

Can AI assess adult ADHD as accurately as a clinician? The RAVEN study

Submission date 02/10/2026	Recruitment status Not yet recruiting	☒ Prospectively registered ☐ Protocol
Registration date 13/10/2026	Overall study status Ongoing	☐ Statistical analysis plan ☐ Results
Last Edited 13/10/2026	Condition category Mental and Behavioural Disorders	☐ Individual participant data ☒ Record updated in last year

Plain English summary of protocol

Background and study aims

Attention deficit hyperactivity disorder (ADHD) affects around 3-4% of adults, and many people wait a long time for an NHS assessment because there are not enough specialist clinicians. Rainbow Diagnostics has developed a computer program (an AI voice assistant) that asks the same kinds of structured questions a clinician asks during an ADHD assessment. Before such a tool could ever be considered for use in care, it must be tested. This study measures how well the AI's conclusions agree with the judgement of a qualified clinician, and how easy, accessible and comfortable people find being assessed by an AI, including how well it builds rapport and whether people would prefer other language options.

Who can participate?

Adults aged 18 or over who are patients of Rainbow Diagnostics: around 50 people who have recently completed an ADHD assessment with a clinician as part of their care, and around 50 people with no ADHD diagnosis who attended the practice for other reasons.

What does the study involve?

Participants who recently had their ADHD assessment complete one extra research activity: a conversation of about 60 minutes with the AI voice assistant from home, within three weeks, plus a short feedback questionnaire. Participants with no ADHD diagnosis have two appointments: a normal assessment with a clinician (about 60 minutes, by video) and then the AI conversation. The AI's results are used for research only - they are not shown to participants or their clinicians and change nothing about anyone's care. Participants receive a 25 GBP voucher for their time.

What are the possible benefits and risks of participating?

There is no direct clinical benefit. Some questions cover personal topics and could be tiring or upsetting; participants can pause or stop at any time and a clinician is available during every AI session. Results will help determine whether AI tools can safely reduce waiting times for ADHD assessment.

Where is the study run from?

Rainbow Diagnostics Ltd (UK); all appointments are remote.

When is the study starting and how long is it expected to run for?
January 2027 to April 2027.

Who is funding the study?
Rainbow Diagnostics Ltd.

Who is the main contact?
Dr Raja Mohan, raja@rainbowadhd.com

Contact information

Type(s)

Public, Scientific, Principal investigator

Contact name

Dr Raja Mohan

Contact details

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Additional identifiers

Sponsor protocol number

RDX-AI-001

Study information

Scientific Title

Diagnostic accuracy of an artificial intelligence voice assessment for adult ADHD: a prospective paired study (RAVEN)

Acronym

RAVEN

Study objectives

Primary objective: to estimate the sensitivity and specificity of an AI-conducted 60-minute structured voice assessment (index test) for adult ADHD against contemporaneous clinician diagnostic assessment (reference standard).

Secondary objectives: agreement at individual DSM-5-TR symptom level (Cohen's kappa); positive and negative predictive values across plausible prevalence; inconclusive and technical failure rates; participant acceptability; safety of unsupervised AI assessment sessions.

Hypothesis: the AI assessment classifies adult ADHD with sensitivity and specificity of approximately 0.90 against clinician diagnosis.

Ethics approval required

Ethics approval required

Ethics approval(s)

Not yet submitted

Primary study design

Observational

Secondary study design

Cross sectional study

Study type(s)

Health condition(s) or problem(s) studied

Attention deficit hyperactivity disorder (ADHD) in adults

Interventions

Prospective, paired diagnostic test accuracy study embedded in the routine care pathway (STARD 2015 and STARD-AI), single centre (Rainbow Diagnostics Ltd, independent sector provider, England). Sampling is consecutive: all eligible patients during the recruitment window are invited in order, with every decline and exclusion logged. Group A (~50): adults referred for ADHD assessment who screen positive on the ASRS complete their routine NICE NG87-compliant clinician diagnostic assessment (DIVA-5-based interview, developmental and psychiatric history, mental state examination; video consultation) as the reference standard, then complete the 60-minute AI voice assessment within 21 days. Group B (~50): adult patients with no known ADHD diagnosis who attended the practice for other reasons receive the identical full clinician assessment as a study consultation, then the AI assessment. The AI algorithm (locked version) and all analysts are blinded to reference outcomes; AI outputs are used for research only and do not influence care. Analysis: sensitivity, specificity, PPV, NPV with Wilson 95% confidence intervals; Cohen's kappa per DSM-5-TR criterion; inconclusive outputs analysed as test-negative (primary) and excluded (sensitivity analysis). Pre-specified performance objective: lower 95% CI bound above 0.75 for both sensitivity and specificity.

Intervention Type

Device

Phase

Not Applicable

Drug/device/biological/vaccine name(s)

RAVEN AI voice assessment software (Rainbow Diagnostics Ltd), investigational standalone software, version locked for the study

Primary outcome(s)

1. Diagnostic accuracy of the AI voice assessment classification (ADHD likely/unlikely /inconclusive) measured using sensitivity and specificity versus clinician diagnostic assessment

(reference standard), with Wilson 95% confidence intervals; inconclusive AI outputs counted as test-negative, AI assessment completed within 21 days of the reference clinician assessment; at a single time point per participant

Key secondary outcome(s)

1. Criterion-level agreement, predictive values, operational performance, and acceptability and safety, measured using Cohen's kappa per DSM-5-TR Criterion A symptom item and overall; PPV and NPV across 30-70% prevalence; inconclusive and technical failure rates; assessment duration; participant experience questionnaire covering ease of use (System Usability Scale), accessibility (including any adjustments needed), language needs and preference for assessment in other languages, and rapport with the AI assistant (adapted working-alliance items); frequency of distress/safeguarding events and escalations during AI sessions at completion of both assessments per participant; analysed at study end

Completion date

30/04/2027

Eligibility

Key inclusion criteria

1. Aged 18 years or over
2. Patient of Rainbow Diagnostics Ltd
3. Group A: referred for ADHD assessment, ASRS screen positive, completing the routine clinician diagnostic assessment
4. Group B: no known ADHD diagnosis, attended the practice for other reasons, ASRS-negative at recruitment
5. Sufficient spoken English to complete a voice interview
6. Capacity to give informed consent
7. Access to a phone or computer and a private space

Healthy volunteers allowed

No

Age group

Mixed

Lower age limit

18 Years

Upper age limit

100 Years

Sex

All

Total final enrolment

0

Key exclusion criteria

1. Current acute psychiatric crisis or active suicidality
2. Psychotic disorder or major neurocognitive disorder
3. Open safeguarding concern
4. Participation would delay clinically indicated care
5. Inability to complete a spoken interview in English
6. Concurrent participation in interventional research

Date of first enrolment

11/01/2027

Date of final enrolment

31/03/2027

Locations

Countries of recruitment

United Kingdom

England

Study participating centre

Rainbow Diagnostics Ltd

Chelmsford Health Centre, Dickens Place

Chelmsford

England

CM1 4UU

Sponsor information

Organisation

Rainbow Diagnostics Ltd

Funder(s)

Funder type**Funder Name**

Rainbow Diagnostics Ltd

Results and Publications

Individual participant data (IPD) sharing plan

Pseudonymised individual participant data (criterion-level ratings and reference-standard outcomes) will be available from the Chief Investigator (raja@rainbowadhd.com) on reasonable request after publication of the primary results, subject to a data sharing agreement and the consent given by participants. Audio recordings and transcripts will not be shared as they are potentially identifiable.

IPD sharing plan summary

Available on request