# A systematic review and economic evaluation of adalimumab and dexamethasone for treating non-infectious intermediate uveitis, posterior uveitis or panuveitis in adults

Hazel Squires,<sup>1</sup>\* Edith Poku,<sup>1</sup> Inigo Bermejo,<sup>1</sup> Katy Cooper,<sup>1</sup> John Stevens,<sup>1</sup> Jean Hamilton,<sup>1</sup> Ruth Wong,<sup>1</sup> Alastair Denniston,<sup>2</sup> Ian Pearce<sup>3</sup> and Fahd Quhill<sup>4</sup>

<sup>1</sup>School of Health and Related Research (ScHARR), University of Sheffield, Sheffield, UK

<sup>2</sup>University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK <sup>3</sup>St Paul's Eye Unit, Royal Liverpool University Hospital, Liverpool, UK <sup>4</sup>Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK

\*Corresponding author h.squires@sheffield.ac.uk

**Declared competing interests of authors:** Fahd Quhill has received personal fees from Allergan for participation in medical education and training, and has participated in advisory boards given his clinical expertise in the role of steroids in diabetic macular oedema. He has also received support from Allergan to attend international conferences.

Published November 2017 DOI: 10.3310/hta21680

# **Plain English summary**

# Treating adults with non-infectious intermediate, posterior or panuveitis

Health Technology Assessment 2017; Vol. 21: No. 68 DOI: 10.3310/hta21680

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

# **Plain English summary**

N on-infectious intermediate uveitis, posterior uveitis and panuveitis are a group of conditions causing inflammation in the eye, which if untreated may lead to sight loss. Treatment may include injections or implants into the eye or medicines taken by mouth or via injection.

This assessment evaluated whether adalimumab (as an injection under the skin) (Humira<sup>®</sup>; AbbieVie Ltd, Maidenhead, UK) or dexamethasone (as an implant in the eye) (Ozurdex<sup>®</sup>; Allergan Ltd, Marlow, UK) improved patients' eye inflammation, vision and quality of life. We also examined the harmful effects of treatment as well as the associated costs. Data were combined from published sources in an economic model to estimate the cost-effectiveness of adalimumab and dexamethasone compared with current treatment.

Evidence from three studies showed that adalimumab and dexamethasone were each better than placebo at improving eye inflammation, vision and quality of life. In terms of safety, adalimumab resulted in more generalised effects such as infections and injection site reactions. The dexamethasone implant resulted in more eye-related complications such as raised pressure in the eye and cataracts.

For dexamethasone, the additional cost for each additional year of life in full health (cost per quality-adjusted life-year gained) was estimated as £19,509 compared with current practice. The equivalent figure for adalimumab was estimated to be > £90,000, which is higher than the values reported by the National Institute for Health and Care Excellence as thresholds for a treatment to be considered cost-effective. There is substantial uncertainty around the evidence, in particular with regard to the impact of the interventions on patient blindness and differences between trial evidence and clinical practice.

### **Health Technology Assessment**

ISSN 1366-5278 (Print)

ISSN 2046-4924 (Online)

Impact factor: 4.236

Health Technology Assessment is indexed in MEDLINE, CINAHL, EMBASE, The Cochrane Library and the Clarivate Analytics Science Citation Index.

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. Print-on-demand copies can be purchased from the report pages of the NIHR Journals Library website: www.journalslibrary.nihr.ac.uk

#### Criteria for inclusion in the Health Technology Assessment journal

Reports 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**

The HTA programme, part of the National Institute for Health Research (NIHR), was set up in 1993. It produces high-quality research information on the effectiveness, costs and broader impact of health technologies for those who use, manage and provide care in the NHS. 'Health technologies' are broadly defined as all interventions used to promote health, prevent and treat disease, and improve rehabilitation and long-term care.

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.

For more information about the HTA programme please visit the website: http://www.nets.nihr.ac.uk/programmes/hta

#### This report

The research reported in this issue of the journal was commissioned and funded by the HTA programme on behalf of NICE as project number 15/64/07. The protocol was agreed in June 2016. The assessment report began editorial review in December 2016 and was accepted for publication in May 2017. 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' report 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 report.

This report presents independent research funded by the National Institute for Health 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, NETSCC, the HTA programme or the Department of Health. 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, NETSCC, the HTA programme or the Department of Health.

© Queen's Printer and Controller of HMSO 2017. This work was produced by Squires *et al.* under the terms of a commissioning contract issued by the Secretary of State for Health. This issue may be freely reproduced for the purposes of private research and study and extracts (or indeed, the full report) may be included in professional journals provided that suitable acknowledgement is made and the reproduction is not associated with any form of advertising. Applications for commercial reproduction should be addressed to: NIHR Journals Library, National Institute for Health Research, Evaluation, Trials and Studies Coordinating Centre, Alpha House, University of Southampton Science Park, Southampton SO16 7NS, UK.

Published by the NIHR Journals Library (www.journalslibrary.nihr.ac.uk), produced by Prepress Projects Ltd, Perth, Scotland (www.prepress-projects.co.uk).

### Health Technology Assessment Editor-in-Chief

**Professor Hywel Williams** Director, HTA Programme, UK and Foundation Professor and Co-Director of the Centre of Evidence-Based Dermatology, University of Nottingham, UK

### **NIHR Journals Library Editor-in-Chief**

Professor Tom Walley Director, NIHR Evaluation, Trials and Studies and Director of the EME Programme, UK

### **NIHR Journals Library Editors**

**Professor Ken Stein** Chair of HTA and EME Editorial Board and Professor of Public Health, University of Exeter Medical School, UK

Professor Andrée Le May Chair of NIHR Journals Library Editorial Group (HS&DR, PGfAR, PHR journals)

Dr Martin Ashton-Key Consultant in Public Health Medicine/Consultant Advisor, NETSCC, UK

**Professor Matthias Beck** Chair in Public Sector Management and Subject Leader (Management Group), Queen's University Management School, Queen's University Belfast, UK

Dr Tessa Crilly Director, Crystal Blue Consulting Ltd, UK

Dr Eugenia Cronin Senior Scientific Advisor, Wessex Institute, UK

Dr Peter Davidson Director of the NIHR Dissemination Centre, University of Southampton, UK

Ms Tara Lamont Scientific Advisor, NETSCC, UK

**Dr Catriona McDaid** Senior Research Fellow, York Trials Unit, Department of Health Sciences, University of York, UK

Professor William McGuire Professor of Child Health, Hull York Medical School, University of York, UK

Professor Geoffrey Meads Professor of Wellbeing Research, University of Winchester, UK

Professor John Norrie Chair in Medical Statistics, University of Edinburgh, UK

Professor John Powell Consultant Clinical Adviser, National Institute for Health and Care Excellence (NICE), UK

**Professor James Raftery** Professor of Health Technology Assessment, Wessex Institute, Faculty of Medicine, University of Southampton, UK

Dr Rob Riemsma Reviews Manager, Kleijnen Systematic Reviews Ltd, UK

Professor Helen Roberts Professor of Child Health Research, UCL Institute of Child Health, UK

Professor Jonathan Ross Professor of Sexual Health and HIV, University Hospital Birmingham, UK

**Professor Helen Snooks** Professor of Health Services Research, Institute of Life Science, College of Medicine, Swansea University, UK

**Professor Jim Thornton** Professor of Obstetrics and Gynaecology, Faculty of Medicine and Health Sciences, University of Nottingham, UK

**Professor Martin Underwood** Director, Warwick Clinical Trials Unit, Warwick Medical School, University of Warwick, UK

Please visit the website for a list of members of the NIHR Journals Library Board: www.journalslibrary.nihr.ac.uk/about/editors

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