Factors associated with hospital emergency readmission and mortality rates in patients with heart failure or chronic obstructive pulmonary disease: a national observational study

Alex Bottle,1* Kate Honeyford,1 Faiza Chowdhury,2,3 Derek Bell2,3,4 and Paul Aylin1

1Dr Foster Unit, Department of Primary Care and Public Health, Imperial College London, London, UK
2Department of Acute Medicine, Chelsea and Westminster Hospital, Imperial College London, London, UK
3National Institute for Health Research under the Collaborations for Leadership in Applied Health Research and Care Programme North West London, Imperial College London, London, UK
4Royal College of Physicians, Edinburgh, UK

*Corresponding author robert.bottle@imperial.ac.uk

Declared competing interests of authors: The authors declare no financial support for the submitted work from anyone other than their employer and the National Institute for Health Research (NIHR) as listed above, no spouses, partners or children with relationships with commercial entities that might have an interest in the submitted work and no non-financial interests that may be relevant to the submitted work. Alex Bottle, Paul Aylin and the rest of the Dr Foster Unit at Imperial College London are part funded by Dr Foster®, an independent health-care information company and part of Telstra Health. The Dr Foster Unit is affiliated with the Imperial Centre for Patient Safety and Service Quality, funded by NIHR. Alex Bottle is now a member of the Health Services and Delivery Research panel. The NIHR funded Faiza Chowdhury’s PhD in ‘Common rehabilitation: The overlap between COPD and Heart Failure Rehabilitation’, which feeds into this research alongside her job as a respiratory and general internal medicine doctor.

Published July 2018
DOI: 10.3310/hsdr06260

Plain English summary

Hospital emergency readmission and mortality in heart failure or COPD

Health Services and Delivery Research 2018; Vol. 6: No. 26
DOI: 10.3310/hsdr06260

NIHR Journals Library www.journalslibrary.nihr.ac.uk
Heart failure (HF) and chronic obstructive pulmonary disease (COPD) each affect around 900,000 people in the UK, and numbers are rising, with many more cases still undiagnosed. HF and COPD are serious chronic diseases that can worsen over time, and an important stage of the disease is when the patient is hospitalised as an emergency admission for the first time. Much progress remains to be made in improving survival and preventing further admissions. Using various existing NHS databases, we examined what factors predicted the use of accident and emergency (A&E) attendance, readmission and death after this first admission. Our results suggest that patients were at a higher risk of mortality if they were elderly, had other medical problems, had previously missed clinic appointments or went to hospitals with fewer doctors per bed; these factors plus small hospital size also predicted readmission. Some patients seemed to have been sent home too soon and had to be readmitted.

Hospitals are often judged on their emergency readmission rates, which are high for patients with HF or COPD, but our statistical analysis suggests that hospitals should also track their performance with A&E visits. There has been surprisingly little research into how patients use A&E after their first admission and what factors predict who gets admitted to the wards when they do visit A&E. We found that patients were more likely to visit A&E after being discharged from their first admission for HF or COPD if they were older, lived alone, had multiple medical problems or were from poorer areas or areas with fewer general practitioners. However, for COPD it was the younger patients who were admitted more often. Further work should look into how patients use community services and how rising demand for hospital beds, and doctors’ perception of how sick the patient is, affects doctors’ decision-making and patient outcomes.
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 14/19/50. The contractual start date was in June 2015. The final report began editorial review in June 2017 and was accepted for publication in September 2017. 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 2018. This work was produced by Bottle 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 Tom Walley  Director, NIHR Evaluation, Trials and Studies and Director of the EME Programme, 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)

Dr Martin Ashton-Key  Consultant in Public Health Medicine/Consultant Advisor, NETSCC, 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  Senior Scientific Advisor, Wessex Institute, UK

Dr Peter Davidson  Director of the NIHR Dissemination Centre, 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  Director, 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