Group cognitive rehabilitation to reduce the psychological impact of multiple sclerosis on quality of life: the CRAMMS RCT

Nadina B Lincoln,¹* Lucy E Bradshaw,² Cris S Constantinescu,³ Florence Day,² Avril ER Drummond,⁴ Deborah Fitzsimmons,⁵ Shaun Harris,⁵ Alan A Montgomery² and Roshan das Nair⁶ on behalf of the CRAMMS Trial Collaborative Group[†]

¹Division of Rehabilitation and Ageing, University of Nottingham, Nottingham, UK

²Nottingham Clinical Trials Unit, University of Nottingham, Nottingham, UK ³Division of Clinical Neuroscience, University of Nottingham, Nottingham, UK ⁴School of Health Sciences, University of Nottingham, Nottingham, UK ⁵Swansea Centre for Health Economics, Swansea University, Swansea, UK ⁶Institute of Mental Health, Nottingham, UK

*Corresponding author nadina.lincoln@nottingham.ac.uk †See Acknowledgements for details

Declared competing interests of authors: Alan A Montgomery reports grants from the National Institute for Health Research (NIHR) and membership of the NIHR Health Technology Assessment (HTA) Clinical Evaluation and Trials Funding Board during the conduct of the study. Roshan das Nair reports membership of the NIHR Health Services and Delivery Research Board, the HTA End of Life Care and Add-on Studies Board and the NIHR Research for Patient Benefit (East Midlands), and personal fees from Biogen Inc. (Cambridge, MA, USA). Avril ER Drummond reports membership of the NIHR Clinical Lectureships panel. Cris S Constantinescu reports grants, personal fees and other from Bayer AG (Leverkusen, Germany); Biogen Inc.; Merck, Sharp & Dohme (Kenilworth, NJ, USA); Novartis International AG (Basel, Switzerland), Sanofi Genzyme (Cambridge, MA, USA) and Teva Pharmaceuticals Industries Ltd (Petah Tikva, Israel). He also reports grants and personal fees from GW Pharmaceuticals (Cambridge, UK), Morphosys (Planegg, Germany), Roche (Basel, Switzerland); and grants from Sanofi-Pasteur-MSD (Lyon, France), outside the submitted work.

Published January 2020 DOI: 10.3310/hta24040

Plain English summary

The CRAMMS RCT

Health Technology Assessment 2020; Vol. 24: No. 4 DOI: 10.3310/hta24040

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

Plain English summary

Cognitive (or mental processing) problems, particularly those affecting memory and attention, are common in people with multiple sclerosis. Multiple sclerosis is a condition that affects the brain and causes nerve damage. Cognitive rehabilitation can involve:

- retraining cognitive skills, which are the core skills your brain uses to think, read, learn, remember, reason and concentrate
- teaching strategies to cope in daily life.

Cognitive rehabilitation is rarely provided for people with multiple sclerosis.

A trial was carried out to determine whether or not providing a group cognitive rehabilitation programme improved quality of life more than usual clinical care, which did not involve any cognitive rehabilitation. The effects on daily memory problems, mood, fatigue and employment were examined and also the cost-effectiveness of the treatment.

A total of 449 people with multiple sclerosis took part in the trial. They all agreed to be part of the research trial, had cognitive problems, were aged 18–69 years and could travel to attend group sessions. Participants were then allocated to receive cognitive rehabilitation or not, on the basis of chance (i.e. randomly). All participants were followed up for 1 year.

Although both groups showed no differences in quality of life after 1 year, those who received cognitive rehabilitation had fewer memory problems in daily life and reported better mood than those who received only their usual clinical care. There were no differences in their levels of fatigue or disability, or in employment status. The qualitative results indicated that participants found the intervention useful. Treatment cost slightly less than usual care but had modest benefits.

Overall, the results suggest that there may be modest short-term benefits of cognitive rehabilitation, and future studies will consider how such benefits can be maintained and whether or not some people benefit more than others.

© Queen's Printer and Controller of HMSO 2020. This work was produced by Lincoln 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.

Health Technology Assessment

ISSN 1366-5278 (Print)

ISSN 2046-4924 (Online)

Impact factor: 3.819

Health Technology Assessment is indexed in MEDLINE, CINAHL, EMBASE, The Cochrane Library and the Clarivate Analytics Science Citation Index.

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 HTA archive is freely available to view online at www.journalslibrary.nihr.ac.uk/hta. 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 Technology Assessment journal

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

Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

HTA programme

Health Technology Assessment (HTA) research is undertaken where some evidence already exists to show that a technology can be effective and this needs to be compared to the current standard intervention to see which works best. Research can evaluate any intervention used in the treatment, prevention or diagnosis of disease, provided the study outcomes lead to findings that have the potential to be of direct benefit to NHS patients. Technologies in this context mean any method used to promote health; prevent and treat disease; and improve rehabilitation or long-term care. They are not confined to new drugs and include any intervention used in the treatment, prevention or diagnosis of disease.

The journal is indexed in NHS Evidence via its abstracts included in MEDLINE and its Technology Assessment Reports inform National Institute for Health and Care Excellence (NICE) guidance. HTA research is also an important source of evidence for National Screening Committee (NSC) policy decisions.

This report

The research reported in this issue of the journal was funded by the HTA programme as project number 12/190/05. The contractual start date was in September 2014. The draft report began editorial review in September 2018 and was accepted for publication in February 2019. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the draft 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 HTA 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 HTA programme or the Department of Health and Social Care.

© Queen's Printer and Controller of HMSO 2020. This work was produced by Lincoln *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