Australian Orthopaedic Association National Joint Replacement Registry

2026 SUPPLEMENTARY REPORT

Demographics and Outcome of Elbow and Wrist Arthroplasty

AOA
AUSTRALIAN ORTHOPAEDIC ASSOCIATION

Australian Orthopaedic Association National Joint Replacement Registry

https://doi.org/10.25310/

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Demographics and Outcomes of Elbow and Wrist Arthroplasty

2026 Supplementary Report

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The AOANJRR is funded by the Australian Government Department of Health, Disability and Ageing

Cite this report

Gill DR, Smith PN, McAuliffe MJ, Stoney JD, Wall CJ, Corfield S, Esaian R, Moylan S, McCaul M, Mushangwe S, Davies LW, Holder C, Edwards S, Xu Q, Oakey H, Lewis PL. Demographics and Outcomes of Elbow and Wrist Arthroplasty Supplementary Report in *Hip, Knee & Shoulder Arthroplasty: 2026 Annual Report*, Australian Orthopaedic Association National Joint Replacement Registry, AOA, Adelaide; 2026. https://doi.org/10.25310/BHVZ9254

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Australian Orthopaedic Association
National Joint Replacement Registry

Demographics and Outcomes of Elbow and Wrist Arthroplasty

2026 Supplementary Report

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Introduction

The 2026 Demographics and Outcome of Elbow and Wrist Arthroplasty Supplementary Report is based on the analysis of 8,953 elbow and 1,351 wrist procedures recorded by the Registry with a procedure date up to and including 31 December 2025.

The elbow arthroplasty procedures include 5,329 primary partial, 2,164 primary total and 1,460 revisions (Table EG1).

The wrist arthroplasty procedures include 307 primary partial, 843 primary total and 201 revisions (Table WG1).

The Elbow and Wrist Arthroplasty Report is one of 14 supplementary reports to complete the AOANJRR Annual Report for 2026.

The 2026 Annual Report, Supplementary Reports, and investigations of prostheses with higher than anticipated rates of revision are available on the AOANJRR website.

Information on the background, purpose, aims, benefits and governance of the Registry can be found in the Introduction of the 2026 Hip, Knee and Shoulder Arthroplasty Annual Report.

The Registry data quality processes, including data collection, validation and outcomes assessment, are provided in detail in the data quality section of the 2026 Hip, Knee and Shoulder Arthroplasty Annual Report: https://registry.aoa.org.au/annual-reports-2026.

Elbow Replacement

CATEGORIES OF ELBOW REPLACEMENT

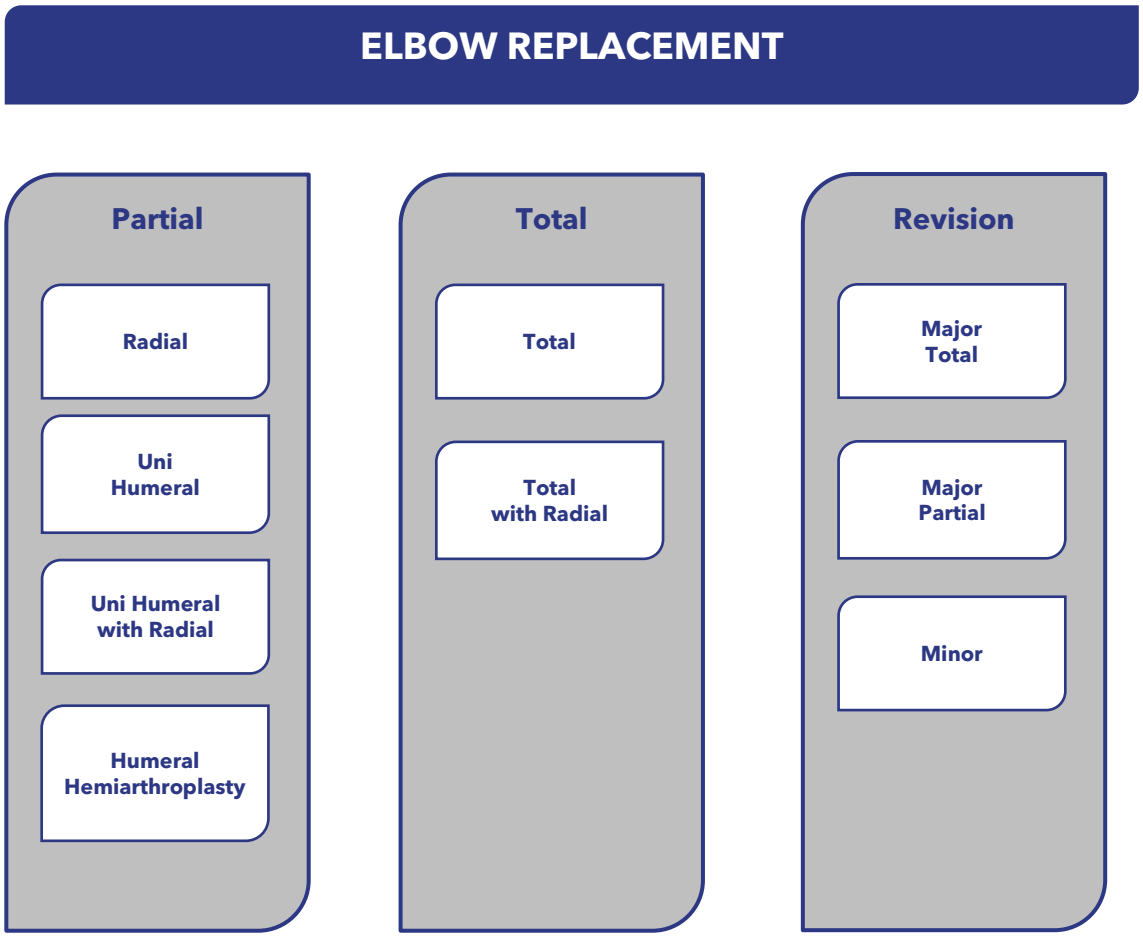
The Registry groups elbow replacement into three broad categories: primary partial, primary total, and revision elbow replacement.

A primary replacement is the initial replacement procedure undertaken on a joint and involves replacing either part (partial) or all (total) of the articular surface.

Primary partial and primary total elbow replacement are further subcategorised into classes depending on the type of prostheses used. Partial elbow classes are radial, uni humeral, uni humeral with radial, and humeral hemiarthroplasty elbow replacement. Total elbow classes are total and total with radial elbow replacement. Definitions for each of these are detailed in the relevant chapters.

Revision procedures are re-operations of previous elbow replacements where one or more of the prosthetic components are replaced, removed, or another component is added. Revisions include re-operations of primary partial, primary total or previous revision procedures.

Elbow revisions are subcategorised into three classes: minor, major partial, and major total revisions. These are defined in the section on revisions.



DEMOGRAPHICS

Table EG1 Number of Elbow Replacements by Sex

Elbow Replacement	Female		Male		TOTAL	
	N	%	N	%	N	%
Radial	2797	58.9	1954	41.1	4751	89.2
Uni Humeral	7	70.0	3	30.0	10	0.2
Uni Humeral & Radial	10	40.0	15	60.0	25	0.5
Humeral Hemiarthroplasty	456	84.0	87	16.0	543	10.2
Primary Partial	**3270**	**61.4**	**2059**	**38.6**	**5329**	**100.0**
Total Elbow	1576	74.8	532	25.2	2108	97.4
Total Elbow & Radial	35	62.5	21	37.5	56	2.6
Primary Total	**1611**	**74.4**	**553**	**25.6**	**2164**	**100.0**
Revision	**861**	**59.0**	**599**	**41.0**	**1460**	**100.0**
TOTAL	**5742**	**64.1**	**3211**	**35.9**	**8953**	**100.0**

Table EG2 Number of Elbow Replacements by Age

Elbow Replacement	<55		55-64		65-74		75-84		≥85		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Radial	2297	48.3	1193	25.1	874	18.4	335	7.1	52	1.1	4751	89.2
Uni Humeral	9	90.0	1	10.0	.	.	.	.	.	.	10	0.2
Uni Humeral & Radial	10	40.0	9	36.0	5	20.0	1	4.0	.	.	25	0.5
Humeral Hemiarthroplasty	55	10.1	123	22.7	170	31.3	138	25.4	57	10.5	543	10.2
Primary Partial	**2371**	**44.5**	**1326**	**24.9**	**1049**	**19.7**	**474**	**8.9**	**109**	**2.0**	**5329**	**100.0**
Total Elbow	202	9.6	353	16.7	664	31.5	648	30.7	241	11.4	2108	97.4
Total Elbow & Radial	6	10.7	14	25.0	20	35.7	15	26.8	1	1.8	56	2.6
Primary Total	**208**	**9.6**	**367**	**17.0**	**684**	**31.6**	**663**	**30.6**	**242**	**11.2**	**2164**	**100.0**
Revision	**399**	**27.3**	**344**	**23.6**	**415**	**28.4**	**238**	**16.3**	**64**	**4.4**	**1460**	**100.0**
TOTAL	**2978**	**33.3**	**2037**	**22.8**	**2148**	**24.0**	**1375**	**15.4**	**415**	**4.6**	**8953**	**100.0**

Table EG3 Time between Procedures for Bilateral Primary Elbow Replacement

Bilateral Procedures	Same Day		1day-6months		≥6months		TOTAL	
	N	Total%	N	Total%	N	Total%	N	Total%
Both - Radial	19	11.5	5	3.0	11	6.7	35	21.2
Both - Total Elbow	1	0.6	15	9.1	103	62.4	119	72.1
Humeral Hemiarthroplasty & Total Elbow	.	.	1	0.6	1	0.6	2	1.2
Radial & Humeral Hemiarthroplasty	.	.	1	0.6	1	0.6	2	1.2
Radial & Total Elbow	.	.	.	.	3	1.8	3	1.8
Radial & Uni Humeral & Radial	.	.	.	.	1	0.6	1	0.6
Total Elbow & Total Elbow & Radial	.	.	.	.	2	1.2	2	1.2
Uni Humeral & Radial & Total Elbow	.	.	.	.	1	0.6	1	0.6
TOTAL	**20**	**12.1**	**22**	**13.3**	**123**	**74.5**	**165**	**100.0**

Figure EG1 All Elbow Replacement by Age and Sex

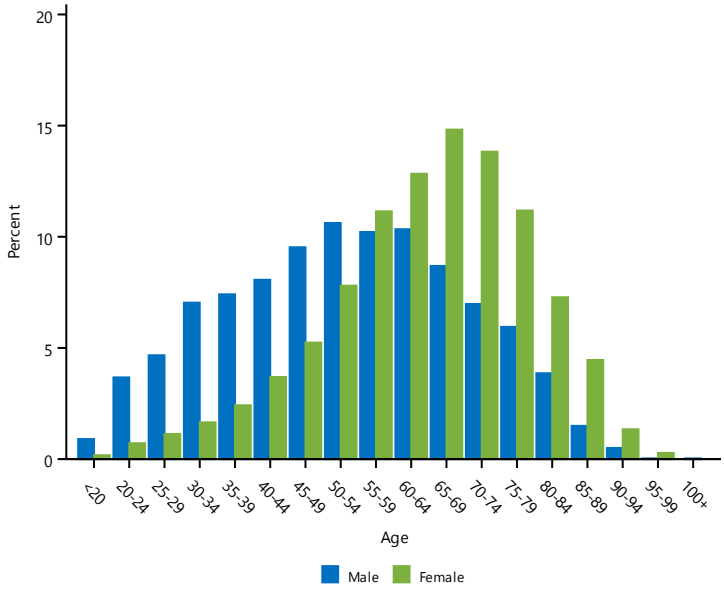


Table EG4 All Elbow Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	3211	35.9%	12	102	54	53.2	16.9
Female	5742	64.1%	16	99	66	64.1	14.3
TOTAL	**8953**	**100.0%**	**12**	**102**	**62**	**60.2**	**16.2**

Table EG5 Cumulative Percent Revision of Primary Elbow Replacement by Elbow Class

Elbow Class	N Revised	N Total	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Radial	256	4751	2.9 (2.4, 3.4)	4.8 (4.2, 5.4)	5.5 (4.8, 6.2)	6.0 (5.3, 6.8)	6.5 (5.7, 7.5)
Uni Humeral	1	10	0.0 (0.0, 0.0)	10.0 (1.5, 52.7)	10.0 (1.5, 52.7)	10.0 (1.5, 52.7)	10.0 (1.5, 52.7)
Uni Humeral & Radial	13	25	24.0 (11.6, 45.8)	48.0 (30.8, 68.8)	48.0 (30.8, 68.8)	52.3 (34.6, 72.6)	52.3 (34.6, 72.6)
Humeral Hemiarthroplasty	35	543	4.0 (2.7, 6.1)	5.3 (3.6, 7.8)	6.1 (4.2, 8.8)	10.3 (7.1, 14.9)	
Total Elbow	272	2108	3.4 (2.7, 4.2)	8.7 (7.5, 10.0)	11.7 (10.2, 13.3)	18.1 (16.0, 20.5)	22.4 (19.2, 25.9)
Total Elbow & Radial	14	56	5.5 (1.8, 16.0)	18.8 (10.6, 32.1)	22.8 (13.7, 36.8)	29.0 (17.9, 44.8)	29.0 (17.9, 44.8)
TOTAL	**591**	**7493**					

PRIMARY PARTIAL ELBOW REPLACEMENT

DEMOGRAPHICS

The Registry subcategorises primary partial elbow replacement into four classes. These are defined as:

Radial involves resection of the radial head and replacement with a stemmed radial prosthesis.
Uni humeral involves replacement of the capitellum.

Uni humeral with radial involves replacement of the capitellum and radial head.
Humeral hemiarthroplasty involves resection of the distal humerus and replacement with a stemmed humeral prosthesis.

Table EP1 Primary Partial Elbow Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	3270	61.4%	16	99	61	60.3	14.1
Male	2059	38.6%	14	102	48	47.5	15.2
TOTAL	**5329**	**100.0%**	**14**	**102**	**57**	**55.4**	**15.8**

Figure EP1 Primary Partial Elbow Replacement by Age and Sex

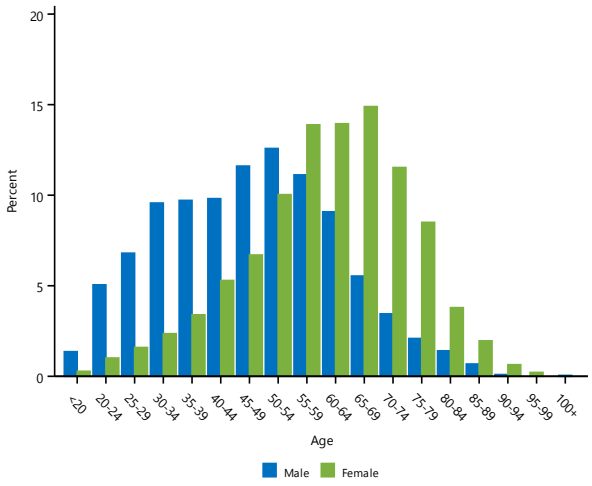


Table EP2 Primary Partial Elbow Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fracture/Dislocation	4879	91.6
Osteoarthritis	364	6.8
Instability	44	0.8
Rheumatoid Arthritis	14	0.3
Osteonecrosis	14	0.3
Tumour	7	0.1
Other Inflammatory Arthritis	5	0.1
Osteochondritis Dissecans	1	0.0
Other	1	0.0
TOTAL	**5329**	**100.0**

PRIMARY RADIAL ELBOW REPLACEMENT

Table EP3 Primary Radial Elbow Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	2797	58.9%	16	97	60	58.7	13.8
Male	1954	41.1%	14	102	47	46.8	14.8
TOTAL	**4751**	**100.0%**	**14**	**102**	**55**	**53.8**	**15.4**

Figure EP2 Primary Radial Elbow Replacement by Age and Sex

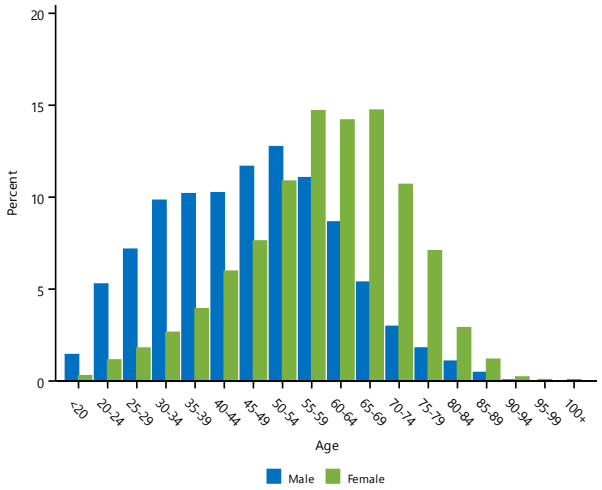


Table EP4 Primary Radial Elbow Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fracture/Dislocation	4357	91.7
Osteoarthritis	318	6.7
Instability	44	0.9
Rheumatoid Arthritis	11	0.2
Osteonecrosis	11	0.2
Other Inflammatory Arthritis	5	0.1
Tumour	4	0.1
Other	1	0.0
TOTAL	**4751**	**100.0**

Table EP5 Most Used Radial Head/Stem Prostheses in Primary Radial Elbow Replacement

2008		2022		2023		2024		2025	
N	Model	N	Model	N	Model	N	Model	N	Model
57	Evolve	143	Radial Stem (Ascension)	73	Radial Stem (Ascension)	103	ALIGN	107	Radial Stem (Ascension)
30	Radial Stem (Ascension)	60	Evolve	71	Anatomic	81	Anatomic	58	Anatomic
20	Anatomic	51	Anatomic	57	ALIGN	57	MOPYC	49	ALIGN
15	MOPYC	31	MOPYC	51	Evolve	49	Evolve	49	Evolve
8	RHS	14	ALIGN	41	MOPYC	7	Radial Head Replacement System	10	MOPYC
6	ExploR	3	Radial Head Replacement System	6	Radial Head Replacement System	2	Radial Stem (Ascension)	8	Radial Head Replacement System
4	Swanson								
4	rHead								
1	Generic Radial Stem								
1	Solar								
10 Most Used									
146	(10) 100.0%	302	(6) 100.0%	299	(6) 100.0%	299	(6) 100.0%	281	(6) 100.0%

PRIMARY UNI HUMERAL ELBOW REPLACEMENT

Table EP6 Primary Uni Humeral Elbow Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	7	70.0%	27	56	51	47.0	10.4
Male	3	30.0%	30	52	47	43.0	11.5
TOTAL	**10**	**100.0%**	**27**	**56**	**49**	**45.8**	**10.2**

Figure EP3 Primary Humeral Elbow Replacement by Age and Sex

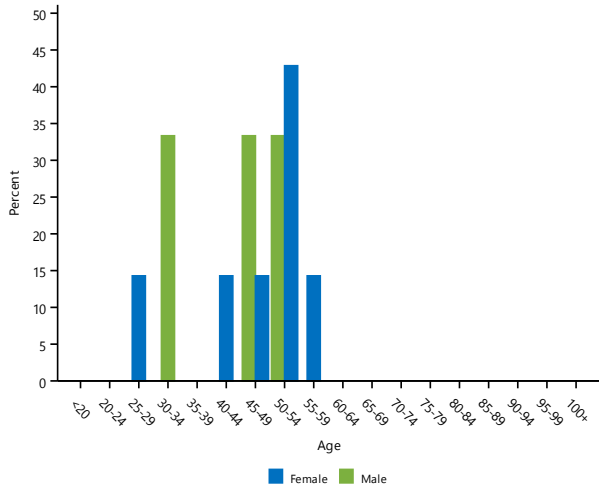


Table EP7 Primary Uni Humeral Elbow Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	5	50.0
Fracture/Dislocation	4	40.0
Osteonecrosis	1	10.0
TOTAL	**10**	**100.0**

PRIMARY UNI HUMERAL WITH RADIAL ELBOW REPLACEMENT

Table EP8 Primary Uni Humeral with Radial Elbow Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	10	40.0%	22	83	59	57.4	17.0
Male	15	60.0%	31	69	57	55.0	9.3
TOTAL	**25**	**100.0%**	**22**	**83**	**58**	**56.0**	**12.6**

Figure EP4 Primary Uni Humeral with Radial Elbow Replacement by Age and Sex

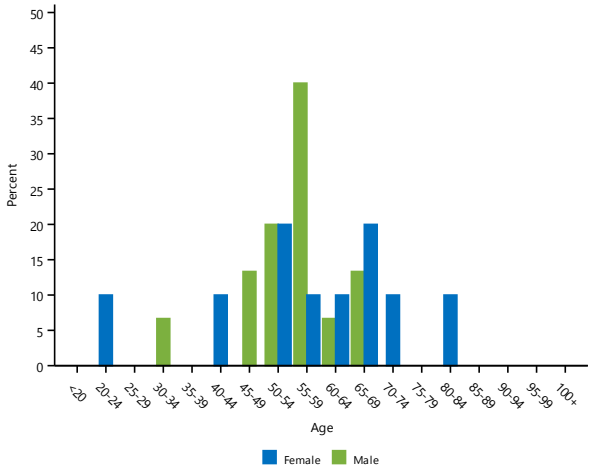


Table EP9 Primary Uni Humeral with Radial Elbow Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	21	84.0
Osteonecrosis	2	8.0
Fracture/Dislocation	2	8.0
TOTAL	**25**	**100.0**

PRIMARY HUMERAL HEMIARTHROPLASTY

Table EP10 Primary Humeral Hemiarthroplasty Elbow Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	456	84.0%	18	99	71	70.4	11.7
Male	87	16.0%	22	91	64	64.0	14.6
TOTAL	**543**	**100.0%**	**18**	**99**	**70**	**69.4**	**12.4**

Figure EP5 Primary Humeral Hemiarthroplasty Elbow Replacement by Age and Sex

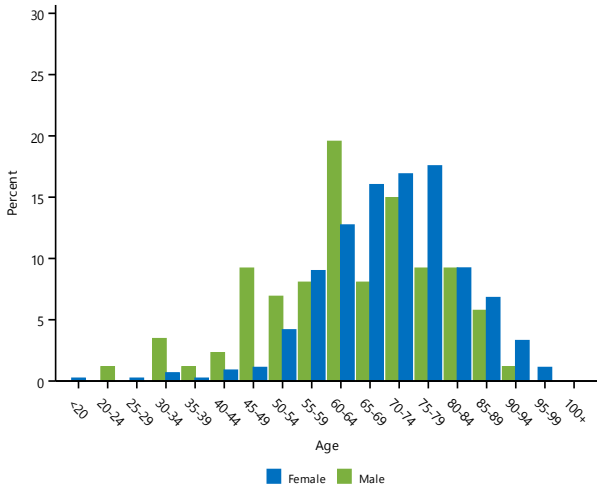


Table EP11 Primary Humeral Hemiarthroplasty Elbow Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fracture/Dislocation	516	95.0
Osteoarthritis	20	3.7
Rheumatoid Arthritis	3	0.6
Tumour	3	0.6
Osteochondritis Dissecans	1	0.2
TOTAL	**543**	**100.0**

Table EP12 Most Used Humeral Prostheses in Primary Humeral Hemiarthroplasty Elbow Replacement

2008		2022		2023		2024		2025	
N	Model	N	Model	N	Model	N	Model	N	Model
13	Latitude	34	Latitude	58	Latitude	59	Latitude	76	Latitude
1	Sorbie-Questor								
10 Most Used									
14	(2) 100.0%	34	(1) 100.0%	58	(1) 100.0%	59	(1) 100.0%	76	(1) 100.0%

PRIMARY TOTAL ELBOW REPLACEMENT

DEMOGRAPHICS

The Registry subcategorises primary total elbow replacement into two classes. These are defined as:

Total elbow without radial involves resection of the olecranon and distal humerus and replacement with a stemmed ulna and stemmed humeral prosthesis.

Total elbow with radial involves resection of the olecranon and distal humerus and replacement with a stemmed ulna and stemmed humeral prosthesis combined with replacement of the radial head with a radial prosthesis. There are no total elbow with radial replacement procedures recorded since the last report.

Table ET1 Primary Total Elbow Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	1611	74.4%	16	96	73	71.5	12.0
Male	553	25.6%	12	94	71	68.8	12.3
TOTAL	**2164**	**100.0%**	**12**	**96**	**72**	**70.8**	**12.1**

Figure ET1 Primary Total Elbow Replacement by Age and Sex

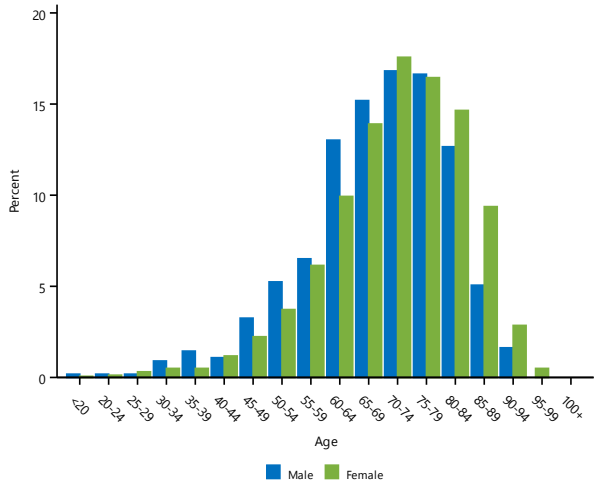


Table ET2 Primary Total Elbow Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fracture/Dislocation	829	38.3
Osteoarthritis	729	33.7
Rheumatoid Arthritis	503	23.2
Other Inflammatory Arthritis	50	2.3
Tumour	33	1.5
Instability	13	0.6
Osteonecrosis	3	0.1
Other	4	0.2
TOTAL	**2164**	**100.0**

PRIMARY TOTAL ELBOW WITHOUT RADIAL REPLACEMENT

Table ET3 Primary Total Elbow without Radial Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	1576	74.8%	16	96	73	71.6	12.0
Male	532	25.2%	12	94	71	68.9	12.4
TOTAL	**2108**	**100.0%**	**12**	**96**	**72**	**70.9**	**12.2**

Figure ET2 Primary Total Elbow without Radial Replacement by Age and Sex

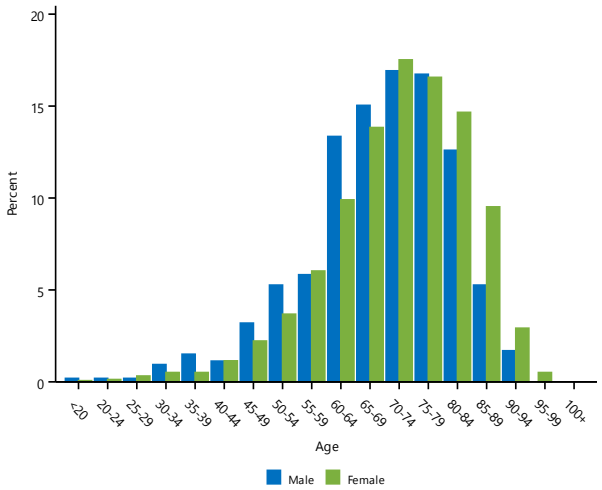


Table ET4 Primary Total Elbow without Radial Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fracture/Dislocation	818	38.8
Osteoarthritis	699	33.2
Rheumatoid Arthritis	490	23.2
Other Inflammatory Arthritis	49	2.3
Tumour	33	1.6
Instability	12	0.6
Osteonecrosis	3	0.1
Other	4	0.2
TOTAL	**2108**	**100.0**

Table ET5 Most Used Humeral Prostheses in Primary Total Elbow without Radial Replacement

2008		2022		2023		2024		2025	
N	Model	N	Model	N	Model	N	Model	N	Model
47	Coonrad/Morrey	51	Latitude	63	Latitude	73	Latitude	74	Latitude
21	Latitude	38	Nexel	38	Nexel	34	Nexel	34	Nexel
10	Discovery	10	Coonrad/Morrey	24	Coonrad/Morrey	10	Coonrad/Morrey	18	Coonrad/Morrey
1	Souter Strathclyde	5	Mutars	2	Mutars	3	Comprehensive	1	Mutars
						1	Mutars		
10 Most Used									
79	(4) 100.0%	104	(4) 100.0%	127	(4) 100.0%	121	(5) 100.0%	127	(4) 100.0%

Table ET6 Cumulative Percent Revision of Primary Total Elbow without Radial Replacement by Humeral Prostheses (Primary Diagnosis Fracture/Dislocation)

Humeral Stem	N Revised	N Total	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Coonrad/Morrey	31	340	1.9 (0.8, 4.1)	6.1 (3.9, 9.5)	8.7 (5.9, 12.7)	12.8 (8.9, 18.3)	
Discovery	3	26	4.0 (0.6, 25.2)	8.4 (2.2, 29.6)	13.2 (4.4, 35.7)	13.2 (4.4, 35.7)	
Latitude	19	310	2.3 (1.1, 4.9)	5.9 (3.6, 9.6)	5.9 (3.6, 9.6)		
Nexel	11	135	2.3 (0.7, 6.9)	6.0 (2.9, 12.3)	7.4 (3.7, 14.5)		
Other (4)	1	7	14.3 (2.1, 66.6)	14.3 (2.1, 66.6)	14.3 (2.1, 66.6)		
TOTAL	**65**	**818**					

Note: Only prostheses with >10 procedures have been listed

Table ET7 Cumulative Percent Revision of Primary Total Elbow without Radial Replacement by Humeral Prostheses (Primary Diagnosis Osteoarthritis)

Humeral Stem	N Revised	N Total	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Coonrad/Morrey	49	206	3.9 (2.0, 7.7)	15.4 (11.1, 21.4)	21.3 (16.0, 27.9)	27.7 (21.6, 35.1)	
Discovery	17	61	3.3 (0.8, 12.5)	11.7 (5.8, 23.1)	15.3 (8.3, 27.4)	33.3 (21.2, 49.7)	
Latitude	39	267	5.4 (3.2, 9.0)	7.8 (5.0, 11.9)	13.0 (8.9, 18.6)		
Nexel	25	158	5.3 (2.7, 10.3)	15.0 (10.0, 22.1)	18.0 (12.4, 25.9)		
Other (5)	3	7	28.6 (8.0, 74.2)	42.9 (16.3, 82.8)	42.9 (16.3, 82.8)	42.9 (16.3, 82.8)	
TOTAL	**133**	**699**					

Note: Only prostheses with >10 procedures have been listed

Table ET8 Cumulative Percent Revision of Primary Total Elbow without Radial Replacement by Humeral Prostheses (Primary Diagnosis Rheumatoid Arthritis)

Humeral Stem	N Revised	N Total	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Coonrad/Morrey	31	194	3.1 (1.4, 6.8)	8.1 (5.0, 13.1)	11.6 (7.7, 17.3)	17.0 (12.1, 23.7)	
Discovery	6	32	6.3 (1.6, 22.7)	6.3 (1.6, 22.7)	6.3 (1.6, 22.7)	14.1 (5.5, 33.6)	21.3 (8.8, 46.2)
Latitude	13	162	1.3 (0.3, 5.0)	4.3 (1.9, 9.3)	6.2 (3.1, 12.1)		
Nexel	8	99	1.1 (0.2, 7.8)	7.3 (3.3, 15.5)	7.3 (3.3, 15.5)		
Other (1)	1	3	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)	
TOTAL	**59**	**490**					

Note: Only prostheses with >10 procedures have been listed

Humeral hemiarthroplasty and total elbow without radial head replacement

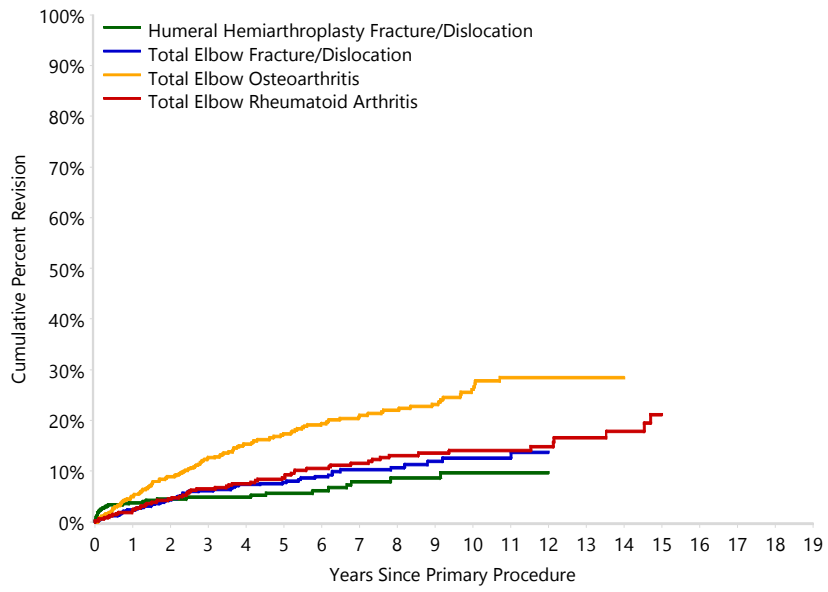
When the most common elbow replacements are compared by primary diagnosis total elbow for fracture/dislocation or rheumatoid arthritis and osteoarthritis has an increased rate of revision compared to humeral hemiarthroplasty for fracture /dislocation (Table ET9 and Figure ET3).

Table ET9 Cumulative Percent Revision of Primary Total Elbow without Radial Replacement by Primary Diagnosis and Class

Class	Primary Diagnosis	N Revised	N Total	1 Yr	3 Yrs	5 Yrs	10 Yrs	14 Yrs
Humeral Hemiarthroplasty	Fracture/Dislocation	31	516	3.8 (2.4, 5.9)	4.9 (3.2, 7.3)	5.7 (3.8, 8.4)	9.7 (6.5, 14.5)	
Total Elbow	Fracture/Dislocation	65	818	2.3 (1.5, 3.7)	6.2 (4.6, 8.3)	7.8 (6.0, 10.2)	12.6 (9.6, 16.5)	
	Osteoarthritis	133	699	5.0 (3.6, 6.9)	12.6 (10.3, 15.5)	17.4 (14.5, 20.7)	26.1 (22.1, 30.8)	28.4 (24.0, 33.5)
	Rheumatoid Arthritis	59	490	2.3 (1.3, 4.1)	6.5 (4.5, 9.2)	8.7 (6.4, 11.8)	14.1 (10.8, 18.3)	17.9 (13.4, 23.6)
TOTAL		**288**	**2523**					

Note: Only prostheses with >10 procedures have been listed.

Figure ET3 Cumulative Percent Revision of Primary Total Elbow without Radial Replacement by Primary Diagnosis and Class



HR - adjusted for age and sex

Total Elbow Fracture/Dislocation vs
Humeral Hemiarthroplasty Fracture/Dislocation

0 - 6Mth: HR=0.48 (95% CI 0.22, 1.06), p=0.069
6Mth - 9Mth: HR=4.09 (95% CI 1.31, 12.77), p=0.015
9Mth - 1.5Yr: HR=2.23 (95% CI 0.87, 5.69), p=0.094
1.5Yr+: HR=2.70 (95% CI 1.48, 4.90), p=0.001

Total Elbow Osteoarthritis vs
Humeral Hemiarthroplasty Fracture/Dislocation

0 - 3Mth: HR=0.43 (95% CI 0.19, 0.98), p=0.044
3Mth - 6Mth: HR=3.90 (95% CI 1.39, 10.93), p=0.009
6Mth - 1.5Yr: HR=4.68 (95% CI 2.24, 9.79), p<0.001
1.5Yr+: HR=4.21 (95% CI 2.43, 7.27), p<0.001

Total Elbow Rheumatoid Arthritis vs
Humeral Hemiarthroplasty Fracture/Dislocation

0 - 3Mth: HR=0.26 (95% CI 0.08, 0.77), p=0.015
3Mth+: HR=2.25 (95% CI 1.31, 3.85), p=0.003

Number at Risk		0 Yr	1 Yr	3 Yrs	5 Yrs	10 Yrs	14 Yrs
Humeral Hemiarthroplasty	Fracture/Dislocation	516	408	281	208	77	26
Total Elbow	Fracture/Dislocation	818	711	522	365	100	23
	Osteoarthritis	699	618	474	354	134	55
	Rheumatoid Arthritis	490	448	361	303	149	57

Note: Only combinations with > 10 procedures have been listed

PRIMARY TOTAL ELBOW WITH RADIAL REPLACEMENT

Table ET10 Primary Total Elbow with Radial Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	35	62.5%	42	86	68	67.7	10.8
Male	21	37.5%	45	83	67	67.5	10.7
TOTAL	**56**	**100.0%**	**42**	**86**	**68**	**67.6**	**10.7**

Figure ET4 Primary Total Elbow with Radial Replacement by Age and Sex

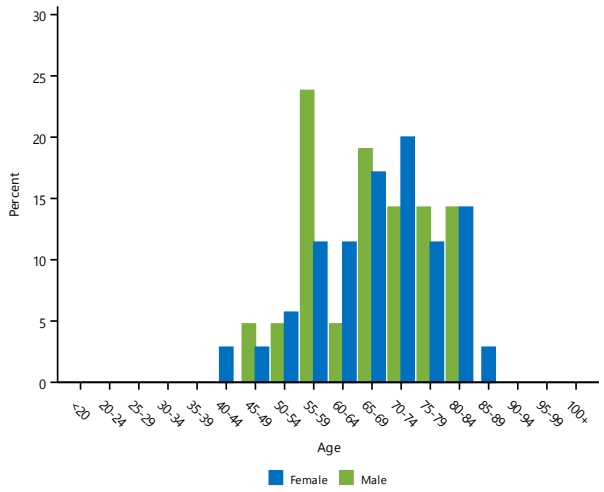


Table ET11 Primary Total Elbow with Radial Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	30	53.6
Rheumatoid Arthritis	13	23.2
Fracture/Dislocation	11	19.6
Other Inflammatory Arthritis	1	1.8
Instability	1	1.8
TOTAL	**56**	**100.0**

Table ET12 Most Used Radial Head/Humeral Prostheses in Primary Total Elbow with Radial Replacement

2008		2020		2021		2022		2025	
N	Model	N	Model	N	Model	N	Model	N	Model
10	Latitude	2	Latitude	1	Latitude	1	Latitude		
Most Used									
10	(1) 100.0%	2	(1) 100.0%	1	(1) 100.0%	1	(1) 100.0%	0	(0)

Note: No procedures in the period 2025.

REVISION ELBOW REPLACEMENT

DEMOGRAPHICS

The Registry subcategorises elbow revisions into three classes. These are defined as:

Major total revision involves the insertion, removal and/or replacement of a major component on both the proximal and distal side of the joint.
Major partial revision involves the insertion, removal and/or replacement of a major component on either the proximal or distal side of the joint.
Minor revision involves the insertion, removal and/or replacement of any other prosthesis or implant in elbow replacement.

Major components are prostheses that are fixed to bone. These are the humeral prosthesis and the ulna prosthesis in elbow replacement. The exception to this is the radial prosthesis, which is fixed to bone and is not considered a major prosthesis.

Different types of major partial and minor revisions are identified based on the specific prostheses or implants used in the revision.

Table ER1 All Revision Elbow Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	599	41.0%	20	97	60	58.2	15.3
Female	861	59.0%	21	95	66	65.0	13.5
TOTAL	**1460**	**100.0%**	**20**	**97**	**64**	**62.2**	**14.7**

Table ER2 Reason for Revision of All Revision Elbow Replacement

Reason for Revision	Number	Percent
Loosening	513	35.1
Infection	337	23.1
Fracture	170	11.6
Instability	88	6.0
Prosthesis Dislocation	37	2.5
Pain	33	2.3
Incorrect Sizing	29	2.0
Wear Bushing	24	1.6
Lysis	20	1.4
Implant Breakage Ulna	17	1.2
Arthrofibrosis	16	1.1
Malposition	10	0.7
Progression Of Disease	10	0.7
Metal Related Pathology	9	0.6
Implant Breakage Humeral	8	0.5
Heterotopic Bone	5	0.3
Wear Ulna	5	0.3
Synovitis	2	0.1
Wear Humeral	1	0.1
Other	126	8.6
TOTAL	**1460**	**100.0**

Table ER3 Type of Revision of All Revision Elbow Replacement

Type of Revision	Number	Percent
Humeral/Ulnar	366	25.1
Radial Component	314	21.5
Humeral Component	187	12.8
Ulna Component	139	9.5
Elbow Pin Only	135	9.2
Removal of Prostheses	107	7.3
Cement Spacer	78	5.3
Ulna Cap Only	27	1.8
Radial Head Only	25	1.7
Radial Neck Only	21	1.4
Reoperation	16	1.1
Minor Components	14	1.0
Cement Only	13	0.9
Uni Humeral/Radius	7	0.5
Reinsertion of Components	4	0.3
Radial/Ulnar	3	0.2
Unclassified - No components	2	0.1
Humeral/Radius	1	0.1
Humeral/Radius/Ulnar	1	0.1
TOTAL	**1460**	**100.0**

Wrist Replacement

CATEGORIES OF WRIST REPLACEMENT

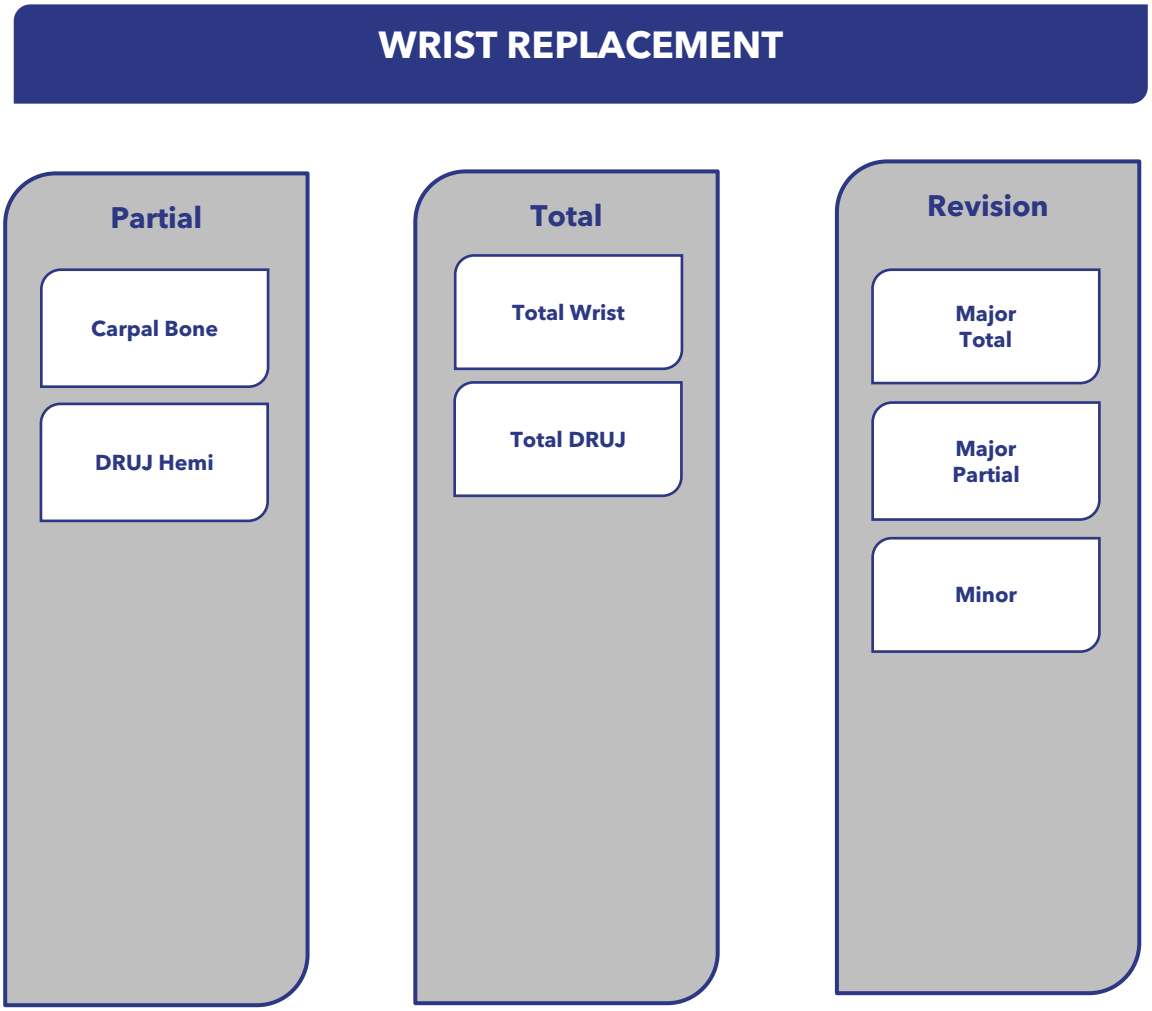
The Registry groups wrist replacement into three broad categories: primary partial, primary total and revision wrist replacement.

A primary replacement is the initial replacement procedure undertaken on a joint and involves replacing either part (partial) or all (total) of the articular surface.

Primary partial wrist replacement is further subcategorised into five classes depending on the type of prosthesis used. Partial wrist classes are lunate, partial ulna, distal radial ulna joint (DRUJ) with ulna only replacement, DRUJ with ulna and radial replacement, and scaphoid interspacer replacement. Definitions for each of these are detailed in the relevant sections.

Revision procedures are re-operations of previous wrist replacements where one or more of the prosthetic components are replaced, removed, or another component is added. Revisions include re-operations of primary partial, primary total or previous revision procedures.

Wrist revisions are subcategorised into three classes: minor, major partial, and major total revisions. These are defined in the chapter on revisions.



DEMOGRAPHICS

Table WG1 Number of Wrist Replacements by Sex

Wrist Replacement	Female		Male		TOTAL	
	N	%	N	%	N	%
DRUJ Hemi	113	51.1	108	48.9	221	72.0
Carpal Bone	28	32.6	58	67.4	86	28.0
Primary Partial	**141**	**45.9**	**166**	**54.1**	**307**	**100.0**
Total DRUJ	61	51.3	58	48.7	119	14.1
Total Wrist	307	42.4	417	57.6	724	85.9
Primary Total	**368**	**43.7**	**475**	**56.3**	**843**	**100.0**
Revision	**110**	**54.7**	**91**	**45.3**	**201**	**100.0**
TOTAL	**619**	**45.8**	**732**	**54.2**	**1351**	**100.0**

Table WG2 Number of Wrist Replacements by Age

Wrist Replacement	<55		55-64		65-74		75-84		≥85		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
DRUJ Hemi	46	20.8	58	26.2	65	29.4	44	19.9	8	3.6	221	72.0
Carpal Bone	44	51.2	19	22.1	16	18.6	6	7.0	1	1.2	86	28.0
Primary Partial	**90**	**29.3**	**77**	**25.1**	**81**	**26.4**	**50**	**16.3**	**9**	**2.9**	**307**	**100.0**
Total DRUJ	37	31.1	38	31.9	24	20.2	17	14.3	3	2.5	119	14.1
Total Wrist	127	17.5	209	28.9	230	31.8	144	19.9	14	1.9	724	85.9
Primary Total	**164**	**19.5**	**247**	**29.3**	**254**	**30.1**	**161**	**19.1**	**17**	**2.0**	**843**	**100.0**
Revision	**44**	**21.9**	**59**	**29.4**	**59**	**29.4**	**35**	**17.4**	**4**	**2.0**	**201**	**100.0**
TOTAL	**298**	**22.1**	**383**	**28.3**	**394**	**29.2**	**246**	**18.2**	**30**	**2.2**	**1351**	**100.0**

Table WG3 All Wrist Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	732	54.2%	18	90	64	63.0	13.6
Female	619	45.8%	21	89	64	63.0	13.2
TOTAL	**1351**	**100.0%**	**18**	**90**	**64**	**63.0**	**13.4**

Figure WG1 All Wrist Replacement by Age and Sex

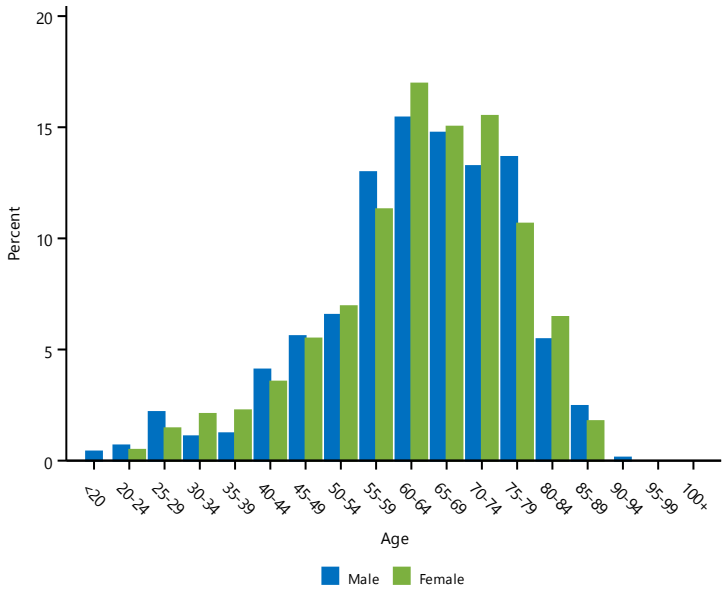


Table WG4 Cumulative Percent Revision of Primary Wrist Replacement by Class

Wrist Class	N Revised	N Total	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs
DRUJ Hemi	17	221	3.6 (1.8, 7.1)	6.5 (3.9, 10.7)	7.6 (4.7, 12.1)	8.7 (5.4, 13.8)	
Total DRUJ	8	119	2.7 (0.9, 8.1)	6.1 (2.8, 13.1)	8.5 (4.3, 16.5)		
Carpal Bone	5	86	4.7 (1.8, 12.0)	5.9 (2.5, 13.6)	5.9 (2.5, 13.6)	5.9 (2.5, 13.6)	
Total Wrist	80	724	4.2 (2.9, 6.0)	9.2 (7.2, 11.9)	12.2 (9.7, 15.3)	17.1 (13.4, 21.6)	
TOTAL	**110**	**1150**					

PRIMARY PARTIAL WRIST REPLACEMENT

DEMOGRAPHICS

The Registry subcategorises primary partial wrist replacement into two classes. These are defined as:

Carpal Bone: involves replacement of the carpal bone with a prosthesis.
Distal radial ulna joint (DRUJ) Hemi: involves the replacement of part of the distal ulna surface with a stemmed ulna prosthesis and resection of the ulna head and replacement with a stemmed ulna prosthesis.

Table WP1 Primary Partial Wrist Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	141	45.9%	21	89	64	62.3	14.7
Male	166	54.1%	18	88	63	58.9	17.5
TOTAL	**307**	**100.0%**	**18**	**89**	**63**	**60.5**	**16.3**

Figure WP1 Primary Partial Wrist Replacement by Age and Sex

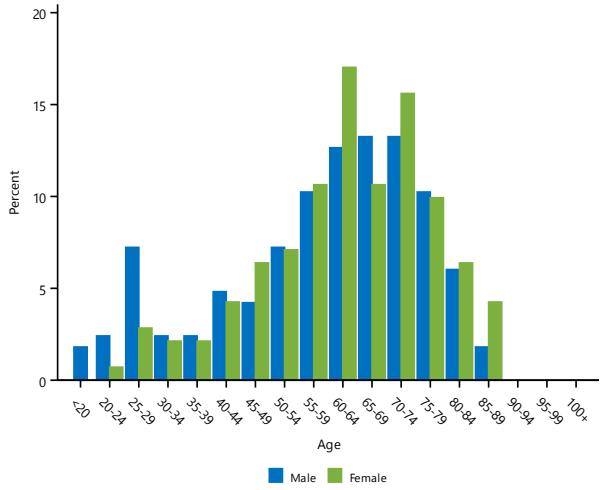


Table WP2 Primary Partial Wrist Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	211	68.7
Fracture/Dislocation	30	9.8
Rheumatoid Arthritis	29	9.4
Osteonecrosis	15	4.9
Instability	8	2.6
Other Inflammatory Arthritis	8	2.6
Tumour	1	0.3
Other	5	1.6
TOTAL	**307**	**100.0**

PRIMARY CARPAL BONE REPLACEMENT

Table WP3 Primary Carpal Bone Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	28	32.6%	21	88	62	59.2	17.1
Male	58	67.4%	18	80	49	46.5	17.5
TOTAL	**86**	**100.0%**	**18**	**88**	**53**	**50.6**	**18.2**

Figure WP2 Primary Carpal Bone Replacement by Age and Sex

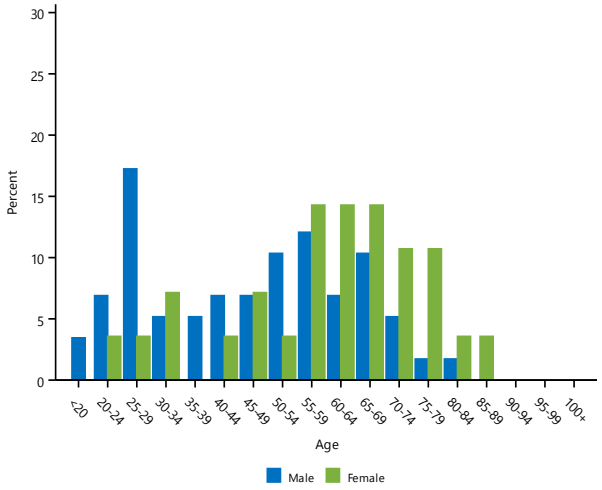


Table WP4 Primary Carpal Bone Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	49	57.0
Osteonecrosis	14	16.3
Fracture/Dislocation	14	16.3
Rheumatoid Arthritis	4	4.7
Other Inflammatory Arthritis	3	3.5
Instability	1	1.2
Other	1	1.2
TOTAL	**86**	**100.0**

PRIMARY DRUJ HEMI REPLACEMENT

There are no primary DRUJ hemi replacement procedures in 2025.

Table WP5 Primary DRUJ Hemi Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	113	51.1%	26	89	64	63.1	14.1
Male	108	48.9%	19	88	68	65.5	13.5
TOTAL	**221**	**100.0%**	**19**	**89**	**65**	**64.3**	**13.8**

Figure WP3 Primary DRUJ Hemi Replacement by Age and Sex

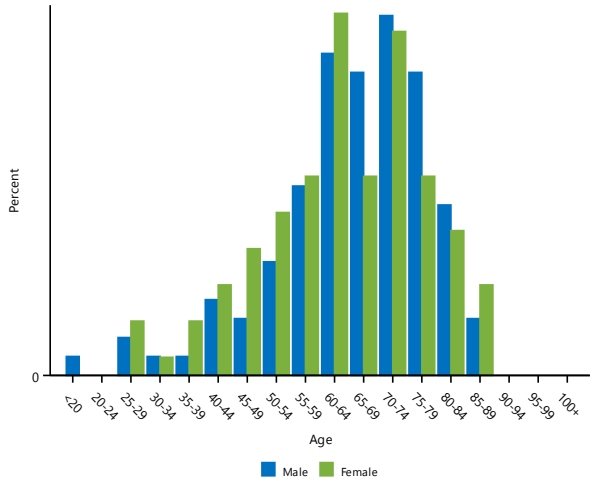


Table WP6 Primary DRUJ Hemi Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	162	73.3
Rheumatoid Arthritis	25	11.3
Fracture/Dislocation	16	7.2
Instability	7	3.2
Other Inflammatory Arthritis	5	2.3
Tumour	1	0.5
Osteonecrosis	1	0.5
Other	4	1.8
TOTAL	**221**	**100.0**

Table WP7 Most Used Ulna Prostheses in Primary DRUJ Hemi Replacement

2008		2021		2022		2023		2024	
N	Model	N	Model	N	Model	N	Model	N	Model
5	uHead	5	DRUJ (Ascension)	5	Herbert UHP	16	Herbert UHP	12	Herbert UHP
2	Eclypse	2	Herbert UHP	2	DRUJ (Ascension)	1	DRUJ (APTIS)	1	DRUJ (APTIS)
2	Herbert UHP	1	Eclypse						
1	E-Centrix								
Most Used									
10	(5) 100.0%	8	(4) 100.0%	7	(3) 100.0%	15	(2) 100.0%	9	(1) 100.0%

TOTAL WRIST

DEMOGRAPHICS

Primary total wrist replacement includes resection of the distal radius and replacement with a radial prosthesis combined with replacement of carpal bones with a carpal prosthesis and carpal spacer.

Total Distal radial ulna joint (DRUJ) with ulna and radial replacement involves resection of the ulna head and replacement with a stemmed ulna prosthesis and a distal radial notch and plate.

PRIMARY TOTAL WRIST REPLACEMENT

Table WT1 Primary Total Wrist Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	368	43.7%	22	87	65	63.2	12.7
Male	475	56.3%	26	90	65	64.6	11.6
TOTAL	**843**	**100.0%**	**22**	**90**	**65**	**64.0**	**12.1**

Figure WT1 Primary Total Wrist Replacement by Age and Sex

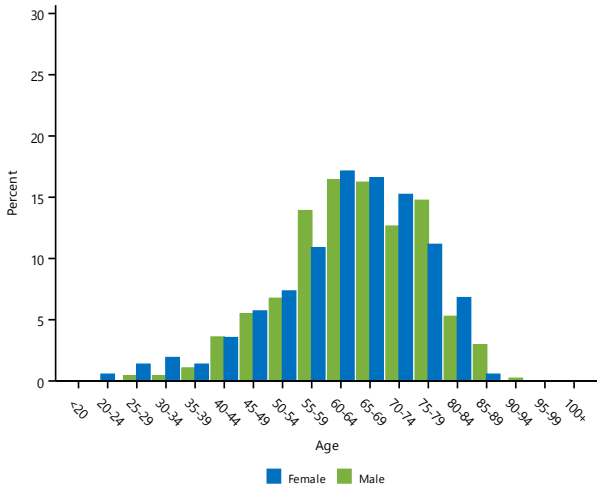


Table WT2 Primary Total Wrist Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	629	74.6
Rheumatoid Arthritis	103	12.2
Instability	32	3.8
Fracture/Dislocation	23	2.7
Osteonecrosis	22	2.6
Other Inflammatory Arthritis	20	2.4
Other	14	1.7
TOTAL	**843**	**100.0**

Table WT3 Most Used Carpal/Radial Prostheses in Primary Total Wrist Replacement

2008		2022		2023		2024		2025	
N	Model	N	Model	N	Model	N	Model	N	Model
10	Re-Motion	51	Motec	56	Motec	80	Motec	88	Motec
3	Universal 2	1	Freedom			1	Re-Motion		
		1	Re-Motion						
10 Most Used									
13	(2) 100.0	53	(3) 100.0	56	(1) 100.0	81	(2) 100.0	88	(1) 100.0

PRIMARY DRUJ

Table WP8 Primary Total DRUJ Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	61	51.3%	27	81	61	59.3	13.5
Male	58	48.7%	26	87	61	61.9	14.2
TOTAL	**119**	**100.0%**	**26**	**87**	**61**	**60.5**	**13.9**

Figure WP4 Primary Total DRUJ Replacement by Age and Sex

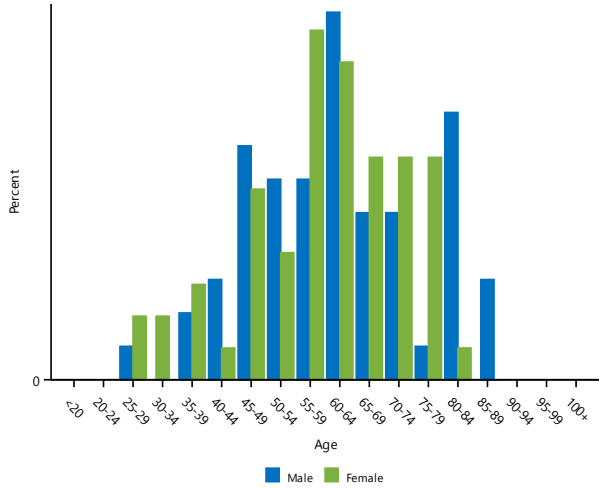


Table WP9 Primary Total DRUJ Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	91	76.5
Instability	11	9.2
Rheumatoid Arthritis	6	5.0
Fracture/Dislocation	5	4.2
Other Inflammatory Arthritis	2	1.7
Other	4	3.4
TOTAL	**119**	**100.0**

REVISION WRIST REPLACEMENT

DEMOGRAPHICS

The Registry subcategorises wrist revisions into three classes. These are defined as:

Major total revision involves the insertion, removal and/or replacement of a major component on both the proximal and distal side of the joint.
Major partial revision involves the insertion, removal and/or replacement of a major component on either the proximal or the distal side of the joint.
Minor revision involves the insertion, removal and/or replacement of any other prosthesis or implant in wrist replacement.

Major components are prostheses that are fixed to bone. These are the radial prosthesis and the carpal prosthesis in wrist replacement. The ulna and individual carpal prostheses are not considered major prostheses.

Different types of major, partial and minor revisions are identified based on the specific prostheses or implants used in the revision.

Table WR1 All Revision Wrist Replacement by Age and Sex

Sex	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	91	45.3%	22	88	64	62.2	13.9
Female	110	54.7%	32	87	65	63.3	13.0
TOTAL	**201**	**100.0%**	**22**	**88**	**64**	**62.8**	**13.3**

Table WR2 Reason for Revision of All Revision Wrist Replacement

Reason for Revision	Number	Percent
Loosening	62	30.8
Instability	27	13.4
Infection	24	11.9
Pain	23	11.4
Lysis	12	6.0
Metal Related Pathology	5	2.5
Progression Of Disease	4	2.0
Arthrofibrosis	4	2.0
Prosthesis Dislocation	3	1.5
Implant Breakage Carpal	3	1.5
Fracture	3	1.5
Incorrect Sizing	2	1.0
Contracture	1	0.5
Malposition	1	0.5
Implant Breakage Wrist Plate	1	0.5
Implant Breakage Ulna	1	0.5
Flexion Deformity	1	0.5
Osteonecrosis	1	0.5
Other	23	11.4
TOTAL	**201**	**100.0**

Type of Revision of All Revision Wrist Replacement

Type of Revision	Number	Percent
Removal of Prostheses	28	13.9
Carpal Head/Radial Cup	25	12.4
Carpal Component	22	10.9
Carpal/Radius	20	10.0
Sigmoid Notch	19	9.5
Ulna Component	18	9.0
Minor Components	18	9.0
Reoperation Fusion	11	5.5
Ulna Head Only	10	5.0
Radius Component	9	4.5
Carpal Insert	6	3.0
Cement Spacer	5	2.5
Unclassified - No components	3	1.5
Sigmoid Notch/Ulna	2	1.0
Carpal Head	2	1.0
Radial Cup	1	0.5
Reinsertion of Components	1	0.5
Cement Only	1	0.5
TOTAL	**201**	**100.0**

Australian Orthopaedic Association National Joint Replacement Registry

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The AOANJRR is funded by the Australian Government Department of Health, Disability and Ageing