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BRITISH GERIATRICS SOCIETY

The **National Hip Fracture** Database
National Report 2011

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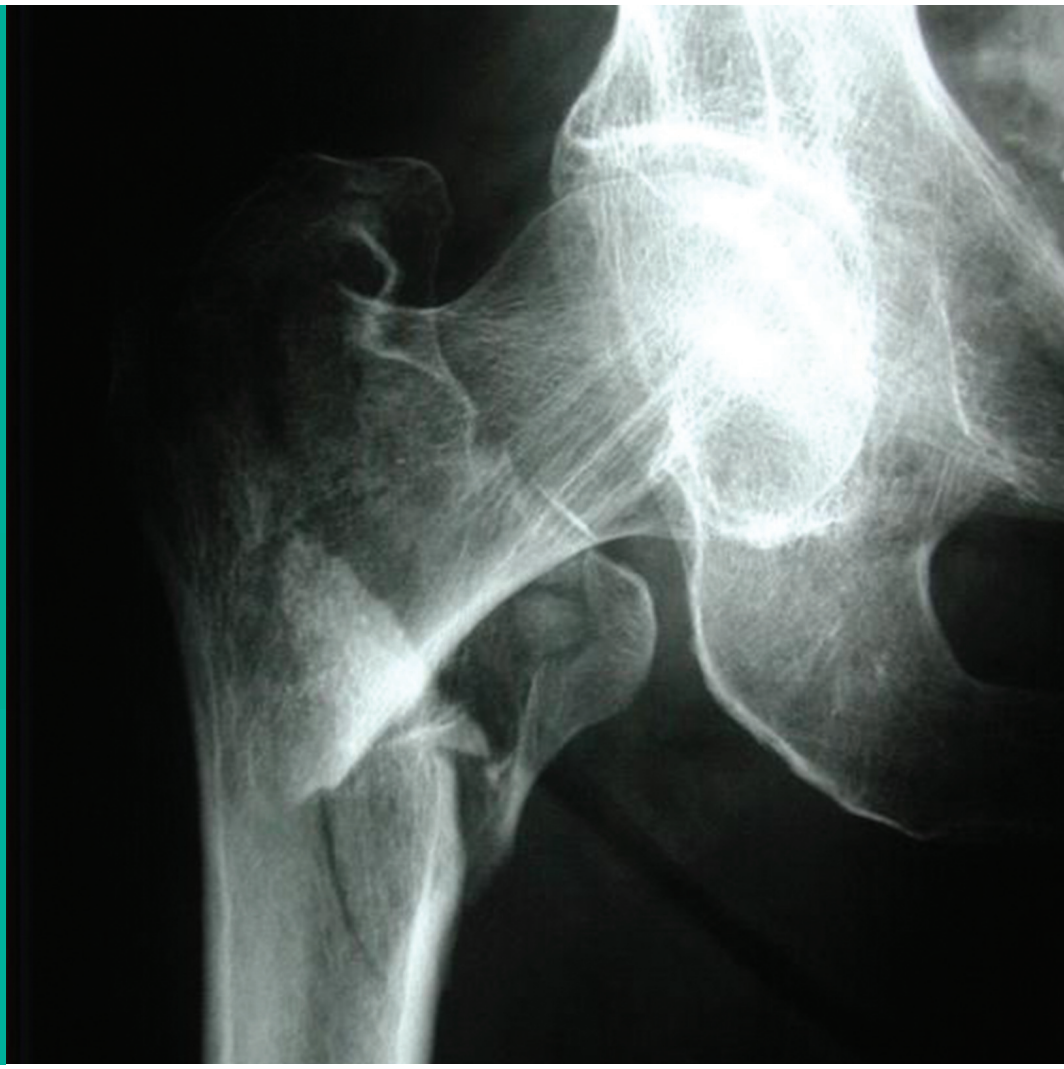

The **National Hip Fracture** Database National Report 2011

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A summary of this report is also available on line
www.nhfd.co.uk

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Foreword

Hip fracture is a common, serious injury of older people that is likely to become more common as the population ages. For many patients, it can bring loss of mobility and independence, and for some the loss of a cherished home. For society the costs, both in acute care and in providing for subsequent dependency, are high – approaching £2 billion per year for the UK as a whole.

Since its launch in 2007 the National Hip Fracture Database has done much to draw attention to the status of hip fracture as the tracer condition for the current epidemic of fractures that result from osteoporosis; and to mobilise professional enthusiasm for its care.

This publication, the third national report from the NHFD, is notable in a number of respects. All eligible hospitals in England, Wales, Northern Ireland, and the Channel Islands are now registered with the NHFD, with the vast majority regularly uploading data. In England, the NHFD has made possible the collaboration with the Department of Health to implement the Best Practice Tariff (BPT) for hip fracture care with impressive participation and steadily rising numbers of cases meeting the criteria. With more than 53,000 cases from 176 hospitals, this report is the most substantial so far, and provides further evidence that hip fracture care is improving, and that significant advances have been made in the provision of secondary prevention. We consider this is remarkable progress and truly indicative of the influence of clinical audit.

Perhaps most importantly, the NHFD, together with the BPT initiative, has succeeded in promoting the ideal of collaborative care, so that orthopaedic surgeons, anaesthetists, orthogeriatricians and their teams are working together in more and more hospitals providing safer, better and more cost-effective care for their patients.

The NHFD, clinically led and focused on the improving clinical care, has earned the trust of healthcare professionals – both clinicians and managers. We know they value the combination of audit, standards, and continuous feedback, and the support the NHFD offers as they work together to improve the services they provide for some of our most vulnerable and frail patients.

This report, at a time of impending change and increasing cost pressures in healthcare, is therefore most welcome, not least because it gives grounds for optimism that, in hip fracture care, cost and quality are not in conflict, but can be achieved together. For the future, we look forward to a key role for NICE Quality Standards in setting the standards for clinical audits.

Professor David Oliver
National Clinical Director
for Older People

Professor Keith Willett
National Clinical Director
for Trauma Care

Executive summary

- The National Hip Fracture Database (NHFD) is a clinically led, web-based audit of hip fracture care and secondary prevention in England, Wales, Northern Ireland and the Channel Islands. Its aim is to improve such care.

- All 191 of the eligible hospitals are now registered with NHFD. 98% participate by regularly uploading case records in a standard dataset format. Hospitals receive benchmarked feedback that enables clinicians and managers to monitor and improve the care they provide.

- Around 76% of the estimated 70,000 cases occurring annually are now documented by NHFD. The total number of cases recorded since its launch in 2007 is now over 132,000, making the NHFD the largest and fastest-growing national hip fracture audit in the world.

- Care is audited against six standards: prompt admission to orthopaedic care; surgery within 48 hours and within normal working hours; nursing care aimed at minimising pressure ulcer incidence; routine access to orthogeriatric medical care; assessment and appropriate treatment to promote bone health; and falls assessment. Since April 2009 additional fields – most notably surgery within 36 hours – have been included to meet the needs of the Best Practice Tariff initiative (see below).

- This report covers case mix, care and outcomes of 53,443 cases submitted between 1 April 2010 and 31st March 2011 by 176 hospitals meeting the case threshold of 100 (or a high percentage submission rate in smaller hospitals). The key charts cover compliance with the six care standards, with hospitals in rank order.

- In terms of those standards, and in comparison with the findings of the 2010 National Report:

    1. 58% of patients are admitted to an orthopaedic ward within four hours (up from 57% in 2010)
    2. 87% receive surgery within 48 hours (up from 80%)
    3. 3% are reported as having developed pressure ulcers (down from 6%)
    4. 37% are assessed preoperatively by an orthogeriatrician (up from 31%)
    5. 66% are discharged on bone protection medication (up from 57%)
    6. 81% received a falls assessment prior to discharge (up from 63%)

    It is encouraging that compliance has improved year on year for all 6 standards.

    Note: in order to ensure comparability between 2010 and 2011 data, calculations for the above have been made – as for the 2010 report – with the exclusion of 'unknown' data

- Case mix-adjusted reporting on two key outcomes (30-day mortality, and rate of return home by 30 days) allows fairer inter-hospital comparisons. In the case of 30-day mortality, new processes have been agreed for the identification and management of outlying hospitals.

- Clinicians and managers have used NHFD participation to prompt, monitor and evaluate clinical and service developments to improve the quality and cost effectiveness of hip fracture care. The report includes brief summaries that might encourage similar efforts elsewhere.

- A trend analysis based on data from a subgroup of 28 hospitals selected for their commitment to the audit and the completeness and quality of their data shows statistically highly significant improvements in a number of process and outcome indicators over the past three years. This clearly demonstrates the effectiveness of the use of audit in the improving care and reducing mortality.

- In England, the NHFD has been integral to the success of the Department of Health's Best Practice Tariff (BPT) initiative, which rewards the achievement of specified standards (surgery within 36 hours; care by surgeon and geriatrician; care protocol agreed by geriatrician, surgeon and anaesthetist; pre/perioperative assessment by geriatrician; geriatrician-led multi-disciplinary rehabilitation; and secondary prevention including falls and bone health assessment).

- In its first year BPT has achieved steady quarter-by-quarter increases in hospital participation (from 58% to 73%), and the number of submitted cases achieving the enhanced tariff (from 2,254 to 4,645).

- Although the NHFD has steadily increased its coverage of hip fracture care since 2007, further work is required if the remaining c. 24% of the estimated total incidence is to be included. Gaps remain in the data submitted on reported cases: ASA grade (a measure of prior fitness) and AMT score (a measure of cognitive state) are only variably documented, as is 30-day follow-up. Again, further effort is required.

- The NHFD will continue its work in its present form until March 2012, and thereafter will do so as part of a new Falls and Fragility Fracture Audit, the details of which are at the time of writing still under discussion.

Introduction

The National Hip Fracture Database

The aim of the National Hip Fracture Database (NHFD) is to improve the care and secondary prevention of hip fracture – the commonest serious injury of older people. The NHFD was developed from 2004 as an independent, clinically-led, web-based audit, with the support of the British Orthopaedic Association (BOA) and the British Geriatrics Society (BGS) and start-up funding from industry sources. It was launched in 2007, and in 2009 was recognised by the National Clinical Audit Advisory Group for central funding for 2009-2012 as a national clinical audit under the auspices of the Healthcare Quality Improvement Partnership.

Since 2007, coverage has expanded steadily, with all 191 eligible hospitals in England, Wales, Northern Ireland and the Channel Islands now registered with NHFD, and 189 regularly contributing data. Participating units upload casemix, care and outcome details in a standard dataset format, and receive regular feedback, with benchmarking at regional and national level. Care is measured against six quality standards set out in the BOA/BGS Blue Book on the care of patients with fragility fracture[1], which cover: prompt admission to orthopaedic care; early surgery; the prevention of pressure ulcers▲; access to acute orthogeriatric care; assessment for bone protection therapy; and falls assessment▲.

This synergy of audit, standards and feedback supports clinicians in the improvement of the care they provide, and in service developments aimed at improving care and secondary prevention. The NHFD website offers additional support – in the form of case studies, good practice examples, model job descriptions, business plans and an extensive database of the relevant medical literature. NHFD central staff – its project manager and two project coordinators – have organised a series of well-attended regional meetings. These bring together clinicians and managers to share expertise, and report on the use of NHFD in improving the quality and cost-effectiveness of the care they provide. Together these measures have succeeded in creating a truly national clinical audit, and a critical mass of enthusiasm and expertise in hip fracture care now reflected in the findings reported here.

The NHFD National Report 2011

General

This publication provides details on the casemix, care and outcomes of 53,443 cases of hip fracture from 176 hospitals that either submitted more than 100 cases over the year from 1st April 2010 to 31st March 2011 (169 hospitals); or had fewer than 100 cases, but with at least 66% of cases submitted (7 hospitals). It follows two previous national reports: in 2009 (64 hospitals; 12,983 cases); and in 2010 (129 hospitals; 36,556 cases), and therefore provides a more extensive and more detailed – but still incomplete – picture of hip fracture care in England, Wales, Northern Ireland and the Channel Islands in 2010/2011.

In the charts comprising the bulk of the report, data from participating hospitals is displayed comparatively, and in its first section describes casemix▲: in terms of age, sex-ratio, place of residence, ASA grade▲, cognition, walking ability, and fracture type. The next section follows the journey of care from initial admission through to discharge, with details of time to ward and to surgery, operations performed, medical assessment, development of any pressure ulcers, secondary prevention measures, length of acute hospital stay and destination on discharge. Finally, two key outcomes - namely percentage of patients returning home by 30 days, and mortality at 30 days – are reported not in terms of the raw data but by the use of a case-mix adjustment methodology that takes account of the inter-hospital variation in patients treated.

Measuring progress

In terms of the six Blue Book standards, there is broad evidence of improvement in compliance since the 2010 report with: 58% admitted to an orthopaedic ward within four hours (up from 57% in 2010); 87% receiving surgery within 48 hours (up from 80%); 3% reported as having developed pressure ulcers (down from 6%); 37% assessed preoperatively by an orthogeriatrician (up from 31%); 66% discharged on bone protection medication▲ (up from 57%); and 81% receiving a falls assessment prior to discharge (up from 63%).

In order to assess the longer term impact of involvement with NHFD, a group of 28 hospitals with established NHFD participation and sustained high levels of case-reporting and data completeness was identified; and trends in five care quality indicators (surgery within 36 hours; orthogeriatrician assessment; bone protection assessment; falls assessment; and 30 day mortality) were tracked for 30,022 (9,547 from April 2008-March 2009, 10,075 from April 2009-March 2010 and 10,400 from April 2010-March 2011). Remarkably, for every indicator a sustained year-on-year improvement is demonstrated (See pages 51-56).

The Best Practice Tariff for Hip Fracture Care

The NHFD, with its detailed documentation of case mix, care and outcomes, prompted the selection of hip fracture as a topic for the Department of Health's Best Practice Tariff (BPT) initiative[2], which offers additional payment for cases the care of which meets agreed standards (surgery within 36 hours; care by surgeon and geriatrician; care protocol agreed by geriatrician, surgeon and anaesthetist; pre/perioperative assessment by geriatrician; geriatrician-led multi-disciplinary rehabilitation▲; secondary prevention including falls and bone health assessment) that are monitored by the NHFD.

From April 2010, when BPT – which applies only in England – began, participation has increased quarter by quarter, with steadily rising numbers of hospitals with cases meeting the tariff standards (from 92-118); and of the numbers of cases meeting the tariff standards (from 2254 to 4645).

Limitations of the Report

This report therefore describes some substantial advances in the care of hip fracture, but – as frankly acknowledged at various points within it – further work is required. Ideally, a national clinical audit would acquire complete data on all cases occurring, but the NHFD is still some way from achieving this. The 53,443 cases included in this report represent only around 76% of the estimated total of c. 70,000 cases presenting to the hospitals registered. Case ascertainment▲ by hospitals varies from 19% to 119.5%*. At case level, as the first chart in the report (p 14) shows, incomplete reporting persists, most notably in the reporting of ASA grades and AMTS scores▲ (both of which are casemix factors which strongly predict outcomes); and in 30 day follow-up, which varies by hospital from 0% to 100% missing. To acknowledge this, and for the first time in a NHFD national report, the proportion of missing data in various fields is represented in the charts that follow by white insertions in the horizontal bars.

*Case ascertainment is based on information provided for the NHFD Facilities Audit (See pages 96-101)

As a result of the problem of missing data, the casemix-adjusted reporting of two key outcomes – 30 day mortality and particularly 30 day return home (pages 49 & 50) – must be regarded as indicative rather than conclusive. In the case of return home, the data reported is frankly incomplete by reason of the currently limited 30 day follow-up data. In the case of mortality – although deaths and the timing of deaths are reliably reported from central sources – incomplete case reporting by hospitals may under-report hospital mortality, thus skewing the average; and hospitals submitting 100% of cases

may as a result appear to be performing less well. The consequences of this for outlier identification and management are obvious, and due caution should be exercised in the interpretation of these charts[3,4]; and, while outlier identification and management is described in Appendix E and is now being implemented, the NHFD will continue to support and encourage higher levels of data completeness.

Audit and Change

As will be clear from the above, the NHFD has had some success in its aim of improving the quality and cost-effectiveness of hip fracture care, and promoting secondary prevention measures that have been shown to reduce its incidence. Measurable year-on-year improvements in aspects of such care and secondary prevention have been demonstrated at national level across the 2010 and 2011 national reports, together with encouraging trend data for the period 2009 – 2011, and these provide evidence that progress is being made.

In addition, evidence of improvement at national level, this report also includes a number of vignettes that describe how hospitals have made use of NHFD to prompt, monitor and evaluate clinical and service developments.

They demonstrate how – using trusted and current data on the care they provide – clinicians and managers can work together to achieve not only remarkable improvements in care but, in some cases, substantial efficiency savings as well, mainly through reduction in length of stay – by far the dominant factor in the overall costs of hip fracture care.

NHFD: the future

At a time of impending funding pressures for the NHS, the influence the NHFD demonstrates in improving quality while reducing costs should be welcomed, and the costs of NHFD – both centrally and in the collection of data at hospital level – can be fully justified. Both care and secondary prevention are improving, with the cost of care in a number of hospitals appearing to fall. The humane and economic benefits of secondary prevention, potentially substantial, are still to be fully realised.

To sustain and improve the role of the NHFD in improving care, the goal of improving data completeness at hospital and case level will be pursued via NHFD regional meetings and data workshops for those directly involved in collecting data.

The potential of using NHFD data to improve the evidence base for hip fracture care has been recognised, and the NHFD Scientific and Publications Committee is currently engaged in evaluating risks possibly associated with the use of cemented arthroplasties▲; examining the problem of atypical fractures▲ possibly associated with bisphosphonate use; and in using trend and comparative data to evaluate the contribution of orthogeriatrician input to care. An evaluation of the impact of the introduction of the Best Practice Tariff is currently at the planning stage.

NHFD will continue in its present form until its current funding ends in March 2012. Already under discussion is its continuation in partnership with the current RCP Falls and Bone Health Audit[5]. A new audit, covering both falls and fragility fractures, would continue to develop the work of the NHFD, with possible broadening of its scope to other fragility fractures, and an enhanced capacity to address through sprint audits a closer scrutiny of process issues, including those relating to the important topic of secondary prevention, which – as the Glasgow Fracture Liaison Service has demonstrated[6] – can substantially reduce the incidence of hip fracture in the target population.

Participating hospitals

Indicates inclusion in this report n = 176; indicates participating in NHFD but not submitting sufficient data to be included in report n = 15.

Addenbrooke's Hospital, Cambridge	ADD
Airdale General Hospital	
Alexandra Hospital, Redditch	RED
Altnagelvin Area Hospital	ALT
Arrowe Park Hospital, Wirral	WIR
Barnet Hospital	BNT
Barnsley Hospital	BAR
Basildon University Hospital	BAS
Bassetlaw Hospital	BSL
Bedford Hospital	BED
Birmingham Heartlands	EBH
Bradford Royal Infirmary	BRD
Bristol Royal Infirmary	BRI
Bronglais Hospital, Aberystwyth	BRG
Broomfield Hospital	BFH
Central Middlesex Hospital, London	
Charing Cross Hospital	CCH
Chase Farm Hospital	CHS
Chelsea and Westminster Hospital	WES
Cheltenham General Hospital	CHG
Chesterfield Royal Hospital	CHE
Colchester General Hospital	COL
Conquest Hospital, Hastings	CGH
Countess of Chester Hospital	COC
County Hospital, Hereford	HCH
Craigavon Hospital, Portadown	
Cumberland Infirmary, Carlisle	CMI
Darent Valley Hospital, Dartford	DVH
Darlington Memorial Hospital	DAR
Derbyshire Royal Infirmary, Derby	DER
Derriford Hospital, Plymouth	PLY
Dewsbury & District Hospital	DEW
Diana Princess of Wales Hospital, Grimbsy	GGH
Doncaster Royal Infirmary	DID
Dorset County Hospital, Dorchester	WDH
Ealing Hospital	
East Surrey Hospital, Redhill	ESU
Eastbourne Hospital	DGE
Fairfield Hospital, Bury	BRY
Frenchay Hospital, Bristol	FRY
Frimley Park, Camberley	FRM
Furness General Hospital, Barrow-in-Furness	FGH
George Eliot Hospital, Nuneaton	NUN
Glan Clwyd Hospital, Rhyl	
Gloucestershire Royal Hospital, Gloucester	GLO
Good Hope Hospital, Birmingham	GHS
Grantham and District Hospital	
Gwynnedd Ysbyty, Bangor	GWY
Harrogate District Hospital	HAR
Hillingdon Hospital	HIL
Hinchingbrooke Hospital	HIN
Homerton Hospital, London	HOM
Hope Hospital, Salford	SLF
Horton Hospital, Banbury	HOR
Huddersfield Royal Infirmary	HUD
Hull Royal Infirmary	HRI
Ipswich Hospital	IPS
James Cook University Hospital, Middlesbrough	SCM
James Paget University Hospital, Great Yarmouth	JPH
John Radcliffe Hospital, Oxford	RAD
Kent and Sussex Hospital, Tunbridge Wells	KSX
Kettering General Hospital	KGH
King's College Hospital, London	KCH
King's Mill Hospital, Sutton in Ashfield	KMH
Kingston Hospital	KTH
Leeds General Infirmary	LGI
Leicester Royal Infirmary	LER
Leighton Hospital, Crewe	LGH
Lincoln County Hospital	LIN
Lister Hospital, Stevenage	LIS
Luton and Dunstable Hospital	LDH
Macclesfield General Hospital	MAC
Maelor Hospital, Wrexham	WRX
Maidstone Hospital	MAI
Manchester Royal Infirmary	MRI
Manor Hospital, Walsall	
Mayday University Hospital, London	MAY
Medway Maritime Hospital	MDW
Milton Keynes General Hospital	MKH
Morriston Hospital, Swansea	MOR
Musgrove Park Hospital, Taunton	MPH
Nevill Hall Hospital, Abergavenny	NEV
New Cross Hospital, Wolverhampton	NCR
Newham General Hospital, London	NWG
Nobles Hospital, Isle of Man	NOB
Norfolk and Norwich University Hospital	NOR
North Devon District Hospital, Barnstaple	NDD
North Hampshire Hospital, Basingstoke	NHH
North Manchester General Hospital	
North Middlesex University Hospital	NMH
North Tyneside General Hospital, North Shields	NTY
Northampton General Hospital	NTH
Northern General Hospital, Sheffield	NGS
Northwick Park Hospital, London	
Peterborough District Hospital	PET

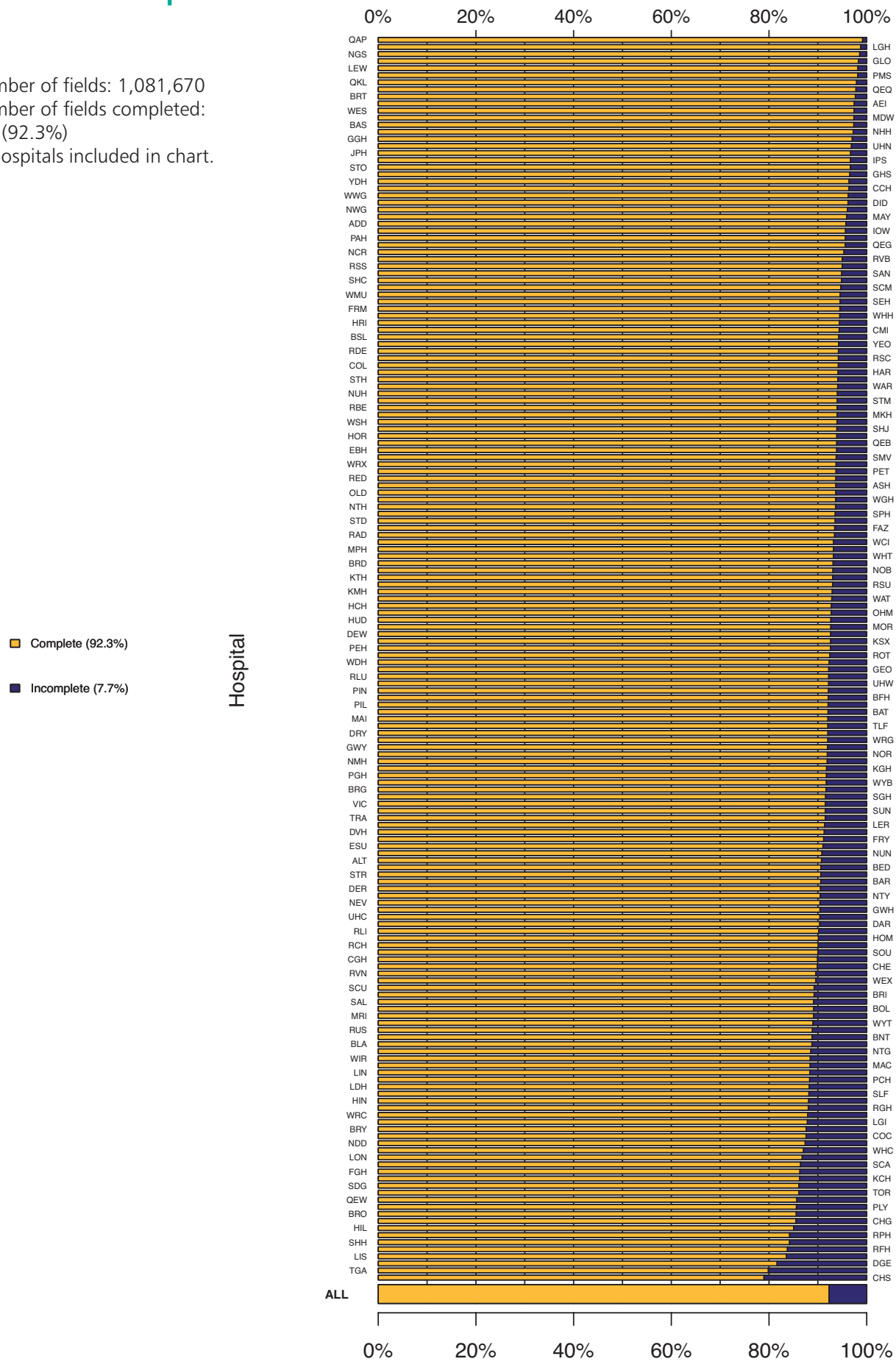
Pilgrim Hospital, Boston	PIL
Pinderfields General Hospital, Wakefield	PIN
Poole General Hospital	PGH
Prince Charles Hospital, Merthyr Tydfil	PCH
Princess Elizabeth hospital, Guernsey	PEH
Princess of Wales Hospital, Bridgend	
Princess Royal Hospital, Telford	TLF
Princess Royal University Hospital, Bromley	BRO
Queen Alexandra Hospital, Portsmouth	QAP
Queen Elizabeth Hospital, Birmingham	QEB
Queen Elizabeth Hospital, Gateshead	QEG
Queen Elizabeth Hospital, King's Lynn	QKL
Queen Elizabeth Hospital, Woolwich	GWH
Queen Elizabeth II Hospital, Welwyn	QEW
Queen Elizabeth the Queen Mother Hospital, Margate	QEQ
Queens Hospital, Burton upon Trent	BRT
Queen's Hospital, Romford	OLD
Rotherham District General Hospital	ROT
Royal Albert Edward Infirmary, Wigan	AEI
Royal Berkshire Hospital, Reading	RBE
Royal Blackburn Hospital	BLA
Royal Bolton Hospital	BOL
Royal Devon & Exeter Hospital, Exeter	RDE
Royal Free Hospital, London	RFH
Royal Glamorgan Hospital, Llantrisant	RGH
Royal Gwent Hospital, Newport	
Royal Hampshire County Hospital, Winchester	
Royal Lancaster Infirmary	RLI
Royal Liverpool University Hospital	RLU
Royal Oldham Hospital	OHM
Royal Preston Hospital	RPH
Royal Shrewsbury Hospital	RSS
Royal Surrey County Hospital, Guildford	RSU
Royal Sussex County Hospital, Brighton	RSC
Royal United Hospital, Bath	BAT
Royal Victoria Hospital, Newcastle	RVN
Royal Victoria Hospital.Belfast	RVB
Russells Hall Hospital, Dudley	RUS
Salisbury District Hospital	SAL
Sandwell General Hospital	SAN
Scarborough General Hospital	SCA
Scunthorpe General Hospital	SCU
South Tyneside District Hospital, South Shields	STD
Southampton General Hospital	SGH
Southend Hospital	SEH
Southport District General Hospital	SOU
St George's Hospital, London	GEO
St Helier Hospital, Carshalton	SHC
St Peter's Hospital, Chertsey	SPH
St Richard's Hospital, Chichester	STR
St Thomas' Hospital, London	STH
St. Hellier Hospital, Jersey	SHJ
St. Mary's Hospital, Isle of Wight	IOW
St.Mary's Hospital, Paddington	STM
Stafford Hospital	SDG
Stepping Hill Hospital, Stockport	SHH
Stoke Mandeville Hospital, Aylesbury	SMV
Sunderland Royal Hospital	SUN
Tameside General Hospital, Manchester	TGA
The Great Western Hospital, Swindon	PMS
The Princess Alexandra Hospital, Harlow	PAH
The Royal Cornwall Hospital, Treliske	RCH
The Royal London Hospital	LON
Torbay District General Hospital	TOR
Trafford General Hospital, Manchester	TRA
Ulster Hospital, Belfast	NUH
University College Hospital London	
University Hospital, Nottingham	UHN
University Hospital Aintree	FAZ
University Hospital Coventry	UHC
University Hospital of North Durham	DRY
University Hosp. of North Staffordshire, Stoke-on Trent	STO
University Hospital of North Tees, Stockton on Tees	NTG
University Hospital of Wales, Cardiff	UHW
University Hospital, Lewisham	LEW
Victoria Hospital, Blackpool	VIC
Wansbeck Hospital	ASH
Warrington Hospital	
Warwick Hospital	WAR
Watford General Hospital	WAT
West Cumberland Hospital, Whitehaven	WCI
West Middlesex University Hospital, Isleworth	WMU
West Suffolk Hospital, Bury St. Edmunds	WSH
West Wales General Hospital, Carmarthen	WWG
Weston General Hospital, Weston-Super-Mare	WGH
Wexham Park Hospital, Slough	WEX
Whipps Cross University Hospital	WHC
Whiston Hospital, Prescot	
Whittington Hospital, London	WHT
William Harvey Hospital, Ashford	WHH
Withybush Hospital, Haverford West	WYB
Worcestershire Royal Hospital, Worcester	WRC
Worthing Hospital	WRG
Wythenshawe Hospital, Manchester	WYT
Yeovil District Hospital	YEO
York Hospital	YDH

In all of the following charts hospitals are identified by their unique three letter code.

Chart 1 - Completeness of data fields on cases included in the 2011 National Report

Data:

Total number of fields: 1,081,670
Total number of fields completed: 998,435 (92.3%)
All 176 hospitals included in chart.



Casemix is largely unchanged from the last year's report, with the exception of residential status (Chart 4).

Chart 2 - Age at admission

This reflects local demography, e.g. retirement locations with resultant older populations

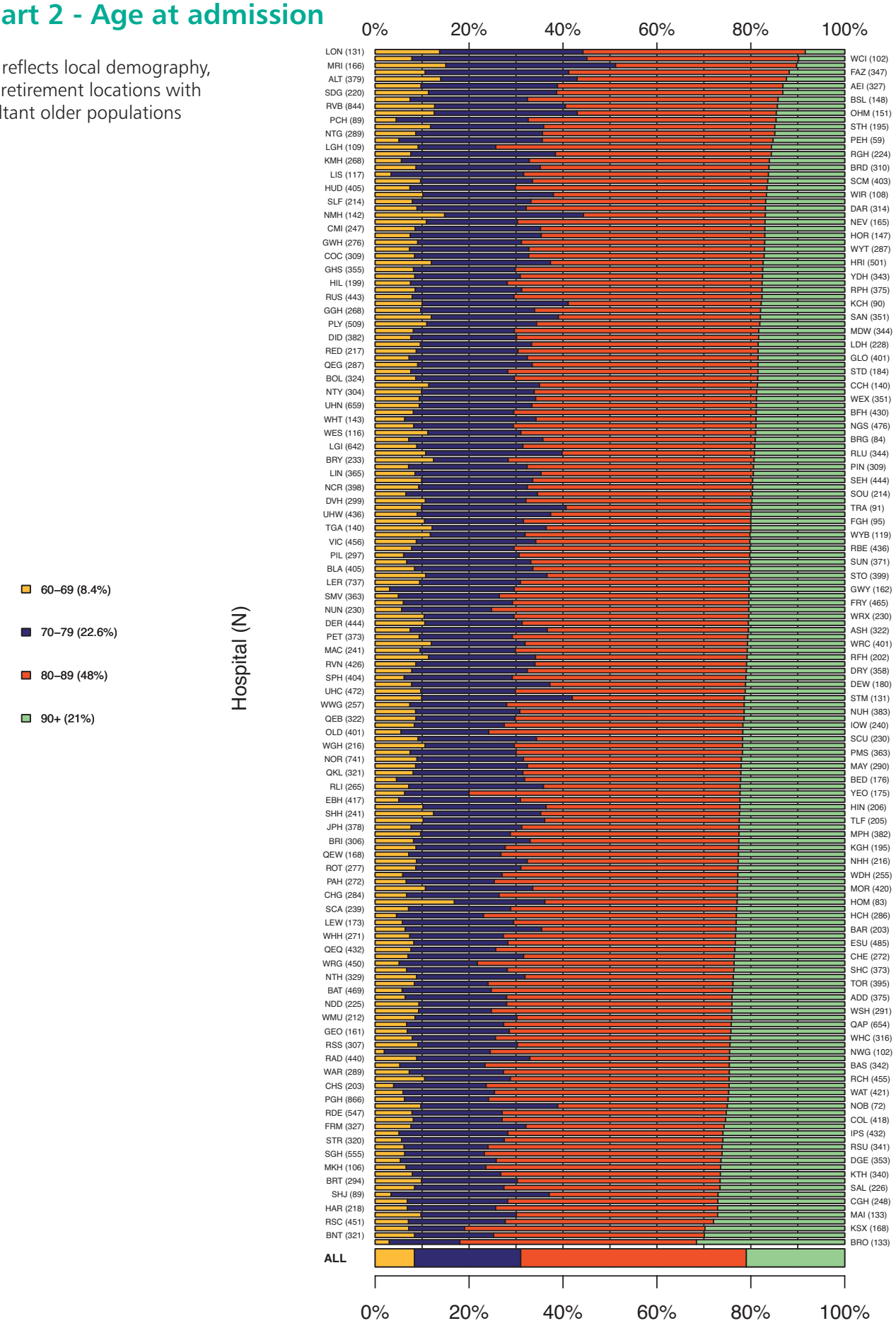


Chart 3 - Gender

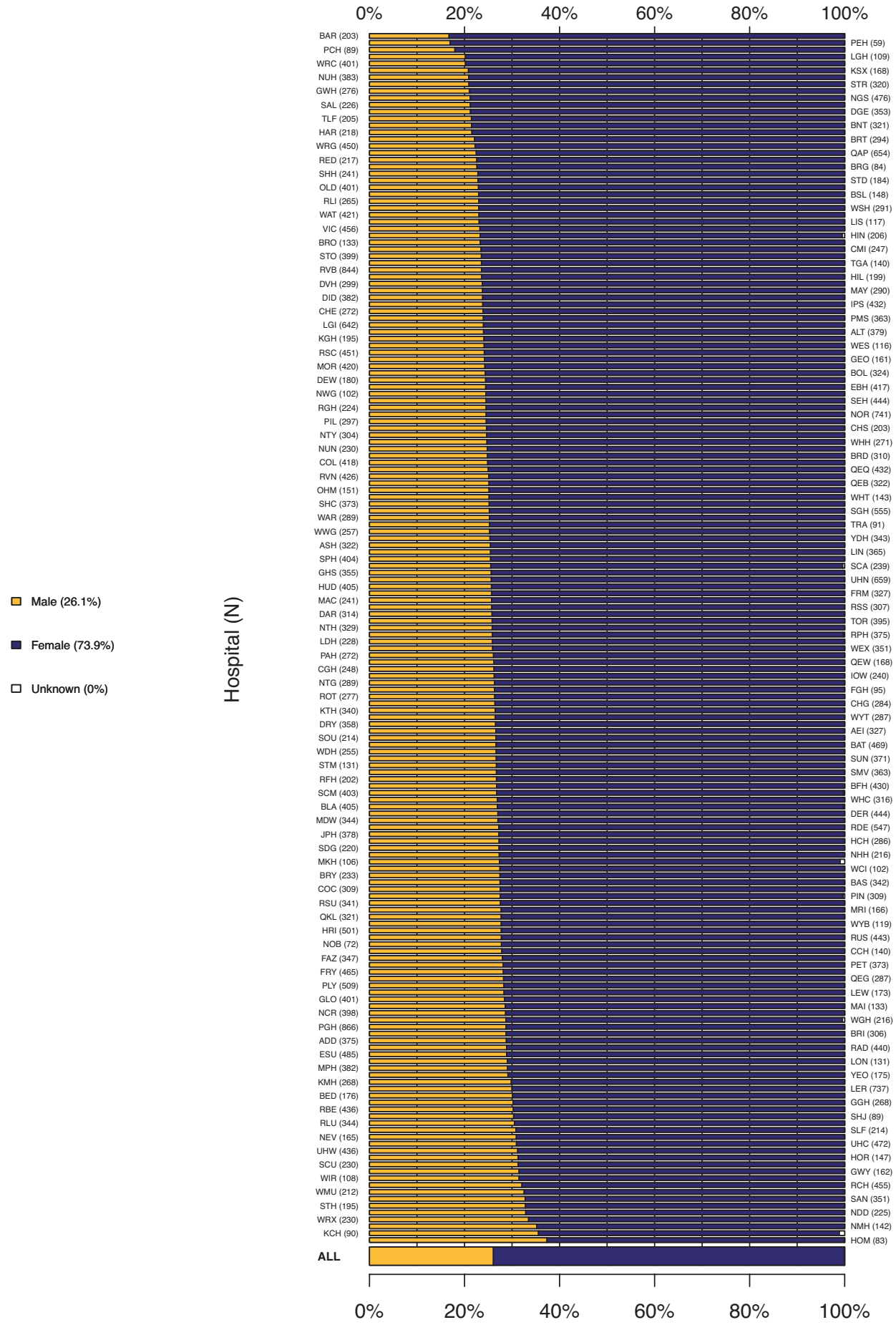
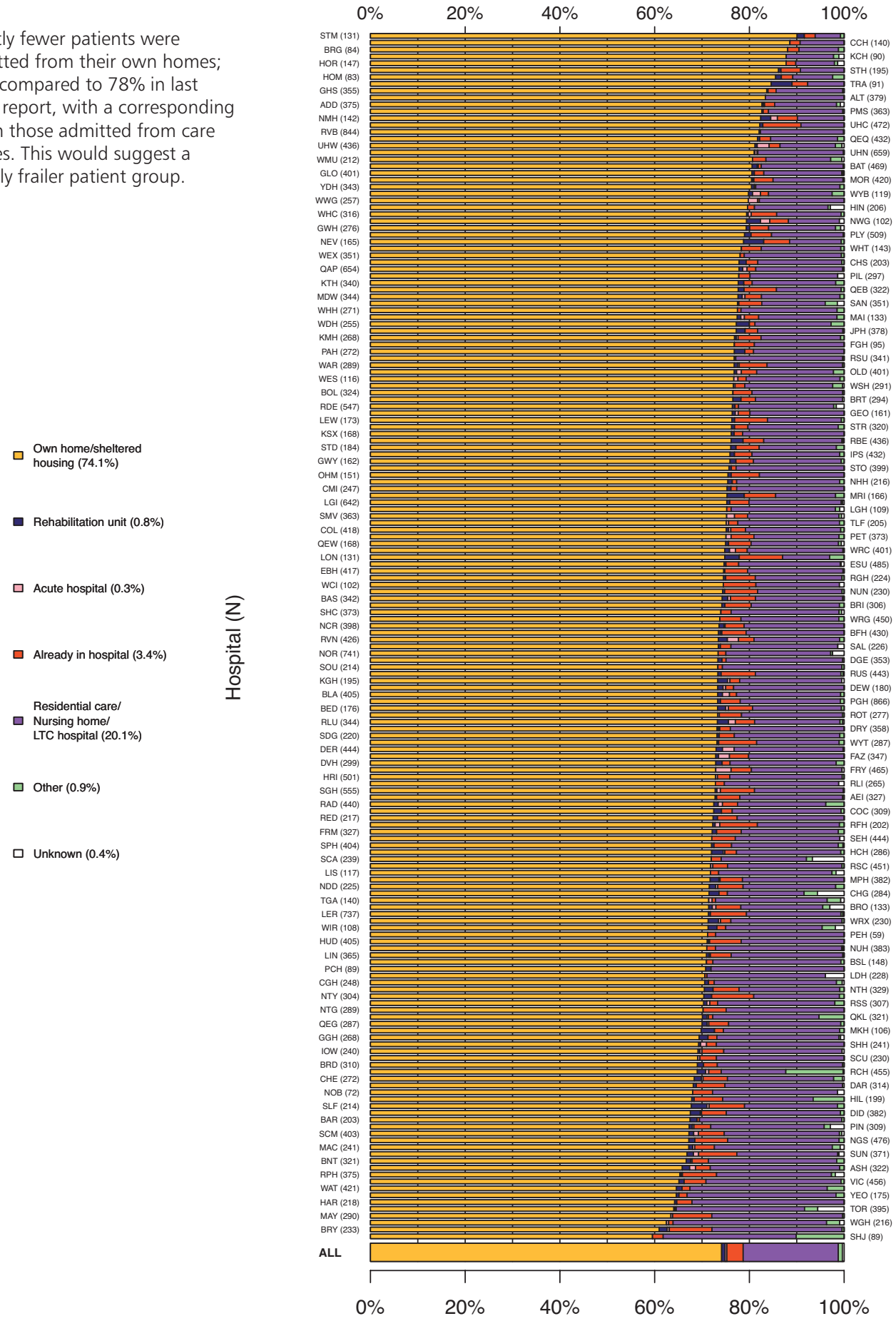


Chart 4 - Admitted from

Slightly fewer patients were admitted from their own homes; 74% compared to 78% in last years report, with a corresponding rise in those admitted from care homes. This would suggest a slightly frailer patient group.



Known ASA grades, pre-injury walking ability and fracture type are virtually unchanged from last year's report, and this despite an almost 70% increase in patient numbers.

Chart 5 - ASA grade

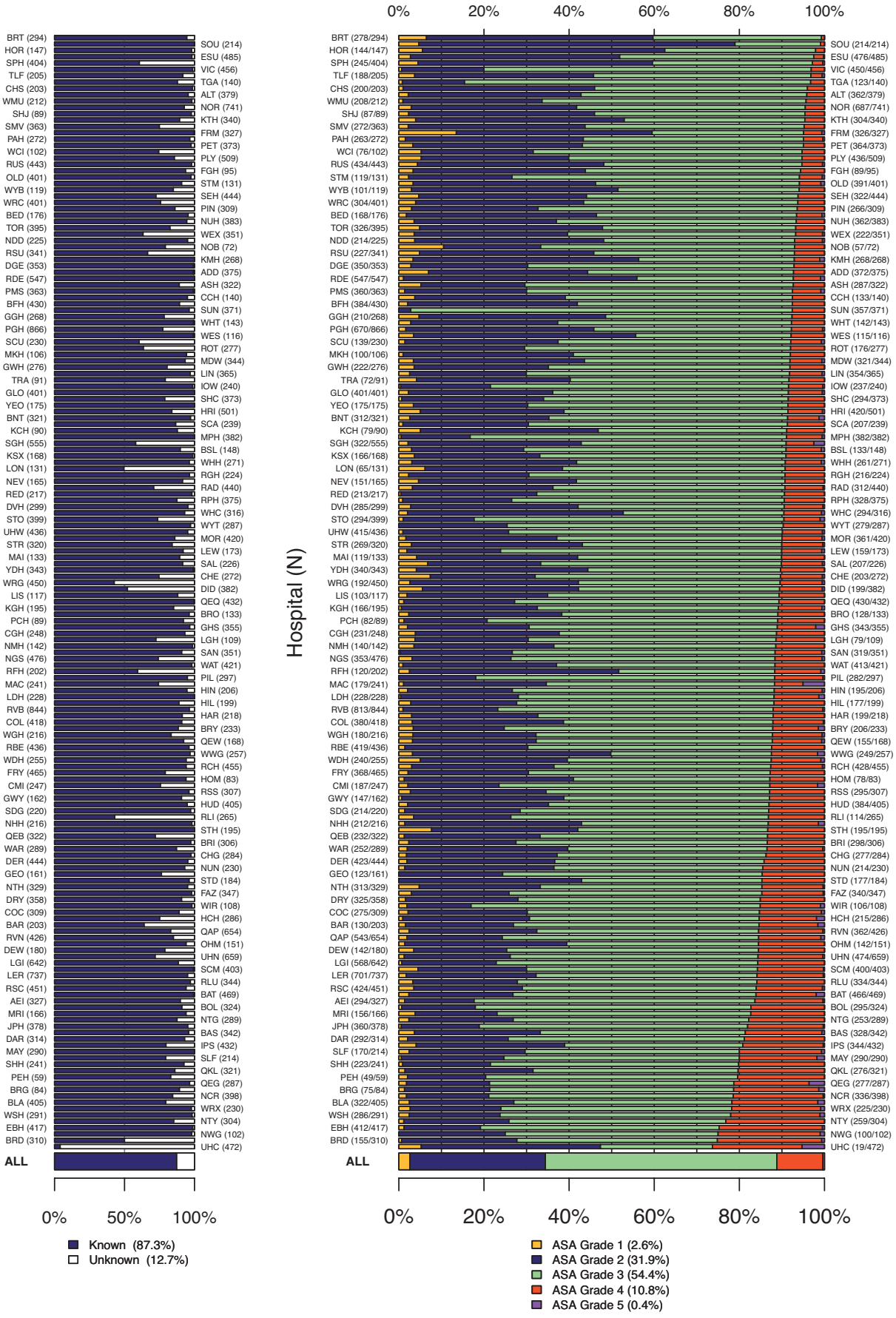


Chart 6 - Walking ability

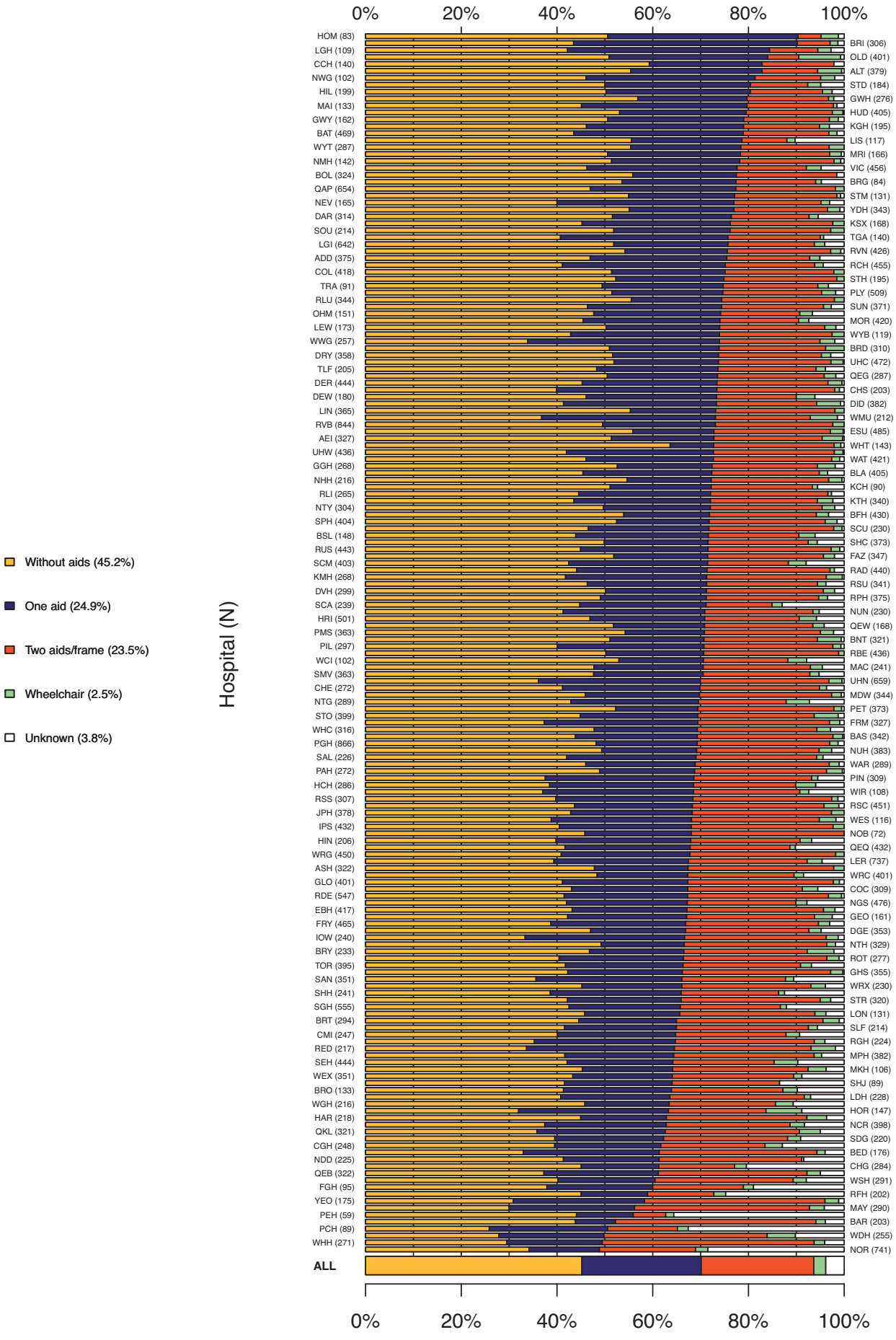
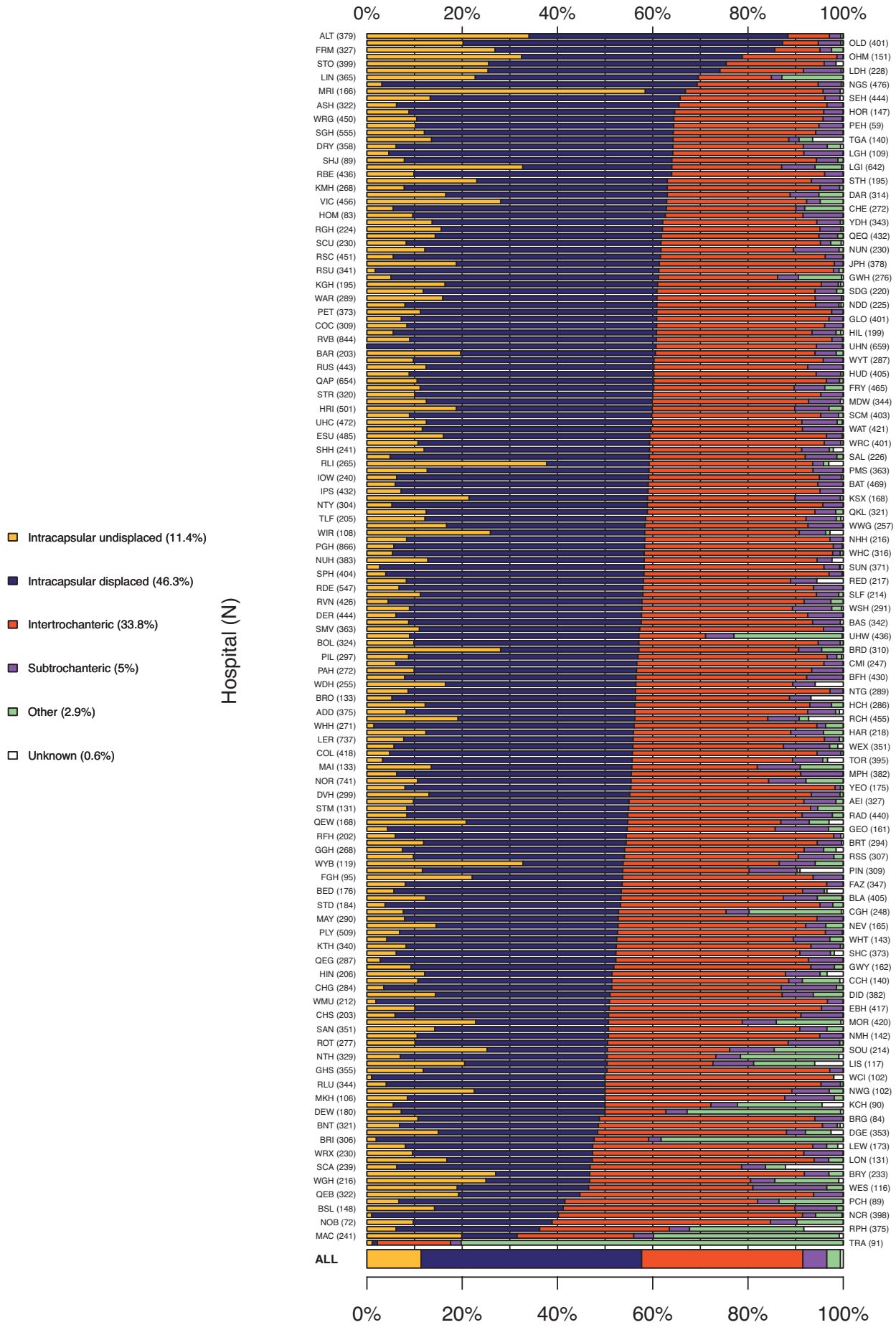


Chart 7 - Fracture Type



Fracture type

In general, the term 'hip fracture' is used to describe a number of fracture types involving the upper or proximal femur. Those fractures that occur within the joint itself are termed intracapsular (58% of total). These are divided into those in which the bones remain in their correct place – undisplaced (11% of total), and those which have moved to an extent that the blood supply to the bone is disrupted – displaced (46% of total). Fractures outside the joint are divided into those that occur between the major muscle insertions (the trochanters) which are termed intertrochanteric (34% of total), and those that occur further down the femur at the junction with the femoral shaft. These are termed subtrochanteric (5% of total). (See Fig 1.)

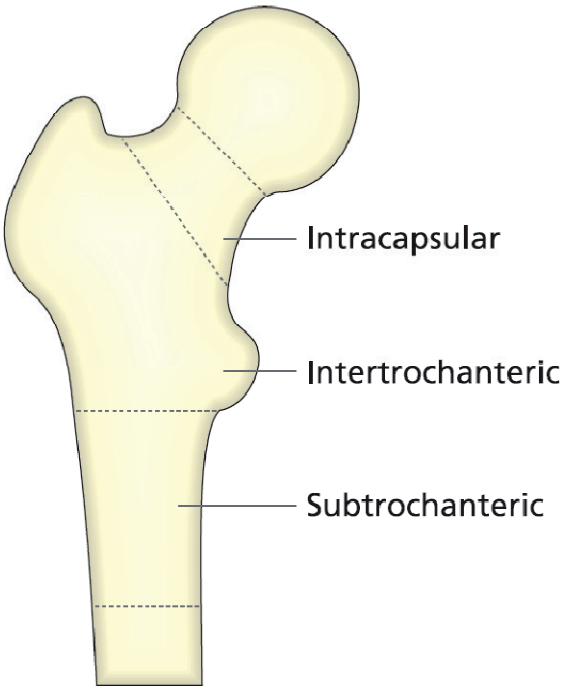


Fig 1

Within these categories, fracture patterns show considerable variation and there is likely to be a degree of disagreement in classification between observers, particularly in terms of fracture displacement and in the subtrochanteric region.

Hospitals with an atypical pattern of fracture type, and those with a high proportion of fractures recorded as unknown or other, should increase the clinical input to data collection and validation. Further help on classification is available at **www.nhfd.co.uk** (E-learning)

Chart 8 - AMTS Score

The Abbreviated Mental Test Score is a valuable tool in the assessment of dementia[7] and can be obtained in a few minutes. It is a highly significant factor in casemix adjusted outcomes but is available for only 56.9% of patients. Where it has been recorded 31% of patients score less than 6/10, indicating significant impairment. Hospitals should endeavour to increase the number of records in which this field is completed.

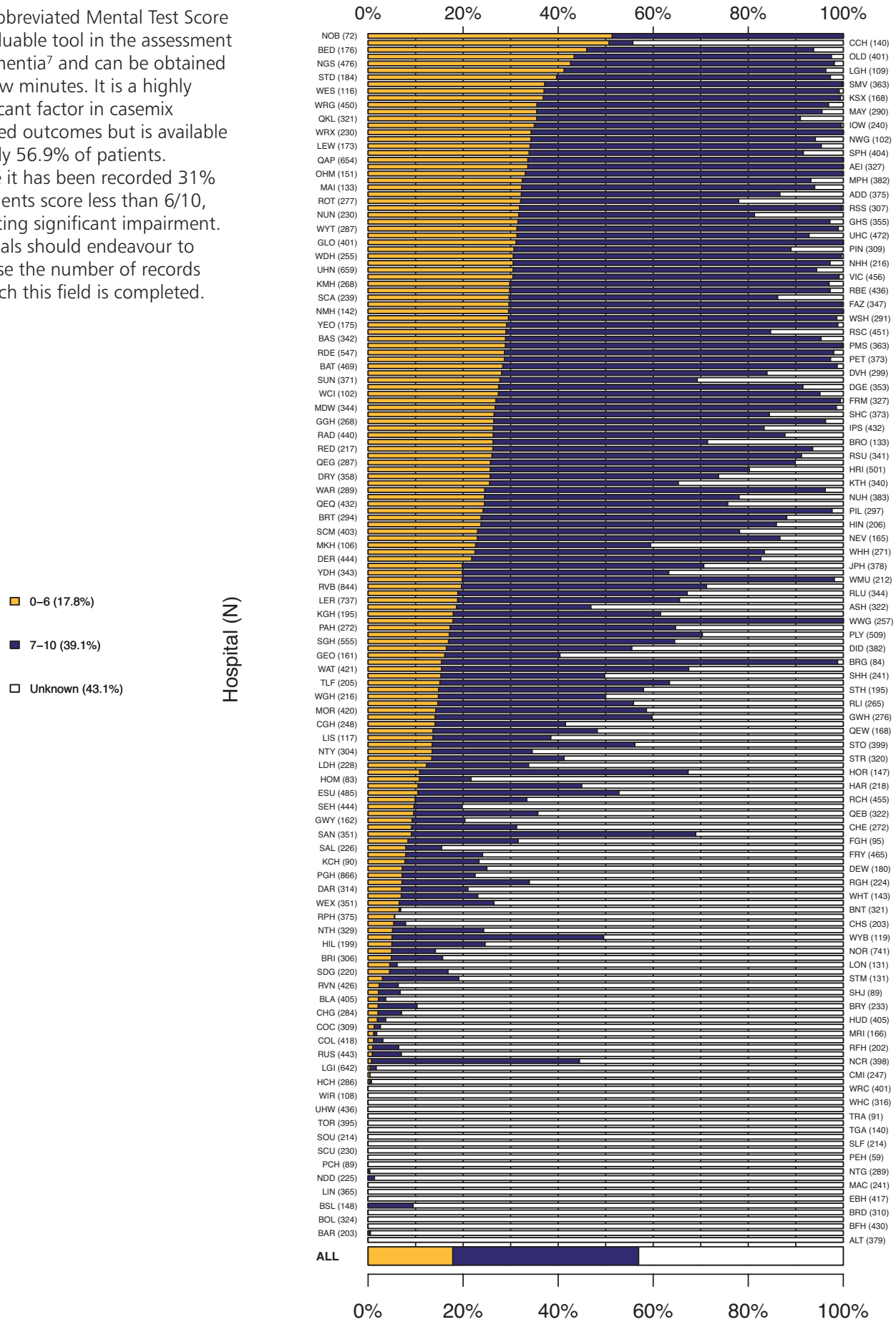


Chart 9 - A&E to orthopaedic ward in 4 hours (Blue Book Standard 1)

Hip fracture patients are best treated in specialist wards, and should generally be 'fast tracked' to their definitive bed with minimal delay. In practice it is difficult to achieve this within an hour of arrival, but four hours gives more than enough time to complete all the necessary investigations and assessments prior to transfer. This chart shows the great range in the proportion of patients getting to an orthopaedic ward or other designated hip fracture ward within 4 hours. This may arise in part from poor recording of time of arrival on ward in clinical records.

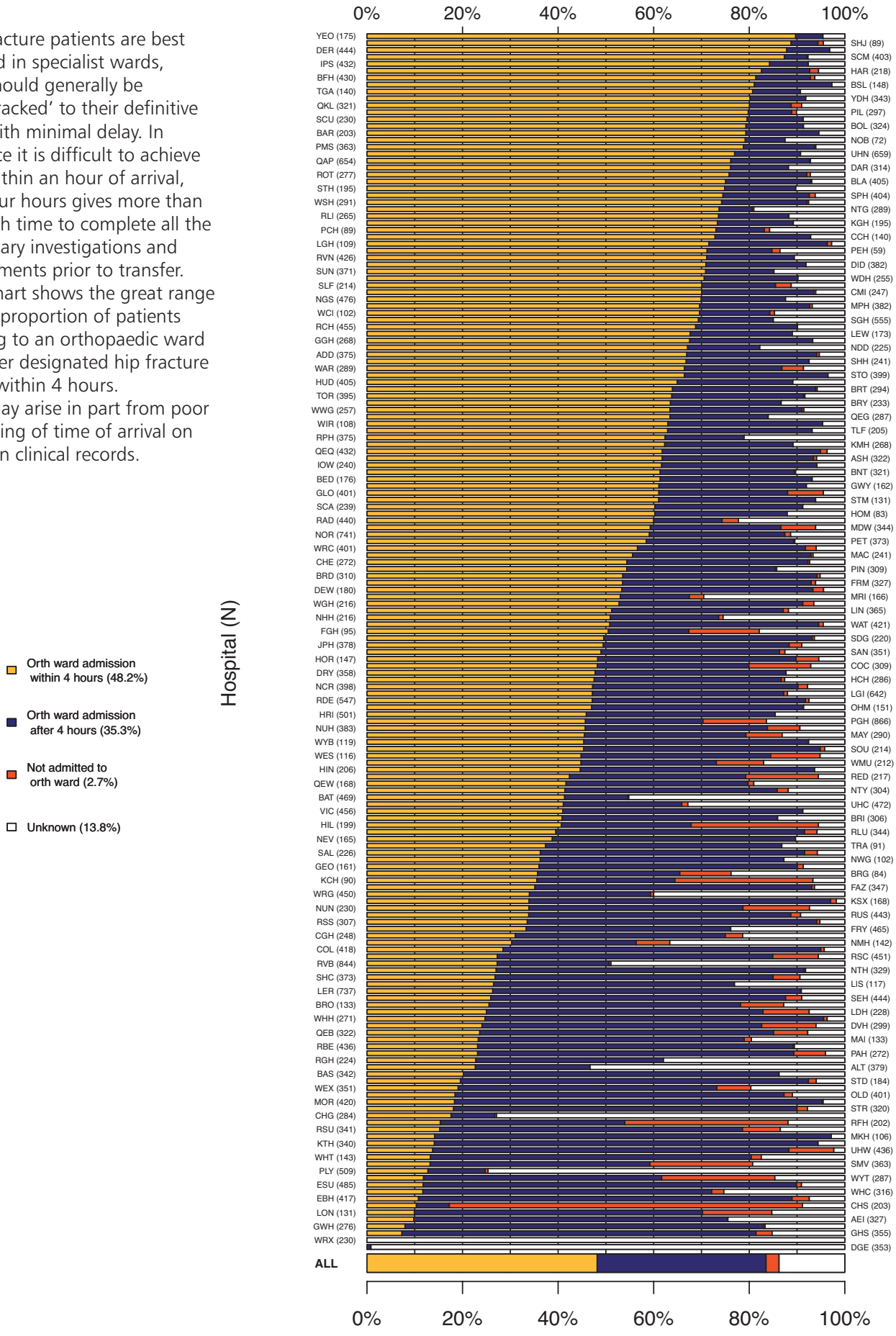


Chart 10 - Surgery within 36 hours of admission

This chart shows the percentage of patients who have their surgery within 36 hours. The range is from 9% to 88%, demonstrating considerable scope for improvement.

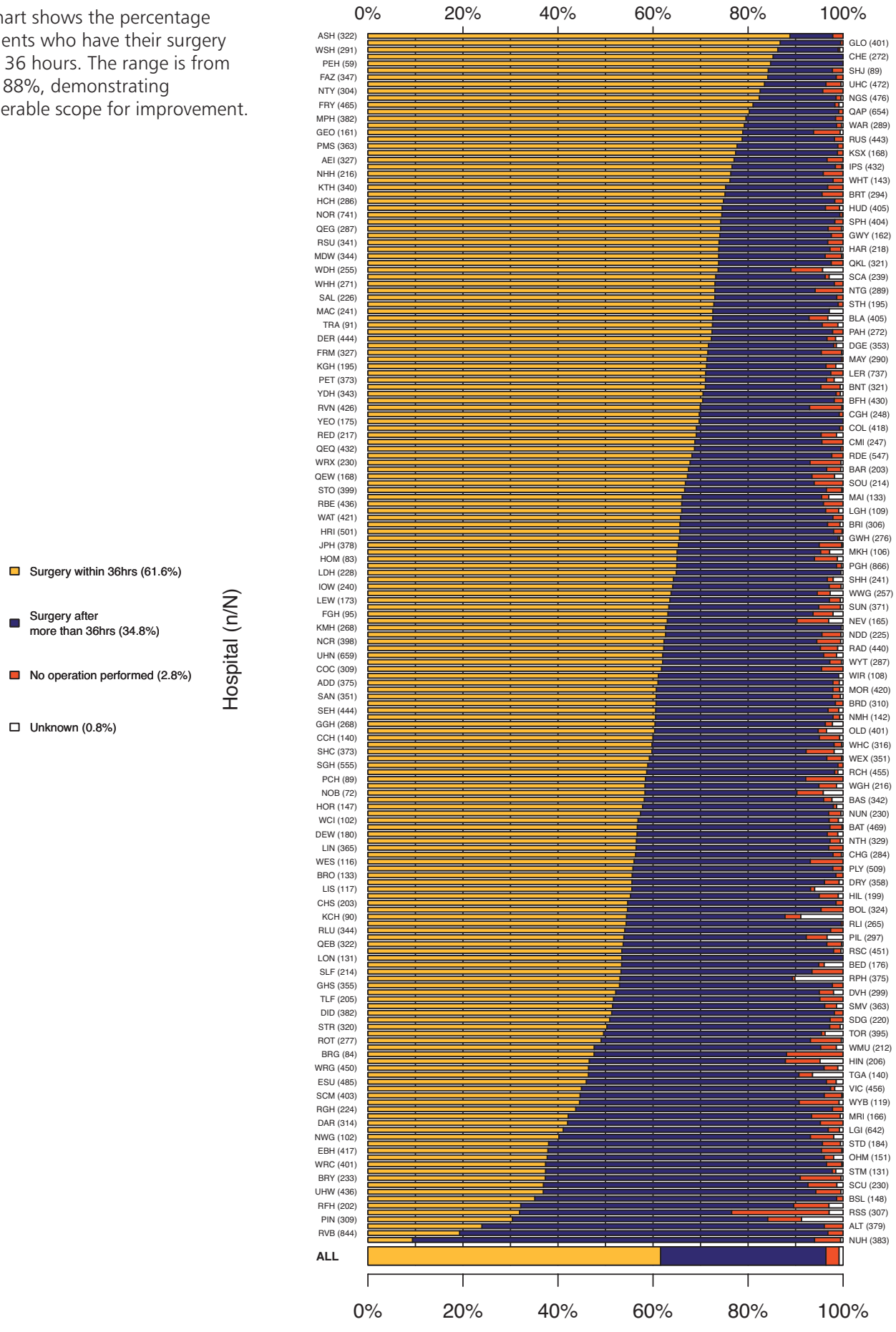
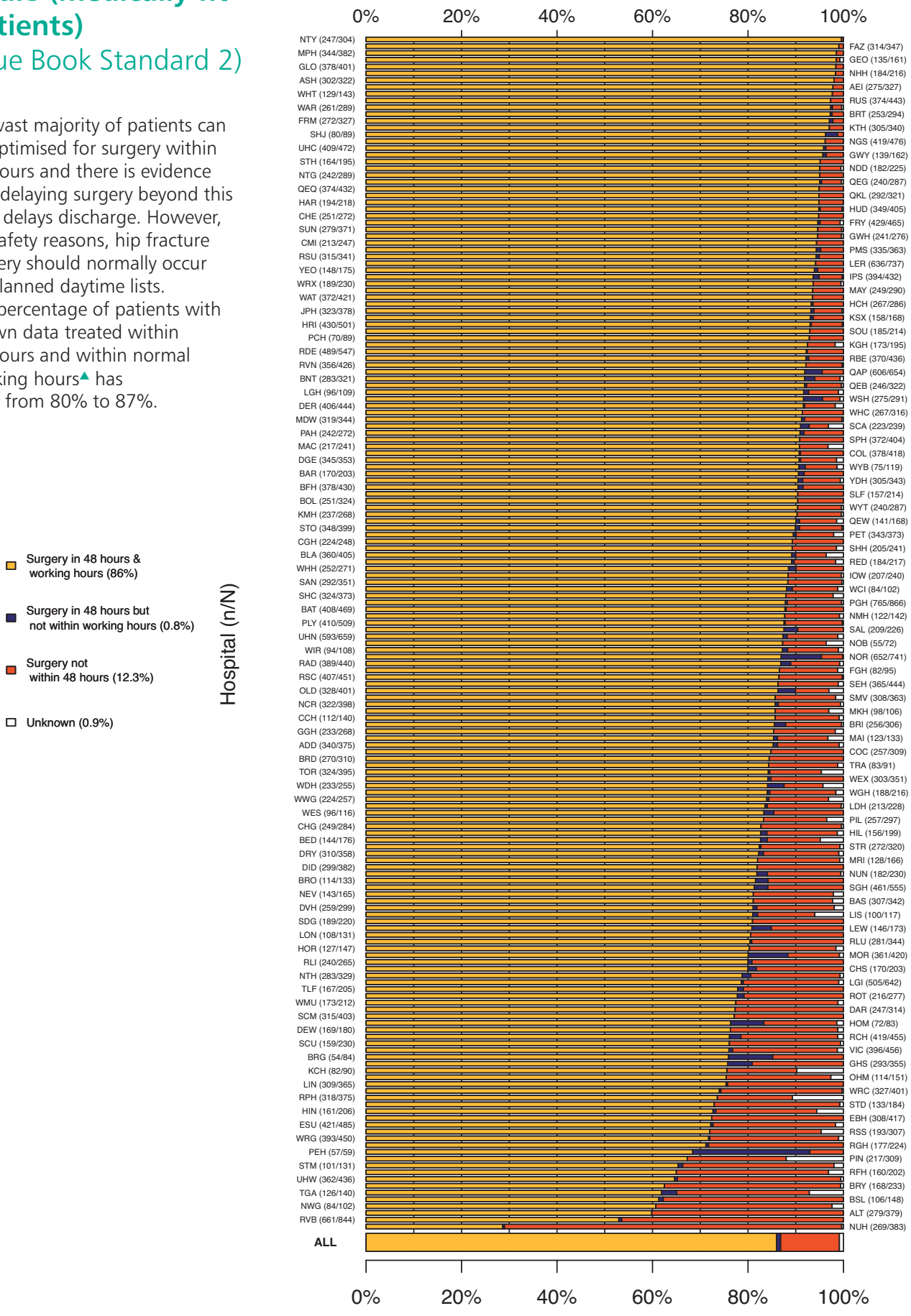


Chart 11 - Surgery within 48 hours and during normal working hours (medically fit patients)

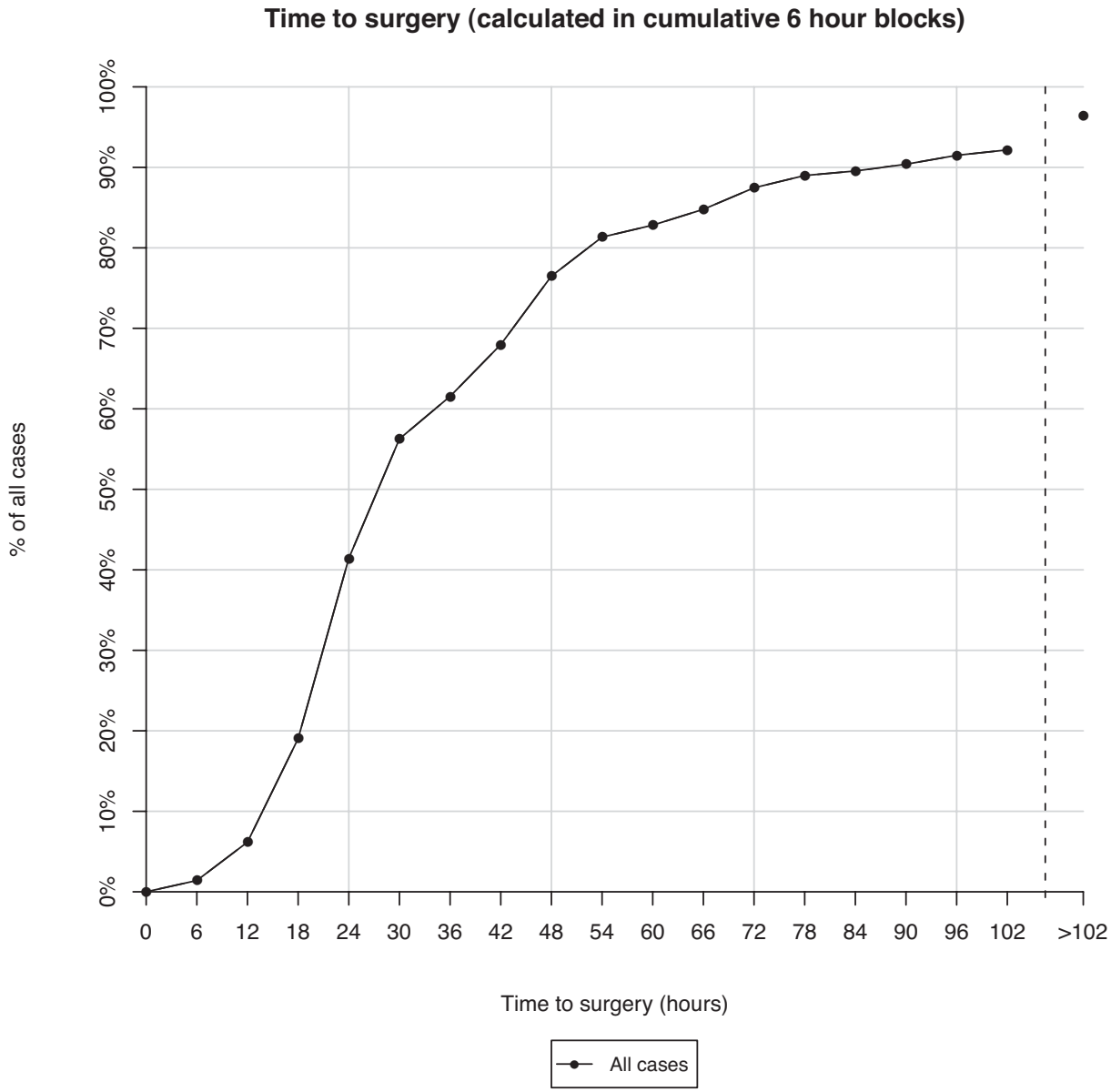
(Blue Book Standard 2)

The vast majority of patients can be optimised for surgery within 48 hours and there is evidence that delaying surgery beyond this time delays discharge. However, for safety reasons, hip fracture surgery should normally occur on planned daytime lists.
The percentage of patients with known data treated within 48 hours and within normal working hours▲ has risen from 80% to 87%.



Excludes patients already in hospital when fracture occurred, patients medically unfit after 48 hours, patients dead within 48 hours, and patients who were treated without surgery

Chart 12 - Cumulative time to surgery



This shows at six hourly intervals the percentage of patients who have already had surgery. Since three quarters of patients present between 11:00 and 23:00, they reach the 30 hours from admission time frame during the out of hours period. This is reflected in the changing slope of the graph.

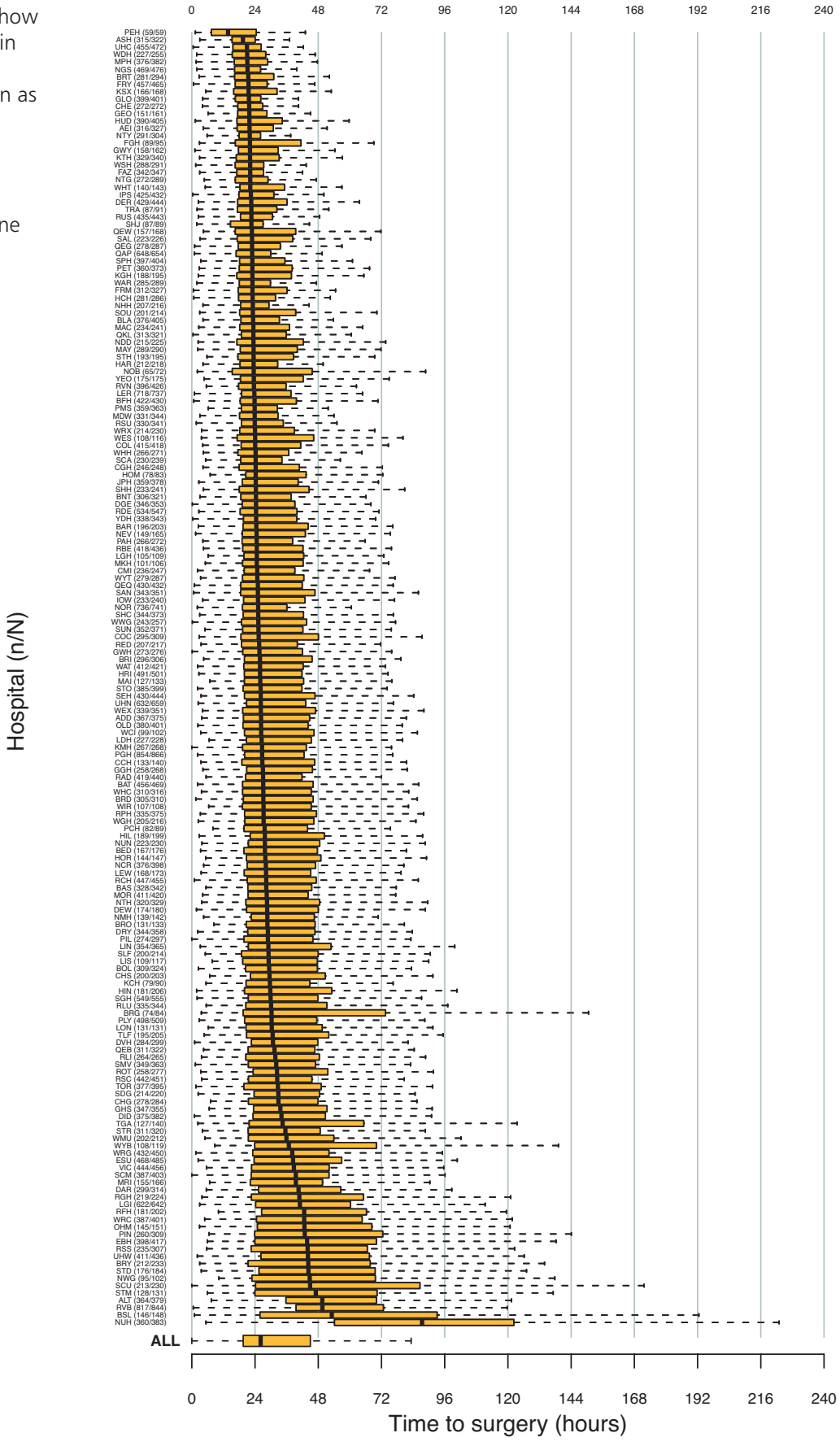
A table of this data is available in Appendix B for hospitals that wish to compare their own performance against the national figures.

While the majority of patients whose surgery is delayed have significant medical problems, 2% of healthy patients wait more than four days for surgery.

Considerable variation in delay to surgery persists. Over 90% of patients treated in the Channel Islands have their operation within 48 hours, compared with only 40% of those treated in Northern Ireland, where most hip fracture care is centralised, and a hub and spoke care model tends to prolong waits to surgery.

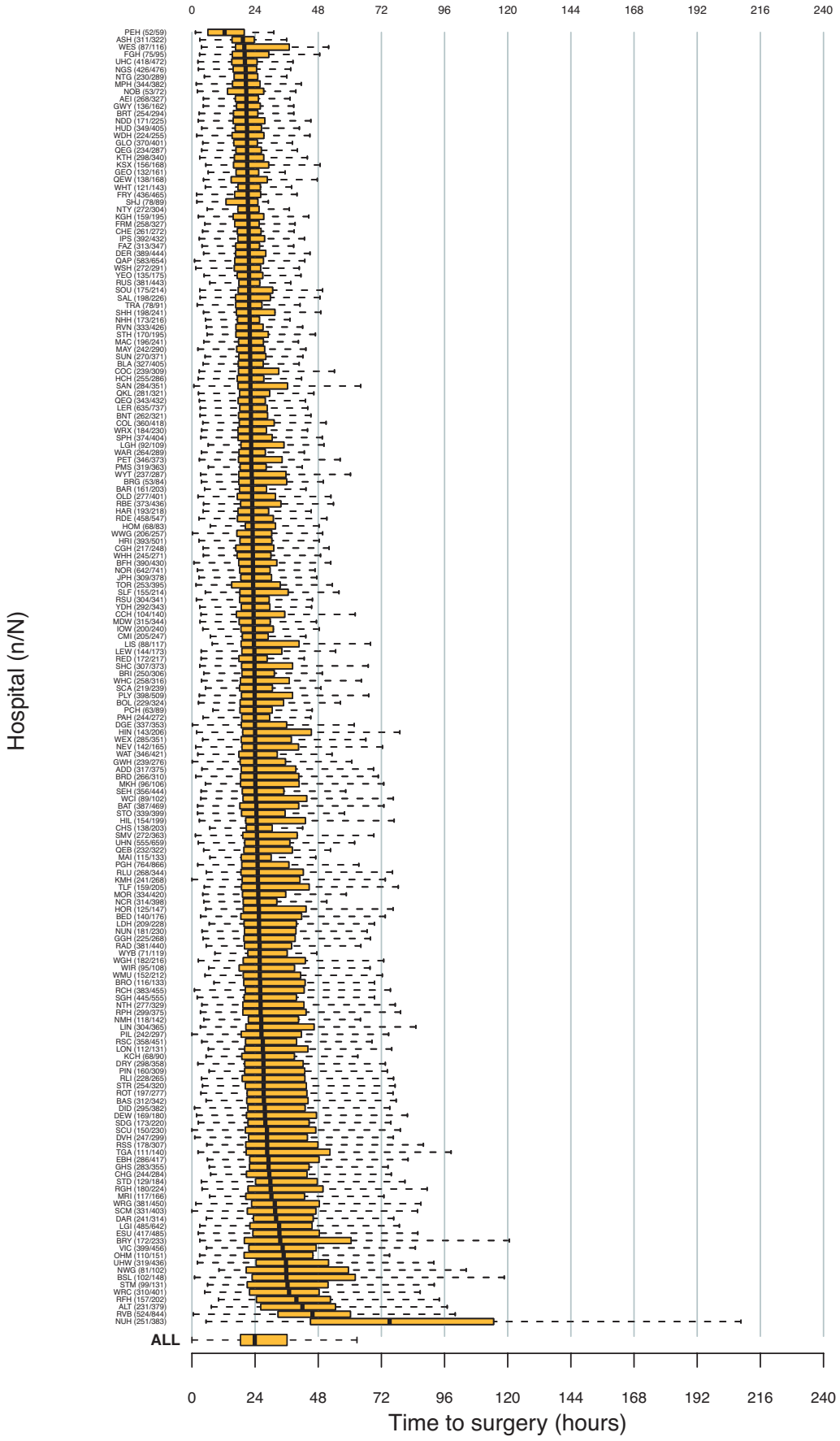
Chart 13 - Box plots for time to surgery

Charts 13 & 14.
'Box and whisker' plots show within-hospital variation in delay to theatre.
The median time is shown as a black line, with the inter-quartile range as a yellow box, and the dotted line whiskers and the extremes as dotted-line 'whiskers'.



Excludes patients with times to surgery outside of range [0 days,365 days], those who did not undergo surgery and those with missing data

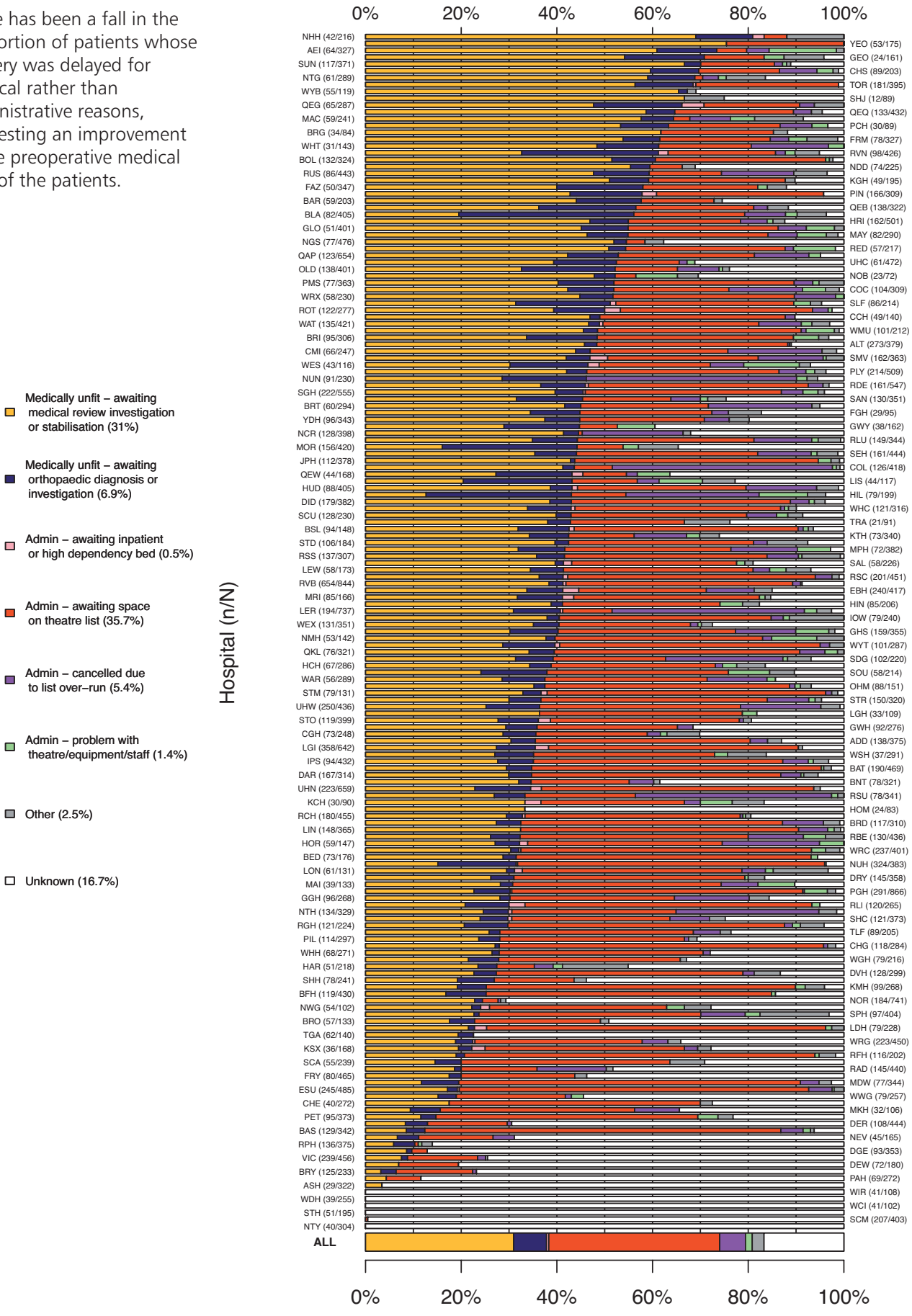
Chart 14 - Box plots for time to surgery – medically fit patients



Excludes patients who were delayed because of medical reasons.
Also excludes patients with times to surgery outside of range [0 days,365 days], those who did not undergo surgery and those with missing data

Chart 15 - Reason for no operation in 36 hours

There has been a fall in the proportion of patients whose surgery was delayed for medical rather than administrative reasons, suggesting an improvement in the preoperative medical care of the patients.



Includes only patients who underwent surgery after more than 36 hours.
Hospitals with fewer than 10 patients delayed by 36 hours or more are not plotted

Chart 16 - Patients treated without surgery

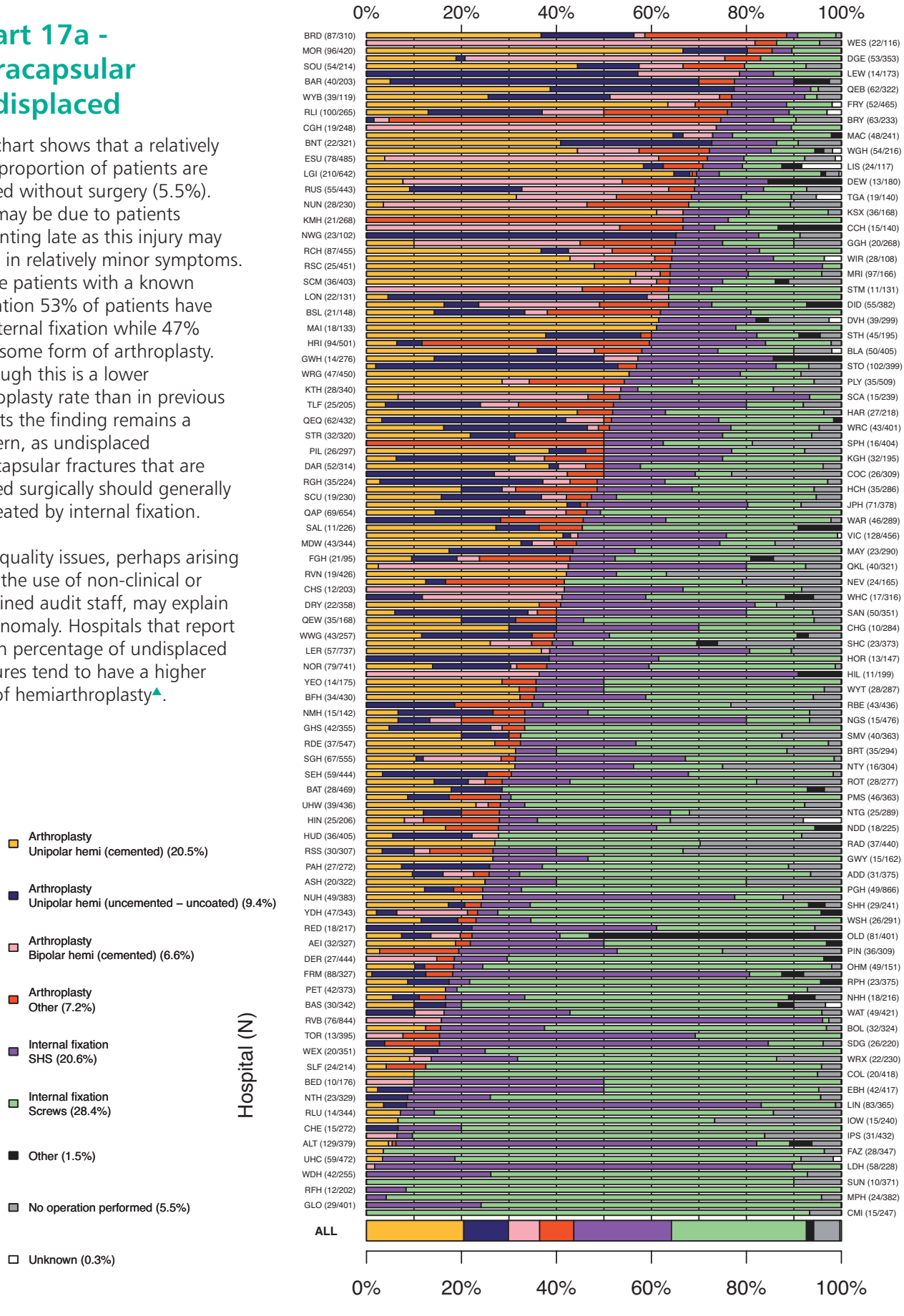
Virtually all fracture patients should have surgery, except those in whom the fracture is already healing in a satisfactory alignment at the time of presentation; and those whose expected survival is, for reasons unrelated to hip fracture, very brief. It is therefore encouraging that the number of patients treated without surgery is less than 3% in this report. However it is of concern that while the range was from 0% to 10% in 2010 there are two hospitals not operating on more than 10%. Clinicians there should review their criteria for surgery, and their outcomes.

Operations performed by fracture type

Chart 17a - Intracapsular undisplaced

This chart shows that a relatively high proportion of patients are treated without surgery (5.5%). This may be due to patients presenting late as this injury may result in relatively minor symptoms. Of the patients with a known operation 53% of patients have an internal fixation while 47% have some form of arthroplasty. Although this is a lower arthroplasty rate than in previous reports the finding remains a concern, as undisplaced intracapsular fractures that are treated surgically should generally be treated by internal fixation.

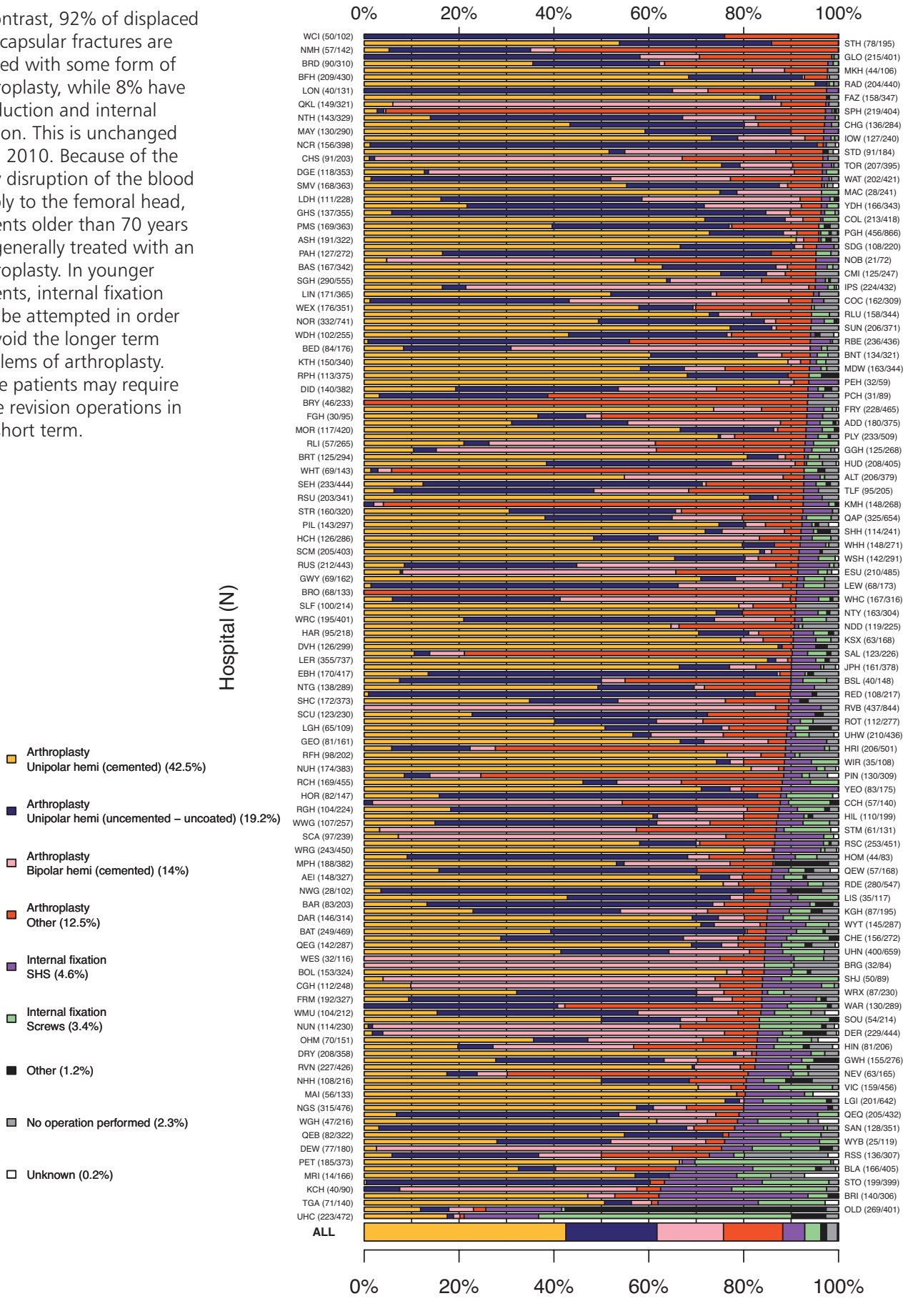
Data quality issues, perhaps arising from the use of non-clinical or untrained audit staff, may explain this anomaly. Hospitals that report a high percentage of undisplaced fractures tend to have a higher rate of hemiarthroplasty▲.



Hospitals excluded where less than 10 patients suffered an intercapsular undisplaced fracture

Chart 17b - Intracapsular displaced

In contrast, 92% of displaced Intracapsular fractures are treated with some form of arthroplasty, while 8% have a reduction and internal fixation. This is unchanged from 2010. Because of the likely disruption of the blood supply to the femoral head, patients older than 70 years are generally treated with an arthroplasty. In younger patients, internal fixation may be attempted in order to avoid the longer term problems of arthroplasty. These patients may require more revision operations in the short term.



Hospitals excluded where less than 10 patients suffered an intercapsular displaced fracture

Chart 17c - Intertrochanteric

There is a consensus on the merit of fixing the majority of these fractures with a sliding screw. The distribution of the 1.9% of fractures fixed using cannulated screws suggests coding issues, while in a minority of units a proximal femoral nail is the preferred form of fixation.

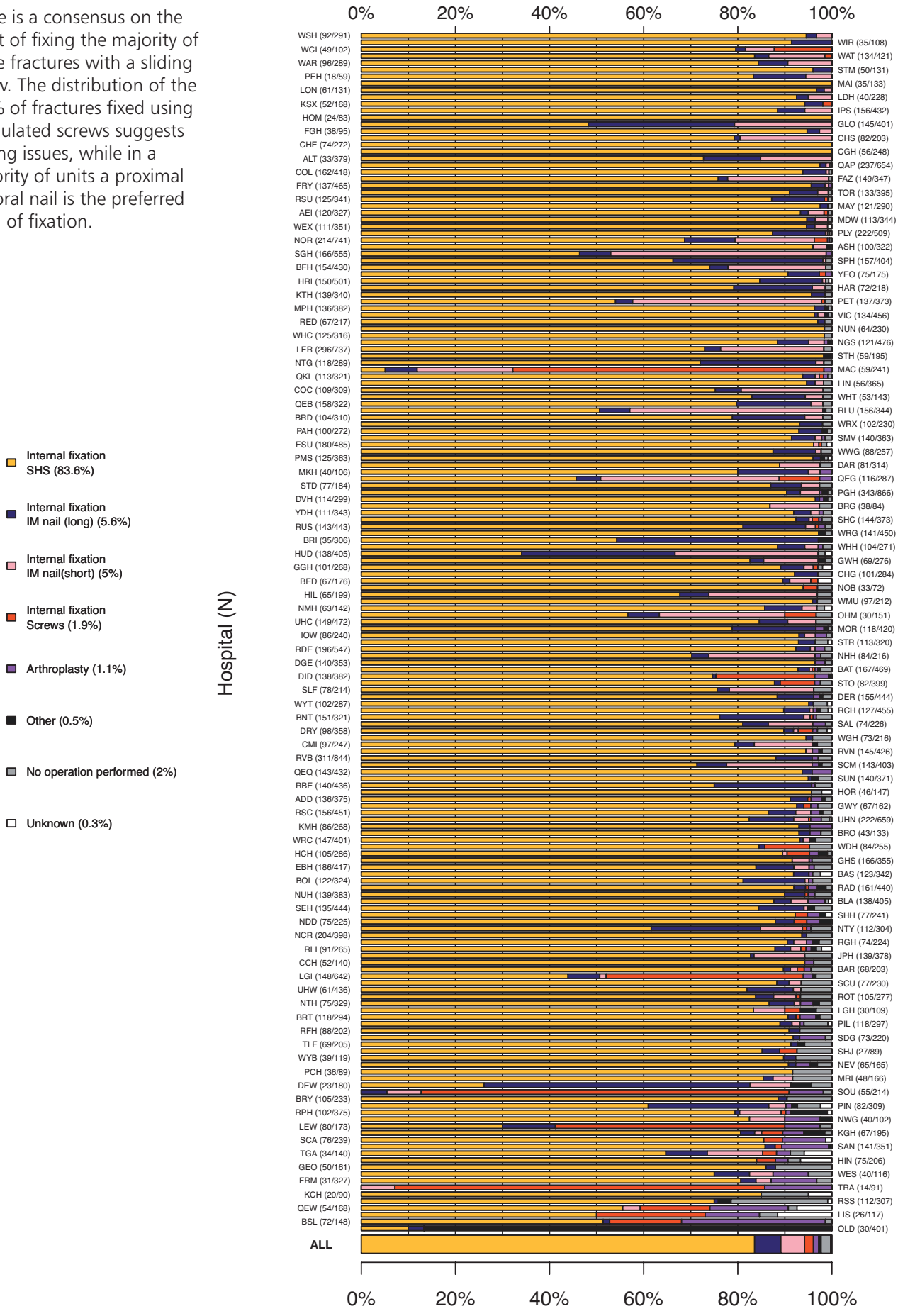
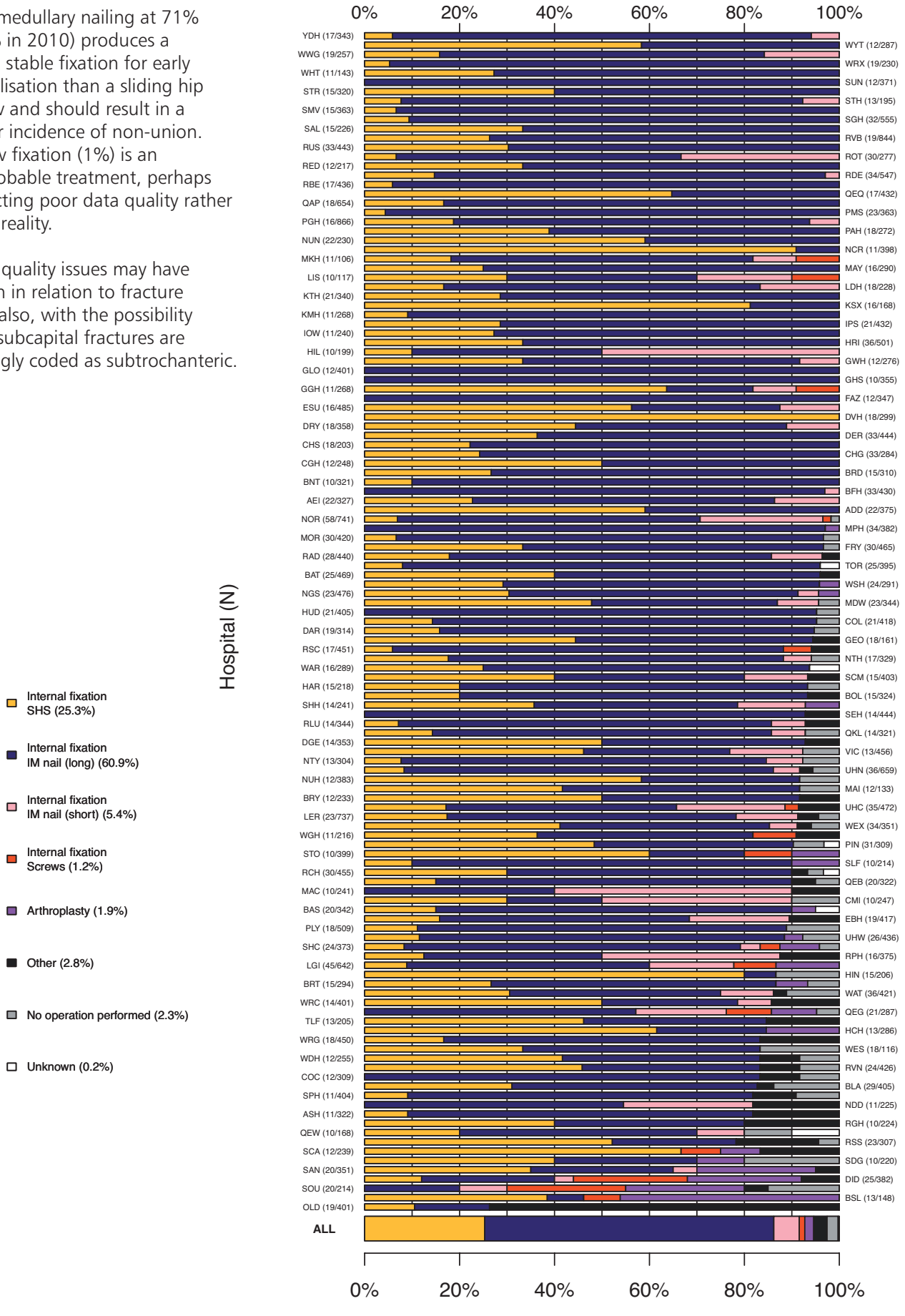


Chart 17d - Subtrochanteric

Intramedullary nailing at 71% (65% in 2010) produces a more stable fixation for early mobilisation than a sliding hip screw and should result in a lower incidence of non-union. Screw fixation (1%) is an improbable treatment, perhaps reflecting poor data quality rather than reality.

Data quality issues may have arisen in relation to fracture type also, with the possibility that subcapital fractures are wrongly coded as subtrochanteric.



Hospitals excluded where less than 10 patients suffered a subtrochanteric fracture

Improving NHFD data collection and follow-up, Basingstoke and North Hampshire Hospital

When the Basingstoke and North Hampshire Hospital began participating in NHFD in October 2009, the clinical team set out to ensure that the standards of data collection and follow-up were high. A&E staff supply reliable data on time of transfer. The clerking pro-forma for hip fracture patients includes the NHFD dataset for acute care. ASA grades, routinely recorded in the theatre IT system, are supplied by e-mail.

Follow-up data – widely seen as difficult to collect – was initially sought by telephone, but time constraints and patients' reluctance to answer 'number withheld' calls prompted a change to a brief questionnaire letter sent with a pre-paid reply envelope. Return rates are now more than 90%. All patients are offered a multidisciplinary clinic follow-up at around six weeks, which has proved viable for checking medication compliance, assessing mobility, reviewing outstanding investigations (e.g. DEXA scans), and allowing discussion and explanation to improve patients' understanding

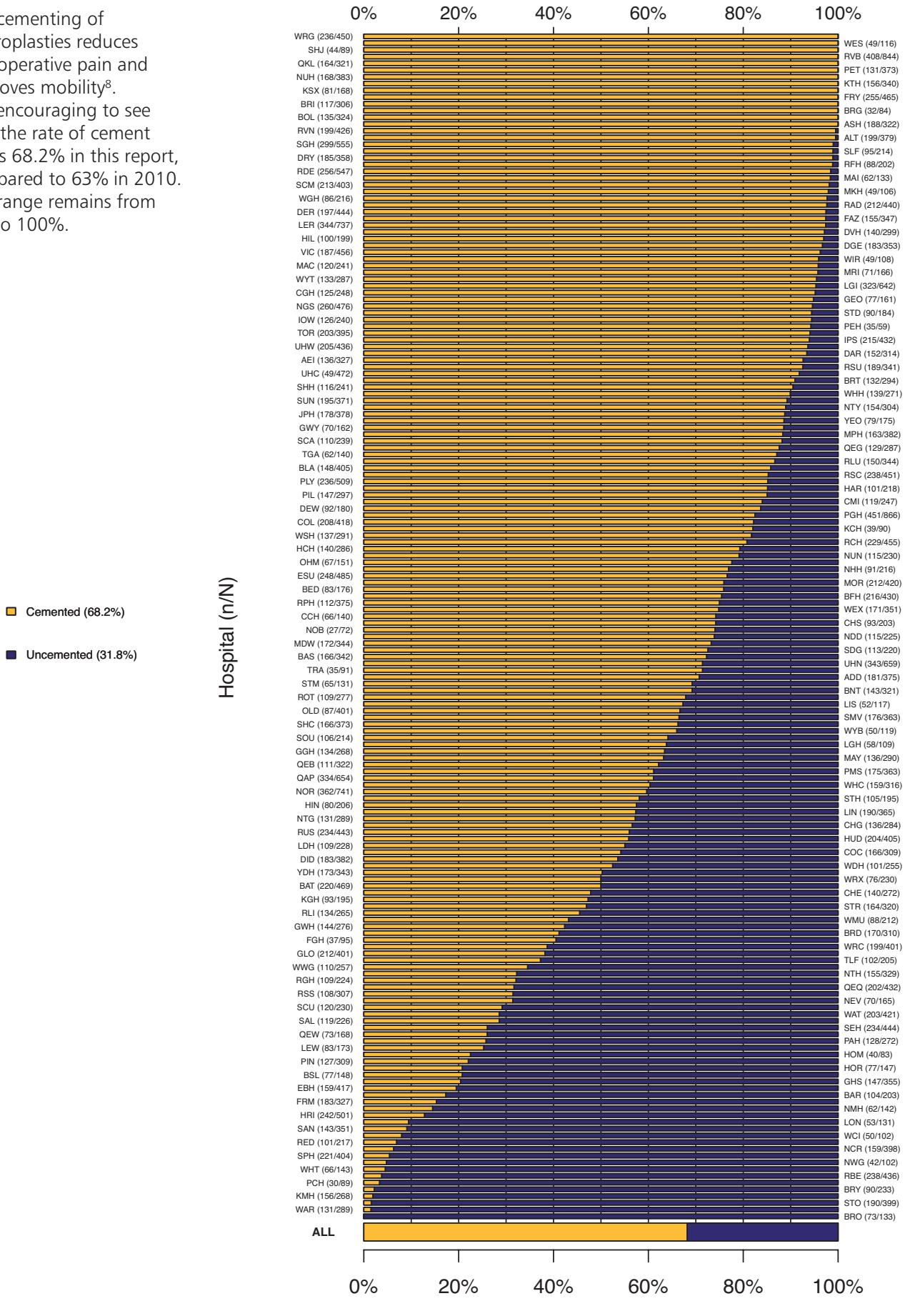
Achieving and using high-quality NHFD data, University Hospitals Coventry and Warwickshire

Clinical teams at University Hospitals Coventry and Warwickshire have worked to improve hip fracture care by establishing a new ortho-geriatrician post, setting up a hip governance group, providing an A-to-Z guide to hip fracture care for junior medical staff, employing advanced nurse practitioners, redesigning the hip fracture clinical pathway, and using regular audit presentations to monitor and improve care.

Data quality has improved since data collection became the responsibility of nurses with dedicated time, and improved data quality is seen as powerful in involving senior clinical staff in the audit. Follow-up data, now collected to a high standard, has improved communication, increased patient confidence in the service, identified problem areas, and facilitated checks on essential investigations such as DEXA scans.

Chart 18 - Cementing of arthroplasties

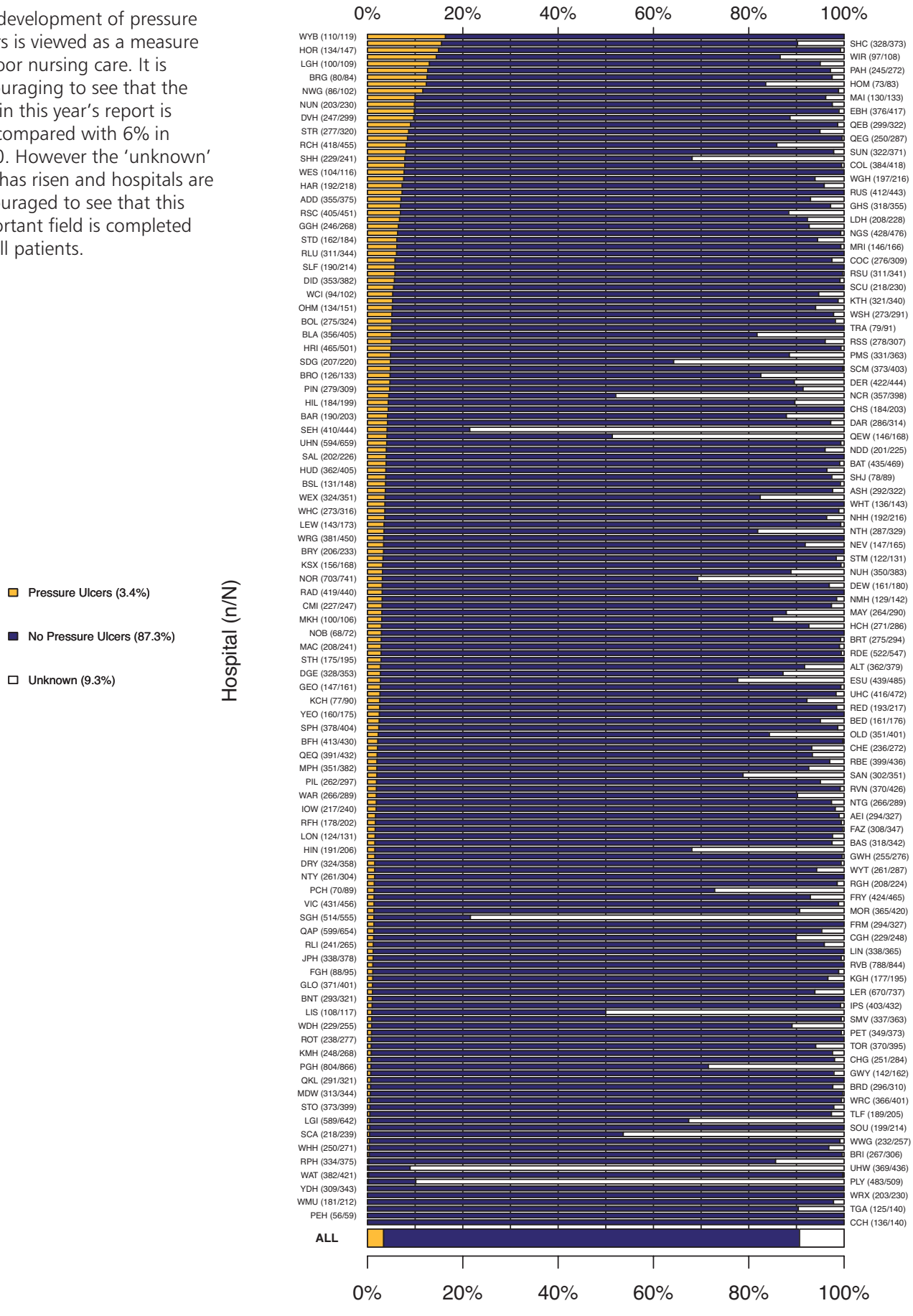
The cementing of arthroplasties reduces postoperative pain and improves mobility[8].
It is encouraging to see that the rate of cement use is 68.2% in this report, compared to 63% in 2010. The range remains from 0% to 100%.



Includes only patients who underwent arthroplasty

Chart 19 - Development of pressure ulcers (Blue Book Standard 3)

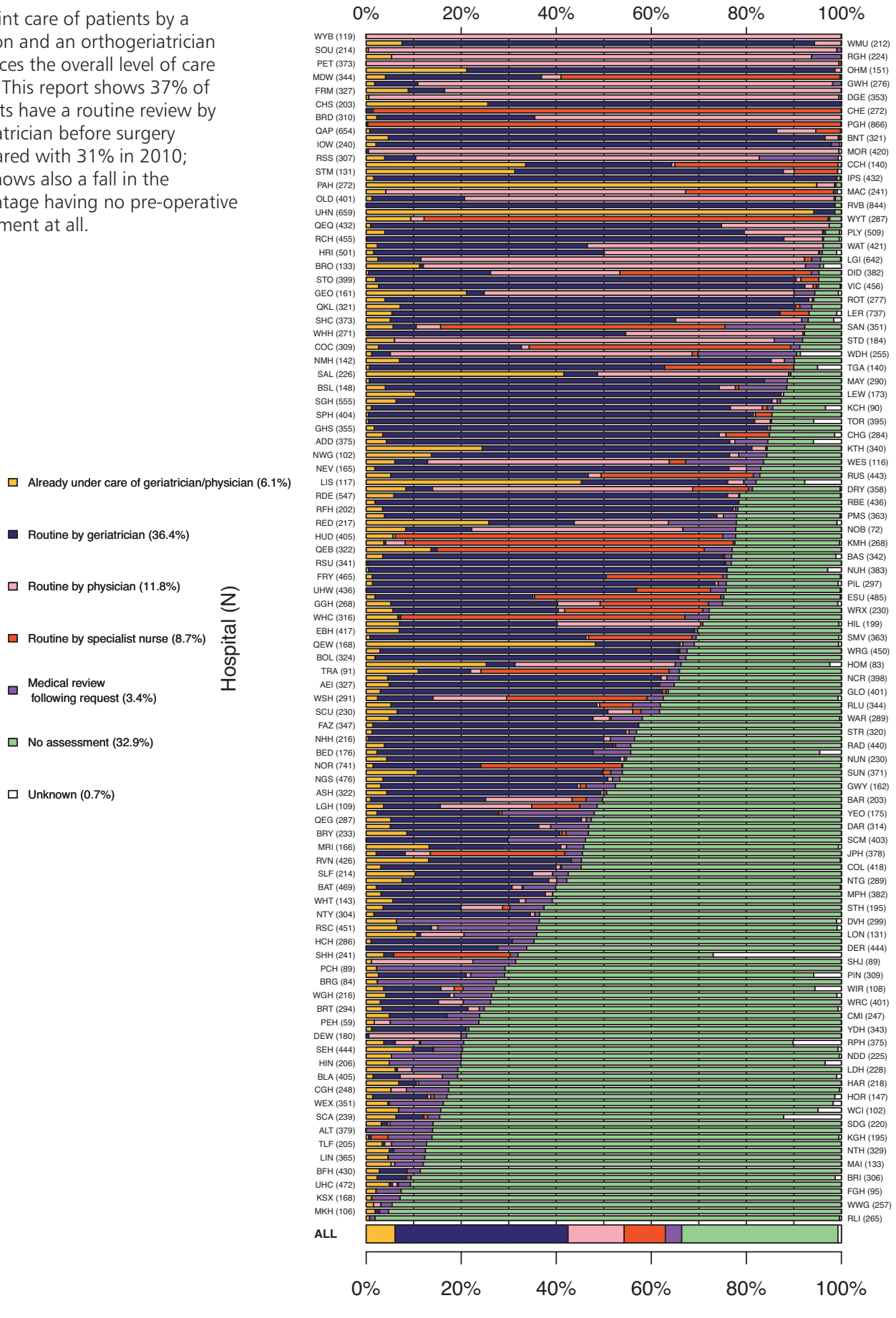
The development of pressure ulcers is viewed as a measure of poor nursing care. It is encouraging to see that the rate in this year's report is 3% compared with 6% in 2010. However the 'unknown' rate has risen and hospitals are encouraged to see that this important field is completed for all patients.



Excludes patients who died in hospital

Chart 20 - Preoperative medical assessments (Blue Book Standard 4)

The joint care of patients by a surgeon and an orthogeriatrician enhances the overall level of care given. This report shows 37% of patients have a routine review by a geriatrician before surgery compared with 31% in 2010; and shows also a fall in the percentage having no pre-operative assessment at all.



Patients are included under the highest level of assessment which they received. Levels are plotted in the hierarchical order

Chart 21 - Bone protection medication at admission

There has been a slight (2%) rise in the percentage of patients who are taking bone protection medication at the time of their admission. If this continues it may indicate an improvement in the secondary prevention available to all fragility fracture patients.

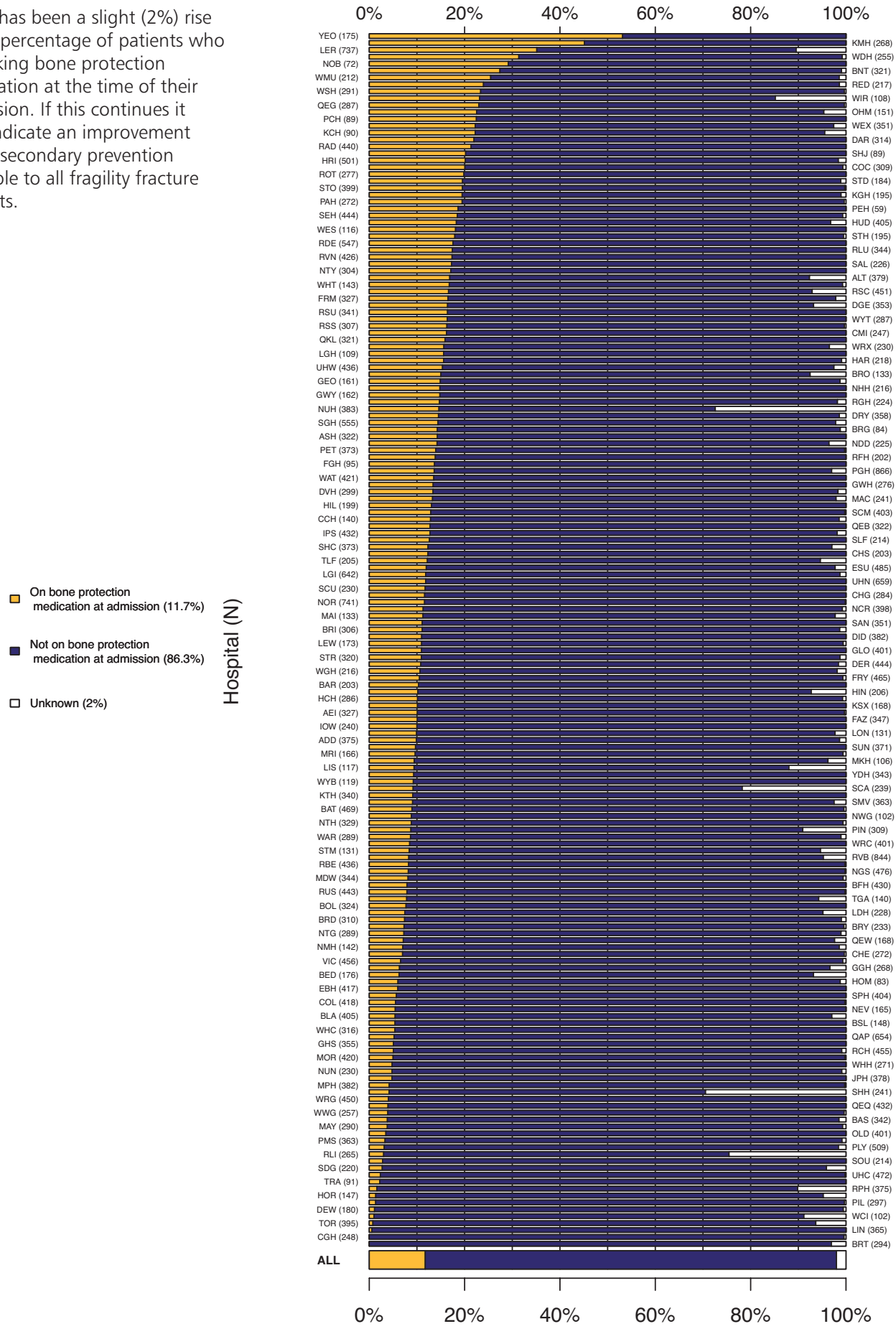
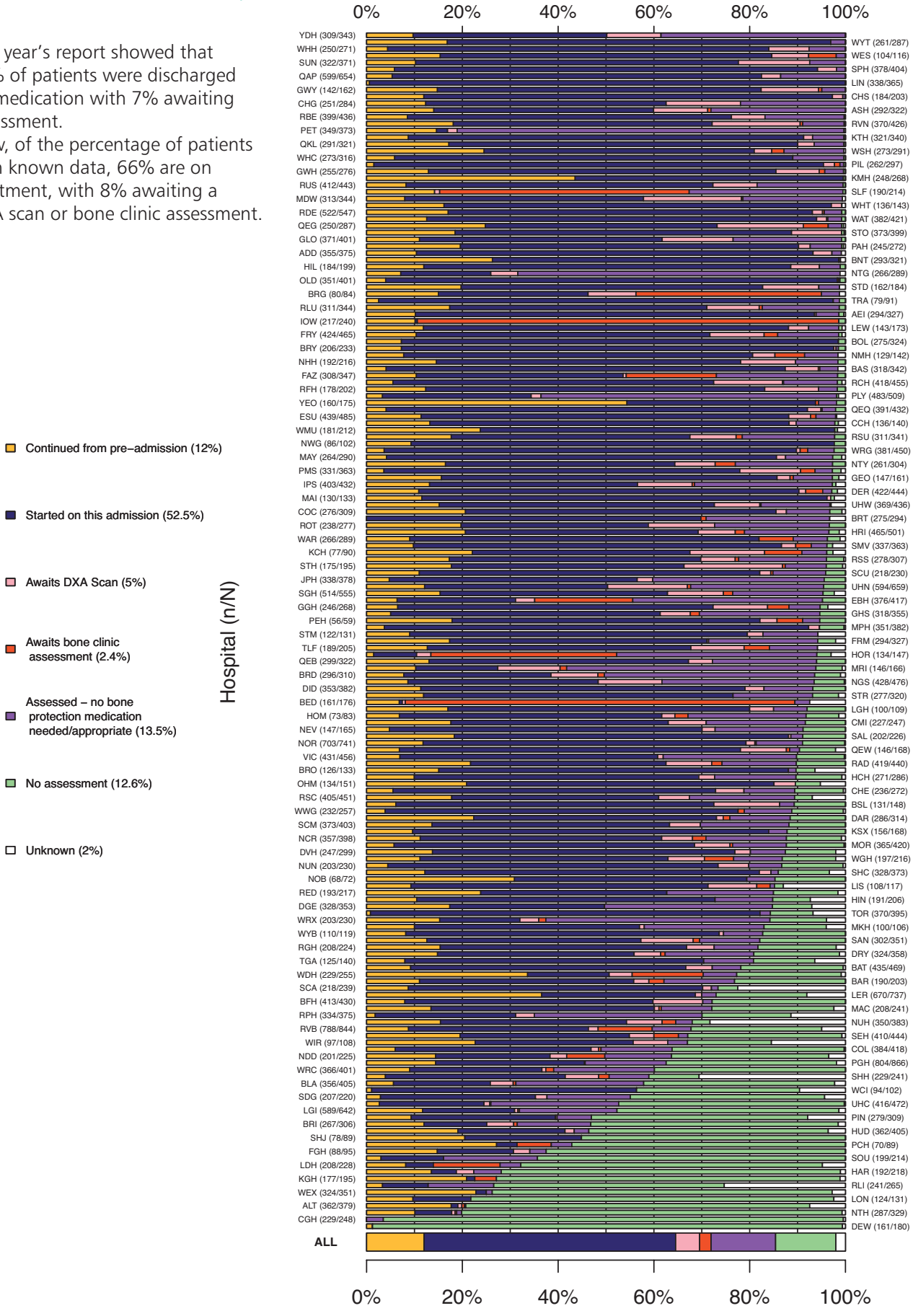


Chart 22 - Bone health assessment and treatment at discharge
(Blue Book Standard 5)

Last year's report showed that 57% of patients were discharged on medication with 7% awaiting assessment.
Now, of the percentage of patients with known data, 66% are on treatment, with 8% awaiting a DXA scan or bone clinic assessment.

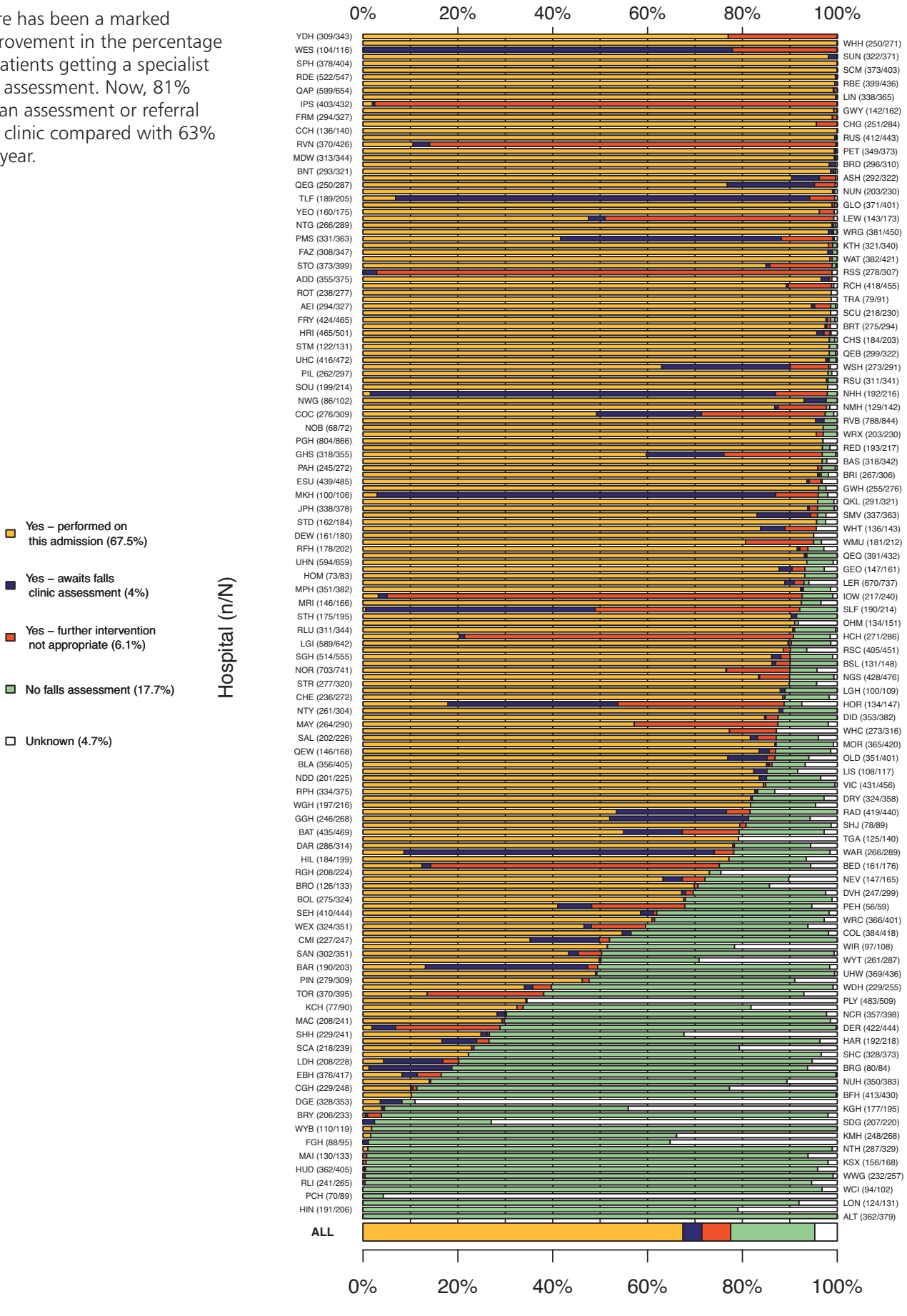


Excludes patients who died in hospital

Patients are included under the highest level of bone health assessment which they received. Levels are plotted in the hierarchical order

Chart 23 - Specialist falls assessment▲ (Blue Book Standard 6)

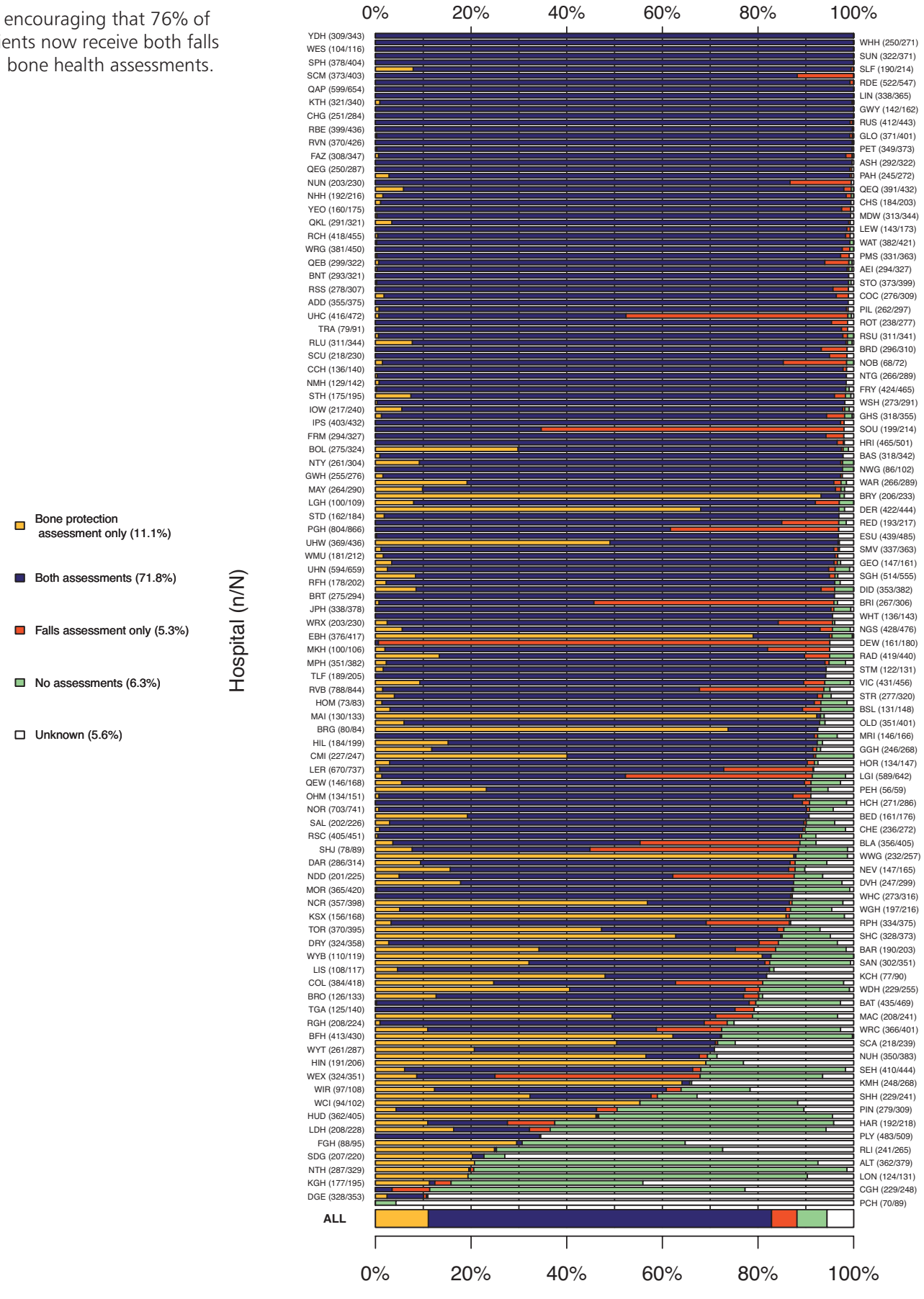
There has been a marked improvement in the percentage of patients getting a specialist falls assessment. Now, 81% get an assessment or referral to a clinic compared with 63% last year.



Excludes patients who died in hospital

Chart 24 - Secondary prevention overview

It is encouraging that 76% of patients now receive both falls and bone health assessments.



Excludes patients who died in hospital.
'Unknown' includes any patients with one or more unknown assessment

Service development and change, South Tees NHS Foundation Trust

Using NHFD data, South Tees NHS Foundation Trust set out to improve hip fracture care in 2009. With the appointment of a part-time orthogeriatrician and a hip fracture specialist nurse, preoperative ortho-geriatric assessment rose from 0% to 62%, and bone health assessments increased from 2% to 90%. Overall trust length of stay was reduced by five days, with considerable efficiency savings resulting.

Using audit to improve care, Kingston Hospital, London

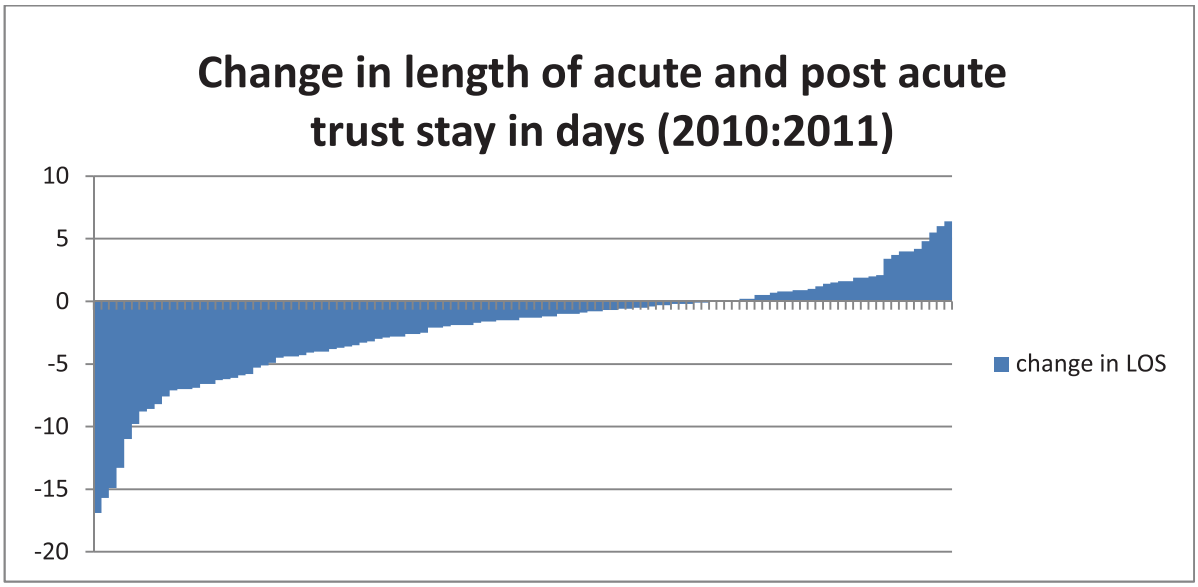
A multi-disciplinary, multi-specialty team at Kingston Hospital, London, used NHFD data on care process and outcomes to plan service developments. A full-time orthogeriatrician service was introduced in February 2010. This, together with closer collaboration between surgeons and anaesthetists, reduced time to surgery from 41 to 30 hours. Mean acute stay fell 18 to 14 days, and 94% of patients now have both falls assessments and osteoporosis care. The team continues to meet and discuss performance data, and NHFD participation is valued highly for its impact in improving care.

Chart 25a-c - Length of stay

These chart shows a mean length of acute stay of 16.4 days with a mean length of post-acute stay within the trust of 4.8 days, a total of 21.2 days. This compares favourably with 2010 in which the mean length of acute stay was 19.7 days and the mean post acute stay was 6.2 days, totalling 25.9.

Clearly a number of hospitals have been added in to this report which may influence the national mean. If we consider a sub-set of 113 hospitals whose length of stay was available for both 2010 and 2011 it is clear that in changes of length of stay decreases are more frequent than increases, with a median figure of a 1.5 day reduction in length of stay.

Some hospitals show very large changes which would indicate significant changes in the hip fracture patient pathway.

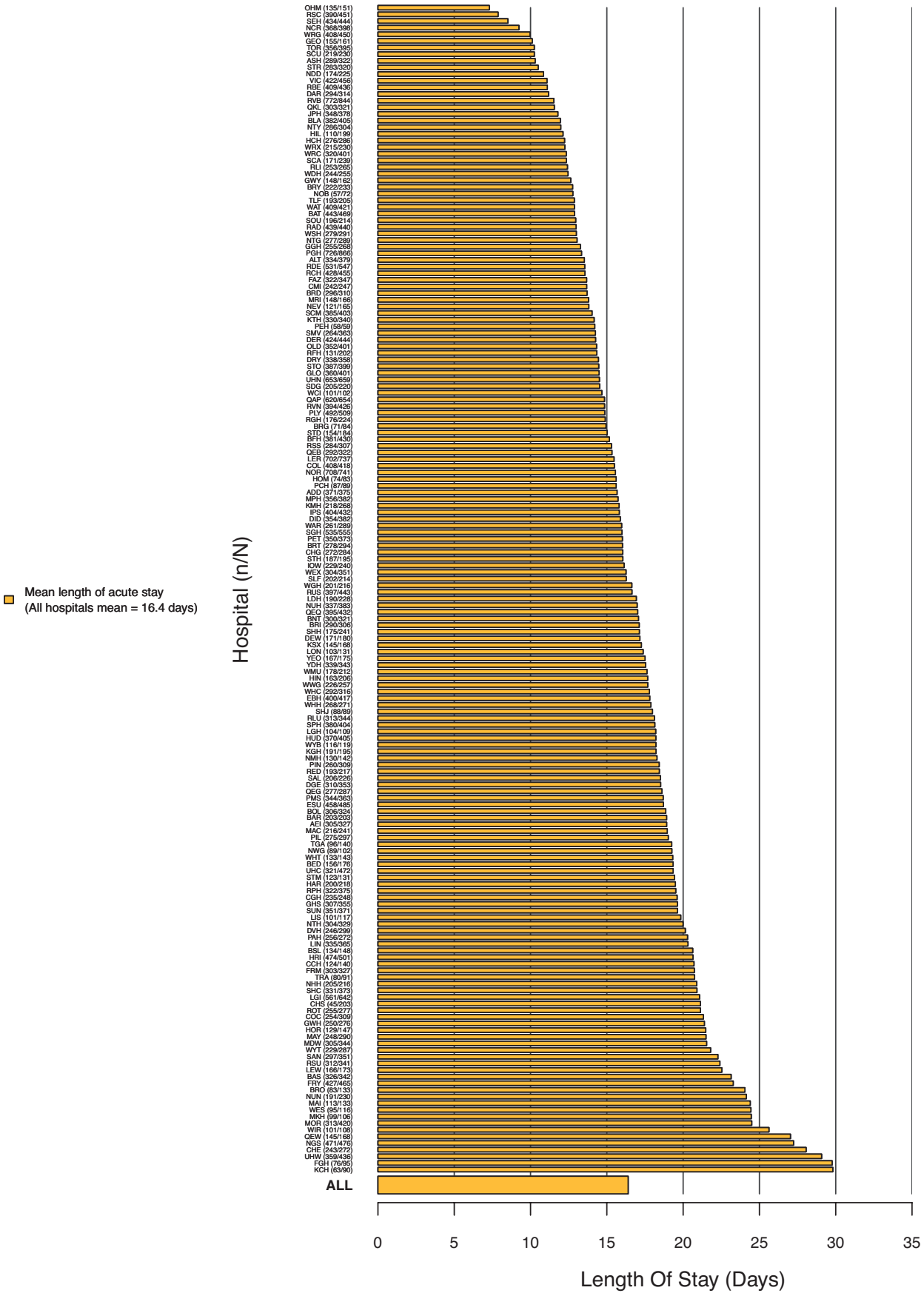


The length of acute stay in the orthopaedic ward is generally well recorded, as is post-acute stay within the same trust. However, care elsewhere in the NHS – for example, in a PCT-run community hospital – is poorly recorded.

The box and whisker charts (25b, 25d) show marked variation between hospitals in the length of acute stay; and between trusts in the combined acute and post-acute trust length of stay. With length of stay by far the dominant factor in the overall cost of hip fracture care, this variance demonstrates very considerable differences in resource use – and hence cost-effectiveness of care.

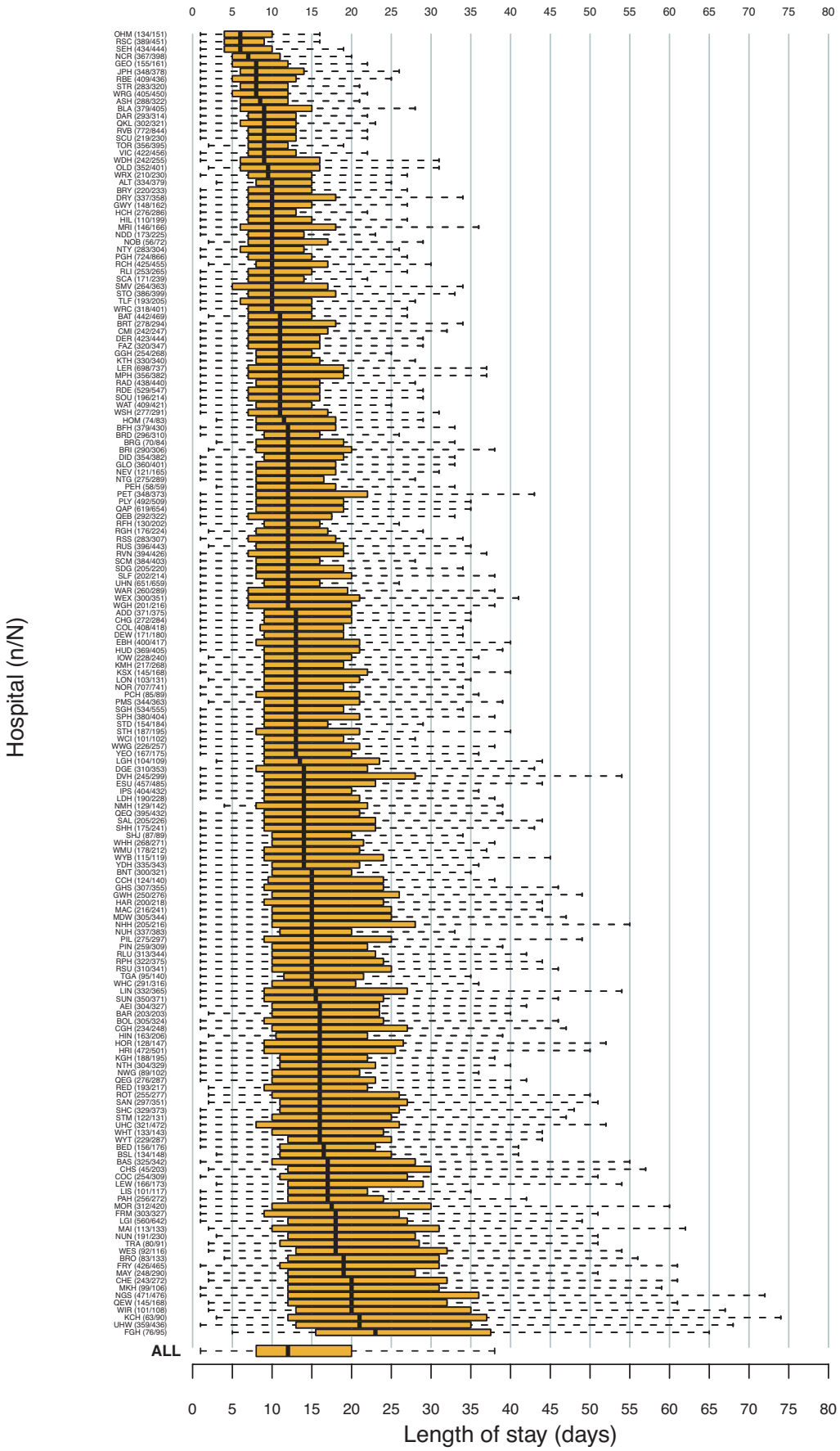
Improved linkage with HES▲ data may in future lead to better documentation of total NHS length of inpatient stay 'superspell', with more transparent accountability for NHS resource use in hip fracture care.

Chart 25a - Length of acute stay



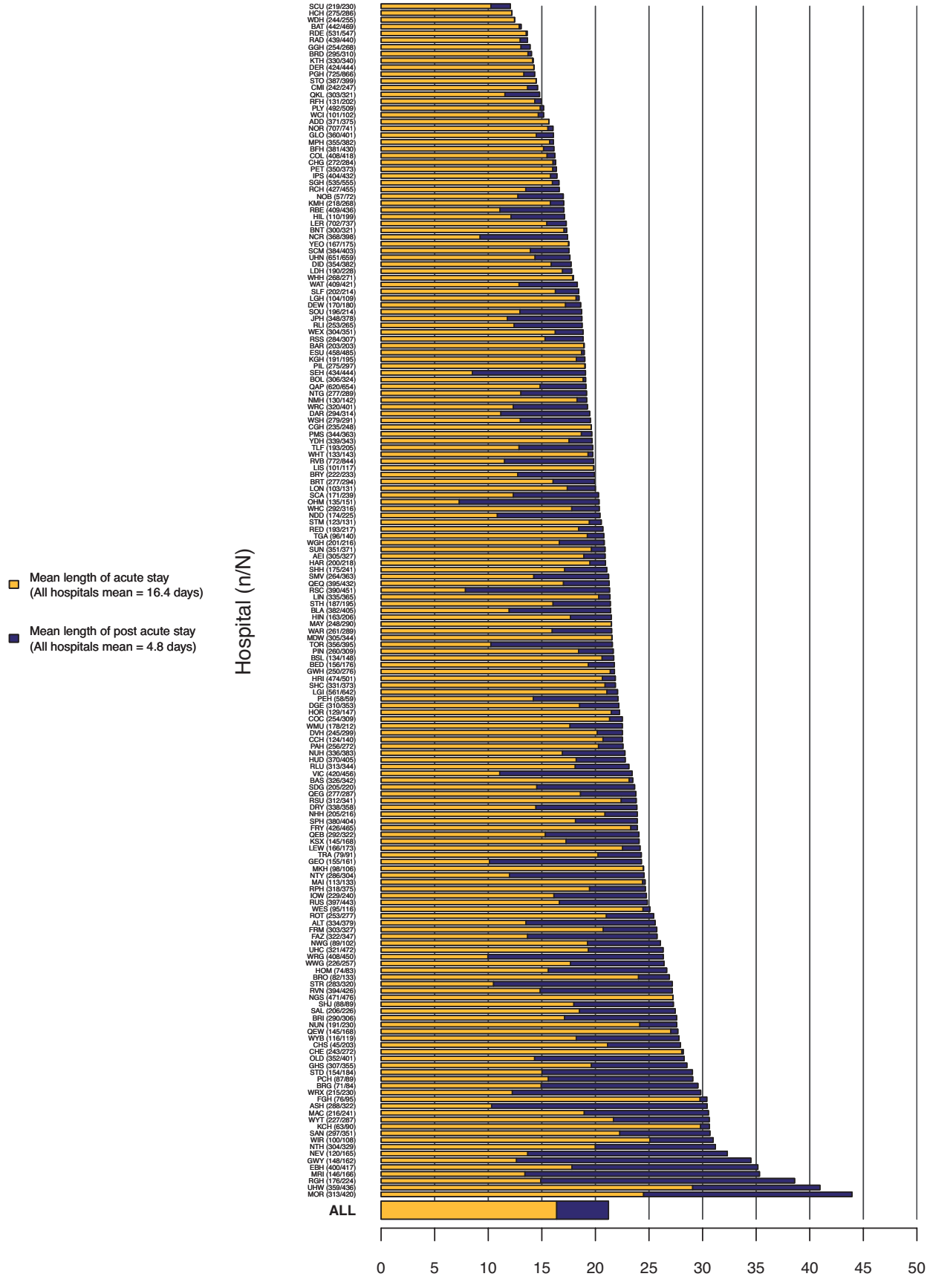
Excludes patients discharged after 31/3/2011
Excludes patients with stays outside of range [0 days,365 days] and those with missing data

Chart 25b - Length of acute stay - box plot



Excludes patients with acute length of stay outside of range [0 days,365 days] and those with missing data for acute length of stay

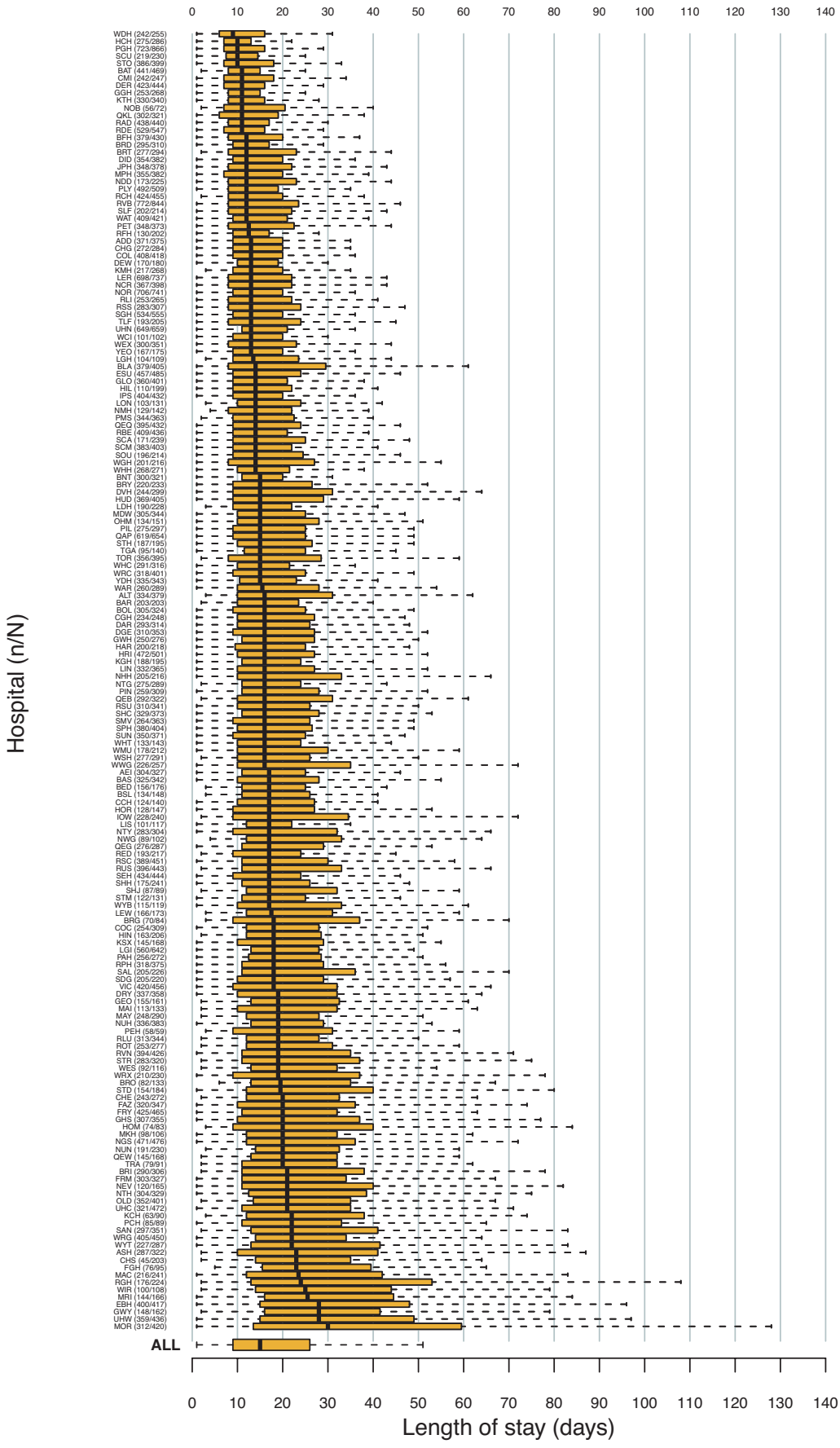
Chart 25c - Length of acute stay and post acute stay



Excludes patients discharged after 31/3/2011

Excludes patients with stays outside of range [0 days,365 days] and those with missing data for either of the phases

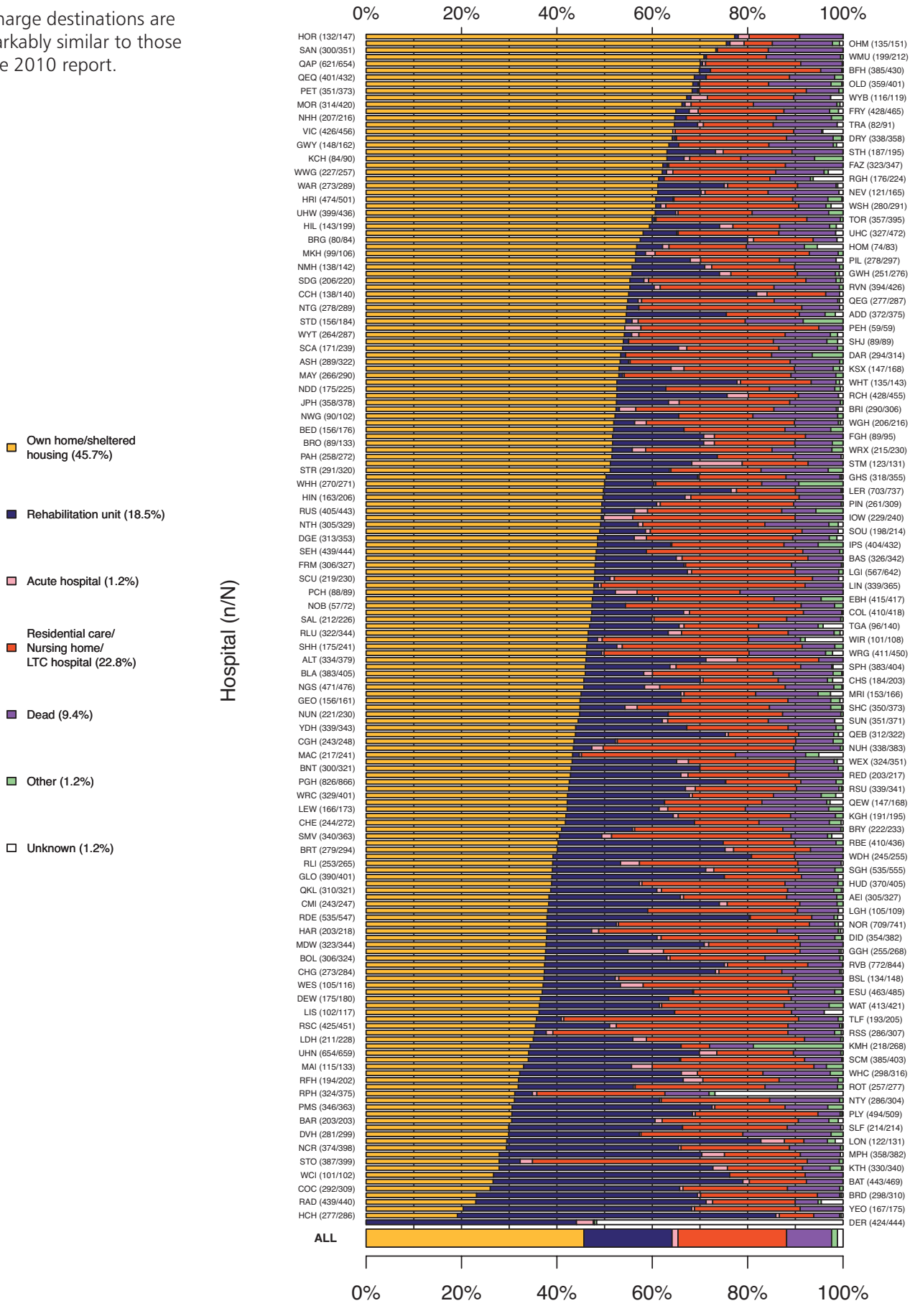
Chart 25d - Overall trust length of stay - box plot



Excludes patients with total length of stay outside of range [0 days,365 days] and those with missing data for total length of stay
Total length of stay is equal to actute stay plus post–acute stay

Chart 26 - Discharge destination from Trust

Discharge destinations are remarkably similar to those in the 2010 report.



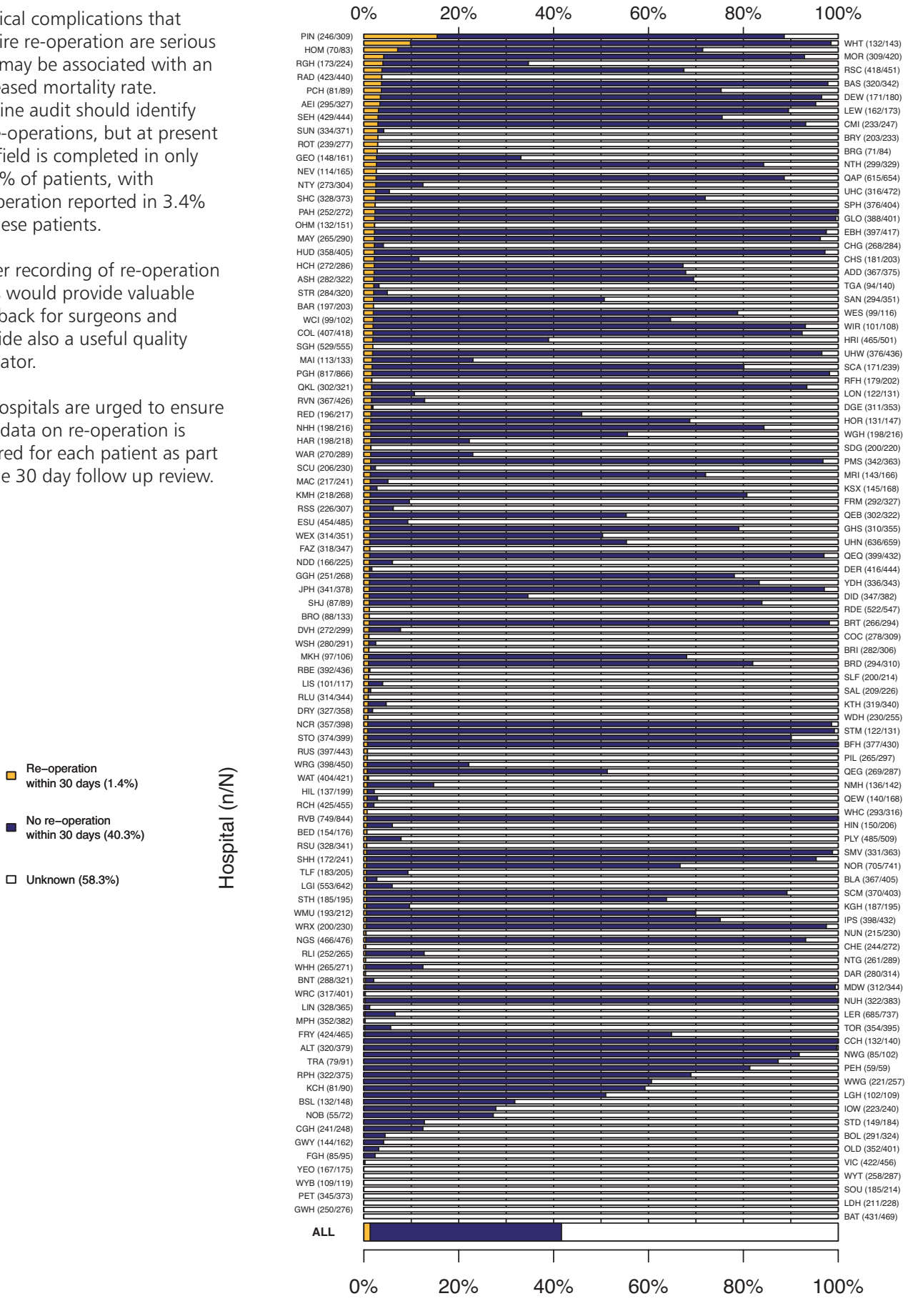
Excludes patients discharged after 31/03/2011

Chart 27 - Re-operation within 30 days

Surgical complications that require re-operation are serious and may be associated with an increased mortality rate. Routine audit should identify all re-operations, but at present this field is completed in only 41.7% of patients, with re-operation reported in 3.4% of these patients.

Better recording of re-operation rates would provide valuable feedback for surgeons and provide also a useful quality indicator.

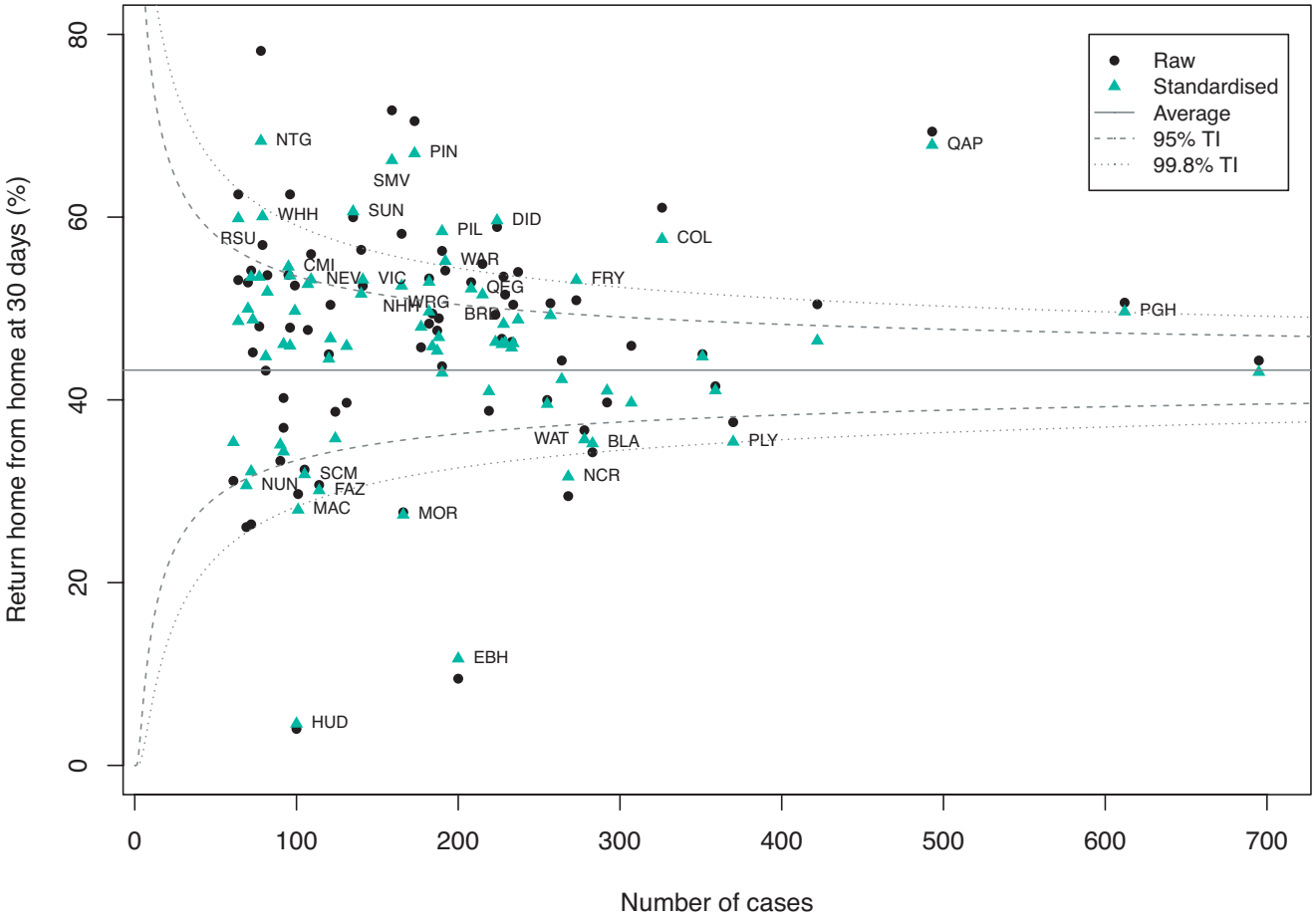
All hospitals are urged to ensure that data on re-operation is entered for each patient as part of the 30 day follow up review.



Excludes patients who were not initially treated with surgery or were discharged after 31/03/11

Casemix adjusted outcomes:

Funnel plot for return home from home at 30 days



This analysis shows the rate of return home by 30 days of patients admitted from home or sheltered housing. Cases with unknown residential status at 30 days are excluded and, since only 74% of patients are admitted from home or sheltered housing and 30-day follow-up reporting is generally poor, only 16,592 cases are included.

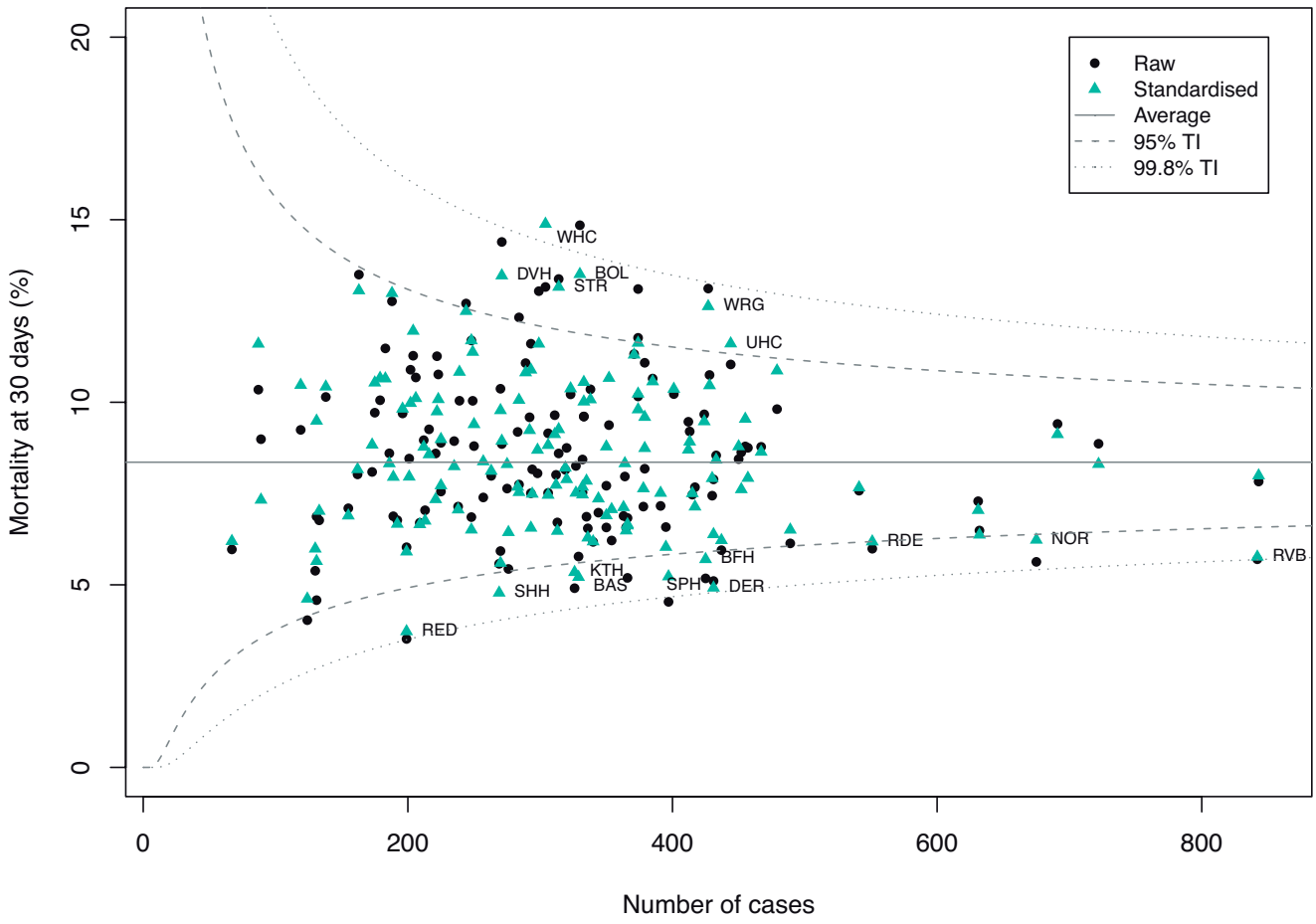
The overall rate of return home by 30 days is 43.3%. The three most important predictors of return home are age, ASA grade, and walking ability; and these provide the basis for the casemix adjustment shown here.

Determinants of rate of return home are clearly complex, and include: the effectiveness of in-hospital rehabilitation; the availability of community rehabilitation; and the provision of specialist early supported discharge schemes▲ – all of which vary greatly across the country. There is also some evidence that ready access to downstream beds may result in longer overall hospital stay, and hence lower the rate of return home by 30 days. Together, these factors may account for the high degree of variance displayed here.

Note: in order to include 30 day follow up, this and the mortality analysis are based on cases admitted between 1st March 2010 and 28th February 2011.

Please see Appendix C for list of excluded hospitals

Funnel plot for mortality at 30 days



This analysis is based on 45,741 cases from hospitals with case ascertainment of 80% and above. The latter provision serves to minimise, but cannot entirely eliminate, the impact on the analysis of the under-reporting of cases with perhaps a high mortality; the possible effect of this in disadvantaging hospitals with 100% case ascertainment must therefore be borne in mind.

Overall, 30-day mortality is 8.4%. The two most important predictors of mortality are ASA grade and age, and these, with others, provide the basis for the casemix adjustment displayed here.

As will be seen, standardisation for casemix may shift hospital mortality rates either way. Six hospitals have standardised rates outside the upper 95% tolerance interval, with one of these outside the 99.8% tolerance interval. As noted in Appendix E on outlier management (Page 102), further close scrutiny of relevant data is necessary, and further analysis of casemix, care and mortality in these hospitals is likely to provide information helpful in improving care.

Please see Appendix C for list of excluded hospitals

Trends in care and mortality

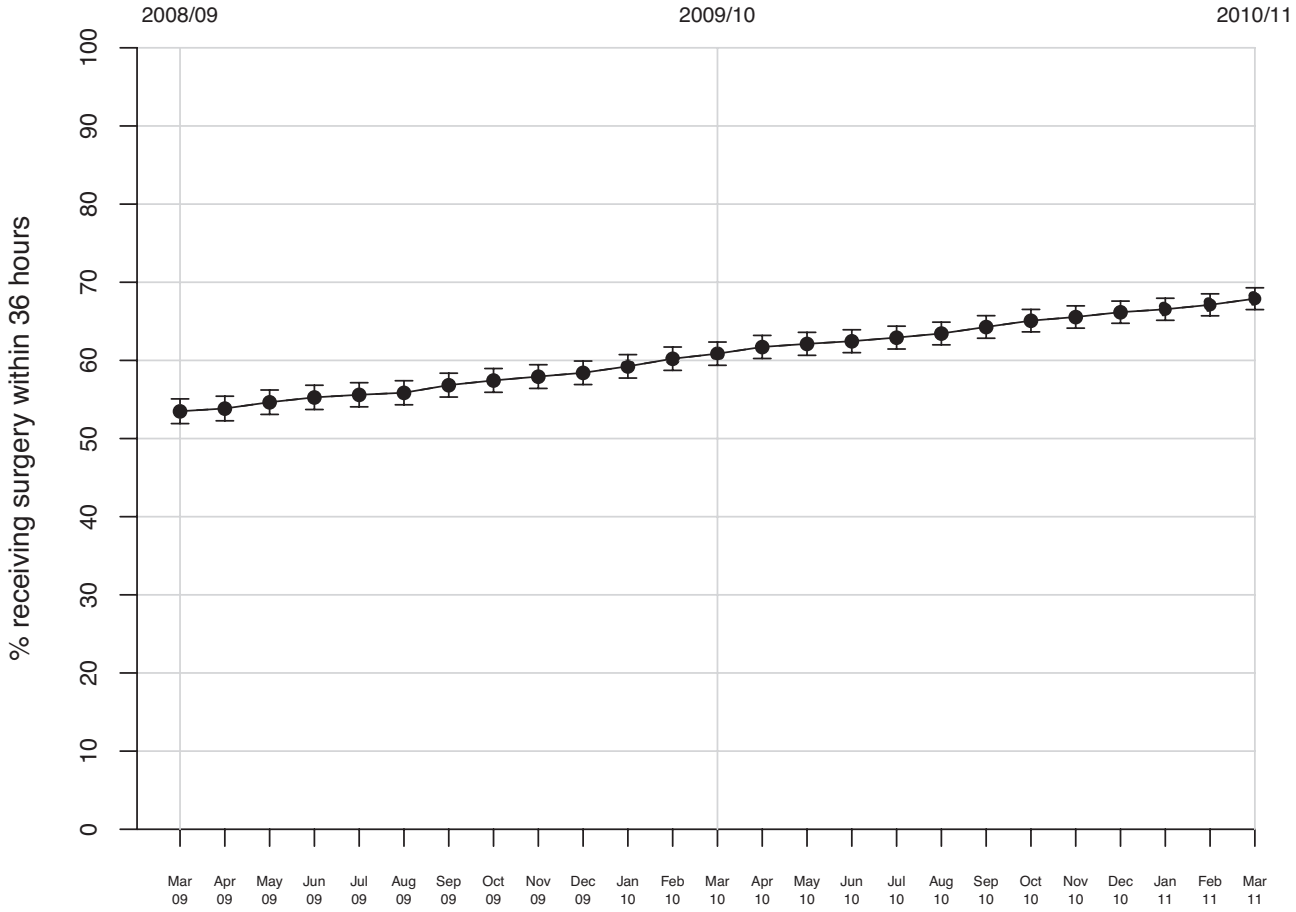
(See Appendix F)

In order to assess the longer term impact of involvement with NHFD, a group of 28 hospitals with established NHFD participation and sustained high levels of case-reporting and data completeness was identified. In this analysis, trends in five care quality indicators (surgery within 36 hours; orthogeriatrician assessment; bone protection assessment; falls assessment; and 30-day mortality were tracked for 30,022 patients (9,547 from April 2008-March 2009, 10,075 from April 2009-March 2010 and 10,400 from April 2010-March 2011). All of the indicators showed year-on-year improvements which, with the exception of mortality, were also highly statistically significant.

Since the group of hospitals was selected purely on the basis of commitment to the audit, this analysis demonstrates clearly the value of audit in improving both process and outcome. It should also be noted that the hospitals in the group which are eligible for the Best Practice Tariff (i.e. the English hospitals) achieved a level of 44% compared with the national figure of 31%.

For a full explanation of the statistical basis of these trend analyses, see Appendix F.

Moving average of % of patients receiving surgery within 36 hours
April 2008 – March 2011



Data taken from 28 hospitals with good completion over the period 2008–2011

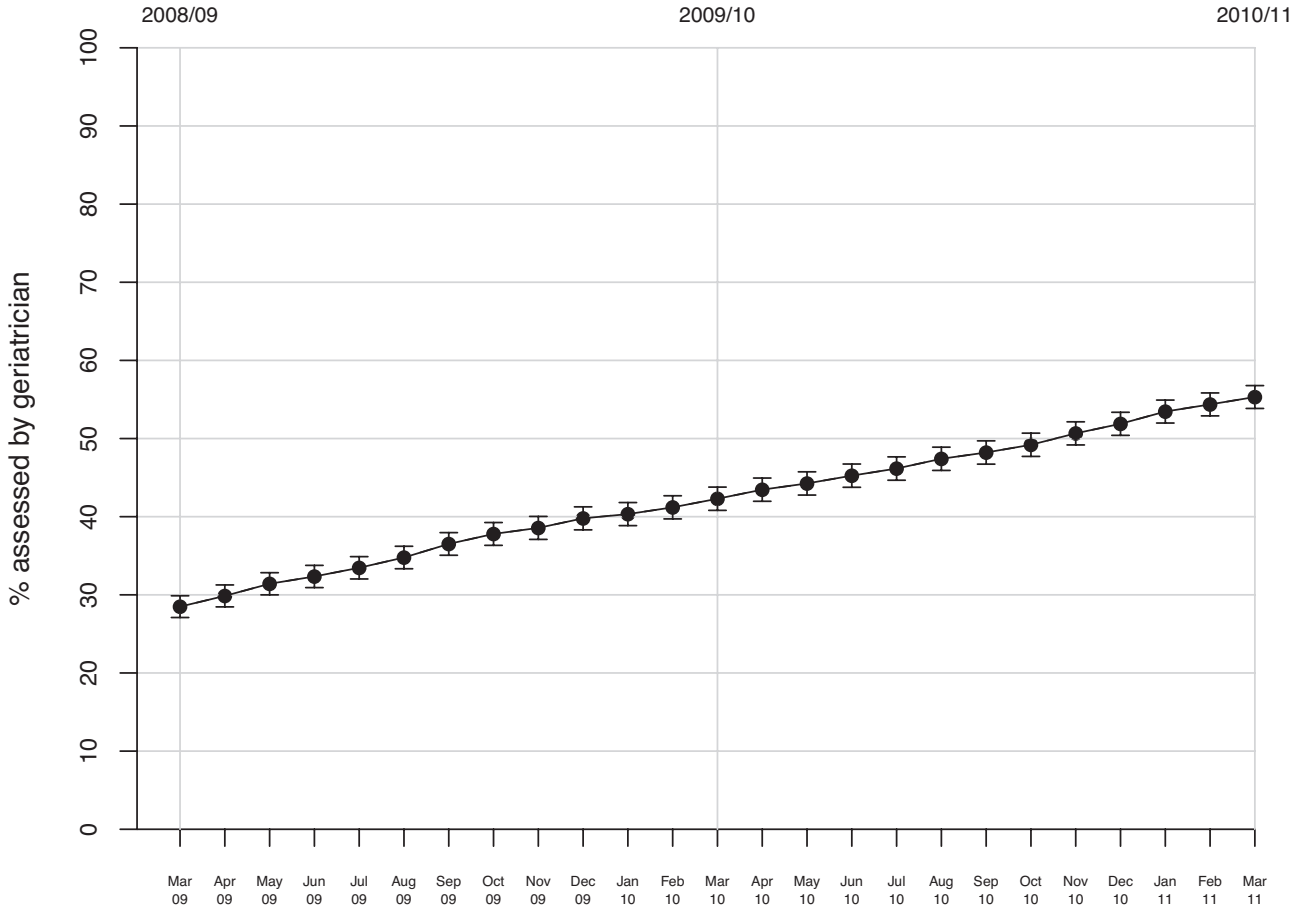
% in year ending 31/03/2009 (n=8962): 53.5%
% in year ending 31/03/2010 (n=9663): 60.9%
% in year ending 31/03/2011 (n=10086): 67.9%

2008/09 – 2009/10
Year–on–year change in percentage: +7.4
99% confidence interval for year–on–year change: [5.5, 9.2]
Binomial test p–value < 0.001

2009/10 – 2010/11
Year–on–year change in percentage: +7.0
99% confidence interval for year–on–year change: [5.3, 8.8]
Binomial test p–value < 0.001

2008/09 – 2010/11
Change in percentage: +14.4
99% confidence interval for change: [12.6, 16.2]
Binomial test p–value < 0.001

Moving average of % of patients receiving preoperative assessment by geriatrician
April 2008 – March 2011



Data taken from 28 hospitals with good completion over the period 2008–2011

% in year ending 31/03/2009 (n=9467): 28.5%
% in year ending 31/03/2010 (n=9918): 42.3%
% in year ending 31/03/2011 (n=10392): 55.3%

2008/09 – 2009/10

Year–on–year change in percentage: +13.8
99% confidence interval for year–on–year change: [12.0, 15.6]
Binomial test p–value < 0.001

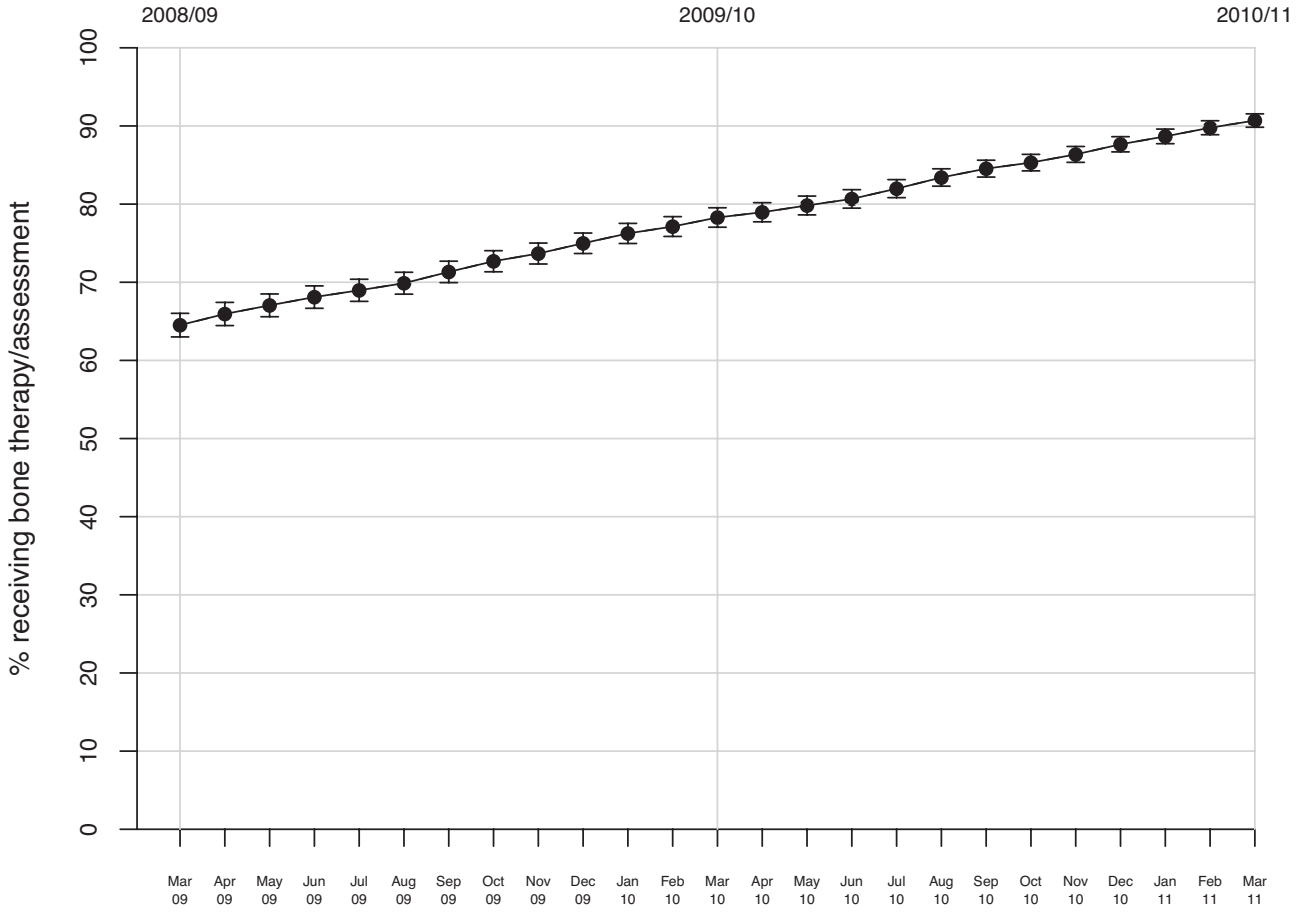
2009/10 – 2010/11

Year–on–year change in percentage: +13.0
99% confidence interval for year–on–year change: [11.2, 14.8]
Binomial test p–value < 0.001

2008/09 – 2010/11

Change in percentage: +26.8
99% confidence interval for change: [25.1, 28.6]
Binomial test p–value < 0.001

Moving average of % of patients receiving bone therapy/assessment April 2008 – March 2011



Data taken from 28 hospitals with good completion over the period 2008–2011

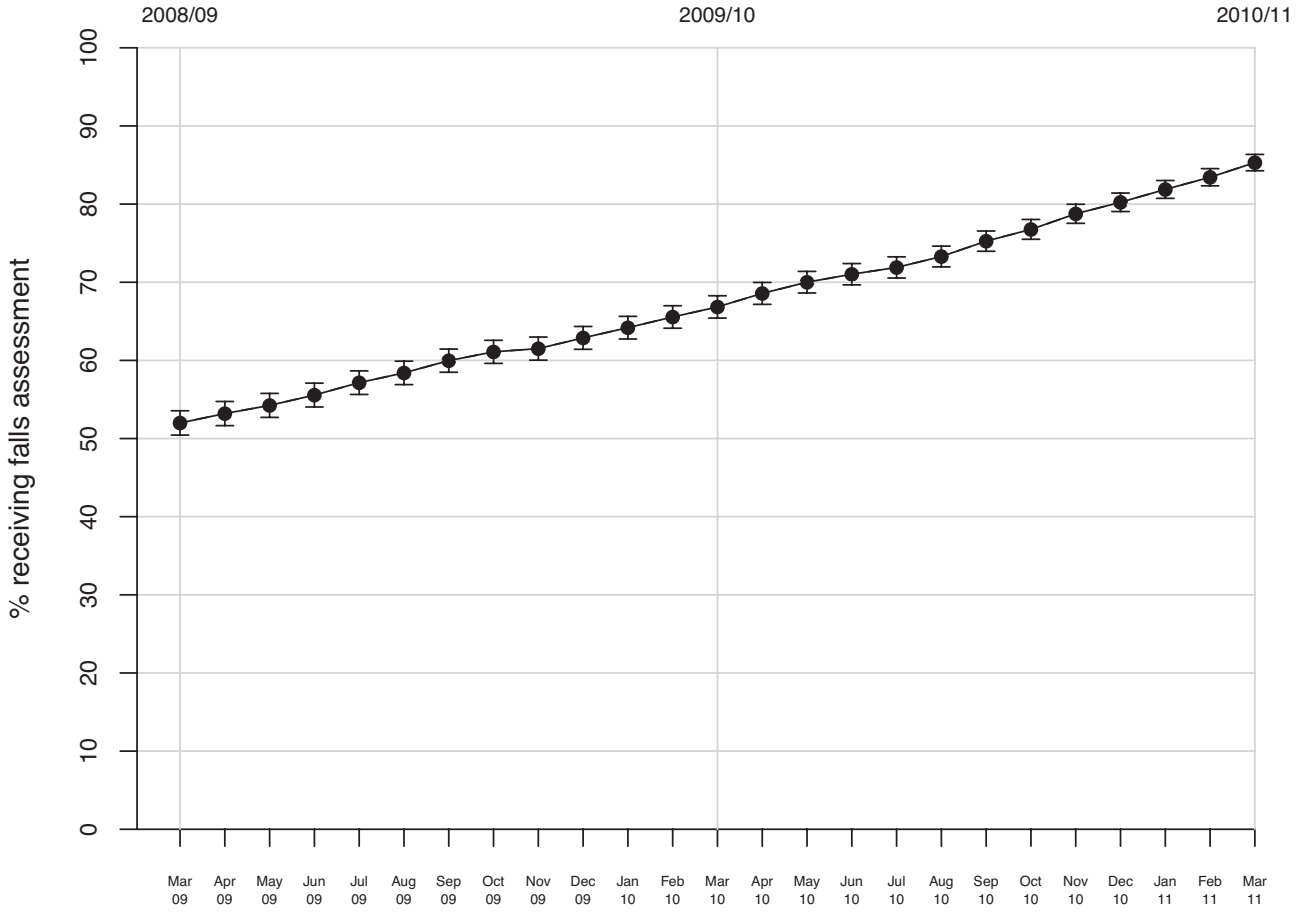
% in year ending 31/03/2009 (n=9026): 64.5%
% in year ending 31/03/2010 (n=9879): 78.3%
% in year ending 31/03/2011 (n=10358): 90.7%

2008/09 – 2009/10
Year–on–year change in percentage: +13.8
99% confidence interval for year–on–year change: [12.1, 15.5]
Binomial test p–value < 0.001

2009/10 – 2010/11
Year–on–year change in percentage: +12.4
99% confidence interval for year–on–year change: [11.1, 13.7]
Binomial test p–value < 0.001

2008/09 – 2010/11
Change in percentage: +26.2
99% confidence interval for change: [24.7, 27.7]
Binomial test p–value < 0.001

Moving average of % of patients receiving falls assessment
April 2008 – March 2011



End Month of 12 Month Average

Data taken from 28 hospitals with good completion over the period 2008–2011

% in year ending 31/03/2009 (n=9285): 52.0%
% in year ending 31/03/2010 (n=9808): 66.8%
% in year ending 31/03/2011 (n=10287): 85.3%

2008/09 – 2009/10

Year–on–year change in percentage: +14.8
99% confidence interval for year–on–year change: [13.0, 16.7]
Binomial test p–value < 0.001

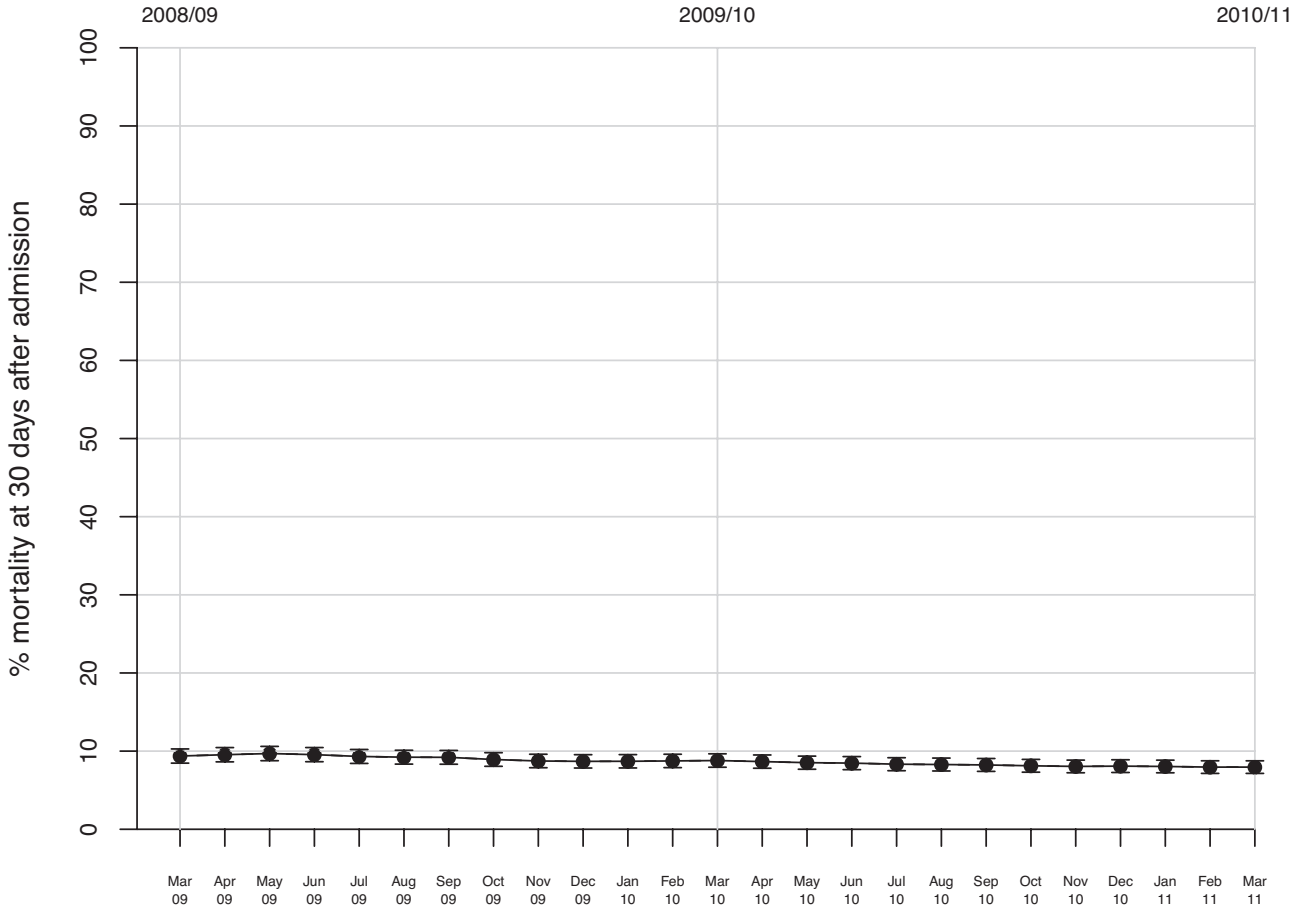
2009/10 – 2010/11

Year–on–year change in percentage: +18.5
99% confidence interval for year–on–year change: [16.9, 20.0]
Binomial test p–value < 0.001

2008/09 – 2010/11

Change in percentage: +33.3
99% confidence interval for change: [31.7, 34.9]
Binomial test p–value < 0.001

Moving average of % of patient mortality at 30 days from admission
April 2008 – March 2011



Data taken from 28 hospitals with good completion over the period 2008–2011

% in year ending 31/03/2009 (n=9252): 9.4%
% in year ending 31/03/2010 (n=9800): 8.8%
% in year ending 31/03/2011 (n=10184): 8.0%

2008/09 – 2009/10
Year–on–year change in percentage: –0.6
99% confidence interval for year–on–year change: [–1.7, 0.5]
Binomial test p–value = 0.175

2009/10 – 2010/11
Year–on–year change in percentage: –0.8
99% confidence interval for year–on–year change: [–1.9, 0.2]
Binomial test p–value = 0.034

2008/09 – 2010/11
Change in percentage: –1.4
99% confidence interval for change: [–2.5, –0.4]
Binomial test p–value < 0.001

Best Practice Tariff (BPT)

The NHFD, with its care standards and its detailed documentation of case mix, care and outcomes, prompted the selection of hip fracture as a topic for the Department of Health's Best Practice Tariff (BPT) initiative[2], which offers additional payment for cases the care of which meets agreed standards (surgery within 36 hours; care by surgeon and geriatrician; care protocol agreed by geriatrician, surgeon and anaesthetist; pre/perioperative assessment by geriatrician; geriatrician-led multi-disciplinary rehabilitation▲; secondary prevention including falls and bone health assessment) that are monitored by the NHFD.

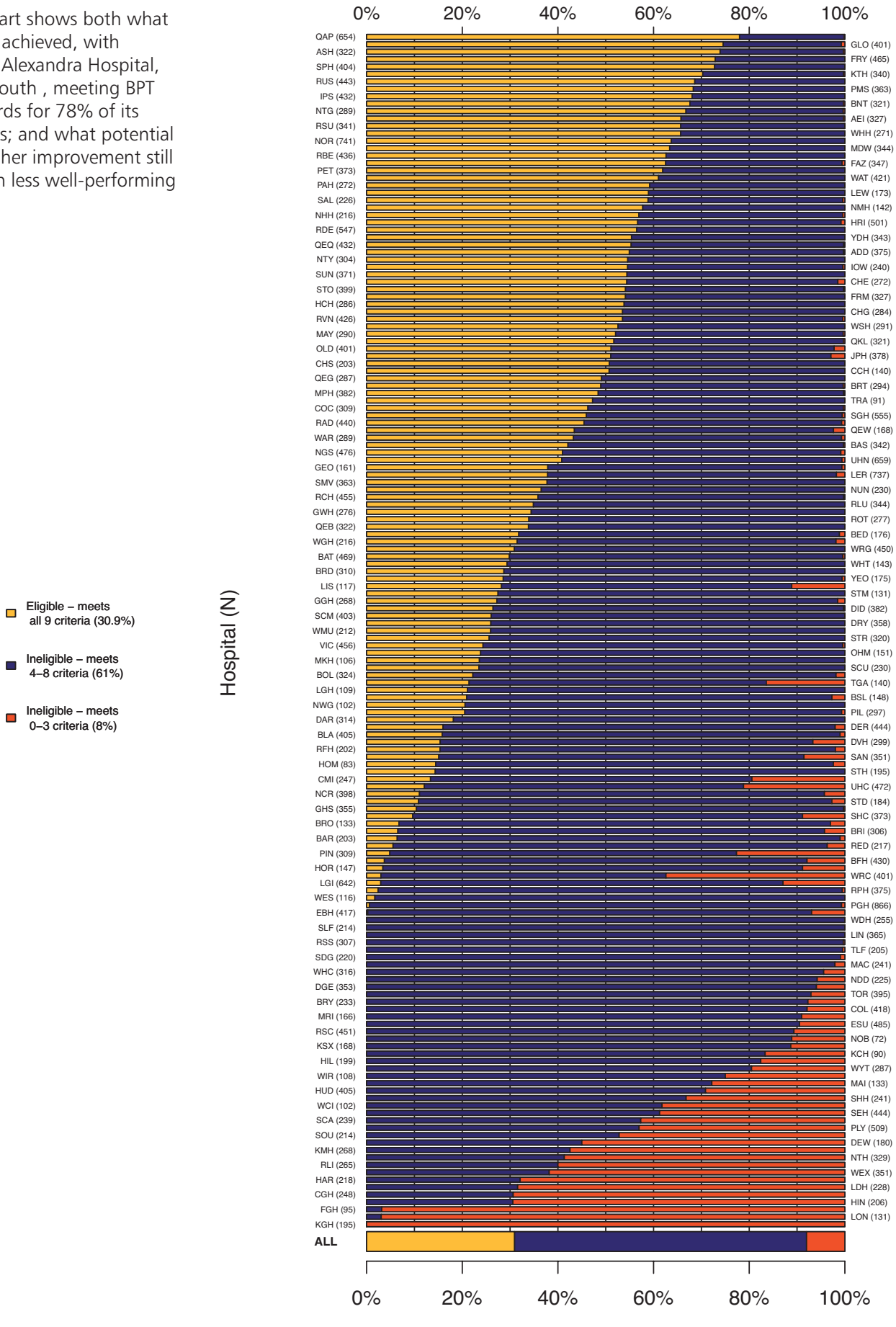
From April 2010, when BPT – which applies only in England – began, participation has increased quarter by quarter, with steadily rising numbers of hospitals with cases meeting the tariff standards (from 92-118); and of the numbers of cases meeting the tariff standards (from 2254 to 4645).

It appears that the implementation of BPT in England has served to promote interest, better resourcing, service improvement, and better outcomes in hip fracture care.

	Eligible hospitals	Hospitals achieving BPT	Number of pts submitted	Number of pts achieving BPT	Range
Qtr 1	158	92(58%)	9333	2254(24%)	0 – 81%
Qtr 2	160	103(64%)	11751	3247(28%)	0 – 74%
Qtr 3	161	112(69%)	13093	4460(34%)	0 – 82%
Qtr 4	161	118(73%)	12672	4645(37%)	0 – 87%

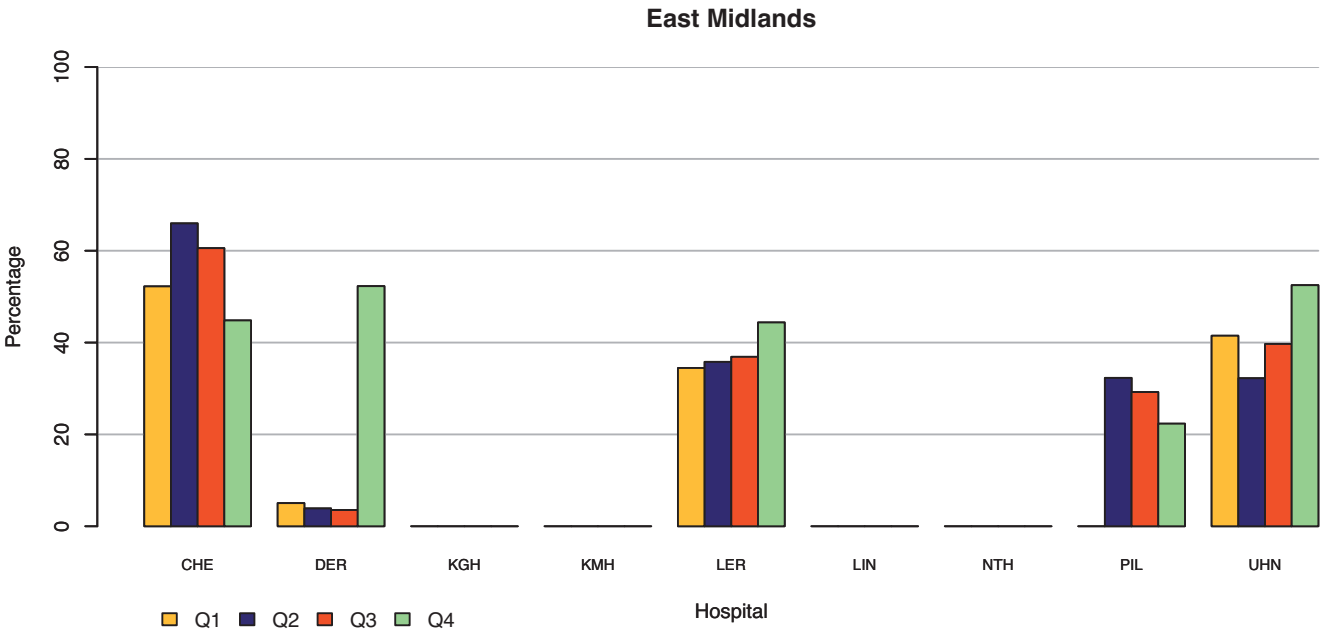
Chart 28 - BPT uplift eligibility

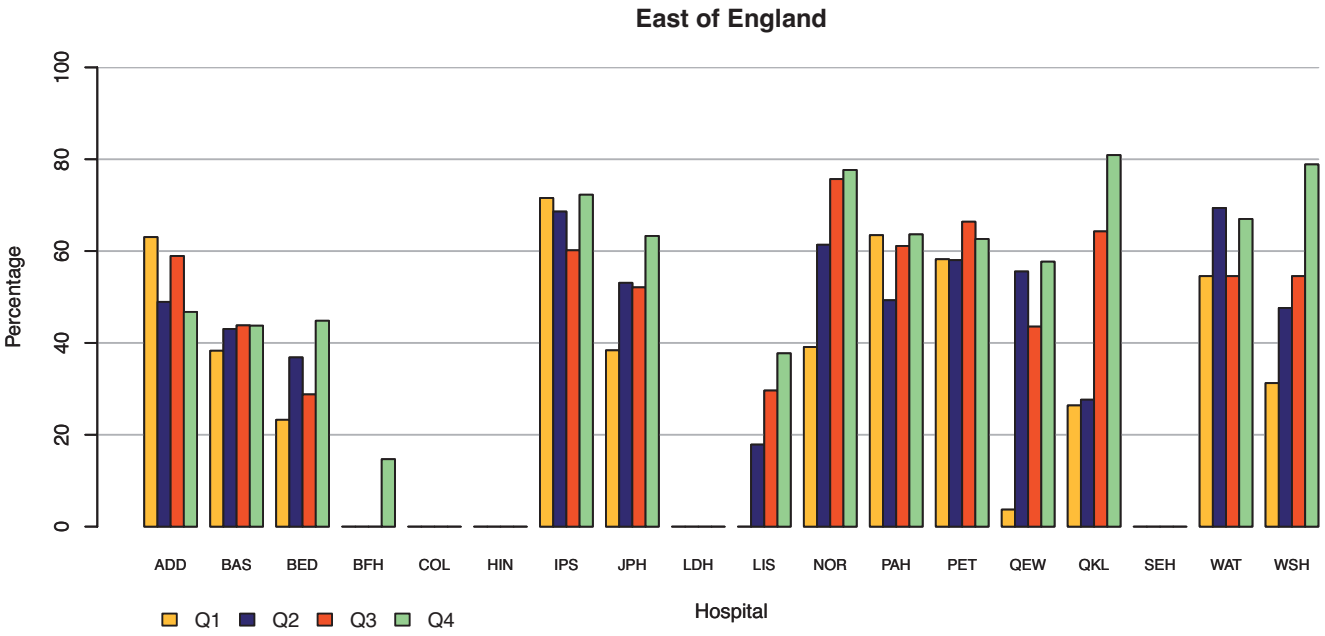
This chart shows both what can be achieved, with Queen Alexandra Hospital, Portsmouth , meeting BPT standards for 78% of its patients; and what potential for further improvement still exists in less well-performing units.

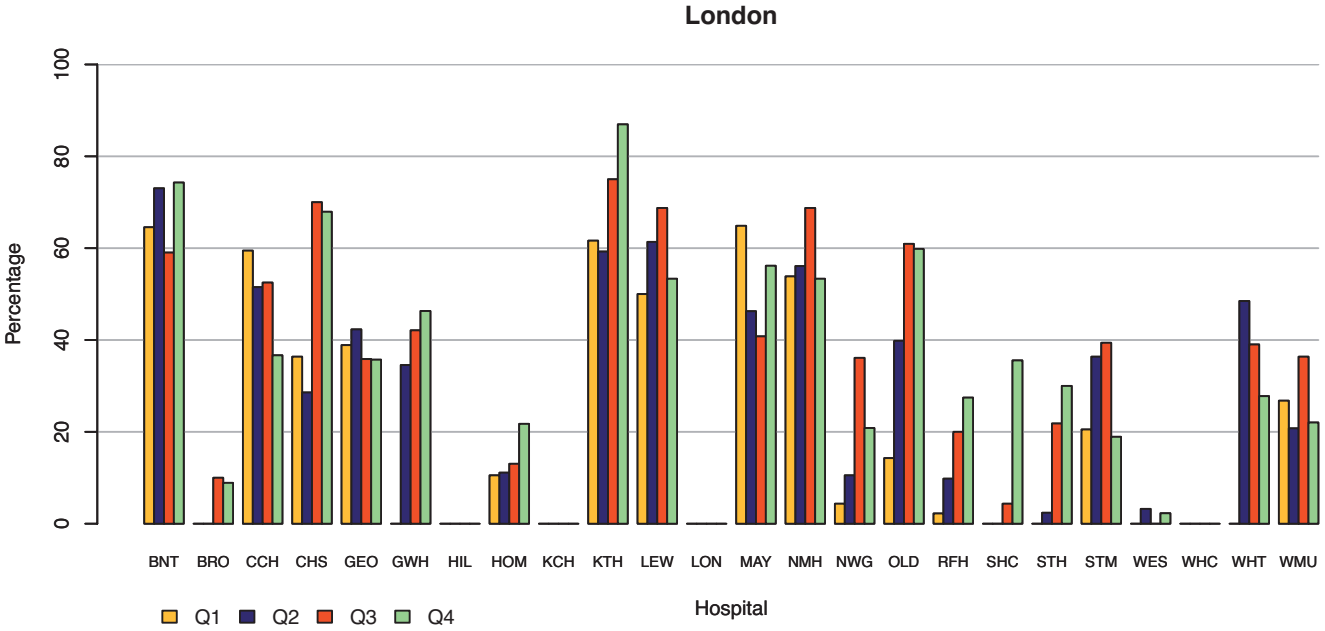


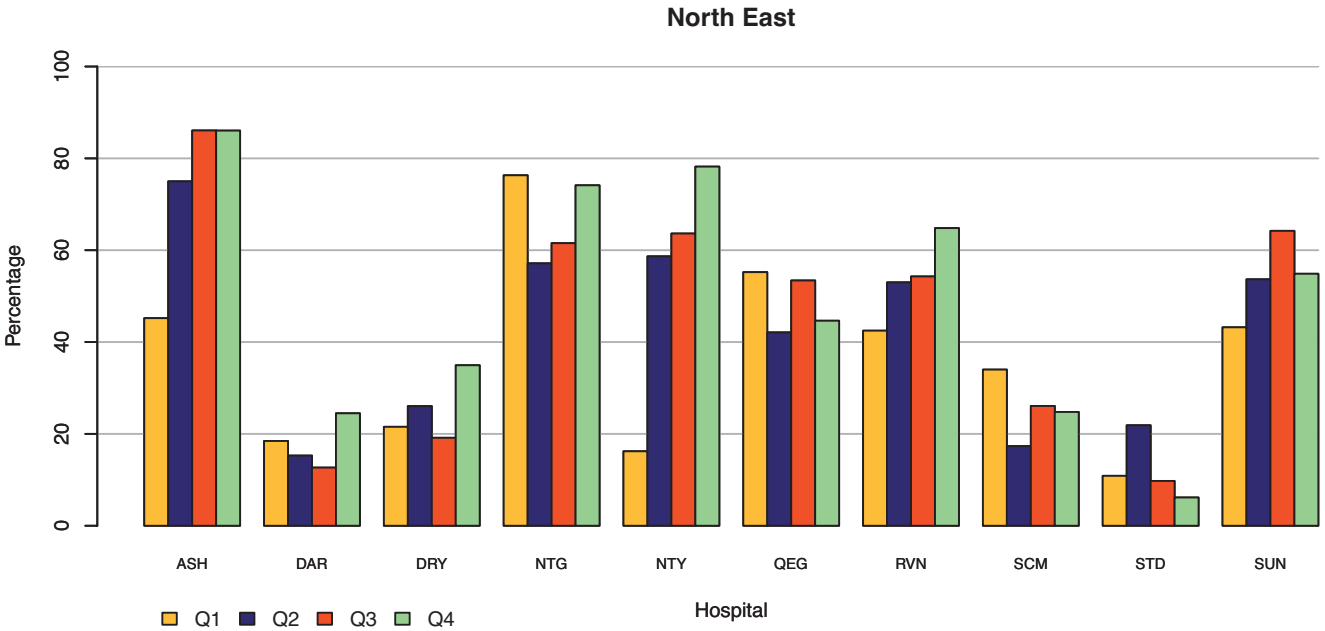
Only includes hospitals in England

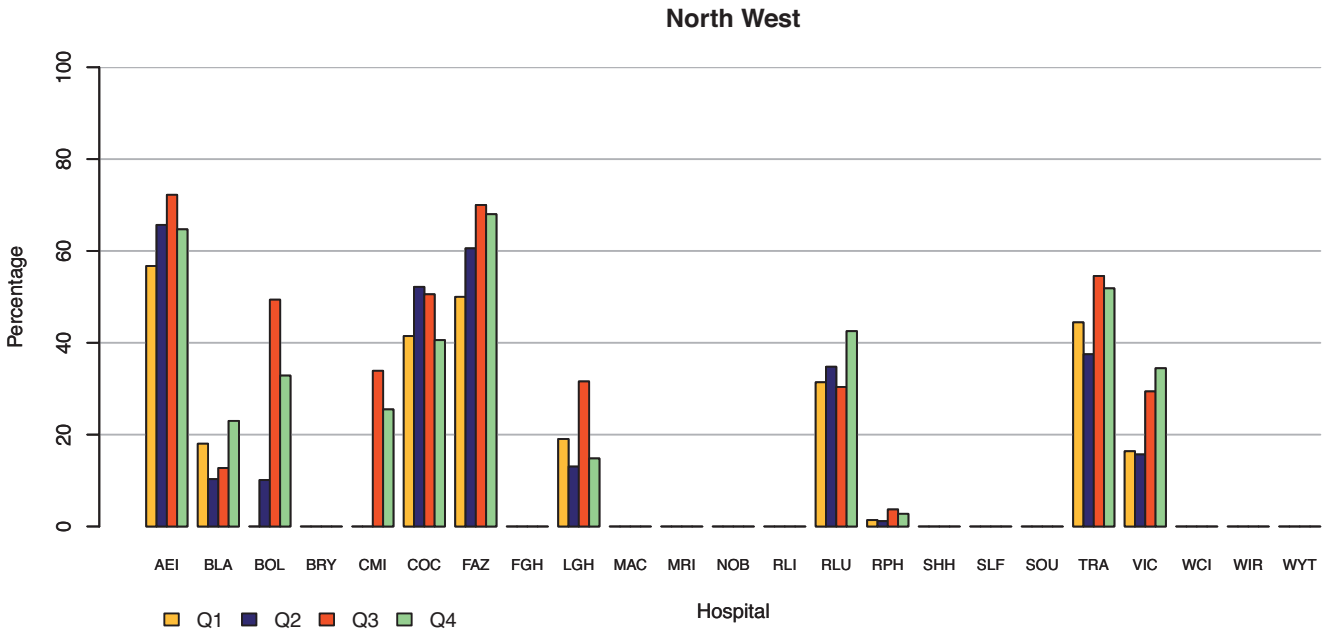
Best Practice Tariff – achievement by SHA

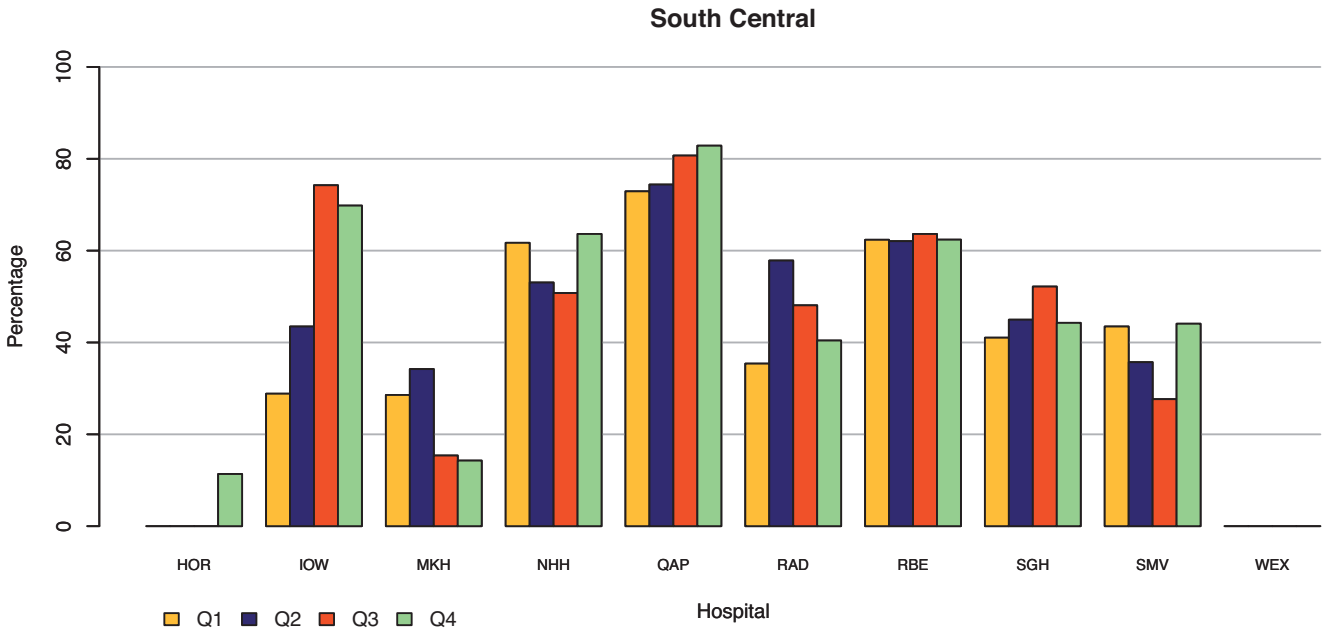


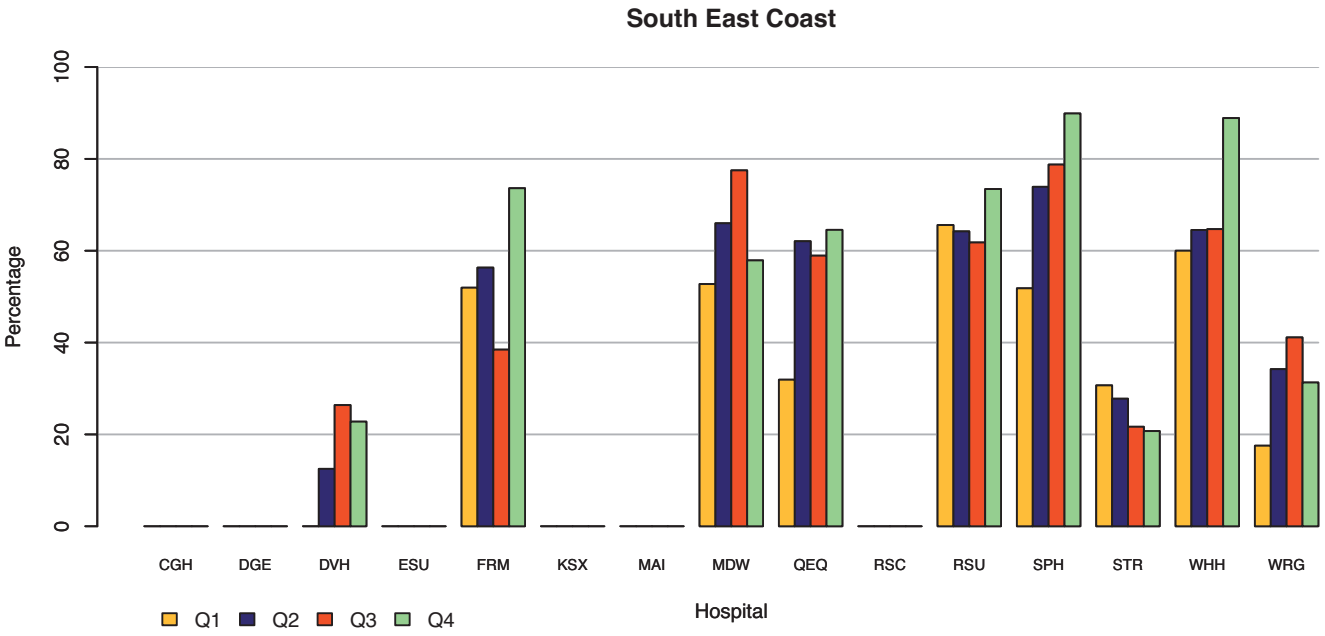


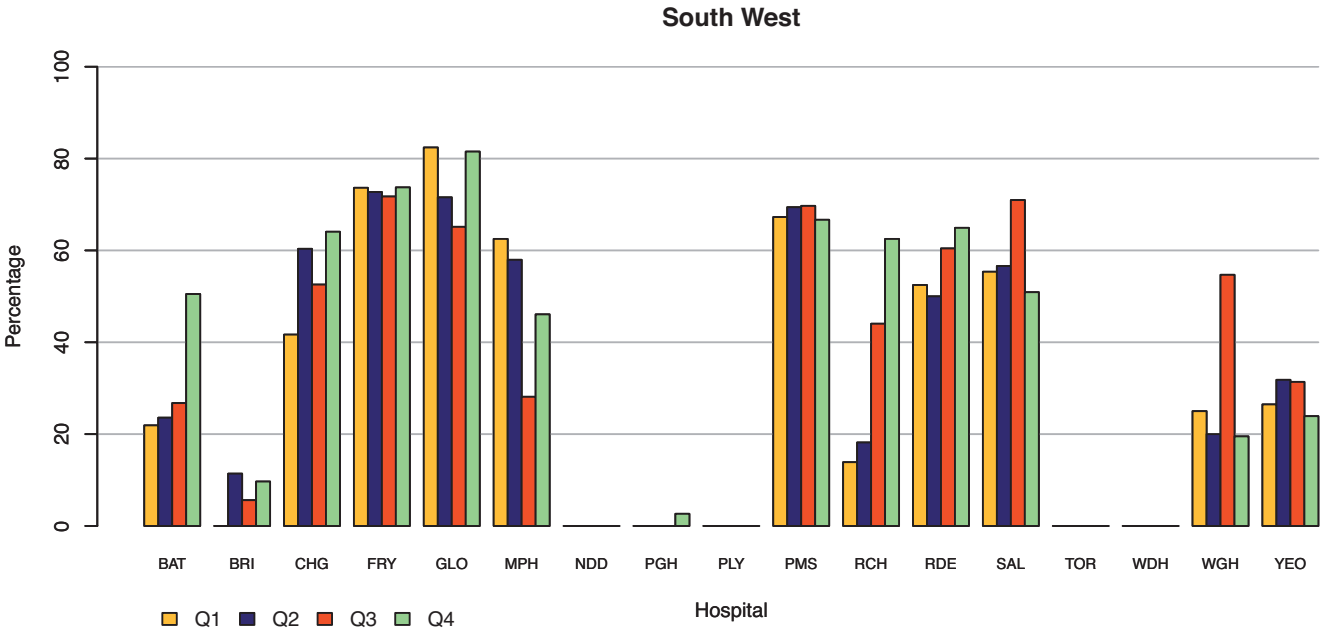


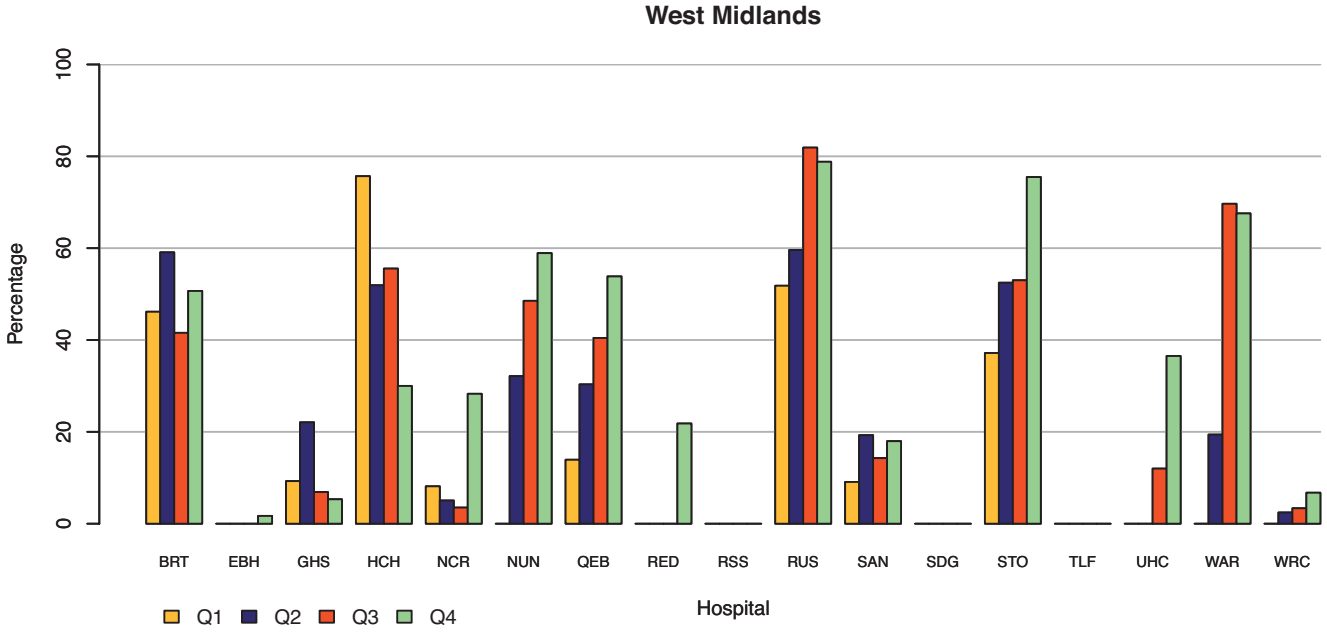


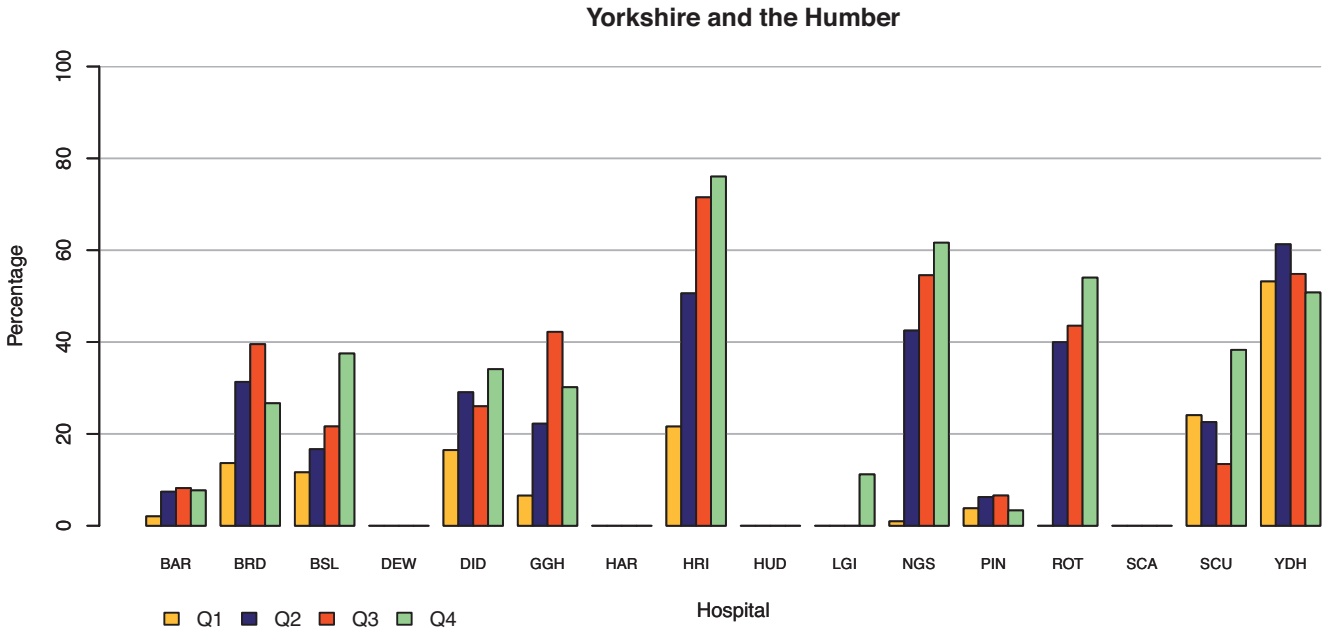












Using audit to improve care

Good Practice Examples - National Hip Fracture Database 2011 Report

Fracture Liaison Service and NHFD, Queen Elizabeth Hospital, Woolwich

A Fracture Liaison Service (FLS) offers 'systematic assessment of patients presenting with fracture for osteoporosis to reduce their future fracture risk'. Building on the work of the Glasgow FLS, which succeeded in reducing hip fracture admissions by 7.3% over the period 1998-2008, Queen Elizabeth Hospital, Woolwich, introduced a FLS that offers a consultant osteoporosis clinic and – in addition to oral medication – a nurse-led IV bisphosphonate service. Hip fracture patients are recruited via FLS nurse visits to orthopaedic wards. The service has greatly improved the recognition and treatment of osteoporosis, and audit follow-up has demonstrated impressively high levels of compliance with medication – at 84%

Improving NHFD data collection and follow-up, Basingstoke and North Hampshire Hospital

When the Basingstoke and North Hampshire Hospital began participating in NHFD in October 2009, the clinical team set out to ensure that the standards of data collection and follow-up were high. A&E staff supply reliable data on time of transfer. The clerking pro-forma for hip fracture patients includes the NHFD dataset for acute care. ASA grades, routinely recorded in the theatre IT system, are supplied by e-mail.

Follow-up data – widely seen as difficult to collect – was initially sought by telephone, but time constraints and patients' reluctance to answer 'number withheld' calls prompted a change to a brief questionnaire letter sent with a pre-paid reply envelope. Return rates are now more than 90%. All patients are offered a multidisciplinary clinic follow-up at around six weeks, which has proved viable for checking medication compliance, assessing mobility, reviewing outstanding investigations (e.g. DEXA scans), and allowing discussion and explanation to improve patients' understanding

Achieving Best Practice Tariff, Dudley Hospitals

In a series of developments over several years (nurses specialising in hip fracture care from 2004; a multidisciplinary hip fracture care team, to develop policies and solve problems, from 2005; a 24-bed hip fracture suite from 2005; and an orthogeriatrician post established in 2006, with staff grade support from 2008) clinicians and managers at Dudley Hospitals have developed a specialised service for hip fracture patients that now achieves high standards of care. Using NHFD audit data and the clinical standards set out in the Blue Book, the clinical team has delivered over the period 2004-2010 both substantial reductions in acute length of stay (from 34 to 23 days) and a steadily rising proportion of patients discharged directly home (from 50% to 64%) These developments ensured that the service was well prepared to address the challenges of Best Practice Tariff; within 10 months of its introduction in April 2010, the care of 82% of hip fracture patients treated in Dudley Hospitals achieving all the BPT standards.

Care Pathway Redesign, South Devon Healthcare Foundation Trust

In a five-month project – beginning in November 2010 and using 'Lean Thinking' problem-solving methodology –patients, carers and the whole clinical team in Torbay worked to redesign the entire hip fracture clinical pathway in order to deliver prompt, patient-focused, cost-effective care. In response to an early alert from paramedics, a clinical trauma coordinator now escorts the patient from ambulance to X-ray, then to the theatre complex for optimisation and preparation for same-day or next-morning surgery. Post-operative care has been improved by better pain control, earlier mobilisation and coordinated discharge planning.

Critical success factors include: newly appointed clinical trauma coordinators; provision of near-theatre space for pre-operative care; close liaison between surgeons and anaesthetists; same-day surgery where possible; immediate discussion of problems arising; new ways of working that are agreed and written down; regular scrutiny of real-time performance; and greater use of nurse-administered local anaesthetic.

Average time to theatre has been reduced from 48 to 16 hrs; and acute length of stay from 10 to 7 days. Pain control has improved, complications are fewer, substantial efficiency savings have been achieved through reduced length of stay, and patient satisfaction is high.

Audit and change using a monthly scorecard, Good Hope Hospital, Sutton Coldfield

At Good Hope Hospital, Sutton Coldfield, NHFD data was used to produce a monthly scorecard that shows unit performance in relation to the Blue Book standards and the Best Practice Tariff indicators. This is widely distributed to medical, nursing, therapy and managerial teams, and provides early indications of problems – and thus prompting necessary action. The scorecard showed that waiting times for surgery were higher for patients admitted on a Friday, Saturday or Sunday. The case was made for an extra trauma list at the weekend, and when this was provided mean waiting times fell from 53 to 37 hours

Improving care, measuring outcomes, University Hospitals Coventry and Warwickshire

Clinical teams at University Hospitals Coventry and Warwickshire have worked to improve hip fracture care by establishing a new orthogeriatrician post, setting up a hip governance group, providing an A-to-Z guide to hip fracture care for junior medical staff, employing advanced nurse practitioners, redesigning the hip fracture clinical pathway, and using regular audit presentations to monitor and improve care.

Data quality has improved since data collection became the responsibility of nurses with dedicated time, and improved data quality is seen as powerful in involving senior clinical staff in the audit. Follow-up data, now collected to a high standard, has improved communication, increased patient confidence in the service, identified problem areas, and facilitated checks on essential investigations such as DEXA scans.

Quality Improvement Programme for hip fracture care, Northumbria Healthcare NHS Foundation Trust

In Wansbeck and North Tyneside hospitals, Northumbria, a quality improvement programme for hip fracture care began in October 2009. A multidisciplinary steering group, with support from the Kings Fund, has worked to improve care from admission through to discharge. Pain control has improved, with 79% of patients receiving a nerve block, on admission. 90% of patients now have surgery within 36 hours; 25% of medically fit patients are mobilised on the day of surgery, and 100% the following day. With the help of newly appointed nutrition assistants, 81% of patients now receive additional feeding. At Wansbeck General Hospital, 30 day mortality has improved from 11.7% to 7.7%. By March 2010 90% of patients in both hospitals were meeting BPT care standards.

Using audit to improve care, Kingston Hospital, London

A multi-disciplinary, multi-specialty team at Kingston Hospital, London, used NHFD data on care process and outcomes to plan service developments. A full-time orthogeriatrician service was introduced in February 2010. This, together with closer collaboration between surgeons and anaesthetists, reduced time to surgery from 41 to 30 hours. Mean acute stay fell 18 to 14 days, and 94% of patients now have both falls assessments and osteoporosis care. The team continues to meet and discuss performance data, and NHFD participation is valued highly for its impact in improving care.

Service development and change, South Tees NHS Foundation Trust

Using NHFD data, South Tees NHS Foundation Trust set out to improve hip fracture care in 2009. With the appointment of a part-time orthogeriatrician and a hip fracture specialist nurse, preoperative ortho-geriatric assessment rose from 0% to 62%, and bone health assessments increased from 2% to 90%. Overall trust length of stay was reduced by five days, with considerable efficiency savings resulting.

NHFD and service development, Frenchay Hospital, Bristol

Frenchay hospital has participated in NHFD since 2007, and used its data in the run-up to Best Practice Tariff in 2009 to make the case for increased orthogeriatrician staffing and the appointment of a trauma coordinator. A strong multidisciplinary team provides both acute care and rehabilitation in the trauma wards. Rehabilitation potential and needs are identified early, and all patients are seen by physiotherapist on the first post-day, seven days a week. Service changes have resulted in a reduction in average time to theatre from 36 to 24 hours, and a fall in average length of stay of five days. 30-day mortality has also been reduced, from 12% to 8%.

Achieving Best Practice Tariff, Ipswich Hospital

When the best practice tariff was introduced in April 2009, clinicians at Ipswich hospital used NHFD data to benchmark their performance against that necessary to achieve BPT standards and to identify the changes needed in their service. Initially the optimisation of trauma lists and additional care of elderly input resulted in a 15% increase in patients having surgery within 36 hours; then a business case was made for the funding of joint protocols and care, with daily care of elderly ward rounds. A three-month trial was agreed on the basis of potential BPT gains and length of stay reduction. NHFD verified its success, and the funding was made permanent. In Ipswich 75% of hip fracture patients now meet the standards for the Best Practice Tariff.

Facilities Audit

It is vital that a hospital's performance in the care of individuals should be evaluated in the context of the resources available to the hospital.

Specifically we ask each hospital for information on:

- Trauma catchment area population
- Estimated numbers of hip fractures treated each year (ideally based on the documented caseload from the previous year)
- Orthopaedic surgical and orthogeriatric service provision
- Secondary prevention services and facilities
- Information about how audit data is collected and submitted.

Such data supports informed comparisons across different hospitals, and is used to calculate case ascertainment, i.e. the percentage of cases submitted to NHFD in relation to the case prediction.

Although completion of the Facilities Audit proforma is now mandatory for inclusion in the NHFD National Report, there are grounds for concern in many instances about both completeness and accuracy in the reporting of Facilities Audit data.

The robustness of these numbers– perhaps sometimes based on estimates – may be variable.

Type of unit

Three quarters of hospitals are DGHs primarily serving local communities. The remainder – generally much larger – have regional responsibility for complex trauma (which may have consequences for the priority given to hip fracture care).

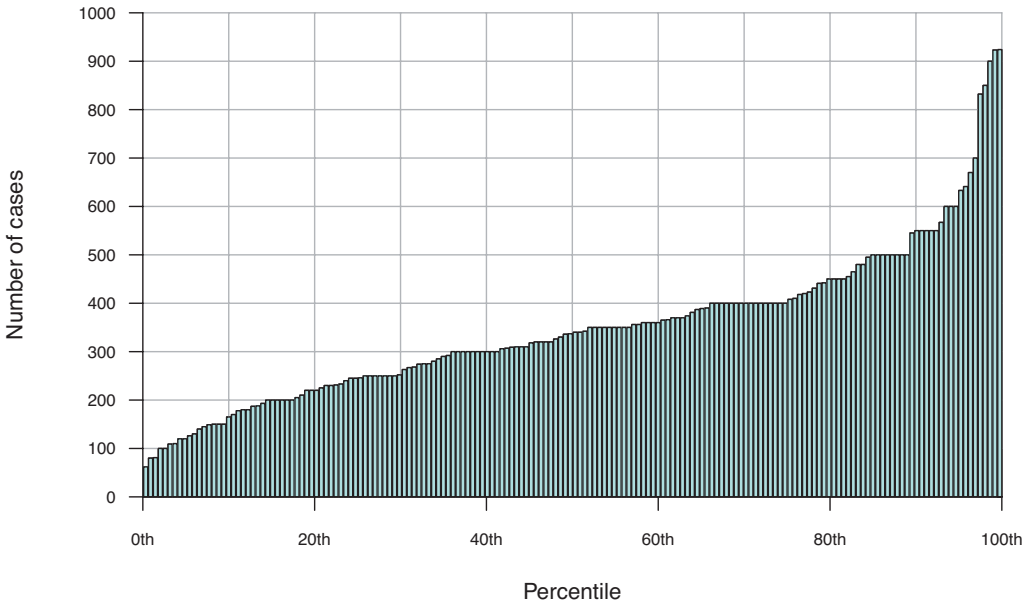
Hospitals vary greatly in size, with trauma catchment areas ranging from 10,000 to 1,020,000 (median 300,000), and the number of hip fractures treated each year ranges from 62 to 924 (median 339).

Case load

Ideally, all hospitals should enter all of their hip fracture cases on the database. The degree to which this is being achieved in an organisation is measured by the case ascertainment rate; the number of records submitted divided by the number of patients treated. Unfortunately, there is no satisfactory way of obtaining this figure other than from the treating unit. Reviewing HES data▲ shows that a significant number of hospitals inform the NHFD of more cases than they report to the NHS.

In future each unit's case load will be calculated from the average number of patients with specific hip fracture types treated over the preceeding three years.

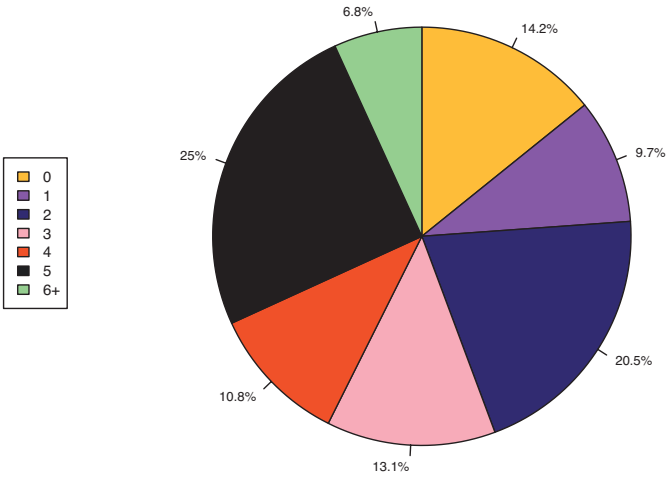
Number of hip fractures reported as being treated by each unit



Staffing of units

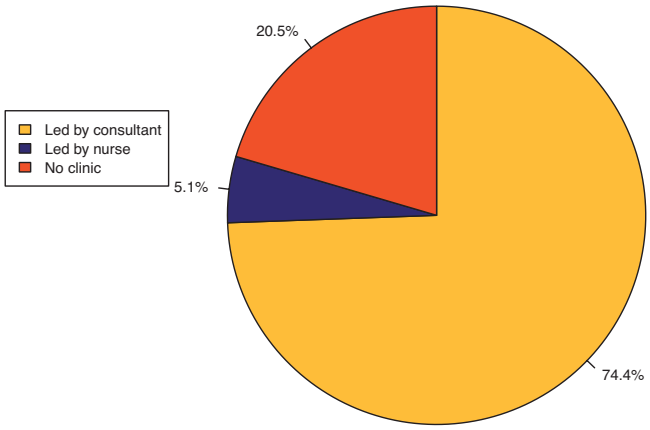
Orthogeriatrician staffing appears to have increased in recent years, but still varies substantially across hospitals as does the staffing and resourcing of secondary prevention.

Facilities Audit Chart 1 - Number of Orthogeriatric ward rounds each week



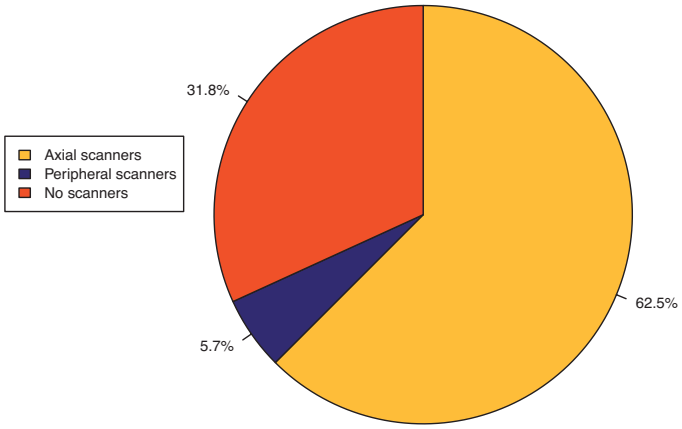
Overall, 14% of hospitals still have no routine orthogeriatric input, and the number of wardrounds is unchanged since 2010.
However, in a subset of 118/191 hospitals that have submitted FA data to the NHFD for 2010 and 2011 the average number of orthogeriatric consultant hours has increased from to 10.5 to 12.8 (up by 21%) and orthogeriatric middle grade hours have increased from 10.0 to 11.5 (up by 15%). The overall number of wardrounds has increased by 15%.

Facilities Audit Chart 2 - On site falls clinic



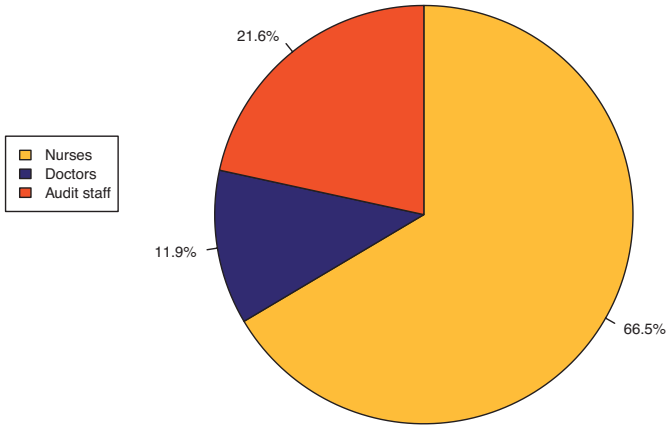
There is a 5% difference in the number of hospitals that have an on site falls clinic, which could account for some the improvement in falls assessments.

Facilities Audit Chart 3 - On site DXA scanners



There has been no change in the availability of scanners.

Facilities Audit Chart 4 - Data collectors



There is no significant change in the proportions of the different types of data collectors.

Strategic Health Authority summary tables

Channel Islands

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Princess Elizabeth Hospital, Guernsey	PEH	62	59	95.2	92.6	71.2	68.4	0.0	94.3	0.0	1.7	18.6	14.2 (8.4)	7.9 (12.1)
St. Helier Hospital, Jersey	SHJ	100	89	89.0	93.9	88.8	96.2	2.2	100.0	3.8	1.1	20.2	18.2 (14.4)	9.4 (23.3)
Overall SHA		162	148	91.4	93.4	81.8	84.7	1.4	97.5	2.2	1.4	19.6	16.6 (12.4)	8.8 (19.6)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

East Midlands

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Chesterfield Royal Hospital	CHE	374	272	72.7	89.9	54.4	94.8	0.0	47.9	2.1	1.1	7.0	28.1 (27.3)	0.1 (1.8)
Derbyshire Royal Infirmary, Derby	DER	550	444	80.7	90.6	87.8	91.6	1.8	97.5	4.7	27.7	10.8	14.3 (14.0)	0.0 (0.0)
Kettering General Hospital	KGH	306	195	63.7	91.8	73.3	92.5	2.1	47.3	1.1	1.0	19.5	18.5 (12.5)	0.8 (6.8)
King's Mill Hospital, Sutton in Ashfield	KMH	450	268	59.6	93.0	62.3	90.3	0.0	1.9	0.8	4.1	45.1	15.9 (11.2)	1.2 (7.0)
Leicester Royal Infirmary	LER	900	737	81.9	91.4	26.3	94.2	2.6	97.4	1.0	87.0	35.1	15.6 (13.0)	1.8 (5.9)
Lincoln County Hospital	LIN	389	365	93.8	88.4	51.2	75.4	3.0	57.4	1.2	4.7	0.5	20.5 (15.7)	0.9 (7.0)
Northampton General Hospital	NTH	330	329	99.7	93.6	27.1	78.8	2.1	32.3	3.5	5.8	8.8	20.0 (15.1)	11.2 (23.4)
Pilgrim Hospital, Boston	PIL	300	297	99.0	92.1	79.8	83.3	4.4	85.0	1.9	73.4	1.3	19.0 (13.8)	0.0 (0.0)
University Hospital (Queens Medical Centre) Nottingham	UHN	832	659	79.2	96.9	76.9	87.4	2.7	71.4	4.0	98.6	11.8	14.4 (11.5)	3.3 (8.6)
Overall SHA		4431	3566	80.5	92.3	57.8	88.1	2.2	66.3	2.5	47.2	16.8	17.5 (15.2)	2.3 (9.6)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

East of England

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Addenbrooke's Hospital, Cambridge	ADD	420	375	89.3	95.8	66.9	85.3	1.3	70.7	7.5	76.5	9.9	15.7 (10.4)	0.0 (0.0)
Basildon and Thurrock University Hospital	BAS	356	342	96.1	97.4	20.2	81.1	1.8	72.3	1.6	75.1	3.8	23.2 (21.7)	0.3 (4.7)
Bedford Hospital	BED	200	176	88.0	90.7	61.4	82.6	1.1	75.9	2.6	47.7	6.2	19.3 (13.4)	2.4 (10.7)
Broomfield Hospital	BFH	442	430	97.3	92.1	81.4	90.5	1.9	75.5	2.2	8.6	7.9	15.2 (12.2)	1.0 (4.4)
Colchester General Hospital	COL	500	418	83.6	94.2	28.5	90.7	0.7	82.2	7.8	40.0	5.5	15.5 (10.4)	0.7 (4.3)
Hinchingbrooke Hospital	HIN	200	206	103.0	88.1	44.7	72.7	7.3	57.5	1.8	4.9	10.2	17.7 (10.6)	3.8 (9.1)
Ipswich Hospital	IPS	418	432	103.3	96.7	84.3	93.7	1.4	94.0	1.0	99.1	12.7	15.8 (10.1)	0.6 (4.4)
James Paget University Hospital, Great Yarmouth	JPH	400	378	94.5	96.7	49.5	93.2	4.8	88.8	1.2	8.2	4.8	11.8 (10.4)	6.9 (14.0)
Luton and Dunstable Hospital	LDH	252	228	90.5	88.2	25.0	83.6	0.0	55.0	7.0	6.6	7.5	16.9 (11.7)	0.8 (4.1)
Lister Hospital, Stevenage	LIS	275	117	42.5	83.5	26.5	81.0	0.9	67.3	1.0	76.1	9.4	19.8 (16.7)	0.0 (0.0)
Norfolk and Norwich University Hospital	NOR	850	741	87.2	92.0	59.1	87.0	0.5	59.7	3.2	24.0	11.6	15.6 (11.1)	0.5 (5.4)
The Princess Alexandra Hospital, Harlow	PAH	307	272	88.6	95.6	23.2	90.9	2.2	25.8	13.0	94.9	19.5	20.3 (14.5)	2.3 (6.7)
Peterborough District Hospital	PET	400	373	93.2	93.7	58.4	89.5	1.6	100.0	0.9	0.0	13.9	16.1 (13.2)	0.3 (2.7)
Queen Elizabeth II Hospital, Welwyn	QEW	240	168	70.0	85.7	41.7	90.1	4.8	26.0	4.2	66.1	7.1	27.0 (24.2)	0.7 (5.5)
Queen Elizabeth Hospital, King's Lynn	QKL	320	321	100.3	97.9	80.1	94.9	2.5	100.0	0.7	90.3	15.9	11.6 (9.4)	3.2 (8.8)
Southend Hospital	SEH	550	444	80.7	94.6	25.9	86.3	2.3	26.1	4.2	14.0	18.5	8.5 (7.0)	10.6 (13.9)
Watford General Hospital	WAT	450	421	93.6	92.9	50.8	93.5	2.1	28.6	0.3	46.6	13.5	12.9 (8.7)	5.4 (14.2)
West Suffolk Hospital, Bury St. Edmunds	WSH	310	291	93.9	93.9	74.2	91.6	0.3	81.8	5.1	14.1	23.4	13.1 (9.0)	6.3 (10.7)
Overall SHA		6890	6133	89.0	93.7	52.5	88.6	1.9	66.4	3.5	41.4	11.4	15.5 (12.8)	2.7 (8.9)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

London

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Barnet Hospital	BNT	300	321	107.0	88.8	61.4	91.9	4.0	69.2	1.0	96.6	27.4	17.1 (10.9)	0.2 (2.3)
Princess Royal University Hospital, Bromley	BRO	360	133	36.9	85.6	25.6	81.6	1.5	0.0	4.8	12.0	15.0	24.0 (17.8)	2.9 (8.5)
Charing Cross Hospital	CCH	150	140	93.3	96.4	72.9	85.7	4.3	74.2	0.0	64.3	12.9	20.7 (20.7)	1.8 (7.4)
Chase Farm Hospital	CHS	250	203	81.2	79.0	10.3	80.0	1.5	74.2	4.3	100.0	12.3	21.1 (13.4)	6.8 (13.3)
St George's Hospital, London	GEO	188	161	85.6	92.2	36.0	98.5	5.6	94.8	2.7	24.8	14.9	10.1 (7.3)	14.2 (15.9)
Queen Elizabeth Hospital, Woolwich	GWH	231	276	119.5	90.4	8.0	94.6	0.4	42.4	1.6	10.9	13.4	21.4 (18.3)	0.4 (3.6)
Hillingdon Hospital	HIL	200	199	99.5	85.1	40.7	82.7	4.0	97.0	4.4	40.2	13.1	12.1 (8.2)	5.0 (8.8)
Homerton Hospital, London	HOM	110	83	75.5	90.1	60.2	76.4	4.8	22.5	13.6	31.3	6.0	15.6 (13.7)	11.0 (19.2)
King's College Hospital, London	KCH	81	90	111.1	86.3	35.6	75.6	3.3	82.1	2.7	76.7	22.2	29.8 (30.9)	0.8 (4.6)
Kingston Hospital	KTH	400	340	85.0	93.1	14.1	97.0	3.2	100.0	5.3	81.2	9.1	14.2 (11.0)	0.0 (0.1)
University Hospital, Lewisham	LEW	150	173	115.3	98.2	67.6	80.8	2.3	25.3	3.5	87.3	11.0	22.5 (15.2)	1.6 (9.6)
The Royal London Hospital	LON	145	131	90.3	86.8	9.9	80.6	0.0	9.4	1.6	11.5	9.9	17.4 (14.5)	2.6 (7.5)
Croydon University Hospital	MAY	340	290	85.3	95.9	45.5	93.6	0.3	63.2	3.0	83.8	3.8	21.5 (12.8)	0.0 (0.0)
North Middlesex University Hospital	NMH	140	142	101.4	91.9	30.3	87.7	1.4	14.5	3.1	85.2	7.0	18.4 (15.1)	0.7 (4.3)
Newham General Hospital, London	NWG	100	102	102.0	96.1	36.3	60.7	4.9	4.8	11.6	76.5	8.8	19.3 (14.4)	6.8 (16.7)
Queen's Hospital, Romford	OLD	500	401	80.2	93.7	18.5	86.3	1.7	66.7	2.3	20.7	3.5	14.3 (15.1)	14.0 (19.4)
Royal Free Hospital, London	RFH	205	202	98.5	83.8	15.3	65.0	7.4	98.9	1.7	77.2	13.9	14.5 (8.8)	0.6 (4.2)
St Helier Hospital, Carshalton	SHC	365	373	102.2	94.8	26.8	88.0	5.9	66.3	16.0	65.1	12.3	21.0 (16.2)	1.0 (4.9)
St Thomas' Hospital, London	STH	220	195	88.6	94.1	74.9	95.1	1.0	58.1	2.9	20.0	17.9	16.0 (11.9)	5.3 (15.6)
St. Mary's Hospital, Paddington	STM	120	131	109.2	94.0	61.1	65.3	0.8	69.2	3.3	87.8	8.4	19.6 (13.1)	1.1 (5.6)
Chelsea and Westminster Hospital	WES	170	116	68.2	97.4	44.8	83.3	6.9	100.0	7.7	12.9	18.1	25.2 (18.6)	0.4 (2.3)
Whipps Cross University Hospital	WHC	326	316	96.9	87.1	11.7	91.4	1.6	60.4	3.7	7.0	5.4	17.9 (14.6)	2.6 (13.9)
Whittington Hospital, London	WHT	150	143	95.3	93.2	13.3	97.7	2.1	4.5	3.7	32.2	16.8	19.3 (12.8)	0.4 (3.6)
West Middlesex University Hospital, Isleworth	WMU	200	212	106.0	94.6	44.8	77.5	3.3	43.2	0.0	94.3	25.5	17.6 (12.7)	4.9 (15.9)
Overall SHA		5401	4873	90.2	91.3	33.3	86.4	2.9	60.3	4.2	54.7	12.4	18.1 (14.9)	3.4 (11.4)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

North East

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Wansbeck Hospital	ASH	350	322	92.0	93.7	61.8	98.0	2.2	100.0	3.9	49.4	14.3	10.3 (6.5)	20.2 (27.0)
Darlington Memorial Hospital	DAR	336	314	93.5	90.4	76.1	77.3	4.8	93.4	4.2	36.3	22.0	11.2 (7.7)	8.3 (12.2)
University Hospital Of North Durham, Darlington	DRY	300	358	119.3	92.1	47.8	82.3	3.1	98.9	1.5	14.0	14.5	14.5 (12.5)	9.4 (15.7)
University Hospital of North Tees, Stockton on Tees	NTG	370	289	78.1	88.6	73.7	95.0	5.9	57.3	1.9	38.4	7.3	13.1 (7.2)	6.1 (11.2)
North Tyneside General Hospital, North Shields	NTY	310	304	98.1	90.5	41.4	99.6	4.3	89.0	1.5	34.5	17.1	12.1 (11.0)	12.7 (20.7)
Queen Elizabeth Hospital, Gateshead	QEG	320	287	89.7	95.6	63.4	95.0	2.8	87.6	8.4	45.3	23.0	18.7 (12.5)	5.2 (17.7)
Royal Victoria Hospital, Newcastle	RVN	450	426	94.7	89.6	71.1	92.1	6.8	99.5	1.9	43.2	17.4	14.9 (12.0)	12.3 (23.1)
James Cook University Hospital, Middlesbrough	SCM	400	403	100.8	94.7	87.3	77.1	3.7	98.1	4.8	29.8	12.9	14.0 (9.7)	3.6 (9.9)
South Tyneside District Hospital, South Shields	STD	193	184	95.3	93.6	19.6	72.9	3.8	94.4	6.4	6.0	19.6	15.0 (8.8)	14.0 (20.2)
Sunderland Royal Hospital	SUN	400	371	92.8	91.5	70.9	94.6	4.6	89.2	8.3	49.6	9.7	19.7 (16.3)	1.1 (5.8)
Overall SHA		3429	3258	95.0	92.0	64.0	89.0	4.3	91.9	4.1	35.9	15.5	14.4 (11.4)	8.9 (18.0)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

North West

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Royal Albert Edward Infirmary, Wigan	AEI	350	327	93.4	97.5	9.8	97.8	3.4	92.6	1.7	61.5	10.1	19.0 (13.6)	2.0 (7.4)
Royal Blackburn Hospital	BLA	600	405	67.5	88.8	75.1	89.2	4.0	85.8	5.2	7.2	5.4	12.0 (9.8)	9.5 (18.1)
Royal Bolton Hospital	BOL	350	324	92.6	89.1	79.3	90.4	4.6	100.0	5.2	65.7	7.7	18.9 (15.6)	0.2 (2.0)
Fairfield Hospital, Bury	BRY	210	233	111.0	87.6	63.5	62.5	8.6	2.2	3.4	40.8	7.3	12.9 (10.1)	7.1 (12.3)
Cumberland Infirmary, Carlisle	CMI	300	247	82.3	94.4	70.0	94.4	4.5	84.0	3.1	17.0	16.2	13.7 (9.4)	0.9 (6.1)
Countess of Chester Hospital	COC	320	309	96.6	87.6	48.2	84.8	4.5	54.2	5.9	32.7	20.1	21.3 (16.7)	1.2 (4.9)
University Hospital Aintree	FAZ	400	347	86.8	93.5	35.2	99.0	1.4	97.4	1.6	57.3	10.1	13.8 (10.6)	12.1 (19.0)
Furness General Hospital, Barrow-in-Furness	FGH	180	95	52.8	86.3	50.5	86.6	4.2	40.5	1.1	2.1	13.7	29.8 (22.4)	0.6 (5.2)
Leighton Hospital, Crewe	LGH	250	109	43.6	98.8	71.6	91.7	2.8	63.8	13.0	15.6	15.6	18.2 (14.2)	0.3 (2.7)
Macclesfield General Hospital	MAC	220	241	109.5	88.4	55.6	90.8	0.0	95.8	2.9	4.1	13.3	19.0 (14.1)	11.6 (20.3)
Manchester Royal Infirmary	MRI	180	166	92.2	89.1	53.0	82.0	6.0	95.8	6.2	41.0	9.6	13.6 (11.8)	21.6 (26.9)
Nobles Hospital, Isle of Man	NOB	80	72	90.0	93.1	79.2	87.3	5.6	74.1	2.9	22.2	29.2	13.0 (9.8)	3.9 (12.2)
Royal Oldham Hospital	OHM	342	151	44.2	92.7	47.0	75.4	2.0	77.6	5.3	98.7	22.5	7.4 (5.1)	12.8 (15.6)
Royal Lancaster Infirmary	RLI	280	265	94.6	90.2	73.6	80.0	0.4	45.5	1.3	0.8	3.0	12.4 (8.7)	6.3 (14.2)
Royal Liverpool University Hospital	RLU	387	344	88.9	92.2	39.5	80.4	2.6	86.7	6.1	48.5	17.4	18.1 (13.2)	5.0 (11.5)
Royal Preston Hospital	RPH	408	375	91.9	84.2	62.4	73.6	0.6	75.0	0.3	6.1	1.6	19.5 (14.8)	5.2 (13.0)
Stepping Hill Hospital, Stockport	SHH	337	241	71.5	84.2	66.8	89.3	1.3	90.5	11.3	5.8	4.1	17.1 (11.1)	3.9 (11.8)
Hope Hospital, Salford	SLF	245	214	87.3	88.2	70.1	90.4	6.5	98.9	5.8	35.0	12.6	16.3 (13.9)	2.2 (12.7)
Southport District General Hospital	SOU	309	214	69.3	90.0	45.3	93.0	6.1	64.2	0.5	0.5	2.8	13.0 (8.5)	5.8 (11.8)
Tameside General Hospital, Manchester	TGA	370	140	37.8	79.9	80.7	61.9	2.9	87.1	0.0	62.9	7.9	19.5 (13.7)	1.5 (7.4)
Tra?ord General Hospital, Manchester	TRA	120	91	75.8	91.5	37.4	84.3	3.3	71.4	5.1	22.0	2.2	20.2 (13.7)	4.0 (12.5)
Victoria Hospital, Blackpool	VIC	480	456	95.0	91.5	41.0	76.0	0.9	96.3	1.4	92.3	6.6	11.1 (6.6)	12.3 (17.2)
West Cumberland Hospital, Whitehaven	WCI	149	102	68.5	93.2	69.6	88.1	2.0	8.0	5.6	6.9	1.0	14.7 (8.9)	0.5 (2.7)
Arrowe Park Hospital, Wirral	WIR	567	108	19.0	88.5	63.0	87.2	0.0	95.9	15.9	15.7	23.1	25.1 (17.5)	5.9 (16.5)
Wythenshawe Hospital, Manchester	WYT	292	287	98.3	89.0	11.8	90.4	2.4	95.5	1.6	9.4	16.4	21.7 (17.5)	8.9 (19.4)
Overall SHA		7726	5863	75.9	90.1	53.6	85.4	3.1	78.9	3.8	34.2	10.2	16.2 (13.2)	6.4 (14.8)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

Northern Ireland

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Altnagelvin Area Hospital	ALT	431	379	87.9	90.8	22.7	59.9	4.0	99.5	2.8	0.0	16.9	13.5 (12.2)	12.1 (21.5)
Ulster Hospital, Belfast	NUH	400	383	95.8	94.0	45.7	28.6	5.5	100.0	3.5	76.0	14.6	16.9 (9.3)	5.8 (12.7)
Royal Victoria Hospital, Belfast	RVB	924	844	91.3	95.0	27.3	53.0	3.2	100.0	1.1	98.6	8.3	11.5 (7.8)	8.3 (18.2)
Overall SHA		1755	1606	91.5	93.8	30.6	49.1	3.9	99.9	2.1	69.9	11.8	13.2 (9.6)	8.6 (18.0)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

South Central

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Horton Hospital, Banbury	HOR	165	147	89.1	93.9	48.3	80.3	0.7	20.8	15.0	12.9	1.4	21.6 (19.9)	0.8 (6.9)
St.Mary's Hospital, Isle of Wight	IOW	250	240	96.0	95.7	61.7	88.4	2.5	94.4	1.9	97.9	10.0	16.2 (11.4)	8.5 (18.3)
Milton Keynes General Hospital	MKH	245	106	43.3	93.9	14.2	85.7	1.9	98.0	3.1	2.8	9.4	24.5 (18.6)	0.0 (0.2)
Basingstoke & N.Hants Hospital	NHH	220	216	98.2	97.2	50.9	98.4	4.2	76.9	3.8	50.0	14.8	20.9 (17.5)	3.0 (12.9)
Queen Alexandra Hospital, Portsmouth	QAP	641	654	102.0	99.2	76.1	91.9	0.9	61.1	1.3	86.4	5.2	14.9 (10.8)	4.3 (10.0)
John Radcliffe Hospital, Oxford	RAD	480	440	91.7	93.4	60.0	86.9	3.6	97.6	3.1	52.0	21.4	13.0 (9.1)	0.7 (4.3)
Royal Berkshire Hospital, Reading	RBE	455	436	95.8	94.0	23.2	92.2	4.1	3.8	2.1	78.4	8.3	11.1 (10.7)	6.0 (10.2)
Southampton General Hospital	SGH	600	555	92.5	91.6	69.4	81.3	1.1	99.0	1.4	85.4	14.4	16.0 (12.1)	0.6 (4.0)
Stoke Mandeville Hospital, Aylesbury	SMV	381	363	95.3	93.8	13.2	85.7	2.5	66.5	0.9	46.3	9.1	14.2 (14.2)	7.0 (15.9)
Wexham Park Hospital, Slough	WEX	360	351	97.5	89.6	19.1	84.2	3.1	74.9	3.8	4.8	22.2	16.5 (15.9)	2.5 (12.1)
Overall SHA		3797	3508	92.4	94.2	48.7	87.8	2.4	68.5	2.7	61.6	12.1	15.5 (13.3)	3.4 (10.7)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

South East Coast

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Conquest Hospital, Hastings	CGH	318	248	78.0	89.9	31.0	89.3	0.8	95.2	1.3	5.2	0.0	19.7 (14.8)	0.0 (0.0)
Eastbourne Hospital	DGE	400	353	88.2	81.7	0.0	90.7	0.6	96.7	2.9	0.6	16.4	18.5 (16.1)	3.7 (12.5)
Darent Valley Hospital, Dartford	DVH	320	299	93.4	91.3	24.1	81.1	3.0	97.1	10.2	6.4	13.4	20.3 (16.9)	2.3 (9.0)
East Surrey Hospital, Redhill	ESU	545	485	89.0	91.1	11.8	72.2	2.1	76.6	2.9	35.1	12.0	18.7 (14.5)	0.2 (3.5)
Frimley Park, Camberley	FRM	360	327	90.8	94.5	53.5	97.1	4.3	15.3	1.4	16.5	16.5	20.7 (15.0)	5.0 (14.6)
Kent and Sussex Hospital, Tunbridge Wells	KSX	300	168	56.0	92.6	33.9	93.0	1.2	100.0	3.2	1.2	10.1	17.3 (11.9)	6.8 (18.1)
Maidstone Hospital	MAI	126	133	105.6	92.1	23.3	85.4	1.5	98.4	10.4	5.3	11.3	24.4 (20.7)	0.2 (1.9)
Medway Maritime Hospital	MDW	370	344	93.0	97.4	59.3	91.2	3.5	73.3	0.6	36.9	8.1	21.5 (19.9)	0.0 (0.2)
Queen Elizabeth the Queen Mother Hospital, Margate	QEQ	410	432	105.4	97.8	61.8	94.9	0.5	31.7	2.0	74.8	3.9	17.0 (12.3)	4.3 (14.8)
Royal Sussex County Hospital, Brighton	RSC	500	451	90.2	94.2	27.3	86.5	1.6	85.3	7.6	13.7	16.6	7.9 (7.1)	13.5 (13.2)
Royal Surrey County Hospital, Guildford	RSU	356	341	95.8	93.0	15.2	94.3	3.2	92.6	5.8	75.4	16.4	22.6 (23.0)	1.1 (7.5)
St Peter's Hospital, Chertsey	SPH	400	404	101.0	93.6	74.5	90.9	1.7	5.4	2.4	81.4	5.7	18.1 (16.0)	5.8 (18.6)
St Richard's Hospital, Chichester	STR	400	320	80.0	90.6	18.1	82.4	2.2	47.0	8.8	54.7	10.9	10.5 (8.7)	16.7 (21.8)
William Harvey Hospital, Ashford	WHH	360	271	75.3	94.5	24.7	88.5	1.8	89.9	0.4	54.6	4.8	17.9 (13.7)	0.1 (0.6)
Worthing & Southlands Hospital	WRG	450	450	100.0	92.1	34.0	71.8	2.9	100.0	3.4	65.6	4.0	10.0 (8.9)	16.4 (18.4)
Overall SHA		5615	5026	89.5	92.5	33.7	86.7	2.1	70.1	3.9	39.5	10.1	17.1 (15.5)	5.5 (14.2)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

South West

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Royal United Hospital, Bath	BAT	550	469	85.3	92.1	41.4	87.7	2.6	50.0	3.9	30.7	9.0	12.9 (8.7)	0.2 (2.1)
Bristol Royal Infirmary	BRI	350	306	87.4	89.2	40.8	85.5	2.6	100.0	0.4	8.2	11.1	17.1 (15.8)	10.5 (17.1)
Cheltenham General Hospital	CHG	310	284	91.6	85.5	17.6	82.7	1.8	56.6	0.8	74.3	11.6	16.0 (10.7)	0.2 (2.4)
Frenchay Hospital, Bristol	FRY	500	465	93.0	91.2	33.3	94.6	0.9	100.0	1.4	50.5	10.5	23.4 (16.4)	0.6 (4.3)
Gloucestershire Royal Hospital, Gloucester	GLO	400	401	100.2	98.3	61.1	98.4	0.5	38.2	1.1	62.3	11.0	14.5 (9.5)	1.6 (4.9)
Musgrove Park Hospital, Taunton	MPH	400	382	95.5	93.2	69.6	98.5	1.6	88.3	2.1	37.7	4.2	15.7 (13.8)	0.3 (2.7)
North Devon District Hospital, Barnstaple	NDD	250	225	90.0	87.4	67.1	95.1	4.0	73.9	4.0	5.3	14.2	10.9 (6.3)	8.9 (20.2)
Poole General Hospital	PGH	923	866	93.8	91.8	45.7	87.8	1.0	82.5	0.8	0.3	13.6	13.4 (12.6)	1.0 (6.4)
Derriford Hospital, Plymouth	PLY	550	509	92.5	85.6	12.8	87.6	2.0	85.2	0.2	79.6	3.1	14.9 (9.7)	0.3 (3.8)
The Great Western Hospital, Swindon	PMS	350	363	103.7	98.2	78.8	94.3	1.1	61.1	4.9	73.8	3.3	18.7 (20.5)	1.0 (4.6)
The Royal Cornwall Hospital, Treliske	RCH	500	455	91.0	90.1	68.8	76.1	0.7	80.8	8.1	87.9	5.1	13.6 (10.4)	3.1 (9.0)
Royal Devon & Exeter Hospital, Exeter	RDE	633	547	86.4	94.2	47.2	92.2	2.4	98.4	2.9	76.1	17.6	13.6 (9.8)	0.0 (0.8)
Salisbury District Hospital	SAL	187	226	120.9	89.1	36.3	87.6	1.3	28.6	4.0	48.7	17.3	18.6 (15.2)	9.0 (21.4)
Torbay District General Hospital	TOR	495	395	79.8	86.1	63.8	84.3	0.8	94.1	0.9	81.8	0.8	10.2 (6.0)	11.3 (17.2)
Dorset County Hospital, Dorchester	WDH	300	255	85.0	92.3	70.6	84.1	6.7	52.5	0.9	5.1	31.4	12.6 (12.6)	0.0 (0.0)
Weston General Hospital, Weston-Super-Mare	WGH	268	216	80.6	93.7	52.8	84.0	3.7	97.7	7.8	17.6	10.6	16.6 (14.7)	4.2 (11.6)
Yeovil District Hospital	YEO	250	175	70.0	94.3	89.7	93.9	0.0	88.6	2.5	28.0	53.1	17.5 (14.6)	0.0 (0.0)
Overall SHA		7216	6539	90.6	91.5	50.3	89.1	1.8	76.7	2.5	46.6	11.5	15.1 (12.9)	2.5 (9.7)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

Wales

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Bronglais Hospital, Aberystwyth	BRG	109	84	77.1	91.7	35.7	75.9	11.9	100.0	12.8	2.4	14.3	15.2 (10.9)	14.8 (28.8)
Gwynnedd Ysbyty, Bangor	GWY	275	162	58.9	92.0	61.1	95.7	2.5	88.6	0.7	44.4	14.8	12.6 (11.2)	21.9 (28.1)
Morriston Hospital, Swansea	MOR	600	420	70.0	92.7	18.3	80.1	1.4	75.9	1.5	0.5	5.0	24.6 (24.4)	19.5 (34.9)
Nevill Hall Hospital, Abergavenny	NEV	300	165	55.0	90.4	38.8	81.1	6.7	31.4	3.4	76.4	5.5	13.7 (8.8)	18.6 (31.0)
Prince Charles Hospital, Merthyr Tydfil	PCH	230	89	38.7	88.3	73.0	92.9	7.9	3.3	1.4	2.2	22.5	16.0 (12.0)	13.8 (29.3)
Royal Glamorgan Hospital, Llantrisant	RGH	300	224	74.7	88.0	22.8	71.2	2.2	32.1	1.5	5.4	14.7	14.9 (11.4)	23.7 (38.9)
University Hospital of Wales, Cardiff	UHW	500	436	87.2	92.2	13.8	64.6	5.3	93.7	0.3	56.9	15.4	29.1 (28.0)	11.9 (32.3)
Maelor Hospital, Wrexham	WRX	230	230	100.0	93.8	0.0	93.7	6.5	50.0	0.0	40.4	15.7	12.5 (9.6)	16.8 (27.5)
West Wales General Hospital, Carmarthen	WWG	290	257	88.6	96.2	63.4	83.9	2.7	34.5	0.4	1.6	3.9	17.7 (14.3)	8.7 (21.3)
Withybush Hospital, Haverford West	WYB	200	119	59.5	91.7	45.4	90.7	8.4	66.0	16.4	0.0	9.2	18.4 (13.0)	9.7 (26.6)
Overall SHA		3034	2186	72.1	92.2	30.3	80.1	4.5	63.7	2.4	25.7	11.1	19.4 (19.5)	15.8 (31.1)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

West Midlands

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Queens Hospital, Burton upon Trent	BRT	274	294	107.3	97.7	63.9	97.2	4.4	90.9	2.9	21.4	0.0	16.1 (14.9)	3.9 (10.1)
Birmingham Heartlands	EBH	500	417	83.4	93.9	10.8	72.4	4.3	19.5	9.8	69.1	6.0	17.8 (17.2)	17.3 (24.0)
Good Hope Hospital, Birmingham	GHS	400	355	88.8	96.5	7.3	75.8	2.3	20.4	7.1	84.5	5.1	19.6 (15.4)	8.9 (22.8)
County Hospital, Hereford	HCH	340	286	84.1	92.8	47.6	93.3	1.7	79.3	3.0	30.8	10.1	12.2 (9.7)	0.0 (0.0)
New Cross Hospital, Wolverhampton	NCR	366	398	108.7	95.4	47.2	85.7	5.0	6.3	4.5	62.1	11.3	9.3 (6.8)	8.2 (13.7)
George Eliot Hospital, Nuneaton	NUN	246	230	93.5	90.8	33.9	81.9	2.6	79.1	9.9	53.5	4.8	24.1 (20.2)	3.5 (15.2)
Queen Elizabeth Hospital, Birmingham	QEB	390	322	82.6	93.9	23.6	91.9	3.1	62.2	9.0	14.6	12.7	15.3 (14.5)	8.7 (16.7)
Alexandra Hospital, Redditch	RED	250	217	86.8	93.7	42.4	89.1	3.2	6.9	2.6	43.8	24.0	18.4 (13.2)	2.3 (9.4)
Royal Shrewsbury Hospital	RSS	300	307	102.3	95.0	33.6	72.0	20.5	31.5	5.2	10.4	16.3	15.4 (11.5)	3.5 (12.0)
Russells Hall Hospital, Dudley	RUS	423	443	104.7	88.9	33.9	97.3	1.8	56.0	7.3	46.7	7.9	16.7 (17.0)	8.2 (15.1)
Sandwell General Hospital	SAN	350	351	100.3	94.9	49.0	88.4	1.7	9.1	2.0	10.5	11.1	22.3 (18.6)	8.4 (17.9)
Staffordshire General Hospital, Stafford	SDG	250	220	88.0	86.1	49.5	81.0	2.7	72.6	5.0	4.5	2.7	14.5 (9.6)	9.1 (17.3)
University Hospital of North Staffordshire, Stoke-on-Trent	STO	400	399	99.8	96.7	66.4	89.9	3.3	1.6	0.5	90.5	19.5	14.5 (12.9)	0.0 (0.0)
Princess Royal Hospital, Telford	TLF	225	205	91.1	92.1	62.9	77.8	4.9	37.3	0.5	3.9	12.2	12.9 (10.2)	6.9 (14.6)
University Hospital Coventry	UHC	500	472	94.4	90.4	41.1	95.8	3.2	91.8	2.7	5.5	2.3	19.3 (16.4)	7.0 (14.2)
Warwick Hospital	WAR	400	289	72.2	94.1	66.4	97.3	1.0	1.5	1.9	47.8	8.7	16.0 (14.9)	5.6 (12.6)
Worcestershire Royal Hospital, Worcester	WRC	350	401	114.6	87.9	56.6	74.0	3.2	38.7	0.5	15.2	8.5	12.4 (8.5)	7.0 (13.1)
Overall SHA		5964	5606	94.0	93.0	42.3	86.7	4.0	38.3	4.4	38.0	9.3	16.1 (14.6)	6.7 (15.6)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

Yorkshire and The Humber

Hospital	Hospital code	Estimated number of cases (facilities audit)	Cases submitted	% Cases submitted / facilities audit estimate	% Data completion	% Admitted to OW in 4 hours	% Surgery within 48 hours (BB2)	% Treated without surgery	% Arthroplasties cemented	% Pressure ulcers	% Assessed by geriatrician	% Bone medication at admission	Mean (SD) acute stay length (days)	Mean (SD) Trust post-acute stay length (days)
Barnsley Hospital	BAR	267	203	76.0	90.6	79.3	90.6	3.0	17.3	4.2	25.1	10.3	18.9 (12.5)	0.0 (0.5)
Bradford Royal Infirmary	BRD	350	310	88.6	93.1	53.5	84.4	1.6	41.2	0.7	35.5	7.4	13.7 (8.1)	0.3 (2.7)
Bassetlaw Hospital	BSL	130	148	113.8	94.3	81.1	61.3	1.4	20.8	3.8	74.3	5.4	20.6 (15.4)	1.1 (7.3)
Dewsbury & District Hospital	DEW	200	180	90.0	92.6	53.3	76.3	2.2	83.7	3.1	0.6	1.1	17.2 (16.6)	1.4 (7.3)
Doncaster Royal Infirmary,	DID	350	382	109.1	96.2	70.9	81.9	1.8	53.6	5.7	26.2	11.0	15.9 (11.6)	1.8 (10.0)
Diana Princess of Wales Hospital, Grimsby	GGH	263	268	101.9	97.0	67.5	85.4	1.5	63.4	6.8	40.3	6.3	13.1 (9.6)	0.8 (5.3)
Harrogate District Hospital	HAR	178	218	122.5	94.2	82.6	94.8	2.3	85.1	7.6	10.6	15.6	19.5 (17.5)	1.4 (7.2)
Hull Royal Infirmary	HRI	550	501	91.1	94.4	45.9	93.0	1.8	12.8	5.0	50.1	20.2	20.7 (17.2)	1.1 (5.5)
Huddersfield Royal Infirmary	HUD	465	405	87.1	92.7	64.9	94.8	3.0	55.9	4.0	5.7	18.3	18.3 (16.6)	4.6 (14.0)
Leeds General Infirmary	LGI	700	642	91.7	87.9	47.2	78.6	2.3	95.4	0.5	11.5	11.8	21.1 (13.5)	1.0 (4.7)
Northern General Hospital, She?eld	NGS	670	476	71.0	98.6	70.0	96.2	1.1	94.6	6.3	50.8	8.2	27.2 (22.7)	0.0 (0.0)
Pinderfields General Hospital, Wakefield	PIN	441	309	70.1	92.2	54.4	67.3	7.1	22.0	5.1	21.0	8.7	18.5 (13.7)	3.2 (9.2)
Rotherham District General Hospital	ROT	300	277	92.3	92.5	75.8	77.8	6.5	67.9	0.8	93.1	19.9	21.0 (18.8)	4.4 (15.2)
Scarborough General Hospital	SCA	285	239	83.9	86.5	60.3	91.0	0.8	88.2	0.6	12.1	9.2	12.3 (9.9)	7.9 (15.3)
Scunthorpe General Hospital	SCU	233	230	98.7	89.3	79.6	76.1	6.1	29.2	5.5	50.9	11.7	10.2 (5.7)	1.8 (6.5)
York Hospital	YDH	400	343	85.8	96.4	80.2	90.5	0.9	50.3	0.0	21.0	9.3	17.8 (12.8)	2.1 (10.5)
Overall SHA		5782	5131	88.7	93.2	64.0	85.6	2.6	58.1	3.6	31.8	11.7	18.7 (15.6)	1.9 (8.6)
Overall National		61202	53443	87.3	92.3	48.2	86.0	2.8	68.2	3.4	42.5	11.7	16.4 (14.2)	4.8 (14.1)

Glossary

Term	Definitions
Atypical fractures	Fractures appearing in the sub trochanteric region and shaft of the femur. They are frequently preceded by pain and have a characteristic 'beak 'on x-ray. They may be associated with prolonged bisphosphonate therapy.
AMTS scores	Abbreviated mental test score. A rapid assessment of elderly patients to assess cognitive dysfunction.
ASA grades	American Society of Anesthesiologists[9] (ASA) physical status classification :- 1. A normal healthy patient 2. A patient with a mild systemic disease 3. A patient with a severe systemic disease that limits activity, but is not incapacitating 4. A patient with an incapacitating systemic disease that is a constant threat to life 5. A moribund patient not expected to survive 24 hours with or without operation This grading does not take into account acute illness, hence a patient can be ASA 1 and 'unfit'.
Bone protection medication	**1. Bisphosphonates** Etidronate Alendronate Risedronate Ibandronate Zoledronate Pamidronate **2. Denosumab** **3. HRT and SERMS** HRT (various) Tibolone Raloxifene **4. Parathyroid hormone** PTH 1-34 PTH 1-84 **5. Strontium** Strontium ranelate **6. Calcium and vitamin D** Calcitriol Calcium and vitamin D – various Alpha-calcidol (or one alpha) **7. Calcitonin**

Term	Definitions
Case ascertainment	The number of cases submitted by the participating hospital divided by the number of cases predicted, expressed as a percentage.
Case mix factors	Demographic and functional information about patient. e.g. Age, sex, mobility, deprivation status, ASA and previous living circumstances (for mortality data only)
Cemented arthroplasties	Polymethyl methacrylate is a plastic that may be used to hold arthroplasties in place. It is introduced into the reamed bone before prostheses are inserted. The 'cement' sets in a few minutes.
Early supported discharge schemes	Supported discharge and early supported discharge (ESD) schemes use specialist staff assessments (schemes vary but the teams tend to include designated medical, nursing, physiotherapy, occupational therapy and social work personnel) whose role is to assess to identify patients, on admission, to identify those suitable for supported discharge, to facilitate early mobilisation and rehabilitation and arrange appropriate support on discharge and follow up who are suitable for early discharge with community support
Falls Assessment	A systematic assessment by a suitably trained person e.g. Geriatrician or a specialist trained nurse which must cover the following domains:- Falls history (noting previous falls), cause of index fall (including medication review), risk factors for falling and injury (including fracture) and from this information formulate and document a plan of action to prevent further falls.
Fracture liaison nurse/service	A nurse whose primary purpose is to ensure that both inpatients and outpatients with low impact fractures are screened for falls and osteoporosis
Hemiarthroplasty / Bipolar Hemiarthroplasty	A half hip replacement that is either: Unipolar – replacement of the femoral head and neck Bipolar – replacement of the femoral head and neck, with the addition of an acetabular cup that is not attached to the pelvis.
HES	Hospital Episode Statistics[10] Centrally held data used to determine a hospital's case load.
Multidisciplinary rehabilitation team	A group of people of different professions (and including as a minimum a physiotherapist, occupational therapist, nurse and doctor) with job plan responsibilities for the assessment and treatment of hip fracture patients, and who convene (including face to face or virtual ward round) regularly (and at least weekly) to discuss patient treatment and care, and plan shared clinical care goals.
Normal working hours	08:00 – 19:59hrs
Pressure ulcer Pressure ulcer grades[11]	A pressure ulcer is an area of localised damage to the skin and underlying tissue caused by pressure, shear or friction forces, or a combination of these. Grade 1 = skin inflammation without blanching Grade 2 = skin blistering/superficial damage Grade 3 = skin broken/serous discharge Grade 4 = deep ulcer, underlying fascia, bone, muscle affected

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Appendix A

Structure and governance

NHFD Steering Group

Co-Chairs

David Marsh
Professor of Clinical Orthopaedics, UCL, Royal National Orthopaedic Hospital

Finbarr Martin
Consultant Geriatrician, Guys and St. Thomas' NHS Foundation Trust, London.
President, British Geriatrics Society

Guy Broome
Consultant Orthopaedic Surgeon,
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James Cooper
Political Relations Officer,
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Colin Currie
Clinical Lead for Geriatric Medicine, NHFD

James Elliott
Consultant Orthopaedic Surgeon, Belfast

Colin Esler
Consultant Orthopaedic Surgeon, Leicester

Karen Hertz
Advanced Nurse Practitioner, University Hospital of North Staffordshire NHS Trust

Antony Johansen
Consultant Orthogeriatrician and Senior Lecturer in Public Health, Cardiff & Vale NHS Trust

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Healthcare Quality and Improvement Partnership

Paul Mitchell
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Maggie Partridge
NHFD Project Manager

Mike Pearson
Professor of Clinical Evaluation,
University of Liverpool

Margit Physant, Age UK
Policy Adviser for Health and Wellbeing

Fay Plant
NHFD Coordinator (North)

Jonathan Roberts
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Opinder Sahota
Professor in Orthogeriatric Medicine & Consultant Physician, Queen's Medical Centre, Nottingham

Bob Smith
Patient Representative

Roz Stanley
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Richard Griffiths
Consultant Anaesthetist, Peterborough Hospital

Keith Willett
Professor of Orthopaedic Trauma Surgery, John Radcliffe Infirmary, Oxford, and National Clinical Director for Trauma Care, Department of Health

Andy Williams
NHFD Project Coordinator (South)

NHFD Implementation Group

Chair

Colin Currie
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Maggie Partridge
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Appendix B

Time to surgery

The following table gives the figures from which the National Cumulative Time to Surgery (Chart 12) was produced. This is to enable hospitals to compare their own downloaded data against the national plot.

Time to surgery	Cumulative % of cases
< 6 hours	1.41
< 12 hours	6.17
< 18 hours	19.04
< 24 hours	41.43
< 30 hours	56.27
< 36 hours	61.55
< 42 hours	67.98
< 48 hours	76.49
< 54 hours	81.33
< 60 hours	82.82
< 66 hours	84.78
< 72 hours	87.46
< 84 hours	89.55
< 90 hours	90.39
< 96 hours	91.49
< 102 hours	92.17
< 102 hours	96.39

Appendix C

Casemix adjusted outcomes

Return home from home at 30 days mortality at 30 days

Description of data set

Hip fracture cases for patients of at least 60 years of age and no more than 107 years of age were eligible for inclusion in the case mix analyses. Cases with draft status were included but cases thought to be duplicates were excluded. A list of hospitals for inclusion in the analysis was provided by the NHFD team. Generally hospitals were included if they entered at least 100 cases into the NHFD for the period April 1, 2010 to March 31, 2011 or, for hospitals with less than 100 cases expected, entered close to 100% of their cases. An extract of the NHFD database was provided in April 2011.

For mortality at 30 days, cases that were admitted between March 1, 2010 and February 28, 2011 were included in the analysis. This is the most recent year long set of data that could be analysed. The extract of the mortality information was taken from the DBS on April 20, 2011 and can be up to three weeks out of date so reliable mortality data was available up to March 31, 2011. It was then necessary to allow another 30 days between this date and the latest date of admission in order to capture mortality at 30 days. Cases with unknown mortality status at 30 days were excluded. Additionally, hospitals with less than 80% case ascertainment were also excluded. The mortality data set includes 45741 cases.

For return home from home at 30 days, cases that were admitted from their own home or sheltered housing between March 1, 2010 and February 28, 2011 were included in the analysis. This is the most recent year long set of data that could be analysed because it was necessary to allow 30 days between the latest date of admission and the extract in order to capture whether the patients had returned home within 30 days. Cases with unknown residential status at 30 days were excluded. The return home from home data set includes 16592 cases.

Case mix factors

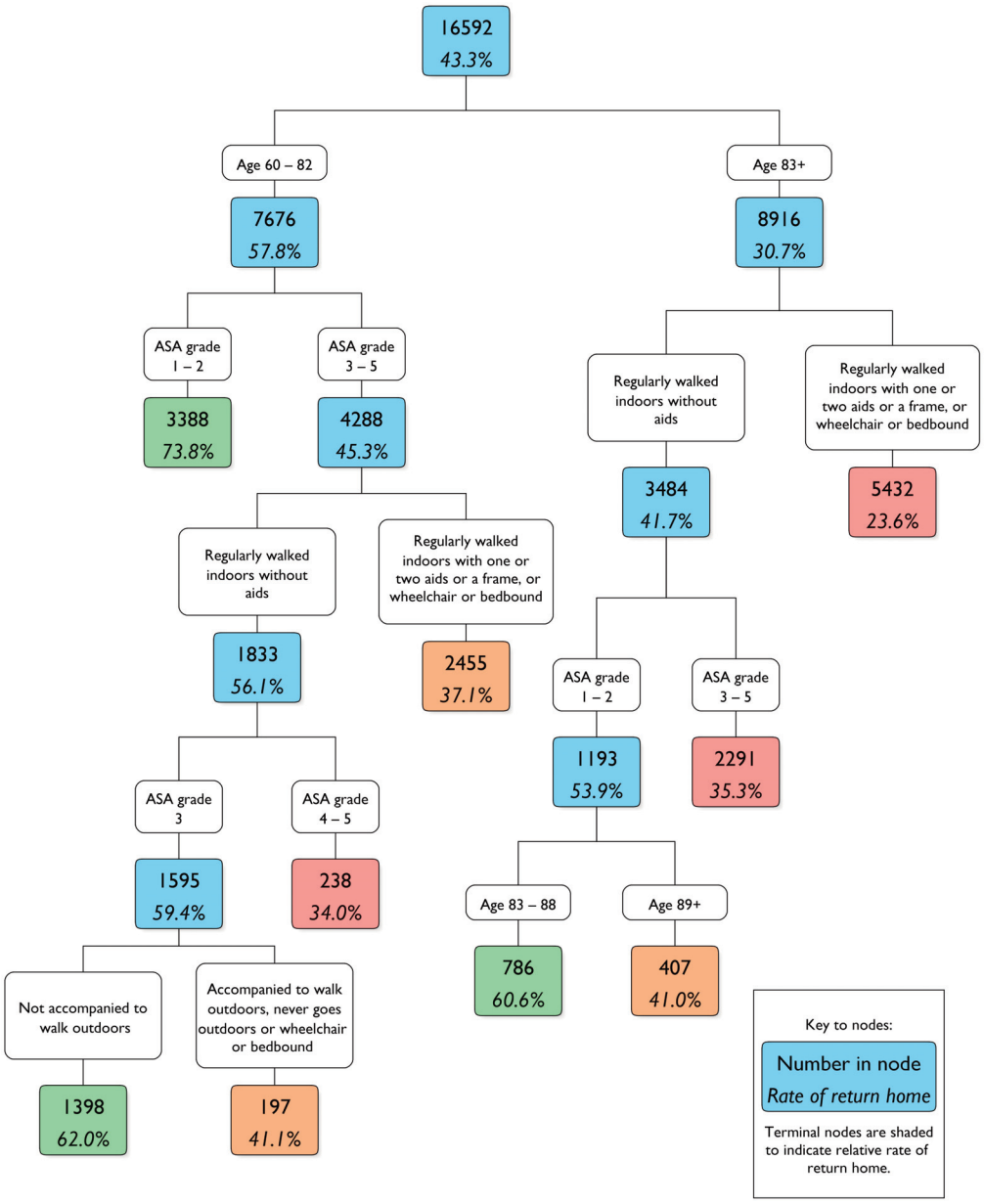
The following case mix factors are used for the adjustment of the rates of mortality at 30 days and return home from home at 30 days:

_ Age
_ Sex
_ ASA grade
_ Deprivation status (based on the Index of Multiple Deprivation (IMD) Rank, the lower the rank the worse the deprivation)
_ Previous living circumstances (for mortality only)
_ Previous mobility
– Walking ability outdoors
– Walking ability indoors
– Whether accompanied indoors
– Whether accompanied outdoors
_ Description of fracture
– Fracture type
– Whether pathological

The distributions of these factors, 30 day mortality and 30 day return home from home for cases admitted between March 1, 2010 and February 28, 2011 inclusive, to hospitals on the inclusion list for patients of at least 60 years of age and no more than 107 years of age are described in Table 1. Note that age and deprivation are summarised by category but they were included in the model as continuous variables.

Classification trees

Rate of return home from home at 30 days.



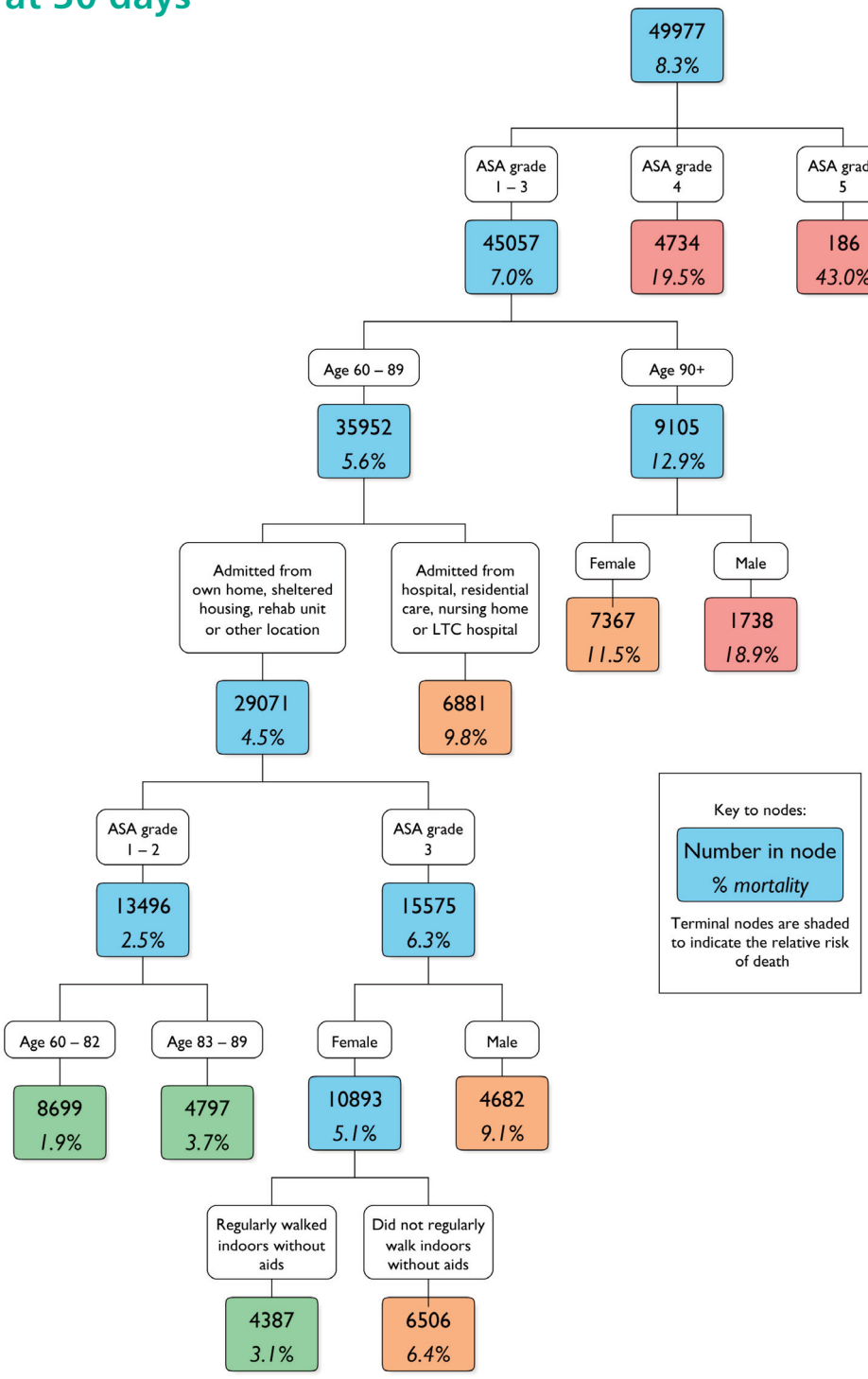
For return from home at 30 days 16592 patients were eligible for analysis. The case mix factor that provides the best prediction of return home from home at 30 days is age. For patients between 60 and 82 years of age inclusive the rate of return home from home at 30 days is 57.8% compared with 30.7% for older patients. For patients in the younger age group, ASA grade provides the next best prediction of the outcome. For patients between 60 and 82 years of age with an ASA grade of 1 or 2 the rate of return home from home at 30 days is 73.8% compared with 45.3% for patients in this age group with an ASA grade of at least 3. For patients who are at least 83 years old walking ability indoors provides the next best prediction of return home from home. Patients in this age group who regularly walked indoors without aids had a rate of return home from home of 41.7% compared with 23.6% for patients in this age group who did not regularly walk indoors without aids. Whether the patient was accompanied to walk outdoors is also an important predictor of rate of return home from home at 30 days.

Excluded hospitals

Excluded Hospitals	Cases eligible for return home analysis	Percent returned home at 30 days for eligible cases Raw	Adjusted
PAH	54	18.5	20.6
SOU	54	59.3	48.0
TGA	54	51.9	54.3
UHN	53	0.0	0.0
RVN	50	14.0	15.8
SPH	50	22.0	25.3
HCH	49	36.7	38.4
LGI	48	12.5	13.2
DEW	45	31.1	32.5
NWG	44	40.9	43.4
RLU	43	51.2	47.3
BAT	42	7.1	9.0
LER	42	0.0	0.0
WES	41	41.5	40.6
SHJ	39	69.2	58.3
WHC	39	0.0	0.0
BAR	38	55.3	55.8
NOB	38	55.3	50.5
LIN	37	37.8	36.2
SHH	36	27.8	33.1
SAN	34	0.0	0.0
ADD	33	15.2	21.0
CHS	33	48.5	48.5
OLD	33	0.0	0.0
PEH	33	75.8	76.1
IOW	32	12.5	14.1
IPS	32	12.5	14.9
SHC	32	0.0	0.0
BED	31	48.4	46.1
BNT	31	25.8	29.4
ESU	31	3.2	3.8
STR	31	0.0	0.0
PCH	30	43.3	49.1
DRY	29	0.0	0.0
SEH	28	0.0	0.0
NGS	27	0.0	0.0
WMU	27	0.0	0.0
WYT	27	3.7	4.0
BRG	26	11.5	14.5
BRY	26	0.0	0.0
NMH	26	46.2	46.4
PET	26	0.0	0.0
ROT	26	0.0	0.0
RSC	26	0.0	0.0
RUS	26	0.0	0.0
RCH	25	0.0	0.0
MAY	24	25.0	27.6
HRI	23	0.0	0.0
SGH	23	0.0	0.0
LEW	22	0.0	0.0

Excluded Hospitals	Cases eligible for return home analysis	Percent returned home at 30 days for eligible cases Raw	Adjusted
MPH	22	0.0	0.0
QKL	22	0.0	0.0
SLF	22	0.0	0.0
BRO	20	15.0	15.7
DGE	19	10.5	13.7
CHE	18	0.0	0.0
WRX	18	0.0	0.0
WWG	18	5.6	6.7
KTH	17	23.5	32.4
RFH	17	0.0	0.0
CGH	16	6.3	7.8
HOM	16	43.8	44.3
LDH	16	6.3	9.1
STO	16	0.0	0.0
RLI	15	0.0	0.0
GEO	14	7.1	8.2
RED	14	0.0	0.0
RGH	14	0.0	0.0
SAL	14	0.0	0.0
STD	14	0.0	0.0
TLF	14	14.3	14.6
BRT	13	7.7	9.1
DAR	13	0.0	0.0
KCH	13	0.0	0.0
KMH	13	0.0	0.0
QEW	13	0.0	0.0
WGH	13	0.0	0.0
BFH	12	0.0	0.0
HIL	12	8.3	11.6
SCA	12	0.0	0.0
KGH	11	0.0	0.0
FGH	10	0.0	0.0
LGH	10	0.0	0.0
OHM	9	0.0	0.0
HOR	8	0.0	0.0
KSX	8	0.0	0.0
STM	8	0.0	0.0
RPH	7	14.3	16.2
WYB	7	0.0	0.0
WHT	6	0.0	0.0
YEO	6	0.0	0.0
CCH	3	0.0	0.0
LIS	3	0.0	0.0
MKH	3	0.0	0.0
NOR	3	0.0	0.0
MAI	2	0.0	0.0
RAD	2	0.0	0.0
DER	0	N/A	N/A *Residential status at 30 days 100% missing
WCI	0	N/A	N/A *Residential status at 30 days 100% missing
WDH	0	N/A	N/A *Residential status at 30 days 100% missing
WIR	0	N/A	N/A *Residential status at 30 days 100% missing

Mortality at 30 days



For the key outcomes, return home from home at 30 days and mortality at 30 days, both raw and case mix adjusted estimates are reported. The following case mix factors were considered: age, sex, ASA grade, deprivation status (based on the Index of Multiple Deprivation Rank), previous mobility (walking ability indoors and outdoors and whether accompanied indoors and outdoors), fracture type, whether the fracture was pathological and previous living circumstances (for mortality at 30 days only). A classification tree approach was used to determine which case mix factors are most important for each outcome. Each classification tree is based on all cases that were eligible for the analysis. The most important case mix factors are shown towards the top of the diagrams. Each node is represented by a box that includes the number of patients in the node and the percentage of patients who displayed the outcome.

Excluded hospitals

Excluded Hospitals	Cases eligible for mortality analysis	Percent mortality at 30 days for Raw	Adjusted
SHJ	16	0.0	0.0
PEH	8	0	0
BLA	Excluded: poor ascertainment		
BRO	Excluded: poor ascertainment		
CHE	Excluded: poor ascertainment		
CHS	Excluded: poor ascertainment		
FGH	Excluded: poor ascertainment		
GWY	Excluded: poor ascertainment		
HOM	Excluded: poor ascertainment		
KGH	Excluded: poor ascertainment		
KMH	Excluded: poor ascertainment		
KSX	Excluded: poor ascertainment		
LGH	Excluded: poor ascertainment		
LIS	Excluded: poor ascertainment		
MKH	Excluded: poor ascertainment		
MOR	Excluded: poor ascertainment		
NEV	Excluded: poor ascertainment		
NGS	Excluded: poor ascertainment		
OHM	Excluded: poor ascertainment		
OLD	Excluded: poor ascertainment		
PCH	Excluded: poor ascertainment		
PIN	Excluded: poor ascertainment		
QEW	Excluded: poor ascertainment		
SOU	Excluded: poor ascertainment		
TGA	Excluded: poor ascertainment		
TOR	Excluded: poor ascertainment		
TRA	Excluded: poor ascertainment		
WAR	Excluded: poor ascertainment		
WES	Excluded: poor ascertainment		
WIR	Excluded: poor ascertainment		
WYB	Excluded: poor ascertainment		
YEO	Excluded: poor ascertainment		
BRG	Excluded: mortality unavailable for >5%		
MAI	Excluded: mortality unavailable for >5%		
PLY	Excluded: mortality unavailable for >5%		
RGH	Excluded: mortality unavailable for >5%		
STM	Excluded: mortality unavailable for >5%		

Appendix D Facilities Audit tables

NHFD Facilities Audit 2010-2011

Hospital Code	Trauma catchment population	No. of hip fractures treated/annum	Trauma Service Description	Hours of Designated trauma/week	No. of WTE Orthopaedic Consultants	No. of WTE Orthopaedic middle grades	Orthogeriatric consultant hours/week	Orthogeriatric middle grades hours/week	Orthogeriatric ward rounds per week	No. of WTE fragility fracture nurses	No. of WTE fracture liaison nurses	Falls clinic	DXA on-site facility	Where rehabilitation is done	Who collects and enters data
ADD	350000	420	both	62.5	15	10	32	40	5	1	1	con	axial	ward	audit
AEI	360000	350	DGH	64	8	6	20	0	5	0	0	con	axial	ward	nurses
ALT	392980	431	DGH	48	9.9	2	0	0	0	0	0	con	axial	ward	nurses
ASH	250000	350	DGH	44	9	9	8	24	2	1	0	con	none	GORU	nurses
BAR	224600	267	DGH	28	7	8	10	0	0	2	0	nurse	peri	GORU	audit
BAS	320000	356	DGH	40	11	11	15	25	5	1.4	2	con	axial	ward	nurses
BAT	500000	550	DGH	74	17	13	6	2	2	1	4	con	none	ward	nurses
BED	270000	200	DGH	17.5	5.5	6	8	0	4	0	0	nurse	axial	ward	nurses
BFH	400000	442	DGH	46.5	11	10	6	0	3	1	2	none	axial	ward	nurses
BLA	525000	600	DGH	19	16	15	3	2	1	0	0	con	axial	ward	nurses
BNT	250000	300	DGH	16	7	9	16	40	3	0	0	con	axial	GORU	nurses
BOL	360000	350	DGH	57	10	7	40	0	5	0	0	none	none	ward	nurses
BRD	480000	350	DGH	33	14	8	0	0	4	0	0	none	axial	ward	nurses
BRG	95000	109	DGH	0	4	5	0	0	0	1	1	con	axial	ward	nurses
BRI	300000	350	both	31	14	12	4	0	1	0	0	con	axial	ward	audit
BRO	307000	360	DGH	40	9	12	8	0	3	1	0	con	axial	ward	nurses
BRT	300000	274	DGH	40	9	8	9	9	3	0	1	con	peri	ward	audit
BRY	170000	210	DGH	28	5	6	3	1	4	4	0	none	none	GORU	nurses
BSL	150000	130	DGH	24	5	6	4	0	5	0	0	con	axial	ward	doctors
CCH	325000	150	both	28	9	7	40	40	5	0	0	con	axial	ward	audit
CGH	200000	318	DGH	20	7	9	0	0	0	0	0	con	none	ward	audit
CHE	370000	374	DGH	31.5	9	9	14	0	5	0	1	none	axial	ward	nurses
CHG	225000	310	DGH	28	10.5	11	8	30	4	3	1.1	con	axial	ward	nurses
CHS	250000	250	DGH	20	4	8	8	40	2	0	0	con	none	ward	nurses
CMI	200000	300	DGH	21	9	9	6	5	4	1	0	nurse	none	ward	nurses
COC	250000	320	DGH	31.5	7	8	8	2	5	2	1	con	none	ward	nurses
COL	370000	500	DGH	44	9	9	8	2	2	0	0	con	none	ward	nurses
DAR	250000	336	DGH	26.5	9	9	8	0	4	0	0	nurse	axial	ward	nurses
DER	500000	550	DGH	84	20	20	12	0	5	0	1	con	axial	ward	nurses
DEW	180000	200	DGH	20	5	6	0	0	1	1	1	con	none	ward	nurses

NHFD Facilities Audit 2010-2011

Hospital Code	Trauma catchment population	No. of hip fractures treated/annum	Trauma Service Description	Hours of Designated trauma/week	No. of WTE Orthopaedic Consultants	No. of WTE Orthopaedic middle grades	Orthogeriatric consultant hours/week	Orthogeriatric middle grades hours/week	Orthogeriatric ward rounds per week	No. of WTE fragility fracture nurses	No. of WTE fracture liaison nurses	Falls clinic	DXA on-site facility	Where rehabilitation is done	Who collects and enters data
DGE	335938	400	DGH	38.5	8	7	2	0	0	1	0	con	none	ward	nurses
DID	300000	350	DGH	13	12	15	7	0	5	4	0	con	axial	GORU	doctors
DRY	270000	300	DGH	33.5	9	10	8	0	2	1	0	con	axial	GORU	nurses
DVH	270000	320	DGH	20	5	8	8	3	1	0	1	con	axial	ward	nurses
EBH	750000	500	DGH	49	10	9	14	52.5	6	0	0	con	none	GORU	doctors
ESU	500000	545	DGH	58	8	8	20	40	5	0.5	1.8	con	axial	ward	nurses
FAZ	500000	400	DGH	43.5	9	5	8	20	5	0	0	con	axial	GORU	doctors
FGH	100000	180	DGH	20	5	6	0	0	0	0	0	con	none	ward	doctors
FRM	450000	360	DGH	58	20	9	6	20	2	0	1	con	axial	ward	nurses
FRY	500000	500	both	60	14	15	32	0	6	1.4	0	con	axial	ward	nurses
GEO	260000	188	tertiary	68	16	11	4	0	2	0	0	con	axial	GORU	nurses
GGH	158000	263	DGH	21	6	7	9	9	3	1	1	con	axial	ward	audit
GHS	400000	400	DGH	18	8	7	10	0	7	0	0	con	axial	ward	doctors
GLO	320000	400	DGH	52.5	16	10	17	12	5	1	1	con	axial	ward	nurses
GWH	380000	231	DGH	80	12	12	10	5	4	0	2	con	axial	ward	nurses
GWY	220000	275	DGH	35	8	12	16	0	4	0.2	0.5	con	axial	ward	doctors
HAR	200000	178	DGH	20	8	9	24	0	4	0	0	con	axial	ward	nurses
HCH	230000	340	DGH	30	8	7	10	20	5	0	1	con	axial	ward	nurses
HIL	350000	200	DGH	30.5	6	10	44	6	2	0	0	none	none	ward	nurses
HIN	250000	200	DGH	31.5	5	4		0	0	0	0	none	none	ward	nurses
HOM	115000	110	DGH	0	5	5	4	0	2	0	0	con	none	ward	nurses
HOR	200000	165	DGH	0	7	0	21	0	4	0	1	con	none	ward	audit
HRI	650000	550	both	75	16	11	20	40	5	1	2	con	axial	ward	audit
HUD	495000	465	DGH	52.5	14	13	4	4	2	0	0	con	none	ward	nurses
IOW	145000	250	DGH	17.5	5	6	0	5	5	1	1	con	axial	GORU	nurses
IPS	320000	418	DGH	35	12	9	20	0	2	1	1	con	axial	ward	nurses
JPH	250000	400	DGH	25	6	6	9	0	3	0	0	none	none	ward	nurses
KCH	200000	81	tertiary	31	12	18	15	22	1	1	1	con	axial	ward	nurses
KGH	300000	306	DGH	40	9	9	0	0	0	0	0	con	axial	ward	nurses
KMH	400000	450	DGH	38.5	13	10	0	0	0	1.5	0	con	axial	ward	nurses

NHFD Facilities Audit 2010-2011

Hospital Code	Trauma catchment population	No. of hip fractures treated/annum	Trauma Service Description	Hours of Designated trauma/week	No. of WTE Orthopaedic Consultants	No. of WTE Orthopaedic middle grades	Orthogeriatric consultant hours/week	Orthogeriatric middle grades hours/week	Orthogeriatric ward rounds per week	No. of WTE fragility fracture nurses	No. of WTE fracture liaison nurses	Falls clinic	DXA on-site facility	Where rehabilitation is done	Who collects and enters data
KSX	250000	300	DGH	17.5	7.51	7	0	0	0	0.5	0	none	none	ward	nurses
KTH	350000	400	DGH	53	9	8	34	0	5	0	0	con	peri	ward	nurses
LDH	300000	252	DGH	35	10	13	0	0	0	0	0	con	axial	ward	nurses
LER	1000000	900	tertiary	76.5	20	10	14	8	2	0	0	con	axial	ward	audit
LEW	450000	150	DGH	26.5	8	8	8	5	7	0	0.5	con	none	ward	audit
LGH	280000	250	DGH	32	6.5	8	7	0	3	0	0	none	axial	ward	nurses
LGI	804088	700	both	84	16	28	32	0	8	1	0	con	axial	ward	nurses
LIN	734891	389	both	75	12	11	0	0	0	0	0	con	peri	ward	nurses
LIS	250000	275	DGH	24	6	7	4	12	4	0	0	con	axial	ward	doctors
LON	250000	145	both	70	13	20	0	0	0	0	0	none	axial	GORU	nurses
MAC	200000	220	DGH	26	7	5	3	0	1	0	4	none	none	GORU	audit
MAI	250000	126	DGH	17.5	6.6	8	0	0	0	0.25	1	con	none	ward	nurses
MAY	380000	340	DGH	24	7	5	25	10	5	0	0	con	axial	ward	doctors
MDW	375000	370	DGH	66	11	10	20	0	2	3	5	con	axial	ward	nurses
MKH	250000	245	DGH	31.5	7	10	3	3	3	0	0	none	none	ward	doctors
MOR	410000	600	both	56	19	12	11.25	15	1	0	0	none	none	GORU	nurses
MPH	350000	400	DGH	48	8	7	6	0	2	0	0	con	axial	ward	nurses
MRI	251665	180	DGH	31.5	9.5	6	13.5	4	2	3.5	0	con	axial	ward	nurses
NCR	236000	366	DGH	56	12	10	0	5	0	1	1	con	axial	ward	nurses
NDD	160000	250	DGH	20	7	7	0	16	1	0	0	none	axial	GORU	nurses
NEV	200000	300	DGH	25.5	8	8	3	37.5	2	0	4	con	peri	GORU	nurses
NGS	500000	670	both	66.5	23	12	72	40	10	0	0	con	axial	ward	nurses
NHH	280000	220	DGH	32	10	10	8	24	3	0	0	con	none	ward	nurses
NMH	250000	140	DGH	20	6	6	14	20	5	0	0	con	none	ward	doctors
NOB	80000	80	tertiary	14	4	4	0	0	0	0	0	none	axial	ward	nurses
NOR	822500	850	both	84	20	9	11	35	2	0.6	0	con	axial	ward	audit
NTG	352000	370	DGH	48.5	14	20	12	28	3	0	0.6	con	axial	ward	nurses
NTH	380000	330	DGH	44	11.6	10	0	0	0	0	0	none	axial	ward	nurses
NTY	250000	310	DGH	37.5	9	9	4	40	1	1	0	con	axial	GORU	nurses
NUH	360000	400	tertiary	45	4	4	4	66	2	0.6	0.65	con	axial	GORU	audit

NHFD Facilities Audit 2010-2011

Hospital Code	Trauma catchment population	No. of hip fractures treated/annum	Trauma Service Description	Hours of Designated trauma/week	No. of WTE Orthopaedic Consultants	No. of WTE Orthopaedic middle grades	Orthogeriatric consultant hours/week	Orthogeriatric middle grades hours/week	Orthogeriatric ward rounds per week	No. of WTE fragility fracture nurses	No. of WTE fracture liaison nurses	Falls clinic	DXA on-site facility	Where rehabilitation is done	Who collects and enters data
NUN	290000	246	DGH	28	4	6	16	1	3	0	1	con	axial	ward	audit
NWG	265000	100	DGH	24	6.3	6	14	0	2	0	0	con	none	ward	doctors
OHM	430000	342	DGH	42	10	12	7.5	3	1	0	0	con	axial	ward	nurses
OLD	700000	500	DGH	88	13.86	23	16	48	5	1	1	nurse	axial	GORU	audit
PAH	296900	307	DGH	31	11	11	30	28	5	0	0	none	none	ward	audit
PCH	200000	230	DGH	17.5	7	6	0	0	0	0	0	none	none	ward	nurses
PEH	65000	62	DGH	0	3	0	0	0	0	1	0	con	axial	GORU	audit
PET	350000	400	DGH	40	16	5	0	0	0		1	none	axial	ward	nurses
PGH	484000	923	DGH	119	10	13	13	12	7	0	0	con	none	ward	nurses
PIL	225000	300	DGH	27.5	7	10	8	0	2	0	0	con	axial	ward	nurses
PIN	320600	441	DGH	54	11	4	2	1	2	0	0	con	axial	GORU	nurses
PLY	470000	550	DGH	73	14	10	0	40	5	0	0	nurse	axial	ward	nurses
PMS	400000	350	DGH	70	12.9	15	12	64	5	0	0	con	axial	ward	doctors
QAP	610000	641	DGH	84	24.49	2.83	25.2	36	8	2	0	con	axial	ward	nurses
QEB	383000	390	both	18	12	15	12	6	3	3	0	con	axial	GORU	audit
QEG	205000	320	DGH	45	10	9	24	0	4	0.4	0.6	con	axial	ward	doctors
QEQ	175000	410	DGH	35	9	12	10	40	5	0	1.5	con	none	ward	audit
QEW	250000	240	DGH	20	5	7	12	8	4	0	0	con	axial	ward	doctors
QKL	220000	320	DGH	25	7	8	3	0	1	0	0	con	none	ward	nurses
RAD	500000	480	tertiary	124	7.5	10	40	40	5	0	1.5	con	none	ward	audit
RBE	500000	455	DGH	61	20	14	30	32	5	0.5	0	con	none	GORU	doctors
RCH	450000	500	DGH	65	16	11	20	10	5	0	0	con	axial	ward	nurses
RDE	754934	633	DGH	71	12	6	20	3	3	0	0	none	axial	ward	nurses
RED	320000	250	DGH	20	10	6	10	0	5	1	0	con	none	ward	nurses
RFH	300000	205	DGH	20	6.2	7	20	10	5	1	0	con	axial	GORU	doctors
RGH	240000	300	DGH	17.5	7	6	6	0	2	0	0	none	axial	GORU	nurses
RLI	250000	280	DGH	28	8	8	6	0	3	0	0	con	peri	ward	audit
RLU	350000	387	DGH	77	9	10	16	2	4.5	1	0	con	axial	ward	nurses
ROT	254000	300	DGH	36	12.2	8	8	0	1	0	0	con	none	ward	nurses
RPH	440000	408	both	59	10	8	2	4	3	1	0	con	none	ward	nurses

NHFD Facilities Audit 2010-2011

Hospital Code	Trauma catchment population	No. of hip fractures treated/annum	Trauma Service Description	Hours of Designated trauma/week	No. of WTE Orthopaedic Consultants	No. of WTE Orthopaedic middle grades	Orthogeriatric consultant hours/week	Orthogeriatric middle grades hours/week	Orthogeriatric ward rounds per week	No. of WTE fragility fracture nurses	No. of WTE fracture liaison nurses	Falls clinic	DXA on-site facility	Where rehabilitation is done	Who collects and enters data
RSC	460000	500	both	118	15.5	16	22	10	3	0	0	con	axial	ward	audit
RSS	330000	300	DGH	48	6	6	10	0	2	0	0	con	none	GORU	nurses
RSU	320000	356	DGH	40	12	8	20	40	5	0	0	con	axial	GORU	nurses
RUS	500000	423	DGH	48	11	9	16	40	3	4	0	con	axial	ward	nurses
RVB	1020000	924	both	144	9.725	5	5	55.5	8	0	1	con	none	GORU	audit
RVN	300000	450	DGH	48	8	8	9	12	5	1.16	1.14	con	axial	GORU	nurses
SAL	200000	187	DGH	15	8	8	8	35	7	2	0	con	peri	ward	nurses
SAN	550000	350	DGH	74	12.5	16	8	0	4	0	0	con	axial	ward	nurses
SCA	250000	285	DGH	21	6	6	0	0	2	0	0	none	axial	ward	nurses
SCM	270000	400	both	45	8	12.5	4	0	2	1	2	none	axial	GORU	audit
SCU	195130	233	DGH	28	6	8	3.5	0	4	0	0	con	axial	ward	nurses
SDG	340000	250	DGH	24	9	6	2	0	1	1	1	con	axial	ward	nurses
SEH.	361000	550	DGH	28	13	8	0	0	0	0	0	con	axial	GORU	nurses
SGH	600000	600	both	97.5	17	20	26	20	5	0	0	none	axial	ward	nurses
SHC	350000	365	DGH	48	16	12	26	26	5	1	0	none	none	ward	doctors
SHH	350000	337	DGH	57	17	10	24	0	7	0	0	con	axial	GORU	nurses
SHJ	10000	100	DGH	20	3	5	1	1	0	0	0	con	axial	GORU	audit
SLF	275546	245	both	42	10.2	10	20	0	2	0.5	0.5	con	axial	ward	doctors
SMV	500000	381	DGH	49	15.5	12	20	5	3	0	1	con	none	GORU	nurses
SOU	220000	309	DGH	144	8	8	0	4	1	1	0	none	axial	ward	nurses
SPH	450000	400	DGH	45	12.61	13	18	4	5	2	0	con	axial	ward	nurses
STD	156000	193	DGH	21	5	5	3	3	2	1	0	con	axial	GORU	nurses
STH	150000	220	tertiary	48	8	0	8	6	2	0	0	con	axial	ward	doctors
STM	325000	120	both	28	9	7	40	40	5	0.5	0	con	axial	ward	audit
STO	500000	400	both	60	19	16	15	0	3	2	1	nurse	axial	ward	audit
STR	220000	400	DGH	46	7	8	6	4	5	0	0	none	axial	ward	nurses
SUN	375000	400	DGH	49	14	8	10	0	5	2	0	con	peri	ward	nurses
TGA	250000	370	DGH	50	7	6	2	3	5	0	0	con	axial	ward	nurses
TLF	240000	225	DGH	17.5	8	7	0	0	0	1	0	nurse	peri	GORU	doctors
TOR	270000	495	DGH	56	12	3	0	40	3	0	1.5	con	axial	GORU	audit

NHFD Facilities Audit 2010-2011

Hospital Code	Trauma catchment population	No. of hip fractures treated/annum	Trauma Service Description	Hours of Designated trauma/week	No. of WTE Orthopaedic Consultants	No. of WTE Orthopaedic middle grades	Orthogeriatric consultant hours/week	Orthogeriatric middle grades hours/week	Orthogeriatric ward rounds per week	No. of WTE fragility fracture nurses	No. of WTE fracture liaison nurses	Falls clinic	DXA on-site facility	Where rehabilitation is done	Who collects and enters data
TRA	200000	120	DGH	20	6	5	8	0	2	1	0	con	none	ward	nurses
UHC	500000	500	both	100	25	19	37.5	0	4	4	0	none	none	ward	nurses
UHN	750000	832	both	119	14	16	25	0	5	1	1	con	axial	GORU	audit
UHW	500000	500	tertiary	84	16	4	20	12	8	3	1	none	axial		nurses
VIC	330000	480	DGH	35	9	9	8	0	2	0	0	nurse	peri	GORU	audit
WAR	290000	400	DGH	25	11	9	20	40	4	6	0	con	none	ward	nurses
WAT	500000	450	DGH	52	10	14	20	40	5	0	0	con	none	ward	audit
WCI	165300	149	DGH	17.5	5.5	6	0	0	0	1	0	none	axial	ward	nurses
WDH	200000	300	both	32.5	7.82	4	6	0	3	1	0	none	axial	ward	audit
WES	180000	170	DGH	17.5	8	7	7	7	3	3	1	con	axial	ward	nurses
WEX	550000	360	DGH	33	10	12	2	0	2	0	0	con	none	ward	nurses
WGH	200000	268	DGH	17.5	6.85	8	4.5	0.4	5	0.53	0.53	con	axial	ward	audit
WHC	315000	326	DGH	40	8	8	0	0	1	1	1	con	none	GORU	nurses
WHH	175000	360	DGH	43.5	9	10	10	40	5	0	1.5	con	none	GORU	audit
WHT	240000	150	DGH	20	8	8	8	0	2	0	0	con	axial	ward	doctors
WIR	400000	567	DGH	74.5	13.8	13	12	8	5	0	0	none	axial	GORU	audit
WMU	250000	200	DGH	42	4	9	3	6	2	1	0	con	none	ward	nurses
WRC	325000	350	DGH	9	8	7	0.5	0	1	0	0	con	axial	GORU	nurses
WRG	300000	450	DGH	41	7	9	12	2	3	0	0	con	axial	ward	nurses
WRX	250000	230	DGH	27	8	6	10	12	2	0	1	none	none	GORU	nurses
WSH	260000	310	DGH	20	10	8	20	6.8	5	2	0	con	none		audit
WWG	180767	290	DGH	33	10	8	2	2	1	1	0	none	none	ward	nurses
WYB	135000	200	DGH	9	5	5	0	0	0	0	0.8	none	none	GORU	nurses
WYT	570000	292	DGH	37	8	3	2	0	2	0	1	con	none	ward	nurses
YDH	350000	400	DGH	36	10	8	20	0	4	0	1	con	none	ward	audit
YEO	180000	250	DGH	34	7	8	6	0	2	1	2	con	axial	ward	nurses

Appendix E

Management of potential outliers 2011

This document outlines the procedure to be undertaken in the management of outliers in the NHFD report 2011.

The document is based on the guidance prepared by the National Clinical Audit Advisory Group (NCAAG) Detection and management of outliers DH 2011 and additional correspondence. Web address: http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@ab/documents/digitalasset/dh_123888.pdf

As a National Audit funded by the Health Quality Improvement Partnership, NHFD is required by NCAAG to ensure that the appropriate authorities are aware of any providers of acute care to hip fracture patients that are shown to be statistical outliers.

1. Choice of performance indicator

Due to the voluntary nature of the audit and the variable case ascertainment between contributing providers, only one indicator is considered to be suitable for the full implementation of NCAAG outlier detection and management - 30 day case mix adjusted mortality. This is seen as a gold standard quality indicator in hip fracture patient management. Historically, the overall figure has been in the region of 10%, but this is subject to wide variation, due partly to case mix and partly to the care given.

2. Choice of target

The target chosen for the funnel plot is the mean for all patients included in the analysis.

3. Data quality

For this analysis a case ascertainment level of 80% was used to minimise the risk of low ascertainment providers with low mortality rates skewing the mean of the funnel in such a way as to push hospitals with higher ascertainment into the 'alert' and 'alarm' areas of the plot. The case mix adjustment was achieved through the use of a decision tree algorithm. Where case mix factors were missing, surrogate case mix factors were used instead. The patients have been identified as having had hip fractures by the providers and mortality within 30 days of presentation has been determined by linkage with the Demographics Batch Service database and for Northern Ireland, the 30 day follow up field. Case mix factor accuracy is aided by tools embedded in the web entry form, but where plausible data is entered it is the responsibility of the provider organisation to ensure accuracy.

4. Case mix adjustment

All statistical analysis for the 30 day case mix adjusted mortality funnel was undertaken by Quantics, a statistical consultancy with more than 10 years of experience in case mix adjusted outcomes in hip fracture patients. The NHFD accepts that risk adjustment will always be incomplete and case mix differences can never be totally excluded as possible explanations for outlying performance. Details of the methodology used are available in the report.

5. Detection of a potential outlier

No action is to be taken regarding providers who perform better than might be expected. The analysis includes 139 providers and 44,692 cases. For those hospitals that are not included in the plot no attempt has been made to determine whether or not they are potential outliers. Providers who lie between the 2SD funnel and 3SD funnel trigger an 'alert' while those that lie outside the 3SD funnel 'alarm'.

6. Management of a potential outlier

Seven stages have been identified in the management of a potential outlier. NCAAG recommend that this process should be completed within 85 working days. A log of actions will be recorded by the NHFD.

Stage	What action?	Who?
0	Initial release of funnel plot	
1	Careful scrutiny of the data handling and analyses performed to determine whether there is a case to answer. **'no case to answer'** • Potential outlier status not confirmed • Data and results to be revised in NHFD records and report • Details formally recorded **'case to answer,** • Potential outlier status persists • Proceed to stage 2	
2	The Lead Clinician in the provider organisation informed (telephonically and in writing) about the potential outlier status and requested to identify any data errors or justifiable explanations. All relevant data and analyses to be made available to the Lead Clinician. A copy of the request will also be sent to the Clinical Governance Lead of the provider organisation.	NHFD Lead Clinicians to speak to leads and to confirm contact details for lead clinician and Clinical Governance Lead
3	Lead Clinician to provide written response to NHFD including confirmation receipt of documentation by the provider organisation Clinical Governance Lead and the contact details of the Medical Director and Chief Executive.	Provider Lead Clinician
4	Review of Lead Clinician's response to determine: **'no case to answer'** • Provider data confirmed to contain inaccuracies. • Reanalysis of accurate data no longer indicates outlier status • Data and results to be revised in NHFD records and report • Details formally recorded **'case to answer'** • Potential outlier status persists • Proceed to stage 5	NHFD Implementation Group
	Individual report to compare process in provider organisation with virtual organisation based on casemix adjusted patients from NHFD database	Quantics
5	1.Contact Provider Lead Clinician by telephone, prior to written confirmation of potential outlier status; copied to Provider Clinical Governance Lead, Medical Director and Chief Executive. 2.Chief Executive advised to notified the Care Quality Commission and to inform relevant bodies including Primary Care Trusts, Strategic Health Authority, professional societies/associations.	NHFD Lead Clinicians, with follow up letter at 5 days if no acknowledgement received.
6	Acknowledgement of receipt of the letter received by NHFD	Provider chief executive
7	Public disclosure (release of annual report)	

Appendix F

Hip fracture outcome trend analysis report

Introduction

Analysis has been carried out to show change over time in five key indicators of good practice in the NHFD database from April 2008 to March 2011. All five indicators showed an improvement in practice over the three year period which was highly statistically significant. All of the indicators except for mortality also showed highly significant year-on-year improvements. This report gives a brief summary of the data and methods used; all results can be found in Table F3 below and on the relevant graphs.

Data

28 hospitals were identified by the NHFD as having good ascertainment and data completion figures over the three year period from April 2008-2011 and are used in the analysis. The full list of hospitals used can be found in Table F1 below. Patients were included in analysis only if they were aged between 60 and 107 and admitted between 01/04/2008 and 31/03/2011.

The percentages for the five indicators are calculated as follows:

30 day mortality: % of patients where life status is dead and date of death is less than 30 days after A&E admission (if missing then trauma team admission or orthopaedic ward admission)

Surgery within 36 hours: % of patients where the time between A&E admission (if missing then trauma team admission or orthopaedic ward admission) and surgery is between 0 and 36 hours for patients who have known time of surgery.

Preoperative assessment by geriatrician: % of patients where preoperative medical assessment indicates patient received an assessment from a geriatrician for patients where preoperative medical assessment is not missing.

Bone therapy assessment or treatment: % of patients where anti resorptive therapy indicates patient received an assessment or treatment in hospital or was already receiving treatment for patients where anti resorptive therapy is not missing.

Falls assessment: % of patients where falls assessment indicates patient received an assessment patients where falls assessment is not missing.

Moving averages

The graphs plot the percentage of patients by 12 month period. Trends should be examined on a 1-year basis to account for any seasonal effects (e.g. more hip fractures in winter). Error bars are plotted of 3 times the standard deviation of each point, which is roughly equivalent to a 99% confidence interval for the percentage.

It may be of slight concern that the hospital BRD (Bradford Royal Infirmary) did not submit any cases until May 2008 and hospital GLO (Gloucester Royal Hospital) did not submit any cases until August 2008. However due to the robust nature of the moving averages in comparison to monthly averages and because the hospital results are pooled rather than analysed independently this does not invalidate the results.

Note that the 12-month admission periods used to summarise the data overlap each other. For example, the first period is 1st April 2008 to 31st March 2009 and the second period is 1st May 2008 to 30th April 2009.

Binomial proportion test

In order to determine if the changes in the indicators over time are significant a binomial proportion test is used to calculate the difference between non-overlapping moving average groups. The non-overlapping groups used in this analysis were of patients admitted between April 2008-March 2009; April 2009-March 2010 and April 2010–March 2011. The null hypothesis of the test is that the proportion of patients achieving the criteria of the indicator is the same at both points tested.

A p-value of less than 0.01 indicates that the proportions at the two time points are significantly different from each other at the 1% significance level.

A 1% level has been deemed more appropriate to determine significance than the more usual 5% level to account for multiple testing.

A 99% confidence interval of the changes between the three groups is also calculated using the asymptotic method, which provides a conservative estimate of the 99% confidence interval for each of the changes.

Table F1 – List of Hospitals

Code	Name	Eligible Patients 2008-09	Eligible Patients 2009-10	Eligible Patients 2010-11
AEI	Royal Albert Edward Infirmary, Wigan	286	301	327
BAS	Basildon University Hospital	342	378	341
BOL	Royal Bolton Hospital	318	319	324
BRD	Bradford Royal Infirmary	299	304	310
CMI	Cumberland Infirmary, Carlisle	266	286	254
DER	Derbyshire Royal Infirmary, Derby	458	504	444
GLO	Gloucestershire Royal Hospital, Gloucester	242	357	401
GWH	Queen Elizabeth Hospital, Woolwich	172	184	277
HIL	Hillingdon Hospital	152	189	199
IPS	Ipswich Hospital	389	408	432
MPH	Musgrove Park Hospital, Taunton	346	348	382
MRI	Manchester Royal Infirmary	152	165	166
NMH	North Middlesex University Hospital	119	130	142
NOR	Norfolk and Norwich University Hospital	530	517	741
NTH	Northampton General Hospital	337	305	331
QAP	Queen Alexandra Hospital, Portsmouth	605	654	654
QEG	Queen Elizabeth Hospital, Gateshead	277	284	294
QKL	Queen Elizabeth Hospital, King's Lynn	246	307	321
RAD	John Radcliffe Hospital, Oxford	459	464	465
RBE	Royal Berkshire Hospital, Reading	420	455	436
RSU	Royal Surrey County Hospital, Guildford	331	298	341
SCM	James Cook University Hospital, Middlesbrough	357	348	403
SCU	Scunthorpe General Hospital	240	237	230
UHC	University Hospital Coventry	421	508	472
UHN	University Hospital (Queens Medical Centre) Nottingham	755	748	679
UHW	University Hospital of Wales, Cardiff	465	476	435
VIC	Victoria Hospital, Blackpool	450	458	456
WHT	Whittington Hospital, London	113	143	143
	Total	**9547**	**10075**	**10400**

Table F2 - Missing Data

Indicator	Missing/ Unknown Data 2008-09 (N=9547)	Missing/ Unknown Data 2009-10 (N=10075)	Missing/ Unknown Data 2010-11 (N=10400)
30 day mortality	295 (3.1%)	295 (3.1%)	295 (3.1%)
Surgery within 36 hours	585 (6.1%)	585 (6.1%)	585 (6.1%)
Preoperative geriatrician assessment	80 (0.8%)	80 (0.8%)	80 (0.8%)
Bone therapy assessment or treatment	521 (5.5%)	521 (5.5%)	521 (5.5%)
Falls assessment	262 (2.7%)	262 (2.7%)	262 (2.7%)

Table F3 - Summary of results

30 day mortality	2008-09 (n=9252)	2009-10 (n=9800)	2010-11 (n=10184)
% mortality	9.4	8.8	8.0
Change in % from 2008-09 [99% confidence interval] (p-value)	/	-0.6 [-1.7, 0.5] (p=0.175)	-1.4 [-2.5, -0.4] (p<0.001)
Change in % from 2009-10: [99% confidence interval] (p-value)	/	/	-0.8 [-1.9, 0.2] (p=0.034)

Surgery within 36 hours	2008-09 (n=8962)	2009-10 (n=9663)	2010-11 (n=10086)
% surgery within 36 hours	53.5	60.9	67.9
Change in % from 2008-09 [99% confidence interval] (p-value)	/	+7.4 [5.5, 9.2] (p<0.001)	+14.4 [12.6, 16.2] (p<0.001)
Change in % from 2009-10: [99% confidence interval] (p-value)	/	/	+7.0 [5.3, 8.8] (p<0.001)

Preoperative assessment by geriatrician	2008-09 (n=9467)	2009-10 (n=9918)	2010-11 (n=10392)
% assessed by geriatrician	28.5	42.3	55.3
Change in % from 2008-09 [99% confidence interval] (p-value)	/	+13.8 [12.0, 15.6] (p<0.001)	+26.8 [25.1, 28.6] (p<0.001)
Change in % from 2009-10: [99% confidence interval] (p-value)	/	/	+13.0 [11.2, 14.8] (p<0.001)

Bone therapy assessment or treatment	2008-09 (n=9026)	2009-10 (n=9879)	2010-11 (n=10358)
% receiving bone therapy assessment	64.5	78.3	90.7
Change in % from 2008-09 [99% confidence interval] (p-value)	/	+13.8 [12.1, 15.5] (p<0.001)	+26.2 [24.7, 27.7] (p<0.001)
Change in % from 2009-10: [99% confidence interval] (p-value)	/	/	+12.4 [11.1, 13.7] (p<0.001)

Falls assessment	2008-09 (n=9285)	2009-10 (n=9808)	2010-11 (n=10287)
% receiving falls assessment	52.0	66.8	85.3
Change in % from 2008-09 [99% confidence interval] (p-value)	/	+14.8 [13.0, 16.7] (p<0.001)	+33.3 [31.7, 34.9] (p<0.001)
Change in % from 2009-10: [99% confidence interval] (p-value)	/	/	+18.5 [16.9, 20.0] (p<0.001)

Appendix G

NHFD – 2011 Chart Outlines

All charts

Hospital (N) – Indicates that all cases are included and the number in brackets is the number of cases per hospital.
Hospital (n/N) – Indicates that a subset of has been taken. n is the number of cases in the subset per hospital and N is the total number of cases in the hospital as above.

Chart 1 - Completeness of datafields on cases included in the 2011 National Report

Description: Hospitals ranked by the percentage of complete data from most to least.
N.B. Percentage refers to overall percentage of complete data and not to the percentage of patients with complete data.
Fields Used:
For all patients: *Gender, ASA Grade, Admitted From, Walking Ability Indoors, Fracture Type, Operation Performed, Preoperative Medical Assessment, Bone Therapy Medication, Admission Time to A&E, Admission Time to Orthopaedic Ward, AMTS Score, Ward Type, Discharge Date from Ward, Discharge Date from Trust, Discharge from Ward Destination, Discharge from Trust Destination*
For patients who do not die in hospital: *Pressure Ulcers, Specialist Falls Assessment*
For patients who undergo surgery: *Date of Surgery*
For patients who undergo surgery after 36 hours: *Reason for 36 Hour Delay to Surgery*
For patients who undergo surgery after 48 hours: *Reason for 48 Hour Delay to Surgery*
For patients who both undergo surgery & are discharged before 1/04/11: *30 Day Re-operation*
Calculation: Number of completed fields per hospital divided by the number of fields which the hospital should have been completed.
Data:
Total number of fields: 1,081,670
Total number of fields completed: 998,435 (92.30%)
All 176 hospitals included in chart.

Chart 2 – Age at admission

Description: Hospitals ranked by the percentage of patients aged over 90 from most to least. N.B. Patients who are less than 60 years old, over 107 years old or with age missing have been excluded from all analyses. As a result 100% of data is complete by definition so this field is not included in the data completion calculation.
Fields Used: *Age*
Groups: Patient age is grouped into four inclusive categories – 60-69, 70-79, 80-89 and 90+.
Data:
Total number of patients included: 53,443
All 176 hospitals included in chart.

Chart 3 – Gender

Description: Hospitals ranked by the percentage of female patients from most to least.
Fields Used: *Gender*
Groups: Patients with Gender not completed are grouped as 'unknown'.
Data:
Total number of patients included: 53,443
Number of patients with Gender missing: 9 (0.02%)
All 176 hospitals included in chart.

Chart 4 – Admitted from

Description: Hospitals ranked by the percentage of patients admitted from 'own home/sheltered housing' from most to least.
Fields Used: *Admitted From*
Groups: Responses 'Nursing Care', 'Residential Care' & 'Residential care/Nursing Home/LTC Hospital' are grouped as 'Residential care/Nursing Home/LTC Hospital'. Patients with Admitted From missing are grouped with response 'unknown' as 'unknown'.
Data:
Total number of patients included: 53,443
Number of patients with Admitted From missing: 129 (0.24%)
Number of patients with Admitted From response 'unknown': 68 (0.13%)
All 176 hospitals included in chart.

Chart 5 – ASA grade

Description: Hospitals ranked by the percentage of patients with ASA Grade equal to 1, 2 or 3 from most to least. Two charts produced – left graph is of known data against unknown data, right graph excludes unknown data to only include ASA Grades 1 to 5.
Fields Used: *ASA Grade*
Groups: Patients with ASA Grade field not completed are grouped with response 'unknown' as 'unknown'.
Exclusions: None in left hand side chart. Right hand side chart excludes any patient with the response of 'unknown' or with no response.
Data:
Total number of patients included in LHS chart: 53,443
Total number of patients included in RHS chart: 46,657
Number of patients with ASA Grade missing: 1,154 (2.16%)
Number of patients with ASA Grade response 'unknown': 5,632 (10.54%)
All 176 hospitals included in both charts.

Chart 6 – Walking ability

Description: Hospitals ranked by the percentage of patients with walking ability 'Regularly walked without aids' or 'Regularly walked with one aid' from most to least. Walking ability refers to pre-admission walking ability indoors.
Fields Used: *Walking Ability Indoors*
Groups: Patients with field not completed are grouped with response 'unknown' as 'unknown'.
Data:
Total number of patients included: 53,443
Number of patients with Walking Ability Indoors missing: 220 (0.41%)
Number of patients with Walking Ability Indoors response 'unknown': 1,836 (3.44%)
All 176 hospitals included in chart.

Chart 7 – Fracture type

Description: Hospitals ranked by the percentage of patients with Intracapsular fracture (either displaced or undisplaced) from most to least.
Fields Used: *Fracture Type*
Groups: Patients with field not completed are grouped as 'unknown'.
Data:
Total number of patients included: 53,443
All 176 hospitals included in chart.

Chart 8 – AMTS score

Description: Hospitals ranked by the percentage of patients with AMTS score between 0 & 6.
Fields Used: *AMTS Score*
Groups: Patients with AMTS Score between 0 and 6 inclusive are grouped as '0-6' and patients with AMTS score between 7 and 10 inclusive are grouped as '7-10'. Patients with missing AMTS score or with AMTS score outside of range 0-10 are grouped as 'unknown'.
Data:
Total number of patients included: 53,443
All 176 hospitals included in chart.

Chart 9 – A&E to orthopaedic ward in 4 hours (Blue Book Standard 1)

Description: Hospitals ranked by the percentage of patients admitted to orthopaedic ward within 4 hours from most to least.
Fields Used: *Admission Time to A&E, Admission Time to Orthopaedic Ward, Ward Type*
Calculation: Time to orthopaedic ward is calculated as the difference between Admission Time to Orthopaedic Ward and the Admission Time to A&E
Groups: Patients are allocated into two inclusive groups by time to orthopaedic ward – 0-4 hours and 4-8760 hours. These are 'Admission to Orthopaedic Ward in less than 4 hours' and 'Admission to Orthopaedic Ward in more than 4 hours'. Patients with Ward Type equal to 'Never admitted to orthopaedic ward' are grouped as 'Not admitted to orthopaedic ward'. Patients with a time to orthopaedic ward outside of 0-8760 hours or with Admission Time to A&E or Admission Time to Orthopaedic Ward missing and with Ward Type not equal to 'Never admitted to orthopaedic ward' are grouped as 'Unknown'.
Data:
Total number of patients included: 53,443
Number of patients with missing Admission Time to A&E: 4,058 (7.54%)
Number of patients with missing Admission Time to Orthopaedic Ward: 4,650 (8.70%)
Number of patients with time to OW less than 0 hours: 602 (1.13%)
Number of patients with time to OW more than 8760 hours: 11 (0.02%)
All 176 hospitals included in chart.

Chart 10 – Surgery within 36 hours of admission

Description: Hospitals ranked by the percentage of patients who underwent operation within 36 hours of admission.
Fields Used: *Admission Time to A&E; Admission Time to Orthopaedic Ward; Date of Surgery; Operation.*
Calculation: Time to surgery is calculated as the difference in the Admission time to surgery time. Admission time is taken is taken as admission time to A&E, if this is missing then it is taken as admission time to OW.
Groups: Patients with time to surgery between 0 and 36 hours are grouped into 'Surgery in 36hrs'. If the surgery took place between 36 and 8760 hours then the patients are grouped into 'Surgery not within 36 hours.' Patients with missing Date of Surgery and patients with time to surgery outside of the range 0-8760 hours are grouped as 'unknown' and patients where Operation is equal to 'No operation performed' are grouped as 'No operation performed'.
Data:
Total number of patients included: 53,443
Number of patients with Operation indicating surgery but with missing Date of Surgery: 130 (0.24%)
Number of patients with time to surgery less than 0 hours: 88 (0.16%)
Number of patients with time to surgery more than 8760 hours: 1 (0.00%)
All 176 hospitals included in chart.

Chart 11 – urgery within 48 hours and normal working hours (medically fit patients) (Blue Book Standard 2)

Description: Hospitals ranked by the percentage of medically fit patients admitted from outside of hospital and who were treated with surgery that underwent operation within 48 hours and during working hours (8am-6pm).
Fields Used: *Admission Time to A&E, Admission Time to Orthopaedic Ward; Date of Surgery; Reason for 48 Hour Delay to Surgery; Admitted From, Operation.*
Calculation: Time to surgery is calculated as the difference in the Admission time to Date of Surgery. Admission time is taken is taken as Admission Time to A&E, if this is missing then it is taken as Admission Time to Orthopaedic Ward.
Groups: Patients with time to surgery between 0 and 48 hours are allocated into 'Surgery in 48 hours & working hours' if their operation took place between 8am and 6pm and 'Surgery in 48 hours but not within working hours' if it took place outside of this time. If the surgery took place between 48 and 8760 hours then the patients are allocated to 'Surgery not within 48 hours.' Patients with missing surgery time and patients with time to surgery outside of the range 0-8760 hours are grouped as 'unknown'
Exclusions:
48 Hour Delay to Surgery = 'Medically Unfit': 4,942 patients
48 Hour Delay to Surgery = 'Dead': 0 patients
Admitted From = 'Already in Hospital': 1,841 patients
Operation = 'No Operation Performed': 1,480 patients
Total Unique Exclusions: 7,803 patients
Data:
Total number of patients included: 45,640
Number of patients with missing Date of Surgery: 320 (0.70%)
Number of patients with time to surgery less than 0 hours: 55 (0.12%)
Number of patients with time to surgery more than 8760 hours: 0 (0%)
All 176 hospitals included in chart.

Chart 12 – Cumulative time to surgery

Description: Overall time to surgery for all patients plotted in cumulative 6 hour groups up to 102 hours.
Fields Used: *Admission Time to A&E; Admission Time to Orthopaedic Ward; Date of Surgery.*
Calculation: Time to surgery is calculated as the difference in the Admission time to surgery time. Admission time is taken is taken as admission time to A&E, if this is missing then it is taken as admission time to OW.
Data:
Total number of patients included: 53,443
Data from all 176 hospitals included in chart.

Chart 13 – Boxplots for time to surgery

Description: Boxplots produced for each hospital's time to surgery for all patients receiving surgery. Hospitals ranked by median time to surgery.
Fields Used: Admission Time to A&E; Admission Time to Orthopaedic Ward; Date of Surgery, Operation
Calculation: Time to surgery is calculated as the difference in the Admission time to surgery time. Admission time is taken is taken as admission time to A&E, if this is missing then it is taken as admission time to OW.
Exclusions:
Operation = 'No Operation Performed': 1,480 patients
Missing Date of Surgery: 1,813 (3.39%)
Time to surgery less than 0 hours: 88 (0.16%)
Time to surgery more than 8760 hours: 1 (0.00%)
Total Unique Exclusions: 1,932 patients
Data:
Total number of patients included: 51,515
Data from all 176 hospitals included in chart.

Chart 14 – Boxplots for time to surgery - medically fit patients

Description: Boxplots produced for each hospital's time to surgery for all patients receiving surgery. Hospitals ranked by median time to surgery.
Fields Used: *Admission Time to A&E; Admission Time to Orthopaedic Ward; Date of Surgery, Operation, 36 Hour Reason for Delay to Surgery, 48 Hour Reason for Delay to Surgery.*
Calculation: Time to surgery is calculated as the difference in the Admission time to surgery time. Admission time is taken is taken as admission time to A&E, if this is missing then it is taken as admission time to OW.
Exclusions:
Operation = 'No Operation Performed': 1,480 patients
Missing Date of Surgery: 1,813 (3.39%)
Time to surgery less than 0 hours: 88 (0.16%)
Time to surgery more than 8760 hours: 1 (0.00%)
Reason for 48 hour delay to surgery includes 'Medically unfit': 4,942 (9.25%)
Reason for 36 hour delay to surgery includes 'Medically unfit': 7,204 (13.48%)
Total Unique Exclusions: 9,659 patients
Data:
Total number of patients included: 43,784
Data from all 176 hospitals included in chart.

Chart 15 – Reason for no operation in 36 hours

Description: Hospitals ranked by the percentage of patients who underwent surgery after 36 hours who had their surgery delayed for medical reasons.
Fields Used: Admission Time to A&E; Admission Time to Orthopaedic Ward; Date of Surgery; Reason for 36 hour Delay to Surgery; Operation.
Calculation: Time to surgery is calculated as the difference in the Admission time to Date of Surgery. Admission time is taken is taken as Admission Time to A&E, if this is missing then it is taken as Admission Time to Orthopaedic Ward.
Groups: 'Problem with theatre/equipment' and 'Problem with theatre/surgical/anaesthetic staff' merged into 'Problem with theatre/equipment/staff'. 'No delay surgery < 36 hours' & 'No delay surgery < 24 hours' and missing Reason for 36 hour Delay to Surgery are grouped with response 'unknown' as 'unknown'.
Exclusions:
Time to surgery < 36 hours: 32,934 patients
Date of surgery missing: 1,798 patients
Time to surgery outside 0 to 8760 hours: 89 patients
Operation = 'No Operation Performed': 1,480 patients
Small Hospitals*: 9 patients
Total Unique Exclusions: 34,851 patients
Data:
Total number of patients included: 18,592
Number of patients with Reason for 36 hour Delay to Surgery missing: 2,332 (12.54%)
Number of patients with Reason for 36 hour Delay to Surgery response 'unknown': 491 (2.64%)
Number of patients with Reason for 36 hour Delay to Surgery response 'No Delay': 280 (1.50%)
*175 hospitals included in chart. Hospital PEH has only 9 patients who underwent surgery after 36 hours & is excluded from the chart.

Chart 16 – Patients treated without surgery

Description: Hospitals ranked by the percentage of patients who underwent surgery.
Fields Used: *Operation*
Groups: Patients with Operation indicating any form of surgery grouped as 'Surgery'; if Operation recoded as 'No Operation Performed' then patients grouped as 'No Surgery'; if Operation is missing then patients grouped as 'Unknown'.
Data:
Total number of patients included: 53,443
All 176 hospitals included in chart.

Operations performed by fracture type

Chart 17a – Intracapsular undisplaced

Description: Hospitals ranked by the percentage of patients with intracapsular undisplaced fractures who receive arthroplasty.
Fields Used: *Fracture Type, Operation*
Groups: Operation categories accounting for less than 3% of all patients are grouped as 'Arthroplasty – Other' or 'Other' as appropriate. Missing data is grouped with response 'unknown' as 'unknown'.
Exclusions:
Fracture not intracapsular undisplaced: 47,372
Small Hospitals: 123
Data:
Total number of patients included: 5,948
164 hospitals included in chart.

Chart 17b - Intracapsular displaced

Description: Hospitals ranked by the percentage of patients with intracapsular displaced fractures who receive arthroplasty.
Fields Used: Fracture Type, Operation
Groups: Operation categories accounting for less than 3% of all patients are grouped as 'Arthroplasty – Other' or 'Other' as appropriate. Missing data is grouped with response 'unknown' as 'unknown'.
Exclusions:
Fracture not intracapsular displaced: 28,685
Small hospitals: 1
Data:
Total number of patients included: 24,757
175 hospitals included in chart.

Chart 17c – Intertrochanteric

Description: Hospitals ranked by the percentage of patients with intertrochanteric fractures who receive internal fixation.
Fields Used: Fracture Type, Operation
Groups: Operation categories accounting for less than 3% of all patients are grouped as 'Arthroplasty' or 'Other' as appropriate. Missing data is grouped with response 'unknown' as 'unknown'.
Exclusions:
Fracture not intracapsular undisplaced: 35,355
Data:
Total number of patients included: 18,088
All 176 hospitals included in chart.

Chart 17d - Subtrochanteric

Description: Hospitals ranked by the percentage of patients with subtrochanteric fractures who receive internal fixation.
Fields Used: Fracture Type, Operation
Groups: Operation categories accounting for less than 3% of all patients are grouped as 'Arthroplasty' or 'Other' as appropriate. Missing data is grouped with response 'unknown' as 'unknown'.
Exclusions:
Fracture not subtrochanteric: 50,756
Small Hospitals: 280
Data:
Total number of patients included: 2,407
127 hospitals included in chart.

Chart 18 - Cementing of arthroplasties

Description: Hospitals ranked by the percentage of patients who underwent arthroplasty who had the arthroplasty cemented.
Fields Used: Operation
Groups: Patients undergoing arthroplasty split into 'cemented' and 'uncemented' as indicated by their response to Operation.
Exclusions:
Patients not undergoing arthroplasty: 28,195
Data:
Total number of patients included: 25,248
All 176 hospitals included in chart.

Chart 19 – Development of pressure ulcers (Blue Book Standard 3)

Description: Hospitals ranked by the percentage of patients who did not die in hospital who developed pressure ulcers.
Fields Used: Pressure Ulcers, Discharge Ward Destination, Discharge Trust Destination
Groups: Patients with Pressure Ulcers missing are grouped with response 'Unknown' as 'Unknown'.
Exclusions:
Discharge Ward Destination = 'Dead': 3,700
Discharge Trust Destination = 'Dead': 4,763
Total Unique Exclusions: 4,842 patients
Data:
Total number of patients included: 48,601
Number of patients with Pressure Ulcers missing: 810 (1.67%)
Number of patients with Pressure Ulcers response 'unknown': 3,730 (7.67%)
All 176 hospitals included in chart.

Chart 20 – Preoperative medical assessments (Blue Book Standard 4)

Description: Hospitals ranked by the percentage of patients who underwent any preoperative medical assessment.
Fields Used: Preoperative Medical Assessment
Groups: As multiple responses were possible for this field patients were only allocated to the highest level of assessment they received according to the following hierarchy:
'Already under care' > 'Routine by geriatrician' > 'Routine by physician' > 'Routine by specialist nurse' > 'Medical review following request' > 'None'. Patients with the field missing are grouped as 'Unknown'.
Data:
Total number of patients included: 53,443
All 176 hospitals included in chart.

Chart 21 – Bone protection medication at admission

Description: Hospitals ranked by the percentage of patients who received bone protection medication pre-admission.
Fields Used: Bone Therapy Medication
Groups: Patients with a response not containing 'Medication continued from pre-admission' are grouped as 'Medication not continued from pre-admission'. Patients with no response are grouped as 'Unknown'.
Data:
Total number of patients included: 53,443
All 176 hospitals included in chart.

Chart 22 – Bone health assessment and treatment at discharge (Blue Book Standard 5)

Description: Hospitals ranked by the percentage of patients who did not die in hospital received bone protection medication during their stay in hospital.
Fields Used: Bone Therapy Medication, Discharge Ward Destination, Discharge Trust Destination
Groups: As multiple responses were possible for this field patients were only allocated to the highest level of assessment they received according to the following hierarchy:
'Continued from pre-admission' > 'Started on this admission' > 'Awaits DXA scan' > 'Awaits bone clinic assessment' > 'Assessed – no bone protection medication needed/appropriate' > 'No assessment or action taken'. Patients with the field missing are included as 'Unknown'.
Exclusions:
Discharge Ward Destination = 'Dead': 3,700
Discharge Trust Destination = 'Dead': 4,763
Total Unique Exclusions: 4,842 patients
Data:
Total number of patients included: 48,601
All 176 hospitals included in chart.

Chart 23 – Specialist falls assessment (Blue Book Standard 6)

Description: Hospitals ranked by the percentage of patients who did not die in hospital who received a falls assessment
Fields Used: Falls Assessment, Discharge Ward Destination, Discharge Trust Destination
Groups: Patients with Falls Assessment missing are grouped as 'Unknown'
Exclusions:
Discharge Ward Destination = 'Dead': 3,700
Discharge Trust Destination = 'Dead': 4,763
Total Unique Exclusions: 4,842 patients
Data:
Total number of patients included: 48,601
All 176 hospitals included in chart.

Chart 24 – Secondary prevention overview

Description: Hospitals ranked by the percentage of patients who did not die in hospital who received either bone protection medication and/or a falls assessment
Fields Used: Falls Assessment, Bone Therapy Medication, Discharge Ward Destination, Discharge Trust Destination
Groups: Responses to Bone Therapy Medication 'Continued from pre-admission'/ 'Started on this admission'/'Awaits DXA scan'/'Awaits bone clinic assessment'/'Assessed – no bone protection medication needed/appropriate' are taken as a completed bone assessment. Responses to Falls Assessment starting with 'Yes' are taken as a completed falls assessment.

Patients with both assessments completed are grouped as 'Both assessments'; patients with one known complete assessment and one known incomplete assessment are grouped as 'Falls assessment only' or 'Bone protection assessment only'. Patients with both assessments known and incomplete are grouped as 'No assessments'. Patients with either of the assessments unknown are grouped as 'unknown'.
Exclusions:
Discharge Ward Destination = 'Dead': 3,700
Discharge Trust Destination = 'Dead': 4,763
Total Unique Exclusions: 4,842 patients
Data:
Total number of patients included: 48,601
Patients with unknown Falls Assessment and known completed Bone Therapy Medication: 1252 (2.58%)
Patients with unknown Falls Assessment and known incomplete Bone Therapy Medication: 480 (0.99%)
Patients with unknown Bone Therapy Medication and known completed Falls Assessment: 218 (0.45%)
Patients with unknown Bone Therapy Medication and known incomplete Falls Assessment: 187 (0.38%)
Patients with both assessments unknown: 567 (1.17%)
All 176 hospitals included in chart.

Chart 25a – Length of acute stay

Description: Hospitals ranked by the average length of acute stay.
Fields Used: Admission Time to A&E; Admission Time to Orthopaedic Ward; Discharge Time from Ward
Calculation: Acute stay is calculated as the difference in the admission time to discharge from ward time. Admission time is taken is taken as Admission Time to A&E, if this is missing then it is taken as Admission Time to Orthopaedic Ward.
Exclusions:
Discharge Ward Date after 01/04/11: 3,826 patients
Patients with missing Discharge Time from Ward: 2,917
Patients with acute stay outside of range 0-365 days: 55
Total Unique Exclusions: 5,045 patients
Data:
Total number of patients included: 48,398

Chart 25b – Length of acute stay - boxplot

Description: As chart 24a. Data presented as box plots instead of bar plots. Middle line represents median, box represents interquartile range, whiskers represent the extreme points or the interquartile range multiplied by 1.5 depending on which is lower.

Chart 25c – Length of acute stay and post acute stay

Description: Hospitals ranked by the total inpatient length of stay for a patient across acute and post-acute periods.
Fields Used: Admission Time to A&E; Admission Time to Orthopaedic Ward; Discharge Time from Ward; Discharge Time from Trust, Discharge Time from NHS
Calculation: Acute stay is calculated as the difference in the admission time to discharge from ward time. Admission time is taken is taken as Admission Time to A&E;, if this is missing then it is taken as Admission Time to Orthopaedic Ward. Post-acute stay is calculated as the difference between Discharge Time from Ward and Discharge Time from Trust. Post-discharge NHS stay is calculated as the difference in time between Discharge Time from Trust and Discharge Time from NHS.
Exclusions:
Discharge Trust Date after 01/04/11: 1,018 patients
Patients with missing Discharge Date from Ward: 2,917
Patients with missing Discharge Date from Trust: 2,808
Patients with acute stay outside of range 0-365 days: 55
Patients with post-acute stay outside of range 0-365 days: 64
Total Unique Exclusions: 5,095 patients
Data:
Total number of patients included: 48,248
All 176 hospitals included in chart

Chart 25d – Overall length of stay - boxplot

Description: As chart 24c. Data presented as box plots instead of bar plots. Middle line represents median, box represents interquartile range, whiskers represent the extreme points or the interquartile range multiplied by 1.5 depending on which is lower.

Chart 26 – Discharge destination from Trust

Description: Hospitals ranked by the percentage of patients who were discharged before 1/04/11 who were discharged to their own home or sheltered housing.
Fields Used: Discharge Trust Destination, Discharge Trust Date
Groups: Patients with Discharge Trust Destination missing are grouped with response 'Unknown' as 'Unknown'.
Exclusions:
Discharge Trust Date after 01/04/11: 1,018 patients
Discharge Trust Date missing: 2,808 patients
Total Unique Exclusions: 3,826 patients
Data:
Total number of patients included: 49,617
Number of patients with Discharge Trust Destination missing: 519 (1.05%)
Number of patients with Discharge Trust Destination response 'unknown': 59 (0.12%)
All 176 hospitals included in chart

Chart 27 – Re-operation within 30 days

Description: Hospitals ranked by the percentage of patients who undergo re-operation within 30 days of admission.
Fields Used: 30 Day Re-operation, Operation
Groups: Patients with any response indicating that re-operation had occurred are grouped as 'Re-operation within 30 days'. Patients with the response 'None' are grouped as 'No re-operation within 30 days'. Patients with no response or the response 'Unknown' are grouped as 'Unknown'.
Exclusions:
Discharge Trust Date after 01/04/11: 1,018 patients
Discharge Trust Date missing: 2,808 patients
Operation = 'No Operation Performed': 1,480 patients
Total Unique Exclusions: 5,228 patients
Data:
Total number of patients included: 48,215
All 176 hospitals included in chart.

Chart 28 - BPT uplift eligibility

Description: English hospitals ranked by the percentage of patients in England who meet all of the eligibility requirements for BPT uplift.
Fields Used: NHS Number, Admission Time to A&E, Admission Time to Orthopaedic Ward, Date of Surgery, Orthopaedic GMC number, Geriatrician GMC number, Admitted Using Jointly Agreed Assessment Protocol, Geriatrician Assessment Time, Geriatrician Grade, MDT Assessment, Bone Therapy Medication, Falls Assessment.
Calculations: Time to surgery is calculated as the difference in the Admission time to surgery time. Time to geriatrician is calculated as the difference in the Admission time to geriatrician assessment time. Admission time is taken is taken as admission time to A&E, if this is missing then it is taken as admission time to OW.
Criteria: There are a number of requirements which must be met in order for a patient to be eligible for BPT uplift. These have been grouped into 9 reasonably independent criteria:

1) NHS number is not missing
2) Time to surgery is in the range 0 to 36 hours
3) Orthopaedic GMC number is not missing
4) Geriatrician GMC number is not missing
5) Admitted Using Jointly Agreed Assessment Protocol is equal to 'Yes'
6) Time to geriatrician is between 0 and 72 hours, Geriatrician Grade is equal to 'Consultant', 'ST3' or 'SAS'.
7) MDT Assessment is equal to 'Yes'
8) Bone Therapy Medication response indicates patient received any form of assessment/action
9) Falls Assessment response indicates patient received any form of assessment/action

Groups: Patients meeting all criteria are grouped as 'Eligible'; patients meeting 4-8 of the criteria are grouped as 'Ineligible – meets 4-8 criteria'; patients meeting less than 4 criteria are grouped as 'Ineligible – meets 0-3 criteria'.
Exclusions:
Hospital not based in England: 3,940
Data:
Total number of patients included: 49,503

Patients meeting criteria 1: 48,759 (98.5%)
Patients meeting criteria 2: 31,315 (63.3%)
Patients meeting criteria 3: 43,074 (87.0%)
Patients meeting criteria 4: 36,256 (73.2%)
Patients meeting criteria 5: 36,428 (73.6%)
Patients meeting criteria 6: 27,469 (55.5%)
Patients meeting criteria 7: 42,621 (86.1%)
Patients meeting criteria 8: 42,156 (85.2%)
Patients meeting criteria 9: 38,812 (78.4%)

161 hospitals included in chart.

Acknowledgements:

NHFD participants: clinical and audit staff in all contributing hospitals

British Geriatrics Society
British Orthopaedic Association
Department of Health
Dr. Richard Keen, Metabolic Bone Unit, Royal National Orthopaedic Hospital
Healthcare Quality Improvement Partnership
National Clinical Audit Advisory Group
NHS Information Centre
Quantics Consulting Ltd

British Orthopaedic Association

HQIP
Healthcare Quality Improvement Partnership

BRITISH GERIATRICS SOCIETY

The **National Hip Fracture** Database National Report 2011

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