



Australian  
Orthopaedic  
Association  
National  
Joint  
Replacement  
Registry

# Automated Industry Report 1269

## Depuy Synthes Australia

### Attune Total Knee

Report Generated: 10 May 2019

Data Period: 1 September 1999 - 9 May 2019

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This report has been prepared by the Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR). The report provides information on the usage and outcomes of the Attune tibial compared to all other total knee replacements, based on data collected by the AOANJRR.

#### Disclaimer

The AOANJRR has taken every care to ensure that the data supplied are accurate but does not warrant that the data are error free and does not accept any liability for errors or omissions in the data.

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## Attune Total Knee

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### Catalogue Numbers of Attune Tibial Components included in this analysis

Model	Catalogue Range	Range Description	No. of Primary Procedures
Attune	150670001 - 150670010	Tibial Base Fixed Bearing Cemented w S+ technology	2171
Attune	150680001 - 150680010	Tibial Baseplate Rotating Platform	731

The AOANJRR also reports these catalogue numbers as Attune Tibial Components. These are not included in the analysis.

Model	Catalogue Range	Range Description
Attune	150600001 - 150600010	Fixed Tibial Baseplate
Attune	150610001 - 150610010	Rotating Tibial Baseplate
Attune	150611002 - 150611010	Rotating Tibial Baseplate Porocoat
Attune	150640003 - 150640008	Attune FB Cemented Revision Tibial Base
Attune	150660003 - 150660008	Revision Tibial Base Rotating Platform

**Table 1: Revision Rates of Attune Primary Total Knee Replacement by Tibial Catalogue Number Range (All Diagnoses)**

Tibial Range	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
150670001 - 150670010	14	2171	1433	0.98 (0.53, 1.64)
150680001 - 150680010	4	731	239	1.67 (0.46, 4.29)
<b>TOTAL</b>	<b>18</b>	<b>2902</b>	<b>1672</b>	<b>1.08 (0.64, 1.70)</b>

**Table 2: Implant Usage of Attune in Primary Total Knee Replacement (All Diagnoses)**

	N
<b>Implant Usage</b>	
Date First Used	17 January 2018
Date Last Used	26 April 2019
N Procedures	2902
N Patients	2555
N Hospitals Implanting	100
N Surgeons Implanting*	114
<b>Outcome</b>	
N Revised	18
N Deceased**	4

\*22 Attune procedures have unknown surgeon

\*\*'N Deceased' does not include patient deaths that occurred after the Attune implant was revised

**Table 3: Follow Up Years of Attune Primary Total Knee Replacement (All Diagnoses)**

Model	N	Minimum	Maximum	Median	Mean	Std Dev
Attune	2902	0.03	1.31	0.51	0.58	0.34
<b>TOTAL</b>	<b>2902</b>	<b>0.03</b>	<b>1.31</b>	<b>0.51</b>	<b>0.58</b>	<b>0.34</b>

**Table 4: Age and Gender of Attune Primary Total Knee Replacement (All Diagnoses)**

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	1268	43.7%	31	95	68	67.8	8.9
Female	1634	56.3%	18	92	68	68.3	9.2
<b>TOTAL</b>	<b>2902</b>	<b>100.0%</b>	<b>18</b>	<b>95</b>	<b>68</b>	<b>68.1</b>	<b>9.1</b>

**Table 5: Primary Total Knee Replacement by Model and Age (All Diagnoses)**

Age	Attune		Other Total Knee	
	N	Col%	N	Col%
<55	184	6.3	45441	6.8
55-64	773	26.6	176437	26.4
65-74	1239	42.7	262882	39.3
≥75	706	24.3	184335	27.5
<b>TOTAL</b>	<b>2902</b>	<b>100.0</b>	<b>669095</b>	<b>100.0</b>

**Table 6: Primary Total Knee Replacement by Model and Gender (All Diagnoses)**

Gender	Attune		Other Total Knee	
	N	Col%	N	Col%
Male	1268	43.7	290859	43.5
Female	1634	56.3	378236	56.5
<b>TOTAL</b>	<b>2902</b>	<b>100.0</b>	<b>669095</b>	<b>100.0</b>

**Table 7: Primary Total Knee Replacement by Model and ASA Grade (All Diagnoses)**

ASA Grade	Attune		Other Total Knee	
	N	Col%	N	Col%
1	146	5.0	18097	6.0
2	1589	54.8	167034	55.4
3	1139	39.2	112926	37.5
4	28	1.0	3324	1.1
5	.	.	17	0.0
<b>TOTAL</b>	<b>2902</b>	<b>100.0</b>	<b>301398</b>	<b>100.0</b>

**Table 8: Primary Total Knee Replacement by Model and BMI (All Diagnoses)**

BMI	Attune		Other Total Knee	
	N	Col%	N	Col%
Underweight (<18.50)	8	0.3	425	0.2
Normal (18.50-24.99)	347	12.1	21711	10.4
Pre Obese (25.00-29.99)	850	29.5	64759	31.1
Obese Class 1 (30.00-34.99)	869	30.2	63838	30.7
Obese Class 2 (35.00-39.99)	512	17.8	35454	17.0
Obese Class 3 (≥40.00)	292	10.1	22088	10.6
<b>TOTAL</b>	<b>2878</b>	<b>100.0</b>	<b>208275</b>	<b>100.0</b>

Note: The AOANJRR commenced collection of BMI data in 2015. 24 Attune procedures with no BMI recorded are excluded from this table

**Table 9: Primary Total Knee Replacement by Model and Primary Diagnosis**

Primary Diagnosis	Attune		Other Total Knee	
	N	Col%	N	Col%
Osteoarthritis	2863	98.7	653473	97.7
Rheumatoid Arthritis	21	0.7	8613	1.3
Other Inflammatory Arthritis	9	0.3	3387	0.5
Osteonecrosis	8	0.3	2113	0.3
Tumour	.	.	813	0.1
Fracture	.	.	484	0.1
Chondrocalcinosis	.	.	18	0.0
Osteochondritis Dissecans	.	.	2	0.0
Other	1	0.0	192	0.0
<b>TOTAL</b>	<b>2902</b>	<b>100.0</b>	<b>669095</b>	<b>100.0</b>

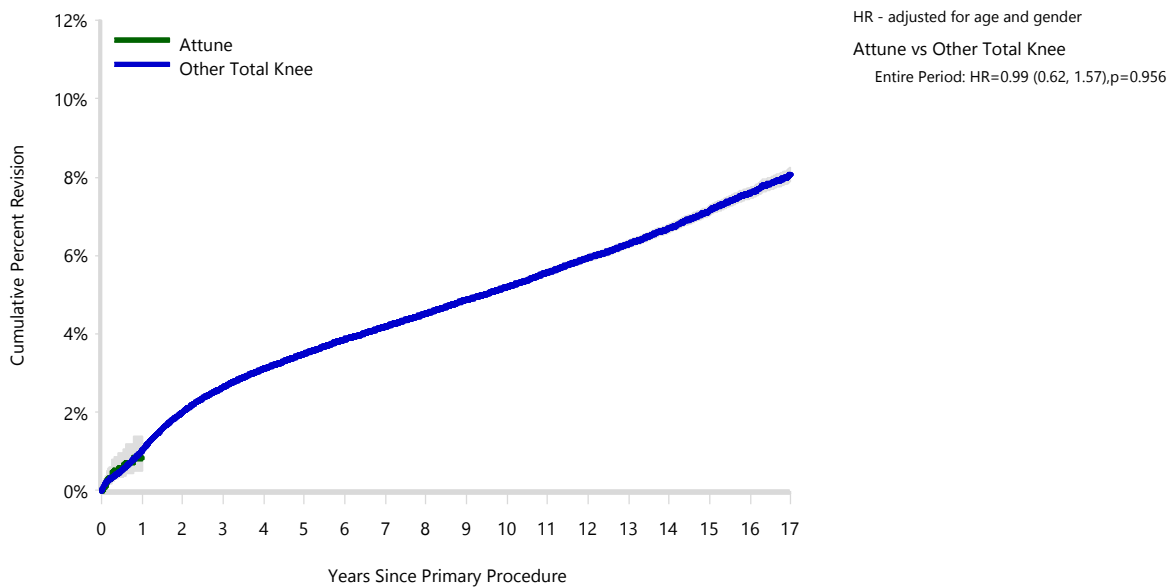
**Table 10: Revision Rates of Primary Total Knee Replacement by Model (All Diagnoses)**

Model	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Attune	18	2902	1672	1.08 (0.64, 1.70)
Other Total Knee	25967	669095	4312603	0.60 (0.59, 0.61)
<b>TOTAL</b>	<b>25985</b>	<b>671997</b>	<b>4314275</b>	<b>0.60 (0.60, 0.61)</b>

**Table 11: Yearly Cumulative Percent Revision of Primary Total Knee Replacement by Model (All Diagnoses)**

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	
Attune	0.8 (0.5, 1.4)					
Other Total Knee	1.0 (1.0, 1.0)	2.0 (2.0, 2.0)	2.6 (2.6, 2.7)	3.1 (3.1, 3.2)	3.5 (3.4, 3.5)	
CPR	6 Yrs	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs
Attune						
Other Total Knee	3.9 (3.8, 3.9)	4.2 (4.1, 4.2)	4.5 (4.5, 4.6)	4.9 (4.8, 4.9)	5.2 (5.1, 5.3)	5.6 (5.5, 5.6)
CPR	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs
Attune						
Other Total Knee	5.9 (5.9, 6.0)	6.3 (6.2, 6.4)	6.7 (6.6, 6.8)	7.2 (7.0, 7.3)	7.6 (7.5, 7.7)	8.1 (7.9, 8.2)

**Figure 1: Cumulative Percent Revision of Primary Total Knee Replacement by Model (All Diagnoses)**



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs	8 Yrs
Attune	2902	444	0	0	0	0	0	0	0
Other Total Knee	669095	611057	545174	482698	424303	369279	317965	270537	226200
Number at Risk	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs
Attune	0	0	0	0	0	0	0	0	0
Other Total Knee	185934	150376	119212	92065	68731	49126	32775	19875	9620



TABLE 12

## 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 12: Revision Diagnosis of Primary Total Knee Replacement by Model (All Diagnoses) (Follow-up Limited to 1.3 Years)**

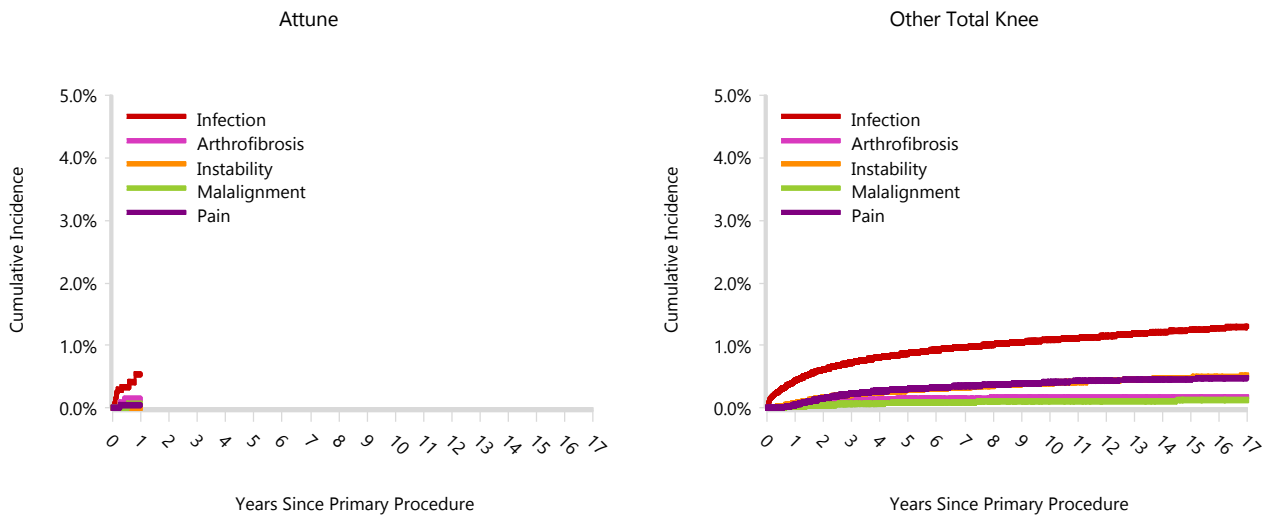
Revision Diagnosis	Number	Attune		Other Total Knee		
		% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Infection	11	0.4	61.1	3249	0.5	37.0
Loosening				1628	0.2	18.5
Patellofemoral Pain				717	0.1	8.2
Instability	1	0.0	5.6	664	0.1	7.6
Pain	1	0.0	5.6	544	0.1	6.2
Arthrofibrosis	3	0.1	16.7	386	0.1	4.4
Fracture				315	0.0	3.6
Patella Erosion				298	0.0	3.4
Malalignment	1	0.0	5.6	206	0.0	2.3
Incorrect Sizing				152	0.0	1.7
Bearing Dislocation				119	0.0	1.4
Patella Maltracking				70	0.0	0.8
Lysis				51	0.0	0.6
Prosthesis Dislocation				43	0.0	0.5
Wear Tibial Insert				42	0.0	0.5
Metal Related Pathology				28	0.0	0.3
Implant Breakage Tibial Insert				26	0.0	0.3
Synovitis				21	0.0	0.2
Osteonecrosis				18	0.0	0.2
Implant Breakage Patella				17	0.0	0.2
Implant Breakage Tibial				12	0.0	0.1
Implant Breakage Femoral				9	0.0	0.1
Tumour				7	0.0	0.1
Incorrect Side				2	0.0	0.0
Wear Tibial				2	0.0	0.0
Heterotopic Bone				1	0.0	0.0
Patella Dislocation				1	0.0	0.0
Wear Patella				1	0.0	0.0
Other	1	0.0	5.6	162	0.0	1.8
<b>N Revision</b>	<b>18</b>	<b>0.6</b>	<b>100.0</b>	<b>8791</b>	<b>1.3</b>	<b>100.0</b>
<b>N Primary</b>	<b>2902</b>			<b>669095</b>		

Note: This table is restricted to revisions within 1.3 years for all groups to allow a time-matched comparison of revisions.

**Table 13: Yearly Cumulative Incidence Revision Diagnosis of Primary Total Knee Replacement by Model (All Diagnoses)**

Model	Event	N Events	1 Yr	2 Yrs	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Attune	Infection	11	0.5 (0.3, 1.0)					
	Arthrofibrosis	3	0.1 (0.0, 0.4)					
	Instability	1	0.0 (0.0, 0.0)					
	Malalignment	1	0.1 (0.0, 0.4)					
	Pain	1	0.0 (0.0, 0.3)					
	Other	1	0.0 (0.0, 0.2)					
	Deceased	4	0.2 (0.1, 0.6)					
	All Revision	18	0.8 (0.5, 1.4)					
Other Total Knee	Infection	6106	0.4 (0.4, 0.4)	0.6 (0.6, 0.6)	0.7 (0.7, 0.7)	0.9 (0.9, 0.9)	1.1 (1.1, 1.1)	1.2 (1.2, 1.3)
	Arthrofibrosis	906	0.0 (0.0, 0.0)	0.1 (0.1, 0.1)	0.1 (0.1, 0.1)	0.1 (0.1, 0.2)	0.2 (0.2, 0.2)	0.2 (0.2, 0.2)
	Instability	2097	0.1 (0.1, 0.1)	0.2 (0.2, 0.2)	0.2 (0.2, 0.2)	0.3 (0.3, 0.3)	0.4 (0.4, 0.4)	0.5 (0.5, 0.5)
	Malalignment	568	0.0 (0.0, 0.0)	0.0 (0.0, 0.1)	0.1 (0.1, 0.1)	0.1 (0.1, 0.1)	0.1 (0.1, 0.1)	0.1 (0.1, 0.1)
	Pain	2103	0.0 (0.0, 0.1)	0.2 (0.1, 0.2)	0.2 (0.2, 0.2)	0.3 (0.3, 0.3)	0.4 (0.4, 0.4)	0.5 (0.4, 0.5)
	Other	14187	0.4 (0.4, 0.4)	0.9 (0.9, 0.9)	1.3 (1.2, 1.3)	1.7 (1.7, 1.8)	2.7 (2.7, 2.8)	3.7 (3.7, 3.8)
	Deceased	10155 3	0.8 (0.7, 0.8)	1.8 (1.7, 1.8)	3.1 (3.1, 3.1)	6.7 (6.6, 6.7)	20.7 (20.5, 20.8)	39.0 (38.7, 39.2)
	All Revision	25967	1.0 (1.0, 1.0)	2.0 (2.0, 2.0)	2.6 (2.6, 2.6)	3.4 (3.4, 3.5)	4.9 (4.8, 5.0)	6.2 (6.1, 6.3)

Figure 2: Cumulative Incidence Revision Diagnosis of Primary Total Knee Replacement by Model (All Diagnoses)



**TABLE 14**

**Type of 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 type of revision as a percentage of the total number of primary procedures. This percentage can be used to approximate the risk of having that type of revision. Differing percentages between groups, with the same distribution of follow up time, may identify problems of concern.

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

**Table 14: Type of Revision of Primary Total Knee Replacement by Model (All Diagnoses) (Follow-up Limited to 1.3 Years)**

Type of Revision	Number	Attune		Other Total Knee		
		% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Insert Only	14	0.5	77.8	3185	0.5	36.2
TKR (Tibial/Femoral)	1	0.0	5.6	1437	0.2	16.3
Patella Only	1	0.0	5.6	1433	0.2	16.3
Tibial Component				865	0.1	9.8
Femoral Component	1	0.0	5.6	660	0.1	7.5
Cement Spacer				587	0.1	6.7
Insert/Patella	1	0.0	5.6	514	0.1	5.8
Removal of Prostheses				64	0.0	0.7
Minor Components				31	0.0	0.4
Reinsertion of Components				6	0.0	0.1
Total Femoral				5	0.0	0.1
Cement Only				4	0.0	0.0
<b>N Revision</b>	<b>18</b>	<b>0.6</b>	<b>100.0</b>	<b>8791</b>	<b>1.3</b>	<b>100.0</b>
<b>N Primary</b>	<b>2902</b>			<b>669095</b>		

Note: This table is restricted to revisions within 1.3 years for all groups to allow a time-matched comparison of revisions.

**Table 15: Revision Rates of Attune Primary Total Knee Replacement by Fixation (All Diagnoses)**

Fixation	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Cemented	18	2902	1672	1.08 (0.64, 1.70)
<b>TOTAL</b>	<b>18</b>	<b>2902</b>	<b>1672</b>	<b>1.08 (0.64, 1.70)</b>

**Table 16: Revision Rates of Attune Primary Total Knee Replacement by Polyethylene Type (All Diagnoses)**

Polyethylene Type	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
XLPE + Antioxidant	18	2902	1672	1.08 (0.64, 1.70)
<b>TOTAL</b>	<b>18</b>	<b>2902</b>	<b>1672</b>	<b>1.08 (0.64, 1.70)</b>

**Table 17: Revision Rates of Attune Primary Total Knee Replacement by Bearing Mobility (All Diagnoses)**

Bearing Mobility	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Fixed	14	2171	1433	0.98 (0.53, 1.64)
Rotating	4	731	239	1.67 (0.46, 4.29)
<b>TOTAL</b>	<b>18</b>	<b>2902</b>	<b>1672</b>	<b>1.08 (0.64, 1.70)</b>

**Table 18: Revision Rates of Attune Primary Total Knee Replacement by Patella Usage (All Diagnoses)**

Patella Usage	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Patella Used	14	2396	1374	1.02 (0.56, 1.71)
No Patella	4	506	297	1.34 (0.37, 3.44)
<b>TOTAL</b>	<b>18</b>	<b>2902</b>	<b>1672</b>	<b>1.08 (0.64, 1.70)</b>

**Table 19: Number of Revisions of Attune Primary Total Knee Replacement by Year of Implant (All Diagnoses)**

Year of Implant	Number Revised	Total Number
2018	15	1944
2019	3	958
<b>TOTAL</b>	<b>18</b>	<b>2902</b>

**Table 20: Revision Rates of Attune Primary Total Knee Replacement by Femoral Component (All Diagnoses)**

Femoral	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Attune CR	11	1833	1013	1.09 (0.54, 1.94)
Attune PS	7	1069	659	1.06 (0.43, 2.19)
<b>TOTAL</b>	<b>18</b>	<b>2902</b>	<b>1672</b>	<b>1.08 (0.64, 1.70)</b>

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