Treatment of Hidradenitis Suppurativa Evaluation Study: the THESEUS prospective cohort study

John R Ingram,[1*] Janine Bates,[2] Rebecca Cannings-John,[2] Fiona Collier,[3] Angela Gibbons,[4] Ceri Harris,[4] Kerenza Hood,[2] Laura Howells,[5] Rachel Howes,[6] Paul Leighton,[5] Muhammad Riaz,[2] Jeremy Rodrigues,[6,7] Helen Stanton,[2] Kim S Thomas[5] and Emma Thomas-Jones[1]

[1]Division of Infection and Immunity, Cardiff University, Cardiff, UK
[2]Centre for Trials Research, College of Biomedical and Life Sciences, Cardiff University, Cardiff, UK
[3]NHS Forth Valley, Stirling, UK
[4]Centre for Trials Research, College of Biomedical and Life Sciences, Cardiff University, Cardiff, UK
[5]Centre of Evidence Based Dermatology, School of Medicine, University of Nottingham, Nottingham, UK
[6]Burns and Plastic Surgery, Stoke Mandeville Hospital, Aylesbury, UK
[7]Warwick Clinical Trials Unit, University of Warwick, Warwick, UK

[*]Corresponding author IngramJR@cardiff.ac.uk

Disclosure of interests

Full disclosure of interests: Completed ICMJE forms for all authors, including all related interests, are available in the toolkit on the NIHR Journals Library report publication page at https://doi.org/10.3310/HWNM2189.

Primary conflict of interest: John R Ingram: Health Technology Assessment (HTA) grant 17/98/01, Consultant for Abbvie Boehringer Ingelheim, ChemoCentryx, Citryll, Novartis, UCB Pharma, and UNION Therapeutics (paid). Authorship honorarium from UpToDate (paid). Co-copyright holder of HiSQOL, Investigator Global Assessment and Patient Global Assessment instruments for HS (no payments as yet). Department receives income from copyright of the Dermatology Life Quality Instrument (DLQI) and related instruments (institution receives payments). Participation in Novartis Data Monitoring Committee (paid). Advisory boards – Insmed, Kymera Therapeutics, Viela Bio (paid). Receives a stipend as Editor-in-Chief of the *British Journal of Dermatology* (paid). Unpaid officer of British Association of Dermatologists. Janine Bates: Nothing to declare. Rebecca Cannings-John: Past member of HTA Associate Board. Fiona Collier: NIHR THESEUS (subcontractor payment); British Dermatology Nursing Group Expert Panel on hidradenitis suppurativa (HS; paid). Angela Gibbons: Novartis: HS Patient Advisory Board (paid), THESEUS Study Management Group (honoraria payment). Ceri Harris: Novartis: HS Patient Advisory Board (paid), THESEUS Patient experience representative (honoraria payment). Kerenza Hood: Member of HTA General Committee, HTA Funding Committee Policy Group and NIHR Research Professors Panel. NIHR HTA funding (Research Grant to Cardiff University). Laura Howells: NIHR HTA funding (research grant to University of Nottingham), consultation fees from the University of Oxford on an educational grant funded by Pfizer, unrelated to submitted work. Rachel Howes: Nothing

to declare. Paul Leighton: Member of NIHR Research for Patient Benefit East Midlands Advisory Board (unpaid). Muhammad Riaz: THESEUS has funded my poster presentation and attendance at ICTMC2022. Jeremy Rodrigues: NIHR postdoctoral fellowship (paid by institution). Helen Stanton: Nothing to declare. Kim Suzanne Thomas: NIHR HTA funding (research grant to University of Nottingham). Emma Thomas-Jones: Nothing to declare.

Equality, diversity and inclusion

Participant representation

Entry criteria for THESEUS were designed to be as inclusive as possible and the baseline demographics of THESEUS participants closely reflects the HS secondary care population in the UK. THESEUS recruited women of childbearing age, with a four to one female to male ratio and an average participant age of 36 years. Regarding smoking and obesity, again, THESEUS participants reflected the overall HS patient population, two-thirds being current or ex-smokers and 86% having a raised body mass index. There was broad representation across socioeconomic groups with half of the THESEUS participants in the most deprived and second-most deprived deprivation quintiles. Just over 20% of THESEUS participants had non-white ethnicity, slightly higher than overall UK population statistics. The 10 recruitment sites chosen for THESEUS were purposively spread across the UK, including sites in southern England, northeast England, northwest England, Scotland and Wales, to ensure that most regions of the UK were involved in the study. Our study centres ranged in size from large tertiary hospitals to smaller district general hospitals, demonstrating that future HS trials can be conducted in a range of settings. During the COVID-19 pandemic, conversion of follow-up to remote appointments if needed ensured that the participants' access to their study team was not interrupted. Remote appointments also helped participants with mobility problems and transport difficulties. Our study results reveal that meetings and other patient meetings were also held online, again improving access for those with physical disabilities. On discussion with THESEUS patient research partners, we chose a hybrid model for the end-of-study workshop. In-person attendance was felt to maximise workshop contributions; however, some of our patient participants preferred to join online due to work or child-care commitments and because of physical disability. The solution was to select a venue with good videoconferencing facilities and, for the small group discussions, there were two in-person groups and one online, each with a facilitator. The potential financial impact of attending the workshop was mitigated by compensating patient attendees at the Involving People daily rate. Male patient representation was specifically sought for the workshop in the context that while HS is a condition in the UK predominantly affecting females, males are also affected as a minority. Only one person with HS featured in the deroofing video so there was not the chance to include a wide range of patient demographics in this aspect of the study. Ensuring that materials and videos for future studies encompass a full range of diversity will be an important element to consider.

Reflections on the research team and wider involvement

The THESEUS research team had substantial patient and public involvement (PPI) in study planning, funding application, study delivery and organising the end-of-study workshop. We were fortunate that one of our research partners is an expert in equality, diversity and inclusion (EDI) and they guided THESEUS regarding EDI considerations. We were able to involve a HS patient carer in the study planning process to ensure representation from this stakeholder group as well. Participant recruitment involved junior doctors, whenever possible, to help provide clinical trial training to the next generation of researchers.

Final approval was provided by Dr J Ingram.

Published December 2023
DOI: 10.3310/HWNM2189

Plain language summary

Treatment of Hidradenitis Suppurativa Evaluation Study: the THESEUS prospective cohort study

Health Technology Assessment 2023; Vol. 27: No. 30
DOI: 10.3310/HWNM2189

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

Plain language summary

Hidradenitis suppurativa is a long-term condition causing boils in skin creases such as the arm pits that are very painful, produce pus and cause scarring in about 1% of the United Kingdom population. The Treatment of Hidradenitis Suppurativa Evaluation Study aimed to understand current hidradenitis suppurativa treatments, to determine what influences treatment choices and to inform the design of future hidradenitis suppurativa randomised controlled trials.

Ten UK hospitals took part and 151 people with active hidradenitis suppurativa, mostly moderate in severity, were enrolled and followed up for 12 months. The Treatment of Hidradenitis Suppurativa Evaluation Study offered five treatments chosen by participants with their doctor: doxycycline antibiotic tablets, combined clindamycin and rifampicin antibiotic tablets, laser hair removal treatment, 'deroofing' of skin tunnels which form due to hidradenitis suppurativa scarring and standard skin surgery. Laser treatment and deroofing were not available in the United Kingdom for hidradenitis suppurativa previously. We made an information video for deroofing which has been viewed more than 1 million times (https://www.cardiff.ac.uk/centre-for-trials-research/research/studies-and-trials/view/theseus).

Laser treatment was most popular, with 69% of participants willing and eligible for treatment, followed by deroofing (58%), standard surgery (54%) and then the antibiotic options. Interviewing participants revealed that willingness and final choice of treatment was most influenced by their doctor.

Only about half of participants were still taking their doxycycline tablets after 3 months, due to lack of effectiveness and adverse effects, and the figure was even lower for combined clindamycin and rifampicin. Despite delays in receiving laser treatment and deroofing, switching between treatments was uncommon. Few participants chose standard surgery, perhaps because of long waiting times and the popularity of deroofing.

Participants were sent a daily text message for 12 weeks, asking them to score their skin pain out of 10 and this worked well for 2 weeks and then rates of reply dropped.

We hosted a workshop to discuss the Treatment of Hidradenitis Suppurativa Evaluation Study results and decide which treatments to take forward in future trials, with laser and deroofing being recommended.

Headline

The Treatment of Hidradenitis Suppurativa Evaluation Study introduced deroofing of skin tunnels and laser treatment for hidradenitis suppurativa and found that these are preferred interventions for future trials compared with oral antibiotics or conventional surgery.

Health Technology Assessment

ISSN 1366-5278 (Print)

ISSN 2046-4924 (Online)

Impact factor: 3.6

Launched in 1997, *Health Technology Assessment* (HTA) has an impact factor of 3.6 and is ranked 32nd (out of 105 titles) in the 'Health Care Sciences & Services' category of the Clarivate 2021 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

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

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 report

The research reported in this issue of the journal was funded by the HTA programme as project number 17/98/01. The contractual start date was in April 2019. The final report began editorial review in October 2022 and was accepted for publication in March 2023. 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 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.

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