

Evaluation of reconfigurations of acute stroke services in different regions of England and lessons for implementation: a mixed-methods study

Naomi J Fulop,^{1*} Angus IG Ramsay,¹
Rachael M Hunter,² Christopher McKevitt,³
Catherine Perry,⁴ Simon J Turner,⁵ Ruth Boaden,⁴
Iliatha Papachristou,⁶ Anthony G Rudd,⁷
Pippa J Tyrrell,⁸ Charles DA Wolfe³
and Stephen Morris¹

¹Department of Applied Health Research, University College London, London, UK

²Research Department of Primary Care and Population Health, University College London, London, UK

³Department of Population Health Sciences, School of Population Health & Environmental Sciences Research, King's College London, London, UK

⁴Alliance Manchester Business School, University of Manchester, Manchester, UK

⁵Centre for Primary Care, Division of Population Health, Health Services Research and Primary Care, University of Manchester, Manchester, UK

⁶Department of Psychological Medicine, King's College London, London, UK

⁷Guy's and St Thomas' NHS Foundation Trust, St Thomas' Hospital, London, UK

⁸Stroke and Vascular Centre, University of Manchester, Manchester Academic Health Science Centre, Salford Royal Hospitals NHS Foundation Trust, Salford, UK

*Corresponding author n.fulop@ucl.ac.uk

Declared competing interests of authors: Stephen Morris and Rachael M Hunter were commissioned by NHS London to conduct an economic evaluation of the London reconfiguration of acute stroke services prior to this study. Anthony G Rudd is National Clinical Director of Stroke, NHS England, and London Clinical Director for Stroke. Pippa J Tyrrell was Clinical Lead for stroke in Greater Manchester (Greater Manchester and Cheshire Cardiac and Stroke Network) (2008–14) and is a Trustee of the Stroke Association. Ruth Boaden is Director of National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care (CLAHRC) Greater Manchester (hosted by Salford Royal NHS Foundation Trust, one of the organisations that has a Hyperacute Stroke Unit in Manchester); she also holds an honorary (unpaid) contract at Salford Royal NHS Foundation Trust as an Associate Director, is a member of the NIHR Dissemination Centre Advisory Group, is Chairperson of the NIHR Knowledge Mobilisation Research Fellowship Panel and is a Health Services and Delivery Research (HSDR) board member. Naomi J Fulop and Stephen Morris were HSDR Board members from 2013 to 2018 and 2014 to 2019, respectively. Angus IG Ramsay and Simon J Turner were associate HSDR Board members from 2015 to 2018 and 2015 to 2017, respectively.

Published February 2019

DOI: 10.3310/hsdr07070

Plain English summary

Evaluation of reconfigurations of acute stroke services

Health Services and Delivery Research 2019; Vol. 7: No. 7

DOI: 10.3310/hsdr07070

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

Plain English summary

Stroke patients do better if they get the right care at the right time, but getting good stroke care varies depending on where people live and the hospital at which patients are treated. In 2007, the Department of Health and Social Care proposed that having specialist Stroke Units in fewer hospitals (called 'centralisation') might improve the chances of patients getting the right care more quickly.

We studied efforts to centralise hospital stroke services in London, Greater Manchester, and the Midlands and East of England in terms of the following:

- how centralisation affected numbers of patient deaths, quality of care provided, patient and carer experience and value for money (in areas where changes were implemented)
- how changes were put into action, whether or not they kept going and what factors made a difference.

We found that if all patients went to a specialist unit for stroke, there were fewer deaths than if some patients went to units that were not specialist. Centralising stroke services led to fewer patient deaths, less time spent in hospital, provision of better care and overall good patient experiences. It also provided value for money.

Putting a centralised service in place depended on region-wide leadership, working together with health professionals, to achieve changes. Local stroke networks helped make change happen within hospitals. Centralisations that linked achievement of quality standards with payments were more likely to have the resources to provide the right care. NHS reforms in 2013 removed region-wide leadership and local networks, making it harder to centralise stroke services.

Our findings provide support for the centralisation of acute stroke services, although we have acknowledged several limitations of our analysis. Our findings relate best to stroke services in larger cities, because rural areas may have longer travel times to hospitals. Our findings on how changes were achieved could help areas that want to centralise health services.

Health Services and Delivery Research

ISSN 2050-4349 (Print)

ISSN 2050-4357 (Online)

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 HS&DR archive is freely available to view online at www.journalslibrary.nihr.ac.uk/hsdr. 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 Services and Delivery Research* journal

Reports are published in *Health Services and Delivery Research* (HS&DR) if (1) they have resulted from work for the HS&DR programme or programmes which preceded the HS&DR programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

HS&DR programme

The Health Services and Delivery Research (HS&DR) programme, part of the National Institute for Health Research (NIHR), was established to fund a broad range of research. It combines the strengths and contributions of two previous NIHR research programmes: the Health Services Research (HSR) programme and the Service Delivery and Organisation (SDO) programme, which were merged in January 2012.

The HS&DR programme aims to produce rigorous and relevant evidence on the quality, access and organisation of health services including costs and outcomes, as well as research on implementation. The programme will enhance the strategic focus on research that matters to the NHS and is keen to support ambitious evaluative research to improve health services.

For more information about the HS&DR programme please visit the website: <http://www.nets.nihr.ac.uk/programmes/hsdr>

This report

The research reported in this issue of the journal was funded by the HS&DR programme or one of its preceding programmes as project number 10/1009/09. The contractual start date was in September 2011. The final report began editorial review in September 2017 and was accepted for publication in April 2018. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HS&DR editors and production house have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the final report 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 HS&DR 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 HS&DR programme or the Department of Health and Social Care.

© Queen's Printer and Controller of HMSO 2019. This work was produced by Fulop *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).

NIHR Journals Library Editor-in-Chief

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

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 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 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 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