

Implant Summary Report for:

DePuy

Marathon Cup

Comprising PRIMARY hips implanted up to:
NJR Database extract:

10 December 2020
08 February 2021

Produced on:
Licensed for use until:

17 February 2021
17 June 2021

Contents

Recorded Usage in NJR	2
Patient and Procedure Details	3
Revision and Survivorship	4
Patient Reported Outcome Measures	12
APPENDIX A – Component List	17

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 Marathon 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:

Acetabular components

Marathon Cup

Femoral Component

Any Femoral Component manufactured by DePuy

Appendix A lists details of all Marathon Cup components included in this report.

This report is made available to DePuy under licence. Under this licence, DePuy is free to distribute this document, subject to the restrictions specified in the National Joint Registry Supplier Feedback Data Access and Use Code of Practice.

NJR Recorded Usage

Implant Usage

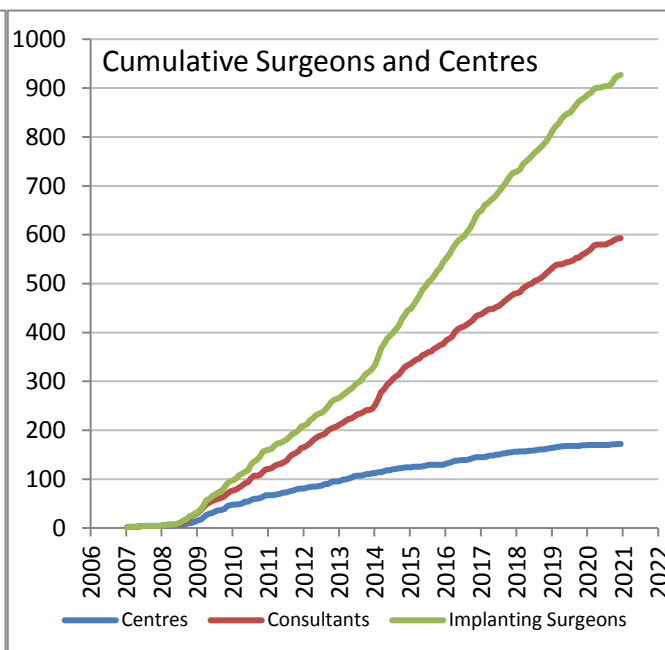
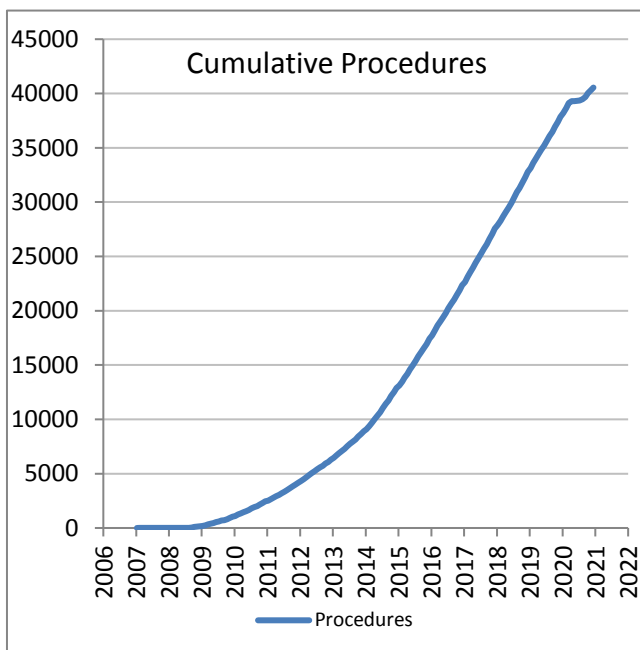
Date of first recorded usage in the NJR: **28 January 2004**

Date of last recorded usage in this dataset: **10 December 2020**

Maximum implantation time: 14.6 years

Mean implantation time: 4.4 years

Totals Recorded in NJR	Cumulative Total
Procedures	40,551
Patients	36,798
Centres	172
Consultants	593
Implanting Surgeons	927



Current Outcome	Year of implantation													Total	%
	Pre-2009	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
Death	48	261	371	387	416	478	611	517	433	284	179	97	11	4093	10.1%
Revised	6	27	25	35	38	48	59	61	60	49	40	28	10	486	1.2%
Unrevised	130	612	1019	1336	1688	2109	3373	3954	4457	4901	5005	4949	2439	35972	88.7%
Total	184	900	1415	1758	2142	2635	4043	4532	4950	5234	5224	5074	2460	40551	100%

Patient / Procedure Details

Patient Details

	Marathon Cup	All other Cemented Cups in NJR	All NJR hip replacement
Total Procedures	40,551	383,070	1,267,190
Total Patients	36,798	340,551	1,067,537
Demographics			
Mean age	71.0	73.7	68.6
< 50	3.4%	1.3%	5.9%
50 – 59	9.4%	5.2%	13.8%
60 – 69	26.6%	22.1%	28.9%
70 – 79	40.1%	44.6%	34.7%
≥ 80	20.6%	26.9%	16.6%
Median BMI	28	28	28
% BMI information available	65.4%	58.2%	62.7%
Underweight (BMI < 18.5)	0.9%	1.2%	0.9%
Normal (18.5 ≤ BMI < 25)	20.5%	22.5%	20.7%
Overweight (25 ≤ BMI < 30)	39.3%	40.2%	39.6%
Obese I (30 ≤ BMI < 35)	26.0%	24.8%	25.8%
Obese II (35 ≤ BMI < 40)	10.2%	8.6%	9.7%
Obese III (BMI ≥ 40)	3.1%	2.8%	3.3%
% Male	36.7%	33.4%	40.2%
ASA Grades			
P1 - Fit and healthy	9.4%	10.8%	15.5%
P2 - Mild disease not incapacitating	70.5%	67.6%	67.7%
P3 - Incapacitating systemic disease	19.6%	20.7%	16.2%
P4 / P5	0.5%	0.8%	0.6%
Indications			
Osteoarthritis	89.69%	91.17%	91.31%
Rheumatoid Arthritis	1.68%	1.35%	1.32%
Avascular Necrosis	2.36%	2.21%	2.53%
Fractured Neck of Femur	5.05%	4.48%	3.63%
CDH/DDH	1.27%	0.54%	1.58%
Other	2.01%	2.24%	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 - all bearing types

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

Reason for Revision	Revised [†]	Expected Revisions [*]	p value
Unexplained Pain	24	30.71	0.267
Dislocation / Subluxation	111	162.47	<0.001
Adverse Soft Tissue Reaction	5	5.08	1
Infection	127	166.68	0.001
Aseptic Loosening - Stem	53	46.74	0.333
Aseptic Loosening - Socket	42	96.64	<0.001
Periprosthetic Fracture Stem	118	107.66	0.293
Periprosthetic Fracture Socket	4	5.92	0.527
Malalignment Stem	20	18.17	0.625
Malalignment Socket	20	23.41	0.523
Wear Of Acetabular Component	12	14.40	0.687
Lysis Stem	3	7.37	0.131
Lysis Socket	9	14.02	0.22
Implant Fracture Stem	7	8.87	0.728
Implant Fracture Socket	0	0.79	1
Implant Fracture Head	0	2.65	0.104
Dissociation of Liner	3	4.64	0.628
Other / reason not recorded	18	19.10	0.905
Total Revised	486	610.92	<0.001

[†] multiple reasons may be listed for one revision procedure^{*} Based on All NJR Cemented Cups, adjusted for agegroup, gender, indications, and implantation year

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	Marathon Cup	All other Cemented Cups in NJR
Femoral only	155	32%	17%
Acetabular only	87	18%	26%
Both femoral and acetabular	173	36%	50%
Neither femoral nor acetabular revision recorded [*]	71	15%	7%

^{*} includes isolated head and/or liner exchange

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	24	30.72	0.267
Dislocation / Subluxation	111	162.46	<0.001
Adverse Soft Tissue Reaction	5	4.92	0.819
Infection	127	166.64	0.001
Aseptic Loosening - Stem	53	46.75	0.333
Aseptic Loosening - Socket	42	96.67	<0.001
Periprosthetic Fracture Stem	118	107.65	0.293
Periprosthetic Fracture Socket	4	5.92	0.527
Malalignment Stem	20	18.17	0.625
Malalignment Socket	20	23.41	0.523
Wear Of Acetabular Component	12	14.41	0.687
Lysis Stem	3	7.37	0.131
Lysis Socket	9	14.03	0.22
Implant Fracture Stem	7	8.86	0.728
Implant Fracture Socket	0	0.79	1
Implant Fracture Head	0	2.65	0.103
Dissociation of Liner	3	4.65	0.628
Other / reason not recorded	18	19.10	0.905
Total Revised	486	610.73	<0.001

† multiple reasons may be listed for one revision procedure

* Based on All NJR Cemented Cups (excluding metal on metal), adjusted for agegroup, gender, indications, and implantation year

Significantly better, $p < 0.001$ Significantly better, $p < 0.05$ Significantly worse $p < 0.05$ Significantly worse $p < 0.001$ 

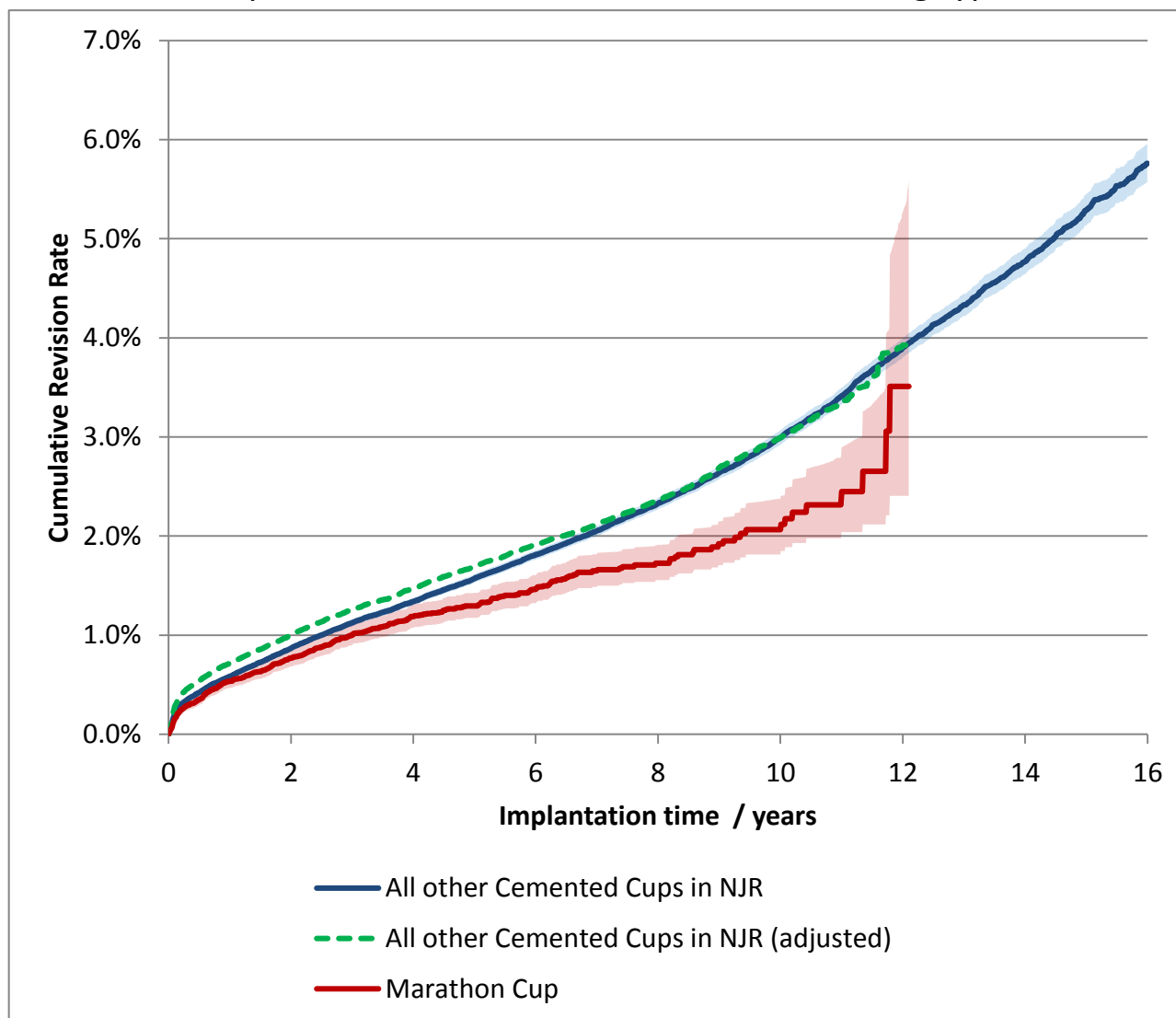
Components Revised	Number of procedures	Marathon Cup	All other Cemented Cups in NJR
Femoral only	155	32%	17%
Acetabular only	87	18%	26%
Both femoral and acetabular	173	36%	50%
Neither femoral nor acetabular revision recorded *	71	15%	7%

* includes isolated head and/or liner exchange

Revision and Survivorship

Cumulative Revision Rate

Endpoint: All reasons for revision. All Bearing types



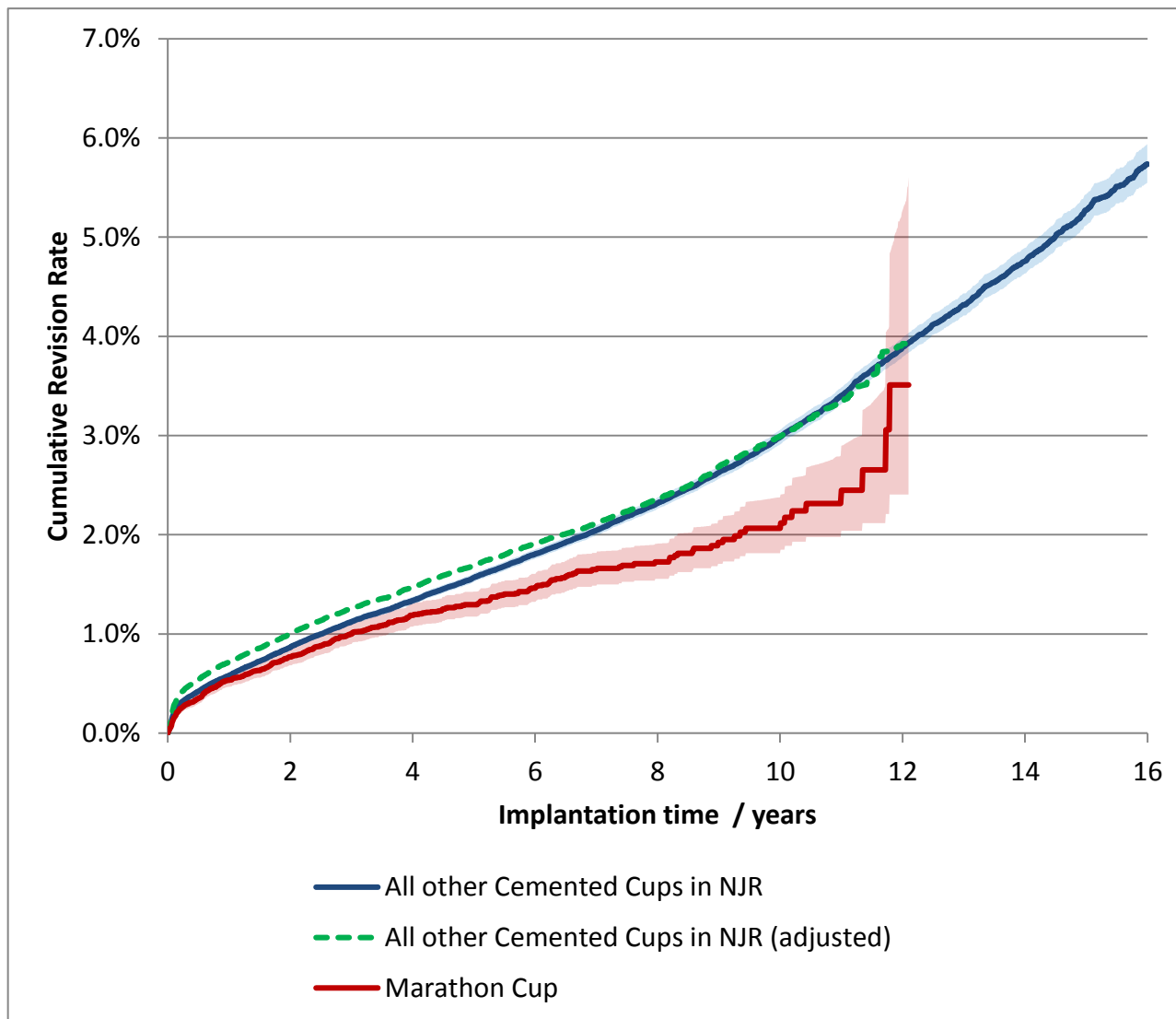
Cox Proportional Hazards model for revision risk ratio of Marathon Cup / All other Cemented Cups in NJR, with endpoint as any revision.

Adjustment	Hazard Ratio (95% CI)	p-value
All bearings. Unadjusted.	0.82 (0.75 - 0.90)	<0.001
All bearings. Adjusted for age, gender, year cohort and indications.	0.77 (0.70 - 0.85)	<0.001

Revision and Survivorship

Cumulative Revision Rate

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



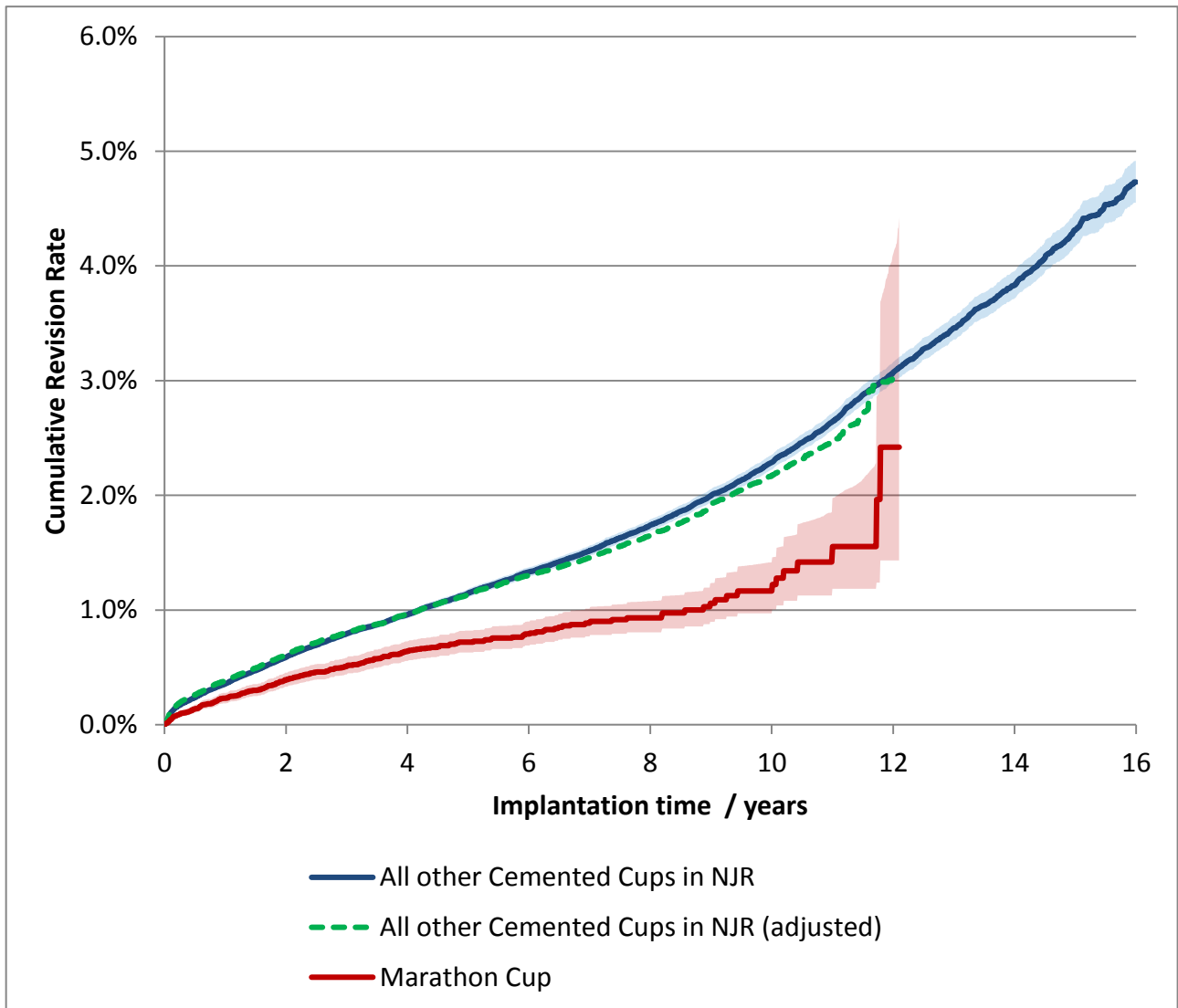
Cox Proportional Hazards model for revision risk ratio of Marathon Cup / All other Cemented Cups in NJR, with endpoint as any revision.

Adjustment	Hazard Ratio (95% CI)	p-value
Excluding MoM, Unadjusted.	0.82 (0.75 - 0.90)	<0.001
Excluding MoM. Adjusted for age, gender, year cohort and indications.	0.77 (0.70 - 0.85)	<0.001

Revision and Survivorship

Cumulative Revision Rate

Endpoint: Acetabular Revision. All Bearing types



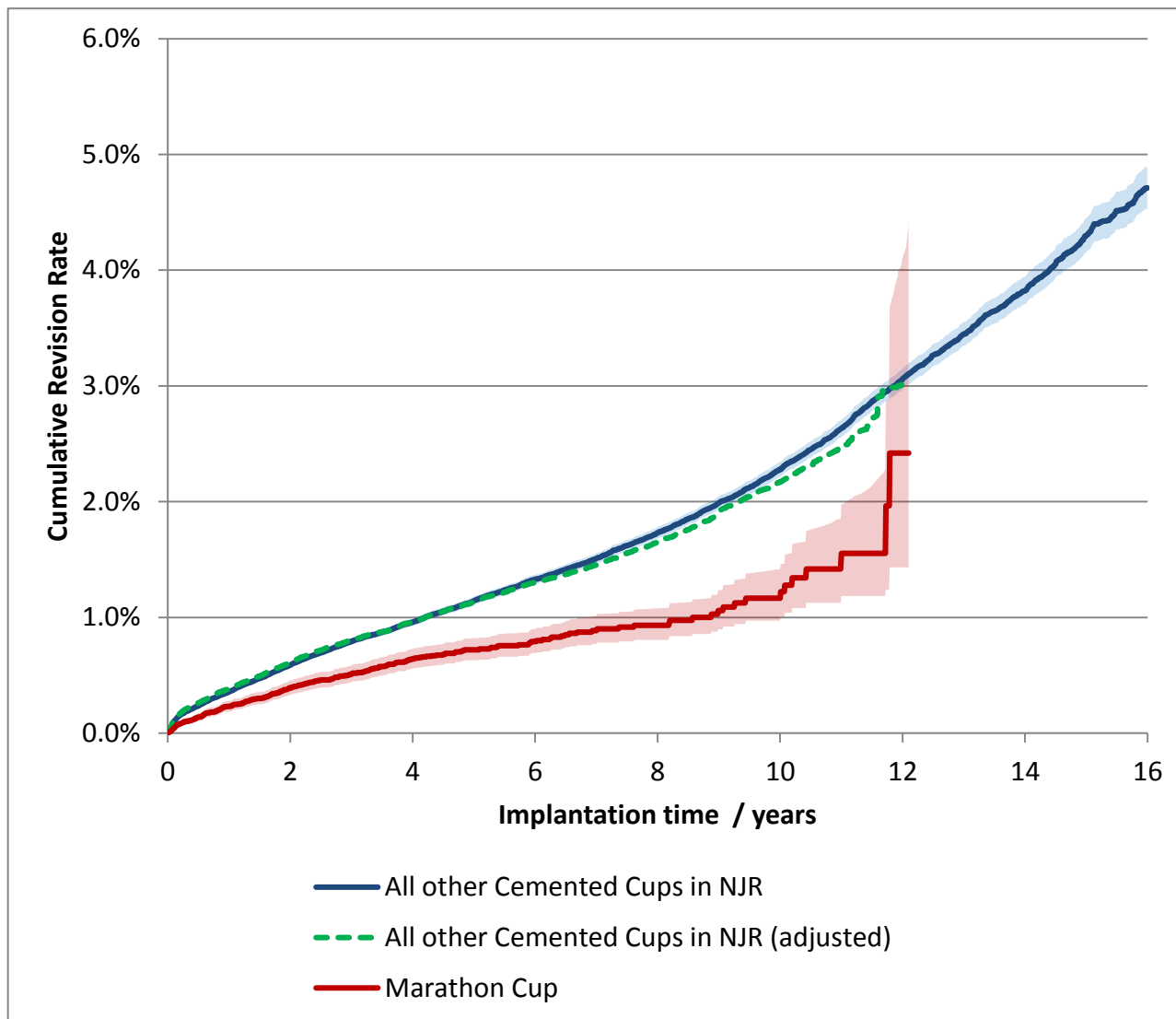
Cox Proportional Hazards model for revision risk ratio of Marathon Cup / All other Cemented Cups in NJR, with endpoint as any revision.

Adjustment	Hazard Ratio (95% CI)	p-value
All bearings. Unadjusted.	0.61 (0.54 - 0.69)	<0.001
All bearings. Adjusted for age, gender, year cohort and indications.	0.62 (0.55 - 0.70)	<0.001

Revision and Survivorship

Cumulative Revision Rate

Endpoint: Acetabular Revision. Excluding Metal-on-Metal



Cox Proportional Hazards model for revision risk ratio of Marathon Cup / All other Cemented Cups in NJR, with endpoint as any revision.

Adjustment	Hazard Ratio (95% CI)	p-value
Excluding MoM. Unadjusted.	0.61 (0.54 - 0.69)	<0.001
Excluding MoM. Adjusted for age, gender, year cohort and indications.	0.62 (0.55 - 0.71)	<0.001

Revision and Survivorship

Cumulative Revision Rate

Endpoint: All revisions

Period /years	All Bearing types				Excluding Metal on Metal Bearings			
	At Risk	Marathon Cup	All other Cemented Cups in NJR	All THR	At Risk	Marathon Cup	All other Cemented Cups in NJR	All THR
0	40,551	-	-	-	40,551	-	-	-
1	37,119	0.5% (0.5% - 0.6%)	0.6% (0.6% - 0.6%)	0.8% (0.8% - 0.8%)	37,119	0.5% (0.5% - 0.6%)	0.6% (0.6% - 0.6%)	0.8% (0.8% - 0.8%)
2	31,522	0.8% (0.7% - 0.9%)	0.9% (0.8% - 0.9%)	1.1% (1.1% - 1.2%)	31,522	0.8% (0.7% - 0.9%)	0.9% (0.8% - 0.9%)	1.1% (1.1% - 1.1%)
3	25,840	1.0% (0.9% - 1.1%)	1.1% (1.1% - 1.2%)	1.5% (1.4% - 1.5%)	25,840	1.0% (0.9% - 1.1%)	1.1% (1.1% - 1.2%)	1.3% (1.3% - 1.4%)
4	20,356	1.2% (1.1% - 1.3%)	1.3% (1.3% - 1.4%)	1.8% (1.8% - 1.8%)	20,356	1.2% (1.1% - 1.3%)	1.3% (1.3% - 1.4%)	1.6% (1.6% - 1.6%)
5	15,378	1.3% (1.2% - 1.4%)	1.6% (1.5% - 1.6%)	2.1% (2.1% - 2.2%)	15,378	1.3% (1.2% - 1.4%)	1.6% (1.5% - 1.6%)	1.8% (1.8% - 1.8%)
6	11,018	1.5% (1.3% - 1.6%)	1.8% (1.8% - 1.9%)	2.5% (2.5% - 2.6%)	11,018	1.5% (1.3% - 1.6%)	1.8% (1.8% - 1.9%)	2.0% (2.0% - 2.1%)
7	7,387	1.6% (1.5% - 1.8%)	2.1% (2.0% - 2.1%)	2.9% (2.9% - 3.0%)	7,387	1.6% (1.5% - 1.8%)	2.0% (2.0% - 2.1%)	2.3% (2.2% - 2.3%)
8	5,060	1.7% (1.6% - 1.9%)	2.3% (2.3% - 2.4%)	3.3% (3.3% - 3.4%)	5,060	1.7% (1.6% - 1.9%)	2.3% (2.3% - 2.4%)	2.5% (2.5% - 2.6%)
9	3,240	1.9% (1.7% - 2.1%)	2.6% (2.6% - 2.7%)	3.8% (3.7% - 3.8%)	3,240	1.9% (1.7% - 2.1%)	2.6% (2.6% - 2.7%)	2.8% (2.8% - 2.9%)
10	1,802	2.1% (1.8% - 2.4%)	3.0% (2.9% - 3.1%)	4.3% (4.2% - 4.3%)	1,802	2.1% (1.8% - 2.4%)	3.0% (2.9% - 3.1%)	3.2% (3.1% - 3.2%)
11	725	2.4% (2.0% - 2.9%)	3.4% (3.3% - 3.5%)	4.8% (4.7% - 4.8%)	725	2.4% (2.0% - 2.9%)	3.4% (3.3% - 3.5%)	3.5% (3.5% - 3.6%)
12	118	3.5% (2.4% - 5.3%)	3.9% (3.8% - 4.0%)	5.3% (5.3% - 5.4%)	118	3.5% (2.4% - 5.3%)	3.9% (3.8% - 4.0%)	4.0% (3.9% - 4.0%)
13		(-)	4.3% (4.2% - 4.4%)	5.8% (5.8% - 5.9%)		(-)	4.3% (4.2% - 4.4%)	4.4% (4.3% - 4.5%)
14		(-)	4.8% (4.6% - 4.9%)	6.3% (6.3% - 6.4%)		(-)	4.8% (4.6% - 4.9%)	4.8% (4.7% - 4.9%)
15		(-)	5.3% (5.1% - 5.4%)	6.9% (6.8% - 7.0%)		(-)	5.3% (5.1% - 5.4%)	5.3% (5.2% - 5.4%)

Cumulative revision rate with 95% confidence intervals

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

Revision and Survivorship

Cumulative Revision Rate

Endpoint: Acetabular Revision

Period /years	All Bearing types				Excluding Metal on Metal Bearings			
	At Risk	Marathon Cup	All Other Cemented Cups in NJR	All THR	At Risk	Marathon Cup	All Other Cemented Cups in NJR	All THR
0	40,551	-	-	-	40,551	-	-	-
1	37,119	0.2% (0.2% - 0.3%)	0.4% (0.3% - 0.4%)	0.4% (0.4% - 0.4%)	37,119	0.2% (0.2% - 0.3%)	0.4% (0.3% - 0.4%)	0.4% (0.4% - 0.4%)
2	31,522	0.4% (0.3% - 0.5%)	0.6% (0.6% - 0.6%)	0.7% (0.7% - 0.7%)	31,522	0.4% (0.3% - 0.5%)	0.6% (0.6% - 0.6%)	0.6% (0.6% - 0.6%)
3	25,840	0.5% (0.4% - 0.6%)	0.8% (0.8% - 0.8%)	0.9% (0.9% - 0.9%)	25,840	0.5% (0.4% - 0.6%)	0.8% (0.8% - 0.8%)	0.8% (0.8% - 0.8%)
4	20,356	0.6% (0.6% - 0.7%)	1.0% (0.9% - 1.0%)	1.1% (1.1% - 1.2%)	20,356	0.6% (0.6% - 0.7%)	1.0% (0.9% - 1.0%)	1.0% (0.9% - 1.0%)
5	15,378	0.7% (0.6% - 0.8%)	1.1% (1.1% - 1.2%)	1.4% (1.4% - 1.4%)	15,378	0.7% (0.6% - 0.8%)	1.1% (1.1% - 1.2%)	1.1% (1.1% - 1.1%)
6	11,018	0.8% (0.7% - 0.9%)	1.3% (1.3% - 1.4%)	1.7% (1.7% - 1.7%)	11,018	0.8% (0.7% - 0.9%)	1.3% (1.3% - 1.4%)	1.3% (1.2% - 1.3%)
7	7,387	0.9% (0.8% - 1.0%)	1.5% (1.5% - 1.6%)	2.0% (2.0% - 2.0%)	7,387	0.9% (0.8% - 1.0%)	1.5% (1.5% - 1.6%)	1.4% (1.4% - 1.4%)
8	5,060	0.9% (0.8% - 1.1%)	1.7% (1.7% - 1.8%)	2.3% (2.3% - 2.4%)	5,060	0.9% (0.8% - 1.1%)	1.7% (1.7% - 1.8%)	1.6% (1.6% - 1.6%)
9	3,240	1.1% (0.9% - 1.2%)	2.0% (1.9% - 2.1%)	2.7% (2.6% - 2.7%)	3,240	1.1% (0.9% - 1.2%)	2.0% (1.9% - 2.0%)	1.8% (1.8% - 1.8%)
10	1,802	1.2% (1.0% - 1.4%)	2.3% (2.2% - 2.4%)	3.0% (3.0% - 3.1%)	1,802	1.2% (1.0% - 1.4%)	2.3% (2.2% - 2.3%)	2.0% (2.0% - 2.0%)
11	725	1.6% (1.2% - 2.0%)	2.6% (2.6% - 2.7%)	3.4% (3.4% - 3.5%)	725	1.6% (1.2% - 2.0%)	2.6% (2.6% - 2.7%)	2.3% (2.2% - 2.3%)
12	118	2.4% (1.4% - 4.1%)	3.1% (3.0% - 3.2%)	3.9% (3.8% - 3.9%)	118	2.4% (1.4% - 4.1%)	3.1% (3.0% - 3.2%)	2.6% (2.6% - 2.7%)
13		(-)	3.5% (3.4% - 3.6%)	4.3% (4.2% - 4.3%)		(-)	3.4% (3.3% - 3.6%)	2.9% (2.9% - 3.0%)
14		(-)	3.8% (3.7% - 4.0%)	4.7% (4.6% - 4.8%)		(-)	3.8% (3.7% - 3.9%)	3.3% (3.2% - 3.4%)
15		(-)	4.3% (4.2% - 4.5%)	5.2% (5.1% - 5.3%)		(-)	4.3% (4.2% - 4.4%)	3.7% (3.6% - 3.8%)

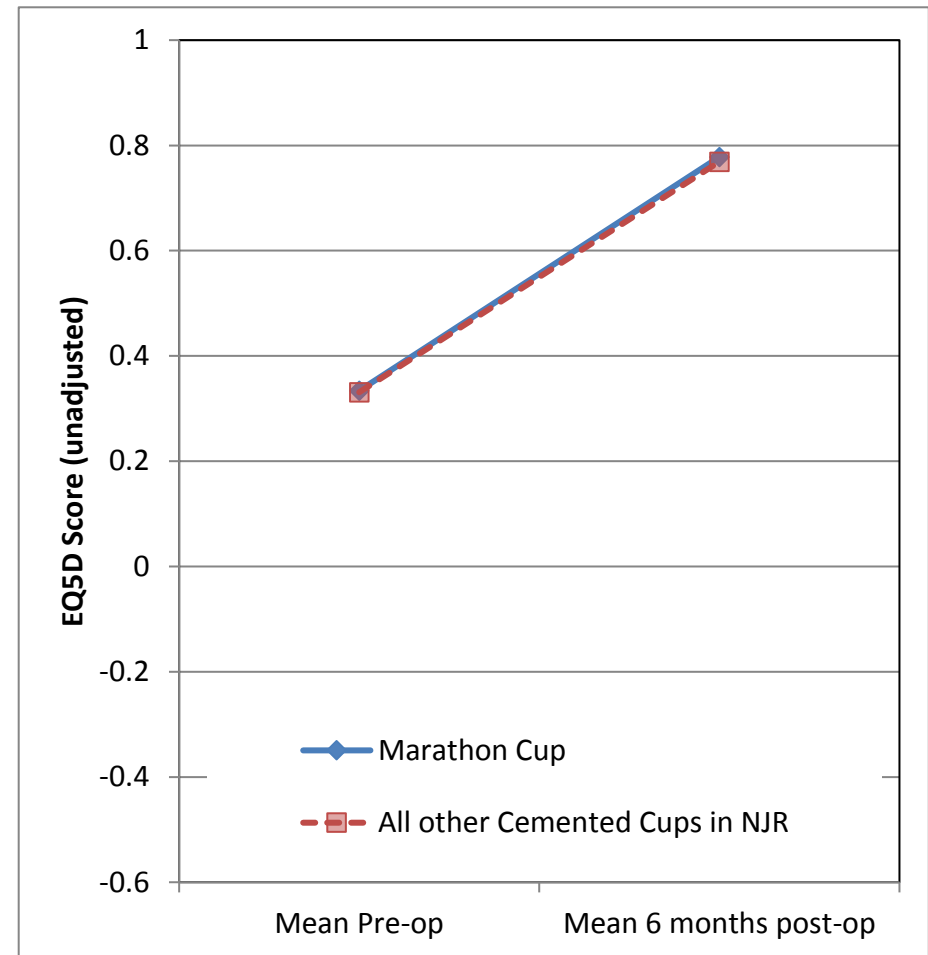
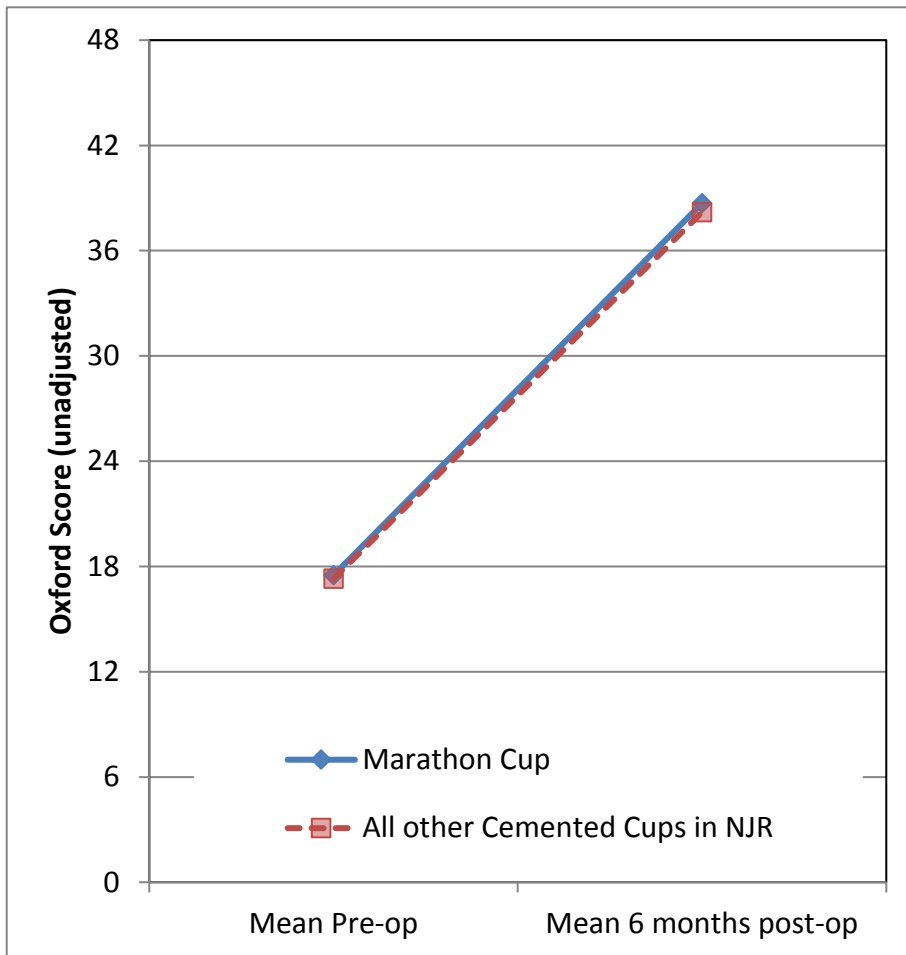
Cumulative revision rate with 95% confidence intervals

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

Patient Reported Outcomes

Comprising PROMs data up to and including: 29/03/2018

PROMs Analysis



Patient Reported Outcomes

PROMs Analysis

Comprising PROMs data up to and including: 29/03/2018

Oxford Hip Score (0 - 48)	Marathon Cup	All other Cemented Cups in NJR	All THR in NJR
Paired Records	11,167	88,459	289,318
PreOp score	17.5 (17.3 - 17.6)	17.3 (17.3 - 17.4)	18.0 (18.0 - 18.1)
6 month score	38.7 (38.6 - 38.9)	38.2 (38.1 - 38.3)	39.4 (39.3 - 39.4)
6 month score (adjusted)	39.1 (39.0 - 39.3)	38.8 (38.8 - 38.9)	39.4 (39.3 - 39.4)
Health gain	21.2 (21.1 - 21.4)	20.9 (20.8 - 20.9)	21.4 (21.3 - 21.4)
Health gain (adjusted)	21.1 (20.9 - 21.2)	20.8 (20.8 - 20.9)	21.4 (21.3 - 21.4)
p value (adjusted health gain)	< 0.001		
Score Improved	97.2%	97.0%	97.2%

EQ-5D Index (-0.59 - 1.00)	Marathon Cup	All other Cemented Cups in NJR	All THR in NJR
Paired Records	10,204	80,709	266,101
PreOp score	0.334 (0.328 - 0.340)	0.331 (0.328 - 0.333)	0.355 (0.354 - 0.356)
6 month score	0.778 (0.773 - 0.783)	0.769 (0.767 - 0.770)	0.792 (0.791 - 0.793)
6 month score (adjusted)	0.786 (0.782 - 0.791)	0.780 (0.779 - 0.782)	0.792 (0.791 - 0.793)
Health gain	0.444 (0.437 - 0.450)	0.438 (0.436 - 0.440)	0.437 (0.436 - 0.438)
Health gain (adjusted)	0.431 (0.427 - 0.435)	0.425 (0.423 - 0.426)	0.437 (0.436 - 0.438)
p value (adjusted health gain)	0.006		
Score Improved	89.5%	88.7%	89.5%

EQ-VAS (0 - 100)	Marathon Cup	All other Cemented Cups in NJR	All THR in NJR
Paired Records	9,724	76,914	255,186
PreOp score	64.6 (64.2 - 65.1)	64.4 (64.2 - 64.5)	65.0 (65.0 - 65.1)
6 month score	76.0 (75.7 - 76.4)	75.1 (74.9 - 75.2)	76.8 (76.7 - 76.9)
6 month score (adjusted)	76.5 (76.2 - 76.8)	76.2 (76.0 - 76.3)	76.8 (76.8 - 76.9)
Health gain	11.4 (11.0 - 11.9)	10.7 (10.5 - 10.9)	11.8 (11.7 - 11.9)
Health gain (adjusted)	11.5 (11.1 - 11.8)	11.1 (11.0 - 11.2)	11.8 (11.7 - 11.8)
p value (adjusted health gain)	0.017		
Score Improved	65.3%	63.3%	65.7%

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

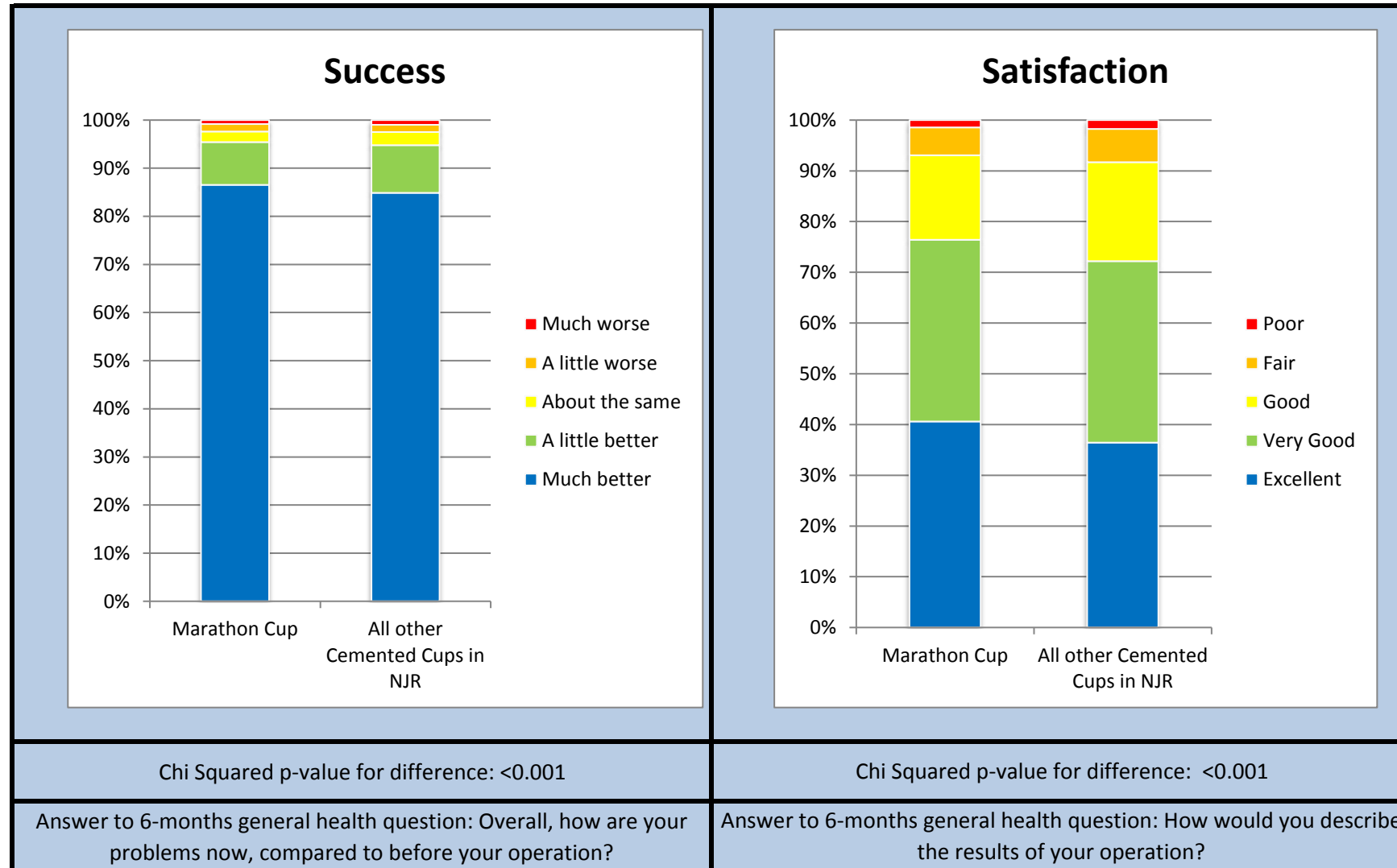
Figures in parentheses represent the 95% confidence interval for the mean

Summary Report for:

Marathon Cup

Responses are not case mix adjusted

Patient Reported Outcomes



Patient Reported Outcomes

Success

Response	Marathon Cup	All other Cemented Cups in NJR
Much better	9815	76299
A little better	1006	8899
About the same	250	2471
A little worse	176	1313
Much worse	93	897

Answer to 6-months general health question:

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

Satisfaction

Response	Marathon Cup	All other Cemented Cups in NJR
Excellent	4593	32687
Very Good	4047	32102
Good	1887	17519
Fair	622	5858
Poor	161	1584

Answer to 6-months general health question:

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

Disclaimer

Disclaimer

The National Joint Registry (NJR) produces this report through its contractor, Northgate Public Services (UK) Limited (NPS) using data collected, collated and provided by third parties. As a result, neither NJR or NPS takes any responsibility for the accuracy, currency, reliability and correctness of any data used or referred to in this report, and disclaims all warranties in relation to such data, in each case to the maximum extent permitted by legislation.

To the maximum extent permitted by law, neither the NJR or NPS shall have any liability (including but not limited to liability by reason of negligence) for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on the data within this report and whether caused by reason of any error, omission or misrepresentation in the report or otherwise. This report is not to be taken as advice. Third parties using or relying on the data in this report do so at their own risk and will be responsible for making their own assessment and should verify all relevant representations, statements and information with their own professional advisers.

Appendix A: Component List

Catalogue Number	Description	Number Implanted
965512238	Marathon XLPE Cemented Cup 22.225/38mm	159
965512240	Marathon XLPE Cemented Cup 22.225/40mm	642
965512243	Marathon XLPE Cemented Cup 22.225/43mm	477
965512245	Marathon XLPE Cemented Cup 22.225/45mm	141
965512247	Marathon XLPE Cemented Cup 22.225/47mm	175
965512250	Marathon XLPE Cemented Cup 22.225/50mm	37
965512253	Marathon XLPE Cemented Cup 22.225/53mm	6
965512650	Marathon XLPE Cemented Cup 26/50mm	1
965512653	Marathon XLPE Cemented Cup 26/53mm	1
965512840	Marathon XLPE Cemented Cup 28/40mm	7346
965512843	Marathon XLPE Cemented Cup 28/43mm	9589
965512845	Marathon XLPE Cemented Cup 28/45mm	3821
965512847	Marathon XLPE Cemented Cup 28/47mm	3681
965512850	Marathon XLPE Cemented Cup 28/50mm	1462
965512853	Marathon XLPE Cemented Cup 28/53mm	404
965513245	Marathon XLPE Cemented Cup 32/45mm	5172
965513247	Marathon XLPE Cemented Cup 32/47mm	3834
965513250	Marathon XLPE Cemented Cup 32/50mm	1805
965513253	Marathon XLPE Cemented Cup 32/53mm	584
965513650	Marathon XLPE Cemented Cup 36/50mm	949
965513653	Marathon XLPE Cemented Cup 36/53mm	265