Identifying back pain subgroups: developing and applying approaches using individual patient data collected within clinical trials

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Declared competing interests of authors: Sarah E Lamb is chairperson of the Health Technology Assessment Clinical Evaluation and Trials (HTA CET) Board. Martin Underwood is a member of the National Institute for Health Research Journals Library Editorial Group.

Published July 2016
DOI: 10.3310/pgfar04100
Plain English summary

Identifying back pain subgroups
Programme Grants for Applied Research 2016; Vol. 4: No. 10
DOI: 10.3310/pgfar04100

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Low back pain is a common and costly disorder for both the patient and the health service, which can be managed using different treatment approaches, some of which are delivered in a physiotherapy department. The benefits of treatments delivered by therapists are small, on average, that is, they get small improvements. If we could predict which patients would be most likely to benefit from different treatments it would be possible to improve the overall effectiveness of treatments and potentially make better use of NHS resources. To address this we pooled together data from 19 back pain trials from around the world. This provided us with a data set of 9328 patients. We developed novel statistical methods to identify subpopulations (groups of people with similar characteristics) that would be likely to benefit from certain treatments. Of the three methods developed, two allowed us to identify subpopulations. The additional benefits for individuals in the subpopulations were modest and unlikely to be of clinical importance. Our third method was exploratory and allowed us to identify the chance of a particular treatment choice being effective for a particular patient.

Overall, we did not find any subpopulations that would benefit from treatment. Neither did we find that such an approach to identifying patients would be cost-effective. We have developed new ways of identifying subpopulations and would recommend the application of these methods to other clinical conditions. We have also developed, from prior trials, a data pool that will now become a resource for back pain researchers to help them answer other questions in the field.
Programme Grants for Applied Research

ISSN 2050-4322 (Print)
ISSN 2050-4330 (Online)

This journal is a member of and subscribes to the principles of the Committee on Publication Ethics (COPE) (www.publicationethics.org/).

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This report

The research reported in this issue of the journal was funded by PGfAR as project number RP-PG-0608-10076. The contractual start date was in October 2010. The final report began editorial review in October 2014 and was accepted for publication in September 2015. As the funder, the PGfAR programme agreed the research questions and study designs in advance with the investigators. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The PGfAR 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, CCF, NETSCC, PGfAR or the Department of Health. 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 PGfAR programme or the Department of Health.

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