

**Bespoke Implant Report for:**

**DePuy**

**C-Stem AMT - Marathon vs. All other cemented hips**

**Comprising PRIMARY hips implanted up to:  
NJR Database extract:**

**07 March 2021  
06 May 2021**

**Produced on:  
Licensed for use until:**

**18 June 2021  
18 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 DePuy C-Stem AMT - Marathon vs. All other cemented hips used in primary hips, based on data collected by the NJR and PROMs data collected by NHS Digital.

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Both groups exclude metal-on-metal and ceramic-on-metal bearings

## Implant Usage

Totals Recorded in NJR	C-Stem AMT - Marathon	All other cemented hips
First usage in the NJR:	06-Jan-2008	01-Apr-2003
Last usage in this dataset:	06-Mar-2021	07-Mar-2021
Maximum implantation time (years):	13.2	17.9
Mean implantation time (years):	3.7	7.0
Procedures	14442	385761
Patients	13539	342653
Centres	124	471
Consultants	429	3284
Implanting Surgeons	645	5706

Group	Year of implantation													Total
	Pre-2010	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
<b>C-Stem AMT - Marathon</b>	102	172	294	417	624	1337	1655	1703	1952	2239	2419	1291	237	14442
<b>All other cemented hips</b>	127383	20767	22124	24554	25652	26485	25931	25941	25090	24704	23819	11661	1650	385761
<b>Total</b>	127485	20939	22418	24971	26276	27822	27586	27644	27042	26943	26238	12952	1887	400203

## Patient / Procedure Details

## Patient Details

	C-Stem AMT - Marathon	All other cemented hips
<b>Total Procedures</b>	14442	385761
<b>Total Patients</b>	13539	342653
<b>Demographics</b>		
Mean age	<b>74.8</b>	<b>73.6</b>
< 50	0.9%	1.5%
50 – 59	4.1%	5.4%
60 – 69	17.7%	22.0%
70 – 79	46.4%	44.3%
≥ 80	30.9%	26.8%
Median BMI	<b>28</b>	<b>28</b>
% BMI information available	64.3%	59.0%
Underweight ( BMI < 18.5)	1.2%	1.1%
Normal (18.5 ≤ BMI < 25)	22.8%	22.6%
Overweight (25 ≤ BMI < 30)	39.8%	40.1%
Obese I (30 ≤ BMI < 35)	24.8%	24.8%
Obese II (35 ≤ BMI < 40)	9.0%	8.6%
Obese III (BMI ≥ 40)	2.4%	2.7%
% Male	32.3%	33.5%
<b>ASA Grades</b>		
P1 - Fit and healthy	5.1%	10.9%
P2 - Mild disease not incapacitating	69.7%	67.6%
P3 - Incapacitating systemic disease	24.5%	20.6%
P4 / P5	0.7%	0.8%
<b>Indications</b>		
Osteoarthritis	86.38%	91.04%
Rheumatoid Arthritis	1.36%	1.36%
Other Inflammatory Arthropathy	1.92%	2.26%
Previous Trauma	10.14%	4.59%
Avascular Necrosis	0.38%	0.61%
Other	1.56%	2.15%

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

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

Reason for Revision	C-Stem AMT - Marathon		All other cemented hips		p value
	Revised <sup>†</sup>	Expected*	Revised <sup>†</sup>	Expected*	
Unexplained Pain	5	6.58	653	651.42	0.695
Dislocation / Subluxation	29	55.00	2133	2107.00	<0.001
Adverse Soft Tissue Reaction	0	0.91	81	80.09	1
Infection	41	54.69	1758	1744.31	0.063
Aseptic Loosening - Stem	9	10.47	1147	1145.53	0.876
Aseptic Loosening - Socket	13	20.31	2267	2259.69	0.117
Periprosthetic Fracture Stem	59	37.67	1330	1351.33	<0.001
Periprosthetic Fracture Socket	2	1.72	77	77.28	0.692
Malalignment Stem	1	5.20	206	201.80	0.07
Malalignment Socket	0	6.67	345	338.33	0.003
Wear Of Acetabular Component	3	3.00	438	438.00	1
Lysis Stem	1	1.72	279	278.28	1
Lysis Socket	3	3.11	431	430.89	1
Implant Fracture Stem	3	1.90	156	157.10	0.444
Implant Fracture Socket	0	0.24	19	18.76	1
Implant Fracture Head	0	0.39	22	21.61	1
Dissociation of Liner	0	1.45	55	53.55	0.407
Other / reason not recorded	5	5.37	211	210.63	1
<b>Total Revised</b>	<b>155</b>	<b>184.82</b>	<b>8578</b>	<b>8548.18</b>	<b>0.026</b>

\* Logrank comparison, adjusted for Patient Gender, Age Group, Implantation year, and Indications (OA/non-OA)

† multiple reasons may be listed for one revision procedure

Significantly better,  $p < 0.001$

Significantly better,  $p < 0.05$

Significantly worse  $p < 0.05$

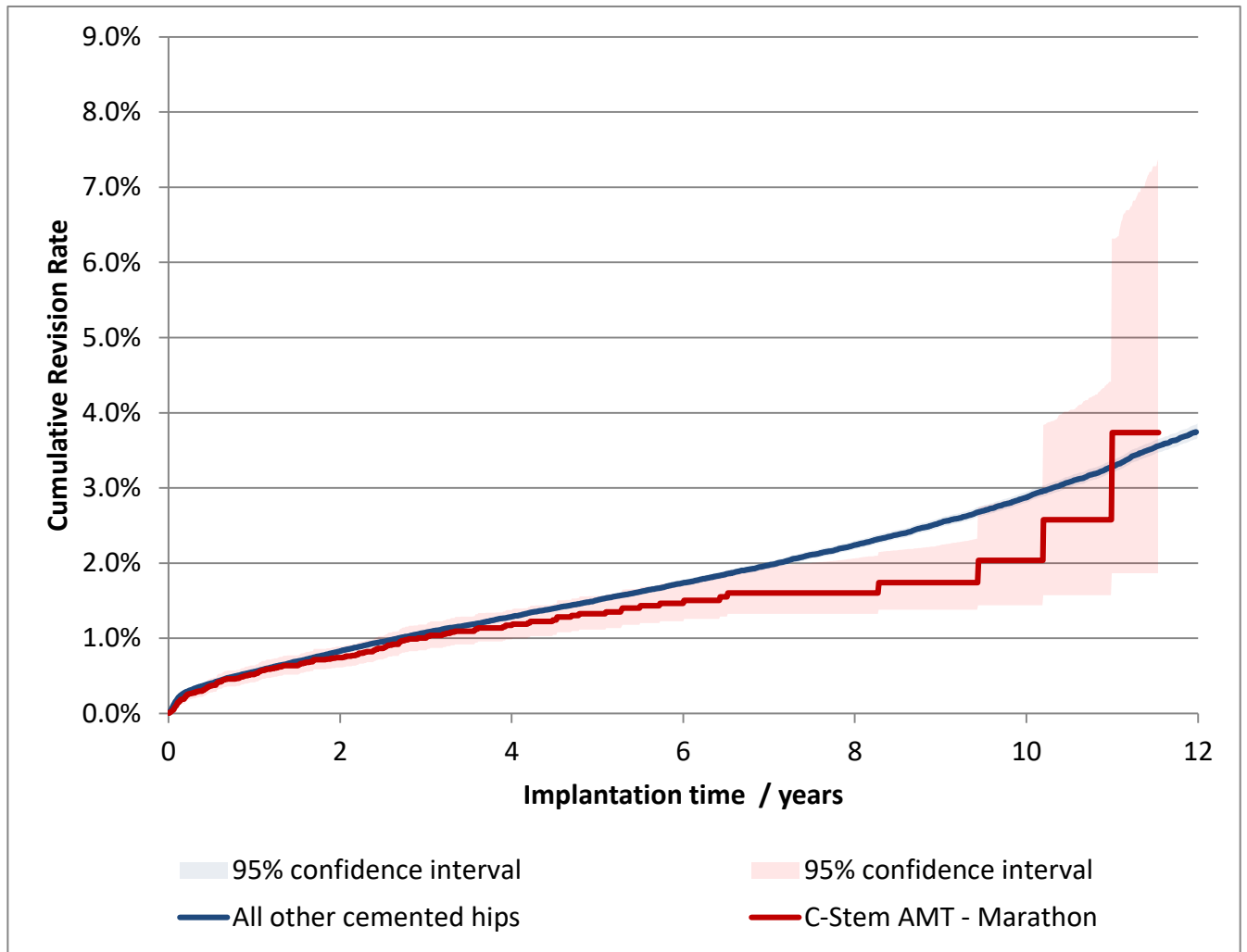
Significantly worse  $p < 0.001$



Components Revised	C-Stem AMT - Marathon		All other cemented hips	
Femoral only	62	40.0%	1465	17.1%
Acetabular only	23	14.8%	2195	25.6%
Both femoral and acetabular	46	29.7%	4334	50.5%
Neither femoral nor acetabular revision recorded *	24	15.5%	584	6.8%

\* includes isolated head and/or liner exchange

**Endpoint: Revision for any reason**



Stratified Log-rank test, with observed and expected number of revisions

Adjustment	C-Stem AMT - Marathon		All other cemented hips		p-value
	Observed	Expected	Observed	Expected	
Unadjusted	155	177.4	8578	8555.6	0.095
Adjusted	155	184.8	8578	8548.2	0.026

Cox Proportional Hazards model for revision risk ratio of C-Stem AMT - Marathon / All other cemented hips

Adjustment	Hazard Ratio (95% CI)	p-value
Unadjusted	0.87 (0.74 - 1.02)	0.089
Adjusted	0.83 (0.71 - 0.98)	0.024

Adjustment includes Patient Gender, Age Group, Implantation year, and Indications (OA/non-OA)

## Revision and Survivorship

### Cumulative Revision Rate

Endpoint: Revision for any reason

Period /years	C-Stem AMT - Marathon		All other cemented hips	
	At Risk	Revision Rate	At Risk	Revision Rate
0	14,442	-	385,761	-
1	13,050	0.52% (0.41% - 0.64%)	366,723	0.56% (0.53% - 0.58%)
2	10,392	0.74% (0.61% - 0.89%)	335,472	0.83% (0.80% - 0.86%)
3	7,879	1.00% (0.84% - 1.18%)	302,400	1.08% (1.04% - 1.11%)
4	5,859	1.17% (0.98% - 1.38%)	270,566	1.29% (1.25% - 1.33%)
5	4,193	1.33% (1.11% - 1.56%)	237,722	1.51% (1.47% - 1.55%)
6	2,592	1.46% (1.23% - 1.74%)	205,798	1.74% (1.69% - 1.78%)
7	1,404	1.60% (1.33% - 1.96%)	175,087	1.97% (1.92% - 2.03%)
8	824	1.60% (1.33% - 2.06%)	146,099	2.24% (2.19% - 2.30%)
9	464	1.74% (1.38% - 2.24%)	119,821	2.54% (2.48% - 2.60%)
10	215	2.04% (1.44% - 2.90%)	96,861	2.87% (2.80% - 2.95%)
11	81	3.74% (1.86% - 6.32%)	77,279	3.29% (3.20% - 3.37%)
12		( - )	60,083	3.76% (3.66% - 3.86%)
13		( - )	44,837	4.18% (4.07% - 4.29%)
14		( - )	30,722	4.59% (4.46% - 4.71%)
15		( - )	19,771	5.07% (4.92% - 5.23%)

Cumulative revision rate with 95% confidence intervals

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

## Patient Reported Outcomes

## PROMs Analysis

Comprising PROMs data up to: 31 December 2019

Oxford Hip Score (0 - 48)	C-Stem AMT - Marathon	All other cemented hips
Paired Records	4,709	103,329
PreOp score	17.4 (17.2 - 17.6)	17.2 (17.2 - 17.3)
6 month score	38.9 (38.6 - 39.1)	38.3 (38.3 - 38.4)
6 month score (adjusted)	39.5 (39.3 - 39.7)	39.0 (38.9 - 39.0)
Health gain	21.5 (21.2 - 21.7)	21.1 (21.0 - 21.2)
Health gain (adjusted)	21.6 (21.3 - 21.8)	21.0 (21.0 - 21.1)
p value (adjusted health gain)	< 0.001	
Score Improved	97.6%	97.1%

EQ-5D Index (-0.59 - 1.00)	C-Stem AMT - Marathon	All other cemented hips
Paired Records	4,275	94,360
PreOp score	0.334 (0.324 - 0.344)	0.329 (0.327 - 0.331)
6 month score	0.786 (0.780 - 0.793)	0.772 (0.770 - 0.773)
6 month score (adjusted)	0.795 (0.789 - 0.802)	0.783 (0.782 - 0.785)
Health gain	0.452 (0.442 - 0.462)	0.443 (0.441 - 0.445)
Health gain (adjusted)	0.442 (0.436 - 0.448)	0.430 (0.429 - 0.431)
p value (adjusted health gain)	0.002	
Score Improved	90.4%	89.1%

EQ-VAS (0 - 100)	C-Stem AMT - Marathon	All other cemented hips
Paired Records	4,058	89,943
PreOp score	65.4 (64.7 - 66.1)	64.1 (64.0 - 64.3)
6 month score	76.3 (75.8 - 76.9)	75.3 (75.2 - 75.5)
6 month score (adjusted)	77.0 (76.5 - 77.5)	76.4 (76.3 - 76.5)
Health gain	10.9 (10.2 - 11.6)	11.2 (11.1 - 11.4)
Health gain (adjusted)	12.2 (11.7 - 12.7)	11.6 (11.5 - 11.7)
p value (adjusted health gain)	0.039	
Score Improved	63.5%	64.1%

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

Bespoke report on:

C-Stem AMT - Marathon vs. All other cemented hips

Responses are not case mix adjusted

Patient Reported Outcomes





## Patient Reported Outcomes

### Success

Response	C-Stem AMT - Marathon	All other cemented hips
Much better	4134	89236
A little better	428	10218
About the same	112	2839
A little worse	58	1568
Much worse	38	1015

Answer to 6-months general health question:

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

### Satisfaction

Response	C-Stem AMT - Marathon	All other cemented hips
Excellent	1904	38829
Very Good	1729	37350
Good	799	20041
Fair	263	6700
Poor	59	1797

Answer to 6-months general health question:

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

## Disclaimer

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