

Patient choice and private provision decreased public provision and increased inequalities in Scotland: a case study of elective hip arthroplasty

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ABSTRACT

Background This is the first research to examine how the policy of patient choice and commercial contracting where NHS funds are given to private providers to tackle waiting times, impacted on direct NHS provision and treatment inequalities.

Methods An ecological study of NHS funded elective primary hip arthroplasties in Scotland using routinely collected inpatient data 1 April 1993–31 March 2013.

Results An increased use of private sector provision by NHS Boards was associated with a significant decrease in direct NHS provision in 2008/09 ($P < 0.01$) and with widening inequalities by age and socio-economic deprivation. National treatment rate fell from 143.8 (140.3, 147.3) per 100 000 in 2006/07 to 137.8 (134.4, 141.2) per 100 000 in 2007/08. By 2012/13, territorial NHS Boards had not recovered 2006/07 levels of provision; this was most marked for NHS Boards with the greatest use of private sector, namely Fife, Grampian and Lothian. Patients aged 85 years and over or living in the more deprived areas of Scotland appear to have been disadvantaged since the onset of patient choice in 2002.

Conclusions NHS funding of private sector provision for elective hip arthroplasty was associated with a decrease in public provision and may have contributed to an increase in age and socio-economic inequalities in treatment rates.

Keywords epidemiology, health services, social determinants

Background

England's NHS Plan 2000 set out a clear agenda for the privatization of NHS services under the rubric of patient choice and in the absence of an evidence base.¹ Following on, 'Partnership for Care – Scotland's Health White Paper', February 2003 invoked spare capacity in the private sector as a means of treating patients whose waiting times exceeded the national guaranteed limit: nine months for inpatient treatment in 2003; 18 weeks from referral to treatment in 2011 and 12 weeks from agreeing to treatment to receiving treatment in 2012.^{2–4} Once again no evidence was given in support of the policy of giving patients a choice of provider although fulfilling the terms of the European Union directive on cross-border healthcare and undue delay was a crucial element.⁵ Within Scotland choice took the form of other territorial NHS Boards, the NHS Golden Jubilee National Hospital (GJNH) or the private

sector with the intention that this would 'complement and not detract from NHS Boards' corporate responsibility to develop sustainable local solutions to long waits'. In June 2005, Andy Kerr, then Labour MSP and minister for health informed the Scottish Parliament that he and the National Waiting Times Unit (NHS) had held talks with 27 separate private healthcare providers in 2004 and 2005 about providing additional capacity and innovative solutions to reduce waiting times for elective surgery.^{6,7} In November 2006 the first block contract between the NHS and the private healthcare sector in Scotland was signed, prior to this England and Scotland had commissioned on a locally negotiated 'spot purchase' basis.⁸ This £18.7 million contract between NHS Tayside and South African

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healthcare company Netcare was for the Scottish Regional Treatment Centre, an Independent Sector Treatment Centre (ISTC) providing NHS funded diagnostics and elective treatments inside the buildings of Stracathro NHS Hospital.⁹ The annual contract value for orthopaedic surgery and outpatient appointments was £4.37 million, of which £3.75 million was for hip and knee replacements with the rest classed as minor orthopaedics.¹⁰ For Scotland as a whole over £373 million was spent on orthopaedics services in 2008/09, around 4% of all NHS spending; however, the split between public and private treatment is not collected centrally.¹¹

The use of the private sector to deliver elective treatments to NHS funded patients in Scotland has been controversial due to poor value for money. In January 2010, the Scottish Government terminated the ISTC contract (Scotland's only ISTC contract to date) when academic analysis revealed a £1.6 million gap (62% of total cash paid) between what had been paid and what had been delivered in treatments to NHS patients in the first 13 months of operation.¹² Current Scottish government policy is to 'effectively eliminate use of the private sector for planned care' although recent figures show NHS Scotland spent £35.8 million on 12 800 patient referrals to private hospitals in financial year 2013/14 compared to £22.8 million for 2239 referrals in 2011/12.^{13,14}

The UK wide Equality Act 2010 introduced a public sector equality duty requiring public bodies to pay due regard to reducing inequalities related to socio-economic status, age and sex.¹⁵ NHS Scotland advocates impact assessments to ensure that NHS Boards and other health bodies meet the requirements of the public sector equality duty when developing and delivering policies, practices and services.¹⁶

Inequalities and inequities in elective hip arthroplasty rates are well documented in England by sex, age and socio-economic deprivation.^{17–24} Women, older patients and those living in the most deprived areas receive fewer treatments relative to need.^{17,18,23,24} Inequalities in treatment rates also exist in Scotland.²⁵ No change in socio-economic equity in hip replacement treatment was found between 2001 and 2008 during the period of increasing patient choice and use of private hospitals for elective care in England.²⁶

There has been no study of the impact of patient choice in Scotland on inequalities in treatment. Hip arthroplasty is a high volume procedure with a relatively long length of stay in hospital and is a good choice of procedure to test inequality.²⁶

The aims of this study are:

- (1) To analyse the effect that NHS funding of elective surgery in the private sector in Scotland had on local capacity for elective primary hip arthroplasty treatment.
- (2) To analyse variations in equality of access to elective primary hip arthroplasty by sex, age and socio-economic deprivation by provider type since the introduction of patient choice of provider (territorial NHS Boards; the GJNH or the private sector).

Methods

Data sources

Numerators: Information Services Division (ISD) of NHS National Services Scotland provided an extract of secondary care admissions' Scottish Morbidity Record (SMR01) data for NHS funded elective primary hip arthroplasties (including hip resurfacing and hybrid hip replacements) on patients resident in Scotland from 01 April 1993 to 31 March 2013 identified using OPCS-4.4 codes as used by the Scottish Arthroplasty Project.²⁷

Denominators: Census estimates mid-year Scotland populations for the first part of the financial year, for example the mid-year population for 1993 was used for financial year 1993/94 and so on.

Analysis

Elective and Emergency Treatment Rates

Numbers and rates of elective and emergency hip arthroplasties were calculated by financial year (01 April to 31 March the following year) for all Scotland from 01 April 1993 to 31 March 2013 with 95% confidence intervals, directly standardized by age to the European Standard Population 2013.²⁸ Numbers and age standardized elective hip arthroplasty rates were also calculated separately by provider type.

Trends by provider type

The number of treatments commissioned by each territorial NHS Board from either the NHS (a patient's own NHS Board, another territorial NHS Board or the GJNH) or the private sector was calculated by financial year along with numbers of treatments provided in-area (i.e. residents directly treated by their own NHS Board). The analysis ran from 01 April 2006 to 31 March 2010 to include the operation of the Scottish Regional Treatment Centre ISTC. Pearson's correlation coefficients were calculated comparing the change in the number of treatments commissioned from the NHS by each territorial NHS Board and the change in the number of treatments commissioned from the private

sector by each territorial NHS Board, in 2007/08, 2008/09 and 2009/10 compared to 2006/07. Pearson's correlation coefficients were also calculated comparing the change in the number of in-area treatments provided by each territorial NHS Board and the change in the number of treatments commissioned by each territorial NHS Board from the private sector over the same time periods.

Inequalities

Inequalities in elective hip arthroplasty treatment provision were analysed by sex, age and area-level socio-economic deprivation using all domains of the Scottish Index of Multiple Deprivation 2012 (SIMD) with SIMD quintile one representing the 20% of the Scottish population living in the most socio-economically deprived areas. Data were used from 01 April 2002 to 31 March 2013 (the first recorded elective hip arthroplasty at the GJNH was in 2002/03 and there were only 10 NHS funded elective hip arthroplasties performed privately prior to financial year 2002/03, 1 in 1994/95, 2 in 1995/96 and 7 in 1996/97). Poisson regression models were built using forward selection in Stata version 12.1 to calculate adjusted incidence rate ratios (IRRs) on the total number of elective hip arthroplasties with covariates sex, age, SIMD and provider type offset by the total mid-year Scotland population years for the time period involved. Interactions were tested between provider type and the other three covariates and where interactions existed, models were built using dummy variables to estimate the effect of the

interactions. Operation rates by age group and SIMD quintile were plotted against financial year of operation and the proportionate increase in 2012/13 compared to 2002/03 was calculated for each category.

Results

Trends in treatment rates

There were 105 872 elective and 48 894 emergency primary hip arthroplasties performed on patients resident in Scotland funded by NHS Scotland from 01 April 1993 to 31 March 2003. The age standardized elective hip arthroplasty rate rose from 90.4 treatments per 100 000 population (95% confidence interval 87.5, 93.4) in 1993/94 to 100.4 (97.4, 103.3) per 100 000 in 2002/03, rising steadily year on year until 2006/07 when it reached 143.8 (140.3, 147.3) per 100 000 (see Fig. 1 and Table A in Supplementary materials). There was a fall in the rate in 2007/08 to 137.8 (134.4, 141.2) per 100 000 population before increasing again in 2008/09 to 146.9 (143.4, 150.4) per 100 000 population. There is no statistically significant difference in the elective hip arthroplasty rates from 2008/09 onwards. There has been no significant change in the emergency hip arthroplasty rate since 2004/05.

Analysis of trends from 01 April 2006 to 31 March 2010 by provider type

The recovery in elective treatment rate in 2008/09 was the result of private sector activity rather than territorial NHS

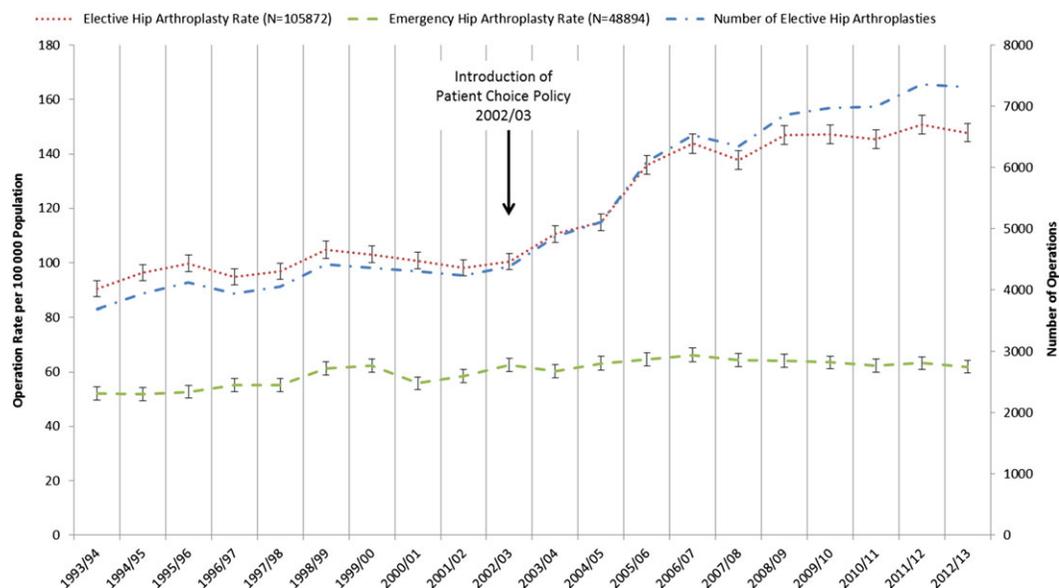


Fig. 1 NHS Scotland funded elective and emergency primary hip arthroplasties in Scotland. Number of operations and operation rates per 100 000 population directly age standardised to the 2013 European Standard Population by financial year of operation. *Data source:* Scottish Morbidity Record Information Services Division NHS Scotland (ISD).

Board activity (see Fig. 2 and Table A in Supplementary materials). The treatment rate for the territorial NHS Boards had not recovered to 2006/07 levels by 2011/12 or 2012/13 although the overall national rate recovered due to the additional capacity provided by the GJNH, a health board in its own right. In-area treatment rates were lower for Fife, Grampian, Highland and Lothian NHS Boards in 2011/12 and 2012/13 than 2006/07 (see Table B in Supplementary materials).

There was a -3.2% , -0.9% and 2.4% change in the number of treatments commissioned by territorial NHS Boards from the NHS in 2007/08, 2008/09 and 2009/10 respectively compared to 2006/07 (see Table C in Supplementary materials). Over the same time periods there was a -4.2% , -5.8% and -3.1% change in the number of treatments provided in-area by NHS Boards and a 13.5% , 248% and 181% change in the number of treatments commissioned from the private sector (see Tables C & D in Supplementary materials). There is a significant negative correlation between the change in the number of treatments commissioned from the NHS by each territorial NHS Board and the change in the number of treatments commissioned from the private sector by each territorial NHS Board in 2008/09 (the peak of private sector activity) compared to 2006/07 (Pearson's correlation coefficient -0.6911 , $P < 0.01$). Similarly there is a significant negative correlation between the change in the number of treatments provided in-area by each territorial NHS Board and the change in the number of treatments commissioned by each territorial NHS Board from the

private sector in 2008/09 compared to 2006/07 (-0.7900 , $P < 0.001$). There were no significant correlations for either of the two comparisons above for 2007/08 or 2009/10 compared to 2006/07 ($P > 0.05$ for all).

Trends in inequality

A total of 68 829 elective primary hip arthroplasties for patients resident in Scotland funded by NHS Scotland were carried out from 01 April 2002 to 31 March 2013.

The covariates sex, age, SIMD and provider type were all found to be significant predictors in the Poisson model on number of operations ($P < 0.0001$ for all). A significant interaction with provider type was found for age and SIMD ($P < 0.0001$ for both) but not for sex ($P = 0.1661$). There are clear differences in the patterns of inequality by both age group and by SIMD quintile for the GJNH and private providers, both compared to territorial NHS Boards (see Table 1 and Figures A & B in Supplementary materials).

There were differences in the proportionate increase in treatment rates by age group from 2002/03 to 2012/13 across all provider types: patients aged 75–79 years increased their treatment rate by 65.7%; those aged 85 years and over increased their treatment rate by 31.3% (see Fig. 3). Over the same time period, the two least deprived quintiles SIMD 4 and 5 increased their treatment rates by 67.3% and 85.4% respectively while the two most deprived quintiles SIMD 1 and 2 increased their treatment rates by 47.7% and 49.5% respectively (see Figure C in Supplementary materials).

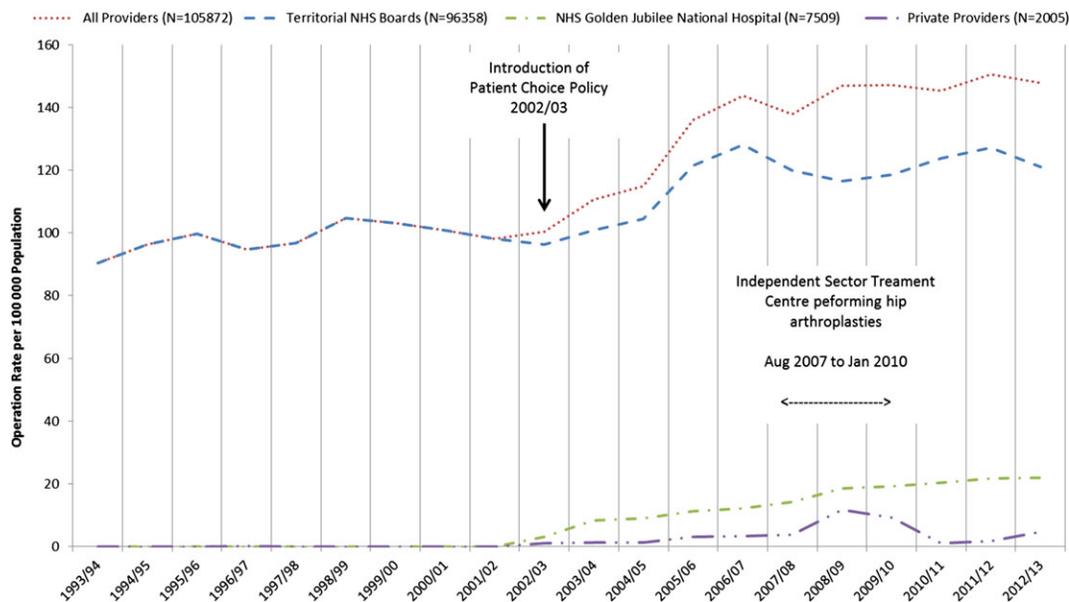


Fig. 2 NHS Scotland funded elective primary hip arthroplasties in Scotland. Operation rates per 100 000 population directly age standardised to the 2013 European Standard Population by provider type and financial year of operation. Data source: Scottish Morbidity Record Information Services Division NHS Scotland (ISD).

Table 1 Number of treatments (N) and incidence rate ratios (IRR) with 95% confidence intervals for interactions between age # provider and Scottish Index of Multiple Deprivation 2012 (SIMD) # provider adjusted by sex for NHS funded elective primary hip arthroplasties for patients resident in Scotland 01 April 2002 to 31 March 2013^a

		<i>Territorial NHS Boards</i>		<i>NHS Golden Jubilee National Hospital</i>		<i>Private providers</i>	
		N	IRR	N	IRR	N	IRR
Age # Provider ^b	0–59 Years	13 667	1	1348	0.099 (0.093, 0.104)	368	0.027 (0.024, 0.030)
	60–64 Years	8149	1	1151	0.141 (0.133, 0.150)	363	0.045 (0.040, 0.049)
	65–69 Years	9837	1	1489	0.151 (0.143, 0.160)	418	0.042 (0.039, 0.047)
	70–74 Years	10 364	1	1657	0.160 (0.152, 0.168)	411	0.040 (0.036, 0.044)
	75–79 Years	8729	1	1127	0.129 (0.121, 0.137)	285	0.033 (0.029, 0.037)
	80–84 Years	5454	1	554	0.102 (0.093, 0.111)	120	0.022 (0.018, 0.026)
	85+ Years	3109	1	181	0.058 (0.050, 0.068)	28	0.009 (0.006, 0.013)
SIMD # Provider ^b	1 (most deprived)	9761	1	1298	0.133 (0.125, 0.141)	276	0.028 (0.025, 0.032)
	2	11 963	1	1727	0.144 (0.137, 0.152)	381	0.032 (0.029, 0.035)
	3	13 183	1	1726	0.131 (0.125, 0.138)	411	0.031 (0.028, 0.034)
	4	13 113	1	1477	0.113 (0.107, 0.119)	464	0.035 (0.032, 0.039)
	5	11 289	1	1279	0.113 (0.107, 0.120)	461	0.041 (0.037, 0.045)
Total ^c		59 309		7507		1993	

^aResults for sex with age or SIMD for each of the models can be found in Supplementary materials Table E.

^bAlso adjusted by age or SIMD as appropriate for model.

^cThere were 20 patients not included as SIMD was blank: 16 for Territorial NHS Boards; 2 for the GJNH; and 2 for private providers.

Discussion

Main finding of the study

The claim made by NHS Scotland's 2003 white paper that the additional use of the private sector would provide 'sustainable local solutions to long waits' is not supported by the evidence. On the contrary, local provision by NHS Boards decreased and although median waiting times for elective hip replacement in Scotland fell from 156 days in 2005/06 to 78 days in 2009/10, the only increase in NHS capacity was at the GJNH.²⁹ Those NHS Boards with the greatest use of the private sector for elective surgery experienced the largest reductions in direct NHS provision and of those Fife, Grampian and Lothian NHS Boards had not recovered 2006/07 levels of in-area provision by 2012/13. Inequality in treatment rates has increased since 2002 with patients aged 85 years and over and those living in the more socio-economically deprived areas of Scotland significantly disadvantaged.

What is already known on this topic

Provision

This is the first study to look at the impact of diverting NHS funds to the private sector on direct and in-area NHS provision. It confirms the conclusions of the 2006 House of Commons Health Select Committee (HSC) that in the

English NHS, the private sector in the form of ISTCs 'had not made a major direct contribution to increasing capacity'.³⁰ Bernard Ribeiro, then president of the Royal College of Surgeons of England informed the committee that ISTCs were leaving 'NHS facilities under-utilized with a concurrent deleterious effect on fragile NHS Trust financial balances'.³¹ In addition, ISTCs were being paid on referrals, not treatments, and consequently an estimated £252 million (14.8%) of the initial £1.7 bn paid to the private sector under the English ISTC programme from 2003 to 2010 was for treatments and diagnostic procedures never carried out.³²

Business cases and contracts for English ISTCs have been withheld or redacted by the Department of Health on grounds of commercial confidentiality making independent scrutiny, even by the HSC, impossible and as private sector organizations performing public functions, ISTCs are not subject to the Freedom of Information Act 2000.^{33–35} Consequently around 5 billion pounds paid by the NHS to the private health-care sector has remained essentially unaudited. The HSC recommended the National Audit Office (NAO) to carry out an investigation into ISTCs, and whether they increased productivity in the NHS; no such investigation has been undertaken by the NAO.^{30,36} Most privately provided NHS funded primary hip replacements in England, Wales and Northern Ireland, however, are actually delivered by non-ISTC private

Limitations of the study

The destination of a patient will depend not only on their individual choice of provider but also on the range of choices made available to them, normally by their GP, and whether the patient is accepted or rejected by the provider chosen. It would be extremely helpful to understand these mechanisms both quantitatively and qualitatively and their role in influencing inequality.

NHS funded patients treated outside of Scotland are not included in this study.

Conclusion

Patient choice and use of private sector in Scotland was associated with a decrease in direct and in-area NHS provision and may have contributed to an increase in age-related and socio-economic inequalities. By 2012/13 territorial NHS Boards had not recovered 2006/07 levels of provision; this was most marked for four NHS Boards, three of which had the greatest use of the private sector, namely Fife, Grampian and Lothian. The expansion of the GJNH did provide additional overall capacity and may have lessened socio-economic inequalities; however, it may have increased age-related inequalities in treatment as the GJNH attracts younger patients.

Equality impact assessments should consider the role of the private sector in increasing inequalities by age and deprivation and on locally sustainable solutions. Reductions in waiting times and waiting time targets are blunt instruments for understanding the effect of using the private sector on public provision and overall capacity.

Supplementary data

Supplementary data are available at the *Journal of Public Health* online.

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