

Cormet 2000 HAP Total Resurfacing Hip Investigation

Note: This analysis compares the Cormet 2000 HAP head prosthesis with all other total resurfacing 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-2022>.

Note: Procedures using prostheses with no recorded use in 2021 are excluded from the comparator.

TABLE 1

Revision Rate of Primary Total Resurfacing Hip Replacement

The revision rate of the Cormet 2000 HAP total resurfacing hip prosthesis is compared to all other total resurfacing hip prostheses.

Table 1: Revision Rates of Primary Total Resurfacing Hip Replacement

Component	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Cormet 2000 HAP	28	95	1377	2.03 (1.35, 2.94)
Other Total Resurfacing Hip	1141	15004	175448	0.65 (0.61, 0.69)
TOTAL	1169	15099	176825	0.66 (0.62, 0.70)

Note: Prostheses no longer used in 2021 are excluded from the comparator.

TABLE 2

Yearly Cumulative Percent Revision of Primary Total Resurfacing Hip Replacement

The yearly cumulative percent revision of the Cormet 2000 HAP total resurfacing hip prosthesis is compared to all other total resurfacing hip prostheses.

Table 2: Yearly Cumulative Percent Revision of Primary Total Resurfacing Hip Replacement

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs
Cormet 2000 HAP	6.3 (2.9, 13.5)	7.4 (3.6, 14.8)	8.4 (4.3, 16.1)	8.4 (4.3, 16.1)	9.5 (5.0, 17.4)	12.6 (7.4, 21.2)	12.6 (7.4, 21.2)
Other Total Resurfacing Hip	1.3 (1.2, 1.5)	1.9 (1.7, 2.1)	2.3 (2.1, 2.6)	2.7 (2.5, 3.0)	3.3 (3.0, 3.6)	3.8 (3.5, 4.1)	4.4 (4.1, 4.8)

CPR	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs
Cormet 2000 HAP	15.8 (9.8, 24.8)	18.9 (12.4, 28.4)	21.1 (14.2, 30.7)	21.1 (14.2, 30.7)	23.3 (16.0, 33.2)	24.4 (17.0, 34.5)	25.6 (17.9, 35.7)
Other Total Resurfacing Hip	5.0 (4.7, 5.4)	5.5 (5.2, 6.0)	6.3 (5.9, 6.8)	6.9 (6.5, 7.4)	7.5 (7.0, 8.0)	8.1 (7.7, 8.7)	8.7 (8.2, 9.2)

CPR	15 Yrs	16 Yrs	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs
Cormet 2000 HAP	25.6 (17.9, 35.7)	29.0 (20.9, 39.4)	29.0 (20.9, 39.4)	29.0 (20.9, 39.4)			
Other Total Resurfacing Hip	9.3 (8.8, 9.9)	9.9 (9.3, 10.5)	10.3 (9.8, 11.0)	10.7 (10.1, 11.4)	11.3 (10.6, 12.0)	11.7 (10.9, 12.5)	12.7 (11.4, 14.2)

Note: Prostheses no longer used in 2021 are excluded from the comparator.

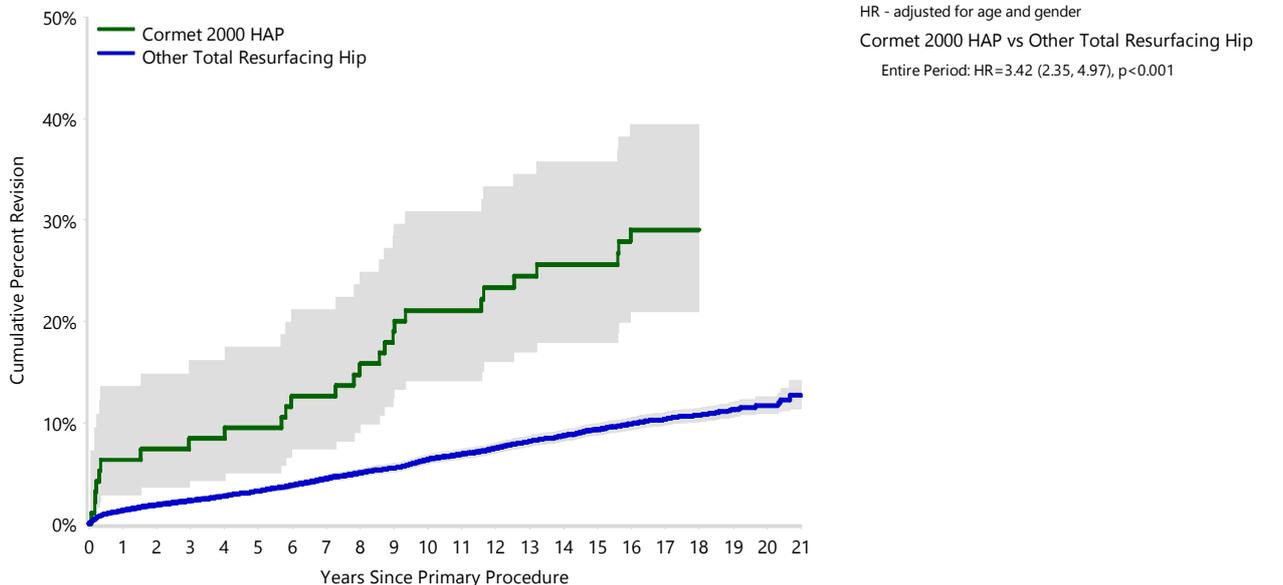
FIGURE 1

Yearly Cumulative Percent Revision of Primary Total Resurfacing Hip Replacement

The yearly cumulative percent revision of the Cormet 2000 HAP total resurfacing hip prosthesis is compared to all other total resurfacing 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 Resurfacing Hip Replacement



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs	8 Yrs	9 Yrs	10 Yrs
Cormet 2000 HAP	95	89	88	87	87	86	83	83	80	77	72
Other Total Resurfacing Hip	15004	14247	13582	12973	12508	12014	11494	11018	10533	10059	9514

Number at Risk	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs
Cormet 2000 HAP	72	68	66	65	65	61	61	30	9	1	0
Other Total Resurfacing Hip	8971	8250	7483	6662	5713	4695	3652	2643	1583	574	81

Note: Prostheses no longer used in 2021 are excluded from the comparator.

TABLE 3**Primary Diagnosis for Revised Primary Total Resurfacing 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 resurfacing hip prostheses.

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

Primary Diagnosis	Cormet 2000 HAP		Other Total Resurfacing Hip	
	Number	Percent	Number	Percent
Osteoarthritis	28	100.0	1042	91.3
Developmental Dysplasia			48	4.2
Osteonecrosis			34	3.0
Other Inflammatory Arthritis			10	0.9
Rheumatoid Arthritis			6	0.5
Other			1	0.1
TOTAL	28	100.0	1141	100.0

Note: Prostheses no longer used in 2021 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 Resurfacing Hip Replacement - Reason for Revision

Revision Diagnosis	Cormet 2000 HAP			Other Total Resurfacing Hip		
	Number	% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Loosening	14	14.7	50.0	307	2.0	26.9
Metal Related Pathology	3	3.2	10.7	239	1.6	20.9
Fracture	6	6.3	21.4	219	1.5	19.2
Lysis	2	2.1	7.1	125	0.8	11.0
Infection	2	2.1	7.1	75	0.5	6.6
Pain	1	1.1	3.6	66	0.4	5.8
Prosthesis Dislocation/Instability				29	0.2	2.5
Osteonecrosis				26	0.2	2.3
Malposition				19	0.1	1.7
Tumour				5	0.0	0.4
Wear Acetabulum				4	0.0	0.4
Implant Breakage Acetabular				2	0.0	0.2
Leg Length Discrepancy				2	0.0	0.2
Progression Of Disease				2	0.0	0.2
Heterotopic Bone				1	0.0	0.1
Incorrect Sizing				1	0.0	0.1
Synovitis				1	0.0	0.1
Other				18	0.1	1.6
N Revision	28	29.5	100.0	1141	7.6	100.0
N Primary	95			15004		

Note: Prostheses no longer used in 2021 are excluded from the comparator.

FIGURE 2

Cumulative Incidence Revision Diagnosis of Primary Total Resurfacing 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 Cormet 2000 HAP total resurfacing hip prosthesis. A comparative graph is provided of the cumulative incidence for the same reasons for revisions for all other total resurfacing hip prostheses.

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

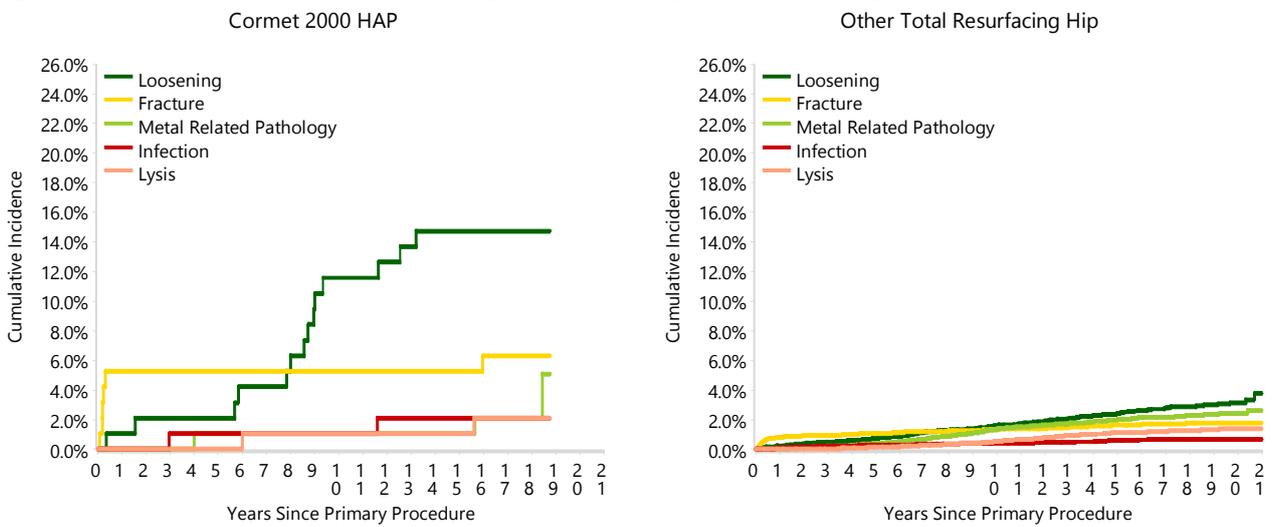


TABLE 5**Type of Revision Performed for Primary Total Resurfacing Hip Replacement**

This analysis identifies the components used in the revision of the Cormet 2000 HAP total resurfacing hip prosthesis and compares it to the components used in the revision of all other total resurfacing 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 resurfacing hip prostheses i.e. is there a difference in the type of revision undertaken for the Cormet 2000 HAP total resurfacing hip prosthesis compared to all other total resurfacing hip prostheses.

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

Type of Revision	Cormet 2000 HAP		Other Total Resurfacing Hip	
	Number	Percent	Number	Percent
THR (Femoral/Acetabular)	19	67.9	787	69.0
Femoral Component	8	28.6	283	24.8
Acetabular Component	1	3.6	37	3.2
Cement Spacer			27	2.4
Removal of Prostheses			7	0.6
N Major	28	100.0	1141	100.0
TOTAL	28	100.0	1141	100.0

Note: Prostheses no longer used in 2021 are excluded from the comparator.

TABLE 6**Revision Rates of Cormet 2000 HAP Primary Total Resurfacing 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 Cormet 2000 HAP Primary Total Resurfacing Hip Replacement by Fixation

Fixation	N Revised	N Total
Cementless	27	92
Hybrid (Femur Cemented)	1	3
TOTAL	28	95

TABLE 7

Revision Rates of Primary Total Resurfacing Hip Replacement by State

This enables a state by state variation to be identified for the Cormet 2000 HAP total resurfacing hip prosthesis and provides the comparative data for each of the states for all other total resurfacing 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 7: Revised Number of Primary Total Resurfacing Hip Replacement by State

Component	State	N Revised	N Total
Cormet 2000 HAP	NSW	17	60
	VIC	9	31
	TAS	2	4
Other Total Resurfacing Hip	NSW	270	3924
	VIC	419	5020
	QLD	254	3790
	WA	58	952
	SA	86	608
	TAS	1	36
	ACT/NT	53	674
TOTAL		1169	15099

Note: Prostheses no longer used in 2021 are excluded from the comparator.

TABLE 8**Number of Revisions of Cormet 2000 HAP Primary Total Resurfacing Hip Replacement by Year of Implant**

This analysis details the number of prostheses reported each year to the Registry for the Cormet 2000 HAP total resurfacing 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 2021 has a maximum of one year to be revised, whereas a primary procedure performed in 2019 has a maximum of three years to be revised.

Table 8: Number of Revisions of Cormet 2000 HAP Primary Total Resurfacing Hip Replacement by Year of Implant

Year of Implant	Number Revised	Total Number
2001	0	1
2002	9	17
2003	12	38
2004	7	39
TOTAL	28	95

TABLE 9**Revision Rates of Cormet 2000 HAP Primary Total Resurfacing 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 Cormet 2000 HAP 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
Head				
Cormet 2000 HAP	A179040H-A179056H	COCR HAP RESURFACING HEAD	NO	METAL

Table 9: Revised Number of Cormet 2000 HAP Primary Total Resurfacing Hip Replacement by Catalogue Number Range

Head Range	N Revised	N Total
A179040H-A179056H	28	95
TOTAL	28	95

TABLE 10**Revision Rates of Cormet 2000 HAP Primary Total Resurfacing 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 Cormet 2000 HAP Primary Total Resurfacing Hip Replacement by Acetabular Component

Acetabular Component	N Revised	N Total
Cormet	28	95
TOTAL	28	95