusions:** The present study suggests that *increased* metabolism of P4 to its NAS isomers is associated with affective disorders early in pregnancy in low-income women of color. The direction of this relationship differs from that reported in later pregnancy, where lower levels of ALLO are commonly associated with MDD. Future work is needed to determine if the increase in NAS metabolism precedes or is a consequence of MDD and the extent to which comorbid GAD may influence the directionality of this association.

25. Baseline symptom profile does not predict early response to electroconvulsive therapy (ECT) in major depressive disorder (MDD)

Presenting Author: Bijan Zarrabi Rush Medical College

Title:

Baseline symptom profile does not predict early response to electroconvulsive therapy (ECT) in major depressive disorder (MDD)

Abstract:

Electroconvulsive therapy (ECT) is currently one of the most effective treatments for depression. Some clinicians use previously researched “clinical predictors,” such as age and melancholic features, to help determine whether their patients are likely to respond early to ECT. However, there is minimal evidence to support this practice. We performed a retrospective chart review using one of the largest existing datasets of ECT patients to determine whether any particular symptom profile can predict rapid ECT response. 2142 treatment-seeking patients at McLean Hospital were assessed using the Quick Inventory for Depressive Symptomatology (QIDS) and Behavior And Symptom Identification Scale (BASIS-24) scores at baseline and after 5 ECT treatments. Outcomes included 1) percentage improvement in overall depression severity and 2) “responder” vs “nonresponder” status (responder ≥50% improvement in QIDS). We specifically investigated early response because later time points may be more biased by selective drop-out. Patients were divided into a training set (80%, n=1723) and test set (20%, n=431) and a lasso regression model was used to determine the amount of variance in clinical outcomes explained by baseline symptoms measured by the QIDS, BASIS-24, age, and sex. A total of 42 predictors were used (16 items on QIDS, 24 items on BASIS-24, age, and sex). Minimal clinical variance was explained by baseline clinical factors in both the training set (R2 = 4.8%, RMSE = 0.256) and the test set (R2 = 4.7%, RMSE = 0.258). Overall, baseline factors accounted for 4.8% of the variance in clinical outcomes (95% CI 0.0285, 0.0675), which was statistically significant but clinically modest. This suggests that previously researched clinical predictors may not be clinically useful in determining which patient will respond early to ECT. Future directions should include modeling this effect at different time points and at independent centers.

26. Treatment-resistant depression: expert consensus identified real-world experience and individualized care as key considerations for novel treatments in major depressive disorder

Presenting Author: Ella Daly Janssen Scientific Affairs

Treatment-resistant depression: expert consensus identified real-world experience and individualized care as key considerations for novel treatments in major depressive disorder

Abigail I. Nash, MD, PhD[1]; Stephane Borentain, MD[2]; Marguerite O'Hara, MPH, MBA[2], Qiaoyi Zhang, MD, PhD[2]; Sebastien Barbreau, PharmD[3]; Siobhan Mulhern Haughey, PhD[4]; Cynthia Bossie, PhD[1]; Ella Daly, MD[1]; Maju Mathews, MD[2], Timothy Ming, MSc[5], Tom Denee, MSc, MScBA[5], Nirav Nagda, MSc[6], Danielle Riley, MSc[6], Richard Perry[6]

[1]Janssen Scientific Affairs, LLC, Titusville, New Jersey, USA; [2]Janssen Research & Development, LLC, Titusville, New Jersey, USA; [3]Janssen EMEA, Paris, France; [4]Janssen EMEA, Dublin, Ireland; [5]Janssen EMEA, High Wycombe, UK; [6]Adelphi Values PROVE UK, Bollington, Cheshire, UK

Background: Despite the availability of numerous treatment options, up to one-third of patients with major depressive disorder (MDD) do not achieve adequate treatment response after two or more oral antidepressant therapies at adequate dose and duration during their current episode of MDD.[1] These individuals may be considered to have treatment-resistant depression (TRD). Novel antidepressant therapies have recently entered the healthcare landscape, including esketamine nasal spray (ESK), which was initially approved in the US in 2019, in conjunction with an oral antidepressant, for adults with TRD. Although newly approved treatments are supported by robust clinical trial programs, they generally enter the market without real-world data or experience, especially with regard to long-term use. An advisory panel was convened to provide expert opinion regarding the clinically appropriate duration of treatment with ESK for adults with TRD.

Methods: Using a Delphi panel, a structured communication method to elicit or identify consensus from a range of opinions,[2] psychiatrists from the EU, UK, and US with experience treating adults with TRD with ESK were recruited to participate in two online surveys followed by a live, anonymized discussion to reach consensus on statements focusing on treatment duration that were derived from the earlier survey rounds. Eligible respondents met predefined screening criteria that ensured: (1) they had previously participated in a TRD clinical trial for ESK and/or had real-world clinical practice experience treating patients with ESK and (2) were able to participate in sponsored research as per country-specific healthcare compliance and regulatory requirements. Participants were invited to participate via email through a third-party vendor and were compensated for their time. The study sponsor was blinded to the identity of the participants and had no direct contact with them at any stage. After completing two online surveys, participants attended a live anonymized virtual meeting, moderated by the research agency, to discuss the responses from the survey. The intention of this meeting was to reach a consensus regarding the appropriate treatment duration with ESK and provide feedback on the impact of discontinuation of ESK on patients in remission (ie, the period of time where a patient is either symptom-free or has only minimal symptoms based on physician opinion). Consensus was defined as >80% of participants expressing either their "agreement" or "disagreement" with a statement on a 9-point Likert scale (i.e., rating a statement from 7–9 or 1–3, respectively).

Results: Out of 77 psychiatrists who were contacted, 11 agreed to participate and completed the first survey. Of these, 10 completed the second survey and 9 (5 from the US, 4 from the EU) participated in the final live anonymized virtual meeting. Overall, panelists were unable to reach consensus regarding treatment duration for ESK in patients with TRD who had achieved long-term remission. There was general recognition that TRD is more difficult to treat and may require a longer treatment duration than MDD that is not treatment resistant, with consensus that treatment should be continued for a minimum of 6 months. Furthermore, panelists noted the current lack of real-world evidence for long-term treatment with ESK that would inform treatment decisions. The panel also highlighted the need to treat each patient individually due to heterogeneity within the patient population with TRD. Based on limited experience with ESK treatment in real-world practice or in clinical trial settings, panelists were reluctant to recommend an

appropriate treatment duration and expressed concern regarding restrictions on ESK treatment in the absence of real-world or substantive data.

Conclusion: Psychiatrists with expertise in treating patients with TRD place high value on the need for individualized treatment and real-world data specific to both the patient population and the treatment. Recommendations or restrictions on the clinically appropriate duration of ESK treatment are viewed as premature and inappropriate at this time, with the panel agreeing that treatment decisions are best left in the hands of the clinicians who can account for the multiple patient-specific factors that inform their clinical decision-making.

1. Rush AJ, Trivedi MH, Wisniewski SR, Nierenberg AA, Stewart JW, Warden D, et al. Acute and longer-term outcomes in depressed outpatients requiring one or several treatment steps: a STAR*D report. Am J Psychiatry. 2008;6(1):128-142.
2. Okoli C, Pawlowski SD. The Delphi method as a research tool: an example, design considerations and applications. Inf Manag. 2004;42(1):15-29.

Category – COVID 19 Research		
1. Mental health symptoms and substance use among non-healthcare essential workers during the COVID-19 pandemic		
Presenting Author:	Alison Athey	Johns Hopkins University
2. The Impact of COVID-19 Pandemic on Patient Mental Health in an Outpatient Psychiatry Setting, February-May 2021		
Presenting Author:	Tenzin Lhaksampa	Johns Hopkins University

1. Mental health symptoms and substance use among non-healthcare essential workers during the COVID-19 pandemic

Presenting Author: Alison Athey Johns Hopkins University

Mental health symptoms and substance use among non-healthcare essential workers during the COVID-19 pandemic

Background: Overall levels of distress, mental health symptoms, and substance use in the American population have increased during the COVID-19 pandemic. In Wuhan, China, half of non-healthcare workers reported clinically significant levels of depression symptoms during the COVID-19 pandemic. It is not clear how pandemic-era distress has impacted American non-healthcare essential workers. This study describes mental health symptoms and substance use among non-healthcare essential workers and assesses the unique impact of serving on the frontline of the pandemic in a nationally representative sample of American adults.

Methods: 3340 American adults completed an online survey in June 2020 regarding their experiences and mental health symptoms during the COVID-19 pandemic as part of a larger, longitudinal study. Participants were included in the study if they completed if they had complete data for variables of interest. Participants who identified as non-healthcare essential workers (*n* = 829) on a self-reported socio-demographic survey were compared to workers who had occupations that were not classified as essential (*n* = 662). Participants who reported that they worked in healthcare settings (*n* = 284) were excluded from analyses. Dependent variables included depressive symptoms (Patient Health Questionnaire (PHQ)-2 score), anxiety symptoms (General Anxiety Disorder-7 score), loneliness (Three-Item Loneliness Scale), pain, alcohol use (Alcohol Use Disorders Identification (AUDIT) measure score), substance use (NIDA Modified ASSIST score). Non-healthcare essential workers were compared to peers in univariate analyses (i.e., chi-square and independent samples t-tests). Linear regression analyses were used to assess the unique role of non-healthcare essential worker status in predicting mental health symptoms, over and above sociodemographic and self-reported COVID-19 diagnosis that differed between the groups in univariate analyses.

Results: Essential workers employed in non-healthcare occupations were similar to their non-essential worker peers in most sociodemographic characteristics including age, gender, sexual orientation, race, educational background, household income, and military service. Essential workers were more likely that non-essential worker peers to be married or cohabitating (χ^2 (*N* =1491) 6.54, *p* = .04) and to have children in the home (χ^2(*N* =1491) 8.46, *p* = .004). Univariate analyses indicated that essential workers left home significantly more often that non-essential workers (χ^2(*N* =1491) 23.05, *p* < .001) and that essential workers were significantly more likely to be diagnosed with COVID-19 (χ^2(*N* =1491) 14.02, *p* < .001). Essential workers reported significantly higher pain scores (*t* (1489) = 3.81, *p* < .001) than peers but showed similar levels of depression, anxiety, and loneliness. Although the effect was small, hierarchical linear regression indicated that essential worker status was associated with significantly lower pain scores (β = - .06, t (1489) = 2.43, *p* = .015) when controlling for the effects of COVID-19 diagnosis (β = .28, t (1489) = 11.23, *p* < .001), marital status (β = .03, t (1489) = 1.20, *p* > .05), and children living at home (β = .10, t (1489) = 3.80, *p* < .001). Essential workers had significantly higher substance use scores (t (1489) = 2.76, *p* = .006). The effect of essential worker status was not associated with substance use score in multivariate analysis.

Conclusions: American non-healthcare essential workers experienced more physical pain and substance misuse at the start of the COVID-19 pandemic compared to peers employed in jobs that were not considered essential. These adverse experiences may be associated with COVID-19 diagnoses or the strain of protecting family members from COVID-19

exposures. Longitudinal studies are needed to identify the long-term effects of pain and substance use on essential workers given the increase in behavioral emergency deaths (e.g., accidental overdose) during the pandemic.

Table 1. Univariate comparisons of essential workers' and non-essential workers' sociodemographic characteristics in March 2020

	Essential Workers	Non-Essential Workers	Test Statistic
	N = 829	*N* = 662	
Age M (SD)	41.33 (13.43)	40.42 (13.00)	1.32
Gender N (%)			3.93
Male	428 (51.6)	310 (46.8)	
Sexual Orientation N (%)			.01
Heterosexual	759 (91.6)	605 (91.4)	
Race/Ethnicity N (%)			6.62
White	600 (72.4)	488 (73.7)	
Black American	46 (5.5)	52 (7.9)	
Asian/Pacific Islander	106 (12.8)	76 (11.5)	
Latinx/Hispanic	69 (8.3)	39 (5.9)	
Other	8 (1.0)	7 (1.1)	
Education N (%)			4.06
High School or less	107 (12.9)	70 (10.6)	
Associates Degree	139 (16.8)	100 (15.1)	
Bachelor's Degree	344 (41.5)	276 (41.7)	
Postgraduate	239 (28.8)	216 (32.6)	
Marital Status N (%)			6.54*
Single	225 (27.1)	220 (33.2)	
Divorced	52 (6.3)	37 (5.6)	
Married or Cohabitating	552 (66.6)	405 (61.2)	
Household Income M (SD)			10.04
< $30,000	78 (9.4)	62 (9.4)	
$31,000-$80,000	266 (32.1)	238 (36.0)	
$81,001-$120,000	229 (27.6)	152 (23.0)	
$121,001-$160,000	132 (15.9)	110 (16.6)	
$160,001-200,000	66 (8.0)	38 (5.7)	
>$200,000	58 (7.0)	62 (9.4)	
Children at Home N (%)	393 (47.4)	264 (39.9)	8.46**

Military Service N (%)	87 (10.5%)	51 (7.7%)	3.41

Note: Independent samples t-tests were used to compare continuous variables. Chi-squared tests were used to compare categorical variables. * indicates * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2. Univariate comparisons of essential workers' and non-essential workers' confounding workplace exposure characteristics

	Essential Workers	Non-Essential Workers	Test Statistic
Occupation N (%)			32.34***
Management, Business, Finance	221 (26.7)	172 (26.0)	
Computer, Engineering, Science	99 (11.9)	80 (12.1)	
Education, Legal, Community Service, Arts Media	135 (16.3)	166 (25.1)	
Service	31 (3.7)	33 (5.0)	
Sales	86 (10.4)	68 (10.3)	
Admin	115 (13.9)	79 (11.9)	
Farming, Fishing, Forestry	6 (0.7)	3 (0.5)	
Construction, Mining	30 (3.6)	17 (2.6)	
Maintenance and Repair	15 (1.8)	5 0.8)	
Manufacturing	54 (6.5)	22 (3.3)	
Transportation	37 (4.5)	17 (2.6)	
Left Home N(%)			23.05***
Never	18 (2.2)	18 (2.7)	
Once per month	67 (8.1)	50 (7.6)	
Once per week	239 (28.8)	243 (36.7)	
Several per week	281 (33.9)	236 (35.6)	
Daily	224 (27.0)	115 (17.4)	
COVID-19 diagnosis	38 (4.6)	8 (1.2)	14.02***

Note: Independent samples t-tests were used to compare continuous variables. Chi-squared tests were used to compare categorical variables. * indicates * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3. Univariate comparisons of essential workers' and non-essential workers' clinical characteristics in March 2020

	Essential Workers	Non-Essential Workers	Test Statistic
PHQ-2 Score M (SD)	1.62 (1.69)	1.53 (1.58)	.98
GAD-7 Score M (SD)	5.62 (5.47)	5.12 (5.12)	1.79
Three-Item loneliness Scale Score M (SD)	4.87 (1.86)	4.90 (1.75)	.32
Pain Score M (SD)	1.24 (.43)	1.16 (.37)	3.81***
AUDIT Score M (SD)	3.18 (2.96)	2.91 (2.55)	1.90
Modified ASSIST Score M (SD)	3.57 (8.41)	2.49 (6.61)	2.76**
Painkiller use N (%)	151 (18.2)	93 (14.0)	4.67*
Stimulant use N (%)	119 (14.4)	80 (12.1)	1.64
Sedative use N (%)	142 (17.1)	93 (14.0)	2.63
Marijuana use N (%)	175 (21.1)	113 (17.1)	3.85*
Cocaine use N (%)	102 (12.3)	60 (9.1)	3.99*
Club drug use N (%)	104 (12.5)	66 (10.0)	2.42
Hallucinogen use N (%)	107 (12.9)	60 (9.1)	5.47*
Heroin use N (%)	101 (12.2)	59 (8.9)	4.11*
Inhalant use N (%)	106 (12.8)	58 (8.8)	6.09**
Methamphetamine use N (%)	104 (12.5)	62 (9.4)	3.76*

Note: Independent samples t-tests were used to compare continuous variables. Chi-squared tests were used to compare categorical variables. * indicates * $p \leq .05$, ** $p < .01$, *** $p < .001$.

2. The Impact of COVID-19 Pandemic on Patient Mental Health in an Outpatient Psychiatry Setting, February-May 2021

Presenting Author: Tenzin Lhaksampa Johns Hopkins University

The Impact of COVID-19 Pandemic on Patient Mental Health in an Outpatient Psychiatry Setting, February-May 2021

Tenzin Lhaksampa[1], Michael Morreale[1], Alexis Becerra[1], Ilana Cohen[1], Michael Van Wert[1], Anne Ruble[1], Peter P. Zandi[1]

[1] Department of Psychiatry & Behavioral Sciences, Johns Hopkins Mood Disorders Center, Johns Hopkins University School of Medicine, Baltimore, MD, USA

Background: Several aspects of life during the COVID-19 pandemic lead to heightened risk for negative mental health outcomes[1,2]. Particularly vulnerable were psychiatric/psychological clinical populations[2,3]. In light of these previous findings, our group designed and disseminated a survey to better understand how the COVID-19 pandemic has affected the mental health of adult patients in two of our outpatient Psychiatry clinics.

Methods: *Distribution:* Surveys were distributed to two participating outpatient clinics, the Johns Hopkins Bayview Community Psychiatry Program and the Johns Hopkins Resident Outpatient Continuity Clinic via a Qualtrics generated email link. A potential participant list was generated by an EPIC database search for any person with an encounter in either clinic over the past year. While a total of 3021 initial surveys were distributed, only those 18+ were able to respond to the mental health questions, leading to a survey pool of 2746. Surveys were initially distributed on February 16th/17th and were closed on May 14th. During the response collection period, non-respondents received twice weekly email reminders until April 1st, at which point 300 remaining non-responders were randomly selected for a telephone follow-up survey. *Statistical Analysis:* Six mental health domains (depression, anxiety, anger, suicidal ideation, difficulty sleeping, and difficulty concentrating) were included in this survey. Respondents were asked to consider each domain over the past three months and were given the reply options of (a) not a problem, (b) symptoms worsened, (c) no change, or (d) symptoms improved. Responses of not a problem and no change were not included in our analysis. For each mental health domain, a series of unadjusted logistic regressions were run to examine the association between mental health changes and socio-demographic factors. In our models the dichotomized mental health domains served as the dependent variables (with a response of improvement set as the reference group), while the socio-demographic factors (age, sex, race, education) were the independent variables.

Results: A total of 568 surveys (21% response rate) were completed. Of the respondents, a majority identified as white (78%) and female (62%). Most of the respondents had at least some college education (79%) and were past young adulthood (90%). Of the six mental health domains that were queried, response rates ranged from 87% (difficulty concentrating) to 88% (depression and difficulty sleeping). All domains, with the exception of suicidal ideation, had a higher percentage of respondents experiencing worsening symptom load. Our unadjusted logistic regression models demonstrated that adults 26 years or older were significantly more likely to report worsening depressive symptoms (OR= 2.41; 95% CI, 1.11-5.05) and worsening concentration problems (OR= 2.70; 1.20-5.82) compared to young adult patients (18-25). In addition, respondents who identified as Black/African American were significantly less likely to report worsening depressive symptoms (OR=0.38; 95% CI, 0.18-0.83) than white patients.

Conclusions: The COVID-19 pandemic served as a major stressor and disruptor of everyday life and has been demonstrated to have exacerbated mental health symptoms in various populations, including our survey population[1,2]. Our preliminary results demonstrate the importance of monitoring patient health both in the clinic and in the clinical whitespace, as well as working to identify potentially vulnerable groups during times of crisis.

References:

Benke, C., Autenrieth, L. K., Asselmann, E., & Pané-Farré, C. A. (2020). Lockdown, quarantine measures, and social distancing: Associations with depression, anxiety and distress at the beginning of the COVID-19 pandemic among adults from Germany. Psychiatry Research, 293, 113462.

Rajkumar, R. P. (2020). COVID-19 and mental health: A review of the existing literature. Asian Journal of Psychiatry, 52, 102066.

Hao, F., Tan, W., Jiang, L., Zhang, L., Zhao, X., Zou, Y., ... & Tam, W. (2020). Do psychiatric patients experience more psychiatric symptoms during COVID-19 pandemic and lockdown? A case-control study with service and research implications for immunopsychiatry. Brain, behavior, and immunity, 87, 100-106.