Developing an intervention around referral and admissions to intensive care: a mixed-methods study

Chris Bassford,1,2* Frances Griffiths,1 Mia Svantesson,3 Mandy Ryan,4 Nicolas Krucien,4 Jeremy Dale,1 Sophie Rees,1 Karen Rees,1 Agnieszka Ignatowicz,1,5 Helen Parsons,1 Nadine Flowers,1 Zoe Fritz,1,6,7 Gavin Perkins,1,8 Sarah Quinton,1,4 Sarah Symons,9 Catherine White,9 Huayi Huang,1 Jake Turner,1 Mike Brooke,1 Aimee McCreedy,1 Caroline Blake1 and Anne Slowther1

1Warwick Medical School, University of Warwick, Coventry, UK
2Department of Anaesthesia, Critical Care and Pain, University Hospitals Coventry and Warwickshire NHS Trust, Coventry, UK
3University Health Care Research Center, Faculty of Medicine and Health, Örebro University, Örebro, Sweden
4Health Economics Research Unit, Institute of Applied Health Sciences, University of Aberdeen, Aberdeen, UK
5Institute of Applied Health Research, College of Medical and Dental Sciences, University of Birmingham, Birmingham, UK
6Department of Acute Medicine, Cambridge University Hospitals NHS Trust, Cambridge, UK
7The Healthcare Improvement Studies (THIS) Institute, University of Cambridge, Cambridge, UK
8Heartlands Hospital, University Hospitals Birmingham, Birmingham, UK
9Patient and public representative

*Corresponding author christopher.bassford@uhcw.nhs.uk

Declared competing interests of authors: Gavin Perkins reports grants from the National Institute for Health Research (NIHR) during the conduct of the study and non-financial support from Intensive Care Foundation (Camberwell, VIC, Australia) outside the submitted work. Karen Rees reports grants from NIHR during the conduct of the study. Helen Parsons reports grants from NIHR during the conduct of the study. Zoe Fritz has received grant funding from the Wellcome Trust (London, UK) outside this study and is on the executive committee of the Resuscitation Council (UK) (London, UK); expenses are covered for meetings. Zoe Fritz is also chairperson of the Strategic Steering Group for ReSPECT (Recommended Summary Plan for Emergency Care and Treatment); expenses are covered for meetings. Sarah Symons is a member of the Bath Clinical Ethics Advisory Group and has received payment from the University of Warwick for time taken to comment on the study documents as patient and public involvement co-investigator. Anne Slowther is a member of the Board of Trustees of the UK Clinical Ethics Network (Newcastle upon Tyne, UK) and the Institute of Medical Ethics (St Helens, UK). She has received funding in grants from NIHR as a co-investigator outside this study.
Plain English summary

An intervention around intensive care referral and admissions

Health Services and Delivery Research 2019; Vol. 7: No. 39
DOI: 10.3310/hsdr07390

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

When a person suddenly becomes very unwell, they rely on doctors to decide what treatment is best for them. One decision that doctors make is whether or not the person should have treatment in an intensive care unit. This project was designed to understand and improve the way doctors make decisions about admission to the intensive care unit. The project had five stages:

1. First, we carried out a review of the previous research about these decisions, and the experiences of the people involved.
2. We then studied how decisions are currently made. A researcher watched how doctors make these decisions in six different hospitals and interviewed the people involved.
3. We used what we had learnt to run a type of survey called a choice experiment to see which factors are most important in making these decisions.
4. We used all that we had learnt from the first three stages to develop a tool that would help doctors to make these decisions. We showed this tool to people from organisations representing patients and doctors, and asked their opinion. We used their feedback to improve the tool. We then used the tool in three hospitals to see whether or not doctors would be able to use it.
5. We developed a way of checking the standard of decision-making so that we would be able to tell whether or not our tool worked.

In this project we have gained a lot of new information about how doctors make decisions about admission to the intensive care unit. We found that decision-making is currently not very clear, and that patients and families are often not involved in making the decision. We have also developed a tool to improve how these decisions are made. This tool could be an important way to make sure that the decisions made about patients are clear and fair for everyone.
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, 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

**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 13/10/14. The contractual start date was in February 2015. The final report began editorial review in May 2018 and was accepted for publication in January 2019. 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 Bassford 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  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