Appendix C

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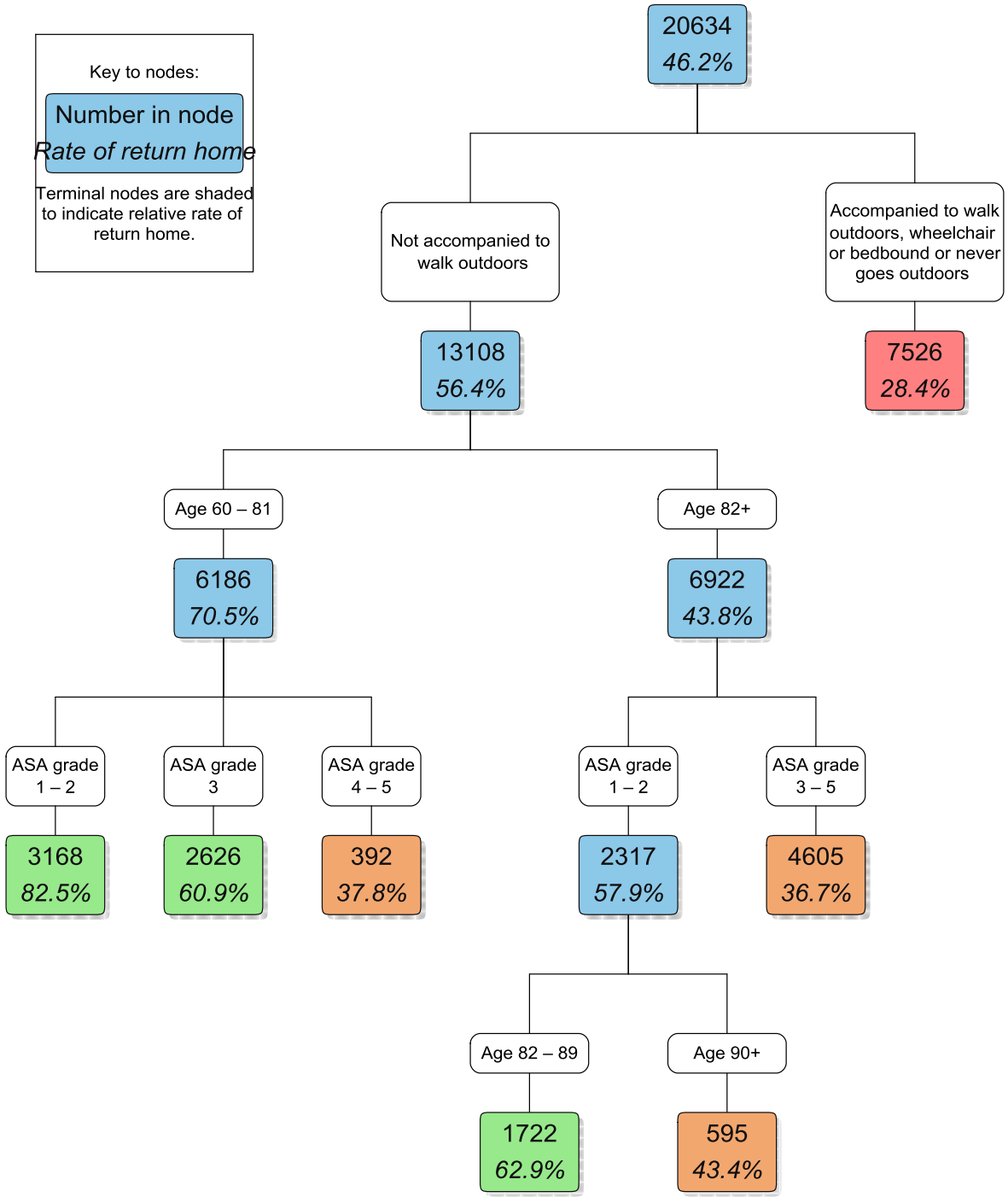
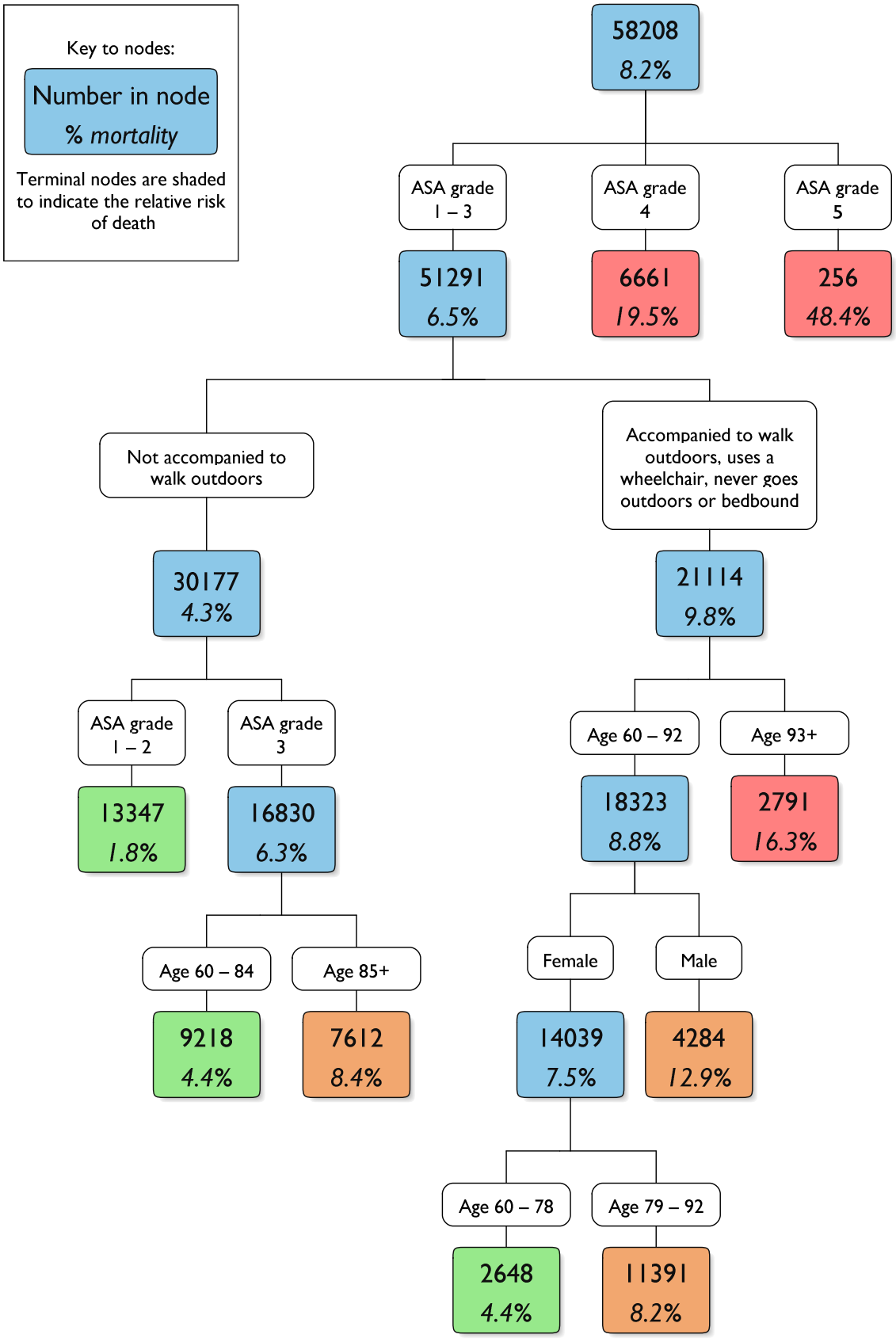
Appendix D
Case mix adjusted outcomes

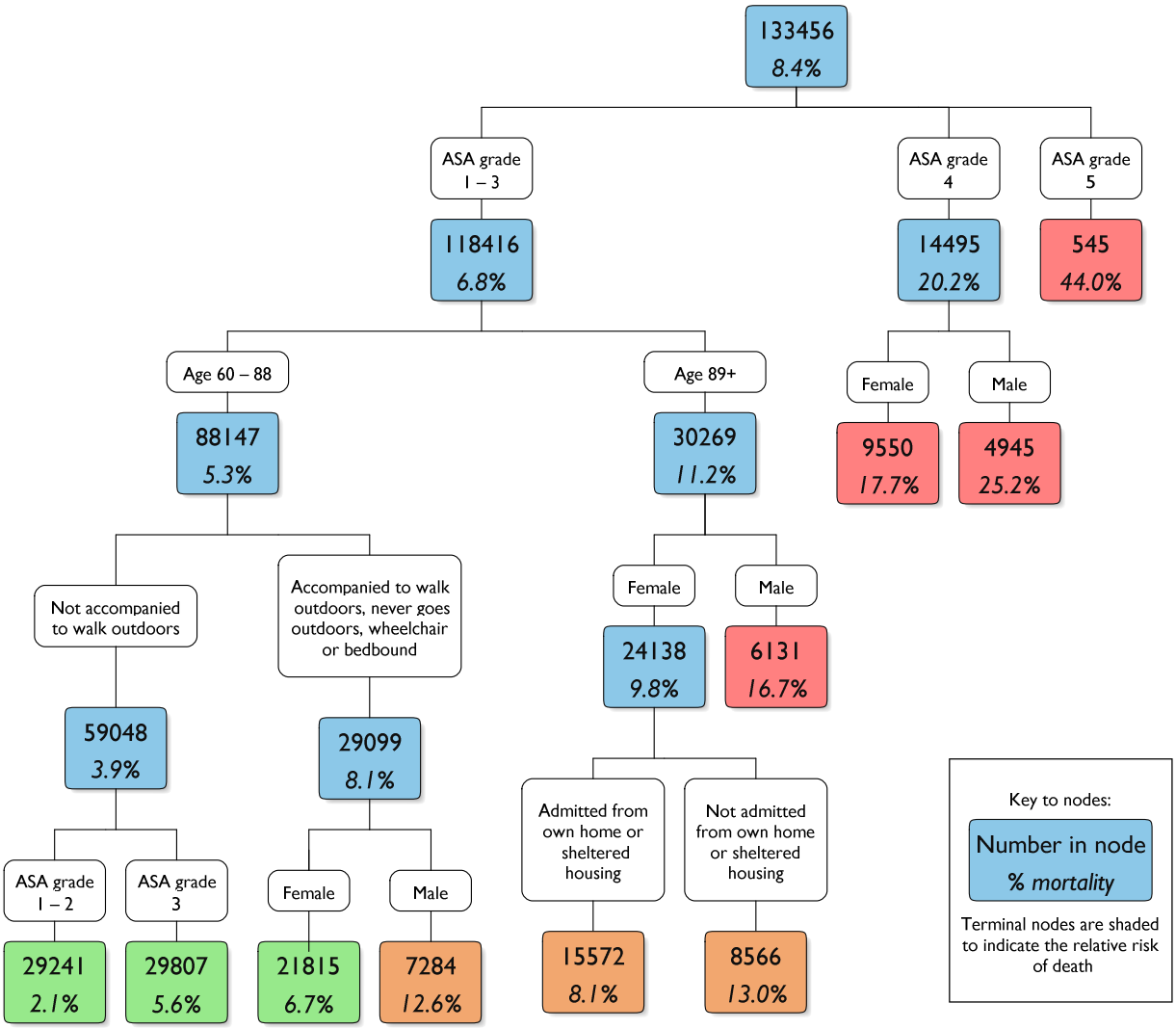
Classification tree - Rate of return home from home at 30 days



Classification tree - Mortality at 30 days (1 year)



Classification tree - Mortality at 30 days (3 years)



Appendix E

The Identification and Management of Outliers

Background

The responsibilities regarding the Identification and Management of Outliers for National Clinical Audits were formalised in a document produced for HQIP by the National Clinical Guidance Group in 2011. Individual audits were to determine how the guidance applied to their work, and in the case of the NHFD the policy was developed by the implementation group. Following the completion of the 2011 report the NHFD project manager and responsible clinical lead met with HQIP to discuss the process and, since the feedback was positive, a similar approach was used for the 2012 report.

Stage	What action?	Who?	Within how many working days? (cumulative)	Deadline
0	Discharge dataslice 1/3/12 -28/2/13 taken for mortality linkage	IC	0	15/4/13
1	Mortality linked data returned	IC	5 (5)	22/4/13
2	Linked data to data analyst (Quantics)	IC	5 (5)	22/4/13
3	Initial release of funnel plot	Quantics	12 (17)	8/5/13
4	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 5*	Quantics/NHFD	5 (22)	15/5/13

5	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 A copy of the request will also be sent to the Clinical Governance Lead of the provider organisation, and to the primary data inputter.	NHFD Lead Clinicians to speak to leads and to confirm contact details for lead clinician and Clinical Governance Lead	5 (22)	15/5/13
6	NHFD coordinators to contact clinical leads and data inputters to offer assistance in checking data.	NHFD	1 (23)	16/5/13
7	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	30 (53)	26/6/13
8	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 9*	NHFD Implementation Group	5 (58)	3/7/13
9	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 that Care Quality Commission notified 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.	5 (58)	3/7/13
10	Acknowledgement of receipt of the letter received by NHFD	Provider chief executive	5 (63)	10/7/13
11	Public disclosure (release of annual report)		50 (98)	18/9/13

Appendix F
Mortality analysis

For each of the periods, patients less than 60 years of age or more than 110 years of age were excluded from the analysis. Cases with draft status were included but cases thought to be duplicates were excluded.

Patients from England and Wales are matched to ONS mortality information. The ONS advises that this data may be up to 4 weeks out of date. Data was last matched on 17 June, 2013. Mortality information is not available from the ONS for patients from Northern Ireland. For the Northern Irish hospitals the "Residential Status at 30 Days" field is known to accurately record death. It is used to provide mortality information. For each of the Northern Irish hospitals, (Altnagelvin Hospital (ALT) Craigavon Area Hospital (CRG), Ulster Hospital (NUH) and Royal Victoria Hospital (RVB)) this field was completed in at least 98% of eligible cases for 2012 to 2013 and at least 96% of eligible cases for 2010 to 2013.

The data slice for the 2012 to 2013 analysis includes cases admitted between 1 March, 2012 and 28 February, 2013. However the data slice for the 2010 to 2013 includes cases admitted between 1 April, 2010 and 31 March, 2013. The data sets differ in their final cut-off points because mortality information was only available up to 28 February, 2013 when the preliminary 2012 to 2013 mortality analysis was conducted. However when the 2010 to 2013 mortality analysis was conducted, mortality data was available up to 31 March, 2013.

Mortality at 30 days for 2012 to 2013

Cases were eligible for the mortality at 30 days analysis for 2012-2013 if they:

- were admitted between 1 March, 2012 and 28 February, 2013 inclusive,
- were from a hospital that was both selected for inclusion in the 2013 annual report and had at least 80% case ascertainment (there were 15 hospitals selected for inclusion in the 2013 annual report that had less than 80% ascertainment: BED, BRO, GEO, GWH, HIN, KCH, KTH, NPH, NWG, PCH, TLF, TUN, WCI, WDG, WGH), and
- had known mortality status at 30 days.

The time period was selected to match the previous time period for mortality at 30 days (1 March, 2011 and 29 February, 2012) and also to allow sufficient time between the date of admission and the date of matching to ONS mortality information.

Ten hospitals were identified as outliers by the preliminary analysis and given the opportunity to review their records:

- Bradford Royal Infirmary (BRD)
- Darent Valley Hospital, Dartford (DVH)
- Frenchay Hospital, Bristol (FRY)
- Gloucestershire Royal Hospital, Gloucester (GLO)
- Luton and Dunstable Hospital (LDH)
- Norfolk and Norwich University Hospital (NOR)
- St Richard's Hospital, Chichester (STR)
- Watford General Hospital (WAT)
- William Harvey Hospital, Ashford (WHH)

- Whiston Hospital, Prescot (WHI)

Table D1 outlines the differences between the preliminary and the final data for the ten hospitals. Note that this table incorporates two changes to the dataset:

1. the updated dataset received on 18 June, 2013 (only the mortality at 30 days field was updated from the preliminary data set; the update affects both the mortality rate and eligibility, since cases are only eligible if their mortality at 30 days is known)
2. any changes made by the hospital when they were given the opportunity to review the data.

The table summarises the number of eligible cases, raw 30 day mortality, ASA grade and walking ability outdoors. ASA grade and walking ability outdoors are included because they appear in the classification tree for mortality at 30 days. Age and gender also appear in the classification tree, but they are not included because these fields were fully completed for each case in the preliminary dataset and no changes were made to these fields on review.

The number of eligible cases does not differ much between the preliminary and final datasets. Most notably WHI added 18 eligible patients to the data set when they were given the opportunity to review their data. The raw mortality rates at 30 days also do not differ much between the preliminary and final datasets. During the review stage, many hospitals took the opportunity to provide the walking ability outdoors for cases where it was missing in the preliminary dataset. Most notably WHH reduced the percentage of missing values from 16.8% to 2.1% and WAT reduced the percentage of missing values from 12.7% to 6.7%. However, the distribution of the values was largely unaffected.

Many hospitals also took the opportunity to review ASA grade and it is ASA grade that differs the most between the preliminary and final datasets. In terms of completeness, the most notable of the hospitals is BRD which improved from 64.8% complete to 99.4% complete. DVH improved from 92.1% complete to 98.2% complete and STR improved from 93.7% complete to 99.7% complete. Other hospitals also made smaller improvements.

Many hospitals also revised the ASA grades that were assigned to each case. The largest revisions are described below:

- DVH revised the ASA grades of 11 cases with an initial ASA grade of 1; for 9 of these cases the ASA grade was increased to 2, and for 2 cases the ASA grade was increased to 3. DVH also revised the ASA grades of 69 cases with an initial ASA grade of 2; for 56 of these cases the ASA grade was increased to 3, and for 13 of these cases the ASA grade was increased to 4.
- GLO revised the ASA grades of 3 cases with an initial ASA grade of 1; 2 of these cases increased to ASA 2 and 1 increased to ASA 3. GLO also revised the ASA grades of 24 cases with an initial ASA grade of 2; 23 of these cases increased to ASA 3 and 1 increased to ASA 4.
- NOR revised the ASA grades of 45 cases with an initial ASA grade of 2; all of these cases increased to ASA 3.
- WHI revised the ASA grades of 2 cases with an initial ASA grade of 1; both of these cases increased to ASA 2. WHI also revised the ASA grades of 26 patients with an initial ASA grade of 2; 25 of these cases increased to ASA 3 and 1increased to ASA 4.

No hospitals revised any ASA grade downwards.

Table D1: Summary of the preliminary and final data for the ten outlying hospitals

Hospital	Summary	Preliminary data [n (%)]	Final data [n (%)]
BRD	**Total eligible cases**	**324**	**322**
	Raw 30 day mortality	56 (17.3%)	55 (17.1%)
	ASA grade known	210 (64.8%)	320 (99.4%)
	ASA grade unknown	114 (35.2%)	2 (0.6%)
	ASA grade 1 (% of known)	2 (1.0%)	2 (0.6%)
	ASA grade 2 (% of known)	38 (18.1%)	52 (16.2%)
	ASA grade 3 (% of known)	117 (55.7%)	165 (51.6%)
	ASA grade 4 (% of known)	42 (20.0%)	89 (27.8%)
	ASA grade 5 (% of known)	11 (5.2%)	12 (3.8%)
	Accompanied to walk outdoors known	324 (100.0%)	322 (100.0%)
	Accompanied to walk outdoors unknown	0 (0.0%)	0 (0.0%)
	Not accompanied to walk outdoors (% of known)	85 (26.2%)	85 (26.4%)
	Accompanied to walk outdoors (% of known)	186 (57.4%)	184 (57.1%)
	Wheelchair or bedbound (% of known)	4 (1.2%)	4 (1.2%)
	Never goes outdoors (% of known)	49 (15.1%)	49 (15.2%)
DVH	**Total eligible cases**	**329**	**328**
	Raw 30 day mortality	37 (11.2%)	37 (11.3%)
	ASA grade known	303 (92.1%)	322 (98.2%)
	ASA grade unknown	26 (7.9%)	6 (1.8%)
	ASA grade 1 (% of known)	14 (4.6%)	3 (0.9%)
	ASA grade 2 (% of known)	132 (43.6%)	76 (23.6%)
	ASA grade 3 (% of known)	137 (45.2%)	203 (63.0%)
	ASA grade 4 (% of known)	20 (6.6%)	34 (10.6%)
	ASA grade 5 (% of known)	0 (0.0%)	6 (1.9%)
	Accompanied to walk outdoors known	314 (95.4%)	324 (98.8%)
	Accompanied to walk outdoors unknown	15 (4.6%)	4 (1.2%)
	Not accompanied to walk outdoors (% of known)	143 (45.5%)	146 (45.1%)
	Accompanied to walk outdoors (% of known)	72 (22.9%)	73 (22.5%)
	Wheelchair or bedbound (% of known)	10 (3.2%)	10 (3.1%)
	Never goes outdoors (% of known)	89 (28.3%)	95 (29.3%)

Table D1 (continued): Summary of the preliminary and final data for the ten outlying hospitals

Hospital	Summary	Preliminary data [n (%)]	Final data [n (%)]
FRY	**Total eligible cases**	**428**	**430**
	Raw 30 day mortality	53 (12.4%)	55 (12.8%)
	ASA grade known	426 (99.5%)	430 (100.0%)
	ASA grade unknown	2 (0.5%)	0 (0.0%)
	ASA grade 1 (% of known)	10 (2.3%)	10 (2.3%)
	ASA grade 2 (% of known)	128 (30.0%)	123 (28.6%)
	ASA grade 3 (% of known)	231 (54.2%)	224 (52.1%)
	ASA grade 4 (% of known)	57 (13.4%)	71 (16.5%)
	ASA grade 5 (% of known)	0 (0.0%)	2 (0.5%)
	Accompanied to walk outdoors known	407 (95.1%)	425 (98.8%)
	Accompanied to walk outdoors unknown	21 (4.9%)	5 (1.2%)
	Not accompanied to walk outdoors (% of known)	194 (47.7%)	197 (46.4%)
	Accompanied to walk outdoors (% of known)	111 (27.3%)	113 (26.6%)
	Wheelchair or bedbound (% of known)	13 (3.2%)	14 (3.3%)
	Never goes outdoors (% of known)	89 (21.9%)	101 (23.8%)
GLO	**Total eligible cases**	**412**	**414**
	Raw 30 day mortality	50 (12.1%)	50 (12.1%)
	ASA grade known	410 (99.5%)	414 (100.0%)
	ASA grade unknown	2 (0.5%)	0 (0.0%)
	ASA grade 1 (% of known)	5 (1.2%)	2 (0.5%)
	ASA grade 2 (% of known)	105 (25.6%)	83 (20.0%)
	ASA grade 3 (% of known)	255 (62.2%)	281 (67.9%)
	ASA grade 4 (% of known)	41 (10.0%)	42 (10.1%)
	ASA grade 5 (% of known)	4 (1.0%)	6 (1.4%)
	Accompanied to walk outdoors known	400 (97.1%)	407 (98.3%)
	Accompanied to walk outdoors unknown	12 (2.9%)	7 (1.7%)
	Not accompanied to walk outdoors (% of known)	205 (51.2%)	206 (50.6%)
	Accompanied to walk outdoors (% of known)	95 (23.8%)	97 (23.8%)
	Wheelchair or bedbound (% of known)	1 (0.2%)	1 (0.2%)
	Never goes outdoors (% of known)	99 (24.8%)	103 (25.3%)
LDH	**Total eligible cases**	**296**	**300**
	Raw 30 day mortality	38 (12.8%)	40 (13.3%)
	ASA grade known	289 (97.6%)	294 (98.0%)
	ASA grade unknown	7 (2.4%)	6 (2.0%)
	ASA grade 1 (% of known)	1 (0.3%)	1 (0.3%)
	ASA grade 2 (% of known)	65 (22.5%)	64 (21.8%)
	ASA grade 3 (% of known)	179 (61.9%)	185 (62.9%)
	ASA grade 4 (% of known)	43 (14.9%)	43 (14.6%)
	ASA grade 5 (% of known)	1 (0.3%)	1 (0.3%)
	Accompanied to walk outdoors known	265 (89.5%)	269 (89.7%)
	Accompanied to walk outdoors unknown	31 (10.5%)	31 (10.3%)
	Not accompanied to walk outdoors (% of known)	178 (67.2%)	181 (67.3%)
	Accompanied to walk outdoors (% of known)	15 (5.7%)	15 (5.6%)
	Wheelchair or bedbound (% of known)	17 (6.4%)	17 (6.3%)
	Never goes outdoors (% of known)	55 (20.8%)	56 (20.8%)

Table D1 (continued): Summary of the preliminary and final data for the ten outlying hospitals

Hospital	Summary	Preliminary data [n (%)]	Final data [n (%)]
NOR	**Total eligible cases**	**738**	**745**
	Raw 30 day mortality	59 (8.0%)	61 (8.2%)
	ASA grade known	723 (98.0%)	740 (99.3%)
	ASA grade unknown	15 (2.0%)	5 (0.7%)
	ASA grade 1 (% of known)	11 (1.5%)	11 (1.5%)
	ASA grade 2 (% of known)	282 (39.0%)	238 (32.2%)
	ASA grade 3 (% of known)	384 (53.1%)	438 (59.2%)
	ASA grade 4 (% of known)	45 (6.2%)	52 (7.0%)
	ASA grade 5 (% of known)	1 (0.1%)	1 (0.1%)
	Accompanied to walk outdoors known	700 (94.9%)	728 (97.7%)
	Accompanied to walk outdoors unknown	38 (5.1%)	17 (2.3%)
	Not accompanied to walk outdoors (% of known)	638 (91.1%)	659 (90.5%)
	Accompanied to walk outdoors (% of known)	14 (2.0%)	16 (2.2%)
	Wheelchair or bedbound (% of known)	12 (1.7%)	13 (1.8%)
	Never goes outdoors (% of known)	36 (5.1%)	40 (5.5%)
STR	**Total eligible cases**	**333**	**336**
	Raw 30 day mortality	41 (12.3%)	42 (12.5%)
	ASA grade known	312 (93.7%)	335 (99.7%)
	ASA grade unknown	21 (6.3%)	1 (0.3%)
	ASA grade 1 (% of known)	4 (1.3%)	5 (1.5%)
	ASA grade 2 (% of known)	101 (32.4%)	101 (30.1%)
	ASA grade 3 (% of known)	181 (58.0%)	189 (56.4%)
	ASA grade 4 (% of known)	26 (8.3%)	33 (9.9%)
	ASA grade 5 (% of known)	0 (0.0%)	7 (2.1%)
	Accompanied to walk outdoors known	326 (97.9%)	336 (100.0%)
	Accompanied to walk outdoors unknown	7 (2.1%)	0 (0.0%)
	Not accompanied to walk outdoors (% of known)	216 (66.3%)	213 (63.4%)
	Accompanied to walk outdoors (% of known)	23 (7.1%)	24 (7.1%)
	Wheelchair or bedbound (% of known)	21 (6.4%)	24 (7.1%)
	Never goes outdoors (% of known)	66 (20.2%)	75 (22.3%)
WAT	**Total eligible cases**	**441**	**445**
	Raw 30 day mortality	51 (11.6%)	51 (11.5%)
	ASA grade known	428 (97.1%)	445 (100.0%)
	ASA grade unknown	13 (2.9%)	0 (0.0%)
	ASA grade 1 (% of known)	9 (2.1%)	5 (1.1%)
	ASA grade 2 (% of known)	108 (25.2%)	109 (24.5%)
	ASA grade 3 (% of known)	273 (63.8%)	290 (65.2%)
	ASA grade 4 (% of known)	37 (8.6%)	40 (9.0%)
	ASA grade 5 (% of known)	1 (0.2%)	1 (0.2%)
	Accompanied to walk outdoors known	385 (87.3%)	415 (93.3%)
	Accompanied to walk outdoors unknown	56 (12.7%)	30 (6.7%)
	Not accompanied to walk outdoors (% of known)	243 (63.1%)	262 (63.1%)
	Accompanied to walk outdoors (% of known)	80 (20.8%)	88 (21.2%)
	Wheelchair or bedbound (% of known)	20 (5.2%)	20 (4.8%)
	Never goes outdoors (% of known)	43 (10.9%)	45 (10.8%)

Table D1 (continued): Summary of the preliminary and final data for the ten outlying hospitals

Hospital	Summary	Preliminary data [n (%)]	Final data [n (%)]
WHH	**Total eligible cases**	**429**	**435**
	Raw 30 day mortality	53 (12.4%)	54 (12.4%)

	ASA grade known	426 (99.3%)	433 (99.5%)
	ASA grade unknown	3 (0.7%)	2 (0.5%)
	ASA grade 1 (% of known)	9 (2.1%)	9 (2.1%)
	ASA grade 2 (% of known)	121 (28.4%)	121 (27.9%)
	ASA grade 3 (% of known)	253 (59.4%)	257 (59.4%)
	ASA grade 4 (% of known)	41 (9.6%)	44 (10.2%)
	ASA grade 5 (% of known)	2 (0.5%)	2 (0.5%)
	Accompanied to walk outdoors known	357 (83.2%)	396 (91.0%)
	Accompanied to walk outdoors unknown	72 (16.8%)	39 (2.1%)
	Not accompanied to walk outdoors (% of known)	237 (66.4%)	255 (64.4%)
	Accompanied to walk outdoors (% of known)	64 (17.9%)	79 (19.9%)
	Wheelchair or bedbound (% of known)	6 (1.7%)	6 (1.5%)
	Never goes outdoors (% of known)	50 (14.0%)	56 (14.1%)
WHI	**Total eligible cases**	**402**	**420**
	Raw 30 day mortality	48 (11.9%)	50 (11.9%)
	ASA grade known	402 (100.0%)	420 (100.0%)
	ASA grade unknown	0 (0.0%)	0 (0.0%)
	ASA grade 1 (% of known)	6 (1.5%)	4 (1.0%)
	ASA grade 2 (% of known)	66 (16.4%)	43 (10.2%)
	ASA grade 3 (% of known)	274 (68.2%)	310 (73.8%)
	ASA grade 4 (% of known)	56 (13.9%)	63 (15.0%)
	ASA grade 5 (% of known)	0 (0.0%)	0 (0.0%)
	Accompanied to walk outdoors known	389 (96.8%)	411 (97.9%)
	Accompanied to walk outdoors unknown	13 (3.2%)	9 (2.1%)
	Not accompanied to walk outdoors (% of known)	186 (47.8%)	195 (47.4%)
	Accompanied to walk outdoors (% of known)	110 (28.3%)	116 (28.2%)
	Wheelchair or bedbound (% of known)	36 (9.3%)	39 (9.5%)
	Never goes outdoors (% of known)	57 (14.7%)	61 (14.8%)

Based on admission date, age and hospital 58,728 cases are eligible for inclusion in the analysis (58,707 cases were eligible for inclusion in the preliminary analysis). Of these cases, 520 (0.9%) have unknown mortality status at 30 days (reduced from 1.3% of cases with unknown mortality for the preliminary analysis). The number of cases with an incorrect date of death has been reduced to 13 (from 249 in the preliminary analysis). Once all patients with unknown mortality status at 30 days are removed, the mortality data set for 2012 to 2013 includes 58,208 cases.

Mortality at 30 days for 2010 to 2013

Cases were eligible for the mortality at 30 days analysis for 2010-2013 if they:

- were admitted between 1 April, 2010 and 31 March, 2013 inclusive,
- were from a hospital that was selected for inclusion in all of the 2011, 2012 and 2013 annual reports and had at least 80% case ascertainment in each year (there are 123 such hospitals), and
- had known mortality status at 30 days.

The time period allows sufficient time between the date of admission and the date of matching to ONS mortality information.

Based on admission date, age and hospital 134,914 cases are eligible for inclusion in the analysis. Of these cases, 1458 (1.1%) have unknown mortality status at 30 days. Once patients with unknown mortality status at 30 days are removed, the mortality data set for 2010 to 2013 includes 133,456 cases.

A note on the definition of mortality at 30 days: In previous reports, mortality at 30 days did not include patients who died at exactly 30 days (these patients were classified as 'Alive at 30 days'). Mortality at 30 days was derived by Quantics from the admission date, the life status and the date of death (where applicable). Under the data sharing agreement for the 2012 to 2013 annual report, Quantics is no longer allowed the date of death and receives only the derived life status at 30 days ('Dead', 'Alive', 'Not Matched at 30 days' or 'Not Matched'). Whilst preparing the trend analysis report for 2008-2013 Quantics noticed a change in definition of mortality at 30 days. Mortality at 30 days is now defined such that patients who died exactly at 30 days are classified as 'Dead at 30 days'. Whilst this will not affect comparisons between hospitals within this analysis (all cases included in the data sets are classified by HSCIC), comparisons between this report and previous reports should be conducted with care. The trend analysis indicated that the change in definition led to a slight increase in mortality at 30 days (for example, for 2011-2012 mortality rose from 8.3% under the old definition to 8.5% under the new definition, for the hospitals included in the trend analysis report).

Appendix G
Trend analysis: methods

This section describes trends in hip fracture outcomes from April 2008 to March 2013. Specifically five key outcomes are examined:

- 30 day mortality,
- surgery within 36 hours,
- pre-operative assessment by geriatrician,
- bone therapy assessment or treatment,
- falls assessment.

The results are based on data from 27 hospitals. These hospitals were selected because they had good case ascertainment for the whole 5 year period (case ascertainment was determined by comparing the number of hip fractures entered into the NHFD to HES data on hip fractures).

Data

A list of the hospitals included in this analysis is provided in Table E1. Patients were eligible for the analysis if they were aged between 60 and 110 at admission and were admitted between the 1st of April 2008 and the 31st of March 2013. Note that Gloucester Royal Hospital (GLO) did not submit any cases to the NHFD until August 2008.

Outcomes

The key outcomes were measured as follows:

- **30 day mortality.** Percentage of patients who died within 30 days of admission (includes patients who died exactly at 30 days after admission). Calculated for all eligible cases that were matched to mortality information.
- **Surgery within 36 hours.** Time to surgery is measured by the time from A&E admission to surgery. Calculated for all eligible cases for which time to surgery was available.
- **Pre-operative assessment by geriatrician**. Percentage of hip fracture cases where the patient received an assessment from a geriatrician. Calculated for all eligible cases where the pre-operative medical assessment field was available.
- **Bone therapy assessment or treatment** Percentage of hip fracture cases where the patient
    - was already receiving antiresorptive therapy,

- began receiving antiresorptive therapy,
- was assessed, or
- was scheduled for assessment or DXA scan.

Calculated for all eligible cases where the antiresorptive therapy field was available.

- **Falls assessment** Percentage of hip fracture cases where the patient received a specialist falls assessment. Calculated for all cases where the falls assessment field was available.

Methods

Moving average graph

For each of the key outcomes a moving average was calculated for 12 month periods. The first 12 month period is April 2008 – March 2009, the second is May 2008 – April 2009 and so on up to April 2012 – March 2013. A 12 month period is used to account for any seasonal effects (e.g. more hip fractures in winter).

Assessment of trends

Logistic regression was used to evaluate the trend for each of the key outcomes. The logistic regression examines the admission day and the outcome for each hip fracture case. The results indicate whether there is a relationship between admission day and the outcome. A p-value of less than 0.05 suggests that there is such a relationship.

Results

All of the key outcomes improve from April 2008 to March 2013. Specifically:

- 30 day mortality decreases from 9.6% to 8.9%,
- surgery within 36 hours increases from 54.8% to 77.7%,
- pre-operative assessment by geriatrician increases from 25.2% to 58.4%,
- bone therapy assessment or treatment increases from 68.9% to 96.8%, and
- falls assessment increases from 60.1% to 94.9%.

Logistic regression indicated that there is evidence of a trend for all outcomes except for mortality at 30 days. For surgery within 36 hours, pre-operative assessment by a geriatrician, bone therapy assessment or treatment and falls assessment there is strong evidence of a trend (the p-values are all less than 0.001).
The results summarise the outcomes for all patients from the 27 included hospitals. The results do not take account of differences between hospitals. There is some variation in the outcomes between hospitals. The results are also specific to patients treated in the 27 included hospitals. The results may over-estimate the trends, as hospitals with good case ascertainment may be more committed to improving hip fracture care.

Table E1: List of Hospitals

Hospital code	Hospital name	Number of eligible patients				
		2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
AEI	Royal Albert Edward Infirmary, Wigan	283	301	327	319	316
BAR	Barnsley Hospital	240	206	220	258	250
BAS	Basildon and Thurrock University Hospital	326	373	344	399	405
BOL	Royal Bolton Hospital	297	319	322	355	390
BRD	Bradford Royal Infirmary	280	303	310	271	350
CMI	Cumberland Infirmary, Carlisle	241	273	261	247	283
DER	Derbyshire Royal Infirmary, Derby	756	917	440	503	489
GLO	Gloucester Royal Hospital, Gloucester	227	357	401	384	418
IPS	Ipswich Hospital	376	410	432	419	436
MDW	Medway Maritime Hospital	285	328	342	338	339
MPH	Musgrove Park Hospital, Taunton	329	351	381	405	368
MRI	Manchester Royal Infirmary	152	167	167	164	173
NMH	North Middlesex University Hospital	117	129	143	123	138
NTH	Northampton General Hospital	321	297	334	361	364
PIL	Pilgrim Hospital, Boston	245	300	293	347	311
QAP	Queen Alexandra Hospital, Portsmouth	597	657	654	689	732
QEG	Queen Elizabeth Hospital, Gateshead	258	285	294	296	318
QKL	Queen Elizabeth Hospital, King's Lynn	246	309	321	354	323
RBE	Royal Berkshire Hospital, Reading	399	455	436	486	449
RFH	Royal Free Hospital, London	118	204	202	197	167
SCM	James Cook University Hospital, Middlesbrough	323	348	403	456	454
SCU	Scunthorpe General Hospital	229	236	226	234	242
SLF	Salford Royal Hospital, Salford	203	238	225	207	223
UHC	University Hospital Coventry	386	510	467	483	486
UHN	University Hospital (Queens Medical Centre) Nottingham	737	746	714	735	739
WAR	Warwick Hospital	284	306	289	276	295
WHC	Whipps Cross University Hospital	272	317	316	298	301
	Total	8527	9642	9264	9604	9759

Appendix H
NHFD Chart Outlines

Summary

Data slices

The charts are each based on one of three data slices – admission data slice (2012-2013), admission data slice (2010-2013) or discharge data slice (2012-2013). Charts use the admission data slice (2012-2013) unless otherwise specified.

Admission data slice (2012-2013): This data slice includes cases that fulfil all three of the following criteria:

1. admitted between 1st April 2012 and 31st March 2013 inclusive,
2. aged between 60 and 110 years inclusive at admission and
3. from one of the 180 hospitals for inclusion in the 2013 NHFD report.

This data slice includes 61,508 cases.

Admission data slice (2010-2013): This data slice is used for the cumulative time to surgery chart only. It includes cases that fulfil all three of the following criteria:

1. admitted between 1st April 2010 and 31st March 2013 inclusive,
2. aged between 60 and 110 years inclusive at admission and
3. from a hospital that was selected for inclusion for the period that the patient was admitted (e.g. if a patient was admitted in the period 1st April 2010 to 31st March 2011, then they are eligible are if their hospital was selected for inclusion in the 2011 report).

This data slice includes 175,526 cases.

Discharge data slice (2012-2013):

This data slice includes cases that fulfil all three of the following criteria:

1. admitted between 1st April 2012 and 31st March 2013 inclusive,
2. discharged from trust between 1st April 2012 and 31st March 2013 inclusive (Note that discharge trust date was missing for 4.7% of otherwise eligible cases. Cases with missing discharge trust date are not included in the discharge data slice.)
3. aged between 60 and 110 years inclusive at admission and
4. from one of the 180 hospitals for inclusion in the 2013 NHFD report.

This data slice includes 57,193 cases.

Numbers of cases

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 has been taken. ‘n’ is the number of cases in the subset and ‘N’ is the total number of cases in the hospital.

Chart 1 – Completeness of data fields on cases included in the 2013 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, Walking Ability Outdoors, Fracture Type, Operation Performed, Pre-operative Medical Assessment, Bone Therapy Medication, Admission Time to A&E, pre-operative AMTS Score, post-operative AMTS score, Ward Type, Discharge Date from Trust, Discharge from Trust Destination, Anaesthesia Type*

For admitted to Orthopaedic Ward: *Admission Time to Orthopaedic Ward, Discharge Date from Ward, Discharge from Ward 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 both undergo surgery & are discharged before 1/04/13: *30 Day Reoperation*

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: 1,390,457

Total number of fields completed: 1,305,286 (93.9%)

All 180 hospitals included in chart.

Chart 2 – Admitted from

Description: Hospitals ranked by the percentage of cases admitted from within the NHS (i.e. cases admitted from hospital, acute hospital or a rehabilitation unit).

Fields Used: *Admitted From*

Groups: One case is categorised according to the old category "Residential care/Nursing home/LTC hospital". It is unclear whether this case should fall into the new category "Residential care" or "Nursing care". Admitted from is set to unknown for this case.

Total number of cases included: 61252

Data: WDH agreed to exclusion from this chart because their data is incorrect.

Chart 3a – Pre-operative AMT score

Description: Hospitals ranked by the percentage of cases with AMT score between 0 and 6.

Fields Used: *AMTS (pre-op)*

Groups: 0-6, 7-10 and unknown (includes missing values:1888; 'Not done': 5438; 'Patient refused':189).

Total number of cases included: 61,508

All 180 hospitals included in chart.

Chart 3b – post-operative AMT score

Description: Hospitals ranked by the percentage of cases with AMT score between 0 and 6. New chart for 2013.
Fields Used: *AMTS (post-op)*
Groups: 0-6, 7-10 and unknown (includes missing values: 7515; 'Not done': 7694; 'Patient refused':247)
Total number of cases included: 61,508
All 180 hospitals included in chart.

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

Description: Hospitals ranked by the percentage of cases admitted to orthopaedic ward (OW) within 4 hours.
Fields Used: *Admission Time to A&E, Admission Time to Orthopaedic Ward, Ward Type*
Groups: Admitted to orthopaedic ward within 4 hours, admitted to orthopaedic ward after 4 hours, not admitted to orthopaedic ward and unknown. Cases admitted to an orthopaedic ward are classified as 'Unknown' if time to orthopaedic ward is missing or outside of 0-8760 hours. The table below shows how the groups are derived from the fields.

	Ward Type		
Time to OW	Hip fracture unit (medicine for older people or OW) or other	Never admitted to an OW	Unknown
< 0 hours	Unknown	Never admitted to an OW	Unknown
0-4 hours	OW within 4 hours	Never admitted to an OW	OW within 4 hours*
4-8760 hours	OW after 4 hours	Never admitted to an OW	OW after 4 hours*
8760 hours +	Unknown	Never admitted to an OW	Unknown
Unknown	Unknown	Never admitted to an OW	Unknown

* If the ward type is unknown and a plausible time to orthopaedic ward is available then assume that the case was admitted to an orthopaedic ward
Total number of cases included: 61,508
All 180 hospitals included in chart.

Chart 5 – Type of anaesthesia

Description: Hospitals ranked by the percentage of cases that received general anaesthesia either alone or in combination.
Fields Used: *Anaesthesia Type*
Groups: The response 'Other' has been classified as 'Unknown' in the chart. The dataset did not include any patients with categories "no", "none" or "other-non-ortho".

Total number of cases included: 61,508
All 180 hospitals included in chart.

Chart 6 – Surgery within 36 hours of admission

Description: Hospitals ranked by the percentage of cases who underwent surgery within 36 hours of admission.

Fields Used: *Admission Time to A&E, Date of Surgery, Operation.*
Calculation: Time to surgery is calculated as the difference between admission to A&E time and surgery time.
Groups: Surgery within 36 hours, surgery after 36 hours, no operation performed and unknown. Cases who received surgery and have missing *Date of Surgery* or have time to surgery outside of the range 0-8760 hours are grouped as 'unknown'. Cases with Operation='no operation performed' and for which a date of surgery was entered are grouped as 'no operation performed' (the dataset only includes 21 such cases).

Total number of cases included: 61,508
All 180 hospitals included in chart.

Chart 7 – Surgery on the day of, or day after admission

Description: Hospitals ranked by the percentage of cases who underwent surgery on the day of, or day after admission.
Fields Used: *Admission Time to A&E, Date of Surgery, Operation.*
Calculation: Days to surgery is calculated as the difference between admission to A&E date and surgery date (time of admission and surgery is not taken into account).
Groups:

- Surgery on day of, or day after, admission
- Surgery two or more calendar days after admission
- No operation performed
- Unknown.

Cases who received surgery and have missing *Date of Surgery* or have days to surgery outside of the range 0-365 days are grouped as 'unknown'. Cases with Operation='no operation performed' and for which a date of surgery was entered are grouped as 'no operation performed'.

Total number of cases included: 61,508
All 180 hospitals included in chart.

Chart 8 – Surgery in 48 hours and during normal working hours (Blue Book Standard 2)

Description: Hospitals ranked by the percentage of eligible cases who were treated with surgery within 48 hours of admission and during working hours (8am-8pm). Includes 8am and excludes 8pm. Cases were eligible unless they were known to be medically unfit, known to be admitted from within hospital ('Acute hospital' or 'Already in hospital') or known not to have undergone surgery.

- Cases were assumed to be medically fit if *Reason for 48 Hour Delay to Surgery* was missing (missing for 97% of cases with time to surgery known to be greater than 48 hours)
- Cases were assumed to be admitted from outside hospitals if *Admitted From* was missing (missing for less than 1% of cases)
- Cases were assumed to have undergone surgery if *Operation* was missing (missing for less than 1% of cases)

Fields Used: *Admission Time to A&E, Date of Surgery, Admitted From, Operation, Reason for 48 Hour Delay to Surgery.*
Calculation: Time to surgery is calculated as the difference between admission to A&E time and surgery time.

Groups: Surgery in 48 hours and working hours (8am-8pm), surgery in 48 hours but not within working hours, surgery not within 48 hours, unknown. Cases with missing surgery time and cases with time to surgery outside of the range 0-8760 hours are grouped as 'unknown'.

Total number of cases included: 57390 (4118 cases were not eligible)
All 180 hospitals included in chart.

Chart 9 – Reason for delay beyond 36 hours

Description: Hospitals ranked by the percentage of delayed cases who had their surgery delayed for medical reasons.
Fields Used: *Admission Time to A&E, Date of Surgery, Reason for 36 hour Delay to Surgery, Operation.*
Calculation: Time to surgery is calculated as the difference between admission to A&E time and surgery time.
Groups: Cases are included in this chart if they underwent surgery more than 36 hours (and less than 8760 hours) after admission to A&E. 'No delay surgery < 36 hours' & 'No delay surgery < 24 hours' are grouped as 'unknown'.

Total number of cases included: 15,809
All 180 hospitals included in chart.

Chart 10 – Cumulative time to surgery

Description: Cumulative time to surgery for all patients. Results are plotted separately for each year: 2010-2011, 2011-2012 and 2012-2013. Cases are excluded from the chart if time to surgery is unknown or implausible (outside of the range 0-8760 hours). The final points indicate the percentages of patients that received any surgery.
Fields Used: *Admission Time to A&E; Date of Surgery; Operation*
Calculation: Time to surgery is calculated as the difference between admission time and surgery time.
Total number of patients included: 174,349 (53,610 for 2010-2011, 59,691 for 2011-2012 and 61,048 for 2012-2013)
For each year the chart includes hospitals as specified by that year's annual report.

Chart 11 – Cases treated without surgery

Description: Hospitals ranked by the percentage of cases who underwent surgery.
Fields Used: *Operation*
Total number of cases included: 61,508
All 180 hospitals included in chart.

Chart 12– Undisplaced intracapsular fractures

Description: Hospitals ranked by the percentage of eligible cases who received arthroplasty. Cases were eligible if they had an undisplaced intracapsular fracture.
Fields Used: *Fracture Type, Operation*
Groups:

Percentages are for those cases with undisplaced intracapsular fractures

Original group	Group for chart
Arthroplasty - Unipolar hemi (cemented) (22.9%)	Arthroplasty - Unipolar hemi (cemented)

Arthroplasty - Unipolar hemi (uncemented - HA coated) (0.7%)	Arthroplasty- Unipolar hemi (uncemented)
Arthroplasty - Unipolar hemi (uncemented - uncoated) (5.0%)	
Arthroplasty - Bipolar hemi (cemented) (7.7%)	Arthroplasty - Bipolar hemi (cemented)
Arthroplasty - Bipolar hemi (uncemented - HA coated) (0.9%)	Arthroplasty - Other
Arthroplasty - Bipolar hemi (uncemented - uncoated) (1.5%)	
Arthroplasty - THR (cemented) (3.8%)	
Arthroplasty - THR (uncemented - HA coated) (0.2%)	
Arthroplasty - THR (uncemented - uncoated) (0.8%)	
Internal fixation – SHS (18.9%)	Internal fixation - SHS
Internal fixation - Sliding Hip Screw (1.9%)	
Internal fixation - Cannulated Screws (3.2%)	Internal fixation - Screws
Internal fixation – Screws (26.1%)	
Internal fixation - IM nail (short) (<0.1%)	Other
Internal fixation - IM nail (long) (0.2%)	
Other (0.7%)	
No operation performed (5.3%)	No operation performed

It is assumed that 'Internal fixation – cannulated screws' is equivalent to 'Internal fixation screws'. It is assumed that 'Internal fixation SHS' is equivalent to 'Internal fixation sliding hip screw'.

Total number of cases included: 6,123
163 hospitals included in chart (17 hospitals with less than 10 eligible cases were excluded).

Chart 13 – Displaced intracapsular fractures

Description: Hospitals ranked by the percentage of eligible cases that received arthroplasty. Cases were eligible if they had a displaced intracapsular fracture.
Fields Used: *Fracture Type, Operation*
Groups: Percentages are for those cases with displaced intracapsular fractures

Original group	**Group for chart**
Arthroplasty - Unipolar hemi (cemented) (43.1%)	Arthroplasty - Unipolar hemi (cemented)
Arthroplasty - Unipolar hemi (uncemented - HA coated) (1.7%)	Arthroplasty- Unipolar hemi (uncemented)
Arthroplasty - Unipolar hemi (uncemented - uncoated) (12.0%)	
Arthroplasty - Bipolar hemi (cemented) (19.0%)	Arthroplasty - Bipolar hemi (cemented)
Arthroplasty - Bipolar hemi (uncemented - HA coated) (2.7%)	Arthroplasty - Other
Arthroplasty - Bipolar hemi (uncemented - uncoated) (1.9%)	
Arthroplasty - THR (cemented) (7.4%)	
Arthroplasty - THR (uncemented - HA coated) (1.0%)	
Arthroplasty - THR (uncemented - uncoated) (1.4%)	
Internal fixation – SHS (4.2%)	Internal fixation - SHS
Internal fixation - Sliding Hip Screw (0.4%)	

Internal fixation - Cannulated Screws (0.3%)	Internal fixation - Screws
Internal fixation – Screws (2.1%)	
Internal fixation - IM nail (short) (<0.1%)	Other
Internal fixation - IM nail (long) (<0.1%)	
Other (0.6%)	
No operation performed (2.1%)	No operation performed

Total number of cases included: 29,203
179 hospitals included in chart (1 hospital with less than 10 eligible cases was excluded).

Chart 14 – Cementing of arthroplasties

Description: Hospitals ranked by the percentage of eligible cases who had a cemented arthroplasty. Cases were eligible if they underwent an arthroplasty.
Fields Used: *Operation*

Original group	Group for chart
Arthroplasty - Unipolar hemi (cemented) (43.1%)	Cemented
Arthroplasty - Unipolar hemi (uncemented - HA coated) (1.7%)	Uncemented
Arthroplasty - Unipolar hemi (uncemented - uncoated) (12.0%)	
Arthroplasty - Bipolar hemi (cemented) (19.0%)	Cemented
Arthroplasty - Bipolar hemi (uncemented - HA coated) (2.7%)	Uncemented
Arthroplasty - Bipolar hemi (uncemented - uncoated) (1.9%)	
Arthroplasty - THR (cemented) (7.4%)	Cemented
Arthroplasty - THR (uncemented - HA coated) (1.0%)	Uncemented
Arthroplasty - THR (uncemented - uncoated) (1.4%)	
Internal fixation – SHS (4.2%)	Excluded
Internal fixation - Sliding Hip Screw (0.4%)	
Internal fixation - Cannulated Screws (0.3%)	
Internal fixation – Screws (2.1%)	
Internal fixation - IM nail (short) (<0.1%)	
Internal fixation - IM nail (long) (<0.1%)	
Other (0.6%)	
No operation performed (2.1%)	

Total number of cases included: 29,582
All 180 hospitals included in chart.

Chart 15 – Total hip replacements for displaced intracapsular fractures

Description: Hospitals ranked by the percentage of eligible cases who received total hip replacement (THR) surgery. Cases were eligible if they received surgery for an intracapsular displaced fracture, had an AMTS greater than 7, an ASA Grade of 3 or less and were able to walk outdoors with one aid or no aids.
Fields Used: *Operation, Fracture Type, Walking Ability Outdoors, ASA Grade, AMTS (pre-op).*
Groups: Cases who received any total hip replacement surgery are grouped as "Total Hip Replacement'. All other operations grouped as 'Other Operation'.

Total number of cases included: 10,141

168 hospitals included in chart (12 hospitals with less than 10 eligible cases were excluded).

Chart 16 – Intertrochanteric fractures

Description: Hospitals ranked by the percentage of cases with intertrochanteric fractures who receive internal fixation.
Fields Used: *Fracture Type, Operation*
Groups:

Percentages are for those cases with intertrochanteric fractures

Original group	Group for chart
Arthroplasty - Unipolar hemi (cemented)	Arthroplasty (1.2%)
Arthroplasty - Unipolar hemi (uncemented - HA coated)	
Arthroplasty - Unipolar hemi (uncemented - uncoated)	
Arthroplasty - Bipolar hemi (cemented)	
Arthroplasty - Bipolar hemi (uncemented - HA coated)	
Arthroplasty - Bipolar hemi (uncemented - uncoated)	
Arthroplasty - THR (cemented)	
Arthroplasty - THR (uncemented - HA coated)	
Arthroplasty - THR (uncemented - uncoated	
Internal fixation – SHS (74.9%)	Internal fixation - SHS
Internal fixation - Sliding Hip Screw (9.3%)	
Internal fixation - Cannulated Screws (0.1%)	Internal fixation - Screws
Internal fixation – Screws (0.2%)	
Internal fixation - IM nail (short) (4.8%)	Internal fixation - IM nail (short)
Internal fixation - IM nail (long) (7.1%)	Internal fixation - IM nail (long)
Other (0.5%)	Other
No operation performed (1.8%)	No operation performed

Total number of cases included: 21532
All 180 hospitals included in chart.

Chart 17 – Subtrochanteric fractures

Description: Hospitals ranked by the percentage of cases with subtrochanteric fractures who receive internal fixation.
Fields Used: *Fracture Type, Operation*
Groups:
Percentages are for those cases with subtrochanteric fractures

Original group	Group for chart
Arthroplasty - Unipolar hemi (cemented)	Arthroplasty (0.8%)
Arthroplasty - Unipolar hemi (uncemented - HA coated)	
Arthroplasty - Unipolar hemi (uncemented - uncoated)	
Arthroplasty - Bipolar hemi (cemented)	
Arthroplasty - Bipolar hemi (uncemented - HA coated)	
Arthroplasty - Bipolar hemi (uncemented - uncoated)	
Arthroplasty - THR (cemented)	
Arthroplasty - THR (uncemented - HA coated)	
Arthroplasty - THR (uncemented - uncoated	
Internal fixation – SHS (19.4%)	Internal fixation - SHS

Internal fixation - Sliding Hip Screw (1.9%)	
Internal fixation - Cannulated Screws (<0.1%)	Internal fixation - Screws
Internal fixation – Screws (<0.1%)	
Internal fixation - IM nail (short) (3.6%)	Internal fixation - IM nail (short)
Internal fixation - IM nail (long) (69.7%)	Internal fixation - IM nail (long)
Other (2.0%)	Other
No operation performed (2.2%)	No operation performed

Total number of cases included: 3297
148 hospitals included in chart (32 hospitals with less than 10 eligible cases were excluded).

Chart 18 – Development of pressure ulcers (Blue Book Standard 3)

Description: Hospitals ranked by the percentage of eligible cases who developed pressure ulcers. Cases are eligible if they did not die in hospital (that is, if DischargeWardDestination and DischargeTrustDestination are not 'Dead').
Fields Used: *Pressure Ulcers, Discharge Ward Destination, Discharge Trust Destination*
Total number of cases included: 56,068
All 180 hospitals included in chart.

Chart 19 – Pre-operative medical assessments (Blue Book Standard 4)

Description: Hospitals ranked by the percentage of cases who underwent any pre-operative medical assessment.
Fields Used: *Pre-operative Medical Assessment*
Groups: As multiple responses were possible for this field cases 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'.

Total number of cases included: 59,529
DGE, POW, SOU, BRO, MOR and WMU agreed to exclusion from this chart because they misinterpreted the pre-operative medical assessment field.

Chart 20 – Bone health assessment and treatment at discharge (Blue Book Standard 5)

Description: Hospitals ranked by the percentage of eligible cases who were already receiving bone protection medication, started bone protection medication, were assessed for bone protection medication or were awaiting DXA scan or bone clinic assessment. Cases were eligible if they did not die in hospital (that is, if DischargeWardDestination and DischargeTrustDestination are not 'Dead').
Fields Used: *Anti Resorptive Therapy*, *Discharge Ward Destination, Discharge Trust Destination*
Groups: As multiple responses were possible for this field, cases 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'.

Total number of cases included: 56,068
All 180 hospitals included in chart.

Chart 21 – Specialist falls assessment (Blue Book Standard 6)

Description: Hospitals ranked by the percentage of eligible cases who had received or were awaiting a falls assessment. Cases were eligible if they did not die in hospital. (DischargeWardDestination or DischargeTrustDestination is 'Dead')
Fields Used: *Falls Assessment, Discharge Ward Destination, Discharge Trust Destination*
Total number of cases included: 56,068
All 180 hospitals included in chart.

Chart 22 – Length of acute and post-acute Trust stay (NHFD data)

Description: Hospitals ranked by total mean length of stay (mean acute stay plus mean post-acute stay). This chart uses the discharge data slice.
Fields Used: *Admission Time to A&E; Admission Time to Orthopaedic Ward; Discharge Time from Ward; Discharge Time from Trust.*
Calculation: Acute stay is calculated as time from admission to A&E to discharge from orthopaedic ward. If admission to A&E is missing then acute stay is estimated as the time from admission to orthopaedic ward to discharge from orthopaedic ward. Post-acute stay is calculated as the difference between *Discharge Time from Ward* and *Discharge Time from Trust*.
Total number of cases included: 55,650 (cases with missing discharge ward date or times outside of 0 to 365 days are excluded)

179 hospitals included in chart (WWG is excluded because length of stay data is missing for 93% of patients).
Hospital Issues: CHS, STR and WRG have no dedicated orthopaedic ward. For these hospitals acute stay is measured by Trust stay.

Chart 23 – Superspell (Third party data sources)

Description: Hospitals ranked by overall length of NHS stay ("superspell"). This chart is based on data from 2011 to 2012. This was the most recently available data for England. This chart uses HES data for England, PEDW data for Wales and NHFD data for Northern Ireland.
The NHFD discharge time from ward, discharge time from trust and discharge time from NHS fields are considered to be accurate for Northern Ireland. For patients admitted into the Northern Irish hospitals between 1 April 2011 and 31 March 2012, these fields are well completed: discharge time from ward (99.8% complete), discharge time from trust (99.0% complete), discharge time from NHS (98.5% complete).
NHFD Fields Used (Northern Ireland): *Admission Time to A&E; Admission Time to Orthopaedic Ward; Discharge Time from Ward; Discharge Time from Trust; Discharge Time from NHS.*
Calculation (Northern Ireland): Acute stay is time of admission to A&E to discharge from orthopaedic ward. Post-acute stay is time of discharge from orthopaedic ward to discharge from trust. Rehab stay is time of discharge from trust to time of discharge from NHS. Cases where any stay is less than 0 days or more than 365 days are excluded.
Total number of cases included: 61,637

175 hospitals included in chart. All hospitals for which data were provided are included.

Chart 24 – Discharge destination from Trust

Description: Hospitals ranked by the percentage of cases who were discharged to their own home or sheltered housing. This chart uses the discharge data slice.
Fields Used: *Discharge Trust Destination, Discharge Trust Date*
Groups: One case is categorised according to the old category "Residential care/Nursing home/LTC hospital". It is unclear whether this case should fall into the new category "Residential care" or "Nursing care". Discharge destination from trust is set to unknown for this case.

Total number of cases included: 57,193
All 180 hospitals included in chart.

Chart 25 – Re-operation within 30 days

Description: Hospitals ranked by the percentage of eligible cases who underwent re-operation within 30 days of admission. This chart uses the discharge data slice. Cases are eligible if they underwent any operation.
Fields Used: *30 Day Reoperation, Operation*
Groups: Cases with any response indicating that re-operation had occurred are grouped as 'Re-operation within 30 days'. Cases with the response 'None' are grouped as 'No reoperation within 30 days'. Cases with no response or the response 'Unknown' are grouped as 'Unknown'.

Total number of cases included: 55,627
All 180 hospitals included in chart.

Chart 26 – Follow up data completeness at 30 days

Description: Hospitals ranked by the percentage of complete follow-up fields for eligible cases. Cases were eligible if their status at 30 days was not dead. Data is taken from 1st December 2011 to 30th November 2012 in line with the follow up data completeness chart for 120 days. A field is considered complete if it is not missing and the response is not "Unknown" (all of the 30 day fields have an option "Unknown").
Fields Used: *Residential Status (30 days); Walking Ability Indoors (30 days); Walking Ability Outdoors (30 days); Accompaniment to Walk Indoors (30 days); Accompaniment to Walk Outdoors (30 days); Bone Therapy Medication (30 days);*
Calculation: Number of completed fields divided by the number of fields that should have been completed.
All 180 hospitals included in chart.

Chart 27 – Follow up data completeness at 120 days

Description: Hospitals ranked by the percentage of completed follow-up fields for eligible cases. Cases were eligible if their status at 120 days was not dead. Assume that the extract data is 1 April 2013. Data is taken from 1st December 2011 to 30th November 2012 to ensure all cases had been admitted 120 days before data was extracted. A field is considered complete if it is not missing and the response is not "Unknown" (all of the 120 day fields have an option "Unknown").
Fields Used: *Residential Status (120 days); Walking Ability Indoors (120 days); Walking Ability Outdoors (120 days); Accompaniment to Walk Indoors (120 days); Accompaniment to Walk Outdoors (120 days); Bone Therapy Medication (120 days);*
Calculation: Number of completed fields divided by the number of fields that should have been completed.
All 180 hospitals included in chart.

Chart 33 – BPT achievement

Description: Hospitals ranked by the percentage of cases who meet all of the eligibility requirements for BPT uplift. This chart is based on the discharge data slice. Only English hospitals are included.
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: As described above (chart 28) there are 9 criteria which must be met in order for a case to be eligible for BPT uplift.
Groups: In this chart cases are grouped by the number of criteria which they met. No patients met zero criteria.

Total number of cases included: 52,685

163 hospitals included in chart.