



Extended Research Article

Clinical and cost-effectiveness of technologies for the assessment of attention deficit hyperactivity disorder: a systematic review and economic model

Eve Tomlinson,^{1†} Mary Ward,^{1†} Josephine Walker,¹ Melissa Benevente,¹
Hanyu Wang,¹ Chris Cooper,¹ Hayley E Jones,¹ Amanda Owen-Smith,¹
Catalina Lopez Manzano,² Sara James,² Dietmar Hank,³ Richard Lee-Kelland,¹
Nicky J Welton^{1††} and Penny Whiting^{1*††}

¹Bristol TAG, Population Health Sciences, Bristol Medical School, University of Bristol, Bristol, UK

²Patient representative

³Avon and Wiltshire Mental Health Partnership NHS Trust, UK

†Joint first author

††Joint last author

*Corresponding author penny.whiting@bristol.ac.uk

Published November 2025

DOI: 10.3310/DRDR7171

Plain language summary

Clinical and cost-effectiveness of technologies for the assessment of attention deficit hyperactivity disorder: a systematic review and economic model

Health Technology Assessment 2025; Vol. 29: No. 58

DOI: 10.3310/DRDR7171

NIHR Journals Library www.journalslibrary.nihr.ac.uk

Plain language summary

What is the problem?

Attention deficit hyperactivity disorder is a common condition that affects behaviour in both children and adults. People with attention deficit hyperactivity disorder may find it hard to concentrate, act without thinking and be unable to sit still. This can get in the way of daily life.

Attention deficit hyperactivity disorder is usually diagnosed by a specialist (an expert in attention deficit hyperactivity disorder) based on the person's history, behaviour and symptoms. The expert will typically observe the person and interview the person and others in their life (e.g. partners, parents or teachers).

It can take a long time to be diagnosed with attention deficit hyperactivity disorder and the person may have to go to lots of appointments. Attention deficit hyperactivity disorder is also sometimes confused with mental health conditions that have similar symptoms, making it harder to diagnose.

Tests have been developed that may improve how attention deficit hyperactivity disorder is diagnosed and followed up. They are intended to be used in addition to assessment by an expert. These tests involve the person doing a computer-based task that measures behaviours associated with attention deficit hyperactivity disorder (e.g. ability to concentrate and to control movement) and include the use of sensors to track movement. These tests may reduce the number of appointments needed and could increase the likelihood of diagnosing attention deficit hyperactivity disorder correctly. They might also be able to help work out if treatments are working properly.

What did we do?

We wanted to know whether using these new tests to help diagnose attention deficit hyperactivity disorder will mean that more people are correctly told whether or not they have attention deficit hyperactivity disorder, whether these tests help diagnose attention deficit hyperactivity disorder faster and whether the tests can be used to correctly tell us how well attention deficit hyperactivity disorder treatments work. We also wanted to know whether these tests are a good use of National Health Service money. We looked at existing research and developed cost models to answer these questions.

What did we find?

We found very limited good-quality data. Our findings suggest that using QbTest may help to diagnose attention deficit hyperactivity disorder more quickly, possibly using fewer appointments, and may allow a diagnosis to be made in more people. It is likely to represent a good use of National Health Service money.

ISSN 2046-4924 (Online)

Impact factor: 4

A list of Journals Library editors can be found on the [NIHR Journals Library website](#)

Launched in 1997, *Health Technology Assessment* (HTA) has an impact factor of 4 and is ranked 30th (out of 174 titles) in the 'Health Care Sciences & Services' category of the Clarivate 2022 Journal Citation Reports (Science Edition). It is also indexed by MEDLINE, CINAHL (EBSCO Information Services, Ipswich, MA, USA), EMBASE (Elsevier, Amsterdam, the Netherlands), NCBI Bookshelf, DOAJ, Europe PMC, the Cochrane Library (John Wiley & Sons, Inc., Hoboken, NJ, USA), INAHTA, the British Nursing Index (ProQuest LLC, Ann Arbor, MI, USA), Ulrichsweb™ (ProQuest LLC, Ann Arbor, MI, USA) and the Science Citation Index Expanded™ (Clarivate™, Philadelphia, PA, USA).

This journal is a member of and subscribes to the principles of the Committee on Publication Ethics (COPE) (www.publicationethics.org/).

Editorial contact: journals.library@nihr.ac.uk

The full HTA archive is freely available to view online at www.journalslibrary.nihr.ac.uk/hta.

Criteria for inclusion in the *Health Technology Assessment* journal

Manuscripts are published in *Health Technology Assessment* (HTA) if (1) they have resulted from work for the HTA programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

HTA programme

Health Technology Assessment (HTA) research is undertaken where some evidence already exists to show that a technology can be effective and this needs to be compared to the current standard intervention to see which works best. Research can evaluate any intervention used in the treatment, prevention or diagnosis of disease, provided the study outcomes lead to findings that have the potential to be of direct benefit to NHS patients. Technologies in this context mean any method used to promote health; prevent and treat disease; and improve rehabilitation or long-term care. They are not confined to new drugs and include any intervention used in the treatment, prevention or diagnosis of disease.

The journal is indexed in NHS Evidence via its abstracts included in MEDLINE and its Technology Assessment Reports inform National Institute for Health and Care Excellence (NICE) guidance. HTA research is also an important source of evidence for National Screening Committee (NSC) policy decisions.

This article

The research reported in this issue of the journal was funded by the Evidence Synthesis programme as award number NIHR136009. The contractual start date was in October 2023. The draft manuscript began editorial review in May 2024 and was accepted for publication in February 2025. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' manuscript and would like to thank the reviewers for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this article.

This article presents independent research funded by the National Institute for Health and Care Research (NIHR). The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, the HTA programme or the Department of Health and Social Care. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, the HTA programme or the Department of Health and Social Care.

This article was published based on current knowledge at the time and date of publication. NIHR is committed to being inclusive and will continually monitor best practice and guidance in relation to terminology and language to ensure that we remain relevant to our stakeholders.

Copyright © 2025 Tomlinson *et al.* This work was produced by Tomlinson *et al.* under the terms of a commissioning contract issued by the Secretary of State for Health and Social Care. This is an Open Access publication distributed under the terms of the Creative Commons Attribution CC BY 4.0 licence, which permits unrestricted use, distribution, reproduction and adaptation in any medium and for any purpose provided that it is properly attributed. See: <https://creativecommons.org/licenses/by/4.0/>. For attribution the title, original author(s), the publication source – NIHR Journals Library, and the DOI of the publication must be cited.

Published by the NIHR Journals Library (www.journalslibrary.nihr.ac.uk), produced by Newgen Digitalworks Pvt Ltd, Chennai, India (www.newgen.co).