PROTOCOL TITLE:

A Randomized Pilot Study Examining DCEEG Characteristics in Ketamine versus Methohexital Induction in Depressed Patients Receiving Electroconvulsive Therapy

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REGULATORY FRAMEWORK:

Please indicate all that apply:

☐	DOD (Department of Defense)
☐	DOE (Department of Energy)
☐	DOJ (Department of Justice)
☐	ED (Department of Education)
☐	EPA (Environmental Protection Agency)
☐	FDA (Food and Drug Administration)
☒	HHS (Department of Health and Human Services)
☐	VA
☐	Other:

Is this a clinical trial per the NIH definition of a Clinical Trial? ☒ Yes ☐ No

NIH Definition of a Clinical Trial:

A research study in which one or more human subjects are prospectively assigned to one or more interventions. An "intervention" is defined as a manipulation of the subject or subject's environment for the purpose of modifying one or more health-related biomedical or behavioral processes and/or endpoints. Examples include: drugs/small molecules/compounds; biologics; devices; procedures (e.g., surgical techniques); delivery systems (e.g., telemedicine, face-to-face interviews); strategies to change health-related behavior (e.g., diet, cognitive therapy, exercise, development of new habits); treatment strategies; prevention strategies; and, diagnostic strategies. (which may include placebo or other control) to evaluate the effects of those interventions on health-related biomedical or behavioral outcomes.

If yes, please confirm that the research team is familiar with and agrees to comply with the investigator requirement to register the study on the

ClinicalTrials.gov database. Additionally, the approved consent document(s) must be uploaded to the ClinicalTrials.gov database☒ Yes ☐ No

FUNDING:

CTSC Pilot Project: CTSC funding pending

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1. Objectives

Electroconvulsive therapy (ECT) is an effective treatment for depression, mania, and psychosis, and has been around for over 80 years. An initial series of ECT consists of 8-12 treatments. At each treatment, electrical current passes through the brain and induces a seizure. The reason for ECT's high efficacy in a heterogeneous set of mental illnesses remains unknown. Without a biomarker of treatment adequacy, the titration schedule for dosing was empirically derived and a trial and error approach dictates treatment.

The electroencephalogram (EEG) is used to monitor seizure activity during ECT. EEG measures have been evaluated as markers for treatment adequacy, but were found to be ineffective, mainly due to EEG's inability to discriminate between dosages in unilateral electrode placement and the weak association between EEG characteristics and clinical outcome [1]. Our neuromodulation group has recently deployed direct current EEG (dcEEG) in patients undergoing ECT. DcEEG differs from normal EEG by its ability to measure slow cortical potentials (SCPs) in low frequencies. SCPs are shifts in the cortical electrical activity lasting from several hundred milliseconds to several seconds. These SCPs may offer insight into inhibitory processes heretofore unexplored. We have captured large infra-slow brain activity using dcEEG on patients receiving ECT. This activity is consistent with a type of SCP called cortical spreading depression (SD). These so-called "brain tsunamis" are powerful, propagating waves of near-complete depolarization resulting in suppression of neuronal activity and are associated with the pathophysiology of stroke, traumatic brain injury, epilepsy, and migraines [2]. However, studies in rats and mice have associated SD in healthy brain tissue with neurogenesis [3, 4]. One in-vivo study with rats found that SD happened during ECT and suggested SD-induced neurogenesis as the neurobiological element underpinning ECT's clinical effectiveness [5]. We can observe the role SDs play in ECT based on the anesthesia used.

Ketamine is an induction agent often used in ECT. Ketamine reduces seizure threshold and was thought to produce superior results given the longer and more pronounced seizures seen in ECT. However, multiple randomized controlled trials (RCTs) have shown no difference in clinical efficacy between ketamine and other induction agents [6]. Unlike other induction agents, ketamine blocks SDs [7]. This may explain why ketamine has not delivered on its promise. While it accentuates seizure production and strength, it may block SD-induced neurogenesis.

Methohexital is another induction agent used in ECT. Although methohexital decreases seizure length and raises seizure threshold in comparison to ketamine, there is no difference in clinical outcome between methohexital and ketamine when used with ECT [8, 9].

Our long-term goal is to develop a biomarker of treatment in patients receiving ECT. By having this biomarker, practitioners could move towards individualized treatment parameters. We hypothesize that ictal power and post-ictal infra-slow waves will be associated with clinical response and the choice of anesthetic agent will accentuate ictal or post-ictal morphology. We propose a pilot project using dcEEG to look at infra-slow waves in depressed patients receiving ECT randomized to ketamine or methohexital. The rationale for this project is to identify biomarkers of treatment adequacy in ECT, which could lead to decreased morbidity and mortality with the procedure and lessen the burden of depression in our patient population.

Aim 1: Identify EEG biomarkers related to clinical response

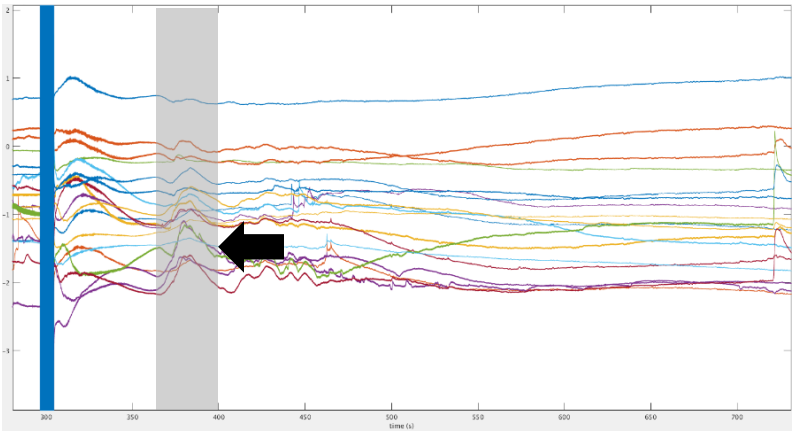
Hypothesis 1.1: Ketamine will be associated with increased ictal power and increased post-ictal suppression compared to methohexital
Hypothesis 1.2: Methohexital will be associated with post-ictal infra-slow waves
Hypothesis 1.3: Increased ictal power and infra-slow waves will be associated with clinical outcomes

At the completion of this pilot project, we expect to identify infra-slow characteristics using dcEEG that correspond with clinically effective treatment. We plan to further evaluate these phenomena as a potential biomarker of treatment adequacy with the goal of individualizing ECT treatments and improving standard of care.

2. Background

Historically it was thought that inducing a seizure was all that was needed to produce the clinical effects seen in ECT, but multiple studies across the past 8 decades have shown varying rates of efficacy and severity of side effects based on ECT stimulus parameters. We learned empirically that electrode placement (bitemporal versus unilateral) and stimulus parameters that affect electrical pulse and pulse train matter [10]. However, practitioners continue to focus on total charge as the primary metric, largely ignoring the role individual stimulus parameters play in the equation.

Figure 1: 24-Lead ECT capturing spreading depression (box with arrow)



A biomarker of treatment response would help in evaluating clinical efficacy and accelerate evaluation of individual ECT parameters. There have been many potential biomarker for depression including hormones, cytokines, and neuro-imaging. These investigations have been met with disappointing results [11]. EEG has also been evaluated as a potential biomarker in ECT, and there have been several advances that warrant a revisit to this line of inquiry. Firstly, traditional EEG filters out low frequency bands. Our preliminary data shows large infra-wave phenomena suggesting significant inhibitory activity (see figure 1) using dcEEG. This newly-captured neuronal activity during ECT could act by itself or in conjunction with ictal and postictal phenomena observed in normally observed frequency bands as a potential biomarker of treatment adequacy. Secondly, the EEG we propose is 24-lead, whereas prior investigations used up to 19-lead [12-14]. Our group has noticed more pronounced infra-slow waves in a subsection of the leads, meaning with greater resolution, we may be picking up neuronal activity that was previously missed. Thirdly, the studies evaluating EEG were carried out before ECT parameters were optimized with respect to seizure efficiency (high frequency and short pulse train duration). Current ECT devices have improved parameter ranges to individualize and optimize clinical outcomes.

3. Study Design

This single-site clinical investigation will use assessments before, during and after the ECT series. At the first time point (T1), subjects will be randomized to ketamine or methohexital induction. The second time point (T2) will be the second ECT treatment. The third time point (T3) will occur midpoint, and the final time point (T4) will be the endpoint at the last ECT treatment. The patient will be blinded to the anesthetic.

4. **Inclusion and Exclusion Criteria**

Inclusion Criteria, Major Depressive Disorder (MDD) & Bipolar Disorder (BPD)-Depressed: 1) Structured Clinical Interview for DSM-5 will confirm diagnosis of MDD or BPD-depressed (with or without psychotic features); 2) the clinical indications for ECT including treatment resistance or a need for a rapid and definitive response; 3) Hamilton Depression Rating Scale 24-item (**HDRS-24**) ≥ 21; and 4) age range between 18 and 65 years of age. Per UNM ECT clinical service recommendations, subjects will be requested to taper and dc scheduled psychotropic medications with the exception of as needed medications for sleep or anxiety.

Exclusion Criteria: 1) Defined neurological or neurodegenerative disorder (e.g., history of head injury with loss of consciousness > 5 minutes, epilepsy, Alzheimer's disease); 2) other psychiatric conditions (e.g., schizophrenia, schizoaffective disorder, bipolar disorder); and 3) current drug or alcohol use disorder, except for nicotine and marijuana 4) adults unable to consent, pregnant women, prisoner*;* 5) Have contraindications to methohexital and ketamine as described in the package inserts*;* 6) non-English speakers; 7) Patients that cannot tolerate Methohexital and Ketamine.

5. **Number of Subjects**

26 subjects meeting the inclusion criteria will be recruited for this investigation. Our total sample size (n = 26) allows for a conservative 15% attrition rate leaving a final sample size of 22. This recruitment rate of 26 subjects per year will complete subject recruitment 1 year after study initiation. Sample size calculation is based on the 2004 Perera et al. paper examining ictal power between a threshold group and suprathreshold group (Cohen's d = 1.19) with variances of .24 and .25 respectively. Assuming a power of .8 and a two-sided alpha (.05), we will need 11 patients in each group to adequately power our analysis, which is in line with our recruitment projections.

6. **Study Timelines**

Individual subjects will have 4 points (T1-T4) in the study with the endpoint being their last treatment. ECT is done three times weekly and a typical series includes 8-12 treatments. This means that patients will be enrolled and participating in research for approximately one month. The study period will be one year long with an additional three months for analysis for a total of 15 months.

7. **Study Endpoints**

The primary endpoints include change in depression rating scale. Changes in depression rating will be compared with total ictal power and postictal suppression along with presence and power of infra-slow waves on dcEEG.

8. **Research Setting**

Patients will be recruited through the UNMH ECT consult service. All data collection will take place at the UNM Center for Psychiatric Research, or the ECT service at the University of New Mexico. All clinical assessments and neuropsychological testing will be conducted in an interview room or in a private patient room.

9. **Resources Available**

Investigators: The PI (Dr. Miller) is a board-certified Psychiatrist and Assistant Professor at UNM. He has been on the neuromodulation service and doing ECT for two years. He has a recent publication on electrode placement and ECT. He has .5 FTE devoted to completing this project as this constitutes his Master's Thesis in the MSCR program. He plans to apply to the CTSC for pilot grant funding.

10. Prior Approvals

Departmental Review Form signed by Department Chair uploaded into Click under "supporting documents."

11. Multi-Site Research

NA

12. Study Procedures

Clinical Assessments: The primary clinical response measure will be change in the QIDS C and QIDS SR [15]. The trained clinical rater will use the structured interview for the HDRS-24 to examine inter-rater reliability [16]. The initial visit will also include the Maudsely Staging Method Form for treatment resistance [17], ECT Appropriateness Scale to assess the indication for ECT [18], Medical History form to gauge overall medical burden, and Edinburgh Handedness Inventory [19].

Neuropsychological Assessments: The Montreal Cognitive Assessment, a measure of global cognitive function that is sensitive to gross neurocognitive abnormalities, will be used for screening for preexisting cognitive impairment [20, 21]. The Dot Counting Test will measure effort. The Test of Premorbid Function estimates premorbid intellectual function [22] that will be used as a potential covariate in analyses. The Autobiographical Memory Test will assess free recall and retrieval patterns (specific versus general) of retrospective autobiographical memories [23-25]. The Hopkins Verbal Learning Test-Revised (HVLT-R) will measure learning strategies, free recall, and recognition memory [26]. The Delis Kaplan Executive Function System (DKEFS) Color-Word Interference and Verbal Fluency Test measures processing speed, sequencing and cognitive flexibility [27-31]. To minimize practice effects, we will use three different published versions of the HVLT-R at each time point [32]. Also, we will construct a reliable change index for all cognitive variables of interest [33]. Following published guidelines, we will compute the HVLT-R percent retention score, which will be our primary outcome measure [34]. The percent retention score is a useful measure of hippocampal dependent memory function that reduces the possibility of over-estimating memory function from immediate and delayed free recall scores [34]. The entire neuropsychological battery (completion time < 60 minutes) will be used to compute composite z-scores that represent global cognitive function at each time point for secondary analysis.

ECT: The treating anesthesiologist will determine the appropriate dose for this procedure. The anesthetic agents include methohexital and ketamine, general anesthetics, and succinylcholine, a depolarizing neuromuscular blocker. Subjects will be randomized into methohexital and ketamine arms prior to the first ECT treatment. Both induction agents are considered standard of care during ECT. The first ECT session will determine individual seizure thresholds to ensure subsequent treatments are delivered at supra-threshold intensities. Motor, electroencephalographic and heart rate parameters will be recorded for each treatment.

Study Protocol: Subjects will receive their baseline depression and cognitive assessment 0 to 48 hours prior to the first ECT session (T1). One day after the sixth ECT treatment (T3), subjects will receive their second depression and cognitive assessment. Treatments will continue thrice weekly until clinical response, which

typically occurs between six and twelve treatments. The final assessment will occur after their last ECT treatment in the series (T4) and will include depression and cognitive assessments. DcEEG data will be collected at T1-T4 using a non-invasive cap that covers the patient's head. Per standard of care, change of electrode placement will be assessed at the midpoint (T2) by the treating psychiatrist. If the patient is not responding to ECT they may be switched from RUL to bitemporal placement. This assessment will not be affected by the research protocol.

13. Data Analysis

See effect size calculation in question #5 for hypothesis 1.1. To the best of our knowledge, spreading depression has never been studied in ECT (aside from our preliminary findings). We will use the effect size for hypothesis 1.1 to guide us.
In terms of analyzing the mean power of the waves noted, we plan to calculate the sum of the mean power per epoch across T1-T4 data points to get total ictal power, as well as smaller epochs to calculate total infra-wave power and post-infra-wave suppression. We will also use chai2 to compare number of infra-slow waves and t-tests to compare power of infra-slow waves and total ictal power of seizures and post-ictal suppression in the methohexital group. We do not expect to see infra-slow waves in the ketamine group.

14. Provisions to Monitor the Data to Ensure the Safety of Subjects

Methohexital and ketamine are both standard of care anesthetic agents used in ECT and the dcEEG device is worn on the scalp and is non-invasive. If the patient does not tolerate the anesthetic chosen, then they will be switched to the other anesthetic and act as a cross-over cohort. The medications and ECT device used in this study are standard of care. In the unlikely event that at the midpoint assessment (6 months) greater than 50% of patients have refused to wear the EEG cap, our study will not be sufficiently powered and will be terminated.

15. Withdrawal of Subjects

If at any time a participant decides to withdraw from the study, the participant will be debriefed by the study coordinator or principal investigator as to the reason for their withdrawal. The participant will then be thanked for their time and compensated for the extent of their participation. If the participant wishes to withdraw, they will be asked if they will allow data already collected on them to be used in the study analysis. If not, the data associated to their identifying code will be purged from the study database.

16. Data Management/Confidentiality

Some mental health information will be retained, including primary diagnosis and results of scales/cognitive tests. Patient will be made aware at time of consent that data will be de-identified immediately and stored in a secure location, and that data used in final analysis will not have any identifiable markers and will be de-linked at close of study. Records will be kept strictly confidential and will not be inspected by any other agency unless required by law. Data will be de-identified as appropriate to the UNM Human Research and Review Committee and HIPPA requirements by assigning a randomized eight-digit number to each participant upon entry into the study. This number will be used for all correspondence between study investigators and all data collection and analysis after the initial screening visit. Any personal information entered into computers is password protected and monitored for suspicious activity. In order to contact subjects for telephone visits and/or other matters, it will be necessary to retain names and telephone numbers of active subjects. However, these direct identifiers will not be stored with any clinical data or subject information in order to protect confidentiality. Any direct identifiers will be stored in

locked cabinets and in password-protected databases, separate from any clinical data. These will only be accessible by key study personnel. A link between study code numbers and direct identifiers will be retained in order to contact subjects for visit appointments or at a later date to inform them of newly received information. This link will be retained for the duration of the study. Subjects will be identified only by unique Patient ID numbers in Case Report Forms (CRFs) and electronic CRFs. The CRFs will be maintained in a locked cabinet housed in the Center for Psychiatric Research. These documents will only be accessible by authorized study staff and will comply with HIPPA requirements for the storage of health information. Moreover, all information will be in double-locked rooms per HIPAA specifications. At the time of study closure, all participant identifiers (name, address, etc.) will be made inaccessible to the research team. The results of this research may be presented at meetings or in publications; however, participants' identity will not be disclosed. The participant will be provided with a copy of the consent form to take home upon request.

Devices:
MECTA Spectrum 5000Q (Electroconvulsive Therapy): The UNM ECT service has two MECTA 5000Q ECT machines for inpatient and outpatient ECT services.

Stimulus output
Current: 800 mA constant current, limited to 450volts

- Frequency: 10 to 120 Hz, in 10 Hz increments
- Pulse width: 0.3 to 1.0 ms, in 0.25 ms increments
- Duration: 0.50 to 8.0 s
- Maximum output: standard maximum output 576 mC Recording Channels
- Channels 1 & 2, EEG Stimulus Generation
- Waveform
- Bipolar
- Brief pulse
- Square wave

dcEEG: The 24-channel EEG monitoring (https://mbraintrain.com/smarting/) will include the low frequency range (< 0.01). EEG set-up will be facilitated with the use of a skull cap that includes the multi-channel electrodes. The EEG signal will be digitally recorded for approximately 30-minutes (pre- and post-ECT) and transferred to a dedicated device over Bluetooth. This dedicated device will not be on the network.

17. Data and Specimen Banking

Data will be stored in locked cabinets at the UNM Center for Psychiatric Research. Subjects' charts will be stored without direct identifiers. Only research staff designated by Dr. Miller will have access to these records. In order to contact subjects for telephone visits and/or other matters, it will be necessary to retain names and telephone numbers of active subjects. However, these direct identifiers will not be stored with any clinical data or subject information in order to protect confidentiality. Any direct identifiers will be stored in locked cabinets and in password-protected databases, separate from any clinical data. These will only be accessible by key study personnel. A link between study code numbers and direct identifiers will be retained in order to contact subjects for visit appointments or at a later date to inform them of newly received information. Information collected will be labeled with a study number

and will be entered into a computer database that is password protected. The data will be stored on the MRN computer network and compact disks, and will be destroyed 5 years after publication. Clinical and research data will be de-identified after the study is complete and closure documents are submitted to the UNM IRB. The de-identified clinical data will be kept indefinitely for research purposes.

Electronic Data: Collaborative Neuroinformatics Suite (COINS). This web-based neuroimaging and neuropsychology software suite offers versatile, automatable data upload/import/entry options, rapid and secure sharing of data among PIs, querying and export all data, real-time reporting, and HIPAA and IRB compliant study-management tools suitable to large institutions as well as smaller scale neuroscience and neuropsychology researchers. Network is accessed on a secure server and has firewalls in place. Controlled access is granted to only study team members.

De-identified information will be available at the Mind Research Network Data Sharing Repository for future research. Both the NDA and Mind Research Network Data Repositories are clearly described in the “Data Sharing” section of the consent form.

18. Risks to Subjects

Participation in this study may involve minimal risk and/or discomforts associated with repeated cognitive testing and the time taken to place the dcEEG cap on their head prior to treatment at four different time points (T1-T4). The anesthetic agents are both standard of care in ECT. There is a risk of side effects with these medications, but these risks are no higher than if they were not in the study.

19. Potential Benefits to Subjects

There is no anticipated benefit for subjects.

20. Recruitment Methods

The UNM ECT Treatment Program receives referrals from inpatient and outpatient providers at the UNM Mental Health Center. The treatment team will clinically determine who will be eligible for the study and document this in the subject’s study records. The research team will only approach patients for the study protocol that have been identified by the primary treatment team. Patients diagnosed with Major Depressive Disorder and Bipolar Disorder currently Depressed are eligible for ECT treatment will be recruited from the UNM ECT Treatment Program.

21. Provisions to Protect the Privacy Interests of Subjects

From the standpoint of privacy and confidentiality, the subject's welfare will be safeguarded by responsible, systematically controlled procedures in the collection of information for both clinical and research purposes. Subjects may refuse to answer any question at any time. Recorded information for research purposes will be identified only by subject initials and a study code number. Subject data will be kept in locked cabinets in the research clinic with limited access granted only to designated research personnel. These processes will be in place throughout the entire research process, from initial consenting to research, through research procedures, and follow-up. The study PI will maintain confidentiality of all records to the extent permitted by applicable laws.

22. Economic Burden to Subjects

Subjects will be not placed under economic burden due to this trial.

23. Compensation

This study will require data gathering at 4 points (T1-T4). Subjects will be compensated $50.00 for completion of wearing the dcEEG cap. They will receive $50.00 for participating in the cognitive and depression assessments for each visit (up to 3 visits). The most compensation a patient can receive is $200.00. The compensation is for the

extra time for EEG preparation and neuropsychological assessments. All compensation will be given in the form of a merchandise card.

Compensation for Research-Related Injury

UNMHSC will provide subjects with emergency treatment, at their own cost. No commitment is made by the University of New Mexico Health Sciences Center (UNMHSC) to provide free medical care or money for injuries to participants in this study. In the event that you have an injury or illness that is caused by a subject's participation in this study, reimbursement for all related costs of care will be sought from their insurer, managed care plan, or other benefits program. If the subject does not have insurance, they may be responsible for the costs. Subjects will also be responsible for any associated co-payments or deductibles required by their insurance.

24. Consent Process

Discussion of the proposed study will occur separate from the evaluation for the ECT procedure. Potential subjects will have ample time to ask questions regarding the nature of this study and will be clearly informed that this imaging investigation is optional. Informed consent will be discussed with each participant with plenty of opportunities to ask questions. The study PI (Miller), a board-certified psychiatrists will assess decisional capacity for each subject during the consent process. The PI has experience with the assessment of decisional capacity in both research and clinical domains. Patients with decisional capacity will provide written informed consent for study participation. Subjects who do not have decisional capacity will not be included in this investigation.

Subjects who are not yet adults (infants, children, teenagers

NA

Waiver or Alteration of Consent Process (consent will not be obtained, required element of consent will not be included, or one or more required elements of consent will be altered)

NA

25. Documentation of Consent

Notes will be kept to document the informed consent process. Narratives will be completed by study staff noting how subjects were referred for research, contact dates, questions asked during the consent process, subject understanding, and the dates they reviewed and signed the consent. Narrative forms will be securely filed with other subject information to document each visit and contact, in addition to required study measures and procedures. Subjects will be given a copy of their signed consent form and HIPAA. A member of the research team will review the HIPAA authorization during the consent.

26. Study Test Results/Incidental Findings

Depression, cognitive, and dcEEG data will be shared with the patients. There are no potential incidental findings noted.

27. Sharing Study Progress or Results with Subjects

As above, the dcEEG, cognitive and depression assessment results will be shared with the patient. There will be no summary provided to the patient with research information at the end of the study.

28. Inclusion of Vulnerable Populations

Sample inclusion will not include gender restrictions. It is expected that our sample will reflect the gender distribution of our ECT service over the last 5 years. Recruitment

will reflect the demographics of the state of New Mexico. Prisoners and pregnant women will be excluded from the study. The age range of 18 to 65 years was selected to limit the variability of age-related volume changes. Subjects with pre-existing diagnoses of neurodegenerative diseases or cerebrovascular pathology will be excluded. Dr. Miller (PI) will assess decisional capacity of all subjects participating in this investigation. Subjects that do not have decisional capacity for this investigation will not be included.

Community-Based Participatory Research

NA

29. Research Involving American Indian/Native Populations

The proposed research inclusion criteria will be open to all patients with major depressive disorder and bipolar disorder meeting the inclusion criteria. The UNM ECT service is part of a tertiary referral service and the demographics of this service reflect the state of New Mexico. This investigation will not have targeted recruitment outside of routine clinical referrals to the UNM ECT service.

30. Transnational Research

NA

31. Drugs or Devices

Methohexital: FDA approved for anesthesia

Ketamine: FDA approved for anesthesia

Mecta 5000q: FDA approved for ECT with 2-channel FP1 FP2 EEG capabilities for clinical decision making

SMARTING EEG

32. Principal Investigator's Assurance

By submitting this study in the Click IRB system, the principal investigator of this study confirms that:

☒ The information supplied in this form and attachments are complete and correct.

☒ The PI has read the Investigator's Manual and will conduct this research in accordance with these requirements.

☒ Data will be collected, maintained and archived or destroyed per HSC Data Security Best Practices, including:

1. **Best Practice for data collection** is for it to be directly entered onto a data collection form that is in a secured access folder on an HS drive behind a firewall, or in a secure UNM Data Security approved system such as RedCap.
2. **Data collection of <u>de-identified data</u>**, if done in a clinical setting or other setting that does not allow direct entry into a secured system, may be done temporarily using a personal or university owned electronic storage device or hard copy document. **The important security safeguard is that no identifiers be include if the data is entered or stored using an untrusted device or storage.**
3. **Permanent (during data analysis, after study closure**) storage must reside on HSC central IT managed storage. Processing of data (aggregation, etc.) are to be carried out in such a way as to avoid creating/retaining files on untrusted storage devices/computers. Trusted devices are HSC managed and provide one or more of following safeguards: access logs, encryption keys, backups, business continuity and disaster recovery capabilities.

4. **Alternate storage media** must be approve by HSC IT Security as meeting or exceeding HSC central IT provided security safeguards.

Checklist Section

This section contains checklists to provide information on a variety of topics that require special determinations by the IRB. Please complete all checklists relevant to your research.

I. Waivers or Alterations of Consent, Assent, and HIPAA Authorization

Partial Waiver of HIPAA Authorization for Screening/Recruitment

Complete the following additional questions/attestations if the records you will review to identify potential subjects and/or determine eligibility include Protected Health Information (PHI).

1. Will you be recording any PHI when conducting the records review to identify potential subjects and/or determine eligibility?

   ☒ Yes. Describe: *Patient's primary mental health diagnosis, age*

   ☐ No

2. If you answered "Yes" to question 6 above, please describe when you will destroy identifiers (must be the earliest opportunity consistent with the conduct of the research) or provide justification for why they must be retained:

   Patient information will be de-identified at time of enrollment, when they will be assigned an 8 digit number. The linking file will be stored separately from the de-identified information in a secure location.

3. The PHI accessed or recorded for identification/screening purposes will not be reused or disclosed to (shared with) any other person or entity, except as required by law, for authorized oversight of the research study, or for other research for which the use or disclosure of the PHI would be permitted under the Privacy Rule.

   ☒ True

   ☐ False

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