Sg2 Service Kit

Primary Hip and Knee Replacement Care Pathway Redesign

February 2011

health care intelligence

Welcome to the Sg2 Service Kit
Primary Hip and Knee Replacement Care Pathway Redesign

While an ageing demographic will fuel 18% growth in primary hip and knee replacements this coming decade, Sg2 forecasts that the financial levers of the 2001-12 best practice tariff (BPT) will help incentivise and accelerate care pathway advances—reducing related inpatient bed days by 13% over the same period. This reduction in hospital length of stay equates to a cumulative national savings of over £664 million in primary hip and knee replacement inpatient care during this ten year timeframe.

On a local level, much of this change will be driven by new BPT incentives. Sg2's latest research identifies that 2011-12 BPT adjustments to primary hip and knee replacement surgeries will cause select NHS trusts to see one-year payment reductions in excess of £400,000. Facing this new economic future, trusts must implement optimised care pathways to ensure a financially sustainable, clinically appropriate and patient-friendly service.

How will the 2011-12 tariff changes alter income and capacity at a local level?
What care redesign strategies ensure a clinically sound and patient-friendly pathway, while reducing costly hospital lengths of stay?

This service kit is designed to help you:

Identify the immediate, financial realities of the primary hip and knee BPT while recognising care pathway redesign initiatives available to improve quality and patient experience while reducing length of stay.

Plan an action strategy, including who to involve, what steps to take, timelines for success and likely impact.

Manage the change, by understanding metrics to guide progress, operational insights, management considerations, and global lessons learned.

In this kit you'll find:	Use this resource to:
Sg2's Analysis of the 2011-12 Tariff for Primary Hip and Knee Replacement	▪ Craft the case for change in primary hip and knee replacement management
Sg2's Impact of Change Forecast for Primary Hip and Knee Replacement Bed Days, Savings	▪ Identify LOS targets and related savings ▪ Develop metrics to guide progress
Sg2's Improvement Guide for Reducing Primary Hip and Knee Replacement LOS	▪ Define your action strategy ▪ Identify improvement options, and understand cost, time and operational considerations
Sg2 Global Practice Summary on Primary Hip and Knee Replacement Best Practice	▪ Leverage global lessons learned
A Sg2 Case Study on Primary Hip and Knee Care Pathway Redesign	▪ Understand application of care redesign concepts within the NHS

A Case for Care Pathway Optimisation in Primary Hip and Knee Replacement

Revenue Impact and Length of Stay Reduction Opportunities Related to 2011-12 best practice tariff (BPT) Adjustments for NHS Trusts

Trusts with LOS above threshold: larger opportunities to offset tariff loss by LOS optimisation

Trusts with LOS below threshold: smaller opportunities to offset tariff loss by LOS optimisation

Trust	2009-10 Spells	2009-10 ALOS	2011-12 Change in Revenue
Gloucestershire Hospitals NHS Foundation Trust	1,695	6.3	-£408,580
Wrightington, Wigan And Leigh NHS Foundation Trust	1,663	6.7	-£399,761
The Royal Orthopaedic Hospital NHS Foundation Trust	1,511	6.6	-£361,783
South London Healthcare NHS Trust	1,360	7.1	-£325,774
Western Sussex Hospitals NHS Trust	1,321	6.7	-£317,476
Robert Jones And Agnes Hunt Orthopaedic And District Hospital NHS Trust	1,328	6.7	-£316,843
Derby Hospitals NHS Foundation Trust	1,301	5.9	-£308,600
Heart Of England NHS Foundation Trust	1,395	6.8	-£299,842
North Bristol NHS Trust	1,198	6.8	-£296,992
Pennine Acute Hospitals NHS Trust	1,217	7.6	-£285,456
Sheffield Teaching Hospitals NHS Foundation Trust	1,205	7.1	-£272,500
County Durham And Darlington NHS Foundation Trust	1,163	6.5	-£271,605
Portsmouth Hospitals NHS Trust	1,165	6.4	-£270,580
United Lincolnshire Hospitals NHS Trust	1,201	6.7	-£269,638
Nottingham University Hospitals NHS Trust	1,162	6.9	-£268,215
Nuffield Orthopaedic Centre NHS Trust	1,035	6.7	-£263,028
Northern Lincolnshire And Goole Hospitals NHS Foundation Trust	1,074	5.9	-£247,572
University Hospitals Coventry And Warwickshire NHS Trust	1,012	7.1	-£246,827
South Tees Hospitals NHS Foundation Trust	1,061	6.0	-£242,123
Great Western Hospitals NHS Foundation Trust	965	6.4	-£240,619
Doncaster And Bassetlaw Hospitals NHS Foundation Trust	1,003	5.9	-£238,161
University Hospitals Of Morecambe Bay NHS Foundation Trust	978	7.0	-£229,968
Norfolk And Norwich University Hospitals NHS Foundation Trust	984	6.9	-£229,182
Buckinghamshire Healthcare NHS Trust	827	6.2	-£213,687
Harrogate And District NHS Foundation Trust	863	5.9	-£204,958
Sherwood Forest Hospitals NHS Foundation Trust	814	6.6	-£192,870
West Hertfordshire Hospitals NHS Trust	713	5.9	-£187,144
Frimley Park Hospital NHS Foundation Trust	729	6.5	-£186,773
Peterborough And Stamford Hospitals NHS Foundation Trust	765	6.4	-£186,449
North Cumbria University Hospitals NHS Trust	759	6.4	-£179,455
Calderdale And Huddersfield NHS Foundation Trust	749	6.4	-£178,834
Wirral University Teaching Hospital NHS Foundation Trust	737	6.6	-£176,906
Sandwell And West Birmingham Hospitals NHS Trust	741	6.4	-£175,264
Royal Cornwall Hospitals NHS Trust	765	6.3	-£173,158
The Royal Wolverhampton Hospitals NHS Trust	740	6.4	-£172,978
Hull And East Yorkshire Hospitals NHS Trust	830	6.3	-£171,953
Heatherwood And Wexham Park Hospitals NHS Foundation Trust	636	6.5	-£168,372
Chesterfield Royal Hospital NHS Foundation Trust	702	7.2	-£165,421
University Hospital Of North Staffordshire NHS Trust	699	5.9	-£165,196
Royal National Orthopaedic Hospital NHS Trust	617	7.0	-£164,797
Stockport NHS Foundation Trust	687	7.3	-£163,611
Plymouth Hospitals NHS Trust	703	7.9	-£163,319
Basildon And Thurrock University Hospitals NHS Foundation Trust	642	5.9	-£156,821
Colchester Hospital University NHS Foundation Trust	775	6.4	-£154,890
Northern Devon Healthcare NHS Trust	752	6.0	-£154,198
Royal United Hospital Bath NHS Trust	623	6.9	-£152,157
East And North Hertfordshire NHS Trust	711	8.5	-£151,873

A Case for Care Pathway Optimisation in Primary Hip and Knee Replacement, cont.

Revenue Impact and Length of Stay Reduction Opportunities Related to 2011-12 best practice tariff (BPT) Adjustments for NHS Trusts

Trusts with LOS above threshold: larger opportunities to offset tariff loss by LOS optimisation

Trusts with LOS below threshold: smaller opportunities to offset tariff loss by LOS optimisation

Trust	2009-10 Spells	2009-10 ALOS	2011-12 Change in Revenue
Luton And Dunstable Hospital NHS Foundation Trust	610	6.1	-£151,782
Dartford And Gravesham NHS Trust	623	17.4	-£150,432
East Lancashire Hospitals NHS Trust	629	7.7	-£148,754
Lancashire Teaching Hospitals NHS Foundation Trust	622	7.1	-£143,409
Basingstoke And North Hampshire NHS Foundation Trust	541	6.2	-£140,912
Northampton General Hospital NHS Trust	583	7.2	-£140,078
Royal Liverpool And Broadgreen University Hospitals NHS Trust	743	5.9	-£137,306
The Princess Alexandra Hospital NHS Trust	561	7.5	-£135,937
Scarborough And North East Yorkshire Health Care NHS Trust	583	6.2	-£133,290
Surrey And Sussex Healthcare NHS Trust	518	6.1	-£132,402
James Paget University Hospitals NHS Foundation Trust	646	8.5	-£130,925
Kettering General Hospital NHS Foundation Trust	588	6.7	-£130,122
Medway NHS Foundation Trust	520	6.0	-£128,807
The Rotherham NHS Foundation Trust	558	5.9	-£124,875
North West London Hospitals NHS Trust	494	6.0	-£123,136
Barnet And Chase Farm Hospitals NHS Trust	533	7.2	-£120,830
Imperial College Healthcare NHS Trust	470	6.7	-£119,466
Bradford Teaching Hospitals NHS Foundation Trust	533	6.0	-£115,831
Salisbury NHS Foundation Trust	473	7.4	-£115,219
Isle Of Wight NHS PCT	486	6.2	-£114,853
Weston Area Health NHS Trust	461	6.9	-£109,445
Whipps Cross University Hospital NHS Trust	415	7.1	-£106,599
Hereford Hospitals NHS Trust	455	7.0	-£105,058
Shrewsbury And Telford Hospital NHS Trust	443	7.5	-£103,331
Bedford Hospital NHS Trust	414	6.0	-£103,051
Yeovil District Hospital NHS Foundation Trust	446	6.0	-£101,634
Walsall Hospitals NHS Trust	434	7.5	-£97,432
Warrington And Halton Hospitals NHS Foundation Trust	406	7.9	-£94,520
St Helens And Knowsley Hospitals NHS Trust	404	9.3	-£94,377
Winchester And Eastleigh Healthcare NHS Trust	404	7.7	-£93,699
Barking, Havering And Redbridge University Hospitals NHS Trust	416	7.2	-£93,181
Royal Berkshire NHS Foundation Trust	749	5.9	-£92,293
Blackpool, Fylde And Wyre Hospitals NHS Foundation Trust	399	7.4	-£92,164
Southampton University Hospitals NHS Trust	376	8.0	-£91,341
Tameside Hospital NHS Foundation Trust	377	6.8	-£90,575
Barnsley Hospital NHS Foundation Trust	515	6.1	-£89,094
University Hospital Of South Manchester NHS Foundation Trust	364	7.9	-£87,986
Mid Cheshire Hospitals NHS Foundation Trust	378	6.4	-£86,685
York Hospitals NHS Foundation Trust	390	7.1	-£84,892
Central Manchester University Hospitals NHS Foundation Trust	357	9.2	-£83,896
Mid Yorkshire Hospitals NHS Trust	1,062	6.9	-£80,393
Airedale NHS Foundation Trust	345	6.9	-£76,263
Royal Bolton Hospital NHS Foundation Trust	309	8.5	-£72,699
King's College Hospital NHS Foundation Trust	317	9.2	-£68,661
Chelsea And Westminster Hospital NHS Foundation Trust	276	7.1	-£67,842
South Tyneside NHS Foundation Trust	287	7.5	-£67,348
Barts And The London NHS Trust	232	8.3	-£63,216

A Case for Care Pathway Optimisation in Primary Hip and Knee Replacement, cont.

Revenue Impact and Length of Stay Reduction Opportunities Related to 2011-12 best practice tariff (BPT) Adjustments for NHS Trusts

Trusts with LOS above threshold: larger opportunities to offset tariff loss by LOS optimisation

Trusts with LOS below threshold: smaller opportunities to offset tariff loss by LOS optimisation

Trust	2009-10 Spells	2009-10 ALOS	2011-12 Change in Revenue
The Whittington Hospital NHS Trust	214	7.4	-£61,760
Lewisham Healthcare NHS Trust	221	8.2	-£61,043
Trafford Healthcare NHS Trust	246	8.5	-£58,242
Royal Free Hampstead NHS Trust	251	7.5	-£54,308
Ealing Hospital NHS Trust	193	8.9	-£52,860
Brighton And Sussex University Hospitals NHS Trust	221	11.6	-£51,846
Guy's And St Thomas' NHS Foundation Trust	483	7.4	-£43,155
North Middlesex University Hospital NHS Trust	161	6.7	-£41,802
Newham University Hospital NHS Trust	153	9.4	-£41,325
Countess Of Chester Hospital NHS Foundation Trust	180	7.2	-£39,847
University College London Hospitals NHS Foundation Trust	335	7.1	-£34,319
Homerton University Hospital NHS Foundation Trust	130	9.1	-£26,002
St George's Healthcare NHS Trust	63	12.1	-£16,315
New Revenue-Based Breakeven ALOS Threshold ≈ 5.8 days			
West Middlesex University Hospital NHS Trust	163	5.7	-£42,925
Salford Royal NHS Foundation Trust	331	5.8	-£63,941
Aintree University Hospitals NHS Foundation Trust	410	5.4	-£89,887
Milton Keynes Hospital NHS Foundation Trust	407	5.3	-£99,567
George Eliot Hospital NHS Trust	492	5.1	-£106,528
Southport And Ormskirk Hospital NHS Trust	461	5.7	-£110,569
East Cheshire NHS Trust	470	5.6	-£113,203
The Queen Elizabeth Hospital King's Lynn NHS Trust	491	4.9	-£113,536
Dorset County Hospital NHS Foundation Trust	526	5.3	-£119,065
Burton Hospitals NHS Foundation Trust	580	5.7	-£122,289
The Hillingdon Hospital NHS Trust	470	5.8	-£128,450
Gateshead Health NHS Foundation Trust	556	5.0	-£132,155
South Devon Healthcare NHS Foundation Trust	654	5.0	-£138,032
Taunton And Somerset NHS Foundation Trust	688	5.2	-£142,622
Royal Surrey County Hospital NHS Foundation Trust	570	5.2	-£144,515
Mid Staffordshire NHS Foundation Trust	644	5.8	-£152,457
Hinchingbrooke Health Care NHS Trust	621	5.1	-£153,049
South Warwickshire NHS Foundation Trust	650	4.7	-£157,611
West Suffolk Hospitals NHS Trust	660	4.8	-£157,885
City Hospitals Sunderland NHS Foundation Trust	691	5.2	-£162,592
Maidstone And Tunbridge Wells NHS Trust	662	5.3	-£168,858
North Tees And Hartlepool NHS Foundation Trust	738	5.7	-£171,891
Ipswich Hospital NHS Trust	783	5.6	-£180,117
Cambridge University Hospitals NHS Foundation Trust	766	5.8	-£180,226
Mid Essex Hospital Services NHS Trust	809	5.7	-£180,809
Southend University Hospital NHS Foundation Trust	768	5.8	-£192,078
Ashford And St Peter's Hospitals NHS Foundation Trust	750	5.7	-£198,422
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	841	5.7	-£198,736
Leeds Teaching Hospitals NHS Trust	853	5.2	-£203,621
East Sussex Hospitals NHS Trust	907	4.9	-£207,832
The Dudley Group Of Hospitals NHS Foundation Trust	952	5.2	-£216,484
East Kent Hospitals University NHS Foundation Trust	1,375	5.2	-£247,408

A Case for Care Pathway Optimisation in Primary Hip and Knee Replacement, cont.

Revenue Impact and Length of Stay Reduction Opportunities Related to 2011-12 best practice tariff (BPT) Adjustments for NHS Trusts

Trusts with LOS above threshold: larger opportunities to offset tariff loss by LOS optimisation

Trusts with LOS below threshold: smaller opportunities to offset tariff loss by LOS optimisation

Trust	2009-10 Spells	2009-19 ALOS	2011-12 Change in Revenue
East Kent Hospitals University NHS Foundation Trust	1,375	5.2	-£247,408
Worcestershire Acute Hospitals NHS Trust	1,110	5.6	-£256,854
Royal Devon And Exeter NHS Foundation Trust	1,383	5.5	-£318,639
Northumbria Healthcare NHS Foundation Trust	1,561	4.9	-£367,763
University Hospitals Of Leicester NHS Trust	1,601	5.2	-£386,343
The Royal Bournemouth And Christchurch Hospitals NHS Foundation Trust	1,899	5.3	-£465,360
Epsom And St Helier University Hospitals NHS Trust	2,273	5.3	-£619,555

TJR = Total Joint Replacement; LOS = Length Of Stay; ALOS = Average Length Of Stay
Baseline figures for primary total hip and knee replacement utilisation are taken from the 2009/10 HES feed (the latest full year data set to be published).
For the purposes of illustrating a defined care pathway, the baseline utilisation for this forecast is derived by identifying spells defined by a dominant procedure OPCS-4 code related to primary hip or knee replacement and a primary diagnosis ICD-10 code related to osteoarthritis. For full forecast detail, please see the accompanying methodology documentation.
All NHS Trusts with more than 10 operations per year fitting the above criteria are included in this analysis. Those with less than 10 operations per year are excluded because of likely coding anomalies.
Sg2 understands that trusts will have access to more up-to-date data sources and we are happy to work with you to understand how individualised data sets and custom analysis of localised forecast factors influence the forecast output.

The Impact of Change in Primary Hip and Knee Replacement

Drivers of change including the 2011-12 best practice tariff on future bed days and savings, all-England

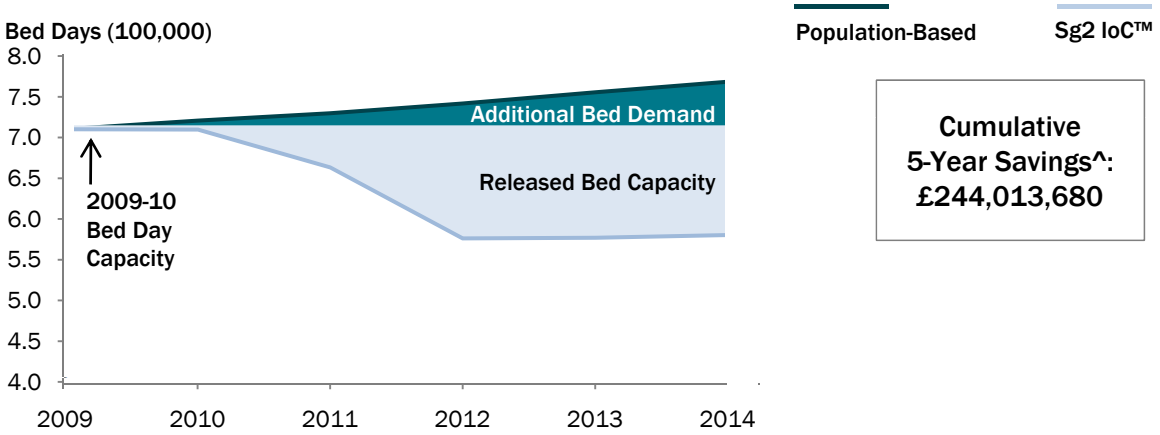
National Benchmarks
2009-10 Spells
114,308
2009-10 ALOS
6.2

Bed Days Forecast										
2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Population-Based										
710,165	720,806	729,779	741,863	755,628	768,632	780,701	793,838	807,854	823,223	836,198
Sg2 IoC™										
710,165	709,852	663,370	576,151	576,985	580,315	582,512	589,408	596,924	605,337	616,115

Bed Days Savings^ Forecast										
2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Population-Based										
-	-	-	-	-	-	-	-	-	-	-
Sg2 IoC™										
£0	£4,381,280	£26,563,720	£66,284,920	£71,457,120	£75,326,640	£79,275,400	£81,772,280	£84,371,720	£87,154,320	£88,033,320
10-Year Cumulative Savings^										
£664,620,720										

A Focus on Change within the QIPP Timeline

The path to delivering quality, primary hip and knee replacement services within available resources to meet the growing demands of an ageing population



ALOS = Average Length Of Stay; IoC™ = Impact of Change™

Baseline figures for primary total hip and knee replacement utilisation are taken from the 2009-10 HES feed (the latest full year data set to be published). Baseline figures include all NHS-funded care, including that supplied by private providers.

For the purposes of illustrating a defined care pathway, the baseline utilisation for this forecast is derived by identifying spells defined by a dominant procedure OPCS-4 code related to primary hip or knee replacement and a primary diagnosis ICD-10 code related to osteoarthritis. For full forecast detail, please see the accompanying methodology documentation.

Sg2 understands that trusts will have access to more up-to-date data sources and we are happy to work with you to understand how individualised data sets influence the forecast output.

^Bed days savings are derived by calculating the annual differential between bed days as predicted by each of the population and Sg2 modeling strategies and multiplying this bed day difference by £400, an estimate of cost for a 24-hour stay on an NHS general or surgical ward. Cumulative bed days savings calculations sum the above annual calculations across 10 years.

The Impact of Change in Primary Hip and Knee Replacement

Drivers of change including the 2011-12 best practice tariff on future bed days and savings, SHAs

National Benchmarks
2009-10 ALOS
6.2

SHA	2009-10 ALOS	2009-10 Spells	Forecast Method	2009 Bed Days	2014 Bed Days	2019 Bed Days	Cumulative 10-Year Savings^
North West SHA	6.7	15,130	Population-Based	100,790	107,786	115,447	£92,790,768
			Sg2 IoC™	100,790	81,375	85,068	
South West SHA	5.9	15,290	Population-Based	90,077	98,540	108,190	£86,392,821
			Sg2 IoC™	90,077	74,134	79,364	
West Midlands SHA	6.2	13,383	Population-Based	82,939	89,226	95,944	£76,405,954
			Sg2 IoC™	82,939	67,500	70,861	
East Of England SHA	6.2	12,795	Population-Based	79,534	87,614	96,808	£76,359,572
			Sg2 IoC™	79,534	66,083	71,246	
Yorkshire And The Humber SHA	6.1	11,660	Population-Based	70,611	76,220	82,614	£65,491,408
			Sg2 IoC™	70,611	57,635	60,988	
East Midlands SHA	6.0	11,255	Population-Based	67,709	74,513	82,050	£64,409,006
			Sg2 IoC™	67,709	56,327	60,547	
South East Coast SHA	6.2	10,835	Population-Based	66,897	72,643	79,526	£63,808,234
			Sg2 IoC™	66,897	54,605	58,279	
London SHA	6.8	9,691	Population-Based	65,879	68,917	73,660	£58,514,342
			Sg2 IoC™	65,879	52,244	54,547	
South Central SHA	6.3	7,892	Population-Based	49,729	54,845	60,574	£47,757,873
			Sg2 IoC™	49,729	41,368	44,579	
North East SHA	5.6	6,377	Population-Based	36,000	38,327	41,386	£32,690,754
			Sg2 IoC™	36,000	29,044	30,636	

SHAs= Strategic Health Authorities; ALOS = Average Length Of Stay; IoC™ = Impact of Change
Baseline figures for primary total hip and knee replacement utilisation are taken from the 2009-10 HES feed (the latest full year data set to be published). Baseline figures include all NHS-funded care, including that supplied by private providers.
For the purposes of illustrating a defined care pathway, the baseline utilisation for this forecast is derived by identifying spells defined by a dominant procedure OPCS-4 code related to primary hip or knee replacement and a primary diagnosis ICD-10 code related to osteoarthritis. For full forecast detail, please see the accompanying methodology documentation.
Sg2 understands that trusts will have access to more up-to-date data sources and we are happy to work with you to understand how individualised data sets influence the forecast output.
^Bed days savings are derived by calculating the annual differential between bed days as predicted by each of the population and Sg2 modeling strategies and multiplying this bed day difference by £400, an estimate of cost for a 24-hour stay on an NHS general or surgical ward. Cumulative bed days savings calculations sum the above annual calculations across 10 years.

The Impact of Change in Primary Hip and Knee Replacement

Drivers of change including the 2011-12 best practice tariff on future bed days and savings, PCTs

National Benchmarks
2009-10 ALOS
6.2

PCT	2009-10 ALOS	2009-10 Spells	Forecast Method	2009 Bed Days	2014 Bed Days	2019 Bed Days	Cumulative 10-Year Savings^
Hampshire PCT	6.4	2,964	Population-Based	18,890	21,004	23,284	£18,273,962
			Sg2 IoC™	18,890	15,853	17,150	
Devon PCT	5.6	2,858	Population-Based	15,922	17,505	19,385	£15,351,374
			Sg2 IoC™	15,922	13,180	14,237	
Hertfordshire PCT	6.9	2,291	Population-Based	15,641	16,847	18,365	£14,510,259
			Sg2 IoC™	15,641	12,736	13,557	
West Kent PCT	8.4	1,688	Population-Based	14,249	15,551	16,993	£14,102,782
			Sg2 IoC™	14,249	11,567	12,290	
Lincolnshire Teaching PCT	6.1	2,222	Population-Based	13,556	15,094	16,762	£13,207,456
			Sg2 IoC™	13,556	11,376	12,322	
West Sussex PCT	6.4	2,083	Population-Based	13,397	14,590	16,039	£12,735,563
			Sg2 IoC™	13,397	10,991	11,787	
Surrey PCT	5.7	2,370	Population-Based	13,546	14,541	15,877	£12,673,575
			Sg2 IoC™	13,546	10,956	11,668	
Derbyshire County PCT	6.1	2,177	Population-Based	13,172	14,566	16,009	£12,569,748
			Sg2 IoC™	13,172	11,013	11,816	
North Yorkshire And York PCT	5.9	2,167	Population-Based	12,829	14,127	15,625	£12,342,791
			Sg2 IoC™	12,829	10,649	11,489	
Nottinghamshire County Teaching PCT	6.1	1,951	Population-Based	11,917	12,959	14,191	£11,204,920
			Sg2 IoC™	11,917	9,791	10,465	
Gloucestershire PCT	6.3	1,673	Population-Based	10,464	11,508	12,698	£10,102,735
			Sg2 IoC™	10,464	8,658	9,316	
Northamptonshire Teaching PCT	6.6	1,518	Population-Based	10,019	11,385	12,825	£9,888,688
			Sg2 IoC™	10,019	8,610	9,471	
Cumbria Teaching PCT	6.4	1,453	Population-Based	9,369	10,239	11,182	£9,021,632
			Sg2 IoC™	9,369	7,684	8,180	
Cornwall And Isles Of Scilly PCT	5.8	1,587	Population-Based	9,278	10,221	11,161	£8,968,293
			Sg2 IoC™	9,278	7,681	8,176	
Somerset PCT	5.5	1,639	Population-Based	9,076	10,108	11,194	£8,902,612
			Sg2 IoC™	9,076	7,601	8,203	
Eastern And Coastal Kent PCT	5.2	1,733	Population-Based	8,984	9,945	10,979	£8,649,425
			Sg2 IoC™	8,984	7,505	8,085	
South Staffordshire PCT	5.8	1,523	Population-Based	8,802	9,826	10,848	£8,512,846
			Sg2 IoC™	8,802	7,423	7,998	
Norfolk PCT	6.2	1,386	Population-Based	8,642	9,531	10,557	£8,363,436
			Sg2 IoC™	8,642	7,175	7,751	
Wiltshire PCT	6.5	1,286	Population-Based	8,412	9,429	10,555	£8,314,333
			Sg2 IoC™	8,412	7,094	7,745	
Suffolk PCT	5.3	1,504	Population-Based	8,018	9,049	10,170	£8,016,289
			Sg2 IoC™	8,018	6,800	7,450	
Worcestershire PCT	5.5	1,504	Population-Based	8,270	9,150	10,109	£7,997,080
			Sg2 IoC™	8,270	6,895	7,430	
Shropshire County PCT	6.8	1,161	Population-Based	7,848	8,773	9,671	£7,687,953
			Sg2 IoC™	7,848	6,603	7,100	
Warwickshire PCT	5.3	1,460	Population-Based	7,703	8,582	9,401	£7,466,654
			Sg2 IoC™	7,703	6,469	6,912	
Cambridgeshire PCT	5.5	1,341	Population-Based	7,415	8,372	9,425	£7,397,876
			Sg2 IoC™	7,415	6,299	6,915	
Dorset PCT	5.3	1,417	Population-Based	7,486	8,211	9,020	£7,283,180
			Sg2 IoC™	7,486	6,156	6,588	

The Impact of Change in Primary Hip and Knee Replacement

Drivers of change including the 2011-12 best practice tariff on future bed days and savings, PCTs, cont.

National Benchmarks
2009-10 ALOS
6.2

PCT	2009-10 ALOS	2009-10 Spells	Forecast Method	2009 Bed Days	2014 Bed Days	2019 Bed Days	Cumulative 10-Year Savings^
County Durham PCT	6.1	1,294	Population-Based	7,942	8,531	9,236	£7,247,887
			Sg2 IoC™	7,942	6,474	6,849	
Sheffield PCT	6.8	1,150	Population-Based	7,790	8,116	8,588	£6,903,641
			Sg2 IoC™	7,790	6,145	6,348	
East Sussex Downs And Weald PCT	5.4	1,320	Population-Based	7,116	7,823	8,581	£6,789,112
			Sg2 IoC™	7,116	5,902	6,318	
Leicestershire County And Rutland PCT	5.1	1,373	Population-Based	7,026	7,854	8,707	£6,777,355
			Sg2 IoC™	7,026	5,942	6,431	
Leeds PCT	5.5	1,345	Population-Based	7,386	7,759	8,209	£6,614,882
			Sg2 IoC™	7,386	5,868	6,061	
Oxfordshire PCT	6.6	931	Population-Based	6,173	6,781	7,478	£6,121,940
			Sg2 IoC™	6,173	5,055	5,424	
North Lancashire Teaching PCT	7.0	917	Population-Based	6,460	6,962	7,517	£6,093,403
			Sg2 IoC™	6,460	5,234	5,511	
Central And Eastern Cheshire PCT	5.7	1,085	Population-Based	6,237	6,878	7,588	£6,055,841
			Sg2 IoC™	6,237	5,170	5,561	
Great Yarmouth And Waveney PCT	8.1	737	Population-Based	5,939	6,531	7,197	£5,698,491
			Sg2 IoC™	5,939	4,922	5,293	
Buckinghamshire PCT	6.4	928	Population-Based	5,895	6,491	7,146	£5,631,142
			Sg2 IoC™	5,895	4,902	5,268	
Central Lancashire PCT	6.7	882	Population-Based	5,892	6,425	6,962	£5,540,810
			Sg2 IoC™	5,892	4,852	5,131	
Mid Essex PCT	5.7	977	Population-Based	5,562	6,330	7,084	£5,486,976
			Sg2 IoC™	5,562	4,786	5,229	
Bedfordshire PCT	5.8	939	Population-Based	5,474	6,160	6,905	£5,385,728
			Sg2 IoC™	5,474	4,646	5,082	
East Riding Of Yorkshire PCT	6.0	892	Population-Based	5,366	6,059	6,717	£5,258,347
			Sg2 IoC™	5,366	4,576	4,952	
Kirklees PCT	6.7	840	Population-Based	5,645	6,104	6,669	£5,181,268
			Sg2 IoC™	5,645	4,636	4,951	
Birmingham East And North PCT	7.2	803	Population-Based	5,817	5,874	6,074	£4,897,552
			Sg2 IoC™	5,817	4,467	4,516	
Berkshire West PCT	6.0	841	Population-Based	5,063	5,601	6,176	£4,891,678
			Sg2 IoC™	5,063	4,221	4,539	
Northumberland Care Trust	4.8	1,056	Population-Based	5,091	5,568	6,154	£4,843,848
			Sg2 IoC™	5,091	4,202	4,534	
Bournemouth And Poole Teaching PCT	5.5	975	Population-Based	5,360	5,530	5,869	£4,768,677
			Sg2 IoC™	5,360	4,168	4,315	
Bradford And Airedale Teaching PCT	5.8	906	Population-Based	5,223	5,562	5,962	£4,747,204
			Sg2 IoC™	5,223	4,208	4,404	
South West Essex PCT	6.5	757	Population-Based	4,915	5,303	5,861	£4,676,791
			Sg2 IoC™	4,915	3,986	4,294	
Dudley PCT	5.3	978	Population-Based	5,137	5,445	5,764	£4,651,718
			Sg2 IoC™	5,137	4,116	4,255	
Wakefield District PCT	6.3	788	Population-Based	4,988	5,405	5,914	£4,623,727
			Sg2 IoC™	4,988	4,098	4,382	
Liverpool PCT	5.9	871	Population-Based	5,159	5,303	5,502	£4,527,535
			Sg2 IoC™	5,159	4,004	4,054	
East Lancashire Teaching PCT	7.5	644	Population-Based	4,844	5,262	5,748	£4,521,586
			Sg2 IoC™	4,844	3,981	4,247	

The Impact of Change in Primary Hip and Knee Replacement

Drivers of change including the 2011-12 best practice tariff on future bed days and savings, PCTs, cont.

National Benchmarks
2009-10 ALOS
6.2

PCT	2009-10 ALOS	2009-110 Spells	Forecast Method	2009 Bed Days	2014 Bed Days	2019 Bed Days	Cumulative 10-Year Savings^
North East Essex PCT	6.2	752	Population-Based	4,667	5,182	5,770	£4,504,787
			Sg2 IoC™	4,667	3,915	4,252	
Wirral PCT	6.4	778	Population-Based	4,983	5,219	5,473	£4,479,637
			Sg2 IoC™	4,983	3,939	4,031	
Manchester PCT	8.0	655	Population-Based	5,239	5,369	5,514	£4,458,761
			Sg2 IoC™	5,239	4,079	4,095	
Coventry Teaching PCT	7.3	701	Population-Based	5,127	5,297	5,540	£4,412,199
			Sg2 IoC™	5,127	4,035	4,127	
South East Essex PCT	5.8	798	Population-Based	4,667	5,073	5,529	£4,402,321
			Sg2 IoC™	4,667	3,827	4,069	
Ashton, Leigh And Wigan PCT	6.7	693	Population-Based	4,652	5,102	5,462	£4,367,071
			Sg2 IoC™	4,652	3,857	4,030	
Halton And St Helens PCT	7.0	673	Population-Based	4,685	4,997	5,378	£4,258,334
			Sg2 IoC™	4,685	3,786	3,981	
Bristol PCT	6.9	673	Population-Based	4,676	4,872	5,132	£4,206,204
			Sg2 IoC™	4,676	3,665	3,765	
Plymouth Teaching PCT	6.4	715	Population-Based	4,554	4,862	5,183	£4,151,024
			Sg2 IoC™	4,554	3,677	3,826	
Stockport PCT	7.4	607	Population-Based	4,519	4,795	5,123	£4,135,649
			Sg2 IoC™	4,519	3,618	3,773	
South Birmingham PCT	6.3	739	Population-Based	4,687	4,770	4,941	£4,052,269
			Sg2 IoC™	4,687	3,617	3,659	
Berkshire East PCT	6.2	687	Population-Based	4,255	4,634	5,072	£3,959,087
			Sg2 IoC™	4,255	3,510	3,753	
Sandwell PCT	6.3	714	Population-Based	4,476	4,646	4,864	£3,911,878
			Sg2 IoC™	4,476	3,522	3,602	
West Essex PCT	7.0	592	Population-Based	4,150	4,467	4,825	£3,892,729
			Sg2 IoC™	4,150	3,364	3,544	
Doncaster PCT	5.4	793	Population-Based	4,313	4,610	4,910	£3,873,323
			Sg2 IoC™	4,313	3,501	3,644	
Walsall Teaching PCT	7.1	619	Population-Based	4,408	4,628	4,787	£3,843,850
			Sg2 IoC™	4,408	3,513	3,550	
Bexley Care Trust	8.1	503	Population-Based	4,078	4,310	4,551	£3,798,503
			Sg2 IoC™	4,078	3,225	3,315	
Bromley PCT	7.3	560	Population-Based	4,078	4,292	4,595	£3,721,546
			Sg2 IoC™	4,078	3,229	3,372	
Rotherham PCT	6.0	649	Population-Based	3,884	4,180	4,495	£3,578,758
			Sg2 IoC™	3,884	3,163	3,322	
North Somerset PCT	6.7	525	Population-Based	3,535	3,970	4,479	£3,567,906
			Sg2 IoC™	3,535	2,971	3,263	
Barnsley PCT	5.9	650	Population-Based	3,848	4,203	4,572	£3,563,573
			Sg2 IoC™	3,848	3,193	3,394	
Sefton PCT	5.7	696	Population-Based	3,951	4,132	4,336	£3,551,636
			Sg2 IoC™	3,951	3,120	3,196	
Western Cheshire PCT	5.8	646	Population-Based	3,736	4,027	4,278	£3,447,698
			Sg2 IoC™	3,736	3,040	3,153	
Sutton And Merton PCT	5.8	656	Population-Based	3,794	3,996	4,304	£3,444,087
			Sg2 IoC™	3,794	3,019	3,173	
Derby City PCT	6.0	633	Population-Based	3,796	4,022	4,286	£3,410,057
			Sg2 IoC™	3,796	3,045	3,170	

The Impact of Change in Primary Hip and Knee Replacement

Drivers of change including the 2011-12 best practice tariff on future bed days and savings, PCTs, cont.

National Benchmarks
2009-10 ALOS
6.2

PCT	2009-10 ALOS	2009-10 Spells	Forecast Method	2009 Bed Days	2014 Bed Days	2019 Bed Days	Cumulative 10-Year Savings^
Tameside And Glossop PCT	6.8	517	Population-Based	3,541	3,868	4,216	£3,313,674
			Sg2 IoC™	3,541	2,929	3,118	
Medway PCT	7.0	484	Population-Based	3,386	3,721	4,140	£3,278,219
			Sg2 IoC™	3,386	2,799	3,037	
North Tyneside PCT	5.6	636	Population-Based	3,576	3,804	4,051	£3,204,830
			Sg2 IoC™	3,576	2,889	3,006	
Herefordshire PCT	6.8	470	Population-Based	3,218	3,590	4,028	£3,199,793
			Sg2 IoC™	3,218	2,694	2,944	
Trafford PCT	7.7	461	Population-Based	3,548	3,727	3,916	£3,198,542
			Sg2 IoC™	3,548	2,816	2,888	
Solihull Care Trust	6.5	542	Population-Based	3,497	3,746	4,020	£3,132,176
			Sg2 IoC™	3,497	2,852	2,994	
Oldham PCT	6.6	520	Population-Based	3,431	3,651	3,876	£3,085,334
			Sg2 IoC™	3,431	2,770	2,874	
Bolton PCT	7.5	454	Population-Based	3,387	3,625	3,844	£3,067,844
			Sg2 IoC™	3,387	2,748	2,848	
Wolverhampton City PCT	6.4	558	Population-Based	3,551	3,658	3,820	£3,048,200
			Sg2 IoC™	3,551	2,784	2,843	
Sunderland Teaching PCT	5.2	649	Population-Based	3,381	3,548	3,851	£3,015,793
			Sg2 IoC™	3,381	2,695	2,860	
Isle Of Wight NHS PCT	6.3	495	Population-Based	3,106	3,436	3,811	£2,963,990
			Sg2 IoC™	3,106	2,599	2,814	
Brighton And Hove City PCT	6.5	528	Population-Based	3,420	3,420	3,548	£2,939,170
			Sg2 IoC™	3,420	2,578	2,608	
Heywood, Middleton And Rochdale PCT	7.1	448	Population-Based	3,178	3,408	3,601	£2,907,383
			Sg2 IoC™	3,178	2,575	2,656	
Barnet PCT	7.5	420	Population-Based	3,144	3,351	3,698	£2,891,406
			Sg2 IoC™	3,144	2,540	2,738	
Nottingham City PCT	5.9	561	Population-Based	3,336	3,365	3,544	£2,868,985
			Sg2 IoC™	3,336	2,550	2,622	
Telford And Wrekin PCT	7.4	401	Population-Based	2,959	3,335	3,668	£2,861,336
			Sg2 IoC™	2,959	2,526	2,714	
Swindon PCT	6.4	456	Population-Based	2,924	3,207	3,679	£2,829,457
			Sg2 IoC™	2,924	2,422	2,713	
Bury PCT	7.4	415	Population-Based	3,053	3,236	3,506	£2,815,698
			Sg2 IoC™	3,053	2,439	2,577	
South Gloucestershire PCT	6.3	454	Population-Based	2,860	3,147	3,446	£2,778,501
			Sg2 IoC™	2,860	2,362	2,520	
Havering PCT	5.4	552	Population-Based	3,002	3,176	3,350	£2,699,669
			Sg2 IoC™	3,002	2,405	2,478	
North Staffordshire PCT	5.7	488	Population-Based	2,782	3,026	3,271	£2,655,483
			Sg2 IoC™	2,782	2,271	2,393	
Torbay Care Trust	4.7	601	Population-Based	2,797	3,034	3,315	£2,649,416
			Sg2 IoC™	2,797	2,286	2,436	
Hastings And Rother PCT	4.4	629	Population-Based	2,799	3,053	3,369	£2,640,387
			Sg2 IoC™	2,799	2,307	2,486	
North Lincolnshire PCT	6.3	424	Population-Based	2,690	2,983	3,289	£2,628,240
			Sg2 IoC™	2,690	2,242	2,410	
Warrington PCT	6.3	433	Population-Based	2,736	3,033	3,318	£2,625,670
			Sg2 IoC™	2,736	2,290	2,444	

The Impact of Change in Primary Hip and Knee Replacement

Drivers of change including the 2011-12 best practice tariff on future bed days and savings, PCTs, cont.

National Benchmarks
2009-10 ALOS
6.2

PCT	2009-10 ALOS	2009-10 Spells	Forecast Method	2009 Bed Days	2014 Bed Days	2019 Bed Days	Cumulative 10-Year Savings^
Newcastle PCT	5.7	531	Population-Based	3,028	3,127	3,359	£2,623,521
			Sg2 IoC™	3,028	2,376	2,494	
Croydon PCT	5.5	507	Population-Based	2,797	2,991	3,208	£2,556,949
			Sg2 IoC™	2,797	2,262	2,368	
Ealing PCT	7.3	405	Population-Based	2,942	3,024	3,317	£2,547,923
			Sg2 IoC™	2,942	2,303	2,470	
Bath And North East Somerset PCT	6.3	431	Population-Based	2,733	2,935	3,075	£2,519,108
			Sg2 IoC™	2,733	2,211	2,260	
Leicester City PCT	6.1	470	Population-Based	2,869	2,995	3,201	£2,517,009
			Sg2 IoC™	2,869	2,281	2,384	
Greenwich Teaching PCT	8.1	354	Population-Based	2,871	2,927	3,037	£2,466,986
			Sg2 IoC™	2,871	2,220	2,250	
Hull Teaching PCT	6.8	384	Population-Based	2,612	2,726	2,950	£2,371,816
			Sg2 IoC™	2,612	2,051	2,166	
Lewisham PCT	8.3	321	Population-Based	2,675	2,767	3,006	£2,354,425
			Sg2 IoC™	2,675	2,107	2,238	
South Tyneside PCT	6.6	387	Population-Based	2,553	2,647	2,876	£2,273,449
			Sg2 IoC™	2,553	2,004	2,126	
Gateshead PCT	5.0	509	Population-Based	2,548	2,621	2,755	£2,229,734
			Sg2 IoC™	2,548	1,985	2,037	
Stoke On Trent PCT	6.0	406	Population-Based	2,416	2,555	2,721	£2,193,201
			Sg2 IoC™	2,416	1,929	2,005	
Salford PCT	6.1	413	Population-Based	2,516	2,576	2,733	£2,191,761
			Sg2 IoC™	2,516	1,951	2,021	
Hillingdon PCT	6.0	403	Population-Based	2,402	2,521	2,802	£2,175,342
			Sg2 IoC™	2,402	1,910	2,075	
Luton PCT	6.3	387	Population-Based	2,430	2,567	2,718	£2,159,389
			Sg2 IoC™	2,430	1,954	2,023	
Portsmouth City Teaching PCT	6.2	381	Population-Based	2,345	2,479	2,660	£2,101,871
			Sg2 IoC™	2,345	1,881	1,971	
Calderdale PCT	6.4	343	Population-Based	2,193	2,417	2,633	£2,100,435
			Sg2 IoC™	2,193	1,821	1,935	
Milton Keynes PCT	5.3	365	Population-Based	1,939	2,267	2,668	£2,021,819
			Sg2 IoC™	1,939	1,706	1,960	
Lambeth PCT	8.2	279	Population-Based	2,281	2,378	2,550	£2,004,850
			Sg2 IoC™	2,281	1,809	1,897	
Bassetlaw PCT	5.8	350	Population-Based	2,018	2,273	2,526	£1,964,788
			Sg2 IoC™	2,018	1,719	1,865	
Heart Of Birmingham Teaching PCT	7.1	316	Population-Based	2,241	2,325	2,418	£1,881,767
			Sg2 IoC™	2,241	1,785	1,819	
Southwark PCT	8.4	254	Population-Based	2,137	2,230	2,464	£1,864,319
			Sg2 IoC™	2,137	1,703	1,842	
Enfield PCT	6.7	305	Population-Based	2,058	2,152	2,274	£1,832,178
			Sg2 IoC™	2,058	1,628	1,679	
Knowsley PCT	6.5	307	Population-Based	1,997	2,074	2,240	£1,798,202
			Sg2 IoC™	1,997	1,566	1,651	
Southampton City PCT	6.9	300	Population-Based	2,063	2,153	2,279	£1,792,384
			Sg2 IoC™	2,063	1,641	1,699	
Redbridge PCT	6.3	321	Population-Based	2,035	2,101	2,252	£1,766,858
			Sg2 IoC™	2,035	1,600	1,676	

The Impact of Change in Primary Hip and Knee Replacement

Drivers of change including the 2011-12 best practice tariff on future bed days and savings, PCTs, cont.

National Benchmarks
2009-10 ALOS
6.2

PCT	2009-10 ALOS	2009-10 Spells	Forecast Method	2009 Bed Days	2014 Bed Days	2019 Bed Days	Cumulative 10-Year Savings^
Peterborough PCT	5.7	334	Population-Based	1,903	2,083	2,276	£1,762,105
			Sg2 IoC™	1,903	1,585	1,693	
Harrow PCT	6.5	294	Population-Based	1,922	2,093	2,248	£1,747,184
			Sg2 IoC™	1,922	1,591	1,672	
Blackpool PCT	6.1	320	Population-Based	1,966	2,016	2,102	£1,721,220
			Sg2 IoC™	1,966	1,522	1,549	
Wandsworth PCT	6.5	318	Population-Based	2,080	2,109	2,130	£1,710,613
			Sg2 IoC™	2,080	1,607	1,588	
Brent Teaching PCT	6.3	317	Population-Based	2,003	2,117	2,142	£1,710,116
			Sg2 IoC™	2,003	1,618	1,603	
North East Lincolnshire Care Trust Plus	5.6	329	Population-Based	1,844	1,970	2,082	£1,703,402
			Sg2 IoC™	1,844	1,483	1,529	
Waltham Forest PCT	6.4	311	Population-Based	1,994	2,040	2,208	£1,698,415
			Sg2 IoC™	1,994	1,556	1,647	
Stockton-On-Tees Teaching PCT	6.1	291	Population-Based	1,774	1,956	2,108	£1,648,243
			Sg2 IoC™	1,774	1,484	1,563	
Redcar And Cleveland PCT	6.1	287	Population-Based	1,754	1,877	1,993	£1,608,879
			Sg2 IoC™	1,754	1,417	1,468	
Blackburn With Darwen Teaching Care Trust Plus	7.1	242	Population-Based	1,711	1,860	2,031	£1,605,847
			Sg2 IoC™	1,711	1,405	1,498	
Hounslow PCT	5.9	293	Population-Based	1,722	1,846	1,976	£1,537,704
			Sg2 IoC™	1,722	1,406	1,471	
Newham PCT	9.5	193	Population-Based	1,824	1,892	1,910	£1,535,394
			Sg2 IoC™	1,824	1,443	1,425	
Darlington PCT	6.3	258	Population-Based	1,632	1,744	1,881	£1,527,425
			Sg2 IoC™	1,632	1,313	1,380	
Kingston PCT	5.4	298	Population-Based	1,603	1,766	1,918	£1,498,257
			Sg2 IoC™	1,603	1,338	1,420	
Camden PCT	7.3	217	Population-Based	1,584	1,677	1,760	£1,415,118
			Sg2 IoC™	1,584	1,272	1,303	
Haringey Teaching PCT	7.1	213	Population-Based	1,520	1,567	1,687	£1,352,131
			Sg2 IoC™	1,520	1,185	1,247	
Hartlepool PCT	5.3	280	Population-Based	1,473	1,590	1,734	£1,346,432
			Sg2 IoC™	1,473	1,210	1,291	
City And Hackney Teaching PCT	8.3	166	Population-Based	1,373	1,440	1,523	£1,182,694
			Sg2 IoC™	1,373	1,101	1,140	
Middlesbrough PCT	6.3	199	Population-Based	1,248	1,313	1,390	£1,120,712
			Sg2 IoC™	1,248	994	1,028	
Richmond And Twickenham PCT	5.2	215	Population-Based	1,124	1,239	1,380	£1,096,288
			Sg2 IoC™	1,124	929	1,008	
Barking And Dagenham PCT	5.6	237	Population-Based	1,338	1,274	1,359	£1,063,205
			Sg2 IoC™	1,338	971	1,013	
Islington PCT	7.1	175	Population-Based	1,237	1,238	1,302	£1,047,615
			Sg2 IoC™	1,237	940	965	
Westminster PCT	6.7	167	Population-Based	1,113	1,182	1,295	£1,028,125
			Sg2 IoC™	1,113	892	953	
Tower Hamlets PCT	7.6	153	Population-Based	1,164	1,149	1,195	£958,465
			Sg2 IoC™	1,164	876	890	

The Impact of Change in Primary Hip and Knee Replacement

Drivers of change including the 2011-12 best practice tariff on future bed days and savings, PCTs, cont.

National Benchmarks
2009-10 ALOS
6.2

PCT	2009-10 ALOS	2009-10 Spells	Forecast Method	2009 Bed Days	2014 Bed Days	2019 Bed Days	Cumulative 10-Year Savings^
Hammersmith And Fulham PCT	6.9	150	Population-Based	1,036	1,041	1,065	£908,096
			Sg2 IoC™	1,036	783	782	
Kensington And Chelsea PCT	7.1	134	Population-Based	948	1,031	1,154	£899,881
			Sg2 IoC™	948	777	849	

SHAs= Strategic Health Authorities; ALOS = Average Length Of Stay; IoC™ = Impact of Change
Baseline figures for primary total hip and knee replacement utilisation are taken from the 2009-10 HES feed (the latest full year data set to be published). Baseline figures include all NHS-funded care, including that supplied by private providers.
For the purposes of illustrating a defined care pathway, the baseline utilisation for this forecast is derived by identifying spells defined by a dominant procedure OPCS-4 code related to primary hip or knee replacement and a primary diagnosis ICD-10 code related to osteoarthritis. For full forecast detail, please see the accompanying methodology documentation.
Sg2 understands that trusts will have access to more up-to-date data sources and we are happy to work with you to understand how individualised data sets influence the forecast output.
^Bed days savings are derived by calculating the annual differential between bed days as predicted by each of the population and Sg2 modeling strategies and multiplying this bed day difference by £400, an estimate of cost for a 24-hour stay on an NHS general or surgical ward. Cumulative bed days savings calculations sum the above annual calculations across 10 years.

Global Improvement Guide

Optimising Length of Stay for Total Joint Replacement Patients

Improvement Imperative

It has long been recognised that unnecessarily prolonged lengths of stay for total joint replacement (TJR) procedures compromise quality, increase risk of hospital acquired infection, and drive up costs. Additionally, as an ageing demographic increases demand for these procedures—procedure demand is forecasted to grow 18% over the next decade—financial constraints across the NHS will require providers to become more efficient in the use of existing capacity. As England's average length of stay (ALOS) for TJR is variable among providers and is higher than in many comparable health economies, care pathway optimisation should present a path to both improved quality and efficiency. An additional rationale for care pathway optimisation can be found in the new best practice tariff (BPT) for elective primary total hip and knee replacements introduced in the Payment by Results (PbR) Draft Guidance for 2011-12, which is designed to incentivise high quality, cost effective care. For those considering pathway optimisation work, keep in mind:

- Variability in ALOS across providers in England suggests room for improvement.
- High ALOS often results from process and communication breakdowns across the care pathway.
- Utilisation of standardised pathways will improve patient experience and satisfaction, reduce lengths of stay and shorten the post-operative rehabilitation period.
- The ability to achieve safe and less than 3-day stays for select TJR patients suggests that, with proper pain management and post-discharge support, trims beyond current national ALOS are possible without compromising quality.

Using This Guide

TJR LOS	Standard Performer*	Top Performer
England	5.0 days	4.0 days
United States	3.8 days	<3.1 days

Note: Statistics include private providers caring for NHS-funded patients. Standard Performer indicates the median hospital (mean = 6.2 days); Top Performers include those at the 90th percentile or higher.
Sources: Hospital Episode Statistics (HES), The NHS Information Centre for Health and Social Care, 2009-10; Sg2 INSIGHT database, 2010; Sg2 Analysis 2011.

TJR Care Provider	% Pts (2009)	THR ALOS (2003-09)	TKR ALOS (2003-09)
NHS Hospital	66.0%	7.3 days	6.9 days
NHS Centre	5.3%	5.8 days	5.9 days
Private Hospital	23.6%	4.9 days	4.9 days
Private Centre	5.2%	4.5 days	4.4 days

THR = total hip replacement; TKR = total knee replacement.
Note: The ALOS of patients in treatment centres and independent hospitals remain shorter than those treated in NHS hospitals, even after adjustment for age, gender, physical status, prosthesis type and country based on National Joint Registry data for 2009.
Sources: National Joint Registry Annual Report 2010; Sg2 Analysis 2011.

Key Areas of Focus in TJR Care Pathway Optimisation

Optimal performance requires connections across the care pathway. The four, key aspects of good clinical pathways as described in the 2011-12 BPT for primary total hip and knee replacements include:

Pre-Operative Assessment
- including patient education, planning and preparation before admission

→

Structured Peri- and Post-Operative Care
- including pain relief management

→

Early Supervised Mobilisation
- as well as safe discharge

→

Access to Post-Discharge Support
- including clinical advice and outreach rehabilitation

Improvement Options

Option	Overview	Implementation Indicators
Manage Patient Expectations During the Pre-Operative Stage	**Rationale:** Lack of clear, consistent communication with patients about the recovery timetable can hinder timely discharge. **Actions:** ▪ Set realistic patient expectations, educate patients about necessary home preparations, set mobility and discharge goals, and ensure informed decision-making. ▪ Optimise a patient's pre-surgical condition and identify peri-operative risks. ▪ Plan to admit patients on the day of surgery, conduct pre-operative discharge planning and highlight well ahead of admission any special needs that can be proactively managed. ▪ Familiarise patients with post-operative exercises and care plans; assess patient rehabilitation needs and arrange for equipment to be delivered to patient's home pre-admission.	**Cost:** ■ **Time:** ■ **Culture:** ■ **Impact:** ■■
Structure Peri- and Post-Operative Management	**Rationale:** Variability in care practices leads to inefficiency and increases the risk of errors. **Actions:** ▪ Develop standardised care paths for anaesthesia and educate staff about the process. ▪ Establish an education plan for new staff. ▪ Evaluate and optimise surgical techniques.	**Cost:** ■ **Time:** ■ **Culture:** ■■ **Impact:** ■■■
Provide Early Supervised Mobilisation and Safe Discharge	**Rationale:** Early mobilisation can reduce hospital stay and have a positive impact on patient motivation to return to wellness. **Actions:** ▪ Establish a process for pre-operative mobilisation planning. ▪ Ensure multi-disciplinary teams are in place to optimise nutrition, hydration, pain control and plans for early mobilisation—preferably within 24 hours of surgery. ▪ Remove catheters as soon as possible following surgery.	**Cost:** ■ **Time:** ■ **Culture:** ■ **Impact:** ■■■
Offer Structured Plans for Access to Clinical Advice and Support Post-Discharge	**Rationale:** Lack of patient communication and poorly integrated post-discharge and patient recovery planning can prolong length of stay and negatively impact outcomes. **Actions:** ▪ Create mechanisms to identify and prepare patients for individualised levels of post-operative training and support. ▪ Provide a structured pathway to follow-up support and advice.	**Cost:** ■ **Time:** ■ **Culture:** ■■ **Impact:** ■■■

Indicators Key

Cost (facility, technology, staff): ■ = ≤£100K; ■■ = £100K–£500K; ■■■ = £500K+
Time: ■ = 0–6 months; ■■ = 6–18 months; ■■■ = 18+ months
Culture (organisation-wide change management): ■ = limited; ■■ = moderate; ■■■ = significant
Impact: ■ = limited; ■■ = moderate; ■■■ = significant

Shaded options indicate in-depth action plans provided on the following page.

Options: In-depth

Manage Patient Expectations During the Pre-Operative Stage

Actions	Implementation Steps

Set Realistic Patient Expectations	▪ Educate patients about what to expect leading up to and following surgery.
	  ▪ Consider hosting elective orthopaedic pre-admission information sessions open to patients, relatives and carers.
	  ▪ Consider organising a joint school, designed to deliver group-based, in-depth education to patients on facets of the care pathway delivered by nurses, physiotherapists, occupational therapists, surgeons and/or anaesthetists.
	▪ Set patient-tailored goals related to mobility and discharge. For example:
	  ▪ "On the day of surgery, you will bear weight with assistance from the physical therapist."
	  ▪ "You will go home on day 3 unless an unforeseen reason necessitates a longer hospital stay."
	▪ Provide a clear to-do list for patients to follow when preparing their home.
	  ▪ The list should include directions to line up a friend or family member to stay with them for at least the first few days post-discharge.

Optimise Pre-Surgical Condition and Identify Peri-Operative Risks	▪ Ensure a robust pre-operative assessment and communicate an estimate of individualised risk to patients. ▪ Leverage simple tools, such as the South Devon Healthcare NHS Trust "traffic light" assessment which pre-operatively triages patients based on risk factors related to elective hip and knee replacement assessment. (See resources section, last page.)
Familiarise Patients with Post-Op Exercises	▪ Encourage patients to begin rehab exercises before surgery to gain strength/flexibility and to develop a routine. ▪ Provide adaptive equipment to patients during pre-operative education classes so they can practice at home prior to surgery. ▪ Deliver and install rehabilitation equipment to the home pre-hospitalisation.

Offer Structured Plans for Access to Clinical Advice and Support Post-Discharge

Actions	Implementation Steps
Create Mechanisms to Identify, Prepare and Support	▪ Revisit pre-operative discharge plans and ensure any special needs affecting a patient's continued care outside of the hospital environment have been, and will continue to be, managed.
Provide a Structured Pathway to Follow-up Support and Advice	▪ Keep open communication with GPs, community nurses and social care to ensure continued care, education and on-going therapy are seamless. ▪ Ensure clinical care teams across the continuum are aware of communication channels available for advice and guidance. ▪ Consider a 24-hour helpline staffed by ward or community nurses, and/or offer calls to patients at pre-scheduled intervals following discharge. ▪ Explore collaborative community-based partnerships for follow-up support. ▪ Consider turnkey enhanced supported discharge models such as those provided by Healthcare at Home Ltd.

Leadership Considerations

- The organisation's leaders and key stakeholders must approach efforts to optimise length of stay as a means of elevating clinical quality and improving the patient experience. Providing evidence of how care pathway optimisation provides a high quality service for patients will help ensure stakeholder commitment.
- Care pathway optimisation and resulting length of stay reductions will be the result of joined-up working practices led by a coordinated, multi-disciplinary team. Secure and engage key members:
    - Executive leadership, whose support drives progress and whose visibility on the short- and long-term implications of care pathway optimisation, is critical. Service and management leadership will also play a strong supportive role.
    - Physicians and clinical staff must be involved from the beginning in any efforts to standardise and improve care processes. Surgeons, anaesthetists, GPs, nurses, ward staff, junior doctors, physiotherapists, dieticians, and pharmacists all have roles in the process; many successful redesign efforts have clinical staff champion the process.
    - Local community health teams, including social services, ambulance services, primary care, and other health and social care partnerships must be integrated. Develop a shared understanding of roles within the care pathway, and engage commissioners in conversations to secure local post-discharge support.
    - As always, patients provide valuable insight and should be an active part of redesign efforts.
- Understanding your current pathway is the first step to pathway redesign. Once this understanding is achieved, conduct gap analyses to identify and prioritise the areas most in need of optimisation efforts.
- Set goals and repeatedly measure progress. Data on length of stay variation provide a good starting point to objectively assess current processes. Incorporating patient experience measures (including clinical outcomes, return to normal rate, and related patient reported outcome measures (PROMs)), readmission rates and compliance measures with specific facets of the care pathway will ensure that length of stay reductions are not gained through reductions in care quality.
- Ensure sustainability through continued data review and team communication.

Operational Considerations

- Length of stay solutions offered in this guide are accessible to providers willing to optimise a pathway which crosses the entire care continuum. Consider a facilitator or coordinator role to take ownership of ongoing management of the breadth and depth of work ahead.
- Visit recognised centres of excellence to learn and avoid common pitfalls during implementation.
- High-volume programmes will face additional challenges related to weekend care and discharge.
    - Physical therapy and nurse staffing levels need to be adequate to support patients who remain over the weekend.
    - Communication between the primary consultant and on-call consultants should be addressed to prevent prolonged stay in the hospital.
    - Agreed-upon home care and transfer processes should have provisions for weekend discharge/transfer.

Resources

Related Sg2 Resources

- Innovations Review: Rapid Recovery Total Joint Programs. May 2009
- Service Kit for Primary Hip and Knee Care Pathway Redesign. February 2011

Other Resources

- The British Orthopedic Association's guides to good practice
- The NHS Institute's report: *Focus on: Primary Hip and Knee Replacement*
- The Enhanced Recovery Programme (including the "Traffic Tool")
- Map of Medicine
- Healthcare at Home Ltd's *Hospital Care at Home,* February 2010

Global Practice Summary

Bringing You Good Ideas from Around the World

Musgrave Park Hospital—Belfast, Northern Ireland, UK **February 2011**

Efficient Surgical Process Increases TJR Throughput

Improvement Initiative

An expanding and active elderly population demanding timely, safe and effective orthopaedic care is putting pressure on health care organisations to provide high-quality and efficient orthopaedic services. Standardising the total joint replacement (TJR) process, while focusing on improving operating theatre utilisation, can reduce length of stay (LOS), increase volumes, improve patient outcomes and reduce costs.

Musgrave Park Hospital (MPH) in Belfast, Northern Ireland, with nearly 2,500 TJRs annually, has one of the most productive routine elective primary joint programmes in Europe. More than 1,500 TJRs are performed in just one of the programme's units annually, with an average LOS of 3 days for total hip replacements (THRs) and total knee replacements (TKRs). The highly active unit specialises in THRs and TKRs, with 2 orthopaedic consultant surgeons being responsible for two thirds of all TJRs performed throughout the programme. High throughput is achieved by optimising operating theatre resources combined with an established rapid recovery programme.

Programme Components

Focusing on patient selection and rapid discharge optimises inpatient care. Efficient care characterises the entire care pathway. The following are key enablers of efficiency and high-operating theatre throughput:

- Patient selection reduces surgical complications. Patients are triaged in the community by a general practitioner (GP) and physiotherapist who have been trained in identifying appropriate orthopaedic referrals. Referred patients are then examined individually by orthopaedic surgeons.
- During the pre-operative assessment, referred patients are examined by either the consultant or anaesthetic nurse specialist using detailed proformas. Patients that are unfit for surgery (eg, patients with low haemoglobin levels) are referred back to their GPs with medical advice and specific targets to qualify for future TJR.
- Patient education about surgery, peri-operative care and post-operative rehabilitation takes place during individual pre-operative assessment classes delivered by a dedicated nurse, a physiotherapist and a member of the anaesthetics team.

Musgrave Park Hospital Snapshot

- Regional specialist hospital
- Orthopaedic unit created in 1947
- 38 orthopaedic consultant surgeons
- 120 orthopaedic inpatient beds
- 8 dedicated laminar flow theatres

- On the day of surgery, the surgical coordinator is responsible for allocating patients to specific theatre lists and for identifying and contacting patients to replace cancellations. For same-day cancellations, the surgical schedule is moved forward to maximise operating theatre utilisation. Replacement criteria focus on post-operative care requirements rather than the actual surgical procedure, which avoids disruptions to post-operative care preparations.
- Optimised and standardised anaesthetics and pain management protocols ensure rapid mobilisation and post-op recovery.[1]
- Rapid recovery and physiotherapy start on the first post-operative day. Patients are mobilised full weight-bearing and functionally assessed with a focus on being discharged once they are capable of independently moving with crutches or a frame. Gait education is provided both pre-op and during rapid recovery. Once discharged, patients are advised to gradually progress to one and eventually no help from aids as mobility improves. Outpatient physiotherapy is not generally prescribed. Discharged patients have access to a dedicated telephone helpline directly to the unit. Staff members follow up by phone at 5 days to evaluate pain and swelling, and outcomes are measured in post-operative reviews at 6 weeks for THRs, 3 months for TKRs and 1 year and 10 years for both.

Implementation Considerations

High throughput relies on sufficient capacity and smart use of resources. Adequate capacity and resources to focus on routine elective TJR in selected patients are essential in achieving high throughput. Disruptions due to capacity restraints or unplanned trauma cases are avoided since the unit is entirely dedicated to elective cases. The work flow for TJR surgical team members is as follows:

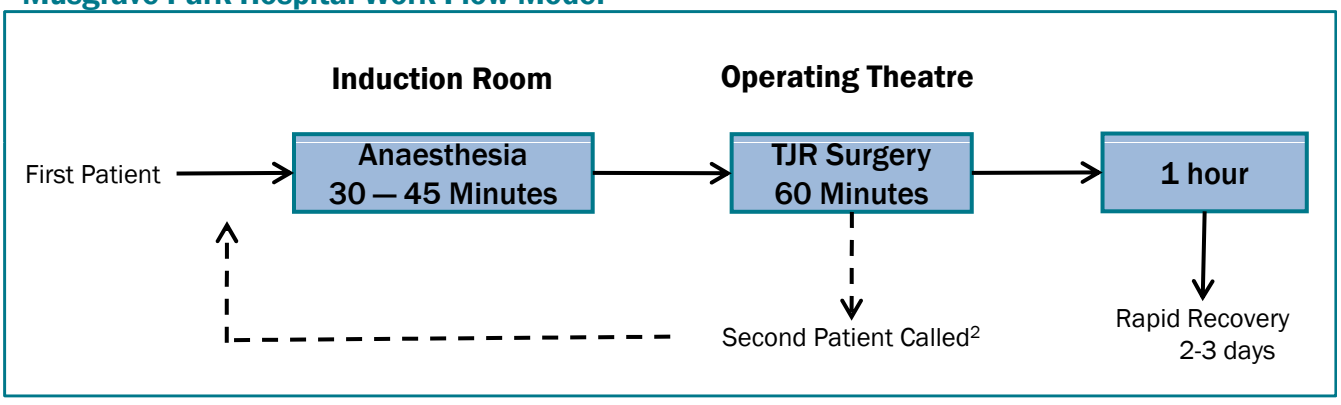
- The availability of implants is checked by the surgical coordinator before surgery to avoid delays. All implants used during the shift are kept in an adjacent storage area.
- The patient is prepared 30 minutes before the first operation in an induction room adjacent to the operating theatre by the anaesthetists in charge.
- Once the patient is transferred into the operating theatre, the induction team will call the next patient for anaesthesia induction.
- Within the operating theatre, the surgeon and team members stand by to immediately start surgery. Time-outs before knife-to-skin contact ensure that errors are minimised.
- Post surgery, the patient is transferred to an adjacent recovery room. While the operating theatre is cleaned up, the surgical coordinator positions the next patient in the induction room and the team prepares for the next surgery. Once the cleanup is finished, the second patient is moved into the operating theatre. The average patient turnover time is 10 minutes[2].
- After recovery, 70% of patients are transported back to the ward for an overnight stay before starting with the rapid recovery programme the following day.

Performance measurement and transparency drive focused technology adoption. Surgical procedures are rigorously tested through meticulous performance measurement by a dedicated outcomes team, which includes a consultant surgeon, nursing staff members and physiotherapists. Process and technology innovations are only adopted when superior clinical, operational and financial benefits have been demonstrated.

Performance results and findings from randomised and blinded studies are published in peer-reviewed journals each year. Surgeon outcomes data are shared with patients during the pre-operative session when complication rates and risks are explained and consent is obtained. The outcomes team is responsible for performance measurement and patient satisfaction surveys that are distributed at the pre-operative stage and at the post-operative 1-year and 10-year follow-up sessions.

An orthopaedic-specific hospital information system initially developed to manage the orthopaedic waiting list has been pivotal for Musgrave Park Hospital performance measurement. The information system provides a user-friendly system with information on patient referrals and past procedures, arrival times, anaesthetics that were administered, imaging results, clinical outcomes and prosthesis stock information. The system is used to track patients, print theatre lists, ensure that cancellations are replaced and measure surgical performance.

Musgrave Park Hospital Work Flow Model



Key Outcomes

- For THRs, 76% of patients are discharged with a LOS of 3 days or less.
- For TKRs, 72% of patients are discharged with a LOS of 3 days or less.
- A study comparing THR at MPH with 2 NHS TJR units suggest that implementing a rapid discharge programme can improve operating efficiency, lower length of stay and reduce costs without impaired patient outcomes[3]:
  - Average duration of the THR surgery (59 minutes) was 33-45% shorter than in the 2 NHS TJR units representing 29-48 minutes saved per THR.
  - Post-operative length of stay was 3 days compared to 5-6 days.
  - Estimated costs per THR patients were 3-18% lower translating into savings of £161-1,061 per THR patient.

Transferable Learnings

- Communicate discharge expectations to patients and all hospital staff and identify a clinician champion to run and oversee the rapid discharge programme.
- Build patient expectations during individual pre-operative assessment classes by explaining the patient care pathway from hospital admission, surgery, peri-operative care to post-operative rehabilitation.
- Assign a surgical coordinator responsible for allocating patients to operating theatre lists and for identifying and contacting patients to replace cancellations.
- Educate GPs and community physiotherapist in triaging patients and in identifying appropriate orthopaedic referrals prior to consultations individually by the orthopaedic surgeons.
- Use detailed proformas to select patients that are fit for surgery and refer unfit patients to their GPs with medical advice and specific targets to qualify for future TJRs.
- Standardised anaesthetics and pain management protocols for optimal post-op recovery and consider scheduling the anaesthetics team to the same orthopaedic surgeon from pre-op evaluation to post-op pain management.
- Measure and communicate performance by setting up an outcomes team responsible for outcomes measurement and regular and timely reporting to all stakeholders.

1. Spinal anaesthetic (bupivacaine) with intravenous sedatives (midazolam or propofol) is most commonly used intra-operatively. Post-operative analgesics include patient-controlled opiates (morphine) during the first 12 hours and selected oral analgesics (tramadol or codeine/ paracetamol) every subsequent and alternating 3 hours.
2. Typical average turnover time is 10 minutes during the 8-hour work shift (8.00 am–12.30 pm and 2.00–5.30 pm).
3. Patient outcomes were assessed pre-operatively and six weeks post-operatively. The Oxford Hip Score at MPH decreased by 22 units (from 49 to 27) and by 10 (from 40 to 30) and 16 (from 43 in the 27) units in the 2 NHS TJR units.

Sources: Sg2 interview with consultant orthopaedic surgeon Mr David Beverland and the Orthopaedics Outcomes team and site visit at Musgrave Park Hospital, 2009; Hunt GR et al. *Clin Rehabil*. 2009;23(12):1067-77; Mockford BJ et al. *J Arthroplasty* 2008;23(8):1110–1114; Ogonda L et al. *J Bone Joint Surg Am* 2005;87(4):701–710; Mangan JL et al. *Qual Health Care* 1992;1(1):34–37; Beverland DE et al. *Health Serv Manage* 1989;85(6):270–272.

Case Study

Continuous Clinical and Strategic Assessment Improves Orthopaedic Services Delivery

Client
A 500-bed district general hospital that serves more than 270,000 people in the south west of England.

Client Challenge
Demand for orthopaedic procedures was expected to increase, owing to an ageing demographic and growing general practitioner (GP) referral rates. Being the major provider of orthopaedic services in the region, the client wanted to ensure that its orthopaedic services were progressive in the types of technologies, procedures and care protocols offered to patients.

Sg2 Approach
In 2007, the client asked Sg2 to develop key strategies for three areas within orthopaedics (joint replacement, trauma/fracture and sports medicine) that would increase patient throughput and improve service provision. Sg2 provided a current state assessment based on a number of a face to face interviews led by Sg2's orthopaedics expert with surgeons, theatre and ward nurses, physiotherapists and managers. In addition, Sg2's detailed Orthopaedics STEP™ survey was completed to provide an overview of the level of innovation in the orthopaedics department. Sg2's international presence and experience in working with hospitals in the United States also enabled us to benchmark the client's operational and clinical performance with that of leading organisations within the field.

Solution
Sg2 conducted a care pathway analysis for the total joint replacement (TJR) programme, customised a technology adoption road map and made recommendations to ensure continued programme differentiation and success. A central recommendation was the implementation of a rapid recovery programme for TJR as a means to improve outcomes and reduce average length of stay (ALOS). Key components of the programme included:

- A "patient optimisation" process in partnership with GPs to ensure patients are willing and fit for surgery prior to admission.
- A one-stop clinic for patient pre-assessment, education and expectation management which takes place 2-3 weeks before surgery.
- Comprehensive pain management and standardised pain control for administering regional anaesthesia.
- Nurse-led discharge planning process that begins during the pre-assessment phase and is conducted by a multidisciplinary team. This ensures patients have the required tools and medications for discharge.
- Rapid mobilisation and rehabilitation initiated a day after surgery in a specially created gymnasium in the hospital ward. Outpatient rehabilitation occurs at a centre near a patient's home.
- Post-discharge care programme which consists of a nurse-led community outreach team accessible 24 hours a day for 10 days post discharge via a direct phone number. All patients receive a follow up call a day after discharge to discuss possible complications regarding pain control and wound management.

Measurable Results
The TJR programme was implemented within 2 months of the project's completion. The clinician champion and programme director worked together with the various stakeholders to implement the proposed changes to each step of the care pathway. After 8 months following implementation of the rapid recovery programme, the trust achieved median LOS reductions from 5 to 3 days for knee replacements and 6 to 4 days for hip replacements. These resulted in estimated savings of 638 hospital days (about £223,330 based on £350/night, excluding treatment costs). As a consequence, during the first 12 months, the trust significantly improved throughput by performing an additional 200 TJR operations within the existing bed base. Initial audit results show that 60% of patients are now mobilised in less than 24 hours post-operation.

February 2011

The Value of Sg2

Who We Are

Sg2 is a global, future-focused health care intelligence and solutions firm. Sg2 provides comprehensive, integrated systems that utilise advanced analytics and health care experts to improve performance and maximise clinical effectiveness. Sg2 has a unique model that combines deep clinical and care delivery expertise with actionable strategic insight to help NHS organisations make informed business decisions.

Sg2's team includes clinicians, PhDs, nurse executives and health care leaders with extensive strategic, operational, clinical, academic, technological and financial experience. NHS clients include Strategic Health Authorities, Primary Care Trusts, Acute Trusts, Foundation Trusts, and national-level organisations.

In the context of the impending changes in health policy in the UK and the need for efficiency savings and quality improvement, Sg2's clinically grounded and analytical approach has enabled our NHS clients to:

- Increase care coordination and clinical quality by providing actionable and cost-effective strategies to move care to the community
- Better prepare for future changes in clinical services by using our vetted, expert-led analytics and forecasting solutions
- Adopt innovative care delivery models informed by our global experience to meet clinical, operational and strategic goals

Systems of Care Focus

As health care services around the world begin to shift from the acute to the community setting, optimal performance requires seamless coordination, integration and management of diseases across all sites of care. Throughout the world, Sg2's solutions have been based on analysing the whole system of care—from the patient, to the general practitioner and community provider, to the secondary and tertiary care hospitals and rehabilitation centre—to identify opportunities for performance improvement and quality advancement.

Who Partners With Sg2?

Sg2 has provided solutions and guidance to more than 1,200 organisations in 10 countries.

Asia/Australia

Bumrungrad International Hospital, Thailand
Department of Health Victoria, Australia
Queensland Health, Australia
Sunway Medical Centre, Malaysia
Western Australia Department of Health

North America

Duke University Health System, US
Johns Hopkins Health System, US
Mayo Clinic, US
NewYork-Presbyterian Healthcare System, US
Partners HealthCare System, US

Middle East

Hamad Medical Corporation, Qatar
Sidra Medical and Research Center, Qatar

United Kingdom

Imperial College Healthcare NHS Trust
NHS Central Lancashire
NHS Halton and St Helens
NHS North West
Royal Brompton & Harefield NHS Foundation Trust
South Devon Healthcare NHS Foundation Trust
University Hospitals Bristol NHS Foundation Trust
University Hospitals Coventry and Warwickshire NHS Trust

Worldwide

GE Healthcare
Philips Medical Systems
Toshiba Medical Systems Corporation

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health care intelligence

The Value of Sg2

Sg2 Solutions for the NHS

- **Clinical Pathway Optimisation** utilises Sg2's clinical expertise, analytics and knowledge of international leading practices. Sg2 analyses the current clinical pathway across the care continuum in specific health economies and identifies gaps and opportunities for optimising the linkages between primary and secondary care, improving care quality and efficiency, and increasing patient satisfaction and outcomes.
- **Analytical Solutions** based on Sg2's proprietary tools help organisations analyse their current performance, identify improvement and cost-saving opportunities, and understand future demand for NHS services and the impact of selected interventions on quality and efficiency. Sg2's analytics have been vetted by our expert team and have been used by many leading health care organisations across the world to support their long-term strategic goals.
- **Clinical Strategic Planning** provides a framework for creating forward-thinking plans for clinical services and building consensus between clinicians, managers and commissioners around a common vision. This is drawn from Sg2's experience in clinical engagement and international health care delivery.
- **Memberships** allow clients to have unlimited access to Sg2 expertise and research on global leading practices. The membership includes real-time interaction with Sg2 experts and an extensive library of reports that analyse clinical advancements and care delivery innovations. Sg2's research and expertise span 10 countries and the major clinical disciplines, including cancer, cardiovascular services, neurosciences, orthopaedics, paediatrics and diagnostic services.

How Is Sg2 Different?

Sg2 is future-focused.

Sg2 continuously scans the health care horizon to anticipate the demographic, technological, clinical and policy changes that will transform hospitals and health care systems.

Sg2 is expert-led.

Sg2 is the only firm that integrates expertise grounded in the major clinical disciplines into its work with clients to support critical decision making and uncover challenges and opportunities.

Sg2 is data-driven and action-oriented.

All of Sg2's solutions provide the powerful combination of expert insight and proprietary analytical tools to inform decision making for today and tomorrow.

Sg2 is global.

Sg2's international business based in London includes work with leading organisations in more than 10 countries around the world, including the United Kingdom, Hong Kong, Thailand, Australia, Qatar and the US.

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