

CPCS/Polarcup (ctd metal) Total Conventional Hip Investigation

Note: This analysis compares the CPCS/Polarcup (ctd metal) femoral stem/acetabular combination with all other total conventional hip prostheses.

This combination 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-2026>.

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 2025 are excluded from the comparator.

TABLE 1
Revision Rate of Primary Total Conventional Hip Replacement

The revision rate of the CPCS/Polarcup (ctd metal) total conventional hip combination 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)
CPCS/Polarcup (ctd metal)	13	132	478	2.72 (1.45, 4.65)
Other Total Conventional Hip	19688	568480	3622593	0.54 (0.54, 0.55)
TOTAL	19701	568612	3623071	0.54 (0.54, 0.55)

Note: Prostheses no longer used in 2025 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 CPCS/Polarcup (ctd metal) total conventional hip combination 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
CPCS/Polarcup (ctd metal)	4.0 (1.7, 9.4)	6.4 (3.1, 13.2)	9.0 (4.7, 16.9)	10.7 (5.8, 19.6)	10.7 (5.8, 19.6)	
Other Total Conventional Hip	1.7 (1.7, 1.8)	2.1 (2.1, 2.2)	2.5 (2.4, 2.5)	2.7 (2.7, 2.8)	3.0 (3.0, 3.1)	3.3 (3.2, 3.3)

CPR	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs
CPCS/Polarcup (ctd metal)						
Other Total Conventional Hip	3.5 (3.5, 3.6)	3.8 (3.7, 3.9)	4.1 (4.0, 4.2)	4.4 (4.3, 4.5)	4.7 (4.6, 4.8)	5.1 (5.0, 5.2)

CPR	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs
CPCS/Polarcup (ctd metal)						
Other Total Conventional Hip	5.4 (5.3, 5.5)	5.8 (5.7, 5.9)	6.2 (6.1, 6.3)	6.6 (6.5, 6.7)	7.0 (6.8, 7.1)	7.3 (7.1, 7.5)

CPR	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs	24 Yrs	25 Yrs
CPCS/Polarcup (ctd metal)							
Other Total Conventional Hip	7.7 (7.5, 7.9)	8.0 (7.8, 8.2)	8.6 (8.3, 8.9)	9.0 (8.7, 9.4)	9.6 (9.1, 10.0)	9.6 (9.1, 10.1)	10.3 (9.4, 11.2)

Note: Prostheses no longer used in 2025 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

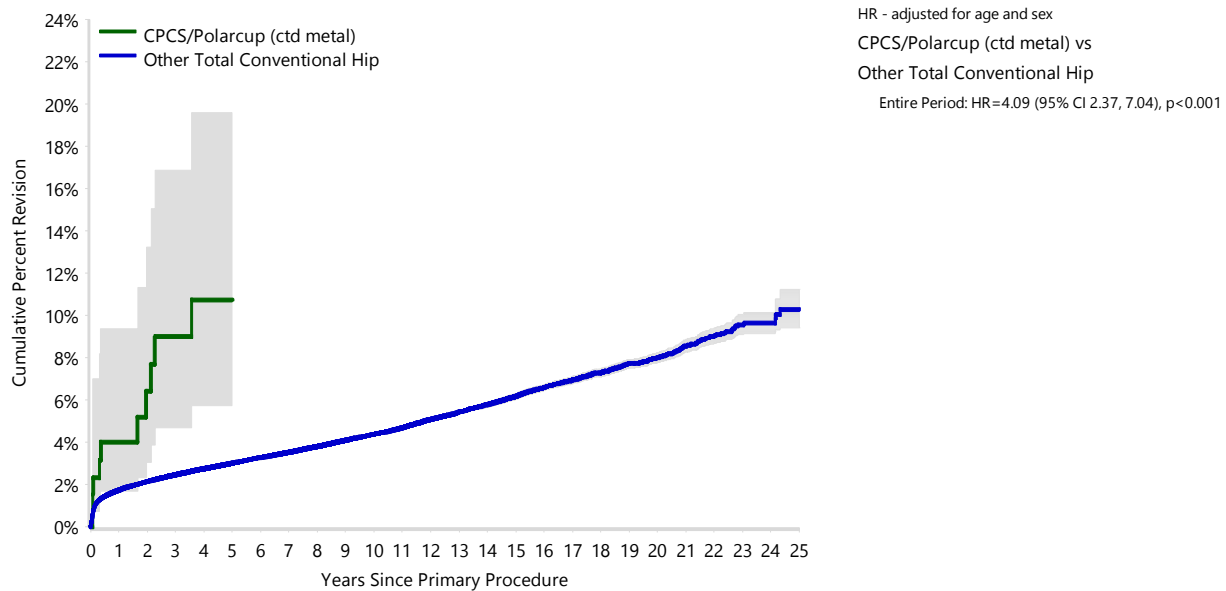
FIGURE 1

Yearly Cumulative Percent Revision of Primary Total Conventional Hip Replacement

The yearly cumulative percent revision of the CPCS/Polarcup (ctd metal) total conventional hip combination 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



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs
CPCS/Polarcup (ctd metal)	132	94	76	58	48	40	29	22
Other Total Conventional Hip	568480	501509	445357	391506	344341	299314	259487	220926

Number at Risk	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs
CPCS/Polarcup (ctd metal)	19	13	8	6	3	3	2	1	0
Other Total Conventional Hip	185779	153726	124840	99569	79799	63340	49728	38032	28355

Number at Risk	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs	24 Yrs	25 Yrs
CPCS/Polarcup (ctd metal)	0	0	0	0	0	0	0	0	0
Other Total Conventional Hip	20437	14638	10400	7396	4859	2863	1455	560	95

Note: Prostheses no longer used in 2025 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	CPCS/Polarcup (ctd metal)		Other Total Conventional Hip	
	Number	Percent	Number	Percent
Osteoarthritis	2	15.4	16294	82.8
Fractured Neck Of Femur	5	38.5	1516	7.7
Osteonecrosis	1	7.7	843	4.3
Developmental Dysplasia			321	1.6
Rheumatoid Arthritis	1	7.7	200	1.0
Failed Internal Fixation	1	7.7	164	0.8
Tumour	2	15.4	155	0.8
Other Inflammatory Arthritis			102	0.5
Fracture/Dislocation	1	7.7	59	0.3
Other			21	0.1
Arthrodesis Takedown			13	0.1
TOTAL	13	100.0	19688	100.0

Note: Prostheses no longer used in 2025 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 (Follow-up Limited to 15 Years)

Revision Diagnosis	CPCS/Polarcup (ctd metal)			Other Total Conventional Hip		
	Number	% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Infection	5	3.8	38.5	4957	0.9	25.8
Prosthesis Dislocation/Instability				4323	0.8	22.5
Fracture	3	2.3	23.1	4229	0.7	22.0
Loosening	4	3.0	30.8	3505	0.6	18.2
Pain				334	0.1	1.7
Leg Length Discrepancy				307	0.1	1.6
Malposition				280	0.0	1.5
Implant Breakage Stem				198	0.0	1.0
Lysis				171	0.0	0.9
Implant Breakage Acetabular Insert				124	0.0	0.6
Incorrect Sizing				96	0.0	0.5
Wear Acetabular Insert				86	0.0	0.4
Metal Related Pathology				75	0.0	0.4
Implant Breakage Acetabular				70	0.0	0.4
Tumour	1	0.8	7.7	45	0.0	0.2
Wear Head				45	0.0	0.2
Heterotopic Bone				26	0.0	0.1
Implant Breakage Head				23	0.0	0.1
Wear Acetabulum				6	0.0	0.0
Osteonecrosis				4	0.0	0.0
Synovitis				2	0.0	0.0
Progression Of Disease				1	0.0	0.0
Other				320	0.1	1.7
N Revision	13	9.8	100.0	19227	3.4	100.0
N Primary	132			568480		

Note: This table is restricted to revisions within 15 years for all groups to allow a time-matched comparison of revisions.

Note: Prostheses no longer used in 2025 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 CPCS/Polarcup (ctd metal) total conventional hip combination. A comparative graph is provided of the cumulative incidence for the same reasons for revisions for all other total conventional hip prostheses.

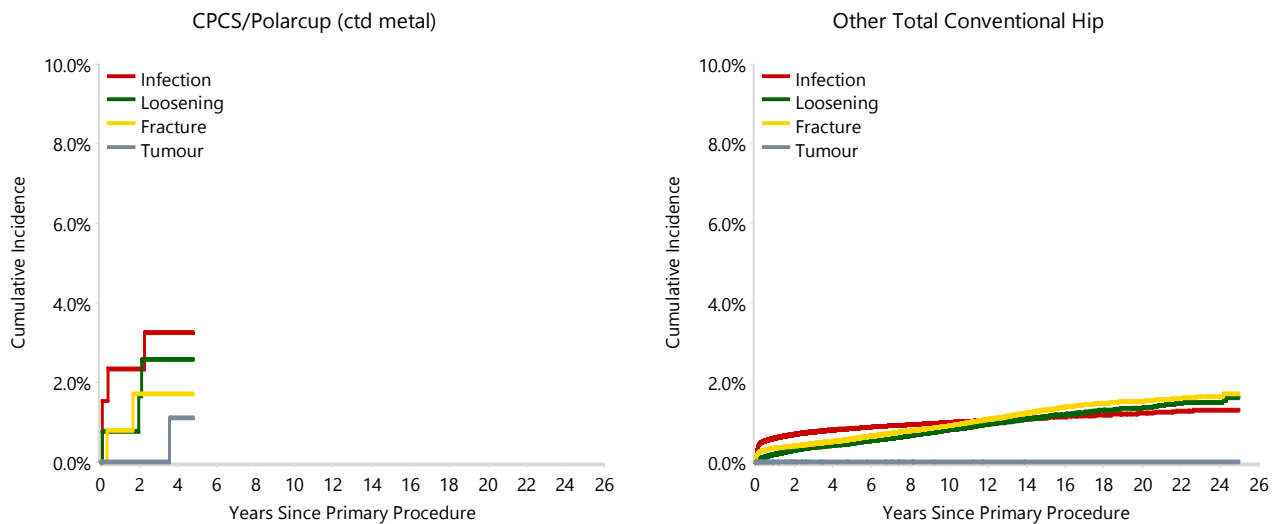
Figure 2: Cumulative Incidence Revision Diagnosis for Primary Total Conventional Hip Replacement

TABLE 5

Type of Revision Performed for Primary Total Conventional Hip Replacement

This analysis identifies the components used in the revision of the CPCS/Polarcup (ctd metal) total conventional hip combination 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 CPCS/Polarcup (ctd metal) total conventional hip combination compared to all other total conventional hip prostheses.

Table 5: Primary Total Conventional Hip Replacement - Type of Revision (Follow-up Limited to 15 Years)

Type of Revision	CPCS/Polarcup (ctd metal)		Other Total Conventional Hip	
	Number	Percent	Number	Percent
Femoral Component	4	30.8	6483	33.7
Acetabular Component	1	7.7	3209	16.7
THR (Femoral/Acetabular)	4	30.8	2205	11.5
Cement Spacer			554	2.9
Removal of Prostheses	1	7.7	90	0.5
Reinsertion of Components			27	0.1
Total Femoral			12	0.1
Bipolar Head and Femoral			10	0.1
N Major	10	76.9	12590	65.5
Head/Insert	3	23.1	5285	27.5
Head Only			904	4.7
Minor Components			279	1.5
Insert Only			166	0.9
Bipolar Only			1	0.0
Cement Only			1	0.0
Head/Neck/Insert			1	0.0
N Minor	3	23.1	6637	34.5
TOTAL	13	100.0	19227	100.0

Note: This table is restricted to revisions within 15 years for all groups to allow a time-matched comparison of revisions.

Note: Prostheses no longer used in 2025 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 CPCS/Polarcup (ctd metal) 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 CPCS/Polarcup (ctd metal) Primary Total Conventional Hip Replacement by Fixation

Fixation	N Revised	N Total
Cemented	13	132
TOTAL	13	132

TABLE 7**Revision Rates of CPCS/Polarcup (ctd metal) 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 combination are listed.

Table 7: Revised Number of CPCS/Polarcup (ctd metal) Primary Total Conventional Hip Replacement by Bearing Surface

Bearing Surface	N Revised	N Total
Metal/Non XLPE	3	19
Metal/XLPE	7	70
Ceramicised Metal/XLPE	3	43
TOTAL	13	132

TABLE 8**Revision Rates of CPCS/Polarcup (ctd metal) 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 combination are listed.

Table 8: Revised Number of CPCS/Polarcup (ctd metal) Primary Total Conventional Hip Replacement by Approach

Approach	N Revised	N Total
Lateral	1	14
Posterior	6	75
TOTAL	7	89

Note: Excludes 43 procedures with no approach recorded

TABLE 9

Revision Rates of Primary Total Conventional Hip Replacement by State

This enables a state by state variation to be identified for the CPCS/Polarcup (ctd metal) total conventional hip combination and provides the comparative data for each of the states for all other total conventional hip prostheses.

The purpose of this analysis is to determine if the higher than anticipated rate of revision has widespread distribution between states. If there is widespread distribution then the reason for the higher than anticipated rate of revision is unlikely to be surgeon specific. If the prosthesis has been used in only a small number of states it is not possible to distinguish if the higher than anticipated rate of revision is related to the prosthesis, surgeon, technique or patient.

Table 9: Revised Number of Primary Total Conventional Hip Replacement by State

Component	State	N Revised	N Total
CPCS/Polarcup (ctd metal)	NSW	0	3
	VIC	1	21
	QLD	9	81
	WA	0	7
	SA	3	20
Other Total Conventional Hip	NSW	5507	166999
	VIC	4852	146537
	QLD	3959	104278
	WA	2510	64939
	SA	1884	52064
	TAS	439	18269
	ACT/NT	537	15394
TOTAL		19701	568612

Note: Prostheses no longer used in 2025 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 10**Number of Revisions of CPCS/Polarcup (ctd metal) Primary Total Conventional Hip Replacement by Year of Implant**

This analysis details the number of prostheses reported each year to the Registry for the CPCS/Polarcup (ctd metal) total conventional hip combination. 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 2025 has a maximum of one year to be revised, whereas a primary procedure performed in 2023 has a maximum of three years to be revised.

Table 10: Number of Revisions of CPCS/Polarcup (ctd metal) Primary Total Conventional Hip Replacement by Year of Implant

Year of Implant	Number Revised	Total Number
2008	2	4
2009	0	5
2010	1	5
2011	1	10
2012	0	8
2013	1	1
2014	1	7
2015	0	6
2016	3	8
2017	0	5
2018	0	5
2019	0	8
2020	1	9
2021	1	7
2022	0	6
2023	1	13
2024	1	11
2025	0	14
TOTAL	13	132

TABLE 11

Revision Rates of CPCS/Polarcup (ctd metal) Primary Total Conventional Hip Replacement by Catalogue Number Range

Many prostheses have a number of catalogue ranges. The catalogue range is specific to particular design features; more than one catalogue range usually indicates a minor difference in design in a particular CPCS/Polarcup (ctd metal) prosthesis.

This analysis has been undertaken to determine if the revision rate varies according to the catalogue number range.

Model	Catalogue Range	Catalogue Description	Cement	Material	Fixation
Femoral Stem					
CPCS	71312360-71312365	COCR PRIMARY COLLARLESS STANDARD OFFSET FEMORAL COMPONENT	YES	METAL	POLISHED
CPCS	71312370-71312375	COCR PRIMARY COLLARLESS HIGH OFFSET FEMORAL COMPONENT	YES	METAL	POLISHED
CPCS	71312380-71312385	SS PRIMARY COLLARLESS STANDARD OFFSET FEMORAL COMPONENT	YES	METAL	POLISHED
CPCS	71312390-71312395	SS PRIMARY COLLARLESS HIGH OFFSET FEMORAL COMPONENT	YES	METAL	POLISHED
CPCS	71928846-71928846	PRIMARY COLLARLESS X-SMALL STANDARD OFFSET FEMORAL COMPONENT	YES	METAL	POLISHED
Acetabular					
Polarcup	11000502-11000512	METAL CEMENTED SHELL	YES	METAL	
Polarcup	75100451-75100461	SHELL STAINLESS STEEL UNCOATED POLISHED CEMENTED	YES	METAL	
Polarcup	CSPC43-CSPC63	METAL CEMENTED SHELL	YES	METAL	POLISHED

Table 11: Revised Number of CPCS/Polarcup (ctd metal) Primary Total Conventional Hip Replacement by Catalogue Number Range

Femoral Stem Range	Acetabular Range	N Revised	N Total
71312360-71312365	11000502-11000512	2	22
	75100451-75100461	3	52
	CSPC43-CSPC63	0	2
71312370-71312375	11000502-11000512	2	17
	75100451-75100461	2	21
71312380-71312385	11000502-11000512	1	4
	CSPC43-CSPC63	1	1
71312390-71312395	11000502-11000512	2	4
71928846-71928846	75100451-75100461	0	8
	CSPC43-CSPC63	0	1
TOTAL		13	132