

Interventions to reduce the risk of surgically transmitted Creutzfeldt–Jakob disease: a cost-effective modelling review

Matt Stevenson,^{1*} Lesley Uttley,¹ Jeremy E Oakley,² Christopher Carroll,¹ Stephen E Chick³ and Ruth Wong¹

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

²School of Mathematics and Statistics, University of Sheffield, Sheffield, UK

³INSEAD, Fontainebleau, France

*Corresponding author m.d.stevenson@sheffield.ac.uk

Declared competing interests of authors: none

Published February 2020

DOI: [10.3310/hta24110](https://doi.org/10.3310/hta24110)

Plain English summary

Surgically transmitted Creutzfeldt–Jakob disease risk

Health Technology Assessment 2020; Vol. 24: No. 11

DOI: [10.3310/hta24110](https://doi.org/10.3310/hta24110)

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

Plain English summary

The aims of this report were to summarise evidence relating to surgically transmitted Creutzfeldt–Jakob disease and to explore the value for money of strategies to reduce the chance of any future surgically transmitted Creutzfeldt–Jakob disease cases. Current recommendations include keeping sets of surgical instruments together for high-risk operations and using separate instruments for people born after 1996. The project involved reviewing published papers, speaking with experts and building a computer model.

The literature reviews found that Creutzfeldt–Jakob disease occurs in around 1–2 per million people and that no definite cases of surgically transmitted Creutzfeldt–Jakob disease have been observed since the 1970s. The reviews also looked for information on the possibility of patients being infected with Creutzfeldt–Jakob disease after having surgery on high-risk tissues, such as the brain and the back of the eye. They found that there was a great deal of uncertainty regarding who might have Creutzfeldt–Jakob disease, but not yet have symptoms, as well as the risk of transmission and the ability of strategies to reduce this risk.

The computer model aimed to estimate value for money of different strategies to reduce the risks of surgically transmitted Creutzfeldt–Jakob disease. However, the reviews found that some of the numbers needed for the model were not known, so experts were asked to estimate this information instead along with the range of possible values. This information included the effectiveness of different cleaning practices and the chances of infected tissue being transmitted between patients undergoing high-risk surgery.

The model found that keeping surgical instruments moist prior to cleaning was likely to save money and reduce the chance of future surgically transmitted Creutzfeldt–Jakob disease cases. However, additional measures, such as using only sets of single-use instruments, ensuring that instruments were kept together in their sets or using separate instruments for those born after 1996, appeared to be poor value for money.

ISSN 1366-5278 (Print)

ISSN 2046-4924 (Online)

Impact factor: 3.819

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

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 17/48/01. The contractual start date was in August 2017. The draft report began editorial review in October 2018 and was accepted for publication in June 2019. 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 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, NETSCC, the HTA programme or the Department of Health and Social Care.

© Queen's Printer and Controller of HMSO 2020. This work was produced by Stevenson *et al.* under the terms of a commissioning contract issued by the Secretary of State for Health and Social Care. 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).

Editor-in-Chief of *Health Technology Assessment* and NIHR Journals Library

Professor Ken Stein Professor of Public Health, University of Exeter Medical School, UK

NIHR Journals Library Editors

Professor John Powell Chair of HTA and EME Editorial Board and Editor-in-Chief of HTA and EME journals. Consultant Clinical Adviser, National Institute for Health and Care Excellence (NICE), UK, and Senior Clinical Researcher, Nuffield Department of Primary Care Health Sciences, University of Oxford, UK

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

Professor Matthias Beck Professor of Management, Cork University Business School, Department of Management and Marketing, University College Cork, Ireland

Dr Tessa Crilly Director, Crystal Blue Consulting Ltd, UK

Dr Eugenia Cronin Senior Scientific Advisor, Wessex Institute, UK

Dr Peter Davidson Consultant Advisor, Wessex Institute, University of Southampton, UK

Ms Tara Lamont Director, NIHR Dissemination Centre, 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 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 Great Ormond Street 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 Ken Stein Professor of Public Health, University of Exeter Medical School, UK

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

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

Please visit the website for a list of editors: www.journalslibrary.nihr.ac.uk/about/editors

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