

Identifying models of care to improve outcomes for older people with urgent care needs: a mixed methods approach to develop a system dynamics model

Simon Conroy,^{1,2*} Sally Brailsford,³ Christopher Burton,⁴ Tracey England,⁵ Jagruti Lalseta,⁶ Graham Martin,⁷ Suzanne Mason,⁸ Laia Maynou-Pujolras,⁹ Kay Phelps,¹⁰ Louise Preston,¹¹ Emma Regen,¹² Peter Riley,¹³ Andrew Street¹⁴ and James van Oppen¹⁵

¹Geriatrician, George Davies Centre, University of Leicester, Leicester, UK

²MRC Unit for Lifelong Health and Ageing, UCL, Leicester, UK

³Southampton Business School, University of Southampton, Southampton, UK

⁴Academic Unit of Medical Education, University of Sheffield, Sheffield, UK

⁵Health Sciences, University of Southampton, Southampton, UK

⁶Leicester Older Peoples' Research Forum, University of Leicester, Leicester, UK

⁷Healthcare Improvement Studies Institute, University of Cambridge, Cambridge, UK

⁸School of Health and Related Research, University of Sheffield, Sheffield, UK

⁹Department of Health Policy, London School of Economics, London, UK

¹⁰Department of Health Sciences, University of Leicester, Leicester, UK

¹¹School of Health and Related Research, University of Sheffield, Sheffield, UK

¹²Department of Health Sciences, University of Leicester, Leicester, UK

¹³Leicester older peoples' research forum, University of Leicester, Leicester, UK

¹⁴Department of Health Policy, London School of Economics, London, UK

¹⁵Department of Health Sciences, University of Leicester, Leicester, UK

*Corresponding author simon.conroy@ucl.ac.uk

Disclosure of interests of authors

Full disclosure of interests: Completed ICMJE forms for all authors, including all related interests, or available in the tool kit on the NIHR Journals Library report publication page at <https://doi.org/10.3310/NLCT5104>.

Primary conflict of interest: Simon Conroy reports membership of HTA Prioritisation Committee (2019–23); editorial royalties for a textbook on geriatric emergency medicine; consulting fees from NHS Elect. Christopher Burton reports membership for the following committees: HTA Prioritisation Committee A (2015–20), and HTA MPOH Panel (2015–18). Tracey England reports grant paid to employer funded by Higher Education Innovation Funding. Graham Martin reports consulting fees from the Health Foundation and Forte. Membership of the following groups: international expert advisory group (COVID-19), Agency for Clinical Innovation, New South Wales Government, Australia; National Institute for Health and Care Excellence Implementation Strategy Group; Evaluation of Flow Coaching

Academy, Health Foundation; Centre for Healthcare Innovation Research, City University; Advisory group chair for NIHR HSDR study (17/99/85); Steering group chair for 2 NIHR HSDR studies (16/04/06 and 16/116/25); member of HTA National Stakeholder Advisory Group (2017–20). James van Oppen reports grant funding from Royal College of Emergency Medicine; travel support from European Society for Emergency Medicine (2021). Suzanne Mason reports membership of HS&DR Commissioned Panel (2013–18).

Published September 2023

DOI: 10.3310/NLCT5104

Plain language summary

Identifying models of care to improve outcomes for older people with urgent care needs: a mixed methods approach to develop a system dynamics model

Health and Social Care Delivery Research 2023; Vol. 11: No. 14

DOI: 10.3310/NLCT5104

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

Plain language summary

Many older people attending emergency care have poor outcomes; this project aimed to:

- describe best practice in emergency care
- understand *how* best practice might be delivered
- describe outcomes from emergency care, and
- synthesise this information in a computer simulation tool that can help teams decide which interventions might work best in their setting.

The existing literature showed that holistic interventions (caring for the *whole* person), spanning emergency and community care, designed with the needs of older people in mind, work best. We checked these findings with front line clinicians, who agreed, but identified that implementing best practice in the emergency department was challenging. Limitations included the emergency department environment itself and the lack of staff with the right skillset. We also asked older people and their carers who had recently received emergency care what mattered. They prioritised basic needs such as comfort, communication, and timely care. They also stated that getting better, maintaining their usual level of function, and getting home safely were important outcomes.

We then analysed data that linked together ambulance, emergency department, and hospital care in Yorkshire and Humber from 2011–17 for over 1 million emergency department attendances and hospital admissions. We found a novel and accurate predictor of long emergency department waits and hospital admission: the level of urgency according to the ambulance call handler.

Drawing upon all the above and guided by a wide range of patient and professionals, we developed a computer model which allows emergency care teams to simulate different best practice emergency department interventions and estimate the impact on reducing admissions, readmissions, and hospital mortality.

In summary, we have reaffirmed the poor outcomes experienced by many older people with urgent care needs. We have identified interventions that could improve patient and service outcomes, as well as implementation tools to help including clinicians, hospital managers and funders transform emergency care for older people.

Health and Social Care Delivery Research

ISSN 2755-0060 (Print)

ISSN 2755-0079 (Online)

Health and Social Care Delivery Research (HSDR) was launched in 2013 and is indexed by Europe PMC, DOAJ, INAHTA, Ulrichsweb™ (ProQuest LLC, Ann Arbor, MI, USA), NCBI Bookshelf and MEDLINE.

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

This journal was previously published as *Health Services and Delivery Research* (Volumes 1–9); ISSN 2050-4349 (print), ISSN 2050-4357 (online)

The full HSDR archive is freely available to view online at www.journalslibrary.nihr.ac.uk/hsdr.

Criteria for inclusion in the *Health Technology Assessment* journal

Reports are published in *Health and Social Care Delivery Research* (HSDR) if (1) they have resulted from work for the HSDR programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

HSDR programme

The HSDR 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 HSDR programme please visit the website at <https://www.nihr.ac.uk/explore-nihr/funding-programmes/health-and-social-care-delivery-research.htm>.

This report

The research reported in this issue of the journal was funded by the HSDR programme or one of its preceding programmes as project number 17/05/96. The contractual start date was in September 2018. The final report began editorial review in June 2022 and was accepted for publication in October 2022. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HSDR 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 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 HSDR 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 HSDR programme or the Department of Health and Social Care.

Copyright © 2023 Conroy *et al.* This work was produced by Conroy *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).

NIHR Journals Library Editor-in-Chief

Dr Cat Chatfield Director of Health Services Research UK

NIHR Journals Library Editors

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

Dr Peter Davidson Interim Chair of HTA and EME Editorial Board. Consultant Advisor, School of Healthcare Enterprise and Innovation, University of Southampton, UK

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 Consultant in Public Health, Delta Public Health Consulting Ltd, UK

Ms Tara Lamont Senior Adviser, School of Healthcare Enterprise and Innovation, University of Southampton, UK

Dr Catriona McDaid Reader in Trials, 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 Emeritus Professor of Wellbeing Research, University of Winchester, UK

Professor James Raftery Professor of Health Technology Assessment, School of Healthcare Enterprise and Innovation, University of Southampton, UK

Dr Rob Riemsma Consultant Advisor, School of Healthcare Enterprise and Innovation, University of Southampton, UK

Professor Helen Roberts Professor of Child Health Research, Child and Adolescent Mental Health, Palliative Care and Paediatrics Unit, Population Policy and Practice Programme, UCL Great Ormond Street Institute of Child Health, London, 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

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

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