What is the evidence on interventions to manage referral from primary to specialist non-emergency care? A systematic review and logic model synthesis

Lindsay Blank,* Susan Baxter, Helen Buckley Woods, Elizabeth Goyder, Andrew Lee, Nick Payne and Melanie Rimmer

School of Health and Related Research (ScHARR), University of Sheffield, Sheffield, UK

*Corresponding author

Declared competing interests of authors: none

Published May 2015
DOI: 10.3310/hsdr03240

Scientific summary

Interventions to manage referral
Health Services and Delivery Research 2015; Vol. 3: No. 24
DOI: 10.3310/hsdr03240

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

Background

Demand management, although often thought of as a means solely to limit the volume of referrals from primary to secondary care, is a term which is used in a much broader way to refer to any method that has the aim of monitoring, directing or regulating patient referrals. Several strategies have been developed in order to manage the referral of patients to secondary care. These interventions may target primary care or specialist services, or, alternatively, a whole health-care-system infrastructure. It is increasingly recognised that most interventions in health care can be considered to be complex. The increasing complexity of the intervention is accompanied by a corresponding growth in the challenges presented for standard methods of evaluation and synthesis. New methods of systematic review have been developed in response to the need to go beyond reporting the effectiveness of experimental studies, to exploring how and why interventions may work, and the assumptions underpinning the processes whereby an intervention may effect change in a particular context. Logic model methods are a form of theory-based evaluation that focus on relating hypothesised links between an intervention and its constituent parts to its outcomes and long-term impacts. They are a useful method for synthesising review findings, in particular when examining complex interventions which may operate at a whole-system level. A logic model diagram enables the pathway between an intervention and its intended outcomes to be constructed in detail, thereby uncovering assumptions and processes that need to be considered when designing and evaluating interventions, and when considering the applicability of findings to a local context.

Objectives

The study aimed to examine the available literature in order to answer the following research questions:

- What can be learned from the international evidence on interventions to manage referral from primary to specialist care?
- How can international evidence on interventions to manage referral from primary to specialist care be applied in a UK context?
- What factors affect the applicability of international evidence in the UK?
- What are the pathways from interventions to improved outcomes?

Methods

The study employed conventional rigorous systematic review methods for the identification of evidence. Systematic searches of published and unpublished (grey literature) sources from health care and other industries were undertaken to identify recent, relevant studies. An iterative (i.e. a number of different searches) and emergent (i.e. the understanding of the question develops throughout the process) approach was taken to identify evidence. Citation searches of included articles and systematic reviews were also undertaken, as was hand-checking of reference lists of all included articles.

The included studies were examined and data were synthesised via tabulating and comparison and a narrative summary detailing types of intervention and outcomes. In addition, the data were used to construct a diagram illustrating the change pathway (a logic model).
Inclusion and exclusion criteria

- Participants: all primary care medical physicians, hospital specialists and their patients.
- Interventions: interventions that aim to influence and/or affect referral from primary care to specialist services by having an impact on the referral practices of the primary physician. In addition, interventions that aim to improve referral between specialists where they also have the potential to impact on primary care to specialist referrals.
- Comparators: the main comparator condition for intervention studies was the usual method of referral practice which is undertaken in the location where the intervention is being implemented. However, alternative comparators were not excluded. We also included studies with no concurrent comparator (e.g. non-controlled before-and-after studies), as well as qualitative studies where comparators are not relevant.
- Outcomes: all outcomes relating to referral were considered, including referral rate, referral quality, appropriateness of referral, impact on existing service provision, costs, mortality and morbidity outcomes, length of stay in hospital, safety, effectiveness, patient satisfaction, patient experience and process measures (such as referral variation and conversion rates). All qualitative outcomes were also considered for the relevant papers.
- Study design: no restrictions were placed on study design. The criterion for inclusion in the review was that a study is able to answer or inform the research questions. However, we evaluated the quality of study design and execution and how these may affect the reliability of the results generated.

Results

In total, our searches generated a database of 8327 unique papers. We included 290 full papers in the review and excluded a total of 286 papers which were obtained as full papers but were subsequently found to be outside the scope of the review. The included papers consisted of 140 intervention papers and 154 non-intervention 'views and predictors' papers, that is, papers that looked at the views of patients and professionals on the referral process and at factors that predict referral.

We first scrutinised the papers reporting interventions, examining the content of each, the process whereby the intervention was delivered and the intended outcomes in order to begin to characterise and sort the data. The intervention studies were grouped into four categories: education interventions (n = 50 papers); process change interventions (n = 49 papers); system change interventions (n = 38 papers); and patient-focused interventions (n = 3 papers). The studies used a wide range of outcomes to determine effectiveness, encompassing referral rate (n = 62), service usage (n = 18), appropriateness of referral measures (n = 24), referral quality indicators (n = 10), appropriate actioning of referral measures (n = 10), waiting-time period (n = 8), costs of providing the service (n = 12), and practitioner or patient satisfaction/attitudes (n = 27).

An examination of the strength of evidence underpinning these interventions and outcomes indicated that there was stronger evidence of effect for interventions comprising peer review/feedback; improvement of referral information; specialist contact prior to referral; electronic referral; provision of specialist services by community medical practitioners; and community provision of specialists. There was conflicting or weaker evidence for other interventions reported.

As outlined above, the interventions used a range of outcomes to evaluate effectiveness. The process whereby these interventions led to the intended system-level demand management outcomes was unclear, however, with a need for a detailed exploration regarding how exactly the intervention would act on participants and systems in order to produce the expected demand management outcomes. This understanding of the pathway underpinning the effectiveness of interventions was a key aspect in exploring the applicability of this evidence to a UK and local NHS context.
In logic model methods, this element in construction of a pathway is typically called the theory of change, sometimes referred to as the programme theory, which sets out the key change mechanisms following an intervention. We further examined the intervention papers in order to identify exactly what mechanisms were intended to lead to the demand management effect. As will be seen from the outcomes listed above, few interventions examined these immediate (or short-term) outcomes; instead, studies used measures relating to the impact on referral quantity or quality. There was thus a gap in the intervention literature concerning how exactly these interventions might operate in order to have an effect on referrals. This gap, however, is key to understanding how the available evidence on referral management can be applied in a UK context. The non-intervention literature provided insights into these missing elements of the pathway. Factors highlighted as key in any change process in this literature were those relating, first, to the general practitioner [(GP) including GP knowledge, GP attitudes and beliefs and GP referral behaviour], second, to the patient (including patient knowledge and patient attitudes and beliefs) and, third, to the influence of the doctor–patient relationship. In addition to these elements at an individual level which interventions need to act upon, studies reported a number of moderating factors (or barriers and facilitators) which could impact on the success of any intervention relating to the local health-care context and system (such as waiting times, size of practice, location of services and availability of specialists). These elements will influence the applicability of and potential effectiveness of any intervention in a local health-care context.

Conclusions

This systematic review and logic model synthesis demonstrates the complexity of the referral process and multiple elements that will impact on intervention outcomes. It illustrates the multitude of assumptions that are made between interventions and demand management outcomes and that successful referral outcomes are highly dependent on the individuals involved in the referral and also the context in which the referral is taking place. Furthermore, in relation to context, the complexity of the intervention-outcomes pathway highlights that, in order to tackle demand management of primary-care services, the focus cannot be on primary care alone – a whole-systems approach is needed as the introduction of interventions in primary care is often just the starting point of the referral process.

The findings suggested that, although individual-level interventions may be popular, the stronger evidence relates only to peer-review and feedback interventions. Process change interventions appeared to be more effective when the change resulted in the specialist being provided with more or better quality information about the patient. System changes, including the community provision of specialist services by GPs, outreach provision by specialists and the return of inappropriate referrals, appeared to have evidence of effect.

Our research questions focused on the applicability of the evidence that we found to the UK NHS context. Although the evidence identified was international in nature and some of it originates from countries with very different health-care systems and processes from the UK, the vast majority of studies had relevance in the UK within a universal health-care setting such as the NHS, in which it is possible to influence and indeed manage the whole range of provision from GP to secondary-care provider. The international evidence suggests that individual peer-review/feedback interventions, and some process change and system change interventions, may be effective and applicable in the UK. The review, however, highlighted the role of local factors such as waiting times, access to specialists and workload, which may influence the success of any intervention. It is likely that local differences between specialties, UK demographic variation and elements that the review identified relating to individual patients and practitioners will have a stronger impact on the effectiveness and applicability of the interventions identified than country of origin. Possible exceptions to this consideration of applicability in the UK are two types of system change interventions, namely the addition or removal of gatekeeping systems and changes to health-care payment systems. It might take more fundamental revision of existing NHS management and procedures to make these types of changes within the UK. However, the review identified few studies evaluating these systems, with evidence of their effectiveness in managing demand conflicting.
**Study registration**

This study is registered as PROSPERO CRD42013004037.

**Funding**

Funding for this study was provided by the Health Services and Delivery Research programme of the National Institute for Health Research.
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 11/1022/01. The contractual start date was in November 2012. The final report began editorial review in February 2014 and was accepted for publication in October 2014. 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. 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.

© Queen’s Printer and Controller of HMSO 2015. This work was produced by Blank et al. under the terms of a commissioning contract issued by the Secretary of State for Health. 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).
Health Services and Delivery Research Editor-in-Chief

Professor Ray Fitzpatrick  Professor of Public Health and Primary Care, University of Oxford, UK

NIHR Journals Library Editor-in-Chief

Professor Tom Walley  Director, NIHR Evaluation, Trials and Studies and Director of the HTA Programme, UK

NIHR Journals Library Editors

Professor Ken Stein  Chair of HTA Editorial Board and Professor of Public Health, University of Exeter Medical School, UK

Professor Andree Le May  Chair of NIHR Journals Library Editorial Group (EME, HS&DR, PGfAR, PHR journals)

Dr Martin Ashton-Key  Consultant in Public Health Medicine/Consultant Advisor, NETSCC, UK

Professor Matthias Beck  Chair in Public Sector Management and Subject Leader (Management Group), Queen’s University Management School, Queen’s University Belfast, UK

Professor Aileen Clarke  Professor of Public Health and Health Services Research, Warwick Medical School, University of Warwick, UK

Dr Tessa Crilly  Director, Crystal Blue Consulting Ltd, UK

Dr Peter Davidson  Director of NETSCC, HTA, UK

Ms Tara Lamont  Scientific Advisor, NETSCC, UK

Professor Elaine McColl  Director, Newcastle Clinical Trials Unit, Institute of Health and Society, Newcastle University, UK

Professor William McGuire  Professor of Child Health, Hull York Medical School, University of York, UK

Professor Geoffrey Meads  Professor of Health Sciences Research, Faculty of Education, University of Winchester, 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 Institute of Child Health, 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 members of the NIHR Journals Library Board:
www.journalslibrary.nihr.ac.uk/about/editors

Editorial contact: nihredit@southampton.ac.uk