

Implant Bespoke Report for:

DePuy

Corail Stem (All Corail With Pinnacle Cup)

Comprising PRIMARY hips implanted up to:	07 March 2021
NJR Database extract:	06 May 2021
Produced on:	15 June 2021
Licensed for use until:	15 June 2023

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This report has been produced by the National Joint Registry of England, Wales and Northern Ireland (NJR). It summarises usage and outcomes associated with the Corail Stem (All Corail With Pinnacle Cup) up to the specified dates. This analysis is based on data collected by the NJR and PROMs data collected by NHS Digital for the following combinations of products:

Femoral components	Corail Stem (All Corail With Pinnacle Cup)
Acetabular Component	Pinnacle cups (excluding metal liners)
Comparator Group	All NJR Cementless Hips (excluding MoM)

Appendix A lists details of all Corail Stem components included in this report.

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NJR Recorded Usage

Implant Usage

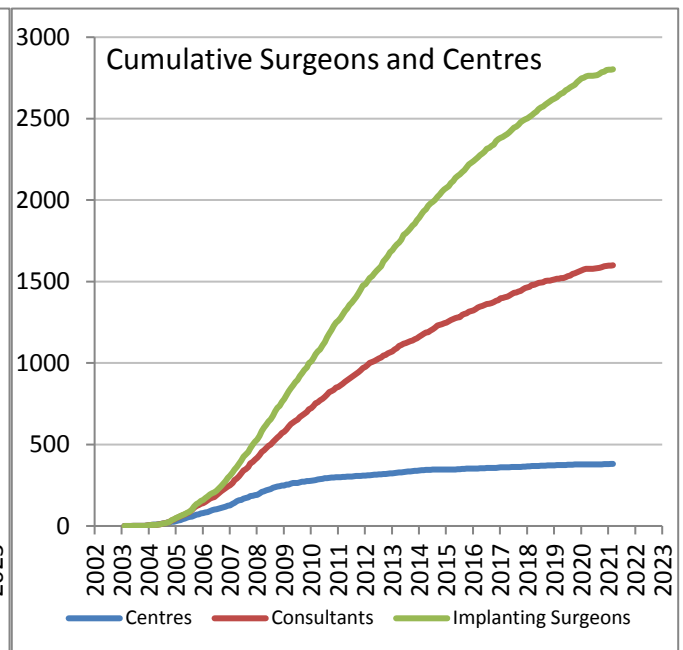
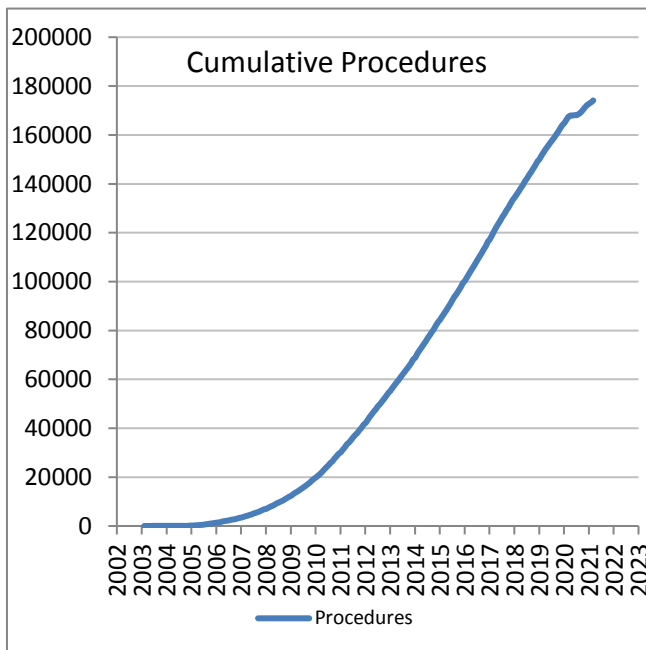
Date of first recorded usage in the NJR: **03 June 2003**

Date of last recorded usage in this dataset: **07 March 2021**

Maximum implantation time: 17.3 years

Mean implantation time: 5.9 years

Totals Recorded in NJR	Cumulative Total
Procedures	174,128
Patients	154,175
Centres	381
Consultants	1,600
Implanting Surgeons	2,803



Current Outcome	Year of implantation													Total	%
	Pre-2010	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
Death	5124	2064	2037	1881	1781	1513	1162	1003	674	409	216	36	1	17901	10.3%
Revised	840	320	371	379	281	302	280	251	214	153	90	35	5	3521	2.0%
Unrevised	13767	7973	9541	10872	11609	13545	14538	15681	16161	15233	14444	7977	1365	152706	87.7%
Total	19731	10357	11949	13132	13671	15360	15980	16935	17049	15795	14750	8048	1371	174128	100%

Patient / Procedure Details

Patient Details

	Corail Stem (All Corail With Pinnacle Cup)	All other Cementless Hips Exl MoM	All NJR hip replacement
Total Procedures	174,128	277,747	1,285,207
Total Patients	154,175	244,186	1,082,079
Demographics			
Mean age	65.7	64.6	68.6
< 50	7.4%	9.7%	5.9%
50 – 59	19.0%	20.3%	13.8%
60 – 69	35.3%	34.6%	28.9%
70 – 79	29.1%	27.1%	34.7%
≥ 80	9.2%	8.3%	16.6%
Median BMI	28	28	28
% BMI information available	70.1%	64.9%	62.7%
Underweight (BMI < 18.5)	0.6%	0.7%	0.9%
Normal (18.5 ≤ BMI < 25)	18.2%	19.3%	20.8%
Overweight (25 ≤ BMI < 30)	39.3%	39.0%	39.6%
Obese I (30 ≤ BMI < 35)	27.1%	26.8%	25.8%
Obese II (35 ≤ BMI < 40)	11.2%	10.6%	9.7%
Obese III (BMI ≥ 40)	3.6%	3.7%	3.3%
% Male	44.6%	44.6%	40.2%
ASA Grades			
P1 - Fit and healthy	16.4%	19.1%	15.6%
P2 - Mild disease not incapacitating	71.0%	68.2%	67.7%
P3 - Incapacitating systemic disease	12.3%	12.3%	16.2%
P4 / P5	0.3%	0.4%	0.6%
Indications			
Osteoarthritis	94.13%	92.63%	91.26%
Rheumatoid Arthritis	1.04%	1.30%	1.32%
Avascular Necrosis	2.15%	2.76%	2.53%
Fractured Neck of Femur	2.01%	1.72%	3.69%
CDH/DDH	1.48%	2.64%	1.58%
Other	1.10%	1.95%	2.12%

Total of indications may exceed total number of implants, since more than one indication can be listed per case.

Revision and Survivorship

Reasons for Revision - excluding Metal on Metal

Reasons for revision of non-MoM primary procedures in which the implant was used.

Reason for Revision	Revised [†]	Expected Revisions [*]	p value
Unexplained Pain	298	394.90	<0.001
Dislocation / Subluxation	698	773.15	<0.001
Adverse Soft Tissue Reaction	91	161.42	<0.001
Infection	555	632.50	<0.001
Aseptic Loosening - Stem	858	770.56	<0.001
Aseptic Loosening - Socket	148	275.88	<0.001
Periprosthetic Fracture Stem	526	609.39	<0.001
Periprosthetic Fracture Socket	33	73.46	<0.001
Malalignment Stem	127	148.05	0.031
Malalignment Socket	210	247.99	0.003
Wear Of Acetabular Component	121	182.76	<0.001
Lysis Stem	68	84.35	0.039
Lysis Socket	30	62.52	<0.001
Implant Fracture Stem	42	65.72	<0.001
Implant Fracture Socket	141	95.67	<0.001
Implant Fracture Head	9	23.37	<0.001
Dissociation of Liner	136	100.96	<0.001
Other / Not recorded	167	188.92	0.053
Total Revised	3521	3902.26	<0.001

* Based on All Cementless Hips Exl MoM (excluding metal on metal), adjusted for agegroup, gender, indications, and implantation year

† multiple reasons may be listed for one revision procedure

Significantly better, $p < 0.001$

Significantly better, $p < 0.05$

Significantly worse $p < 0.05$

Significantly worse $p < 0.001$

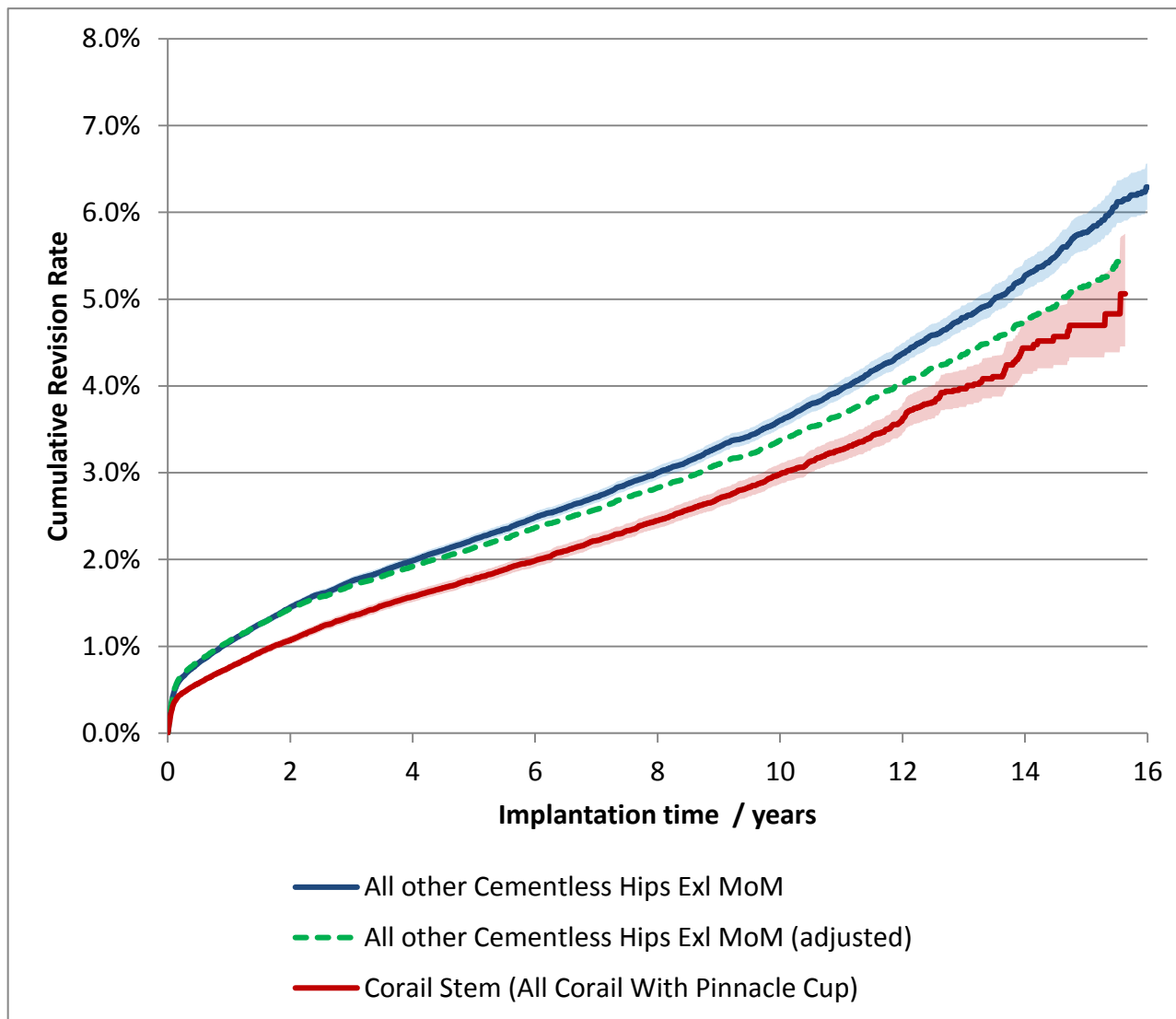
Components Revised	Number of procedures	Corail Stem (All Corail With Pinnacle Cup)	All other Cementless Hips Exl MoM
Femoral only	1265	36%	30%
Acetabular only	765	22%	26%
Both femoral and acetabular	987	28%	32%
Neither femoral nor acetabular revision recorded *	504	14%	12%

* includes isolated head and/or liner exchange

Revision and Survivorship

Cumulative Revision Rate

Endpoint: All reasons for revision. Excluding Metal-on-Metal



Cox Proportional Hazards model for revision risk ratio of Corail Stem (All Corail With Pinnacle Cup) / All other Cementless Hips Exl MoM, with endpoint as any revision.

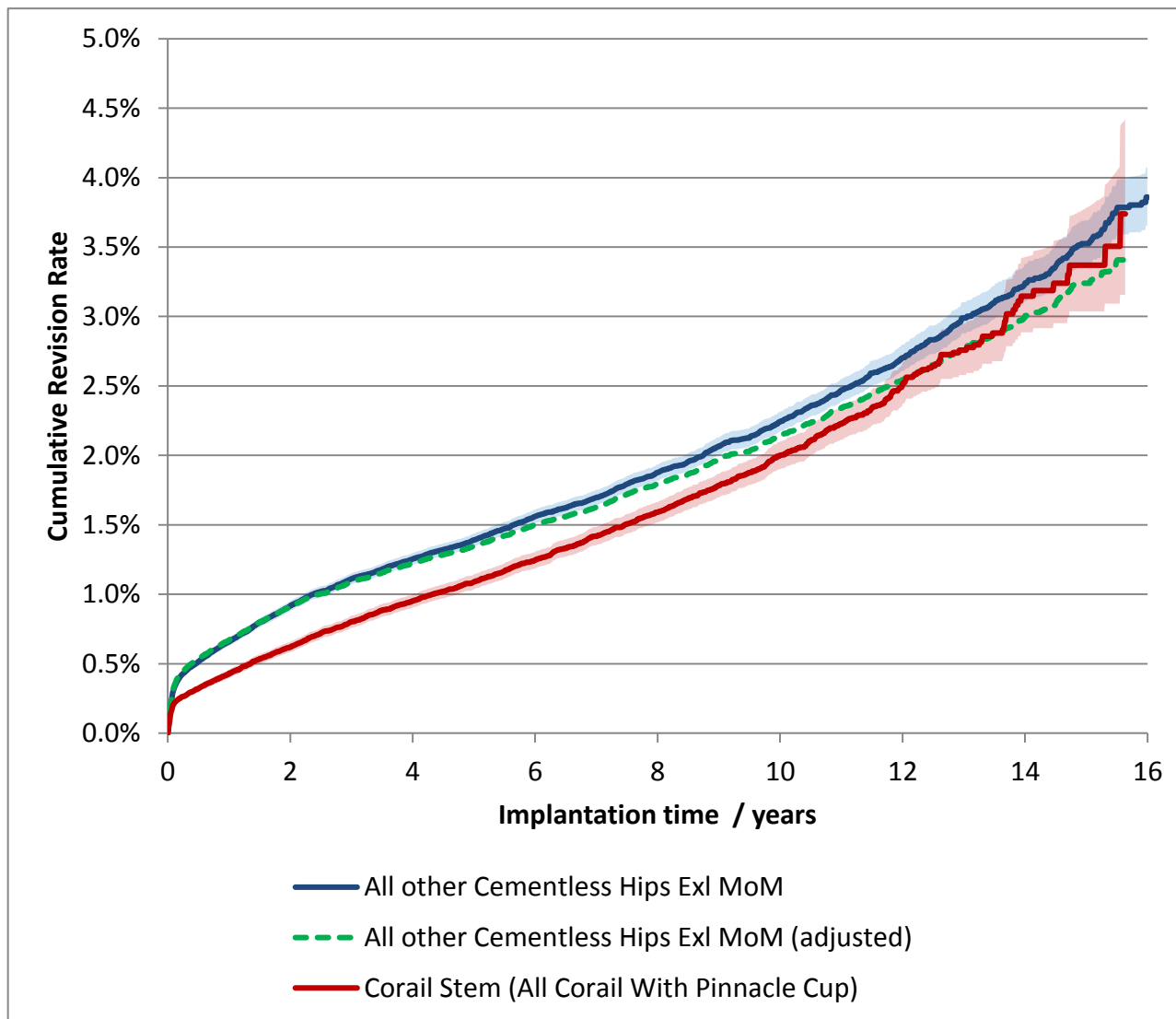
Adjustment	Hazard Ratio (95% CI)	p-value
Excluding MoM, Unadjusted.	0.80 (0.77 - 0.84)	<0.001
Excluding MoM. Adjusted for age, gender, year cohort and indications.	0.85 ‡ (0.82 - 0.89)	<0.001 ‡

‡ Hazard ratio varies with time

Revision and Survivorship

Cumulative Revision Rate

Endpoint: Femoral Revision. Excluding Metal-on-Metal



Cox Proportional Hazards model for revision risk ratio of Corail Stem (All Corail With Pinnacle Cup) / All other Cementless Hips Exl MoM, with endpoint as any revision.

Adjustment	Hazard Ratio (95% CI)	p-value
Excluding MoM. Unadjusted.	0.83 ‡ (0.79 - 0.87)	<0.001 ‡
Excluding MoM. Adjusted for age, gender, year cohort and indications.	0.87 ‡ (0.83 - 0.91)	<0.001 ‡

‡ Hazard ratio varies with time

Revision and Survivorship

Cumulative Revision Rate

Excluding Metal on Metal Bearings

Period /years	Endpoint: Any component revised				Endpoint: Femoral revision			
	At Risk	Corail Stem (All Corail With Pinnacle Cup)	All other Cementless Hips Exl MoM	All THR	At Risk	Corail Stem (All Corail With Pinnacle Cup)	All other Cementless Hips Exl MoM	All THR
0	174,128	-	-	-	174,128	-	-	-
1	164,814	0.8% (0.7% - 0.8%)	1.0% (1.0% - 1.1%)	0.8% (0.8% - 0.8%)	164,814	0.4% (0.4% - 0.5%)	0.7% (0.6% - 0.7%)	0.5% (0.5% - 0.5%)
2	148,435	1.1% (1.0% - 1.1%)	1.4% (1.4% - 1.5%)	1.1% (1.1% - 1.1%)	148,435	0.6% (0.6% - 0.7%)	0.9% (0.9% - 1.0%)	0.7% (0.7% - 0.7%)
3	130,809	1.3% (1.3% - 1.4%)	1.8% (1.7% - 1.8%)	1.3% (1.3% - 1.4%)	130,809	0.8% (0.8% - 0.8%)	1.1% (1.1% - 1.2%)	0.9% (0.8% - 0.9%)
4	112,880	1.6% (1.5% - 1.6%)	2.0% (1.9% - 2.0%)	1.6% (1.5% - 1.6%)	112,880	1.0% (0.9% - 1.0%)	1.3% (1.2% - 1.3%)	1.0% (1.0% - 1.0%)
5	94,746	1.8% (1.7% - 1.8%)	2.2% (2.2% - 2.3%)	1.8% (1.8% - 1.8%)	94,746	1.1% (1.0% - 1.1%)	1.4% (1.3% - 1.4%)	1.2% (1.1% - 1.2%)
6	78,012	2.0% (1.9% - 2.1%)	2.5% (2.4% - 2.6%)	2.0% (2.0% - 2.0%)	78,012	1.2% (1.2% - 1.3%)	1.6% (1.5% - 1.6%)	1.3% (1.3% - 1.3%)
7	62,460	2.2% (2.1% - 2.3%)	2.7% (2.7% - 2.8%)	2.3% (2.2% - 2.3%)	62,460	1.4% (1.4% - 1.5%)	1.7% (1.6% - 1.8%)	1.5% (1.4% - 1.5%)
8	48,766	2.4% (2.4% - 2.5%)	3.0% (2.9% - 3.1%)	2.5% (2.5% - 2.6%)	48,766	1.6% (1.5% - 1.7%)	1.9% (1.8% - 1.9%)	1.7% (1.6% - 1.7%)
9	36,435	2.7% (2.6% - 2.8%)	3.3% (3.2% - 3.4%)	2.8% (2.8% - 2.9%)	36,435	1.8% (1.7% - 1.9%)	2.1% (2.0% - 2.1%)	1.9% (1.8% - 1.9%)
10	25,453	3.0% (2.9% - 3.1%)	3.6% (3.5% - 3.7%)	3.1% (3.1% - 3.2%)	25,453	2.0% (1.9% - 2.1%)	2.2% (2.2% - 2.3%)	2.1% (2.0% - 2.1%)
11	16,159	3.3% (3.1% - 3.4%)	4.0% (3.9% - 4.1%)	3.5% (3.4% - 3.5%)	16,159	2.2% (2.1% - 2.3%)	2.5% (2.4% - 2.6%)	2.3% (2.3% - 2.4%)
12	9,950	3.6% (3.5% - 3.8%)	4.4% (4.3% - 4.5%)	3.9% (3.9% - 4.0%)	9,950	2.5% (2.4% - 2.7%)	2.7% (2.6% - 2.8%)	2.6% (2.6% - 2.7%)
13	5,566	4.0% (3.8% - 4.2%)	4.8% (4.6% - 4.9%)	4.3% (4.3% - 4.4%)	5,566	2.8% (2.6% - 2.9%)	3.0% (2.9% - 3.1%)	2.9% (2.8% - 3.0%)
14	2,674	4.4% (4.1% - 4.7%)	5.3% (5.1% - 5.4%)	4.7% (4.7% - 4.8%)	2,674	3.1% (2.9% - 3.4%)	3.2% (3.1% - 3.4%)	3.2% (3.1% - 3.2%)
15	1,074	4.7% (4.3% - 5.1%)	5.8% (5.6% - 6.0%)	5.2% (5.1% - 5.3%)	1,074	3.4% (3.0% - 3.8%)	3.5% (3.4% - 3.7%)	3.5% (3.4% - 3.6%)

Cumulative revision rate with 95% confidence intervals

Rate is only reported for times where more than 40 remain at risk

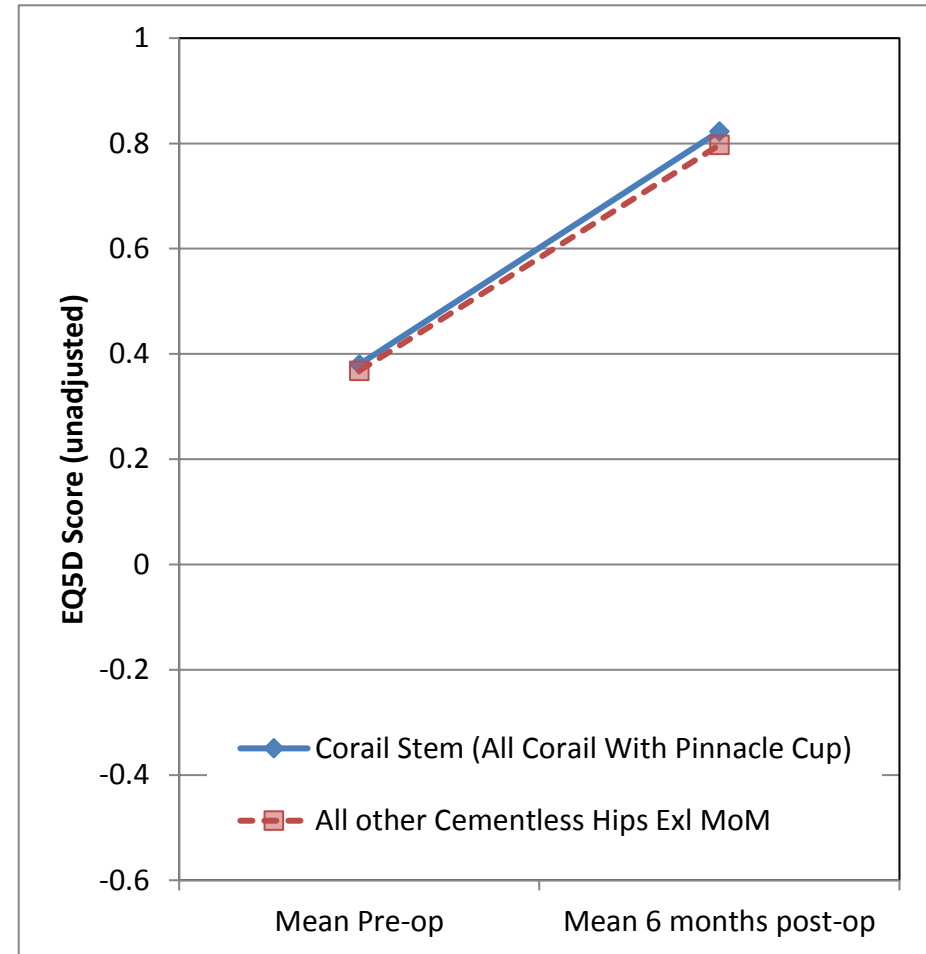
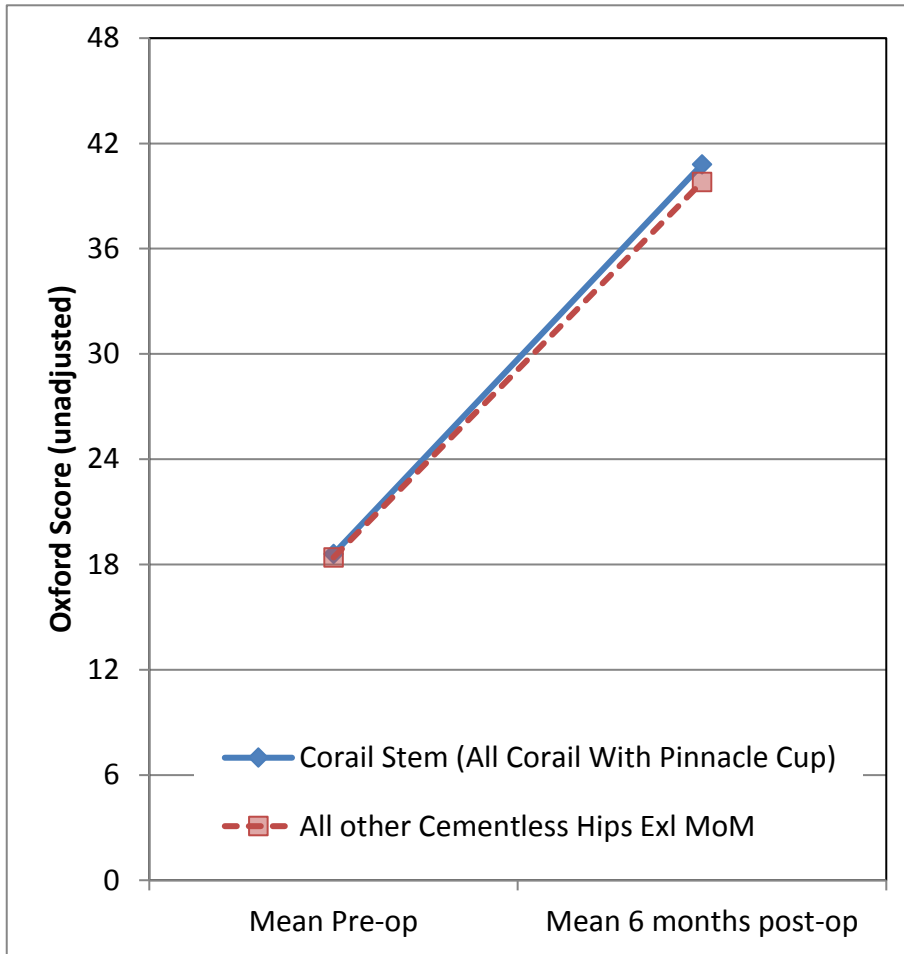
Bespoke Report for:

Corail Stem (All Corail With Pinnacle Cup)

Patient Reported Outcomes

Comprising PROMs data up to and including: 31/12/2019

PROMs Analysis



Patient Reported Outcomes

PROMs Analysis

Comprising PROMs data up to and including: 31/12/2019

Oxford Hip Score (0 - 48)	Corail Stem (All Corail With Pinnacle Cup)	All other Cementless Hips Exl MoM	All THR in NJR
Paired Records	57,753	76,705	342,959
PreOp score	18.6 (18.5 - 18.6)	18.4 (18.4 - 18.5)	17.9 (17.9 - 18.0)
6 month score	40.8 (40.7 - 40.8)	39.8 (39.7 - 39.8)	39.5 (39.5 - 39.5)
6 month score (adjusted)	40.1 (40.1 - 40.2)	39.4 (39.3 - 39.4)	39.5 (39.5 - 39.5)
Health gain	22.2 (22.1 - 22.3)	21.3 (21.3 - 21.4)	21.6 (21.5 - 21.6)
Health gain (adjusted)	22.2 (22.1 - 22.3)	21.4 (21.4 - 21.5)	21.6 (21.5 - 21.6)
p value (adjusted health gain)	< 0.001		
Score Improved	97.7%	96.9%	97.3%

EQ-5D Index (-0.59 - 1.00)	Corail Stem (All Corail With Pinnacle Cup)	All other Cementless Hips Exl MoM	All THR in NJR
Paired Records	53,381	71,138	315,677
PreOp score	0.380 (0.377 - 0.383)	0.368 (0.365 - 0.370)	0.353 (0.352 - 0.354)
6 month score	0.823 (0.821 - 0.825)	0.797 (0.795 - 0.799)	0.794 (0.794 - 0.795)
6 month score (adjusted)	0.809 (0.807 - 0.811)	0.792 (0.790 - 0.794)	0.794 (0.794 - 0.795)
Health gain	0.443 (0.440 - 0.445)	0.429 (0.427 - 0.432)	0.441 (0.440 - 0.442)
Health gain (adjusted)	0.456 (0.454 - 0.458)	0.439 (0.437 - 0.441)	0.441 (0.441 - 0.442)
p value (adjusted health gain)	< 0.001		
Score Improved	90.8%	89.1%	89.7%

EQ-VAS (0 - 100)	Corail Stem (All Corail With Pinnacle Cup)	All other Cementless Hips Exl MoM	All THR in NJR
Paired Records	51,289	68,726	303,007
PreOp score	66.0 (65.9 - 66.2)	64.8 (64.6 - 64.9)	64.8 (64.7 - 64.9)
6 month score	78.7 (78.6 - 78.9)	77.5 (77.4 - 77.7)	77.0 (76.9 - 77.1)
6 month score (adjusted)	77.6 (77.5 - 77.7)	77.0 (76.9 - 77.1)	77.0 (76.9 - 77.0)
Health gain	12.7 (12.5 - 12.9)	12.8 (12.6 - 13.0)	12.2 (12.1 - 12.3)
Health gain (adjusted)	12.8 (12.7 - 13.0)	12.2 (12.1 - 12.3)	12.2 (12.1 - 12.3)
p value (adjusted health gain)	< 0.001		
Score Improved	67.8%	67.5%	66.4%

Adjusted scores correspond to the NHS Digital version 3 casemix-adjustment model. This includes patient variables from PROMs, HES, and IMD data.

Figures in parentheses represent the 95% confidence interval for the mean

Bespoke Report for:

Corail Stem (All Corail With Pinnacle Cup)

Responses are not case mix adjusted

Patient Reported Outcomes



Patient Reported Outcomes

Success

Response	Corail Stem (All Corail With Pinnacle Cup)	All other Cementless Hips Exl MoM
Much better	52990	67823
A little better	4143	6685
About the same	999	1673
A little worse	543	1092
Much worse	462	869

Answer to 6-months general health question:

"Overall, how are your problems now, compared to before your operation?"

Satisfaction

Response	Corail Stem (All Corail With Pinnacle Cup)	All other Cementless Hips Exl MoM
Excellent	28344	33992
Very Good	19554	26229
Good	7993	11997
Fair	2433	4323
Poor	763	1518

Answer to 6-months general health question:

"How would you describe the results of your operation?"

Disclaimer

Disclaimer

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Appendix A: Component List

Catalogue Number	Description	Number Implanted
3L92498	Corail Collared Stem K8A 115mm	3374
3L92499	Corail Collared Stem K9A 130mm	6147
3L92500	Corail Collared Stem K10A 140mm	12926
3L92501	Corail Collared Stem K11A 145mm	19438
3L92502	Corail Collared Stem K12A 150mm	15794
3L92503	Corail Collared Stem K13A 155mm	7962
3L92504	Corail Collared Stem K14A 160mm	4066
3L92505	Corail Collared Stem K15A 165mm	1756
3L92506	Corail Collared Stem K16A 170mm	701
3L92507	Corail Collarless Stem K8S 125mm	3289
3L92508	Corail Collared Stem K18A 180mm	137
3L92509	Corail Collarless Stem K9S 130mm	4382
3L92510	Corail Collarless Stem K10S 140mm	8654
3L92511	Corail Collarless Stem K11S 145mm	12842
3L92512	Corail Collarless Stem K12S 150mm	11104
3L92513	Corail Collarless Stem K13S 155mm	5214
3L92514	Corail Collarless Stem K14S 160mm	2641
3L92515	Corail Collarless Stem K15S 165mm	1157
3L92516	Corail Collarless Stem K16S 170mm	443
3L92518	Corail Collarless Stem K18S 180mm	169
3L92520	Corail Collarless Stem K20S 190mm	8
3L92521	Corail Collared Stem K20A 190mm	10
3L93709	Corail Collared Lateralised Coxa Vara Stem KLA9 130mm	2469
3L93710	Corail Collared Lateralised Coxa Vara Stem KLA10 140mm	4019
3L93711	Corail Collared Lateralised Coxa Vara Stem KLA11 145mm	6284
3L93712	Corail Collared Lateralised Coxa Vara Stem KLA12 150mm	5347
3L93713	Corail Collared Lateralised Coxa Vara Stem KLA13 155mm	2679
3L93714	Corail Collared Lateralised Coxa Vara Stem KLA14 160mm	1491
3L93715	Corail Collared Lateralised Coxa Vara Stem KLA15 165mm	644
3L93716	Corail Collared Lateralised Coxa Vara Stem KLA16 170mm	265
3L93718	Corail Collared Lateralised Coxa Vara Stem Size 18	21
3L93720	Corail Collared Lateralised Coxa Vara Stem Size 20	1
L20309	Corail High Offset Collarless Stem KHO9 130mm	1252
L20310	Corail High Offset Collarless Stem KHO10 140mm	2545
L20311	Corail High Offset Collarless Stem KHO11 145mm	4674
L20312	Corail High Offset Collarless Stem KHO12 150mm	5312
L20313	Corail High Offset Collarless Stem KHO13 155mm	3534
L20314	Corail High Offset Collarless Stem KHO14 160mm	2258
L20315	Corail High Offset Collarless Stem KHO15 165mm	1178
L20316	Corail High Offset Collarless Stem KHO16 170mm	539
L20318	Corail High Offset Collarless Stem Size 18	38
L20320	Corail High Offset Collarless Stem Size 20	2
L971109	Corail 135 High Offset KHO (Collar) Size 9	291
L971110	Corail 135 High Offset KHO (Collar) Size 10	673
L971111	Corail 135 High Offset KHO (Collar) Size 11	1571
L971112	Corail 135 High Offset KHO (Collar) Size 12	1754

Appendix A: Component List

Catalogue Number	Description	Number Implanted
L971113	Corail 135 High Offset KHO (Collar) Size 13	1139
L971114	Corail 135 High Offset KHO (Collar) Size 14	788
L971115	Corail 135 High Offset KHO (Collar) Size 15	404
L971116	Corail 135 High Offset KHO (Collar) Size 16	216
L971118	Corail 135 High Offset KHO (Collar) Size 18	33
L971120	Corail 135 High Offset KHO (Collar) Size 20	12
L971208	Corail 125 Standard Neck SN (Collar) Size 8	65
L971209	Corail 125 Standard Neck SN (Collar) Size 9	74
L971210	Corail 125 Standard Neck SN (Collar) Size 10	74
L971211	Corail 125 Standard Neck SN (Collar) Size 11	9
L971212	Corail 125 Standard Neck SN (Collar) Size 12	7
L971213	Corail 125 Standard Neck SN (Collar) Size 13	1
L971308	Corail 135 Short Neck SN (Collar) Size 8	55
L971309	Corail 135 Short Neck SN (Collar) Size 9	35
L971310	Corail 135 Short Neck SN (Collar) Size 10	72
L971311	Corail 135 Short Neck SN (Collar) Size 11	9
L971312	Corail 135 Short Neck SN (Collar) Size 12	7
L971313	Corail 135 Short Neck SN (Collar) Size 13	3
L981208	Corail 125 Standard Neck SN (No Collar) Size 8	9
L981209	Corail 125 Standard Neck SN (No Collar) Size 9	6
L981210	Corail 125 Standard Neck SN (No Collar) Size 10	9
L981308	Corail 135 Short Neck SN (No Collar) Size 8	23
L981309	Corail 135 Short Neck SN (No Collar) Size 9	12
L981310	Corail 135 Short Neck SN (No Collar) Size 10	11