

current study presents the optimization of a Comprehensive Rehabilitation Assessment summary report that is used by clinicians to individualize treatment. **METHODS/STUDY POPULATION:** A multi-aim approach was taken that utilized aspects of various implementation science frameworks. Participants were clinical staff ( $N = 7$ ; female = 71%). A quantitative survey was used for aims 1 and 2 to assess motives and context around the report as well as evaluate the design of it. Aim 3 focused on optimization via semi-structured interviews. Descriptive and modified content analyses were utilized appropriately for each aim. **RESULTS/ANTICIPATED RESULTS:** Five versions of the assessment report were created between February 2021 and August 2022, the most recent of which was adapted into patients' electronic medical records based on study results. Each report version, participants' results/feedback, and researchers' perceived barriers to this translational process will be discussed. **DISCUSSION/SIGNIFICANCE:** The current study highlights a replicable approach for optimizing the translation of assessment data into treatment for patients with disorders of addiction.

358

### Using autism symptom profiles at intervention baseline to predict social cognitive outcomes

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Rush University Authorship has not yet been determined and finalized, but all will be at Rush University.

**OBJECTIVES/GOALS:** 1) Investigate the utility of pragmatic communication profiles in a sample of children with autism at baseline to predict response to treatment in a randomized clinical trial (RCT) of oxytocin augmentation and social cognitive skills training at week 12. 2) Determine if levels of anxiety or hyperactivity moderate child outcome performance. **METHODS/STUDY POPULATION:** 40 children (37M, 3F), aged 8-11 ( $M=9.25$ ,  $SD=1.10$ ), with confirmed autism spectrum disorder (ASD), enrolled in an RCT (NCT02918864) were evaluated at baseline on: an assessment of ASD (Autism Diagnosis Observation Schedule, ADOS-2), a task of perspective taking, Theory of Mind ToM, (Reading the Mind from the Eyes Task), pragmatic communication (Pragmatic Rating Scale-School Aged; PRS-SA), IQ (WAIS-III, WISC-V) and anxiety and hyperactivity (Behavior Assessment Scales for Children-3; BASC-3). A Tobii T60 XL was used for eye-tracking visual patterns and attention during the RMET. The PRS-SA was coded by trained, reliable clinicians. Parent ratings indicated over half of the participants' had At Risk levels or higher on anxiety and hyperactivity on the BASC-3. Week 12 measures included all but the PRS-SA and ADOS-2. **RESULTS/ANTICIPATED RESULTS:** Baseline preliminary analysis indicated the participants spent more time looking at words (.41ms) than eye images on the RMET (.15ms,  $p$ ). **DISCUSSION/SIGNIFICANCE:** Findings at baseline suggest pragmatic communication skills are more related to ToM than gaze and attention on the RMET. This relationship will be further investigated over the time of the trial. Mental health indicators need to be considered further in this population. Child profiles at baseline may inform appropriate triage and treatment targets.

359

### Utilization of machine learning approaches on multimodal and ambulatory data to predict individualized symptom course in adults with obsessive-compulsive disorder.

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**OBJECTIVES/GOALS:** This study will collect multimodal and longitudinal data in adults with obsessive-compulsive disorder and healthy controls. A mixed effects random forest machine learning approach will be taken to develop a model that can predict individualized longitudinal OCD symptom burden. **METHODS/STUDY POPULATION:** Baseline resting state functional MRI (rsfMRI) and measures of symptom burden will be collected in adults with OCD and healthy controls. Longitudinal measures of behavior and physiology—such as heart rate, activity, and sleep metrics—will be collected using Fitbit Charge 5 tracker. Daily assessments of symptom burden and functional status will be collected through a smartphone app. Individuals with OCD will start pharmacotherapy during the study period and all participants will be followed for a total of 10 weeks. Repeat rsfMRI imaging will occur at study conclusion. Data will be analyzed using a mixed effects random forest machine learning algorithm with assessment of model performance. **RESULTS/ANTICIPATED RESULTS:** Prior studies of symptom severity in psychiatric illness and affect in non-clinical populations have found longitudinal features—such as lexical and acoustic measures, participant context, heart rate, and sleep metrics—that were predictive of these states over time. It is anticipated that the present study will extend these results to individuals with OCD and identify physiologic and behavioral features that track personalized symptom burden longitudinally in this patient population. A model able to predict when symptoms are elevated could allow for provision of additional treatment or interventions targeted to times of high symptom burden. **DISCUSSION/SIGNIFICANCE:** This study will be the first to collect and analyze longitudinal measures of behavior, symptoms, and physiology in patients with OCD with a goal of predicting symptom burden. Identification of elevated symptom burden would allow for implementation of just-in-time treatment, during these periods.

360

### Waste not, test more: Innovations in tissue processing to expand the testing of clinical specimens

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**OBJECTIVES/GOALS:** Clinical tissue specimens are primarily destined for formalin fixed, paraffin embedded processing to create a basis for diagnosis by microscopic examination. Innovations in specimen processing are required to expand its availability for inclusion as the substrate in assays that can contribute to the further development of