

Using clinical practice variations as a method for commissioners and clinicians to identify and prioritise opportunities for disinvestment in health care: a cross-sectional study, systematic reviews and qualitative study

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Declared competing interests of authors: Padmanabhan Badrinath co-ordinates the Clinical Priorities Group in Suffolk. Claire Beynon is a member of South West Commissioning Support. Christine E Hine was a consultant in public health employed by NHS South Gloucestershire and NHS Bristol to provide independent public health advice to health services commissioning during the research period. She was a member of the Bristol, North Somerset and South Gloucestershire Commissioning Advisory Forum. Hayley E Jones reports personal fees from Novartis AG and personal fees from the British Thoracic Society, outside the submitted work. All other authors declare no competing interests.

Published April 2015

DOI: 10.3310/hsdr03130

Scientific summary

Identifying opportunities for disinvestment in health care

Health Services and Delivery Research 2015; Vol. 3: No. 13

DOI: 10.3310/hsdr03130

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

Scientific summary

Background

NHS expenditure more than doubled between 1996/7 and 2006/7, but has stagnated since the economic crisis of 2007. The NHS faces increasing demands due to population growth, increasing health needs and rising expectations of health care. Studies have identified technological change as a cause of increased spending. One response to the pressures is for policy-makers to revise the methods that they use to regulate use of new and existing health-care technologies. The economic crisis aftermath coincided with a major reconfiguration of the NHS in England. Primary care trusts (PCTs) were abolished and most local secondary care commissioning transferred to Clinical Commissioning Groups (CCGs). CCGs emerged in extremely challenging financial circumstances; discontinuance of existing inefficiently applied health technologies will remain a high priority.

Very little is known about health technology discontinuance. Discontinuance can be spontaneous or managed (i.e. disinvestment). Spontaneous discontinuance will be suboptimal if there is imperfect evidence about the costs and effects of existing interventions or poor evidence dissemination. Elshaug (Elshaug AG, Hiller JE, Tunis SR, Moss JR. Challenges in Australian policy processes for disinvestment from existing, ineffective health-care practices. *Aust N Z Health Policy* 2007;**4**:23) identified five challenges to disinvestment: (1) lack of resources to support disinvestment; (2) lack of methods to identify technologies with uncertain cost-effectiveness; (3) political and other challenges; (4) lack of evidence on existing technologies; and (5) lack of funding for disinvestment research. Our project is based on Wennberg's 'professional uncertainty hypothesis' that high geographical variation in procedure rates reflects clinical uncertainty about appropriate procedure use (Wennberg JE, Barnes BA, Zubkoff M. Professional uncertainty and the problem of supplier-induced demand. *Soc Sci Med* 1982;**16**:811–24). This is a potentially valuable method of addressing Elshaug's second challenge. We also explore some of the barriers to disinvestment emphasised by Elshaug's third challenge.

Objectives

Our aim is to develop the processes by which NHS policy-makers identify existing procedures where there is uncertainty about appropriate use and by which local commissioners identify procedures that might be overutilised and are potential candidates for disinvestment.

Specific objectives:

1. Use routine inpatient data to identify procedures with the highest inter-PCT variation in use and explore whether or not high variation is a marker of clinical uncertainty (see *Chapter 3*).
2. Work with two PCT commissioning groups to use benchmarking to select two procedures that might be locally overutilised (see *Chapter 4*).
3. Conduct rapid systematic reviews for these two procedures to summarise the (cost-)effectiveness evidence. We discuss the possible causes of high local utilisation and options for regulating procedure use to achieve disinvestment (see *Chapters 5 and 6*).
4. Understand obstacles and solutions to local commissioners achieving disinvestment (see *Chapter 7*) and explore patient and surgeon perspectives on regulating access to secondary care procedures (see *Chapter 8*).

Methods

Chapter 3

We used the Hospital Episode Statistics admitted patient care data set to identify 154 commonly used procedures between 2007/8 and 2011/12. Geographical variation was measured between 151 PCTs. Temporal trends in variation were explored. Expected numbers of each procedure for each PCT were calculated using indirect age/sex standardisation followed by Poisson regression adjusting for ethnic and socioeconomic composition, prevalence of chronic diseases, markers of unhealthy lifestyle and private medical care. We quantified the residual inter-PCT procedure rate variability using expected counts as a covariate in random effects Poisson regression models. Exploratory analyses examined five factors potentially associated with high geographical variation: (1) coding uncertainty; (2) variation in community care; (3) uncertainty about the appropriate setting; (4) urgency and invasiveness of the procedure; and (5) evolving or uncertain evidence.

Chapter 4

Working with two PCT commissioning groups (PCT1 and PCT2), we benchmarked local procedure rates against the national rates. PCT public health and commissioning representatives selected one procedure for rapid technology assessment from a list of 20 with the largest estimated absolute excess rates. We explored local variation by tabulating procedure numbers by hospital, by neighbouring PCTs and at the sub-PCT level. We investigated historical trends in PCT procedure use since 2001/2.

Chapters 5 and 6

We conducted rapid systematic reviews of both topics selected by PCTs [carpal tunnel release (CTR) and laser capsulotomy]. We searched MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, Cochrane Library and Database of Abstracts of Reviews of Effects databases, from inception to January 2012 (CTR) or to November 2011 (laser capsulotomy), to identify systematic reviews and randomised controlled trials (RCTs). Abstracts were screened independently by two reviewers, full text of potentially eligible studies was assessed for inclusion and data were extracted by one reviewer and checked by a second. Two reviewers independently appraised RCTs using the Cochrane risk of bias tool. Because of differences in comparison groups (in the case of CTR) and lack of evidence (capsulotomy) we did not pool RCT data and instead provide a narrative summary of the evidence.

Chapters 7 and 8

Methods included non-participant overt observations of PCT commissioning group meetings and semistructured interviews with individuals affiliated with these groups, complemented by document analysis of policies and meeting minutes/agendas. Observations continued until no new analytical insights emerged. Interview participants were initially purposefully selected to include a range of professional roles from PCTs/acute trusts. Subsequent sampling was informed by intentions to develop emerging themes/theories from concurrent analysis of interviews and observations. A degree of snowball sampling also occurred throughout the data collection period.

A case study of disinvestment (CTR surgery) was conducted. Semistructured interviews with surgeons were combined with document analysis and discussion with commissioners. Semistructured interviews were conducted with patients sampled from three NHS hospital trusts within the two study regions. Patients had attended a recent outpatient appointment with symptoms of carpal tunnel syndrome (CTS). Interviews/meetings were transcribed and analysed thematically using the constant comparison method derived from grounded theory. A sample of transcripts was independently analysed by a second researcher. Differences in coding and thematic interpretations were discussed.

Results

Chapter 3

Our analysis included 20.6 million procedures. In the five procedures with the highest inter-PCT variability, the procedure rate was typically 13 times higher in the PCT at the 90th percentile than the PCT at the 10th percentile. In contrast the median interdecile rate ratio among the five procedures with least variation was 1.3. The mean annual change in the procedure variation between 2007/8 and 2011/12 was -2.3% [95% confidence interval (CI) -3.7% to -1.8%], indicating a general decline in variation during the study period. Variation in PCT procedure rates was highest where the diffusion or discontinuance of a procedure was most rapidly evolving and for procedures where substitute procedures were available. Variation was also higher for procedures that were predominantly performed in elderly patients; had a median length of stay < 1 day; were more typically elective; and could be performed in an outpatient setting (and hence excluded from routine inpatient data sets).

Chapter 4

In both PCTs a large number of procedures had a utilisation rate much greater than the national average. CTR surgery was selected in PCT1. The adjusted local rate per 100,000 was 28 (95% CI 20 to 37) procedures higher than the national rate and had been higher than the national average since 2004/5. The highest rates centred around one of two NHS hospitals providing CTR in PCT1. Laser capsulotomy was selected in PCT2. The adjusted local rate per 100,000 was 43 (95% CI 39 to 47) procedures higher than the national rate and had been higher since at least 2001/2. Neighbouring PCTs, all of which commissioned ophthalmology from the same hospital, had capsulotomy procedure rates well above the national average.

Chapter 5

Six RCTs compared surgery with a non-surgical intervention in CTS. The duration of CTS symptoms ranged from 30 weeks to 3.5 years. There were three comparisons versus splinting; two versus corticosteroid injections; one versus splinting and injection; and one versus a combination of therapies. Follow-up varied between 20 weeks and 18 months; all RCTs were unblinded and at risk of performance bias. Three of four trials that provided data on symptoms or function at 3 months concluded that surgery was more likely to have a successful outcome. Two trials with longer follow-up found the effect of surgery diminished over time, but was still evident at 12 months. One RCT estimated the cost per quality-adjusted life-year was £285, suggesting that surgery was a cost-effective intervention.

Chapter 6

We found no systematic reviews or RCTs of interventions for posterior capsule opacification. We found no national guidance on referral or treatment thresholds for capsulotomy. It seems likely that the high rate of capsulotomy in PCT2 is due to the performance of capsulotomy as day case rather (included in our data set) rather than outpatient procedure (not included). There are substantial potential savings to commissioners from moving this procedure from the day case to outpatient setting.

Chapter 7

Eight meetings were observed and 28 individuals interviewed. Meetings were dominated by new funding requests. Seven informants reported little experience of disinvestment. Most who discussed disinvestment referred to threshold policies. Commissioners tended to portray these policies as tools for minimising waste whereas providers/clinicians viewed these as rationing or cost-cutting exercises. Clinicians were concerned about the process for incorporating evidence into threshold policies. Interviews suggested a lack of tools and training to identify opportunities for disinvestment. Benchmarking did not appear to be routinely carried out. Commissioners put this down to capacity issues, but had little confidence in the reliability of benchmarking data. Perceived barriers to disinvestment included lack of collaboration between commissioners and providers, lack of central support for disinvestment, lack of disinvestment tools and a culture of discomfort in health care about explicit discussion of costs.

Chapter 8

Seventeen patients and nine clinicians were interviewed. Clinicians felt threshold criteria had little impact on their practice and that prior approval systems for regulating procedure rates would not prove cost-effective. Most patients were not aware of rationing. Generally, patients interpreted threshold policies as a fair and efficient approach to controlling access to CTS surgery. Thresholds were acceptable to patients because of the potential of avoiding surgery and the perceived low priority of CTS. Prior approval processes raised concern among patients because of the perceived loss of clinician control and potential to delay treatment.

Discussion

NHS financial constraints will keep disinvestment high on CCGs' agendas. Key challenges include the lack of methods to identify technologies with uncertain cost-effectiveness, lack of evidence on the efficiency of existing health technologies and political, clinical and social challenges to changing established practice. Unlike the process for identifying and evaluating new health technologies, efforts to establish health technology reassessment (HTR) programmes have been much more haphazard. Our project aimed to develop processes to identify existing procedures where there is uncertainty about appropriate use and help commissioners identify procedures that might be overutilised locally and are candidates for disinvestment.

Conclusions

We found a high degree of geographical variation in many procedures that cannot be explained by proxies of clinical need. Many procedures with the highest variability are not on the usual list of 'low value' procedures, underlining the potential of this approach to identify emerging areas of uncertainty. Policy-makers could use geographical variation as a starting point to identify procedures where HTR or RCTs might be needed to inform policy.

In two PCTs, benchmarking identified a large number of procedures where local use was much greater than the national average. On further investigation of two procedures, the high rates of one (laser capsulotomy) were believed to be due to inconsistent coding of day case/outpatient procedures. An evidence review of the other (CTR) based on a small number of RCTs with some risk of bias suggested that surgery was cost-effective for the average patient with mild to moderate CTS. However, RCTs provide very little information to identify marginal patient subgroups where the costs of surgery counterbalance the health benefits. Limited evidence on appropriate indications for surgery is a major barrier to achieving disinvestment through benchmarking.

Commissioning group meeting agendas were dominated by investment rather than disinvestment topics. Interviews with stakeholders confirmed concerns about the reliability of routine NHS data for benchmarking and the lack of alternative methods for identifying opportunities for disinvestment. There is a need for increased central NHS support to encourage commissioners to disinvest, and provide the tools, accurate data and relevant evidence to facilitate this.

Implications for practice

Many commissioners felt they spent most of their time fire-fighting and unable to be strategic about reviewing existing care and achieving disinvestment. Part of the solution may be better training for commissioners on what disinvestment is, case studies of successful disinvestment and tools to facilitate it. Ring-fenced time for reviewing existing care pathways to increase efficiency may help local commissioners to consider disinvestment strategically.

Clinical Commissioning Groups have an opportunity to develop a more collaborative and transparent process for disinvestment at the local level. Tensions are inevitable between commissioners and providers, but may be minimised by a transparent process with early and meaningful engagement of all stakeholders and a focus on the available evidence. However, this requires resources and central political support.

Local commissioners can use benchmarking as a 'tin opener' to uncover differences in care pathways and settings between different areas of England. The setting of care can have important financial repercussions. More than 11,000 capsulotomy procedures were still recorded as day cases in 2012/13; a switch to the outpatient setting would reduce hospital reimbursements by more than £2M. This emphasises the need for commissioners to have access to data sets that accurately reflect health care provided across the secondary, primary and community care settings.

Benchmarking can reveal anomalous high procedure rates, but the evidence is often limited and does not support further tightening of existing access criteria. By focusing on the entire pathway of care, the local commissioners, working with patients and colleagues in primary and secondary care, might consider whether shared decision-making, referral management systems or contractual levers are the most effective way of making the care pathway more efficient. The lack of evidence to support commissioning demonstrates the need for local commissioners and research communities to begin to bridge this gap from knowledge need to discovery.

The National Institute for Health and Care Excellence (NICE), NHS England and the National Institute for Health Research (NIHR) might use geographical variation to identify procedures where HTR or RCTs are needed. Awareness of the high geographical variations has been reinvigorated by resources such as *The NHS Atlas of Variation in Healthcare* (NHS Right Care. *The NHS Atlas of Variation in Healthcare: Reducing Unwarranted Variation to Increase Value and Improve Quality*. 2011.). Continued investment in these tools is vital to enable commissioners to use routine data optimally to improve care for local populations.

A more proactive national HTR process for technologies suspected to be used inefficiently in some patient subgroups could help commissioners identify and implement disinvestment. The current more passive approach adopted by NICE, whereby 'do not do' recommendations are predominantly drawn from clinical guidelines, may overlook emerging areas of overdiffusion or obsolescence.

Accurate recording of activity is important for the NHS to monitor and improve the quality and efficiency of services. We have identified cases of inconsistent, incomplete or inaccurate coding of clinical activity which undermine these efforts. It is vital that the NHS provide better training and support to hospital coders in appropriate coding, and audit data collected to identify weaknesses.

The finding in our case studies that evidence is often of limited use in informing disinvestment decisions has implications for research funders. Funders might require that trialists share individual patient data from completed RCTs so that others can identify marginal subgroups of patients where the costs of surgery begin to outweigh the benefits.

Suggested research priorities

Commissioners are faced with an array of tools to help them prioritise and implement disinvestment initiatives. Research comparing methods and exploring optimal design in order to engage clinicians and the public in the decision-making process would help commissioners establish sustainable local disinvestment procedures.

Commissioners adopt a variety of methods for regulating procedure use (e.g. criteria-based access, prior approval, shared decision-making aids). Research on the relative merits of these approaches is needed.

Research on procedures with high geographical variation in localities with 'high' and 'low' procedure rates will help better our understanding of the reasons for variation and appropriate responses.

To make NHS coding frameworks more amenable for research, methodological work is needed to develop a clinically coherent matrix of commonly occurring procedure/diagnosis group pairings.

Routinely collected patient-reported outcome measures after NHS surgery, rather than process measures such as procedure rates, provide an opportunity to examine interhospital variations and benchmarking on the costs and outcomes of surgery.

Funding

The NIHR Health Services and Delivery Research programme.

Public and patient involvement

Service users were involved in the design of the study. Lay members of a PCT commissioning group were key informants for the qualitative study, as were patients who had recently received CTR surgery.

Health Services and Delivery Research

ISSN 2050-4349 (Print)

ISSN 2050-4357 (Online)

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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 09/1006/25. The contractual start date was in April 2011. The final report began editorial review in August 2013 and was accepted for publication in March 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.

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