

Supplementary Material

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Table of Contents

Dates used for English public holidays.....	2
<i>Supplementary Figures.....</i>	3
Figure a. New consultant volume trajectories for consultants reaching threshold volumes of annual revision hip arthroplasty.....	3
<i>Supplementary Tables.....</i>	5
Table i. Centiles of consultant yearly revision hip arthroplasty case volume by indication.....	5
Table ii: Proportion of revision hip arthroplasty cases where lead surgeon is responsible consultant by indication and year	6
<i>Consultant revision hip replacement volume by National Joint Registry region</i>	7
Table iii: Number of revision hip arthroplasties and annual consultant volumes – South West.....	7
Table iv: Number of revision hip arthroplasties and annual consultant volumes – South East & East	8
Table v: Number of revision hip arthroplasties and annual consultant volumes – North East.....	9
Table vi: Number of revision hip arthroplasties and annual consultant volumes – North West & Wales	10
Table vii: Centiles of consultant annual revision hip arthroplasty case volume – South West.....	11
Table viii: Centiles of consultant annual revision hip arthroplasty case volume – South East & East	12
Table ix. Centiles of consultant annual revision hip arthroplasty case volume – North East	13
Table x. Centiles of consultant annual revision hip arthroplasty case volume – North West & Wales.....	14

Dates used for English public holidays

The following dates were defined as non-weekend English public and bank holidays during the study period.

22/04/2011, 25/04/2011, 29/04/2011, 02/05/2011, 30/05/2011, 29/08/2011, 26/12/2011, 27/12/2011, 02/01/2012, 06/04/2012, 09/04/2012, 07/05/2012, 04/06/2012, 05/06/2012, 27/08/2012, 25/12/2012, 26/12/2012, 01/01/2013, 29/03/2013, 01/04/2013, 06/05/2013, 27/05/2013, 26/08/2013, 25/12/2013, 26/12/2013, 01/01/2014, 18/04/2014, 21/04/2014, 05/05/2014, 26/05/2014, 25/08/2014, 25/12/2014, 26/12/2014, 01/01/2015, 03/04/2015, 06/04/2015, 04/05/2015, 25/05/2015, 31/08/2015, 25/12/2015, 28/12/2015, 01/01/2016, 25/03/2016, 28/03/2016, 02/05/2016, 30/05/2016, 29/08/2016, 26/12/2016, 27/12/2016, 02/01/2017, 14/04/2017, 17/04/2017, 01/05/2017, 29/05/2017, 28/08/2017, 25/12/2017, 26/12/2017, 01/01/2018, 30/03/2018, 02/04/2018, 07/05/2018, 28/05/2018, 27/08/2018, 25/12/2018, 26/12/2018, 01/01/2019, 19/04/2019, 22/04/2019, 06/05/2019, 27/05/2019, 26/08/2019, 25/12/2019, 26/12/2019.

Supplementary Figures

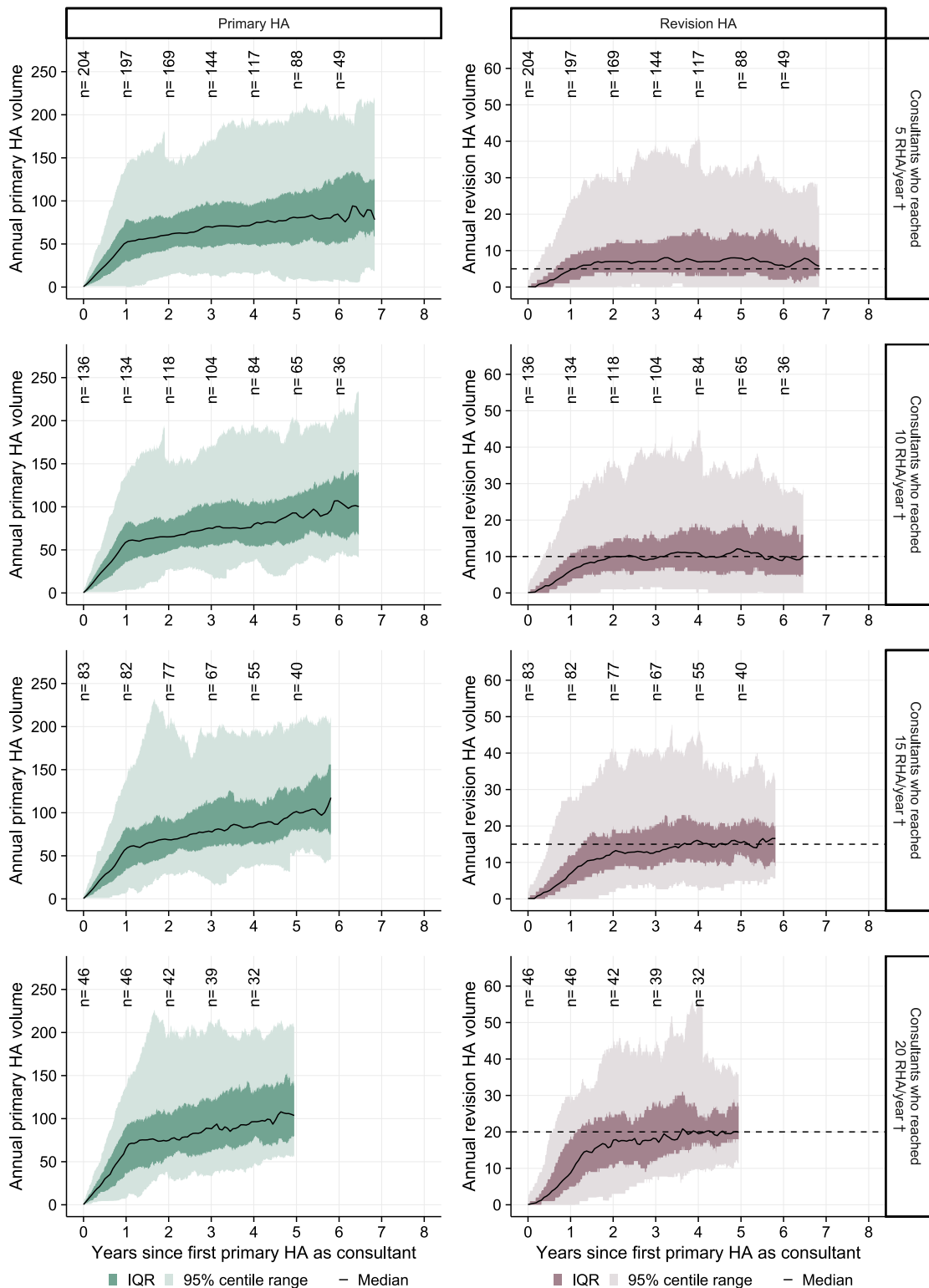


Fig a. Revision hip arthroplasty (RHA) volume trajectories for new consultants who began a primary hip arthroplasty (PHA) practice on or after 1 April 2012, and reached the indicated annual threshold volumes of RHA (shown in y-axis side panel *) prior to 31 December 2019. The time at which more than 50% of consultants consistently maintained each given threshold volume can be approximated by the intersection of the median line with the dashed horizontal

threshold line. Annotation indicates the denominator of consultants available for summarization at each follow-up period. Summary distributions are not presented after the denominator reaches less than 25 consultants.

Example interpretation of the second row of trajectory plots panel – ‘Consultants who reached 10 RHA/year’: There were 136 new consultants who, at any time between 1 April 2012 and 31 December 2019, reached an annual volume of 10 or more RHA per year. We then observe this group of 136 consultants’ annual volumes over time from the date when they first started a PHA consultant practice (which is unique for every consultant) until their last recorded PHA or until being censored (see Methods). After one year in practice, there were 134 consultants (2 had been censored) in whom the median RHA volume performed was 6/year (interquartile range (IQR) 3 to 11, 95% centile range 0 to 25). There were 118 consultants who had been in practice for two years in which the median RHA volume performed was 10/year (IQR 5 to 15, 95% centile range 1 to 35). The dashed threshold line intersects the median line at two years, indicating that half of the cohort of all consultants who ever reached an RHA volume of 10/year were maintaining an annual volume of 10/year after two years in practice.

Supplementary Tables

Table i. Centiles of consultant yearly revision hip arthroplasty case volume by indication.

Indication and centile of consultant yearly case volume	Number of RHA cases needed for a consultant to reach the specified volume centile by year (cumulative % of RHA cases performed by all consultants who recorded the indicated volume and below)*						
	2013	2014	2015	2016	2017	2018	2019
Aseptic loosening							
Number of consultants†	n = 633	n = 632	n = 618	n = 628	n = 617	n = 617	n = 597
25th	2 (8.0)	2 (8.3)	2 (8.7)	2 (10.5)	2 (9.6)	2 (11.8)	2 (12.0)
50th	4 (19.1)	4 (20.4)	4 (19.6)	4 (23.7)	4 (24.8)	3 (18.9)	4 (28.8)
75th	8 (40.3)	8 (43.9)	8 (44.7)	7 (42.0)	7 (43.8)	7 (51.1)	6 (46.7)
90th	14 (69.4)	13 (69.8)	13 (72.6)	12 (69.5)	12 (69.5)	10 (70.0)	10 (72.3)
100th (max)	39 (100)	32 (100)	29 (100)	28 (100)	31 (100)	32 (100)	26 (100)
Infection							
Number of consultants†	n = 439	n = 462	n = 499	n = 482	n = 495	n = 517	n = 529
25th	1 (13.4)	1 (11.5)	1 (11.3)	1 (13.1)	1 (13.2)	1 (13.6)	1 (12.8)
50th	2 (27.7)	2 (25.2)	2 (23.8)	2 (24.5)	2 (23.9)	2 (26.8)	2 (27.2)
75th	4 (48.4)	4 (46.7)	4 (46.1)	4 (49.9)	4 (44.8)	4 (45.8)	4 (49.6)
90th	7 (71.9)	7 (71.2)	7 (68.9)	6 (70.3)	7 (68.9)	7 (69.1)	7 (73.8)
100th (max)	33 (100)	20 (100)	22 (100)	20 (100)	21 (100)	28 (100)	31 (100)
Dislocation							
Number of consultants†	n = 487	n = 524	n = 502	n = 523	n = 534	n = 546	n = 546
25th	1 (16.5)	1 (14.6)	1 (14.0)	1 (16.0)	1 (14.6)	1 (15.1)	1 (15.3)
50th	2 (34.3)	2 (33.4)	2 (30.4)	2 (34.5)	2 (29.6)	2 (30.4)	2 (33.6)
75th	3 (49.2)	3 (47.6)	4 (60.1)	3 (50.9)	4 (56.1)	4 (58.7)	3 (50.1)
90th	6 (74.8)	5 (74.8)	5 (73.4)	5 (73.4)	6 (82.3)	6 (78.5)	5 (73.2)
100th (max)	16 (100)	16 (100)	13 (100)	13 (100)	16 (100)	13 (100)	14 (100)
Other aseptic							
Number of consultants†	n = 462	n = 486	n = 463	n = 446	n = 435	n = 396	n = 393
25th	1 (12.5)	1 (17.1)	1 (20.7)	1 (18.3)	1 (23.0)	1 (25.9)	1 (28.4)
50th	2 (27.0)	2 (33.2)	2 (37.7)	2 (41.3)	2 (47.1)	1 (25.9)	1 (28.4)
75th	4 (47.2)	3 (52.0)	3 (52.3)	3 (59.2)	3 (65.5)	3 (65.6)	2 (53.1)
90th	7 (71.1)	5 (70.1)	5 (77.5)	5 (74.6)	4 (77.3)	4 (77.6)	4 (79.0)
100th (max)	25 (100)	21 (100)	16 (100)	12 (100)	10 (100)	14 (100)	18 (100)
Trauma							
Number of consultants†	n = 450	n = 478	n = 463	n = 513	n = 508	n = 495	n = 516
25th	1 (22.6)	1 (17.1)	1 (14.3)	1 (18.8)	1 (16.9)	1 (13.4)	1 (14.3)
50th	1 (22.6)	2 (34.5)	2 (36.3)	2 (38.0)	2 (33.4)	2 (29.8)	2 (31.2)
75th	3 (58.3)	3 (52.6)	3 (47.8)	3 (53.6)	3 (46.3)	4 (58.9)	3 (46.7)
90th	4 (72.3)	5 (75.2)	6 (81.1)	5 (73.5)	6 (77.6)	6 (76.8)	6 (77.5)
100th (max)	23 (100)	20 (100)	23 (100)	16 (100)	23 (100)	22 (100)	17 (100)
ARMD							
Number of consultants†	n = 339	n = 326	n = 347	n = 325	n = 293	n = 315	n = 296
25th	1 (8.8)	1 (11.2)	1 (14.4)	1 (14.2)	1 (15.2)	1 (16.6)	1 (19.1)
50th	2 (18.5)	2 (22.3)	2 (29.6)	2 (28.9)	2 (28.5)	2 (32.6)	2 (36.1)
75th	4 (33.6)	4 (36.6)	4 (50.5)	3 (39.3)	3 (42.2)	4 (54.8)	3 (51.8)
90th	10 (58.7)	9 (67.2)	6 (63.0)	7 (69.1)	6 (64.2)	6 (75.5)	5 (66.8)
100th (max)	65 (100)	43 (100)	58 (100)	41 (100)	34 (100)	19 (100)	20 (100)

*Due to clustering of consultant volumes around low numbers of RHA, the yearly volumes needed to reach adjacent volume centiles may be identical for some indications. The cumulative RHA volume percentage reported in parentheses includes cases by those consultants who recorded equal to the indicated yearly volumes (which may also include consultants in higher volume centiles due to clustering in lower volumes) and all cases by those consultants who recorded lower yearly volumes.

†The number of unique responsible consultants who submitted one or more RHAs for the given indication in the calendar year on which yearly volume centile distributions are calculated. 2012 data is not shown as includes only April to December cases. Example interpretation – in 2016 there were 482 consultants who recorded one or more RHA cases for infection; to reach the 90th case volume centile (i.e. the top 10% of the 482 consultants ordered by number of RHAs for infection cases each recorded in 2016), a consultant would need to have recorded 6 or more RHAs for infection; in 2016, 69.5% of RHA cases for infection (1,010 of 1,453 (the number of revisions for infection in 2016)) were performed collectively by all consultants who had recorded 6 or fewer cases for infection.

ARMD, adverse reaction to metal debris; RHA, revision hip arthroplasty.

Table ii. Proportion of revision hip arthroplasty cases where the responsible consultant and the lead surgeon are recorded as the same individual in the National Joint Registry (April 2012 to December 2019).

Indication	Year	Total RHA cases	Lead surgeon is responsible consultant, n (%)
All indications	2012	8,160	7,497 (91.9)
	2013	10,213	9,380 (91.8)
	2014	10,174	9,320 (91.6)
	2015	9,864	9,000 (91.2)
	2016	9,341	8,477 (90.8)
	2017	9,357	8,448 (90.3)
	2018	8,996	8,113 (90.2)
Aseptic loosening	2012	3,114	2,900 (93.1)
	2013	3,781	3,503 (92.6)
	2014	3,708	3,456 (93.2)
	2015	3,549	3,285 (92.6)
	2016	3,289	2,993 (91.0)
	2017	3,248	2,960 (91.1)
	2018	2,918	2,690 (92.2)
Infection	2012	1,020	915 (89.7)
	2013	1,315	1,182 (89.9)
	2014	1,470	1,286 (87.5)
	2015	1,616	1,435 (88.8)
	2016	1,453	1,292 (88.9)
	2017	1,563	1,360 (87.0)
	2018	1,592	1,385 (87.0)
Dislocation	2012	949	844 (88.9)
	2013	1,261	1,117 (88.6)
	2014	1,371	1,227 (89.5)
	2015	1,347	1,200 (89.1)
	2016	1,329	1,206 (90.7)
	2017	1,457	1,305 (89.6)
	2018	1,467	1,297 (88.4)
Other aseptic	2012	1,309	1,236 (94.4)
	2013	1,435	1,349 (94.0)
	2014	1,257	1,162 (92.4)
	2015	1,089	1,010 (92.7)
	2016	1,052	975 (92.7)
	2017	913	846 (92.7)
	2018	803	734 (91.4)
Trauma	2012	689	598 (86.8)
	2013	998	889 (89.1)
	2014	1,196	1,084 (90.6)
	2015	1,221	1,097 (89.8)
	2016	1,238	1,092 (88.2)
	2017	1,321	1,166 (88.3)
	2018	1,375	1,217 (88.5)
ARMD	2012	1,079	1,004 (93.0)
	2013	1,423	1,340 (94.2)
	2014	1,172	1,105 (94.3)
	2015	1,042	973 (93.4)
	2016	980	919 (93.8)
	2017	855	811 (94.9)
	2018	841	790 (93.9)
	2019	743	693 (93.3)

ARMD, adverse reaction to metal debris; RHA, revision hip arthroplasty.

Consultant revision hip replacement volume by NJR region

Table iii. Number of revision hip arthroplasties and annual consultant volumes – South West.

Variable	Year								All years
	Apr to Dec 2012*	2013	2014	2015	2016	2017	2018	2019	
Revisions, n	2,701	3,251	3,235	3,079	2,965	2,754	2,699	2,567	23,251
Revisions by indication, n (%)									
Aseptic loosening	937 (34.7)	1,140 (35.1)	1,077 (33.3)	1,052 (34.2)	962 (32.4)	856 (31.1)	824 (30.5)	756 (29.5)	7,604 (32.7)
Infection	328 (12.1)	370 (11.4)	483 (14.9)	484 (15.7)	449 (15.1)	501 (18.2)	492 (18.2)	504 (19.6)	3,611 (15.5)
Dislocation	310 (11.5)	400 (12.3)	419 (13.0)	428 (13.9)	415 (14.0)	420 (15.3)	389 (14.4)	374 (14.6)	3,155 (13.6)
Other aseptic	382 (14.1)	442 (13.6)	358 (11.1)	329 (10.7)	312 (10.5)	259 (9.4)	237 (8.8)	219 (8.5)	2,538 (10.9)
Trauma	257 (9.5)	337 (10.4)	478 (14.8)	460 (14.9)	466 (15.7)	453 (16.4)	487 (18.0)	472 (18.4)	3,410 (14.7)
ARMD	487 (18.0)	562 (17.3)	420 (13.0)	326 (10.6)	361 (12.2)	265 (9.6)	270 (10.0)	242 (9.4)	2,933 (12.6)
Median annual consultant volume of RHA prior to case (IQR)†									
All revisions	29 (18 to 50)	30 (18 to 49)	25 (14 to 42)	24 (14 to 38)	23 (13 to 35)	22 (13 to 35)	20 (12 to 33)	20 (11 to 29)	24 (14 to 39)
Aseptic loosening	12 (7 to 19)	12 (7 to 18)	10 (5 to 16)	10 (5 to 14)	9 (5 to 13)	8 (5 to 12)	7 (3 to 11)	6 (3 to 11)	9 (5 to 14)
Infection	4 (2 to 7)	4 (1 to 7)	4 (1 to 7)	4 (2 to 7)	3 (1 to 6)	4 (2 to 7)	4 (2 to 10)	4 (1 to 9)	4 (1 to 8)
Dislocation	4 (2 to 6)	4 (1 to 6)	2 (1 to 5)	3 (1 to 5)	3 (1 to 5)	3 (1 to 5)	2 (1 to 5)	3 (1 to 5)	3 (1 to 5)
Other aseptic	4 (1 to 10)	4 (2 to 9)	3 (1 to 7)	2 (1 to 4)	2 (1 to 5)	2 (1 to 3)	2 (1 to 4)	2 (0 to 3)	3 (1 to 6)
Trauma	2 (1 to 4)	2 (1 to 5)	3 (1 to 5)	4 (2 to 6)	4 (1 to 6)	4 (2 to 6)	4 (2 to 7)	4 (2 to 6)	3 (1 to 6)
ARMD	9 (3 to 25)	12 (4 to 19)	8 (3 to 16)	5 (2 to 10)	4 (1 to 9)	4 (1 to 8)	3 (1 to 6)	4 (1 to 7)	6 (2 to 12)

*2012 includes April to December data only.

†This is the number of revisions the responsible consultant had undertaken, on average, across all RHA cases recorded for the specified indication.

ARMD, adverse reaction to metal debris; IQR, interquartile range; RHA, revision hip arthroplasty.

Table iv. Number of revision hip arthroplasties and annual consultant volumes – South East & East.

Variable	Year								All years
	Apr to Dec 2012*	2013	2014	2015	2016	2017	2018	2019	
Revisions, n	1,851	2,257	2,191	2,280	2,020	1,997	1,951	1,856	16,403
Revisions by indication, n (%)									
Aseptic loosening	785 (42.4)	868 (38.5)	819 (37.4)	830 (36.4)	764 (37.8)	703 (35.2)	645 (33.1)	593 (32.0)	6,007 (36.6)
Infection	232 (12.5)	299 (13.2)	324 (14.8)	373 (16.4)	310 (15.3)	351 (17.6)	344 (17.6)	322 (17.3)	2,555 (15.6)
Dislocation	175 (9.5)	261 (11.6)	278 (12.7)	286 (12.5)	255 (12.6)	262 (13.1)	327 (16.8)	291 (15.7)	2,135 (13.0)
Other aseptic	299 (16.2)	302 (13.4)	306 (14.0)	288 (12.6)	252 (12.5)	213 (10.7)	164 (8.4)	168 (9.1)	1,992 (12.1)
Trauma	156 (8.4)	216 (9.6)	227 (10.4)	277 (12.1)	257 (12.7)	293 (14.7)	312 (16.0)	300 (16.2)	2,038 (12.4)
ARMD	204 (11.0)	311 (13.8)	237 (10.8)	226 (9.9)	182 (9.0)	175 (8.8)	159 (8.1)	182 (9.8)	1,676 (10.2)
Median annual consultant volume of RHA prior to case (IQR)†									
All revisions	23 (10 to 47)	22 (11 to 36)	21 (9 to 33)	17 (9 to 32)	16 (8 to 30)	15 (8 to 28)	16 (8 to 27)	15 (7 to 25)	18 (9 to 31)
Aseptic loosening	10 (5 to 19)	9 (4 to 15)	8 (4 to 13)	7 (4 to 12)	7 (3 to 12)	6 (3 to 11)	6 (3 to 9)	6 (3 to 9)	7 (4 to 12)
Infection	3 (1 to 9)	3 (1 to 7)	3 (1 to 6)	4 (1 to 7)	4 (1 to 7)	4 (1 to 9)	4 (1 to 7)	3 (1 to 6)	3 (1 to 7)
Dislocation	2 (1 to 3)	2 (1 to 4)	2 (1 to 3)	2 (1 to 3)	2 (0 to 3)	2 (1 to 3)	2 (1 to 4)	2 (1 to 4)	2 (1 to 4)
Other aseptic	4 (1 to 8)	4 (1 to 7)	3 (1 to 6)	2 (1 to 5)	2 (1 to 4)	2 (0 to 4)	1 (0 to 3)	1 (0 to 3)	2 (1 to 5)
Trauma	2 (0 to 3)	1 (0 to 3)	1 (0 to 3)	2 (1 to 4)	2 (0 to 4)	2 (1 to 4)	2 (1 to 4)	2 (1 to 4)	2 (1 to 4)
ARMD	8 (2 to 17)	6 (2 to 15)	5 (2 to 12)	3 (1 to 6)	3 (1 to 6)	4 (1 to 7)	3 (1 to 5)	3 (1 to 6)	4 (1 to 9)

*2012 includes April to December data only.

†This is the number of revisions the responsible consultant had undertaken, on average, across all RAR cases recorded for the specified indication.

ARMD, adverse reaction to metal debris; IQR, interquartile range; RHA, revision hip arthroplasty.

Table v. Number of revision hip arthroplasties and annual consultant volumes – North East.

Variable	Year								All years
	Apr to Dec 2012*	2013	2014	2015	2016	2017	2018	2019	
Revisions, n	1,875	2,387	2,269	2,203	2,094	2,313	2,186	2,198	17,525
Revisions by indication, n (%)									
Aseptic loosening	722 (38.5)	893 (37.4)	855 (37.7)	828 (37.6)	761 (36.3)	830 (35.9)	734 (33.6)	746 (33.9)	6,369 (36.3)
Infection	209 (11.1)	326 (13.7)	301 (13.3)	345 (15.7)	328 (15.7)	387 (16.7)	368 (16.8)	431 (19.6)	2,695 (15.4)
Dislocation	284 (15.1)	349 (14.6)	358 (15.8)	355 (16.1)	357 (17.0)	422 (18.2)	414 (18.9)	395 (18.0)	2,934 (16.7)
Other aseptic	290 (15.5)	296 (12.4)	277 (12.2)	217 (9.9)	228 (10.9)	197 (8.5)	171 (7.8)	163 (7.4)	1,839 (10.5)
Trauma	141 (7.5)	231 (9.7)	237 (10.4)	245 (11.1)	247 (11.8)	315 (13.6)	315 (14.4)	315 (14.3)	2,046 (11.7)
ARMD	229 (12.2)	292 (12.2)	241 (10.6)	213 (9.7)	173 (8.3)	162 (7.0)	184 (8.4)	148 (6.7)	1,642 (9.4)
Median annual consultant volume of RHA prior to case (IQR)†									
All revisions	21 (12 to 37)	21 (11 to 36)	20 (11 to 33)	21 (13 to 32)	18 (11 to 32)	18 (11 to 30)	18 (10 to 27)	19 (11 to 31)	19 (11 to 32)
Aseptic loosening	10 (5 to 15)	8 (4 to 15)	8 (4 to 13)	8 (4 to 12)	8 (4 to 14)	8 (4 to 13)	6 (3 to 10)	7 (4 to 11)	8 (4 to 13)
Infection	4 (1 to 8)	3 (1 to 8)	3 (1 to 6)	4 (1 to 6)	3 (1 to 6)	3 (2 to 7)	3 (1 to 6)	4 (2 to 7)	3 (1 to 7)
Dislocation	3 (1 to 5)	3 (1 to 6)	3 (1 to 5)	3 (1 to 6)	3 (1 to 5)	3 (2 to 5)	3 (1 to 6)	4 (2 to 6)	3 (1 to 6)
Other aseptic	4 (1 to 8)	3 (1 to 6)	2 (1 to 5)	2 (1 to 4)	2 (1 to 4)	2 (1 to 3)	2 (1 to 3)	1 (0 to 4)	2 (1 to 5)
Trauma	1 (0 to 2)	1 (0 to 3)	2 (1 to 4)	3 (1 to 5)	2 (1 to 4)	2 (1 to 4)	3 (1 to 5)	3 (1 to 5)	2 (1 to 4)
ARMD	4 (1 to 12)	4 (2 to 12)	5 (1 to 8)	3 (1 to 9)	3 (1 to 6)	2 (1 to 6)	3 (1 to 5)	3 (1 to 5)	3 (1 to 8)

*2012 includes April to December data only.

†This is the number of revisions the responsible consultant had undertaken, on average, across all RAR cases recorded for the specified indication.

ARMD, adverse reaction to metal debris; IQR, interquartile range; RHA, revision hip arthroplasty.

Table vi. Number of revision hip arthroplasties and annual consultant volumes – North West & Wales.

Variable	Year								All years
	Apr to Dec 2012*	2013	2014	2015	2016	2017	2018	2019	
Revisions, n	1,638	2,209	2,421	2,298	2,261	2,293	2,160	2,094	17,374
Revisions by indication, n (%)									
Aseptic loosening	627 (38.3)	829 (37.5)	939 (38.8)	837 (36.4)	802 (35.5)	859 (37.5)	715 (33.1)	700 (33.4)	6,308 (36.3)
Infection	234 (14.3)	303 (13.7)	354 (14.6)	414 (18.0)	366 (16.2)	324 (14.1)	388 (18.0)	347 (16.6)	2,730 (15.7)
Dislocation	171 (10.4)	246 (11.1)	310 (12.8)	278 (12.1)	301 (13.3)	353 (15.4)	337 (15.6)	355 (17.0)	2,351 (13.5)
Other aseptic	332 (20.3)	388 (17.6)	311 (12.8)	254 (11.1)	260 (11.5)	244 (10.6)	231 (10.7)	211 (10.1)	2,231 (12.8)
Trauma	130 (7.9)	207 (9.4)	243 (10.0)	239 (10.4)	268 (11.9)	260 (11.3)	261 (12.1)	310 (14.8)	1,918 (11.0)
ARMD	144 (8.8)	236 (10.7)	264 (10.9)	276 (12.0)	264 (11.7)	253 (11.0)	228 (10.6)	171 (8.2)	1,836 (10.6)
Median annual consultant volume of RHA prior to case (IQR)†									
All revisions	26 (13 to 44)	23 (10 to 39)	23 (10 to 35)	22 (11 to 33)	20 (10 to 32)	20 (10 to 31)	19 (9 to 29)	18 (9 to 29)	21 (10 to 33)
Aseptic loosening	10 (5 to 16)	9 (4 to 15)	9 (4 to 14)	9 (4 to 14)	8 (3 to 13)	9 (4 to 15)	8 (3 to 13)	6 (3 to 13)	9 (4 to 14)
Infection	4 (2 to 7)	4 (1 to 6)	3 (1 to 7)	4 (1 to 7)	4 (1 to 7)	4 (1 to 6)	3 (1 to 7)	3 (1 to 6)	3 (1 to 7)
Dislocation	3 (2 to 5)	2 (1 to 5)	2 (1 to 4)	2 (1 to 4)	2 (1 to 4)	2 (1 to 4)	3 (1 to 5)	3 (1 to 5)	2 (1 to 4)
Other aseptic	5 (2 to 11)	5 (2 to 14)	3 (1 to 7)	2 (1 to 5)	2 (1 to 5)	2 (1 to 4)	1 (0 to 3)	1 (0 to 3)	3 (1 to 6)
Trauma	1 (0 to 3)	2 (0 to 3)	2 (1 to 3)	2 (1 to 4)	2 (1 to 4)	2 (1 to 4)	2 (1 to 4)	2 (1 to 4)	2 (1 to 4)
ARMD	3 (1 to 13)	4 (1 to 8)	4 (2 to 8)	4 (1 to 10)	4 (1 to 12)	4 (2 to 11)	3 (1 to 7)	4 (1 to 7)	4 (1 to 9)

*2012 includes April to December data only.

†This is the number of revisions the responsible consultant had undertaken, on average, across all RAR cases recorded for the specified indication.

ARMD, adverse reaction to metal debris; IQR, interquartile range; RHA, revision hip arthroplasty.

Table vii. Centiles of consultant annual revision hip arthroplasty case volume – South West.

Indication and centile of consultant yearly case volume	Number of RHA cases needed for a consultant to reach the specified volume centile by year (cumulative % of RHA cases performed by all consultants who recorded the indicated volume and below)*						
	2013	2014	2015	2016	2017	2018	2019
All RHA indications							
Number of consultants†	n = 275	n = 285	n = 273	n = 296	n = 278	n = 284	n = 296
25th	1 (2.5)	2 (4.3)	2 (4.2)	1 (2.6)	1 (2.8)	1 (3.2)	1 (3.5)
50th	5 (9.0)	6 (9.3)	6 (9.5)	5 (10.6)	5 (10.0)	5 (10.6)	4 (9.7)
75th	18 (31.3)	18 (38.1)	18 (39.1)	15 (34.5)	15 (33.1)	14 (33.2)	13 (35.8)
90th	32 (66.4)	31 (63.7)	29 (67.2)	25 (66.1)	25 (65.4)	25 (65.7)	21 (66.7)
100th (max)	87 (100)	76 (100)	61 (100)	55 (100)	72 (100)	61 (100)	85 (100)
Aseptic loosening							
Number of consultants†	n = 189	n = 198	n = 185	n = 191	n = 178	n = 186	n = 189
25th	1 (4.6)	2 (10.6)	2 (7.8)	2 (10.7)	1 (5.3)	1 (6.1)	1 (6.5)
50th	4 (17.3)	4 (20.7)	4 (19.0)	4 (24.2)	3 (18.1)	3 (20.4)	3 (23.4)
75th	9 (43.2)	7 (41.7)	8 (46.7)	7 (44.3)	7 (46.1)	6 (46.0)	5 (48.8)
90th	15 (71.1)	12 (70.8)	13 (77.3)	11 (72.0)	11 (80.4)	11 (74.6)	9 (77.4)
100th (max)	33 (100)	24 (100)	25 (100)	26 (100)	25 (100)	17 (100)	22 (100)
Infection							
Number of consultants†	n = 142	n = 148	n = 150	n = 147	n = 156	n = 153	n = 161
25th	1 (18.9)	1 (12.2)	1 (11.6)	1 (12.7)	1 (14.0)	1 (13.8)	1 (12.7)
50th	2 (33.0)	2 (23.4)	2 (23.6)	2 (22.9)	2 (22.0)	2 (25.2)	2 (26.6)
75th	3 (44.3)	4 (44.1)	4 (45.9)	4 (49.2)	4 (39.7)	4 (42.7)	4 (50.2)
90th	6 (71.9)	7 (70.2)	8 (74.6)	6 (73.9)	7 (69.5)	7 (67.9)	6 (63.1)
100th (max)	17 (100)	18 (100)	16 (100)	20 (100)	18 (100)	28 (100)	31 (100)
Dislocation							
Number of consultants†	n = 148	n = 161	n = 154	n = 167	n = 156	n = 163	n = 163
25th	1 (15.8)	1 (13.8)	1 (12.4)	1 (17.3)	1 (17.1)	1 (18.5)	1 (20.3)
50th	2 (31.8)	2 (32.9)	2 (30.1)	2 (35.7)	2 (28.6)	2 (38.0)	2 (41.2)
75th	3 (43.8)	3 (51.6)	3 (48.4)	3 (51.6)	4 (51.7)	3 (53.5)	3 (59.6)
90th	6 (71.0)	5 (76.4)	6 (80.6)	6 (82.4)	6 (78.1)	5 (72.5)	4 (69.3)
100th (max)	12 (100)	13 (100)	11 (100)	11 (100)	16 (100)	8 (100)	11 (100)
Other aseptic							
Number of consultants†	n = 154	n = 146	n = 134	n = 143	n = 130	n = 124	n = 115
25th	1 (14.7)	1 (18.4)	1 (18.5)	1 (21.5)	1 (23.9)	1 (27.8)	1 (28.8)
50th	2 (30.1)	2 (36.9)	2 (33.7)	2 (44.6)	2 (54.8)	1 (27.8)	1 (28.8)
75th	4 (51.1)	3 (56.1)	3 (52.0)	3 (66.7)	2 (54.8)	2 (52.3)	2 (51.6)
90th	6 (68.1)	4 (68.4)	5 (76.9)	4 (78.2)	3 (73.4)	4 (81.4)	3 (73.5)
100th (max)	20 (100)	17 (100)	15 (100)	12 (100)	9 (100)	7 (100)	9 (100)
Trauma							
Number of consultants†	n = 136	n = 157	n = 149	n = 159	n = 146	n = 150	n = 147
25th	1 (19.0)	1 (11.7)	1 (11.1)	1 (14.8)	1 (12.8)	1 (10.5)	1 (11.0)
50th	2 (33.8)	2 (24.3)	2 (26.3)	2 (26.0)	2 (24.7)	2 (25.3)	2 (22.9)
75th	3 (52.5)	4 (57.3)	4 (48.7)	4 (49.8)	4 (46.8)	4 (44.6)	4 (45.6)
90th	5 (71.8)	6 (68.6)	6 (76.5)	7 (71.7)	7 (75.1)	7 (75.8)	7 (75.0)
100th (max)	22 (100)	20 (100)	23 (100)	16 (100)	22 (100)	22 (100)	17 (100)
ARMD							
Number of consultants†	n = 123	n = 108	n = 110	n = 119	n = 101	n = 103	n = 104
25th	1 (8.4)	1 (8.6)	1 (14.1)	1 (13.0)	1 (15.1)	1 (13.3)	1 (20.7)
50th	2 (17.6)	2 (20.0)	2 (29.4)	2 (29.1)	2 (34.0)	2 (33.3)	2 (42.1)
75th	5 (30.1)	5 (39.3)	4 (49.7)	4 (47.4)	3 (52.1)	3 (51.1)	3 (55.8)
90th	14 (59.6)	10 (69.5)	7 (69.9)	7 (70.4)	6 (71.7)	5 (73.3)	5 (70.2)
100th (max)	26 (100)	19 (100)	13 (100)	16 (100)	11 (100)	11 (100)	13 (100)

RHA, revision hip arthroplasty.

*Due to clustering of consultant volumes around low numbers of RHA, the yearly volumes needed to reach adjacent volume centiles may be identical for some indications. The cumulative RHA volume percentage reported in parentheses includes cases by those consultants who recorded equal to the indicated yearly volumes (which may also include consultants in higher volume centiles due to clustering in lower volumes) and all cases by those consultants who recorded lower yearly volumes.

†The number of unique responsible consultants who submitted one or more RHA for the given indication in the calendar year on which yearly volume centile distributions are calculated. 2012 data is not shown as includes only April to December cases.

Table viii. Centiles of consultant annual revision hip arthroplasty case volume – South East & East.

Indication and centile of consultant yearly case volume	Number of RHA cases needed for a consultant to reach the specified volume centile by year (cumulative % of RHA cases performed by all consultants who recorded the indicated volume and below)*						
	2013	2014	2015	2016	2017	2018	2019
All RHA indications							
Number of consultants†	n = 251	n = 263	n = 266	n = 289	n = 277	n = 277	n = 265
25th	2 (5.3)	2 (5.8)	2 (5.3)	1 (4.9)	1 (4.3)	1 (4.3)	1 (4.0)
50th	5 (14.8)	4 (12.2)	5 (12.2)	4 (14.5)	4 (13.9)	4 (14.6)	4 (13.5)
75th	12 (32.5)	10 (33.5)	12 (36.1)	9 (33.8)	10 (33.9)	9 (32.2)	10 (40.3)
90th	25 (65.9)	22 (61.3)	21 (64.0)	18 (59.7)	19 (64.3)	18 (62.2)	17 (63.4)
100th (max)	68 (100)	56 (100)	59 (100)	62 (100)	46 (100)	47 (100)	62 (100)
Aseptic loosening							
Number of consultants†	n = 190	n = 188	n = 187	n = 186	n = 177	n = 172	n = 162
25th	1 (6.6)	1 (6.2)	2 (14.7)	1 (8.1)	1 (7.5)	1 (9.6)	1 (8.9)
50th	3 (21.0)	3 (24.8)	3 (22.7)	3 (23.0)	3 (24.0)	2 (17.1)	2 (20.4)
75th	6 (41.9)	6 (46.4)	6 (45.7)	6 (48.0)	5 (42.4)	6 (47.6)	5 (48.7)
90th	11 (68.4)	10 (67.0)	11 (77.7)	9 (68.8)	9 (74.0)	8 (70.5)	8 (69.1)
100th (max)	21 (100)	25 (100)	20 (100)	22 (100)	22 (100)	22 (100)	17 (100)
Infection							
Number of consultants†	n = 102	n = 113	n = 123	n = 108	n = 114	n = 122	n = 130
25th	1 (12.4)	1 (14.2)	1 (11.5)	1 (16.8)	1 (15.1)	1 (18.0)	1 (19.3)
50th	2 (29.8)	2 (30.2)	2 (27.1)	2 (27.7)	2 (25.9)	1 (18.0)	2 (36.0)
75th	4 (57.9)	4 (50.0)	3 (44.8)	4 (49.0)	3 (37.9)	3 (39.2)	3 (49.1)
90th	6 (68.9)	6 (72.5)	5 (64.9)	7 (76.1)	8 (64.1)	6 (64.8)	5 (68.9)
100th (max)	16 (100)	18 (100)	22 (100)	19 (100)	16 (100)	19 (100)	14 (100)
Dislocation							
Number of consultants†	n = 121	n = 133	n = 136	n = 131	n = 126	n = 139	n = 143
25th	1 (23.0)	1 (23.4)	1 (23.1)	1 (28.2)	1 (23.3)	1 (21.4)	1 (25.4)
50th	2 (46.7)	2 (45.0)	2 (45.5)	1 (28.2)	2 (46.2)	1 (21.4)	1 (25.4)
75th	2 (46.7)	3 (65.5)	3 (60.1)	2 (49.4)	3 (61.1)	3 (50.5)	3 (64.9)
90th	5 (81.2)	4 (77.0)	5 (95.1)	4 (80.4)	4 (79.4)	5 (71.9)	4 (77.3)
100th (max)	16 (100)	8 (100)	8 (100)	9 (100)	7 (100)	11 (100)	8 (100)
Other aseptic							
Number of consultants†	n = 120	n = 132	n = 132	n = 126	n = 113	n = 91	n = 106
25th	1 (17.2)	1 (20.9)	1 (22.2)	1 (27.0)	1 (29.6)	1 (31.7)	1 (41.1)
50th	2 (35.8)	2 (40.5)	2 (45.1)	1 (27.0)	1 (29.6)	1 (31.7)	1 (41.1)
75th	3 (47.7)	3 (55.2)	3 (60.8)	2 (51.6)	2 (50.2)	2 (57.3)	2 (69.6)
90th	5 (72.8)	4 (68.3)	4 (73.3)	4 (76.2)	4 (85.9)	3 (77.4)	3 (78.6)
100th (max)	10 (100)	18 (100)	15 (100)	11 (100)	8 (100)	7 (100)	6 (100)
Trauma							
Number of consultants†	n = 110	n = 117	n = 132	n = 136	n = 136	n = 138	n = 138
25th	1 (29.6)	1 (29.1)	1 (19.9)	1 (30.4)	1 (23.9)	1 (20.2)	1 (22.7)
50th	1 (29.6)	1 (29.1)	2 (58.1)	1 (30.4)	1 (23.9)	2 (39.4)	2 (44.7)
75th	3 (63.9)	2 (52.0)	2 (58.1)	2 (56.0)	3 (56.7)	3 (59.6)	3 (61.7)
90th	4 (78.7)	4 (81.1)	4 (72.6)	4 (76.7)	5 (80.5)	4 (73.7)	4 (71.0)
100th (max)	10 (100)	14 (100)	9 (100)	10 (100)	9 (100)	10 (100)	11 (100)
ARMD							
Number of consultants†	n = 81	n = 89	n = 95	n = 86	n = 75	n = 75	n = 81
25th	1 (8.7)	1 (18.6)	1 (20.8)	1 (26.4)	1 (28.0)	1 (22.6)	1 (25.8)
50th	2 (21.5)	2 (32.9)	2 (39.4)	1 (26.4)	1 (28.0)	2 (47.8)	1 (25.8)
75th	4 (36.3)	3 (46.8)	3 (46.0)	2 (45.1)	3 (49.1)	3 (64.8)	3 (56.6)
90th	7 (59.2)	5 (65.0)	5 (72.6)	5 (73.1)	5 (65.1)	5 (82.4)	4 (63.2)
100th (max)	59 (100)	26 (100)	11 (100)	10 (100)	13 (100)	8 (100)	16 (100)

RHA, revision hip arthroplasty.

*Due to clustering of consultant volumes around low numbers of RHA, the yearly volumes needed to reach adjacent volume centiles may be identical for some indications. The cumulative RHA volume percentage reported in parentheses includes cases by those consultants who recorded equal to the indicated yearly volumes (which may also include consultants in higher volume centiles due to clustering in lower volumes) and all cases by those consultants who recorded lower yearly volumes.

†The number of unique responsible consultants who submitted one or more RHA for the given indication in the calendar year on which yearly volume centile distributions are calculated. 2012 data is not shown as includes only April to December cases.

Table ix. Centiles of consultant annual revision hip arthroplasty case volume – North East.

Indication and centile of consultant yearly case volume	Number of RHA cases needed for a consultant to reach the specified volume centile by year (cumulative % of RHA cases performed by all consultants who recorded the indicated volume and below)*						
	2013	2014	2015	2016	2017	2018	2019
All RHA indications							
Number of consultants†	n = 256	n = 266	n = 241	n = 234	n = 238	n = 251	n = 229
25th	1 (2.7)	1 (3.3)	1 (3.0)	2 (5.9)	2 (4.8)	1 (3.7)	2 (3.8)
50th	5 (12.0)	4 (11.6)	4 (10.9)	5 (11.7)	5 (11.1)	5 (9.7)	6 (14.9)
75th	12 (34.6)	12 (32.3)	15 (34.5)	14 (37.3)	14 (35.3)	13 (36.9)	14 (40.0)
90th	26 (61.8)	23 (62.8)	24 (65.0)	21 (63.7)	25 (67.0)	23 (67.1)	22 (68.1)
100th (max)	84 (100)	63 (100)	50 (100)	58 (100)	70 (100)	46 (100)	61 (100)
Aseptic loosening							
Number of consultants†	n = 186	n = 186	n = 174	n = 166	n = 175	n = 169	n = 167
25th	1 (5.9)	1 (6.9)	1 (5.8)	1 (5.9)	1 (6.3)	2 (12.7)	2 (13.3)
50th	3 (16.8)	3 (19.3)	3 (17.8)	3 (22.6)	3 (20.8)	4 (34.6)	3 (21.7)
75th	6 (45.2)	7 (46.8)	7 (43.0)	7 (44.5)	7 (42.2)	6 (51.9)	6 (48.1)
90th	12 (69.1)	11 (73.3)	11 (74.3)	10 (67.3)	12 (72.0)	10 (79.0)	10 (73.6)
100th (max)	23 (100)	20 (100)	27 (100)	21 (100)	24 (100)	17 (100)	26 (100)
Infection							
Number of consultants†	n = 104	n = 108	n = 116	n = 114	n = 122	n = 135	n = 132
25th	1 (11.3)	1 (14.0)	1 (13.3)	1 (11.9)	1 (10.3)	1 (16.0)	1 (11.6)
50th	2 (27.3)	2 (31.2)	2 (29.0)	2 (27.7)	2 (23.3)	2 (31.2)	2 (24.1)
75th	3 (42.0)	3 (44.2)	3 (41.2)	4 (58.5)	4 (52.5)	3 (44.3)	4 (43.6)
90th	6 (65.0)	6 (76.1)	7 (68.7)	5 (70.7)	6 (70.8)	5 (67.9)	7 (66.1)
100th (max)	33 (100)	20 (100)	20 (100)	13 (100)	17 (100)	15 (100)	20 (100)
Dislocation							
Number of consultants†	n = 137	n = 137	n = 127	n = 129	n = 142	n = 144	n = 140
25th	1 (17.8)	1 (16.5)	1 (14.4)	1 (13.4)	1 (12.3)	1 (13.0)	1 (12.4)
50th	2 (33.2)	2 (34.4)	2 (30.1)	2 (28.0)	2 (24.6)	2 (25.6)	2 (32.7)
75th	3 (45.3)	4 (57.8)	4 (51.8)	4 (52.4)	4 (50.0)	4 (58.7)	4 (55.7)
90th	5 (71.3)	5 (77.4)	6 (74.6)	6 (83.2)	6 (80.6)	6 (76.8)	6 (77.5)
100th (max)	14 (100)	16 (100)	13 (100)	10 (100)	12 (100)	13 (100)	13 (100)
Other aseptic							
Number of consultants†	n = 125	n = 129	n = 112	n = 103	n = 103	n = 98	n = 90
25th	1 (21.3)	1 (22.0)	1 (30.0)	1 (20.6)	1 (27.9)	1 (35.1)	1 (30.7)
50th	1 (21.3)	2 (45.8)	1 (30.0)	2 (46.1)	1 (27.9)	1 (35.1)	1 (30.7)
75th	3 (52.4)	3 (67.5)	2 (47.5)	3 (59.2)	2 (55.3)	2 (58.5)	2 (57.7)
90th	5 (69.6)	4 (77.6)	4 (81.6)	4 (71.5)	4 (84.3)	4 (89.5)	3 (74.2)
100th (max)	11 (100)	21 (100)	8 (100)	12 (100)	9 (100)	8 (100)	7 (100)
Trauma							
Number of consultants†	n = 114	n = 110	n = 105	n = 115	n = 123	n = 115	n = 115
25th	1 (24.7)	1 (24.1)	1 (22.9)	1 (21.5)	1 (16.5)	1 (14.0)	1 (15.2)
50th	1 (24.7)	1 (24.1)	1 (22.9)	2 (44.9)	2 (34.9)	2 (30.5)	2 (26.7)
75th	3 (68.8)	3 (62.4)	3 (47.3)	3 (61.9)	3 (48.3)	4 (60.0)	4 (53.3)
90th	4 (81.0)	4 (74.3)	5 (71.8)	4 (76.5)	5 (71.4)	6 (75.2)	6 (80.3)
100th (max)	8 (100)	10 (100)	10 (100)	9 (100)	14 (100)	10 (100)	13 (100)
ARMD							
Number of consultants†	n = 91	n = 86	n = 82	n = 77	n = 68	n = 88	n = 72
25th	1 (13.7)	1 (17.4)	1 (18.8)	1 (20.8)	1 (20.4)	1 (28.3)	1 (27.7)
50th	2 (25.3)	2 (29.9)	2 (34.7)	2 (45.1)	2 (36.4)	1 (28.3)	1 (27.7)
75th	4 (48.3)	4 (50.6)	3 (48.8)	3 (59.0)	3 (51.2)	2 (46.7)	3 (64.2)
90th	7 (61.0)	7 (66.0)	6 (69.0)	5 (80.3)	5 (75.9)	6 (80.4)	4 (72.3)
100th (max)	23 (100)	22 (100)	17 (100)	13 (100)	12 (100)	8 (100)	11 (100)

RHA, revision hip arthroplasty.

*Due to clustering of consultant volumes around low numbers of RHA, the yearly volumes needed to reach adjacent volume centiles may be identical for some indications. The cumulative RHA volume percentage reported in parentheses includes cases by those consultants who recorded equal to the indicated yearly volumes (which may also include consultants in higher volume centiles due to clustering in lower volumes) and all cases by those consultants who recorded lower yearly volumes.

†The number of unique responsible consultants who submitted one or more RHA for the given indication in the calendar year on which yearly volume centile distributions are calculated. 2012 data is not shown as includes only April to December cases.

Table x. Centiles of consultant annual revision hip arthroplasty case volume – North West & Wales.

Indication and centile of consultant yearly case volume	Number of RHA cases needed for a consultant to reach the specified volume centile by year (cumulative % of RHA cases performed by all consultants who recorded the indicated volume and below)*						
	2013	2014	2015	2016	2017	2018	2019
All RHA indications							
Number of consultants†	n = 239	n = 236	n = 250	n = 255	n = 280	n = 265	n = 257
25th	1 (2.8)	2 (3.8)	1 (3.2)	1 (2.9)	1 (3.6)	2 (6.5)	1 (3.5)
50th	4 (11.4)	6 (11.5)	5 (12.3)	5 (13.7)	4 (13.0)	4 (12.4)	5 (13.6)
75th	12 (30.1)	15 (37.1)	13 (32.7)	13 (35.1)	11 (29.7)	12 (34.2)	12 (36.9)
90th	25 (62.5)	27 (68.8)	25 (62.4)	23 (64.0)	22 (60.0)	22 (63.4)	20 (66.1)
100th (max)	66 (100)	77 (100)	56 (100)	66 (100)	68 (100)	54 (100)	47 (100)
Aseptic loosening							
Number of consultants†	n = 175	n = 172	n = 176	n = 183	n = 185	n = 175	n = 168
25th	1 (7.0)	2 (9.2)	1 (5.6)	1 (7.0)	1 (7.2)	1 (7.8)	1 (7.1)
50th	3 (20.6)	4 (21.6)	3 (20.4)	2 (16.0)	3 (21.2)	2 (18.5)	3 (24.0)
75th	7 (42.6)	8 (48.8)	6 (40.9)	5 (38.8)	6 (39.2)	5 (41.0)	5 (42.6)
90th	12 (67.3)	13 (75.9)	12 (71.8)	10 (68.1)	12 (64.4)	9 (67.4)	10 (73.0)
100th (max)	24 (100)	29 (100)	28 (100)	23 (100)	25 (100)	32 (100)	25 (100)
Infection							
Number of consultants†	n = 106	n = 123	n = 137	n = 131	n = 123	n = 137	n = 131
25th	1 (14.5)	1 (13.8)	1 (14.0)	1 (15.6)	1 (17.0)	1 (15.7)	1 (15.0)
50th	2 (27.7)	2 (32.5)	2 (26.6)	2 (27.6)	2 (31.8)	2 (31.2)	2 (34.6)
75th	4 (50.5)	3 (41.8)	4 (47.1)	4 (51.1)	3 (47.5)	3 (42.8)	3 (48.4)
90th	7 (80.2)	5 (63.3)	7 (72.2)	6 (76.0)	6 (74.1)	6 (66.5)	5 (70.6)
100th (max)	16 (100)	18 (100)	19 (100)	15 (100)	21 (100)	14 (100)	16 (100)
Dislocation							
Number of consultants†	n = 113	n = 121	n = 124	n = 138	n = 145	n = 138	n = 141
25th	1 (22.0)	1 (15.8)	1 (22.3)	1 (22.6)	1 (19.3)	1 (17.8)	1 (16.6)
50th	2 (45.5)	2 (35.2)	1 (22.3)	2 (44.5)	2 (36.8)	2 (34.4)	2 (34.1)
75th	3 (63.8)	3 (48.7)	3 (56.1)	3 (60.5)	3 (47.9)	3 (53.1)	3 (52.7)
90th	4 (73.6)	5 (71.0)	5 (88.5)	4 (72.4)	5 (72.2)	5 (81.3)	5 (75.5)
100th (max)	8 (100)	10 (100)	9 (100)	13 (100)	11 (100)	10 (100)	14 (100)
Other aseptic							
Number of consultants†	n = 119	n = 132	n = 122	n = 116	n = 124	n = 122	n = 110
25th	1 (12.6)	1 (22.8)	1 (26.8)	1 (22.3)	1 (26.6)	1 (30.7)	1 (31.3)
50th	2 (26.0)	1 (22.8)	1 (26.8)	1 (22.3)	1 (26.6)	1 (30.7)	1 (31.3)
75th	3 (41.5)	3 (59.5)	2 (46.5)	3 (56.5)	2 (50.4)	2 (51.5)	2 (53.1)
90th	7 (59.8)	4 (64.6)	4 (73.6)	5 (75.0)	4 (79.5)	3 (71.0)	4 (73.5)
100th (max)	25 (100)	18 (100)	11 (100)	9 (100)	9 (100)	12 (100)	17 (100)
Trauma							
Number of consultants†	n = 103	n = 117	n = 100	n = 118	n = 121	n = 113	n = 131
25th	1 (28.0)	1 (21.8)	1 (16.3)	1 (19.0)	1 (23.1)	1 (20.7)	1 (16.5)
50th	1 (28.0)	2 (49.0)	2 (40.6)	2 (42.9)	2 (44.6)	2 (33.7)	2 (41.0)
75th	3 (65.7)	3 (67.5)	3 (56.9)	3 (64.2)	3 (58.5)	3 (56.7)	3 (58.4)
90th	4 (71.5)	4 (80.7)	5 (81.6)	4 (71.6)	4 (75.4)	4 (75.1)	4 (73.9)
100th (max)	8 (100)	9 (100)	9 (100)	11 (100)	10 (100)	10 (100)	9 (100)
ARMD							
Number of consultants†	n = 88	n = 89	n = 95	n = 92	n = 86	n = 83	n = 75
25th	1 (16.5)	1 (15.2)	1 (15.9)	1 (17.4)	1 (13.4)	1 (16.7)	1 (21.1)
50th	2 (33.5)	2 (31.1)	2 (31.2)	1 (17.4)	2 (31.6)	2 (28.9)	2 (38.6)
75th	3 (47.5)	3 (37.9)	3 (40.9)	3 (43.2)	3 (45.8)	4 (57.9)	3 (57.9)
90th	5 (68.2)	6 (64.8)	5 (58.7)	5 (60.2)	6 (63.2)	5 (68.9)	4 (71.9)
100th (max)	25 (100)	35 (100)	41 (100)	31 (100)	25 (100)	12 (100)	9 (100)

RHA, revision hip arthroplasty.

*Due to clustering of consultant volumes around low numbers of RHA, the yearly volumes needed to reach adjacent volume centiles may be identical for some indications. The cumulative RHA volume percentage reported in parentheses includes cases by those consultants who recorded equal to the indicated yearly volumes (which may also include consultants in higher volume centiles due to clustering in lower volumes) and all cases by those consultants who recorded lower yearly volumes.

†The number of unique responsible consultants who submitted one or more RHA for the given indication in the calendar year on which yearly volume centile distributions are calculated. 2012 data is not shown as includes only April to December cases.