

CPT Total Conventional Hip Investigation

Note: This analysis compares the CPT femoral stem prosthesis with all other total conventional hip prostheses.

This prosthesis has been identified as having a significantly higher rate of revision. For a detailed explanation of the process used by the Registry that results in identification of prostheses that have a higher than anticipated rate of revision please refer to the Prostheses with Higher than Anticipated Rates of Revision chapter of the most recent AOANJRR Annual Report, <https://aoanjrr.sahmri.com/annual-reports-2025>.

Note: Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator. Procedures using prostheses with no recorded use in 2024 are excluded from the comparator.

TABLE 1

Revision Rate of Primary Total Conventional Hip Replacement

The revision rate of the CPT total conventional hip prosthesis is compared to all other total conventional hip prostheses.

Table 1: Revision Rates of Primary Total Conventional Hip Replacement

Component	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
CPT	1334	25572	190107	0.70 (0.66, 0.74)
Other Total Conventional Hip	18212	527248	3368990	0.54 (0.53, 0.55)
TOTAL	19546	552820	3559097	0.55 (0.54, 0.56)

Note: Prostheses no longer used in 2024 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 2

Yearly Cumulative Percent Revision of Primary Total Conventional Hip Replacement

The yearly cumulative percent revision of the CPT total conventional hip prosthesis is compared to all other total conventional hip prostheses.

Table 2: Yearly Cumulative Percent Revision (95% CI) of Primary Total Conventional Hip Replacement

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs	8 Yrs
CPT	2.3 (2.1, 2.5)	2.9 (2.7, 3.1)	3.3 (3.1, 3.6)	3.8 (3.6, 4.1)	4.3 (4.0, 4.5)	4.7 (4.4, 5.0)	5.1 (4.8, 5.4)	5.5 (5.2, 5.8)
Other Total Conventional Hip	1.7 (1.7, 1.7)	2.1 (2.1, 2.2)	2.5 (2.4, 2.5)	2.7 (2.7, 2.8)	3.0 (2.9, 3.0)	3.3 (3.2, 3.3)	3.5 (3.4, 3.6)	3.8 (3.7, 3.8)

CPR	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs
CPT	5.9 (5.6, 6.2)	6.3 (5.9, 6.6)	6.6 (6.2, 7.0)	6.9 (6.5, 7.3)	7.3 (6.9, 7.8)	7.6 (7.1, 8.1)	8.0 (7.5, 8.5)	8.2 (7.7, 8.8)
Other Total Conventional Hip	4.1 (4.0, 4.1)	4.4 (4.3, 4.4)	4.7 (4.6, 4.8)	5.1 (5.0, 5.2)	5.4 (5.3, 5.5)	5.8 (5.7, 5.9)	6.2 (6.1, 6.4)	6.6 (6.5, 6.8)

CPR	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs
CPT	8.4 (7.8, 9.0)	8.9 (8.2, 9.7)	9.3 (8.6, 10.2)	9.5 (8.7, 10.4)	10.1 (9.1, 11.3)	10.4 (9.2, 11.8)	11.5 (9.7, 13.7)
Other Total Conventional Hip	7.0 (6.9, 7.2)	7.4 (7.2, 7.6)	7.9 (7.6, 8.1)	8.2 (8.0, 8.5)	8.7 (8.4, 9.0)	9.3 (8.9, 9.8)	9.8 (9.3, 10.4)

Note: Prostheses no longer used in 2024 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

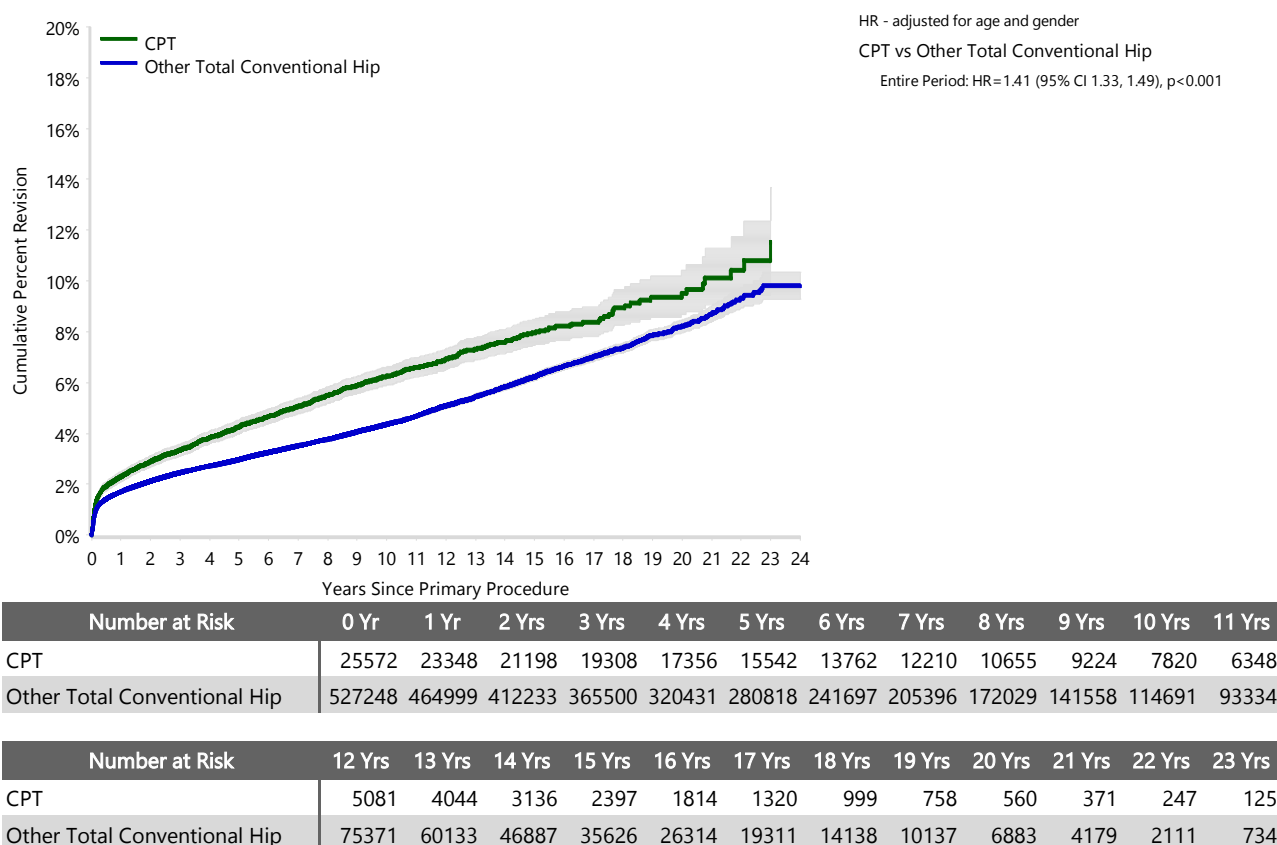
FIGURE 1

Yearly Cumulative Percent Revision of Primary Total Conventional Hip Replacement

The yearly cumulative percent revision of the CPT total conventional hip prosthesis is compared to all other total conventional hip prostheses. In addition, hazard ratios are reported.

Hazard ratios are reported for specific time periods during which the hazard ratio is constant. This is done to enable more specific and valid comparisons of the risk of revision over time. The pattern of variation in risk has important implications with respect to the underlying reasons for any difference.

Figure 1: Cumulative Percent Revision of Primary Total Conventional Hip Replacement



Note: Prostheses no longer used in 2024 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 3**Primary Diagnosis for Revised Primary Total Conventional Hip Replacement**

This table identifies the diagnosis of the primary procedure which was subsequently revised. This information is provided as there is a variation on outcome depending on the primary diagnosis. It is therefore important when considering the reasons for a higher than anticipated rate of revision that there is identification of the primary diagnosis. This information should be compared to the primary diagnosis for the revisions of all other total conventional hip prostheses.

Table 3: Primary Diagnosis for Revised Primary Total Conventional Hip Replacement

Primary Diagnosis	CPT		Other Total Conventional Hip	
	Number	Percent	Number	Percent
Osteoarthritis	1008	75.6	15207	83.5
Fractured Neck Of Femur	163	12.2	1279	7.0
Osteonecrosis	64	4.8	793	4.4
Developmental Dysplasia	16	1.2	298	1.6
Rheumatoid Arthritis	19	1.4	192	1.1
Failed Internal Fixation	16	1.2	143	0.8
Tumour	17	1.3	132	0.7
Other Inflammatory Arthritis	14	1.0	98	0.5
Fracture/Dislocation	12	0.9	42	0.2
Arthrodesis Takedown			14	0.1
Other	5	0.4	14	0.1
TOTAL	1334	100.0	18212	100.0

Note: Prostheses no longer used in 2024 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 4

Reasons for Revision

This is reported in two ways: a percentage of primary procedures revised and as a percentage of all revision procedures.

% Primaries Revised: This shows the proportional contribution of each revision diagnosis as a percentage of the total number of primary procedures. This percentage can be used to approximate the risk of being revised for that diagnosis. Differing percentages between groups, with the same distribution of follow up time, may identify problems of concern.

% Revisions: The number of revisions for each diagnosis is expressed as a percentage of the total number of revisions. This shows the distribution of reasons for revision within a group but cannot be used as a comparison between groups.

Table 4: Primary Total Conventional Hip Replacement - Reason for Revision

Revision Diagnosis	Number	CPT		Other Total Conventional Hip		
		% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Infection	300	1.2	22.5	4483	0.9	24.6
Prosthesis Dislocation/Instability	355	1.4	26.6	4059	0.8	22.3
Fracture	421	1.6	31.6	3942	0.7	21.6
Loosening	169	0.7	12.7	3544	0.7	19.5
Pain	11	0.0	0.8	316	0.1	1.7
Leg Length Discrepancy	5	0.0	0.4	292	0.1	1.6
Malposition	9	0.0	0.7	260	0.0	1.4
Lysis	11	0.0	0.8	201	0.0	1.1
Implant Breakage Stem	9	0.0	0.7	194	0.0	1.1
Implant Breakage Acetabular Insert	7	0.0	0.5	120	0.0	0.7
Wear Acetabular Insert	3	0.0	0.2	106	0.0	0.6
Incorrect Sizing	3	0.0	0.2	95	0.0	0.5
Metal Related Pathology	7	0.0	0.5	89	0.0	0.5
Implant Breakage Acetabular	5	0.0	0.4	63	0.0	0.3
Wear Head				43	0.0	0.2
Tumour	3	0.0	0.2	37	0.0	0.2
Implant Breakage Head				31	0.0	0.2
Heterotopic Bone	2	0.0	0.1	25	0.0	0.1
Wear Acetabulum	1	0.0	0.1	9	0.0	0.0
Osteonecrosis	2	0.0	0.1	1	0.0	0.0
Synovitis				1	0.0	0.0
Other	11	0.0	0.8	301	0.1	1.7
N Revision	1334	5.2	100.0	18212	3.5	100.0
N Primary	25572			527248		

Note: Prostheses no longer used in 2024 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

FIGURE 2

Cumulative Incidence Revision Diagnosis of Primary Total Conventional Hip Replacement

This figure details the cumulative incidence of the most common reasons for revision. The five most common reasons for revision are included as long as each of these reasons account for more than 10 procedures or at least 5% of all revisions for the CPT total conventional hip prosthesis. A comparative graph is provided of the cumulative incidence for the same reasons for revisions for all other total conventional hip prostheses.

Figure 2: Cumulative Incidence Revision Diagnosis for Primary Total Conventional Hip Replacement

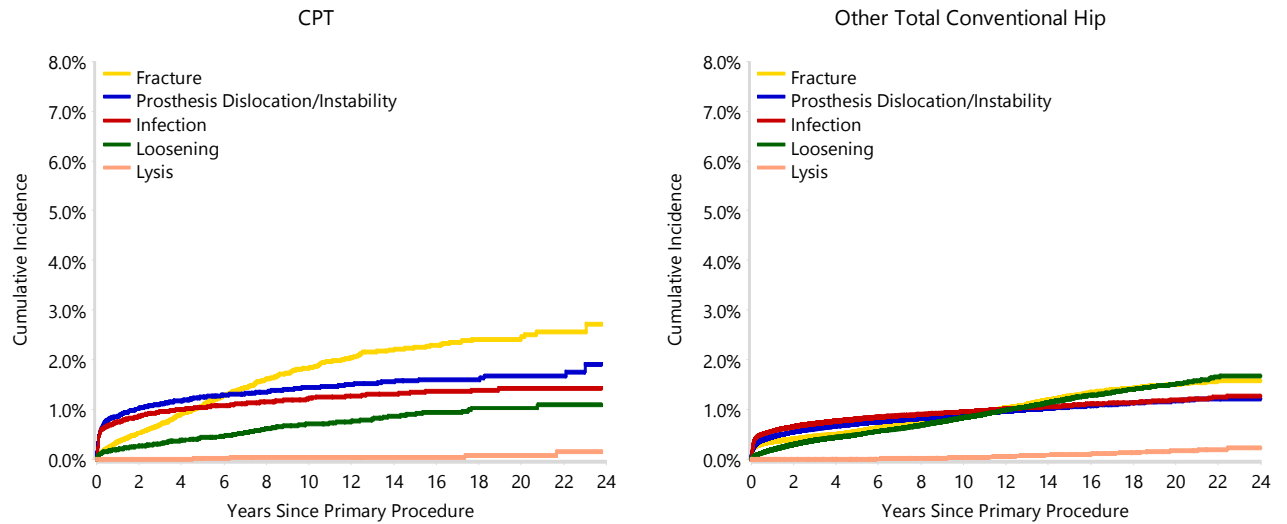


TABLE 5

Type of Revision Performed for Primary Total Conventional Hip Replacement

This analysis identifies the components used in the revision of the CPT total conventional hip prosthesis and compares it to the components used in the revision of all other total conventional hip prostheses.

The reason this analysis is undertaken is to identify whether there is one or more components which are being replaced that differ from the components replaced for revisions of all other total conventional hip prostheses i.e. is there a difference in the type of revision undertaken for the CPT total conventional hip prosthesis compared to all other total conventional hip prostheses.

Table 5: Primary Total Conventional Hip Replacement - Type of Revision

Type of Revision	CPT		Other Total Conventional Hip	
	Number	Percent	Number	Percent
Femoral Component	511	38.3	6072	33.3
Acetabular Component	165	12.4	3260	17.9
THR (Femoral/Acetabular)	166	12.4	2100	11.5
Cement Spacer	39	2.9	560	3.1
Removal of Prostheses	9	0.7	90	0.5
Reinsertion of Components	2	0.1	27	0.1
Total Femoral	1	0.1	13	0.1
Bipolar Head and Femoral			9	0.0
N Major	893	66.9	12131	66.6
Head/Insert	337	25.3	4770	26.2
Head Only	46	3.4	880	4.8
Minor Components	43	3.2	264	1.4
Insert Only	14	1.0	165	0.9
Bipolar Only			1	0.0
Cement Only	1	0.1		
Head/Neck			1	0.0
N Minor	441	33.1	6081	33.4
TOTAL	1334	100.0	18212	100.0

Note: Prostheses no longer used in 2024 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 6

Revision Rates of CPT Primary Total Conventional Hip Replacement by Fixation

This analysis is provided as some prostheses have more than one fixation option. Additionally there are prostheses where an alternative to the recommended approach to fixation was used e.g. a cementless prosthesis that has been cemented or vice-versa.

Table 6: Revised Number of CPT Primary Total Conventional Hip Replacement by Fixation

Fixation	N Revised	N Total
Cemented	147	2284
Cementless	0	3
Hybrid (Femur Cemented)	1187	23285
TOTAL	1334	25572

TABLE 7

Revision Rates of CPT Primary Total Conventional Hip Replacement by Bearing Surface

This analysis is provided as some prostheses are combined with a variety of bearing surfaces. All bearing surfaces used with this prosthesis are listed.

Table 7: Revised Number of CPT Primary Total Conventional Hip Replacement by Bearing Surface

Bearing Surface	N Revised	N Total
Ceramic/Ceramic	28	381
Ceramic/Non XLPE	12	102
Ceramic/XLPE	136	2720
Ceramic/XLPE + Antioxidant	61	1985
Metal/Metal	18	152
Metal/Non XLPE	82	1222
Metal/XLPE	857	14934
Metal/XLPE + Antioxidant	140	4064
Ceramicised Metal/XLPE + Antioxidant	0	1
Unknown	0	11
TOTAL	1334	25572

TABLE 8

Revision Rates of CPT Primary Total Conventional Hip Replacement by Approach

This analysis is provided as some prostheses are used with a variety of surgical approaches. All surgical approaches used with this prosthesis are listed.

Table 8: Revised Number of CPT Primary Total Conventional Hip Replacement by Approach

Approach	N Revised	N Total
Anterior	11	271
Lateral	123	2936
Posterior	412	9351
TOTAL	546	12558

Note: Excludes 13014 procedures with no approach recorded

TABLE 9**Number of Revisions of CPT Primary Total Conventional Hip Replacement by Year of Implant**

This analysis details the number of prostheses reported each year to the Registry for the CPT total conventional hip prosthesis. It also provides the subsequent number of revisions of the primaries reported in that year.

Primary procedures performed in later years have had less follow up time therefore the number revised is expected to be less than the number revised in earlier years. For example, a primary procedure performed in 2024 has a maximum of one year to be revised, whereas a primary procedure performed in 2022 has a maximum of three years to be revised.

Table 9: Number of Revisions of CPT Primary Total Conventional Hip Replacement by Year of Implant

Year of Implant	Number Revised	Total Number
2000	15	113
2001	27	407
2002	24	464
2003	39	477
2004	34	553
2005	27	504
2006	38	555
2007	37	739
2008	62	1070
2009	65	1049
2010	62	1196
2011	83	1241
2012	76	1295
2013	82	1462
2014	92	1566
2015	96	1303
2016	66	1233
2017	63	1240
2018	64	1159
2019	52	1275
2020	54	1339
2021	59	1409
2022	54	1333
2023	43	1566
2024	20	1024
TOTAL	1334	25572

TABLE 10

Revision Rates of CPT Primary Total Conventional Hip Replacement by Component

A prosthesis may be combined with multiple components. This analysis has been undertaken to determine if the revision rate varies according to the component with which it is combined.

Table 10: Revised Number of CPT Primary Total Conventional Hip Replacement by Acetabular Component

Acetabular Component	N Revised	N Total
Acetabular Shell (Global)	1	10
Adept	0	6
Allofit	85	2014
Apollo	0	1
Avantage	16	305
BI-MENTUM	0	1
Brunswick	0	1
Burch Schneider	2	6
Charnley	0	1
Contemporary	2	5
Continuum	203	3429
Contour	0	2
Custom Made (Ossis)	0	2
Delta-TT	1	1
DeltaMotion	0	1
Duraloc	1	2
Duraloc Option	0	1
Durasul	1	14
Durom	4	29
Dynasty	0	1
Elite Multi-Cup Ogee	0	5
Elite Plus LPW	0	2
Elite Plus Ogee	0	3
Endo-Model	0	1
Exceed	4	59
Exeter Contemporary	1	3
Exeter X3 Rimfit	1	6
Fin II	0	1
Fitmore	25	293
Fixa	0	1
Freedom	3	20
G7	149	4798
G7 Multihole	24	510
Generic Shell	0	3
Icon	1	1
Jump System	0	2
LCP	0	1
Logical G	1	5
Low Profile Cup	20	223
Mallory-Head	3	64
Marathon	13	256
Mpact	0	4
Mutars	0	1

Acetabular Component	N Revised	N Total
No Acetabular	5	41
Novae	0	5
Novae E	2	33
PINNACLE	4	134
Polarcup	0	6
R3	1	9
RM Cup	0	92
Reflection (Cup)	2	33
Reflection (Shell)	1	8
Regenerex	0	4
S-Rom	3	32
SPH-Revision	0	1
Trabecular Metal	0	1
Trabecular Metal (Cup)	3	59
Trabecular Metal (Shell)	164	2738
Tri-Flange	1	1
Trident (Cup)	0	1
Trident (Shell)	3	22
Trident II/Tritanium (Shell)	0	1
Trident/Tritanium (Shell)	0	2
Trilogy	515	9025
Trilogy IT	9	128
Trinity	2	23
Trinity Plus	0	2
Versacem	0	1
Versafitcup CC	0	3
Versafitcup DM	0	1
ZCA	58	1072
TOTAL	1334	25572