

GMK-UNI/GMK-UNI Unicompartmental Knee Investigation

Note: This analysis compares the GMK-UNI/GMK-UNI femoral/tibial combination with all other unicompartmental knee 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 prostheses with no recorded use in 2025 are excluded from the comparator.

TABLE 1

Revision Rate of Primary Unicompartmental Knee Replacement

The revision rate of the GMK-UNI/GMK-UNI unicompartmental knee combination is compared to all other unicompartmental knee prostheses.

Table 1: Revision Rates of Primary Unicompartmental Knee Replacement

Component	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
GMK-UNI/GMK-UNI	51	168	1332	3.83 (2.85, 5.04)
Other Unicompartmental Knee	5714	54571	428869	1.33 (1.30, 1.37)
TOTAL	5765	54739	430201	1.34 (1.31, 1.38)

Note: Prostheses no longer used in 2025 are excluded from the comparator.

TABLE 2

Yearly Cumulative Percent Revision of Primary Unicompartmental Knee Replacement

The yearly cumulative percent revision of the GMK-UNI/GMK-UNI unicompartmental knee combination is compared to all other unicompartmental knee prostheses.

Table 2: Yearly Cumulative Percent Revision (95% CI) of Primary Unicompartmental Knee Replacement

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs
GMK-UNI/GMK-UNI	6.5 (3.7, 11.5)	11.9 (7.9, 17.9)	17.3 (12.4, 23.9)	21.5 (16.0, 28.6)	25.2 (19.3, 32.5)	28.4 (22.2, 36.0)
Other Unicompartmental Knee	1.9 (1.8, 2.0)	3.4 (3.2, 3.5)	4.3 (4.2, 4.5)	5.2 (5.0, 5.4)	6.1 (5.8, 6.3)	6.9 (6.7, 7.1)

CPR	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs
GMK-UNI/GMK-UNI	29.8 (23.4, 37.4)	29.8 (23.4, 37.4)	29.8 (23.4, 37.4)	29.8 (23.4, 37.4)	31.0 (24.4, 39.0)	
Other Unicompartmental Knee	7.9 (7.7, 8.2)	8.9 (8.6, 9.2)	10.0 (9.7, 10.3)	11.1 (10.8, 11.4)	12.3 (11.9, 12.7)	13.6 (13.2, 14.0)

CPR	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs
GMK-UNI/GMK-UNI						
Other Unicompartmental Knee	15.0 (14.5, 15.4)	16.5 (16.1, 17.0)	17.9 (17.4, 18.4)	19.5 (18.9, 20.1)	21.2 (20.6, 21.8)	22.7 (22.0, 23.4)

CPR	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs	24 Yrs	25 Yrs
GMK-UNI/GMK-UNI							
Other Unicompartmental Knee	24.4 (23.6, 25.2)	26.3 (25.4, 27.2)	28.2 (27.2, 29.3)	29.7 (28.6, 30.9)	31.1 (29.9, 32.5)	33.0 (31.3, 34.7)	33.3 (31.5, 35.1)

Note: Prostheses no longer used in 2025 are excluded from the comparator.

FIGURE 1

Yearly Cumulative Percent Revision of Primary Unicompartmental Knee Replacement

The yearly cumulative percent revision of the GMK-UNI/GMK-UNI unicompartmental knee combination is compared to all other unicompartmental knee 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 Unicompartmental Knee Replacement

***** Proportionality Not Achieved :-(*****

var1 VS var2 (GMK-UNI/GMK-UNI VS Other Unicompartmental Knee) is non-proportional in time period 5.5Yr_max

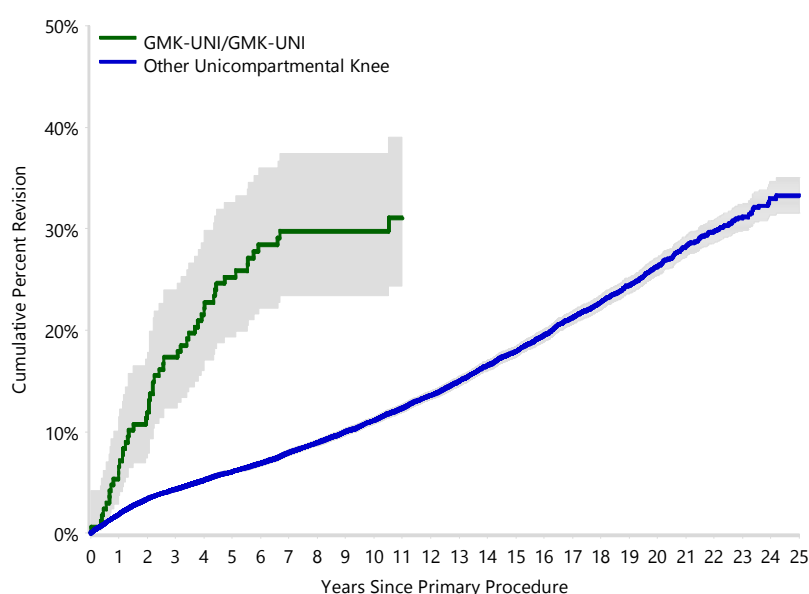
The algorithm is not able to select a time point. Please specify time periods manually

The model will be fit over this entire period instead

var	timepoint	ProbChiSq
var1	0_2Yr	0.6578
var1	2Yr_2p5Yr	0.4631
var1	2p5Yr_4p5Yr	0.4038
var1	4p5Yr_5p5Yr	0.6712
var1	5p5Yr_max	0.0322

The PHREG Procedure

Dummy Text



HR - adjusted for age and sex

GMK-UNI/GMK-UNI vs Other Unicompartmental Knee

0 - 2Yr: HR=3.06 (95% CI 1.97, 4.75), p<0.001

2Yr - 2.5Yr: HR=7.50 (95% CI 3.53, 15.90), p<0.001

2.5Yr - 4.5Yr: HR=4.62 (95% CI 2.72, 7.85), p<0.001

4.5Yr - 5.5Yr: HR=1.75 (95% CI 0.43, 7.02), p=0.432

5.5Yr+: HR=1.08 (95% CI 0.54, 2.17), p=0.818

Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs
GMK-UNI/GMK-UNI	168	157	147	137	130	120	108	104
Other Unicompartmental Knee	54571	49811	45164	40950	37013	33033	29398	25890

Number at Risk	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs
GMK-UNI/GMK-UNI	85	76	64	50	33	20	8	7	6
Other Unicompartmental Knee	22886	20017	17450	15095	12948	11095	9468	7907	6383

Number at Risk	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs	24 Yrs	25 Yrs
GMK-UNI/GMK-UNI	2	0	0	0	0	0	0	0	0
Other Unicompartmental Knee	5098	3942	2983	2175	1553	1055	622	272	63

Note: Prostheses no longer used in 2025 are excluded from the comparator.

TABLE 3**Primary Diagnosis for Revised Primary Unicompartmental Knee 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 unicompartmental knee prostheses.

Table 3: Primary Diagnosis for Revised Primary Unicompartmental Knee Replacement

Primary Diagnosis	GMK-UNI/GMK-UNI		Other Unicompartmental Knee	
	Number	Percent	Number	Percent
Osteoarthritis	51	100.0	5659	99.0
Osteonecrosis			33	0.6
Rheumatoid Arthritis			14	0.2
Other Inflammatory Arthritis			5	0.1
Fracture			2	0.0
Tumour			1	0.0
TOTAL	51	100.0	5714	100.0

Note: Prostheses no longer used in 2025 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 Unicompartmental Knee Replacement - Reason for Revision (Follow-up Limited to 17 Years)

Revision Diagnosis	GMK-UNI/GMK-UNI			Other Unicompartmental Knee		
	Number	% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Progression Of Disease	14	8.3	27.5	2040	3.7	37.9
Loosening	27	16.1	52.9	1660	3.0	30.8
Pain	2	1.2	3.9	387	0.7	7.2
Infection	2	1.2	3.9	289	0.5	5.4
Bearing Dislocation				208	0.4	3.9
Fracture	1	0.6	2.0	170	0.3	3.2
Instability	1	0.6	2.0	117	0.2	2.2
Lysis	1	0.6	2.0	96	0.2	1.8
Wear Tibial Insert	1	0.6	2.0	78	0.1	1.4
Malalignment				75	0.1	1.4
Implant Breakage Tibial Insert				51	0.1	0.9
Incorrect Sizing	1	0.6	2.0	31	0.1	0.6
Patellofemoral Pain				31	0.1	0.6
Prosthesis Dislocation				26	0.0	0.5
Implant Breakage Tibial				19	0.0	0.4
Metal Related Pathology				14	0.0	0.3
Osteonecrosis				14	0.0	0.3
Wear Tibial				12	0.0	0.2
Arthrofibrosis				11	0.0	0.2
Synovitis				11	0.0	0.2
Wear Femoral				5	0.0	0.1
Implant Breakage Femoral	1	0.6	2.0	4	0.0	0.1
Patella Erosion				3	0.0	0.1
Other				34	0.1	0.6
N Revision	51	30.4	100.0	5386	9.9	100.0
N Primary	168			54571		

Note: This table is restricted to revisions within 17 years for all groups to allow a time-matched comparison of revisions.

Note: Prostheses no longer used in 2025 are excluded from the comparator.

FIGURE 2

Cumulative Incidence Revision Diagnosis of Primary Unicompartmental Knee 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 GMK-UNI/GMK-UNI unicompartmental knee combination. A comparative graph is provided of the cumulative incidence for the same reasons for revisions for all other unicompartmental knee prostheses.

Figure 2: Cumulative Incidence Revision Diagnosis for Primary Unicompartmental Knee Replacement

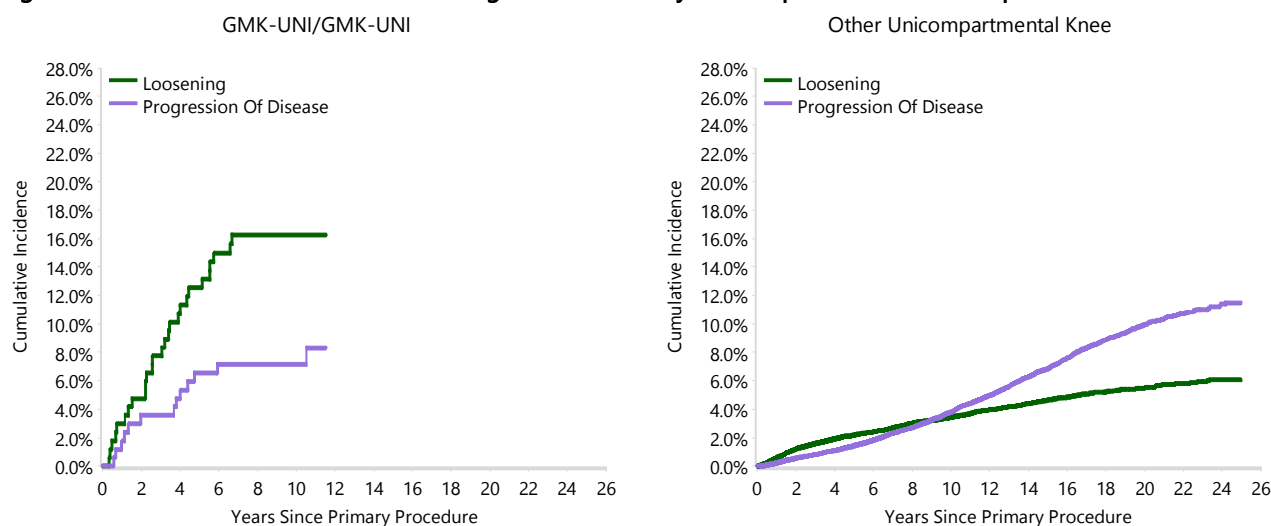


TABLE 5

Type of Revision Performed for Primary Unicompartmental Knee Replacement

This analysis identifies the components used in the revision of the GMK-UNI/GMK-UNI unicompartmental knee combination and compares it to the components used in the revision of all other unicompartmental knee 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 unicompartmental knee prostheses i.e. is there a difference in the type of revision undertaken for the GMK-UNI/GMK-UNI unicompartmental knee combination compared to all other unicompartmental knee prostheses.

Table 5: Primary Unicompartmental Knee Replacement - Type of Revision (Follow-up Limited to 17 Years)

Type of Revision	GMK-UNI/GMK-UNI		Other Unicompartmental Knee	
	Number	Percent	Number	Percent
TKR (Tibial/Femoral)	46	90.2	4529	84.1
Uni Tibial Component	1	2.0	97	1.8
Uni Femoral Component			50	0.9
Cement Spacer			39	0.7
UKR (Uni Tibial/Uni Femoral)	1	2.0	37	0.7
Patella/Trochlear Resurfacing			18	0.3
Femoral Component			5	0.1
Removal of Prostheses			5	0.1
Reinsertion of Components			4	0.1
Tibial Component	1	2.0	1	0.0
N Major	49	96.1	4785	88.8
Uni Insert Only	2	3.9	599	11.1
Insert Only			1	0.0
Patella Only			1	0.0
N Minor	2	3.9	601	11.2
TOTAL	51	100.0	5386	100.0

Note: This table is restricted to revisions within 17 years for all groups to allow a time-matched comparison of revisions.

Note: Prostheses no longer used in 2025 are excluded from the comparator.

TABLE 6**Revision Rates of GMK-UNI/GMK-UNI Primary Unicompartmental Knee 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 GMK-UNI/GMK-UNI Primary Unicompartmental Knee Replacement by Fixation

Fixation	N Revised	N Total
Cemented	51	168
TOTAL	51	168

TABLE 7

Revision Rates of Primary Unicompartmental Knee Replacement by State

This enables a state by state variation to be identified for the GMK-UNI/GMK-UNI unicompartmental knee combination and provides the comparative data for each of the states for all other unicompartmental knee 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 Unicompartmental Knee Replacement by State

Component	State	N Revised	N Total
GMK-UNI/GMK-UNI	NSW	34	102
	VIC	2	6
	QLD	4	9
	SA	11	51
Other Unicompartmental Knee	NSW	1583	12858
	VIC	1159	12807
	QLD	1044	11108
	WA	783	8675
	SA	775	5616
	TAS	212	2348
	ACT/NT	158	1159
TOTAL		5765	54739

Note: Prostheses no longer used in 2025 are excluded from the comparator.

TABLE 8**Number of Revisions of GMK-UNI/GMK-UNI Primary Unicompartmental Knee Replacement by Year of Implant**

This analysis details the number of prostheses reported each year to the Registry for the GMK-UNI/GMK-UNI unicompartmental knee 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 8: Number of Revisions of GMK-UNI/GMK-UNI Primary Unicompartmental Knee Replacement by Year of Implant

Year of Implant	Number Revised	Total Number
2008	0	5
2009	6	10
2010	0	2
2012	6	21
2013	7	22
2014	1	16
2015	7	19
2016	6	17
2017	3	12
2018	10	29
2019	0	3
2020	5	8
2021	0	3
2022	0	1
TOTAL	51	168

TABLE 9

Revision Rates of GMK-UNI/GMK-UNI Primary Unicompartmental Knee 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 GMK-UNI/GMK-UNI 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
Femoral			
GMK-UNI	02080001-02080004	GMK-UNI CEMENTED FEMUR	YES
Tibial			
GMK-UNI	0208TF1LMRL-0208TF5RMLL	GMK-UNI FIXED TIBIA BASEPLATE	YES

Table 9: Revised Number of GMK-UNI/GMK-UNI Primary Unicompartmental Knee Replacement by Catalogue Number Range

Femoral Range	Tibial Range	N Revised	N Total
02080001-02080004	0208TF1LMRL-0208TF5RMLL	51	168
TOTAL		51	168