



2025 ANNUAL REPORT

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Disclaimer: The information presented in this annual report is intended for general information and educational purposes. It is not intended to replace the advice of your own physician. Contact your physician if you believe you have a health problem.

Letter from the Executive Vice President of Research

Just over five years ago, Rogers embraced a vision for evidence-based care that would set us on a path toward clinical innovation long overdue in behavioral health. Today, that vision has become a growing, nationally recognized research program grounded in collaboration and a shared commitment to significantly improving the lives of those we serve.

What began as retrospective studies focused on program outcomes has evolved into a broader portfolio that now includes prospective discovery and translational research designed to inform advanced clinical practice in precision mental health care.

This progress reflects the strength of a collaborative systemwide effort where clinical leadership is increasingly engaged in shaping research priorities, and our principal investigators, study teams, and operational leaders have built the infrastructure and discipline needed to successfully compete for federal funding and execute complex studies.

None of this would be possible without the continued support of our donors, board, and leadership team, whose commitment to innovation and learning has made this work a priority and has helped sustain our momentum.

Rogers is uniquely positioned to conduct clinical research that few others can, and we remain focused on advancing discovery and translating what we learn into improved outcomes for the patients and communities we serve.



Sincerely,

A handwritten signature in black ink that reads "Kelly Piacsek". The signature is fluid and cursive, with the first name and last name clearly distinguishable.

Kelly Piacsek, PhD
Executive Vice President of Research
Rogers Research Center

A Message from Cindy Meyer, President and CEO

Reflecting on the past year, I am proud of Rogers' ongoing innovation and continued delivery of high-quality, evidence-based care. Despite ongoing changes in the behavioral healthcare landscape, our commitment to patient-centered treatment endures, with the Rogers Research Center playing a vital role in advancing our mission.

Research is central to Rogers' strategy, fueling treatment innovation and ongoing improvement. The Research Center's close collaboration with our clinical teams enables us to excel in translational research, directly addressing key questions on treatment effectiveness, accelerating the adoption of effective treatments, and improving patient outcomes. This ensures research is integrated into our everyday care, benefiting patients across all programs and distinguishing Rogers from others.

The achievements of the Research Center are many, including expanding our Biobank, enabling national collaborations and supporting impactful studies. Our teams have identified treatable genetic conditions, opening new opportunities for personalized care. Advances in pharmacogenomics are guiding medication use and improving outcomes, and the evaluation of new technologies ensures our programs stay at the forefront of innovation.

The Research Center's collaboration with our clinical teams enables Rogers to quickly translate research findings into real-world practice, breaking down barriers to implementation and bringing innovative, effective treatments to our patients faster.

I am honored to share the accomplishments of our Research Center over the past year. The dedication and collaboration of our research and clinical teams continues to propel us forward, ensuring Rogers remains at the forefront of innovation and excellence in mental health care.

Thank you for your continued support and partnership as we move forward together.



With gratitude,

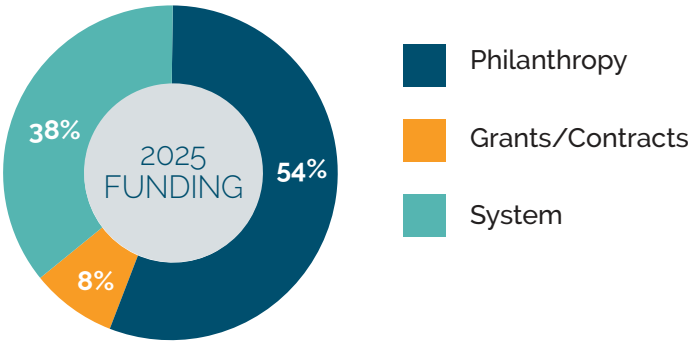
A handwritten signature in black ink that reads "Cindy Meyer". The signature is fluid and cursive, with the first name and last name clearly distinguishable.

Cindy Meyer, MSSW
President and CEO

2025 Research Center Metrics

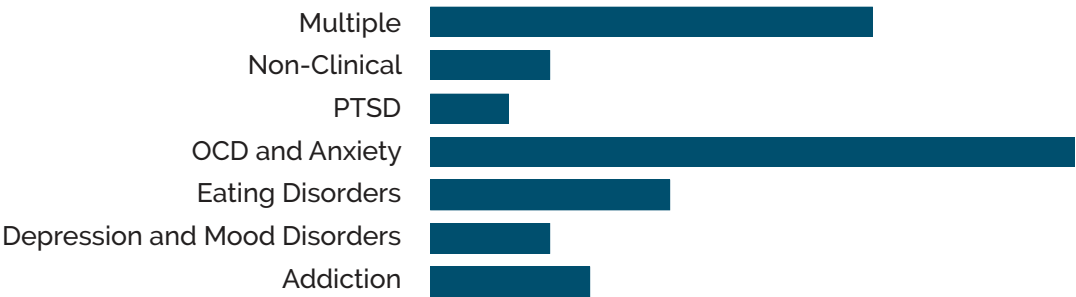
Research Center Funding

2.66 M TOTAL RESEARCH EXPENDITURES



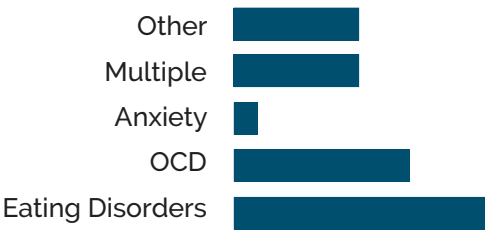
Active Studies by Service Line

45 ACTIVE STUDIES



Publications

28 NEW PUBLICATIONS



Donor Acknowledgements: Lynn S. Nicholas Family Foundation; Franklin Street Giving Tree Foundation; Peter and Nancy Roehl; Clancy; and our donors who wish to remain anonymous.

Measuring the Weight of the Work – Firefighter Spotlight

2025 marks the sixth year that the Rogers Research Center has partnered with the Professional Fire Fighters of Wisconsin Charitable Foundation (PFFW-CF) to survey Wisconsin firefighters with the goal of understanding and better supporting the mental wellbeing of those who serve and protect our local communities. What began as an exploratory effort has grown into one of the largest real-world datasets on firefighter and EMS behavioral health in Wisconsin.

of the weight of the work: over 90% consistently report experiencing a critical incident on the job, reinforcing that the risks for fatigue and emotional and physical stress are high, and don't simply end when the shift does. The personal and professional consequences of this job-related critical stress span a variety of concerns including disrupted and insufficient sleep, irritability and withdrawal, thoughts of suicide or self-harm, and difficulty with close personal relationships.



Since 2020, this survey has been conducted anonymously to encourage participation and protect respondents. However, due to respondents' willingness to help advance this important work, this year we have moved beyond anonymous snapshots and launched a two-year longitudinal study, with nearly 500 participants consenting to ongoing engagement. This next phase allows us to better understand how stress, recovery, and resilience unfold across seasons, years of service, schedules, local environments and life circumstances, not just with an annual assessment, but at multiple time points over a two-year period beginning February 2026, through November 2027.

In 2025, more than 1,500 firefighters and EMS professionals shared their experiences through an anonymous statewide survey of repeated exposure to critical events, secondary trauma, disrupted sleep, and the ongoing challenges of balancing intense schedules, tragic calls and everyday pressures of integrating work and life, in one of the most challenging professional environments. The findings paint a clear picture

Together, we are building the evidence needed to inform smarter services and support systems, reduce stigma, and take better care of the people who take care of all of us in our local communities.

Biobank and Genetics Research Year 4 Progress



In its third year, the Rogers Research Center Biobank accelerated growth and established itself as a cornerstone for national and international genetic collaborations. What began with a few Rogers Wisconsin sites in 2023 expanded to include every Rogers location nationwide, positioning the Biobank for growth as a vital resource for both academic and industry partners.

The Biobank is on track to exceed 1,400 patient enrollments by year-end, achieving the critical scale needed to power advanced genetic studies. It continues to anchor all of Rogers' genetics research while also driving external projects that will shape more effective patient care.

The Rogers Research Center Biobank played a leading role in recruitment for a landmark obsessive-compulsive disorder (OCD) genetics study led by the University of California, San Francisco, and concluded its role as one of the largest U.S. contributors to a five-year NIH-funded project with Baylor College of Medicine focused on Latino, Brazilian, and Hispanic populations. Together, these efforts are advancing the design of more comprehensive genetic testing to improve treatment for individuals with OCD worldwide.



The next phase of research is pivotal to advancing psychiatry through genetics. Dr. Sheldon Garrison and the Biobank research team have identified more than 100 treatable rare genetic diseases that are often misdiagnosed as mental health conditions, with an average diagnostic delay of nearly eight years. To address this gap, the team will partner with a leading genetic sequencing company to determine the prevalence of these conditions among Rogers patients using samples from the Rogers Research Center Biobank. This work represents a substantive step forward in the field. Based on the findings, the team plans to launch an interventional clinical study with Rogers providers to accelerate accurate diagnosis and ensure patients receive the right treatment much earlier in their care journey.

The Rogers Research Center has expanded into a nationwide initiative and supported high impact collaborations with leading institutions. This work has advanced publications, conference presentations, and made contributions to the ongoing work to improve the accurate identification of conditions often misidentified as psychiatric disorders. This progress has been made possible through the continued support of our donors, whose commitment fuels innovation, strengthens partnerships, and advances research that will directly benefit patients and families.

We are grateful to our anonymous donor and the Peter and Nancy Roehl Foundation, whose continued support has advanced the Rogers Research Center Biobank and strengthened research and sample collection efforts over the past year.

Biobank Collection Demographics



Levels of Care

Intensive Outpatient.....	14%
Partial Hospitalization.....	28.3%
Residential.....	54.8%
Community.....	1.4%
Inpatient.....	1.2%



Clinic Locations

Brown Deer	13.2%
Community.....	1.4%
National Clinics.....	8.6%
Oconomowoc	58.0%
West Allis.....	18.1%
Telehealth	0.4%



Sex

Female	57.1%
Male	40.9%



Age Distribution

Child/Adolescent	1.7%
Adult.....	98.3%



Race and Ethnicity

Asian.....	1.7%
Black/African American	5.6%
Hispanic.....	6.7%
Native Populations.....	0.9%
Other/Undisclosed.....	5.0%
White.....	77.3%



Treatment Programs

Depression	13.9%
Eating Disorders.....	6.2%
General MH	5.6%
OCD and Anxiety.....	22.2%
Substance Use.....	30.6%
Primary Behavioral Health.....	6.4%
Personalized Care Model.....	5.1%
Trauma	6.6%
All Others.....	1.6%

Biobank & Genetics Research – 2025 Key Accomplishments

504

BIOBANK RECRUITMENT

The Biobank currently houses saliva samples from 1,402 patients which are now available for genetics research studies. In partnership with Labcorp, the Biobank team is gearing up to transition to a more streamlined approach by collecting blood samples during scheduled clinical draws.

101

UCSF RECRUITMENT

101 new participants were enrolled through our work with UCSF in the 2025 calendar year. Although this work will conclude in 2026, the Rogers Research Center celebrates this important work aimed at identifying genetic risk factors of OCD and related behavioral health conditions. Rogers remained the leading study site throughout the duration of the collaborative project with UCSF.

2

PUBLISHED ABSTRACTS

Two abstracts investigating treatable rare genetic diseases with behavioral presentations were accepted and published in the *European Journal of Medical Genetics* and *Orphanet Journal of Rare Diseases*. This work coupled with Dr. Sheldon Garrison's co-sponsorship has directly led to the inclusion of Gaucher disease on the Wisconsin newborn screening panel.

Pharmacogenomics (PGx) Research

Open label investigator-initiated study to evaluate the implementation of pharmacogenomic (PGx) testing into standard of care for patients undergoing current behavioral health care



Although the potential clinical utility of PGx testing has been increasingly supported by evidence suggesting improvements in treatment response and side effect profiles, much of the existing literature examining provider utilization of PGx testing has focused on knowledge, attitudes, and perceived value rather than real-world implementation behaviors. While these studies frequently report that a large proportion of clinicians express interest in and support for PGx testing, few have examined how and why PGx testing is applied in routine clinical practice or the contextual factors that influence its use and utility. The real-world application of PGx is shaped by a range of factors, including workflow integration, turnaround time for results, clarity and interpretability of reports, confidence in

applying recommendations, and perceived relevance for specific patients. To address these obstacles and investigate the potential benefit of PGx in behavioral health within Rogers, Dr. Kelly Parsons and her study team initiated a PGx testing study that will survey clinicians who have ordered and patients who have undergone screening to evaluate utilization of test results, including changes in medication selection and dosing.



The purpose of this prospective, open-label implementation pilot study is to evaluate physician acceptance of and adherence to commercially available PGx-guided psychotropic medication selection. Rather than focusing on patient outcomes, the primary objective of an implementation pilot is to evaluate the usability, usefulness and utilization of an intervention. Measures and outcomes include feedback on ease of use (ordering, results interpretation, incorporating testing into patient care), why testing was ordered for a particular patient, whether the results of the test were useful for the patient and whether the clinical team made any changes to the patient's treatment based on the test results.



The secondary objective of this study is to assess changes in quality of life and medication side effects for participants using Tempus PGx-guided medication selection.

In order to collect feedback from as many clinicians as possible, enrollment is open to any adult patient receiving in person treatment at three sites in Southwestern Wisconsin. The study was initiated in late 2025 and will continue until approximately 500 patients are enrolled.

The results of this study will provide important preliminary insights to guide future research in personalized psychiatric treatment approaches.



Study Team: Kelly Parsons, PhD; Isaac Siegel; Victoria Sardella; Madeline Hartig; Zaira Chavez; Ilana Hudson

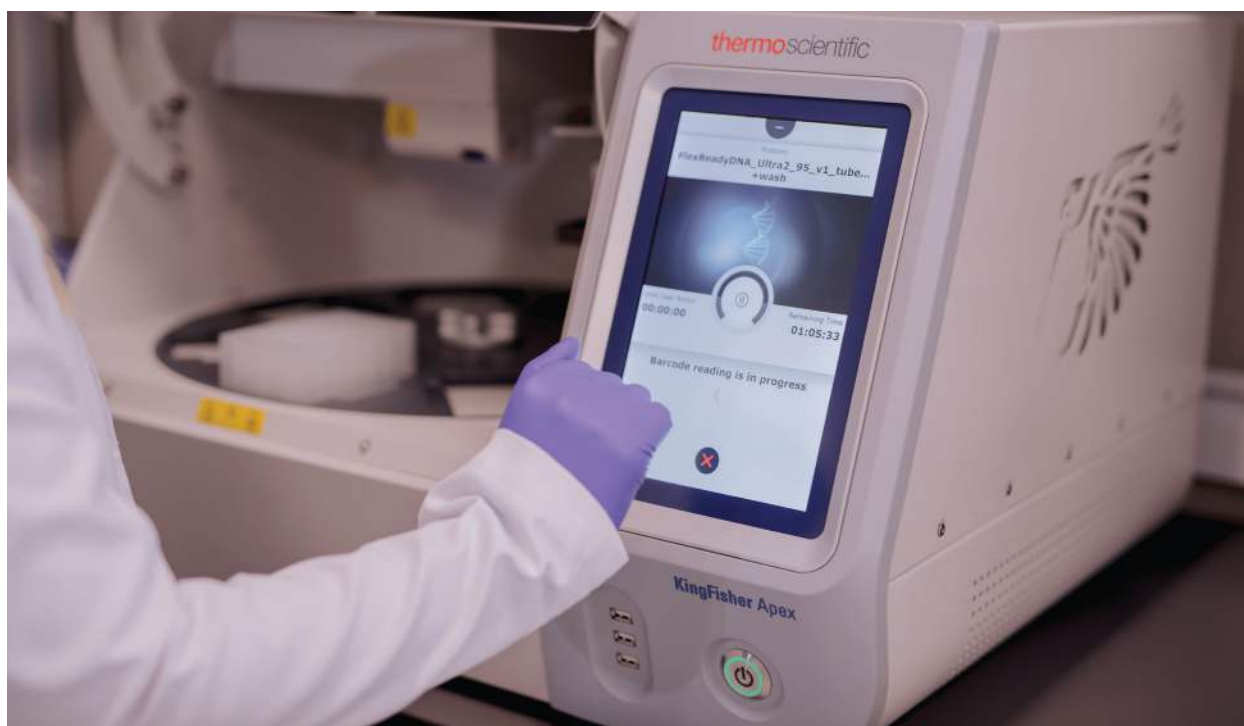
Understanding Rare Genetic Conditions in Psychiatric Care

Prevalence and clinical impact of treatable rare genetic diseases in acute psychiatric populations



Rare diseases (RDs) affect an estimated 6% of the global population and are often driven by complex underlying genetic causes. For many individuals, the path to diagnosis can take 5–9 years, during which symptoms may be treated unsuccessfully while the true condition remains unrecognized. This diagnostic challenge is especially pronounced when rare diseases first appear through neuropsychiatric symptoms that closely resemble primary mental health disorders, leading some individuals to be labeled as treatment resistant despite having an undiagnosed medical condition requiring more specialized care.

The Rogers Research Center and Rogers medical providers are working closely on a study to better understand this intersection between rare disease and mental health. The effort is focused on individuals whose rare genetic conditions may initially present with psychiatric symptoms, often long before symptoms emerge that could help guide an accurate diagnosis and more personalized treatment plan. By using genetics to help distinguish these conditions from primary mental health disorders, the study aims to support earlier recognition and more targeted treatment approaches.



This new study led by Dr. Sheldon Garrison benefits from multidisciplinary collaboration across neuroscience, statistics, and clinical research. These efforts will support data analysis and interpretation, advance understanding of the neurobiological mechanisms underlying psychiatric symptoms in rare disease, and inform the development of more individualized treatment approaches.

The research also explores how genetic differences may influence psychiatric symptoms and responses to medication. This includes efforts to advance novel genetic screening tools that could help guide clinical decision-making in psychiatric settings. Ultimately, this work seeks to shorten the time to an accurate diagnosis, optimize and better personalize treatment decisions, and ultimately improve the long-term outcomes for individuals affected by these complex conditions.



Study Team: Sheldon Garrison, PhD, PI; Martin Franklin, PhD, Co-I, Jeffery Engelmann, PhD, Co-I; Stephen Seiwec, PhD; Sreya Vadapalli, MBS; Maddie Hartig, MS; Isaac Siegel, BS; Sophie Schweinert, BS, Matthew Boyer, MD, Christopher Takala, MD, Gene Yang, MD, MBA, FAPA, Nicolette Weisensel, MD

Related publications (2025)

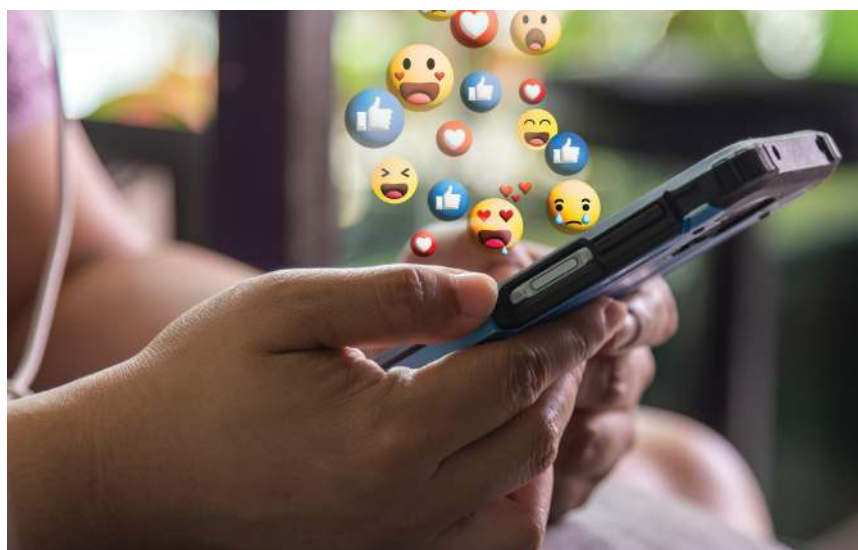
- ① Siegel IJ, Vaithilingam SL, Hartig MM, Patty EC, Mantsch LE, Garrison SR: Diagnostic delays in rare genetic disorders with neuropsychiatric manifestations: A systematic review. *Eur J Med Genet* 2025, 75:105016.
- ② Vaithilingam SL, Garrison SR, Mahajan A, Kranz JF, Diener JT: A Rare Presentation of Hyperphagia and Parasomnias Associated With Chromosome 4q Deletion: A Case Report. *Case Rep Psychiatry* 2025, 2025:5061704.
- ③ Garrison SR, Siegel IJ, Takala CR, Vaithilingam SL, Yang GW, Zoghbi AW, Hartig MM, Vadapalli S, Anderson ME: Bridging psychiatry and rare genetic diseases: a scoping review of therapeutic strategies and diagnostic delay paired with healthcare economic burden analysis. *Orphanet J Rare Dis* 2025, 20(1):393.
- ④ Garrison SR, Schweinert SA, Boyer MW, Singh M, Vadapalli S, Engelmann JM, Schwartz RA, Hartig MM: Polypharmacy and pharmacogenomics in high-acuity behavioral health care for autism spectrum disorder: a retrospective study. *Child Adolesc Psychiatry Ment Health* 2025, 19(1):60.

Evaluating a Novel Patient Reported Outcome Tool

Emojis may help pediatric patients report mental health symptoms

When patients are admitted to Rogers, their treatment teams administer numerous clinical assessments that are repeated routinely throughout their stay, and at discharge. These patient reported outcome measures (PROMs) are used to gauge symptom severity and are an important component of monitoring patient progress throughout treatment. Patients may complete up to 15 different assessments, consisting of yes/no, high-medium-low, and scale-based ratings of the intensity and frequency of feelings, behaviors, and symptoms.

While PROMs are clinically essential, they can be challenging to administer in certain settings and patient populations, such as pediatric units, and with patients with emotional, behavioral and cognitive difficulties. Treatment teams report that they sometimes need to assist patients with reading and interpreting assessment items, and that younger patients in particular may struggle to identify and label their emotions. When patients are unwilling or unable to complete these assessments, care teams lack quantitative measures of patient progress, which can affect both individual treatment planning and the ability to monitor overall program effectiveness.



To address this gap, the Research Center is partnering with ADoH Scientific to evaluate the potential utility of a graphical, emoji-based assessment tool called Emotii. Emotii is an interactive digital application that uses emojis, in place of text-based questions, to capture patient feelings and emotions. Users can adjust each emoji to reflect their current emotional state for domains such as anxiety, stress, and loneliness. The tool assesses eight distinct emotions, along with a composite score that may provide additional insight into a patient's emotional well-being.

Emotii has been previously validated for use in adults, and Drs. Hana Zickgraf and Kelly Parsons are designing a study to evaluate the tool in a community-based child and adolescent setting. Validation in the intended age group is essential to ensure that prompts are interpreted appropriately and align with clinically relevant information. A subsequent study will pilot Emotii in select child and adolescent units within Rogers to assess its effectiveness in measuring symptom severity and response to behavioral health interventions.

Improving Quality-of-Life Measurement in Pediatric Psychiatric Care

Psychometric evaluation of the pediatric quality of life enjoyment and satisfaction scale (PQLESQ) in pediatric patients

The pediatric version of the Quality-of-Life Enjoyment and Satisfaction Questionnaire (PQ-LES-Q) assesses the quality of life in children and adolescents across domains such as physical health, emotions, school, and relationships. At Rogers Behavioral Health, the PQ-LES-Q is routinely used to monitor patient outcomes and guide quality improvement efforts. While the PQ-LES-Q has demonstrated strong validity in outpatient populations with depression, its reliability for patients with other psychiatric diagnoses—or those admitted to higher levels of care—has not been fully established.

To address this gap, last year, Dr. Hana Zickgraf launched a comprehensive validation study across the largest known clinical sample utilizing this measure, from different demographic groups, service lines, and levels of care. Dr. Zickgraf's findings confirmed validity of the PQ-LES-Q for measuring quality of life across diverse groups of youth in psychiatric treatment, including differences in gender, race/ethnicity, level of care, and diagnoses. These results were published in Springer Nature's *Current Psychology* journal: "Psychometric assessment of the pediatric quality of life enjoyment and satisfaction scale (PQLESQ) in a large sample of pediatric psychiatric patients: evidence of measurement invariance."

Building on this work, Dr. Zickgraf is now leading the second phase of the project, focused on response shifts: how patients' interpretations of quality-of-life questions may change over time due to treatment or life events. Response shifts can distort score changes because true change in quality of life cannot be easily disentangled from changes related to patients' changing interpretations of the measure itself. Dr. Zickgraf is developing adjusted scoring models to account for these shifts and better capture true changes in quality of life during treatment. For the third and final phase of this study, Dr. Zickgraf plans to assess the predictive validity of the PQ-LES-Q and subsequently create a short-form version of the measure, intended to reduce patient burden while maintaining accuracy. The goal of this study is to improve both the measurement of patient outcomes and the effectiveness of treatment at Rogers.



Study Team: Hana Zickgraf, PhD (PI); Martin Franklin, PhD; Kelly Piacsek, PhD; Jeff Engelmann, PhD, Sheldon Garrison, PhD; Rachel Schwartz, PhD; Maddie Hartig, MS

Neural Responses to Smoking Cues: Findings from a Collaborative Study

Impact of individual- and neighborhood-level risk factors on brain responses to smoking cues among and across racial groups



Dr. Jeff Engelmann and Dr. Phoenix Do, PhD, of the University of Wisconsin-Milwaukee, have concluded the analysis of a preliminary study using functional MRI to study cue reactivity of smokers. The project, funded by a federal grant, to examine the relationship between clinical, demographic, and socioeconomic predictors and brain responses to smoking-related cues, completed enrollment in 2025. The analyses found no association between race, ethnicity, sex, or socioeconomic factors and smoking cue reactivity. However, in two brain regions, there was a significant interaction between preference for menthol cigarettes, heaviness of smoking, and cue reactivity.

One region is the posterior parietal cortex, which is involved in attentional bias to drug-related cues, including smoking cues. The other region is the insula, which is involved in cue-induced craving for drugs, including cigarettes. The study team found that among non-menthol users, there was a positive association between heaviness of smoking (measured as the number of cigarettes smoked per day) and cue reactivity in both regions. This finding is expected and is generally consistent with literature that heavier smoking is associated with higher levels of brain reactivity to smoking cues. Among menthol smokers, there was no relationship between heaviness of smoking and cue reactivity, meaning that even smokers who smoked very few cigarettes per day had elevated cue reactivity. This finding is consistent with recent preclinical studies which suggest that menthol increases the reinforcing efficacy of nicotine, making it potentially more addictive at lower doses. This was a pilot study, and more research is needed to replicate and extend these findings. The results were submitted as a manuscript to the journal *Addictive Behaviors*, where it is currently under review.



Study Team: Dr. Jeff Engelmann, PhD; Dr. Pheonix Do, PhD, University of Wisconsin-Milwaukee

Exploring Hormonal Influences on Craving and Relapse

Modulators of craving in women seeking intensive treatment for substance use disorders

Despite the abundance of research that has been conducted in the recent past, a significant gap in women's mental health and addiction care remains. According to the National Institute on Drug Abuse, men are more likely to use illicit drugs, but women are more susceptible to craving and relapse. Factors that might contribute to this disparity in the relapse rate have been understudied and are largely unknown. One possible explanation might be the influence of hormone levels on cue-induced craving and relapse. Studies of the effect of differing levels of various hormones impacted by the menstrual cycle can heighten the addictiveness of substances and reduce the efficacy of methadone maintenance therapy. Other studies found that hormonal changes can reduce the rewarding effects of certain drugs and decrease craving responses. Despite the sparsity of consistent findings with the literature, there is consensus that there are sex differences in brain activity in response to stress-induced cravings, cue-induced cravings, and relapse-related behaviors. Further research is necessary to better quantify the relationship between changes in hormone levels and substance use behavior and to elucidate mechanisms that might underlie these changes.

As a first step in this process, Drs. Jeff Engelmann and Michelle Maloney are conducting a retrospective study investigating

the relationship between menstrual cycle data in the Rogers electronic medical record, medication use, and patient-reported outcomes. Using these data, the study team will analyze whether a patient's timing within their menstrual cycle can predict scores on the Urge to Use Scale and on questions about craving and withdrawal symptoms on the Brief Addiction Monitor, while controlling for medications that might impact hormone levels (e.g., hormone replacement, birth control). Additional analyses will impact whether the effectiveness of FDA-approved medications for substance use disorders is influenced by menstrual cycle phase.

If the study team finds any indication that there is indeed a relationship between these factors, the long-term goal is to conduct prospective research that relates direct measurement of blood hormone levels to biomarkers of craving and relapse measured using electroencephalography (EEG), a reliable, valid, and non-invasive measure of brain activity. Direct measurement of hormone levels or EEG might allow for earlier and/or more tailored interventions, such as identifying patients at higher risk for relapse and providing them with additional support. Through this work, the study team aims to help close the important gaps in knowledge surrounding women's mental health and advance health equity.



Study Team: Jeff Engelmann, PhD (PI); Michelle Maloney, PhD, NCSE, LPC, CAADC, CRPS

Addressing Mealtime Anxiety in Eating Disorders

Investigating non-invasive cranial electrotherapy stimulation (CES) for acute anxiety in inpatients with eating disorders

Eating disorders (ED) are serious mental health conditions that involve restrictive eating and/or harmful behaviors, such as purging or excessive exercise. These behaviors can affect body composition, nutritional status, hydration, and electrolyte balance, leading to serious health complications. EDs are associated with one of the highest morbidity and mortality rates for any psychiatric diagnosis. They are among the most dangerous psychiatric illnesses, with very high rates of medical implications and death, with suicide accounting for a majority of eating disorder deaths.



Meal and food-related anxiety and food refusal are one of the primary concerns addressed in treatment programs. While there is evidence that cognitive behavioral therapy (CBT) is an effective intervention for many patients, about one third require additional treatment support. Such supports may include temporary meal plan reductions, feeding through a nasogastric (NG) tube when eating by mouth is not possible, one-to-one support from clinical staff, or fast-acting anti-anxiety medications like benzodiazepines to help reduce meal-time anxiety. Although often necessary to prevent significant complications due to malnutrition, these interventions may interfere with patients' routine treatment or slow their progress toward meeting program goals required to discharge to less intensive levels of care. Thus, our clinical and research teams have explored evidence-based alternatives to standard interventions.

Last year, Rogers Research Center explored several innovative devices for use in future research, including a commercially available Cranial Electrotherapy Stimulation (CES) device called Alpha Stim™. Alpha Stim™ is a small, portable, non-invasive device that delivers very low levels of electricity to the brain via electrodes worn as ear clips. This gently alters brain activity and has been shown to reduce anxiety.

At Rogers, Dr. Hana Zickgraf, Dr. Parsons, and collaborators are currently testing the device in an open-label pilot study on the inpatient eating disorder unit. This pilot study is investigating the feasibility and acceptability of administering the device on the inpatient unit among eligible consenting patients receiving treatment in Rogers Oconomowoc inpatient ED program. The study is also examining the device's effectiveness for reducing mealtime anxiety and food refusal, in addition to standard of care CBT. Participation involves a total of nine (9) stimulation sessions over three (3) consecutive days. Specifically, participants receive a 20-minute stimulation directly prior to their mealtimes (i.e., breakfast, lunch, and dinner). Pending preliminary findings, the study team may continue to investigate the efficacy of Alpha Stim™ in the future with a larger, randomized, controlled trial (RCT).

The study is currently enrolling young adults, ages 18-30, admitted to the inpatient ED clinic at Rogers in Oconomowoc, WI.



Study Team: Hana Zickgraf, PhD (PI); Kelly Parsons, PhD (Co-PI);
Jeff Engelmann, PhD; Katelyn Greenberg, MA; Victoria Sardella, MS;
My Le Tran, BS; Christopher Bender, BS; Ilana Hudson, BS

Advancing OCD Research and Treatment

Event-related potential predictors of clinical outcomes in patients seeking intensive treatment for obsessive-compulsive disorder



The ability to predict treatment response in individuals with obsessive-compulsive disorder (OCD) or identify in advance which patients will benefit from conventional treatment methods is an ongoing initiative at Rogers Research Center. Despite Rogers' decades of experience providing effective, evidence-based interventions for OCD, patients can experience different outcomes, which suggests that biological factors may be at play. Finding a reliable brain-based marker of OCD could not only aid in identifying potential treatment barriers but also provide a more objective way to measure and monitor recovery.

To this end, Dr. Jeff Engelmann and his team developed a study using electroencephalography (EEG), a non-invasive measure of the brain's electrical activity, to examine neural responses in individuals with OCD, both with and without comorbid depression. The specific data obtained from these EEG recordings will allow our researchers to evaluate the brain's responses under three conditions:

- ① **Resting brain activity**—which is evidenced to have altered signal frequencies in individuals with OCD and/or anxiety compared to those without.
- ② **Error response**—which is evidenced to be heightened in individuals with OCD and/or anxiety compared to those without.
- ③ **Reward sensitivity**—people with depression often show reduced brain response to rewards.



To capture this data, researchers record the brain activity of study participants while they rest with their eyes closed and while they complete two cognitive tasks:

- **Flanker task:** A fast-paced psychological test where a participant must respond to a central stimulus while ignoring distracting stimuli. The task is designed to trigger mistakes, which lets researchers measure the brain's reaction to errors.
- **Probabilistic Reward Task (PRT):** A decision-making task that disproportionately rewards responses. It assesses a key characteristic of depression, known as anhedonia, the reduced motivation or ability to experience pleasure. During the task, the participant is asked to make a visual discrimination between two stimuli, where one option is rewarded more frequently than the other, and therefore, measures the motivation of individuals to alter their behavior to obtain a reward.

Participants are asked to complete three sessions throughout their stay at Rogers: admission (baseline), mid-treatment (progress), and discharge (final). These sessions allow researchers to examine the impact of standard treatment on error-related brain activity, and whether these neural responses at baseline can predict treatment trajectory and outcomes. Rogers is uniquely suited to conduct this original and innovative research because of its highly effective residential OCD programming and ability to serve a high volume of patients each year.

This study is now enrolling patients ages 13+ with a diagnosis of OCD, with and without comorbid depression, admitted to an OCD residential program at Rogers.



Study Team: Jeff Engelmann, PhD (PI); Katelyn Greenberg; Victoria Sardella; My Le Tran; Christopher Bender; Ilana Hudson

Virtual reality exposure therapy clinical pilot

At Rogers, Cognitive-behavioral therapy (CBT) with an emphasis on exposure and response prevention (ERP) is the standard treatment strategy for OCD and related anxiety disorders. Patients with OCD at all levels of care complete several hours of independent exposure therapy each day. In recent years, virtual reality (VR) has been increasingly adopted in clinical practice with applications in exposure therapy as well as mindfulness, emotion regulation, and attention training. Evidence suggests that VR-based therapy can improve outcomes, increase patient engagement, and reduce dropout rates. As such, VR-delivered exposure therapy may be a practical treatment option for improving exposure practice at Rogers. By creating synthetic but realistic life scenarios, patients can develop skills to regulate emotional responses to fear, anxiety, or sadness in a safe, controlled environment. Moreover, it allows clinicians to create an immersive exposure environment that may otherwise be impractical or impossible to create in vivo, such as flying, driving, or heights.

Rogers Research Center is set to launch a VR-Exposure Therapy (VRET) pilot at the Child & Adolescent Intensive Outpatient/Partial Hospitalization (IOP/

PHP) OCD clinic in Oconomowoc.

The technology includes an intuitive web-based portal for building and assigning exposure hierarchies, as well as allowing for remote monitoring of patient exposure practice sessions. The portal also features an extensive library of exposure content—nearly a thousand 360° simulations—with new material continuously added. Finally, the portal automatically generates real-time progress reports, recording metrics such as time spent in each environment, exposure completion rate, patient fear ratings of each exposure environment, and more.

The purpose of this VRET clinical pilot is to improve the quality of exposure therapy, guided by feedback from clinicians and patients. We seek to understand the impact of VR-delivered exposure practice on four constructs, both from a clinician- and patient-perspective: level of satisfaction, usefulness, ease of use, and burden. If successful in offering additional exposure content and assisting with staff efficiency, Rogers may expand implementation across multiple sites. The pilot will conclude in 2026.

Treating obsessive-compulsive disorder (OCD) during the perinatal period



Pregnant women have long been excluded from clinical trials and clinical effectiveness research, but many still seek treatment in real-world clinic settings for conditions like OCD. Leveraging Rogers' decades-long collection of patient clinical outcomes data, this retrospective study seeks to determine which interventions pregnant and postpartum women suffering from OCD receive in a real-world setting, how safe and effective they are, and what, if any, modifications are made to accommodate their pregnancy status.

In 2025, Dr. Schwartz received an NIH R03 small research grant from the National Institutes of Mental Health (NIMH) in support of this retrospective study on treating OCD during the perinatal period. This NIH funding reinforces the significance of Dr. Schwartz's ongoing work and represents the first federally funded project for which Rogers Research Center is the primary recipient. The award further advances the Center's vision for sustainable growth and supports Rogers Behavioral Health's mission to deliver exceptional, evidence-based care in a rapidly changing healthcare landscape. The grant project was launched on July 1, 2025, with an anticipated two-year performance period ending June 30th, 2027.



Study Team: Rachel Schwartz, PhD (PI)

Collaborators: Erica Weitz, PhD (MPI University of Pennsylvania); Dr. Martin Franklin, PhD; Victoria Sardella, MS



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The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Nothing to Fear: Developing and piloting treatment and training procedures for non-fear-based presentations of OCD

Building on our growing external research support at Rogers Research Center, Dr. Rachel Schwartz received an International OCD Foundation (IOCDF) Michael A. Jenike Young Investigator Award to support research focused on developing a treatment protocol for non-fear-based presentations of OCD. Non-fear-based OCD refers to symptoms driven by emotions other than fear or anxiety, particularly “not just right” and disgust feelings. Increasing evidence suggests that non-fear-based symptoms are both common and debilitating, yet less responsive to gold-standard OCD treatments such as Exposure and Response Prevention (ERP). Fortunately, emerging research, including a survey study previously conducted by Dr. Schwartz at Rogers Behavioral Health, suggests that tailoring treatments can help improve outcomes for individuals suffering from non-fear-based symptoms.

Dr. Schwartz's study aims to develop the first clinical framework and protocol to tailor first-line OCD treatments to symptoms driven by not just right and disgust feelings. In pursuing this work, Dr. Schwartz is collaborating with experts in non-fear-based OCD from Rogers Behavioral Health, Binghamton University, and Vanderbilt University. During the first phase of the project, Dr. Schwartz conducted an extensive review of the scientific literature, interviewed leading experts in the treatment of non-fear-based OCD, and began protocol composition.

Preliminary findings highlight the complexity of treating non-fear-based OCD and the lack of consensus around best practices for this presentation. The project will support the development and initial testing of treatment and training materials designed to tailor ERP to non-fear-based symptoms. Looking ahead, Dr. Schwartz hopes this work will lay the groundwork for ongoing research evaluating this new treatment approach, ultimately paving the way for improved outcomes for a difficult-to-treat presentation.



Study Team: Rachel Schwartz, PhD (PI); Martin Franklin, PhD; Meredith Coles, PhD, Binghamton University; Bunmi Olatunji, PhD, Vanderbilt University

This research is made possible by the International Obsessive-Compulsive Disorder Foundation (IOCDF) – Michael A. Jenike Young Investigator Award.

Research Initiatives at the Nashotah Center for Dialectical Behavior Therapy (DBT)



The Nashotah Center for Dialectical Behavior Therapy (DBT) at Rogers Behavioral Health is a specialized program for female adolescents experiencing severe depression and significant risk of self-harm or suicide. This structured program uses DBT, a therapy designed to help people manage overwhelming emotions and replace harmful coping strategies with healthier ones. It teaches patients to move away from automatic, reactive behaviors and toward more intentional, balanced responses when facing difficult situations. Due to the targeted focus of the program, its extensive treatment duration (60-90 days), and strong success rates, Rogers Research Center is thrilled to be working closely with Dr. Erik Ulland and his team at the Nashotah Center on several key research initiatives. These include:

- **Medication utilization and optimization** — studying how medications are best utilized and adjusted during treatment.
- **Biometric monitoring** — exploring whether physiological measures can help predict treatment outcomes.
- **Virtual reality** — testing innovative virtual reality technologies that may enhance DBT skills training.
- **Long-term treatment outcomes** — tracking patient progress after successfully completing the program.

Given the complexity of Nashotah patients and the extended residential length of stay, the Rogers Research Center is well positioned to collaborate with this program to generate insights that may inform evidence-based practice and be applicable to the broader Rogers patient population.

Virtual reality mindfulness clinical pilot

Mindfulness practice is a core element of dialectical behavior therapy (DBT), as it supports emotional regulation, greater self-awareness, and reduced impulsivity. At the Nashotah Center, mindfulness is routinely integrated into daily programming through activities such as guided meditative audio tracks or journaling. However, Nashotah residents typically exhibit complex symptoms, including a high prevalence of ADHD, which often impedes their capacity to stay engaged in traditional mindfulness exercises. To address this barrier, Rogers Research Center has implemented **virtual reality (VR)-based mindfulness** in the Nashotah Center as an alternative approach. VR is both interactive and immersive, features that may increase concentration and engagement compared to standard mindfulness exercises.

When completing VR mindfulness experiences, residents are asked to fill out a brief survey to help researchers assess engagement, usefulness, preference, and any technical limitations. The objective of this study is twofold:

1. To evaluate the potential for VR to improve patient engagement and enhance patient satisfaction with the in-clinic mindfulness practices
2. To validate the available evidence that mindfulness engagement and satisfaction are associated with improved clinical outcomes



Residents who opt out of VR-based mindfulness continue to engage in other forms of mindfulness available within the clinic as part of standard care and therefore serve as a comparison group to those who participate in VR. This study, led by Dr. Kelly Piacsek and Dr. Erik Ulland, is currently underway at the Nashotah Center. The goal is to enhance the in-clinic mindfulness experience and evaluate its potential impact on clinical outcomes.



Study Team: Kelly Piacsek, PhD (PI); Erik Ulland, MD (Co-PI); Maharaj Singh, PhD; Katelyn Greenberg, MA; Victoria Sardella, MS; My Le Tran, BS

Using a Smart Ring to evaluate physiological correlates of clinical recovery in a residential DBT program for adolescent girls

Two core components of dialectical behavior therapy (DBT) are distress tolerance—managing crisis situations without resorting to harmful behaviors—and emotion regulation—the ability to understand, manage, and improve intense emotional responses. As patients strengthen these skills and improve mentally, their bodies may also show measurable physiological improvements in how they respond to stress.

With recent advances in consumer technology, wearable devices have become widely used for tracking activity and monitoring health. Building on this, Rogers Research has implemented a study using the Oura Ring, a “smart” wearable ring, to monitor several biometric variables related to activity, stress, sleep, and overall health. The goal is to evaluate how these physiological signals relate to treatment progress and whether they can help clinicians better quantify or even predict treatment readiness and response.

The research team is especially interested in two measures that are each independently linked to mental well-being and evidenced to be associated with psychiatric symptom severity:

- **Heart Rate Variability (HRV):** Controlled by the nervous system, HRV reflects the flexibility of the cardiovascular system in adapting to stress. Prior research in mood disorders (e.g., depression, bipolar disorder, borderline personality disorder) has shown significantly reduced HRV, suggesting it may serve as an indicator of psychological vulnerability or symptom severity as well as recovery.
- **Sleep Quality:** Disturbed sleep is a common symptom of many psychiatric conditions, and decades of research have demonstrated strong links between poor sleep and mood or anxiety disorders.

The Rogers Research team aims to measure these metrics, along with additional physiological data collected via the Oura Ring, to examine the relationship between physiological changes and clinical symptom severity. The study, led by Dr. Kelly Piacsek and Dr. Erik Ulland, is currently enrolling residents at the Nashotah Center. Participants will wear the Oura Ring throughout their treatment stay—from admission through discharge—allowing researchers to capture physiological changes alongside self-reported symptom changes and explore potential objective biomarkers of treatment response.



Study Team: Kelly Piacsek, PhD (PI); Erik Ulland, MD (Co-PI); Jeff Engelman, PhD; Maharaj Singh, PhD; Katelyn Greenberg, MA; Victoria Sardella, MS; My Le Tran, BS

Dialectical Behavior Therapy (DBT) residential treatment outcomes, medication patterns and comorbidity: a retrospective study



Adolescents entering residential care for mood disorders often present with complex clinical needs, including emotion dysregulation, comorbid conditions, and a history of multiple treatment attempts.

Outcomes from the Nashotah Center consistently demonstrate the effectiveness of DBT-based residential care. Adolescents show reductions in mood disorder symptoms and improvements in overall psychosocial functioning. Many also exhibit decreases in borderline symptom severity, fewer self-harm behaviors, and increased use of coping strategies. Program outcomes also suggest that comorbidities play a critical role in shaping these results, with ADHD identified as one of the most common co-occurring conditions in this population.

In many cases, ADHD symptoms—such as inattentiveness and impulsivity-- intensify emotion dysregulation and complicate the clinical presentation of mood disorders. The program addresses ADHD through the use of stimulant medications, which have not only improved attention and impulse control but also appear to reduce emotional volatility. The program's strong track record suggests that the combination of DBT-based therapy and carefully selected medications is key to successful outcomes.

To build on these findings, Rogers Research Center has initiated a large-scale retrospective investigation of the Nashotah program, seeking to better understand three central aspects of treatment:

- ① Patient treatment outcomes
- ② Medication trends across care
- ③ The impact of psychiatric comorbidities, namely ADHD and OCD, on treatment response

The study was approved by the Institutional Review Board (IRB) in 2025, and the team has begun analysis of the Nashotah program data, going back to 2021.

Thus far, preliminary findings show important medication trends. Many adolescents enter residential care with complex medication regimens that include antipsychotics; however, over the course of treatment, antipsychotics are replaced with stimulant medications. This transition reflects provider recognition of ADHD as an underlying driver of emotion dysregulation for many patients. Overall, these findings suggest that stimulants may play an important role in supporting emotional and behavioral regulation within DBT-based treatment.

The adolescent patients complete daily diary cards to monitor skill use throughout treatment, including time spent practicing mindfulness. The research team is analyzing these diary card data to examine the relationship between sustained mindfulness practice (i.e., the ability to focus and maintain attention) and changes in impulse control across the course of treatment.

The study team presented preliminary findings at the International Society for the Improvement and Teaching of Dialectical Behavior Therapy, highlighting the high frequency of anxiety disorder comorbidity in this population and examining changes in anxiety symptoms from admission to discharge. Results demonstrated clinically significant reductions in anxiety disorder measures over the course of treatment, underscoring the benefits of DBT not only for mood regulation but also for improving anxiety-related outcomes.

Results of this ongoing work will contribute important insights to the field and lay the foundation for future prospective studies, both within and beyond the scope of the Nashotah DBT program.



Study Team: Kelly Piacsek, PhD (PI); Erik Ulland, MD (Co-PI); Elizabeth Wall, APNP; Jeff Engelmann, PhD; Victoria Sardella, MS; Katelyn Greenberg, MA

Long-term clinical recovery outcomes and medication utilization in adolescent females following a residential DBT treatment program for emotion dysregulation

Dialectical behavior therapy (DBT), originally developed for adults with borderline personality disorder, has since been adapted for adolescents and is widely used in residential programs to address high-risk behaviors such as chronic suicidality, self-injury, and emotion dysregulation. Research consistently supports the short-term effectiveness of DBT but less is known about whether these treatment gains are sustained once adolescents are discharged from intensive care programs. Given the high rates of relapse, rehospitalization, and ongoing impairment often seen in youth with severe mood and emotion regulation difficulties, understanding long-term outcomes is essential.

Building on this gap in literature, the Rogers Research Center is launching a multi-year follow-up study, examining long-term outcomes for adolescent patients following discharge from the Nashotah program. The aim of this study is to better understand whether improvements observed during residential treatment are maintained over time and to identify factors that support or hinder long-term recovery. This study will allow researchers to examine:

- ① Whether adolescents maintain improvements in mood symptoms, emotion regulation, and quality of life after discharge.
- ② Whether gains made during treatment are associated with reduced risk for psychiatric hospitalization and lower reliance on higher levels of care.
- ③ The role of medication use and adherence, outpatient therapy, and other aftercare supports in sustaining recovery.

Altogether, analyses will explore individual, clinical, and contextual factors that may help explain why some adolescents maintain progress in the long run while others experience greater challenges.

Participants will be surveyed at multiple timepoints—6-, 12-, 18-, and 24-month post-treatment. Data collection will include standardized clinical assessments of mood, depression, borderline symptoms, mindfulness, emotion regulation, and quality of life. Researchers will also track medication use, outpatient engagement, psychiatric stability, and outcomes such as hospital readmissions, suicide attempts, and school or work functioning.

Following adolescents for up to two years post-discharge, this study will provide critical insight into the long-term effectiveness of DBT-based residential care. Findings will not only help clinicians understand the durability of treatment gains but also inform strategies for optimizing continuity of care, tailoring aftercare support, and refining interventions for adolescents with severe emotion regulation difficulties. In doing so, Rogers Behavioral Health continues its commitment to advancing the field through research that bridges immediate treatment outcomes with long-term recovery trajectories.



Study Team: Erik Ulland, MD (Co-PI); Kelly Piacsek, PhD (Co-PI); Jeff Engelmann, PhD; Victoria Sardella, MS; Katelyn Greenberg, MA



Characterizing and predicting incidents of seclusion and restraint in child and adolescent inpatients

Seclusion and restraint procedures are sometimes required in psychiatric treatment settings to manage acute, aggressive patient behaviors that pose immediate risks to themselves or others. Although well-studied and carefully regulated, these practices can significantly affect patients, care providers, and organizations. Because incidents vary across and within institutions, predicting and preventing them is challenging. Studies have suggested that there may be site, seasonal, staffing, and other factors that may help predict when patient dysregulation is more likely to lead to seclusion or restraint. Physicians at Rogers' Child and Adolescent Mental Health Recovery (MHR) inpatient programs are interested in working to quantify and understand these many factors, to help reduce the need for restrictive interventions. In June 2024, inpatient units at Rogers implemented the Brøset Violence Checklist, a short-term violence prediction instrument that assesses six key behaviors: confusion, irritability, boisterousness, verbal threats, physical threats, and attacks on objects. The goal was to reduce seclusion and restraint incidents through earlier detection and intervention.

In early 2025, Rogers Research Center submitted a retrospective study to the Institutional Review Board, seeking to examine patient and environmental factors linked to prior incidents of seclusion and restraint within Rogers' Child and Adolescent MHR inpatient program. Since receiving approval, the research team has begun analyzing patient data to design a predictive model that may account for site and seasonal trends over the past several years, symptom profiles, and behaviors tracked by the Brøset Violence Checklist.

Early analysis identified a predominantly female (66.67%), racially diverse group (White: 45%, Black: 43.33%) that was subject to restrictive interventions. The average age of individuals with reported incidents of seclusion and restraint is 14 years, with an average inpatient length of stay of 8 days. Common diagnostic profiles of inpatients with reports of these incidences include mood disorders with psychotic features, disruptive mood dysregulation disorder, and attention-deficit hyperactivity disorder-combined type. Seasonal trends showed higher incident rates in the summer months. The study team has now shifted their focus toward building a predictive model to identify high-likelihood cases, aiming to help Rogers' care providers prevent these incidents.



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