

Thankyou - A message from our Director



We are deeply grateful to the Amber's White Light for being a valued partner in this vital work. Thank you for joining us on the journey toward better mental health care for all.

Professor Jayashri Kulkarni AM
Director, HER Centre Australia

I would like to extend my sincere thanks to the Amber's White Light for your generous support. Thanks to your contribution, the research team at HER Centre Australia has made meaningful strides through *Amber's Alert* – our dedicated project focused on developing a new questionnaire-based diagnostic-decision tool and objective biomarkers to improve the identification and treatment of complex psychiatric conditions, many of which frequently overlap and are difficult to diagnose using current approaches.

As a clinician and researcher, I know that scientific breakthroughs are never achieved in isolation. Philanthropic support is crucial in bringing bold research ideas to life. Your generosity is enabling us to explore new frontiers in mental health research, intending to create more effective, tailored diagnostic and treatment options for those experiencing mental ill-health.

The Amber's Alert team



Professor Jayashri Kulkarni AM
Director



Associate Professor Caroline Gurvich
Deputy Director and Neuropsychologist



Mr Anthony de Castella
Manager



Dr Eveline Mu
Research Fellow and Manager



Dr Qi Li
Biostatistician



Ms Marta Malicka
Research Assistant



Dr Rebecca Ho
Medical Officer



Ms Lucy Ingleby
Research Assistant

Meet Marta Malicka and Lucy Ingleby



Marta Malicka

We are delighted to introduce Marta and Lucy as the newest members of our Amber's Alert team at HER Centre Australia. As research assistants, they each play a vital role in supporting participants and their families/carers who are involved in this important study.

Marta is leading the coordination and facilitation of focus groups with young people experiencing mental ill-health, as well as with their parents/carers and treating clinicians. She is at the forefront of ensuring smooth day-to-day operations of the study, while also prioritising the comfort and well-being of all participants. Marta's compassionate and thoughtful approach, combined with her commitment to high-quality research, makes her an invaluable team member.



Lucy Ingleby

Lucy is currently preparing for the launch of the eye-tracking component of Amber's Alert, which is planned to commence in the second half of 2025. Lucy will play a central role in the recruitment, data collection and analysis phases of this next stage. Drawing on her strong background in data-driven research, she is ensuring the project is set up for methodological precision and high-quality data capture. Her analytical mindset, attention to detail, and commitment to scientific rigour are laying the foundations for a successful and impactful expansion of the study.

Together, Marta and Lucy bring a thoughtful and skilled approach to Amber's Alert, and we are thrilled to have them as part of the team as we work toward improving early identification and support for young people with mental ill-health.

A year in review

Thanks to your generous support that helped launch the Amber's Alert project, 2024 marked a year of strong foundational progress. With this support, we successfully expanded participant recruitment and completed analysis of our pilot eye-tracking data.

The findings from this pilot phase provided us with confidence in our methodology and have been instrumental in shaping the next stage of the project. Building on this momentum, we are now preparing to launch the next phase of the eye-tracking study in the second half of 2025.

In parallel, Professor Jayashri Kulkarni, Dr Eveline Mu and A/Prof Caroline Gurvich have been leading the development of a new diagnostic-decision tool designed to better differentiate between early psychosis, borderline personality disorder/complex post-traumatic stress disorder, affective disorders, and typical adolescent turmoil.

As part of this process, the team conducted an in-depth review of current diagnostic tools to identify critical gaps in how these complex and overlapping conditions are screened and diagnosed.

These insights have directly informed the planning and design of our upcoming focus groups, for which we have just commenced recruitment.



Summary of the pilot eye-tracking data

The pilot study aimed to compare saccadic eye movement metrics across neutral and emotion-based tasks in individuals with borderline personality disorder, schizophrenia spectrum disorders, and healthy controls. Saccades – rapid, ballistic eye movements that redirect the line of sight – offer a non-invasive, cost-effective method for examining cognitive and neural functioning, with growing potential as a clinical tool to help differentiate between psychiatric conditions.

The primary objective was to identify distinct saccadic patterns that could serve as reliable biomarkers to distinguish between these diagnostic groups. Findings from this pilot study provide compelling preliminary evidence that saccadic eye movement metrics hold strong discriminatory power.

Our promising pilot results support the potential of eye-tracking as a valuable adjunct in the differential diagnosis of complex psychiatric conditions. We are currently finalising the manuscript for submission to a high-impact, peer-reviewed journal.



Where to from here?

Scale development

Recruitment is now underway for our next phase of Amber's Alert. This involves conducting targeted focus groups to gain rich, qualitative insights into the lived experiences of young people, their carers, and clinicians:

- **Young people**

We will conduct individual, semi-structured interviews (approximately 30 minutes each). These one-on-one conversations will explore participants' experiences with symptoms, daily challenges, diagnostic journeys, and interactions with mental health services

- **Parents/Carers**

These sessions will be held online via Zoom, featuring group-based discussions that last approximately 60 minutes. Together, carers will reflect on how their loved one's symptoms affect their daily life, the diagnostic and treatment processes, and areas where current screening tools succeed or fall short

- **Clinicians**

Mental health professionals will complete a structured set of questions – either through written surveys or brief interviews – focusing on their experiences using existing diagnostic tools and the key gaps they observed in differentiating conditions such as early psychosis, borderline personality disorder/complex post-traumatic stress disorder, affective disorders, and normative adolescent turmoil.



Where to from here?

Scale development

We aim to recruit approximately 20 young people who have either received diagnosis or are exhibiting symptoms consistent with:

- Early psychosis
- Borderline personality disorder/complex post-traumatic stress disorder
- Affective disorders
- Adolescent turmoil

Questions will be carefully crafted to explore:

- Personal experiences of the above conditions
- Challenges and ambiguity in early detection and diagnosis
- Perceived strengths and limitations of current screening and diagnostic tools
- Preferences for how a new scale should be designed to capture subtle yet clinically meaningful differences

Findings from these focus groups will directly inform the development of a new questionnaire-based diagnostic-decision tool designed to distinguish between these often overlapping conditions more accurately.

Once developed, this tool will undergo a rigorous validation process to assess its reliability, clinical utility, and effectiveness in real-world settings.

Where to from here?

Eye tracking

Building on the promising results of our pilot study, the next phase of the Amber's Alert project will significantly expand our eye-tracking research. The pilot phase examined saccadic eye movement metrics in individuals with established schizophrenia, borderline personality disorder, and healthy controls.

Beginning in the second half of 2025, we will take the next critical step of assessing whether these eye-tracking biomarkers can also detect and differentiate more complex and less clearly defined presentations in young people. The next phase will involve recruiting 120 participants, divided equally across the four clinical groups.



Where to from here?

Eye tracking

Inclusion criteria:

- Men and women aged between 16-25 years of age
- A diagnosis of psychosis, BPD, cPTSD, depression or anxiety, or symptoms as identified by the Structured Interview for Prodromal Syndromes (SIPS), Positive and Negative Syndrome Scale (PANSS), Diagnostic Interview for Borderlines-Revised (DIB-R) or Zanarini Rating Scale for Borderline Personality Disorder (ZAN-BPD), International Trauma Questionnaire (ITQ), Hamilton Depression Rating Scale (HAM-D) and Hamilton Anxiety Scale (HAM-A), or adolescents facing significant emotional or psychological distress (adolescent prodrome).
- Able to give informed consent
- English language proficiency (to provide informed consent)
- Stable on current psychotropic medication
- Holds a Medicare card



Where to from here?

Eye tracking

Exclusion criteria:

- Participants with a history of severe traumatic brain injury or significant neurological or unstable medical illness such as epilepsy
- Participants experiencing severe melancholia, neurovegetative symptoms or current suicidality necessitating acute hospitalisation or intensive psychiatric treatment.
- Severe substance use disorder
- Pregnant

This expanded study will test whether saccadic eye movement patterns can serve as reliable, non-invasive biomarkers in more diagnostically ambiguous or early-stage conditions, where improved diagnostic clarity is most needed.

Blood biomarkers

Amber's Alert also includes blood sample collection, which will take place during each participant's eye-tracking visit. Blood contains a wealth of biological information, including DNA, RNA, proteins, lipids, and hormones, that may reflect unique biological signatures underlying different psychiatric conditions.

This component of the study will help us investigate whether the disorders of interest have distinct biological origins. If so, this could pave the way for more accurate diagnoses, earlier identification, and the development of more personalised treatment pathways for young people experiencing mental ill-health.



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