

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-2020>.

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	25	95	1256	1.99 (1.29, 2.94)
Other Total Resurfacing Hip	1822	18155	197305	0.92 (0.88, 0.97)
TOTAL	1847	18250	198561	0.93 (0.89, 0.97)

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
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)
Other Total Resurfacing Hip	1.7 (1.5, 1.9)	2.5 (2.2, 2.7)	3.1 (2.9, 3.4)	3.9 (3.6, 4.2)	4.9 (4.6, 5.2)	5.8 (5.4, 6.2)

CPR	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs
Cormet 2000 HAP	12.6 (7.4, 21.2)	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)
Other Total Resurfacing Hip	6.7 (6.3, 7.1)	7.5 (7.1, 7.9)	8.2 (7.8, 8.7)	9.2 (8.7, 9.6)	9.9 (9.4, 10.4)	10.6 (10.1, 11.1)

CPR	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs	19 Yrs
Cormet 2000 HAP	24.4 (17.0, 34.5)	25.6 (17.9, 35.7)	25.6 (17.9, 35.7)	27.3 (19.3, 37.9)			
Other Total Resurfacing Hip	11.4 (10.9, 12.0)	12.0 (11.5, 12.6)	12.6 (12.1, 13.2)	13.2 (12.6, 13.9)	13.7 (13.0, 14.4)	14.0 (13.3, 14.8)	15.1 (13.9, 16.4)

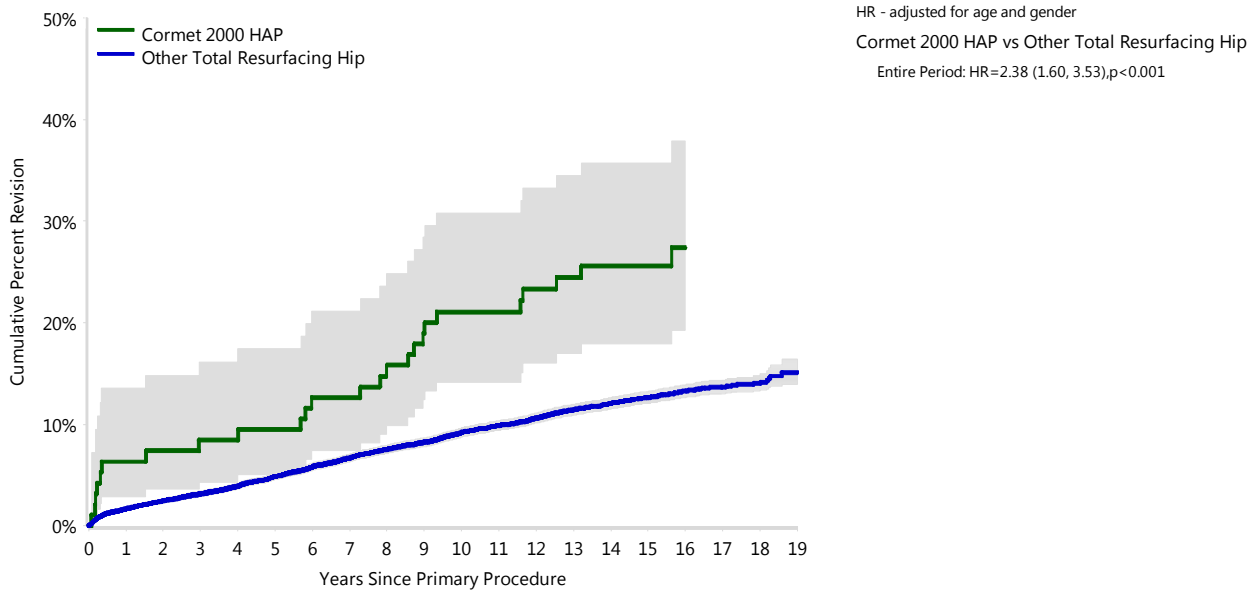
FIGURE 1

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
Cormet 2000 HAP	95	89	88	87	87	86	83	83	80	77
Other Total Resurfacing Hip	18155	17312	16759	16220	15640	15073	14504	13921	13284	12572

Number at Risk	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs	19 Yrs
Cormet 2000 HAP	72	72	68	66	65	65	31	9	1	0
Other Total Resurfacing Hip	11488	10265	8862	7345	5816	4260	2892	1692	620	85

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	25	100.0	1669	91.6
Developmental Dysplasia			89	4.9
Osteonecrosis			42	2.3
Other Inflammatory Arthritis			11	0.6
Rheumatoid Arthritis			9	0.5
Other			2	0.1
TOTAL	25	100.0	1822	100.0

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
Metal Related Pathology	2	2.1	8.0	509	2.8	27.9
Loosening	14	14.7	56.0	461	2.5	25.3
Fracture	5	5.3	20.0	310	1.7	17.0
Lysis	1	1.1	4.0	170	0.9	9.3
Infection	2	2.1	8.0	112	0.6	6.1
Pain	1	1.1	4.0	110	0.6	6.0
Osteonecrosis				43	0.2	2.4
Prosthesis Dislocation				27	0.1	1.5
Malposition				23	0.1	1.3
Instability				8	0.0	0.4
Implant Breakage Head				6	0.0	0.3
Implant Breakage Acetabular				5	0.0	0.3
Progression Of Disease				4	0.0	0.2
Tumour				4	0.0	0.2
Leg Length Discrepancy				3	0.0	0.2
Wear Acetabulum				3	0.0	0.2
Synovitis				2	0.0	0.1
Heterotopic Bone				1	0.0	0.1
Incorrect Sizing				1	0.0	0.1
Other				20	0.1	1.1
N Revision	25	26.3	100.0	1822	10.0	100.0
N Primary	95			18155		

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

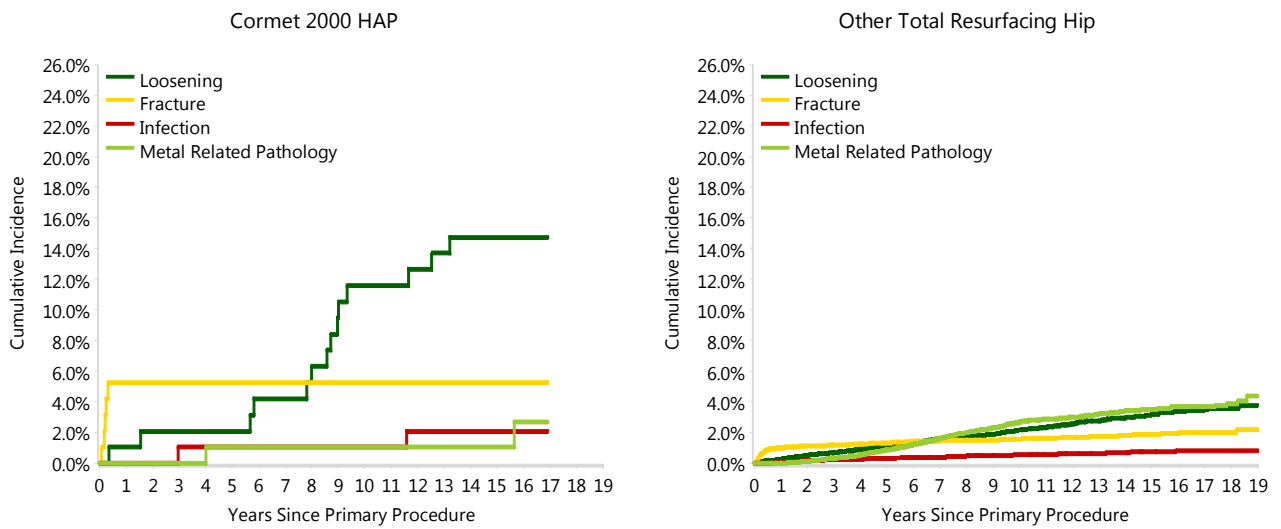


TABLE 5

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)	16	64.0	1314	72.1
Femoral Component	8	32.0	407	22.3
Acetabular Component	1	4.0	51	2.8
Cement Spacer			40	2.2
Removal of Prostheses			10	0.5
N Major	25	100.0	1822	100.0
TOTAL	25	100.0	1822	100.0

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: Revision Rates of Cormet 2000 HAP Primary Total Resurfacing Hip Replacement by Fixation

Fixation	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Cementless	25	92	1208	2.07 (1.34, 3.06)
Hybrid (Femur Cemented)	0	3	48	0.00 (0.00, 7.66)
TOTAL	25	95	1256	1.99 (1.29, 2.94)

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: Revision Rates of Primary Total Resurfacing Hip Replacement by State

Component	State	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Cormet 2000 HAP	NSW	14	60	784	1.79 (0.98, 3.00)
	VIC	9	31	425	2.12 (0.97, 4.02)
	TAS	2	4	48	4.19 (0.51, 15.15)
Other Total Resurfacing Hip	NSW	513	5403	58673	0.87 (0.80, 0.95)
	VIC	551	5965	71088	0.78 (0.71, 0.84)
	QLD	283	3663	34189	0.83 (0.73, 0.93)
	WA	73	881	7332	1.00 (0.78, 1.25)
	SA	324	1408	16743	1.94 (1.73, 2.16)
	TAS	15	101	1129	1.33 (0.74, 2.19)
	ACT/NT	63	734	8151	0.77 (0.59, 0.99)
TOTAL		1847	18250	198561	0.93 (0.89, 0.97)

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 2019 has a maximum of one year to be revised, whereas a primary procedure performed in 2017 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	11	38
2004	5	39
TOTAL	25	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: Revision Rates of Cormet 2000 HAP Primary Total Resurfacing Hip Replacement by Catalogue Number Range

Head Range	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
A179040H-A179056H	25	95	1256	1.99 (1.29, 2.94)
TOTAL	25	95	1256	1.99 (1.29, 2.94)

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: Revision Rates of Cormet 2000 HAP Primary Total Resurfacing Hip Replacement by Acetabular Component

Acetabular Component	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Cormet	25	95	1256	1.99 (1.29, 2.94)
TOTAL	25	95	1256	1.99 (1.29, 2.94)