Effects of Health Reform on Health Care Inequalities

Revised Final Report to the NIHR SDO Programme and the DH Health Reform Evaluation Programme

20 August 2011

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Acknowledgements

Funding and programme management
This project was funded by the NHS National Institute for Health Research (NIHR) Service, Delivery and Organisation (SDO) Programme from 1 April 2007 to 31 October 2010, and managed under the auspices of the DH Policy Research Programme (PRP) Health Reform Evaluation Programme (HREP).

Project team
The project was undertaken by staff at the University of York. The project was led by Richard Cookson and the analysis was conducted by Mauro Laudicella. Richard Cookson was based at the Department of Social Policy and Social Work during the project funding period, and subsequently moved to the Centre for Health Economics (CHE) from April 2011; Mauro Laudicella was based at CHE during the project funding period and subsequently moved to Imperial College London. The project also benefited from analytical support from Paulo Li Donni, who is co-author of two chapters of the report, who was based at CHE during the project funding period and subsequently moved to the University of Palermo, and from Mark Dusheiko from CHE, who is a co-author of the overview chapter and contributed data and advice on econometric modelling methods. We would like to thank the rest of the University of York project team for their invaluable contributions at various stages of the work: Diane Dawson (formerly CHE and now at the University of Cambridge) and Russell Mannion (formerly York Management School and now at the University of Birmingham) for essential contributions to the conception of the overall project, without which the project would never have happened, Geoffrey Hardman (who sadly passed away on 29 December 2009) for important contributions to data collection and interpretation, James Nelson-Smith and James Carpenter (Yorkshire and Humber Public Health Observatory) for important contributions to data provision and interpretation, Hugh Gravelle (Centre for Health Economics) for important contributions to the design of all three studies, Andrew Street (Centre for Health Economics) for helpful advice especially on data sources for independent sector activity, Rita Santos (Centre for Health Economics) for designing and producing maps for the study on competition, and Peter Halls (Computer Science) for helping to compute our preliminary competition indices.

External comments and advice
We would like to thank Nick Mays and Alan Glanz for co-ordinating the HREP Programme and providing useful opportunities for disseminating our work in progress and receiving helpful comments from DH policy leads and academic colleagues working on other HREP projects. We would also like to thank Nick Mays for helpful comments on all aspects of the project findings, Carol Propper and George Leckie for sharing their data and analysis of competition indices, Sara Allin for helpful comments on the study of equity trends, and Dave Buck, Roy Carr-Hill and Michael Haslam for helpful comments on the studies of selection effects. For helpful comments on our draft final report we would like to thank two anonymous referees.

Chapter-specific acknowledgements
We would like to thank various other individuals for helpful comments and discussions about individual chapters, and these acknowledgements are contained in the individual chapters of the report. The material in chapters 2 and 3 have been peer reviewed by two anonymous
reviewers for the UK Department of Health HREP programme but have not completed their full scientific peer review process in the wider scientific community and therefore their findings should be interpreted with due caution. An earlier version of the study on equity change were presented to the Health Economists Study Group meeting at LSE in January 2010, and the current version was presented at the HSRN/SDO Conference in Liverpool, June 2011. An earlier version of the study on competition effects was presented at the American Society for Health Economics (ASHE) meeting in July 2010, and the current version was presented at the Health Economists Study Group meeting in York in January 2011. An earlier version of this study on selection incentives was presented at the Health Economists Study Group meeting in Manchester, January 2009, and the current version has been accepted for publication in *Social Science and Medicine*. 
Executive Summary

Objectives

- **Study 1: Equity change.** To measure change in socio-economic equity in hospital care in the English NHS between 2001/2 and 2008/9

- **Study 2: Competition effects.** To identify effects of increased competition on socio-economic equity in hospital care in the English NHS between 2003/4 and 2008/9

- **Study 3: Selection incentives.** To investigate the size of potential incentives for public hospitals in the English NHS to select against socio-economically disadvantaged patients

Background

The English National Health Service (NHS) offers publicly funded hospital care free at the point of delivery to all citizens, and owns the vast majority of hospital capacity in England. Major reforms to NHS hospital care in England were introduced during the 2000s, alongside substantial growth in spending. The reforms combined target-driven performance management of public hospitals with fixed price competition from 2006, driven by increased patient choice and entry of independent sector providers into the “quasi-market” for publicly funded patients.

The reforms were introduced by a Labour administration led by Prime Minister Tony Blair and his Chancellor Gordon Brown, who subsequently became Prime Minister from 2007-10. The central objectives of these “Blair/Brown” hospital reforms were to reduce hospital waiting times and improve quality of care. However, critics raised concerns that the choice and competition elements of reform might undermine socio-economic equity. These concerns were rejected by proponents of reform, who claimed that growth in NHS spending combined with increased patient choice of hospital would enhance equity for poorer patients.

One of the main concerns raised by the critics of reform was that increased competition might undermine the “pro-social motivation” of NHS managers and clinicians to treat patients on the basis of need, irrespective of financial considerations. The concern was that this could potentially result in publicly owned NHS hospitals selecting in favour of socio-economically advantaged patients who are relatively healthy and easy to treat (known in economics as “creaming”), and seeking to avoid socio-economically disadvantaged patients who are relatively unhealthy and difficult to treat (known in economics as “dumping”).

Data

We assembled and analysed a variety of large datasets covering the adult population of England and all adult patients using hospital care in the English NHS, using Hospital Episode Statistics and other administrative data sources. We used two main types of dataset:

1. Small area level datasets (mean population 1,500) to analyse equity trends and effects
2. Patient and hospital level datasets to analyse selection incentives
Methods

Study 1: equity change. We developed methods for measuring change in socio-economic equity in health care utilisation using small area level administrative data. Our method provides more detailed information on utilisation than survey data but only examined socio-economic differences between neighbourhoods rather than individuals. We examined small area associations between hospital utilisation and deprivation, allowing for observable small area population need variables. We focused on change over time, allowing for change in the following need variables: population size, age-sex composition, and disease prevalence including (from 2003-8) cancer, chronic kidney disease, coronary heart disease, diabetes, epilepsy, hypertension, hypothyroidism, stroke, transient ischaemic attack and (from 2006-8) atrial fibrillation, chronic obstructive pulmonary disease, obesity and heart failure. We were not able to draw conclusions about levels of equity, since we only measured disease prevalence and not disease severity and so in most cases probably under-estimated levels of need for hospital services in deprived areas. However, we were able to draw conclusions about change in equity, on the reasonable assumption of parallel trends in unobserved need between more and less deprived areas. We checked trends in observed disease prevalence between more and less deprived areas, and found no evidence of non-parallel trends.

Study 2: competition effects. To identify competition effects we exploited year-by-year changes in local hospital market structure as the pro-competition reforms were phased in. We computed hospital level indices of market structure based on actual patient flows from GP practices and attributed these to small areas using distance-weighted averages. We estimated models of utilisation allowing for time varying need, independent sector supply variables, and small area fixed effects. We then used various “difference-in-difference” strategies to identify effects of the “dose” of competition on the deprivation-utilisation relationship as the reforms were phased in.

Study 3: selection incentives. To measure potential selection incentives, we examined patient level length of stay differentials by deprivation, co-morbidity and age, allowing for hospital effects. Length of stay differentials are an important potential incentive for NHS hospitals facing waiting time and cost pressures.

Outcome measures

Study 1: equity change. To measure change in socio-economic equity, we examined year-by-year change in need adjusted utilisation rates by deprivation group for two summary indicators of hospital utilisation (all outpatient visits and all elective inpatient admissions) and four procedure-specific indicators (hip replacement, senile cataract, gastroscopy and coronary revascularisation). These four procedures cover a broad spectrum of hospital care – including high and low cost care, day case and residential care, secondary and tertiary care, diagnostic and therapeutic care – across four different clinical specialities, and to include two forms of care (hip replacement and cataract surgery) that were a particular focus of the reforms.

Study 2: competition effects. To identify competition effects, we focused on all elective inpatient admissions as a summary indicator of hospital utilisation.

Study 3: selection incentives. To measure selection incentives, we avoided case mix confounding by focusing on a single procedure: hip replacement. Hip replacement is a good test case because it is a common procedure with substantial length of stay and considerable clinical uncertainty about appropriate use. If health reforms generated substantial and
widespread incentives for NHS hospitals to select against socio-economically disadvantaged patients, then one would expect to find such incentives in relation to hip replacement.

Results
Study 1: equity change. In all years, small area deprivation was associated with higher need adjusted rates of outpatient visits, elective inpatient admission, cataract surgery, gastroscopy and coronary revascularisation but lower need adjusted rates of hip replacement. There were no systematic changes in these associations for any of the four specific inpatient procedures or for outpatient visits. However, elective inpatient admissions increased slightly faster between 2001 and 2008 in deprived areas compared with less deprived areas. Disease prevalence rates changed approximately in parallel between more and less deprived areas, with no sign that need for elective inpatient admissions increased faster in more deprived areas compared with less deprived areas.

Study 2: competition effects. We found a negative association between market dispersion and elective admissions in deprived areas. The effect of pro-competition reform from 2006 was to reduce this negative association slightly, thereby slightly increasing utilisation in deprived areas.

Study 3: selection incentives. After adjusting for patient characteristic and hospital effects, we found that patients from the most deprived tenth of areas stayed just 6% longer than others in 2001/2, falling to 2% by 2007/8. By comparison, patients aged 85 or over stayed 57% longer than others in 2001/2, rising to 71% by 2007/8, and patients with seven or more diagnoses stayed 58% longer than others in 2001/2, rising to 73% by 2007/8.

Conclusions
Study 1: equity change. There was no substantial change in small area socio-economic equity in hospital care in the English NHS from 2001/2 to 2008/9. If anything, equity may have improved slightly as elective inpatient admissions rose slightly faster in low income small areas than elsewhere without any corresponding growth in observed need for hospital services.

Study 2: competition effects. Increased competition in the NHS between 2003/4 and 2008/9 did not undermine small area socio-economic equity in hospital care.

Study 3: selection incentives. The Blair/Brown hospital reforms did not give NHS hospitals strong new incentives to select against hip replacement patients from low income small areas.