

Thromboprophylaxis during pregnancy and the puerperium: a systematic review and economic evaluation to estimate the value of future research

Sarah Davis,^{1*} Abdullah Pandor,¹ Fiona C Sampson,¹ Jean Hamilton,¹ Catherine Nelson-Piercy,² Beverley J Hunt,³ Jahnavi Daru,⁴ Steve Goodacre,¹ Rosie Carser,⁵ Gill Rooney¹ and Mark Clowes¹

¹School of Health and Related Research (ScHARR), University of Sheffield, Sheffield, UK

²Women's Health Academic Centre, Guy's and St Thomas' NHS Foundation Trust, London, UK

³Haematology and Pathology, Guy's and St Thomas' NHS Foundation Trust, London, UK

⁴Institute of Population Health Sciences, Queen Mary University of London, London, UK

⁵Patient and Public Involvement, Thrombosis UK, Llanwrda, UK

*Corresponding author s.davis@sheffield.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/DFWT3873>.

Primary conflicts of interest: Professor Steve Goodacre is chair of the NIHR HTA Clinical Trials Unit Standing Advisory Committee, is a member of the NIHR HTA Programme Oversight Committee 2009–23 and has been a member of a number of NIHR Committees from 2009 to 2022. Professor Beverley Hunt was previously involved in developing relevant National Institute for Health and Care Excellence (NICE) guidance on prevention and management of venous thromboembolic disease and is Medical Director of Thrombosis UK and Chair of the Steering Group of World Thrombosis Day. Catherine Nelson-Piercy reports personal fees from Sanofi and UCB, and was the lead developer of the Royal College of Obstetricians and Gynaecologists (RCOG) Green Top Guideline on thromboprophylaxis in pregnancy (37a). Jahnavi Daru was an author on RCOG's COVID-19 guidance. All other authors declare no competing interests.

This publication presents independent research commissioned by the National Institute for Health and Care Research (NIHR). The views and opinions expressed by the interviewees in this publication are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, MRC, NIHR Coordinating Centre, the HTA programme or the Department of Health and Social Care.

Published March 2024
DOI: 10.3310/DFWT3873

Plain language summary

Thromboprophylaxis during pregnancy and the puerperium: a systematic review and economic evaluation to estimate the value of future research

Health Technology Assessment 2024; Vol. 28: No. 9
DOI: 10.3310/DFWT3873

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

Plain language summary

Women who are pregnant or who have given birth in the previous 6 weeks are at increased risk of developing blood clots that can cause serious illness or death. Small doses of blood thinners given by injection are safe in pregnancy and can reduce the risk of blood clots, but they can slightly increase the risk of bleeding. Healthcare professionals use risk assessment tools to decide if a woman is at high risk of blood clots and should be offered blood thinners. We wanted to find out what research would be useful to help them make better decisions.

We reviewed previous research to establish which risk assessment tools are best at predicting who will have a blood clot. We then created a mathematical model to predict what would happen when using different risk assessment tools to decide who should be offered blood thinners, both during pregnancy and after giving birth. We found that there was a lot of uncertainty about which women should be offered blood thinners. This was mainly because there have only been a few small studies comparing blood thinners to no treatment in pregnant women or women who have recently given birth.

We estimated the value of future studies comparing blood thinners to no treatment, in groups of women with different risk factors, by predicting what information we would gain and how this would be used to improve decisions about using blood thinners. To find out whether these studies would be acceptable and feasible, we held workshops with women who have experienced a blood clot or have been offered blood thinners and surveyed healthcare professionals. We found that a study in obese women who have recently given birth would have substantial value and may be more acceptable than a study in pregnant women with a previous blood clot.

Health Technology Assessment

ISSN 2046-4924 (Online)

Impact factor: 3.6

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 3.6 and is ranked 32nd (out of 105 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 manuscript

The research reported in this issue of the journal was funded by the HTA programme as award number NIHR131021. The contractual start date was in January 2021. The draft report began editorial review in April 2022 and was accepted for publication in February 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' 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 manuscript.

This manuscript 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.

Copyright © 2024 Davis *et al.* This work was produced by Davis *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).

