Temporal variations in quality of acute stroke care and outcomes in London hyperacute stroke units: a mixed-methods study

Robert Simister,1 Georgia B Black,2* Mariya Melnychuk,2 Angus IG Ramsay,2 Abigail Baim-Lance,3 David L Cohen,4 Jeannie Eng,5 Penny D Xanthopoulou,6 Martin M Brown,7 Anthony G Rudd,8 Steve Morris9 and Naomi J Fulop2

1University College London Hospitals NHS Foundation Trust, London, UK
2Department of Applied Health Research, University College London, London, UK
3Center for Innovation in Mental Health, City University of New York, New York, NY, USA
4Stroke Service, Haldane and Herrick Wards, Northwick Park Hospital, London, UK
5Cancer Division, University College London Hospitals NHS Foundation Trust, London, UK
6University of Exeter Medical School, Exeter, UK
7Queen Square Institute of Neurology, University College London, London, UK
8King’s College London and Guy’s and St Thomas’ NHS Foundation Trust, London, UK
9Department of Public Health and Primary Care, University of Cambridge, Cambridge, UK

*Corresponding author  g.black@ucl.ac.uk

Declared competing interests of authors: Rob Simister is lead consultant of the hyperacute stroke unit at the University College London Hospitals NHS Foundation Trust. Rob Simister is now Joint Clinical Director of the London Stroke Clinical Network and is part funded by the National Institute for Health Research (NIHR) Biomedical Research Centre at University College London Hospitals NHS Foundation Trust and University College London. Angus IG Ramsay was an associate board member of the National Institute for Health Research (NIHR) Health Services and Delivery Research (HSDR) Board (2015–18). Anthony Rudd was the National Clinical Director for Stroke in England from 2010 to 2019 and was the London Stroke Clinical Director from 2009 to 2019. Steve Morris was on the NIHR HSDR Funding Committee (2014–19). Naomi Fulop was a member of the NIHR HSDR Funding Committee (2013–18) and is a NIHR Senior Investigator.

Published August 2020
DOI: 10.3310/hsdr08340
Temporal variations in quality of acute stroke care and outcomes

Health Services and Delivery Research 2020; Vol. 8: No. 34
DOI: 10.3310/hsdr08340

NIHR Journals Library www.journalslibrary.nihr.ac.uk
Plain English summary

Stroke patients do better if they are treated in a specialist stroke unit. There are eight such units in London, providing care in the first hours following stroke. Some research has suggested that stroke patients who are admitted to hospital at the weekend or at night are more likely to die or to receive a lower standard of care. We wanted to know if this was the case in London, where the specialist stroke units provide a ‘24 hours a day, 7 days a week’, service.

We studied the London specialist stroke units to find out:

- whether or not patients who were admitted at night or at the weekend had the same outcomes and quality of care as those admitted during the day
- how the specialist stroke units were trying to make sure that patients all received consistent care and whether or not this was value for money
- what staff and patients thought about care during the day, at night and at weekends.

We found that patients admitted to a specialised stroke unit at night and at the weekend were not more likely to die or incur a severe disability than patients admitted during the week or in the daytime. Patients also received important care, such as scans and clot-busting treatments, whatever time of day they were admitted. There were organisational differences in specialist stroke units out of hours. For example, there were fewer therapists in the ward and fewer senior doctors at night. We found that it was important to have a senior nurse in charge on the ward, rather than a junior one. It was also harder for staff to contact outside agencies, such as social services, that are less available at the weekend. If you come in on a Friday or at the weekend, then you are more likely to have to stay in hospital longer than if you come in during the week.

Our findings suggest that London’s specialist stroke units are providing a good service but that there are still times when patients receive poorer care during the week.
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, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

**HS&DR programme**

The HS&DR programme funds research to produce evidence to impact on the quality, accessibility and organisation of health and social care services. This includes evaluations of how the NHS and social care might improve delivery of services.

For more information about the HS&DR programme please visit the website at [https://www.nihr.ac.uk/explore-nihr/funding-programmes/health-services-and-delivery-research.htm](https://www.nihr.ac.uk/explore-nihr/funding-programmes/health-services-and-delivery-research.htm)

**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 12/128/41. The contractual start date was in January 2014. The final report began editorial review in June 2019 and was accepted for publication in February 2020. 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 2020. This work was produced by Simister 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 Services and Delivery Research* 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**  Senior Scientific Adviser (Evidence Use), Wessex Institute, University of Southampton, 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, Kleijnens 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](http://www.journalslibrary.nihr.ac.uk/about/editors)

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