

Online LROI annual report 2026

Joint arthroplasty data to 31 December 2025

Introduction

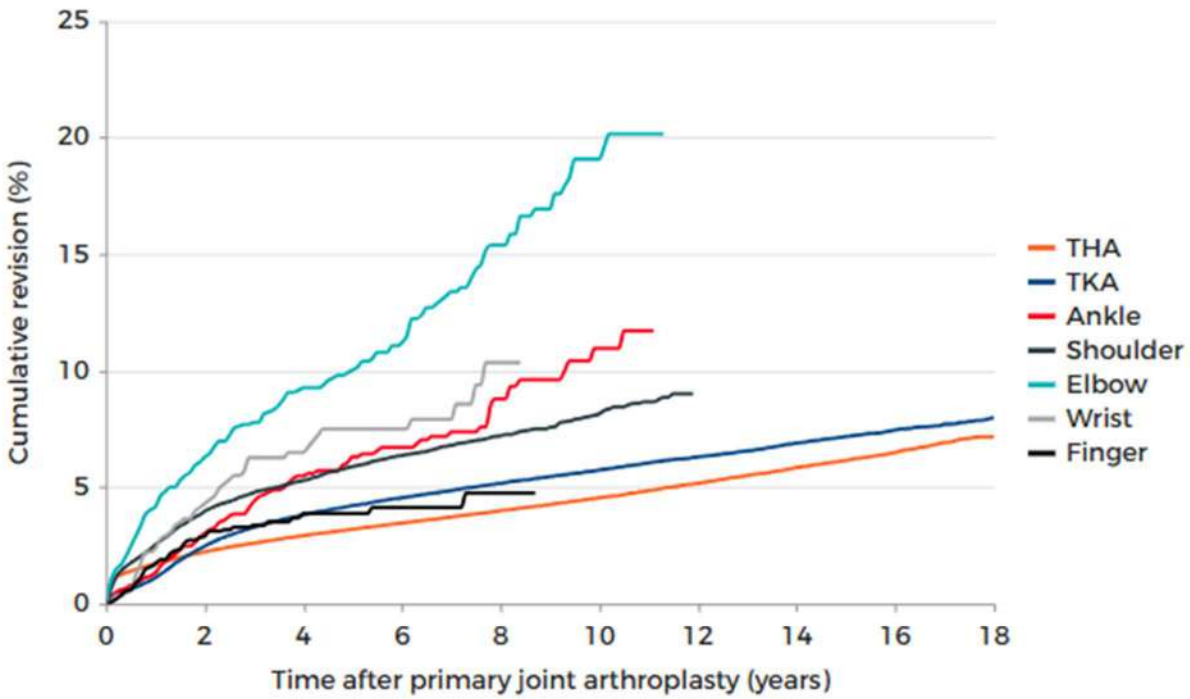
LROI Report 2026

This online annual report 2026 of the Dutch Arthroplasty Register (LROI) contains trends and outcome information on primary and revision hip, knee, ankle, shoulder, elbow, wrist, and finger arthroplasties, as well as clubfoot treatments, in the Netherlands between 2007 and 2025. Since 2007, the LROI has been collecting data on hip and knee procedures, on ankle, shoulder and elbow procedures since 2014, on wrist and finger procedures since 2016, and on clubfoot treatments since 2022.

Survival outcomes

See below for two figures that present the outcomes of revision procedures in the Netherlands between 2007 and 2025. The first figure shows the revision rates for first revisions following primary total hip arthroplasty (THA), total knee arthroplasty (TKA), and arthroplasties of the ankle, shoulder, elbow, wrist, and finger joints. The second figure illustrates the revision rates for second revisions after an initial revision for primary THA, TKA, shoulder, and elbow arthroplasties.

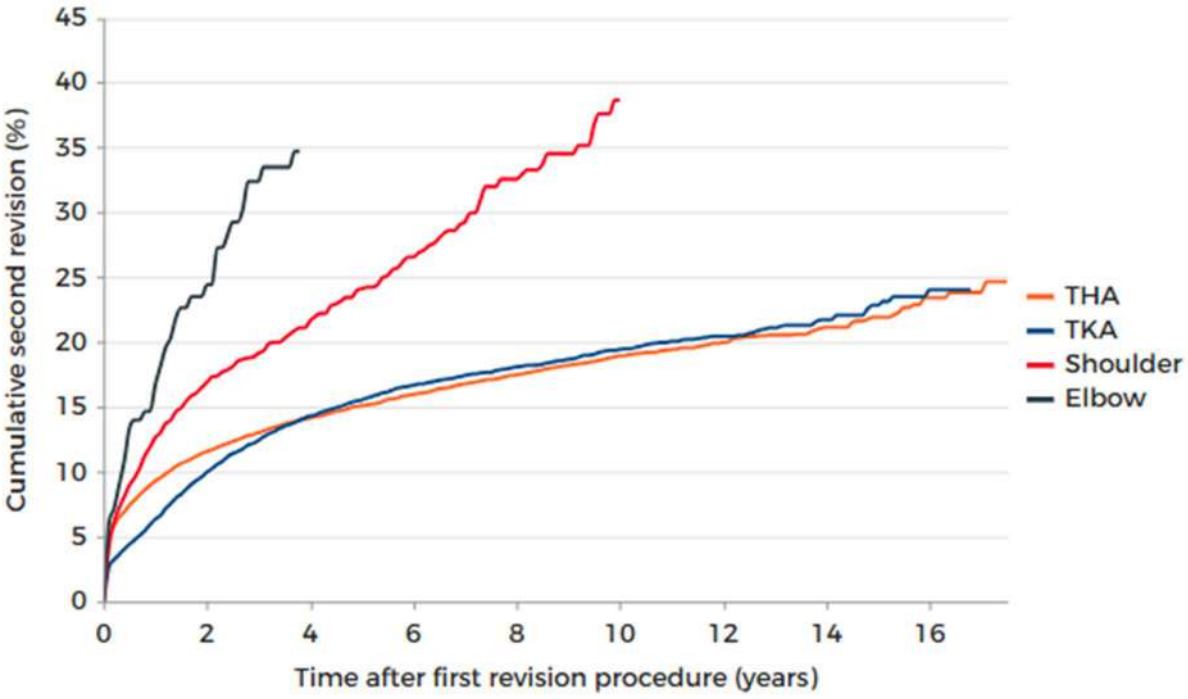
FIGURE First revision outcomes of primary THA, TKA, ankle, shoulder, elbow, wrist and finger arthroplasties in the Netherlands in 2007-2025



THA: total hip arthroplasty; TKA: total knee arthroplasty

© LROI 2026 | 001

FIGURE Second revision outcomes of primary THA, TKA, shoulder and elbow arthroplasties after first revision procedure in the Netherlands in 2007-2025



THA: total hip arthroplasty; TKA: total knee arthroplasty

© LROI 2026 | 002

Contact

Dutch Arthroplasty Register (LROI)
Bruistensingel 230 | 5232 AD ’s-Hertogenbosch | The Netherlands
+31(0) 73 700 3420 | lroi@orthopeden.org
www.lroi.nl

Colophon

Citation: LROI, 2026. *Annual report 2026.* Retrieved from Jaarrapportage (accessed [access-date]).

Analyses and editorial board
I.M.A. (Ilse) de Reus MSc, researcher, LROI head office, 's-Hertogenbosch, the Netherlands
K.A.J. (Karin) Driessen MSc, junior researcher, LROI head office, 's-Hertogenbosch, the Netherlands
N. (Nikki) van Mil, secretary, LROI head office, 's-Hertogenbosch, the Netherlands
Dr. B. (Bart) Pijls, medical director, LROI head office, 's-Hertogenbosch, the Netherlands

Scientific associations
Netherlands Orthopaedic Association (NOV)
Netherlands Society for Plastic Surgery (NVPC)
Dutch Society of Surgery (NVvH)

Data processor
SDB groep BV, the Netherlands
Site by
On-Site, Rotterdam, the Netherlands

© 's-Hertogenbosch, Dutch Arthroplasty Register (Landelijke Registratie Orthopedische Interventies (LROI), www.lroi.nl

All information in this report was composed with the utmost care. If any changes or modifications will be made after publication, these will be published on this website.

All rights reserved. No part of this document or any of its contents may be reproduced, copied, modified, adapted, stored in an automated data file or made public, in any form or in any way, electronic, nor mechanic, nor by photocopies, recordings or in any other way, without prior written consent of the LROI.

Contents

Introduction **2**
Contact **3**
Colophon **4**
Contents **5**
Hip arthroplasty **14**
Numbers 14
Registered procedures 14
Type of procedures 14
Type of procedure per hospital 15
Total hip arthroplasty 17
Patient characteristics 17
By diagnosis 17
Procedure characteristics 18
Surgical approach 18
Fixation 18
Femoral head diameter 19
Articulation 19
Acetabulum 20
Femur 20
Bone cement 21
Survival 21
Short term revision 21
Overall revision per hospital 21
Long term revision 24
Re-revision 26
Survival by component 29
PROMs 34
Response 34
Patient characteristics 36
Outcomes 37
Hip hemiarthroplasty 40
Patient characteristics 40
By specialism 40
Procedure characteristics 41
Specialism 41
Surgical approach 41
Fixation 42
Most frequently registered – Femur 42
Most frequently registered - Femoral head 43

Most frequently registered - Bone cement 43
Survival 44
Short term revision 44
Long term revision 46
Survival by component 48
By cemented femur – fracture 48
By uncemented femur – fracture 49
By cemented femur - other diagnosis 49
By uncemented femur - other diagnosis 50
Hip revision arthroplasty 51
Revision characteristics 51
Reasons for revision 51
Type of revision 52
Conversion to total hip arthroplasty 52
Fixation 53
Cement-in-cement 53
Most frequently registered – Acetabulum 54
Most frequently registered – Femur 55
Most frequently registered - Bone cement 55
PROMs 56
Response 56
Patient characteristics 56
Outcomes 57
Knee arthroplasty 60
Numbers 60
Registered procedures 60
Type of procedures 60
Type of procedure per hospital 61
Total knee arthroplasty 63
Patient characteristics 63
By diagnosis 63
Procedure characteristics 64
Fixation 64
Implantation of patella 65
Most frequently registered - Total knee prostheses 65
Most frequently registered - Bone cement 66
Survival 67
Short term revision 67
Long term revision 70
Rerevision 72
Survival by component 75

By cemented component name - overall revision 75
By cemented component name - major revision 76
By uncemented component name - overall revision 76
By uncemented component name - major revision 77
PROMs 79
Response 79
Patient characteristics 81
Outcomes 82
Unicondylar knee arthroplasty 86
Patient characteristics 86
By diagnosis 86
By unicondylar side 87
Procedure characteristics 88
Unicondylar side 88
Medial UKA fixation 88
Lateral UKA fixation 89
Most frequently registered - Unicondylar knee prostheses 89
Most frequently registered - Bone cement 90
Survival 90
Short term revision 90
Long term revision 94
Rerevision 97
Survival by component 97
By cemented component name 97
By uncemented component 98
PROMs 98
Response 98
Patient characteristics 99
Outcomes 100
Patellofemoral knee arthroplasty 104
Patient characteristics 104
Demographics 104
Procedure characteristics 105
Fixation 105
Most frequently registered - Patellofemoral knee prostheses 105
Most frequently registered - Bone cement 105
Survival 106
Short term revision 106
First major or minor revision 106
Conversion to total knee arthroplasty 106
Long term revision 108

Survival by component 110
By component 110
PROMs 110
Response 110
Patient characteristics 111
Outcomes 112
Knee revision arthroplasty 115
Revision characteristics 116
Reasons for revision 116
Type of revision 117
PROMs 121
Response 121
Patient characteristics 121
Outcomes 122
Ankle arthroplasty 126
Numbers 126
Registered procedures 126
Type of procedures 126
Type of procedure per hospital 127
Primary ankle arthroplasty 128
Patient characteristics 128
By diagnosis 128
Procedure characteristics 129
Extension heel cord 130
Survival 132
Short term revision 132
Long term revision 133
Ankle revision arthroplasty 134
Revision characteristics 134
Reasons for revision 134
Type of revision 134
Shoulder arthroplasty 135
Numbers 135
Registered procedures 135
Type of procedures 135
Type of procedure per hospital 136
Reversed total shoulder arthroplasty 138
Patient characteristics 138
by diagnosis 138
Procedure characteristics 139
Surgical approach 139

Fixation 139
Type humeral stem 140
Modular humeral stem 140
Bonegraft 141
Most frequently registered humeral stems, humeral liners, glenospheres, metaphyses and glenoid baseplates 142
Most frequently registered bone cement 143
Survival 144
Short term revision 144
Long term revision 146
Re-revision 148
Survival by component 150
By osteoarthritis 150
By fracture 151
By cuff arthropathy 151
PROMs 152
Response 152
Patient characteristics 154
Outcomes 155
Total anatomical shoulder arthroplasty 158
Patient characteristics 158
By diagnosis 158
Procedure characteristics 159
Surgical approach 159
Fixation 159
Type humeral stem 160
Modular humeral stem 160
Bonegraft 161
Most frequently registered humeral stem, humeral head, glenoid 162
Most frequently registered bone cement 163
Survival 163
Short term revision 163
Long term revision 165
Re-revision 167
Survival by component 168
PROMs 168
Response 168
Patient characteristics 170
Outcomes 171
Hemi shoulder arthroplasty 174
Patient characteristics 174

By diagnosis 174
Procedure characteristics 175
Surgical approach 175
Fixation 175
Type humeral stem 176
Modular humeral stem 176
Bonegraft 177
Most frequently registered humeral stem and humeral liner 178
Most frequently registered bone cement 178
Survival 179
Short term revision 179
Long term revision 180
PROMs 182
Response 182
Patient characteristics 183
Outcomes 184
Shoulder revision artroplasty 187
Revision characteristics 187
Reasons for revision 187
Type of revision 188
Conversion to TSA 188
Conversion to hemi 189
Fixation 189
Most frequently registered components 190
Most frequently registered bone cement 191
PROMs 192
Response 192
Patient characteristics 193
Outcomes 194
Elbow arthroplasty 197
Numbers 197
Registered procedures 197
Type of procedures 197
Type of procedure per hospital 198
Primary elbow arthroplasty 199
Patient characteristics 199
By prosthesis 199
Procedure characteristics 200
Specialism 200
Surgical approach 200
Fixation 201

Implantation of radial head 201
Linked prosthesis 202
Most frequently registered - total elbow 202
Most frequently registered - radial head 202
Most frequently registered - types of bone cement 203
Survival 203
Short term revision 203
Long term revision 204
Elbow revision arthroplasty 206
Revision characteristics 206
Type of revision 206
Conversion to total elbow arthroplasty 206
Surgical approach 207
Fixation 208
Most frequently registered – components 208
Most frequently registered - type of bone cement 209
Wrist arthroplasty 210
Numbers 210
Registered procedures 210
Type of procedures 210
Type of procedure per hospital 211
Primary wrist arthroplasty 212
Patient characteristics 212
Demographics 212
Procedure characteristics 213
Specialism 213
Surgical approach 213
Fixation 214
Soft tissue stabilisation 214
Most frequently registered components 215
Survival 215
Short term revision 215
Long term revision 216
Wrist revision arthroplasty 217
Revision characteristics 217
Specialism 217
Type of revision 218
Most frequently registered components 218
Finger arthroplasty 219
Numbers 219
Registered procedures 219

Type of procedures 219
Type of procedure per hospital 220
Type of primary finger prosthesis 220
Primary finger arthroplasty 221
Patient characteristics 221
Demographics 221
Procedure characteristics 222
Specialism 222
Surgical approach 222
Soft tissue stabilisation 223
Most frequently registered components 223
Survival 224
Short term revision 224
Long term revision 225
Finger revision arthroplasty 226
Revision characteristics 226
Specialism 226
Type of revision 226
Most frequently registered components 227
Clubfoot 228
Numbers 228
Registered treatments 228
Initial assessments per year 228
Initial assessments per hospital 229
Initial assessment 229
Demographics 229
Gender 230
Treatment within 1 week 230
Treatment within 2 weeks 231
Affected side 231
Data quality 232
Completeness 232
Overall completeness per procedure 232
Completeness per year 233
Completeness primary THA per hospital account 234
Completeness primary hip hemiarthroplasty per hospital account 234
Completeness hip revision per hospital account 235
Completeness primary knee per hospital account 235
Completeness knee revision per hospital account 235
Completeness primary ankle per hospital account 236
Completeness ankle revision per hospital account 236

Completeness primary shoulder per hospital account 236
Completeness shoulder revision per hospital account 237
Completeness primary elbow per hospital account 237
Completeness elbow revision per hospital account 237
Completeness primary wrist per hospital account 238
Completeness wrist revision per hospital account 238
Completeness primary finger per hospital account 238
Completeness finger revision per hospital account 239
Completeness clubfoot initial assessment per hospital account 239
Validity 240
Overall validity 240
Validity per variable 240
Participating hospitals 241
General hospitals 241
University Medical Centers (UMC) 242
Methodology 244
Definitions and abbreviations 244
Definitions 244
Abbreviations 248

Hip arthroplasty

In this section you will find all the information on hip arthroplasty

Numbers

Registered procedures

TABLE Number of registered hip arthroplasties per year of surgery (2007-2025) in the LROI in April 2026

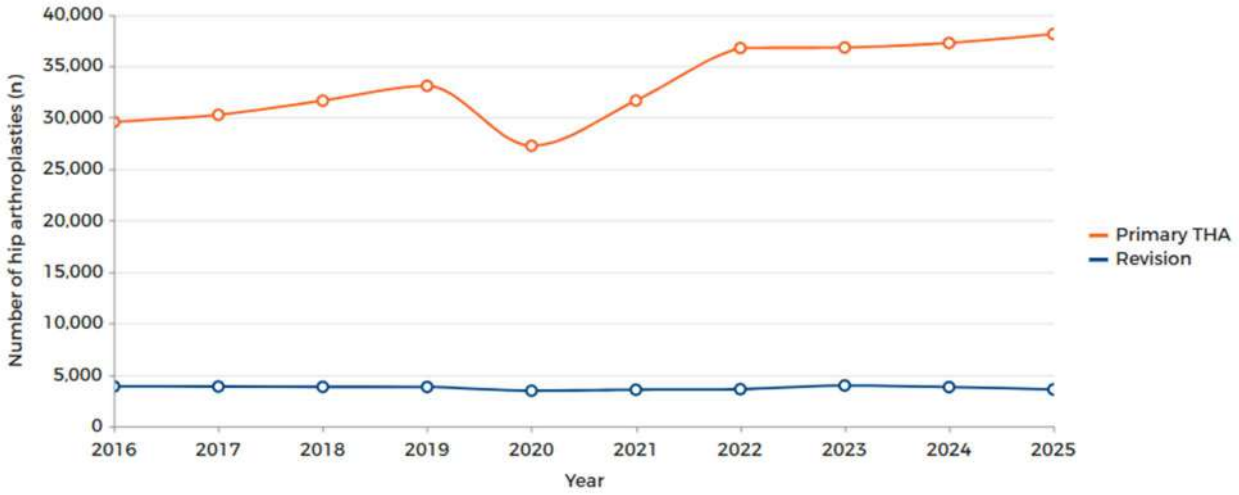
Year of surgery	Total hip arthroplasty	Hemiarthroplasty	Resurfacing arthroplasty	Unknown/ missing	Revision arthroplasty	Total
2007	8,902	1,056	452	933	1,268	**12,611**
2008	15,452	1,524	731	395	1,858	**19,960**
2009	22,105	2,145	863	299	2,679	**28,091**
2010	23,914	2,423	610	295	2,950	**30,192**
2011	24,462	2,520	228	243	3,197	**30,650**
2012	25,817	2,898	10	329	3,766	**32,820**
2013	26,261	3,069	2	261	3,517	**33,110**
2014	28,192	3,766	0	151	3,582	**35,691**
2015	28,873	4,965	15	67	3,834	**37,754**
2016	29,573	5,451	16	98	3,883	**39,021**
2017	30,264	5,950	5	52	3,871	**40,142**
2018	31,635	6,385	2	25	3,843	**41,890**
2019	33,081	6,313	1	36	3,835	**43,266**
2020	27,253	6,544	0	18	3,465	**37,280**
2021	31,646	6,126	0	17	3,563	**41,352**
2022	36,752	6,496	0	27	3,614	**46,889**
2023	36,802	6,366	0	59	3,972	**47,199**
2024	37,240	6,393	0	14	3,822	**47,469**
2025	38,110	6,189	0	11	3,589	**47,899**
Total (n)	**536,334**	**86,579**	**2,935**	**3,330**	**64,108**	**693,286**

Please note: The LROI is nearly complete as of 2010

© LROI 2026 | H001

Type of procedures

FIGURE Number of primary total hip arthroplasties and hip revision arthroplasties registered in the LROI in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Primary THA	29,573	30,264	31,635	33,081	27,253	31,646	36,752	36,802	37,240	38,110	**332,356**
Revision	3,883	3,871	3,843	3,835	3,465	3,563	3,614	3,972	3,822	3,589	**37,457**
Total (n)	**33,456**	**34,135**	**35,478**	**36,916**	**30,718**	**35,209**	**40,366**	**40,774**	**41,062**	**41,699**	**369,813**

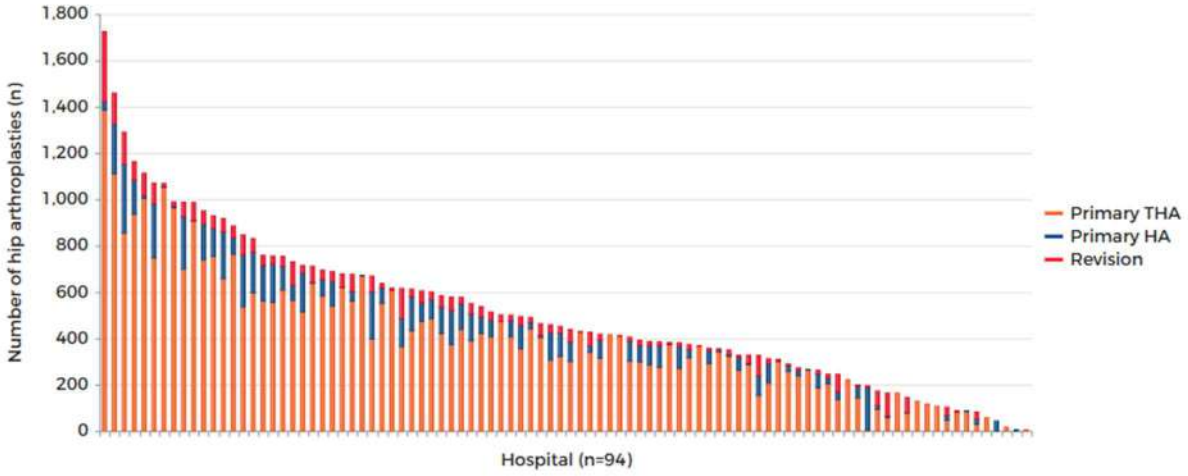
THA: total hip arthroplasty

© LROI 2026 | H002

Out of 38,110 primary total hip arthroplasties that were performed in 2025, 2.9% (n=1,101) was performed bilaterally.

Type of procedure per hospital

FIGURE Number of primary total hip arthroplasties, hemiarthroplasties and hip revision arthroplasties per hospital in the Netherlands in 2025 (n=47,888)

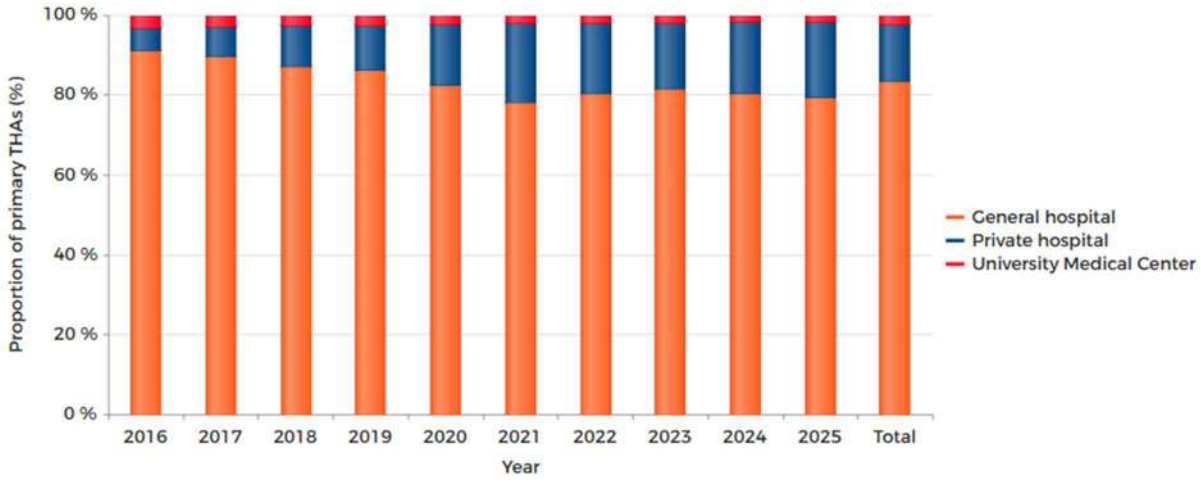


THA: total hip arthroplasty; HA: hemiarthroplasty

© LROI 2026 | H003

Type of hospital performing primary THA

FIGURE Trend (proportion [%] per year) in type of hospital performing primary total hip arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
General hospital	91.21	89.58	87.26	86.38	82.39	78.24	80.24	81.59	80.46	79.42	83.41
Private hospital	5.48	7.52	10.17	11.07	15.21	19.73	17.90	16.48	17.73	19.02	14.34
University Medical Center	3.30	2.90	2.57	2.55	2.40	2.03	1.86	1.93	1.81	1.56	2.25
Total (n)	**29,573**	**30,264**	**31,635**	**33,081**	**27,253**	**31,646**	**36,752**	**36,802**	**37,240**	**38,110**	**332,356**

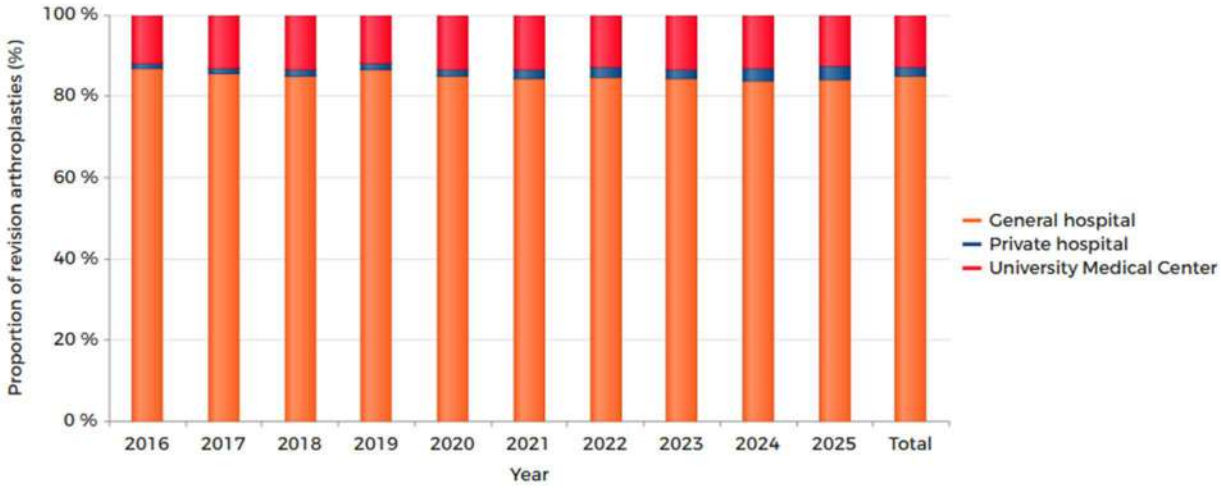
Please note: The number of general hospitals that performed primary total hip arthroplasties decreased from 69 to 65 between 2016-2025, the number of private hospitals increased from 12 to 20, and the number of University Medical Centers remained 7.

THA: total hip arthroplasty

© LROI 2026 | H004A

Type of hospital performing hip revisions

FIGURE Trend (proportion [%] per year) in type of hospital performing hip revision arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
General hospital	86.97	85.71	84.99	86.62	84.94	84.34	84.67	84.49	83.91	84.23	85.10
Private hospital	1.11	1.11	1.48	1.49	1.59	2.33	2.38	2.11	2.90	3.20	1.96
University Medical Center	11.92	13.17	13.53	11.89	13.48	13.33	12.95	13.39	13.19	12.57	12.94
Total (n)	**3,883**	**3,871**	**3,843**	**3,835**	**3,465**	**3,563**	**3,614**	**3,972**	**3,822**	**3,589**	**37,457**

Please note: The number of general hospitals that performed hip revision arthroplasties decreased from 68 to 62 between 2016-2025, the number of private hospitals increased from 6 to 12, and the number of University Medical Centers remained 7.

© LROI 2026 | H004B

Total hip arthroplasty

In this section you will find all the information on total hip arthroplasty:

Patient characteristics

By diagnosis

TABLE Patient characteristics of all patients with a registered primary total hip arthroplasty by diagnosis in the Netherlands in 2025

	Osteoarthritis	Fracture	Osteonecrosis	Late post-traumatic	Dysplasia	Reumatoid arthritis	Post-Perthes disease	Tumour	Other	Total
N(%)	**32,969 (86.6)**	**2,085 (5.4)**	**943 (2.4)**	**807 (2.2)**	**603 (1.6)**	**121 (0.4)**	**104 (0.2)**	**76 (0.2)**	**402 (1)**	**38,110**
Mean age (years) (SD)	70 (9.7)	69.3 (8)	64.3 (15.2)	67.5 (12.5)	52.6 (13.1)	63.5 (13.5)	49 (14.1)	65.2 (10.2)	65.6 (15)	69.4 (10.4)
Age (years) (%)										
<50	3	1	15	7	39	12	45	9	12	4
50-59	12	10	19	15	30	26	34	17	15	13
60-69	29	37	24	30	23	24	16	41	25	29
70-79	41	46	28	35	8	28	4	26	33	40
>80	16	6	14	14	0	11	1	7	15	15
Sex (%)										
Male	37	37	47	44	25	35	66	41	43	37
Female	63	63	53	56	75	65	34	59	57	63
ASA class (%)										
ASA I	12	13	7	12	29	0	19	0	15	12
ASA II	60	56	53	52	60	65	66	24	58	60
ASA III-IV	28	31	40	36	11	35	14	76	24	28
Type of hospital (%)										
General	78	96	85	87	76	86	69	70	79	79
UMC	1	4	6	7	6	7	10	30	8	2
Private	21	0	8	6	18	7	21	0	13	19
Charnley-score (%)										
A One hip joint affected	40	8	36	40	46	31	62	36	28	38
B1 Both hip joints affected	31	2	15	5	26	26	16	4	19	29
B2 Contralateral hip joint with a total hip prosthesis	25	4	13	5	20	21	9	3	19	23
C Multiple joints affected or chronic disease that affects quality of life	3	1	4	2	3	15	3	1	5	3
Mean BMI (kg/m2) (SD)	27.4 (4.5)	25.1 (4.3)	26.9 (5.4)	25.8 (4.4)	26.5 (4.7)	27.1 (5.1)	27.6 (4.4)	27.1 (5.4)	27.1 (5)	27.2 (4.6)
Body Mass Index (kg/m2) (%)										
Underweight (<=18.5)	1	3	3	4	1	3	1	1	1	1
Normal weight (>18.5-25)	33	48	35	43	44	36	29	41	37	34
Overweight (>25-30)	41	34	38	35	33	33	46	36	33	41
Obesity (>30-40)	24	9	21	18	21	25	22	20	26	23
Morbid obesity (>40)	1	0	2	0	1	2	0	3	1	1
Smoking (%)										
No	91	82	82	84	91	90	80	86	86	91
Yes	8	16	18	15	8	9	18	14	11	9

Please note: diagnosis 'Other' (402; 1.1%) includes other (206), inflammatory arthritis (25), post-infectious osteoarthritis (29), and 142 primary total hip arthroplasties where the diagnosis was not registered.

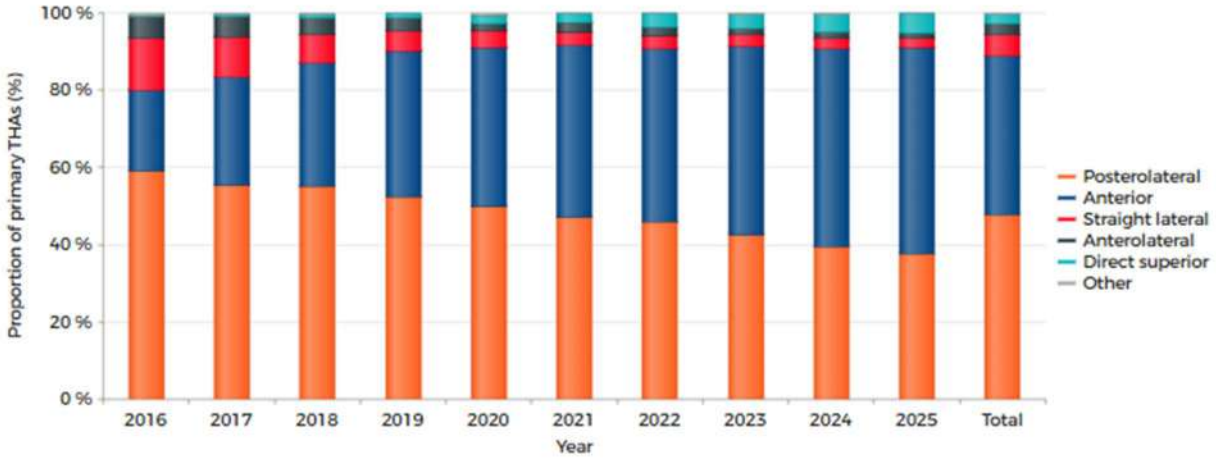
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | H005

Procedure characteristics

Surgical approach

FIGURE Trend (proportion [%] per year) in surgical approach for performing a primary total hip arthroplasty in the Netherlands in 2016-2025



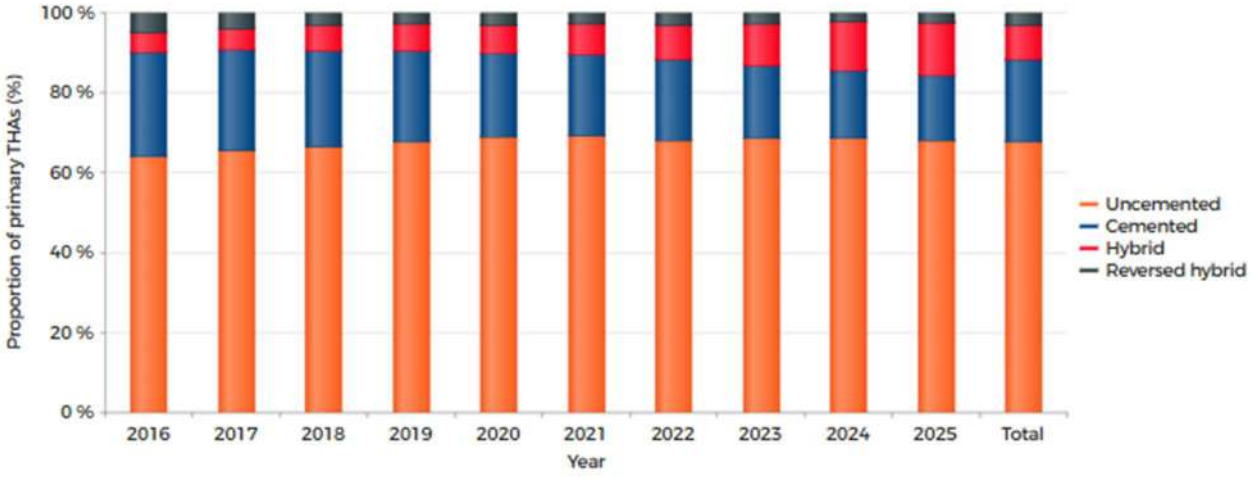
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Posterolateral	59.30	55.63	55.18	52.42	49.88	47.34	45.95	42.74	39.62	37.72	48.00
Anterior	20.92	27.76	31.91	37.70	41.36	44.38	45.00	48.67	51.11	53.26	40.98
Straight lateral	13.49	10.62	7.39	5.19	4.07	3.51	3.37	3.06	2.84	2.52	5.38
Anterolateral	5.48	4.98	4.44	3.45	2.03	2.33	2.04	1.68	1.40	1.32	2.82
Direct superior	0.30	0.80	0.84	1.12	1.94	2.31	3.49	3.68	4.84	5.04	2.58
Other	0.52	0.21	0.24	0.11	0.71	0.13	0.15	0.18	0.20	0.14	0.25
Total (n)	**29,557**	**30,240**	**31,615**	**33,056**	**27,218**	**31,511**	**36,599**	**36,754**	**37,101**	**37,874**	**331,525**

THA: total hip arthroplasty

© LROI 2026 | H006

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary total hip arthroplasties in the Netherlands in 2016-2025



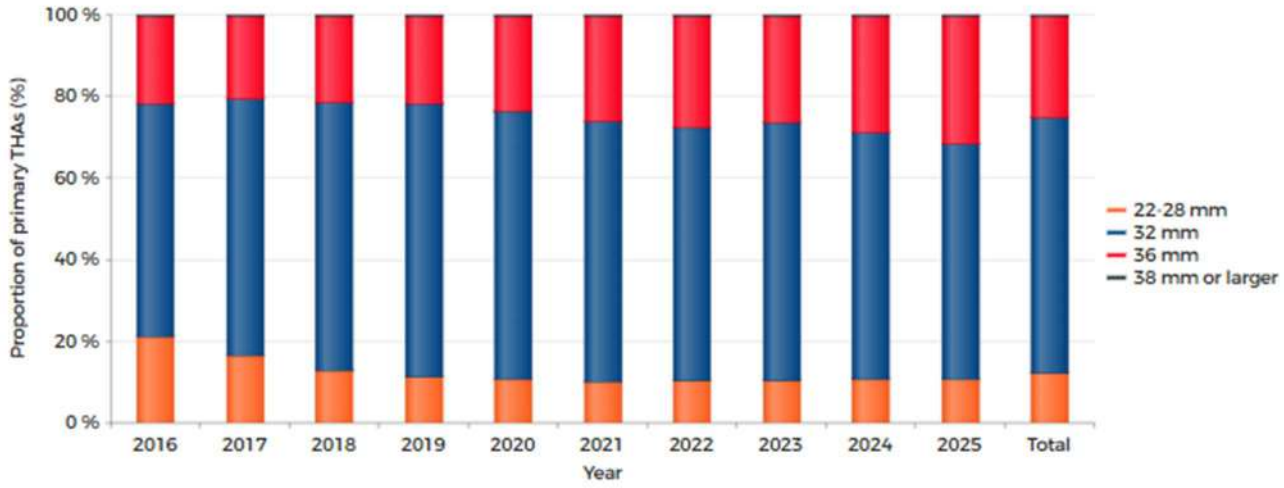
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Uncemented	64.06	65.60	66.53	67.73	68.96	69.22	68.21	68.68	68.68	68.18	67.66
Cemented	26.06	25.27	24.08	22.66	20.98	20.27	20.16	18.12	16.78	16.22	20.79
Hybrid	4.90	5.28	6.27	6.69	7.10	7.90	8.64	10.39	12.31	13.21	8.52
Reversed hybrid	4.99	3.85	3.12	2.91	2.97	2.61	2.99	2.81	2.23	2.40	3.04
Total (n)	**29,421**	**29,829**	**31,453**	**32,849**	**27,044**	**31,414**	**36,576**	**36,652**	**37,042**	**37,894**	**330,174**

THA: total hip arthroplasty

© LROI 2026 | H007

Femoral head diameter

FIGURE Trend (proportion [%] per year) in femoral head component diameter in primary total hip arthroplasties in the Netherlands in 2016-2025



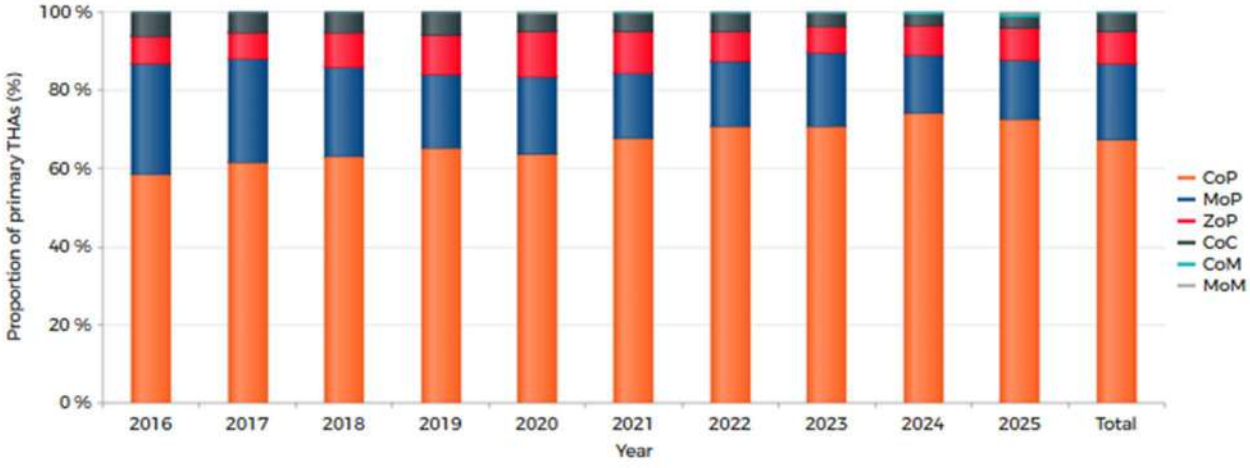
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
22-28 mm	21.22	16.54	13.02	11.50	10.71	10.19	10.33	10.29	10.60	10.73	12.32
32 mm	57.00	63.03	65.52	66.64	65.54	63.82	62.19	63.23	60.63	57.56	62.38
36 mm	21.48	20.15	21.11	21.53	23.39	25.66	27.10	26.18	28.58	31.50	25.00
38 mm or larger	0.30	0.28	0.34	0.34	0.37	0.33	0.39	0.31	0.20	0.20	0.30
Total (n)	**28,781**	**29,493**	**30,813**	**31,559**	**25,273**	**31,092**	**36,101**	**36,253**	**36,382**	**37,445**	**323,192**

THA: total hip arthroplasty

© LROI 2026 | H008

Articulation

FIGURE Trend (proportion [%] per year) in articulation in primary total hip arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
CoP	58.72	61.73	63.20	65.37	63.79	67.90	70.85	70.72	74.16	72.78	67.41
MoP	28.24	26.23	22.69	18.57	19.69	16.46	16.55	18.74	14.84	14.88	19.36
ZoP	6.84	6.81	8.84	10.10	11.67	10.65	7.61	6.95	7.54	8.34	8.44
CoC	6.18	5.16	5.22	5.82	4.61	4.68	4.56	3.23	2.83	2.64	4.39
CoM	0.01	0.02	0.02	0.03	0.06	0.20	0.30	0.26	0.48	1.07	0.27
MoM	0.02	0.05	0.04	0.12	0.17	0.11	0.13	0.11	0.15	0.28	0.12
Total (n)	**28,353**	**29,134**	**30,303**	**31,042**	**24,722**	**30,694**	**35,208**	**35,558**	**35,716**	**36,883**	**317,613**

Please note: MoC was used in 3 (<0.01%) primary THAs in 2016-2025.

THA: total hip arthroplasty; CoP: Ceramics-on-polyethylene; MoP: Metal-on-polyethylene; CoC: Ceramics-on-ceramics; ZoP: Oxidized Zirconium-on-polyethylene; MoM: Metal-on-Metal; CoM: Ceramics-on-Metal; MoC: Metal-on-ceramics

© LROI 2026 | H009

Acetabulum

TABLE The most frequently registered acetabulum components in primary total hip arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Acetabulum cemented (n)	**7,092**	**8,185**	**7,536**	**6,789**	**6,835**
Acetabulum name; Proportion (%)					
AVANTAGE Cemented	19.56	17.58	19.32	19.69	20.59
FAL Cup	6.74	11.83	18.51	17.10	17.25
IP Cup	12.97	12.79	13.24	14.16	15.90
MUller low profile Durasul	18.68	16.11	16.60	14.16	12.80
EXETER RIMFIT X3	6.63	7.34	6.90	7.76	6.23
IP Cup X-Linked	3.30	3.75	4.80	5.85	6.12
CCB cup Low Profile	4.65	4.62	4.86	5.16	4.78
FAL Cup X-Linked	1.80	2.20	1.83	2.50	2.75
Polarcup cemented	2.59	2.32	2.43	2.72	2.33
Bi-Mentum Cemented Cups	0.76	0.84	0.32	1.47	2.14
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Acetabulum uncemented (n)	**23,989**	**27,829**	**28,798**	**29,791**	**30,607**
Acetabulum name; Proportion (%)					
Allofit	35.24	37.62	38.05	37.83	36.84
Pinnacle	20.34	19.35	19.39	16.89	16.36
G7 PPS	5.77	9.25	9.87	11.69	12.32
R3	13.24	8.90	8.56	8.64	9.47
TRIDENT	8.83	7.29	7.42	8.47	7.87
RM Pressfit Vitamys cup	3.67	3.70	3.52	3.57	4.33
Pinnacle Gription	2.19	2.43	1.68	2.65	3.04
Delta-TT	1.50	1.74	2.24	2.15	2.08
TRIDENT TRITANIUM	0.63	2.54	3.23	2.18	1.90
Continuum	2.86	2.12	1.63	1.49	1.50

© LROI 2026 | H010

Femur

TABLE The most frequently registered femur components in primary total hip arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Femur cemented (n)	**8,646**	**10,184**	**10,144**	**10,357**	**10,770**
Femur name; Proportion (%)					
Lubinus SPII	34.85	36.97	40.18	38.24	39.93
Original ME Muller	28.11	28.52	31.92	31.79	29.90
Taperloc Hip Cemented CoCr	6.16	6.01	6.02	7.74	7.69
Exeter	9.46	8.97	7.75	7.29	7.07
Polarstem cemented	0.02	0.31	1.24	2.28	4.69
Avenir Muller	0.01	0.83	1.93	2.45	3.63
Twinsys stem Cemented	1.31	3.51	3.41	3.64	3.27
C-Stem AMT	5.74	5.64	2.02	1.72	1.53
Corail Cemented	0.66	0.63	0.40	0.64	0.71
Taperloc Complete	0.38	0.52	0.46	0.43	0.51
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Femur uncemented (n)	**22,167**	**25,712**	**25,895**	**25,866**	**26,117**
Femur name; Proportion (%)					
Taperloc Complete	30.59	31.51	31.65	33.77	35.51
Corail AMT	23.34	22.94	22.10	21.30	21.44
Accolade II	9.93	11.26	12.15	12.20	11.42
Polarstem	13.70	10.10	9.33	9.23	9.22
Fitmore	4.26	3.59	5.62	6.76	7.13
Avenir Muller	2.19	5.23	5.09	4.13	3.66
Twinsys stem Cementless	3.46	3.40	3.26	2.82	3.24
Optimys stem	1.35	1.36	1.51	1.68	1.91
M/L Taper	2.10	2.33	2.37	2.43	1.89
Wagner Cone	0.58	0.72	0.53	0.54	0.69

© LROI 2026 | H011

Bone cement

TABLE The most frequently registered bone cement used during primary total hip arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement pre-packed in a vacuum mixing system (n)	**5,146**	**6,392**	**6,413**	**6,818**	**6,733**
Cement name; Proportion (%)					
PALACOS R+G	50.45	59.53	68.95	65.12	62.44
Refobacin Bone Cement R	44.01	35.01	28.44	34.41	37.35
COPAL G+C	0.00	0.00	0.00	0.03	0.21
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Separately packed bone cement (n)	**3,943**	**4,313**	**3,543**	**3,361**	**3,125**
Cement name; Proportion (%)					
PALACOS R+G	87.55	88.69	82.08	84.53	83.42
PALACOS MV+G	3.65	4.34	3.84	5.53	6.85
Refobacin Bone Cement R	3.80	4.22	10.47	6.84	5.95
Simplex ABC TOBRA	0.10	0.51	1.52	1.34	2.05
Subiton G	2.51	1.21	0.62	0.62	0.96
Simplex ABC EC	0.33	0.19	0.34	0.21	0.38
COPAL G+V	0.28	0.09	0.06	0.21	0.16
Biomet Bone Cement R	0.10	0.02	0.00	0.03	0.10
COPAL G+C	0.81	0.60	0.45	0.45	0.06
PALACOS R	0.03	0.00	0.00	0.00	0.03

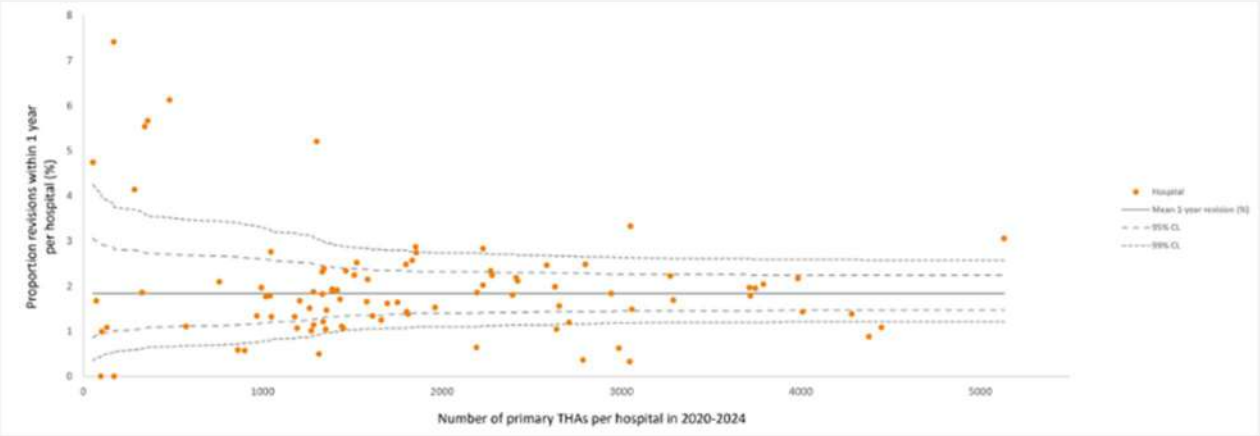
© LROI 2026 | H012

Survival

Short term revision

Overall revision per hospital

Funnel plot of proportion of hip revision arthroplasties within one year after a total hip arthroplasty per hospital in the Netherlands in 2020-2024 (n=169,358)



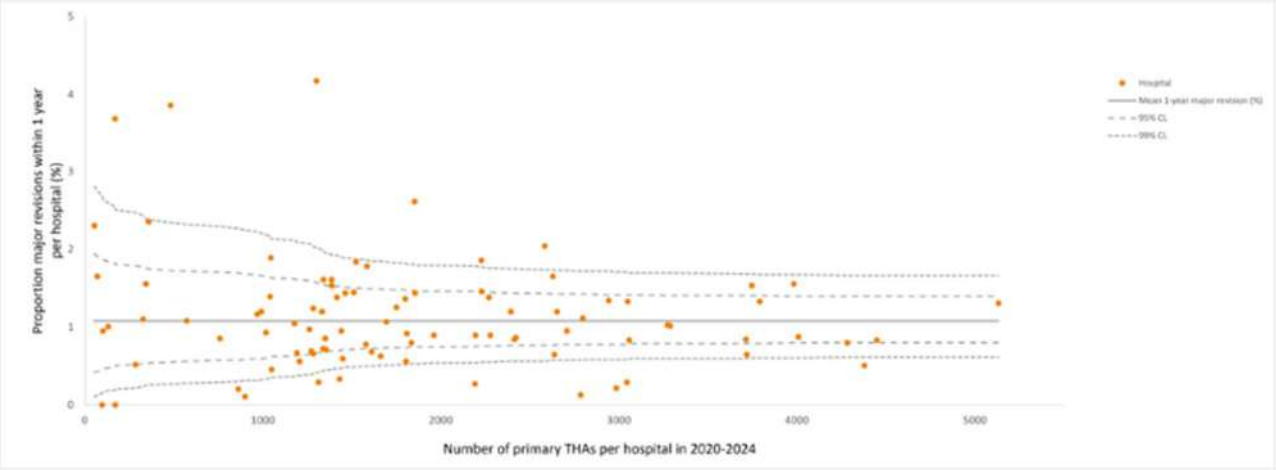
Please note: The proportions of revisions within 1 year per hospital were adjusted for casemix factors age, gender, ASA score, BMI, smoking, charnley score and diagnosis (osteoarthritis versus other).

THA: total hip arthroplasty; CL: control limits.

The mean 1-year revision percentage is 1.84 in the Netherlands in 2020-2024.
Control limits indicate the plausible range of outcome if all hospitals perform equally well.

Major revision per hospital

Funnel plot of proportion of hip major revision arthroplasties within one year after a total hip arthroplasty per hospital in the Netherlands in 2020-2024 (n=169,358)



Please note: Major revision is defined as revision of at least acetabulum or femur compenent.

Please note: The proportions of revisions within 1 year per hospital were adjusted for casemix factors age, gender, ASA score, BMI, smoking, charnley score and diagnosis (osteoarthritis versus other).

THA: total hip arthroplasty; CL: control limits.

The mean 1-year major revision percentage is 1.08 in the Netherlands in 2020-2024.

Control limits indicate the plausible range of outcome if all hospitals perform equally well.

By type of revision within 1 year

TABLE Cumulative 1-year revision percentage of primary total hip arthroplasties by type of revision in the Netherlands in 2020-2024 (n=169,358)

	Cumulative 1-year revision percentage Kaplan Meier (95% CI)
Any type of revision	1.81 (1.74-1.87)
Major revision	0.98 (0.93-1.02)
Only acetabulum	0.31 (0.29-0.34)
Only femur	0.47 (0.44-0.50)
Acetabulum and femur	0.19 (0.17-0.22)
Minor revision	0.79 (0.75-0.84)
DAIR	0.60 (0.57-0.64)
No DAIR	0.19 (0.17-0.21)

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.

Major revision: revision of at least the acetabulum or femur component.

Minor revision: only inlay and/or femoral head exchange (including DAIR procedures).

THA: total hip arthroplasty; CI: confidence interval

© LROI 2026 | H013

In 2020-2024, 2,081 (1.2%) primary THAs were implanted in patients who died within one year after the primary procedure.

First major or minor revision within 1 year

TABLE Cumulative 1-year first revision percentage of primary total hip arthroplasties by type of first major or minor revision in the Netherlands in 2020-2024 (n=169,358)

	Cumulative 1-year first revision percentage
	Kaplan Meier (95% CI)
First major revision	0.98 (0.93-1.02)
Acetabulum	0.60 (0.56-0.63)
Femur	0.73 (0.69-0.77)
Minor revision	0.79 (0.75-0.84)
Inlay	0.42 (0.38-0.45)
Femoral head	0.75 (0.71-0.79)

First major revision: first revision of the acetabulum or femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
First minor revision: only inlay and/or femoral head exchange (including DAIR procedures).
THA: total hip arthroplasty; CI: confidence interval

© LROI 2026 | H014

In 2020-2024, 2,081 (1.2%) primary THAs were implanted in patients who died within one year after the primary procedure.

Reasons for revision within 1 year

TABLE Reasons for revision within one year of primary total hip arthroplasties by type of revision in the Netherlands in 2020-2024

	Major revision (n=1,831)	Minor revision (n=1,356)	Any type of revision (n=3,116)
Reasons for revision	Proportion (%)	Proportion (%)	Proportion (%)
Infection	19.39	75.66	41.82
Dislocation	30.58	11.80	22.53
Peri-prosthetic fracture	32.11	1.70	19.61
Loosening of femur component	13.00	0.29	7.67
Malposition or malalignment	10.32	1.40	6.64
Loosening of acetabulum component	8.79	0.15	5.10
Girdlestone situation	1.47	0.22	0.87
Peri-articular ossification	0.55	0.52	0.42
Inlay wear	0.22	0.22	0.35
Symptomatic MoM bearing	0.00	0.00	0.00
Other	7.97	10.91	9.56

Major revision: first revision of the acetabulum or femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
Minor revision: only inlay and/or femoral head exchange (including DAIR procedures).
Any type of revision includes all first revisions, including revision procedures that could not be classified as minor or major revision.
Please note: More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.
Please note: Malposition or malalignment has been registered since 2022.

© LROI 2026 | H015

Time after primary THA

TABLE Time after primary total hip arthroplasty until short-term revision in the Netherlands in 2018-2022 (n=159,830)

Time after primary THA	Percentage revisions (%)
Day 0-29	0.95
Day 30-182	0.60
Day 183-364	0.26
Day 365-730 (second year)	0.40
Day 731-1095 (third year)	0.33

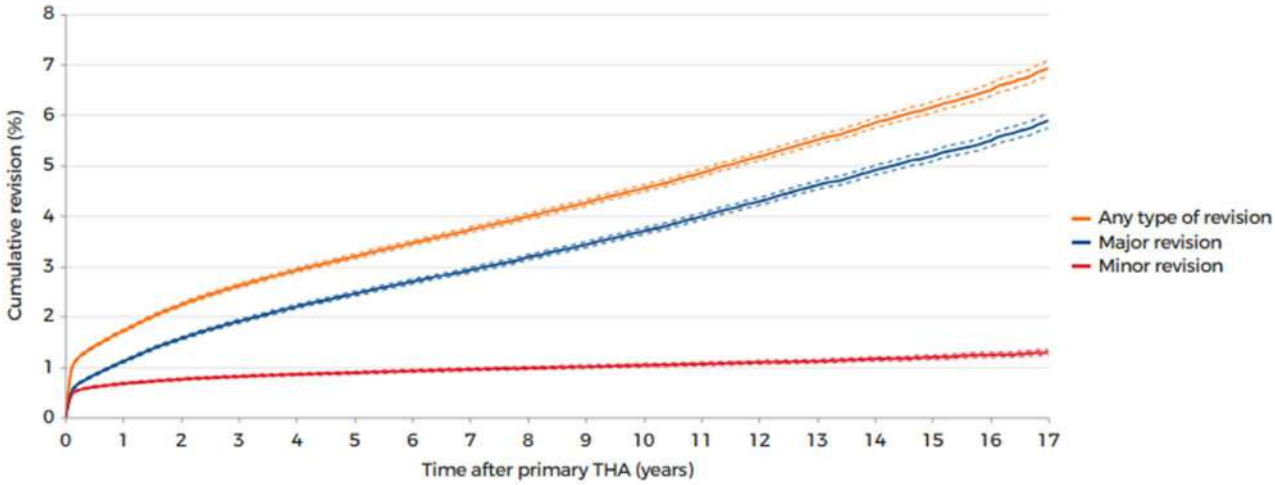
THA: total hip arthroplasty

© LROI 2026 | H016

Long term revision

By type of revision

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of total hip arthroplasties by type of revision in the Netherlands in 2007-2025 (n=534,465)



© LROI 2026 | H017A

	1yr	3yr	5yr	7yr	10yr	17yr
Any type of revision	1.66 (1.62-1.69)	2.57 (2.53-2.62)	3.17 (3.12-3.22)	3.69 (3.63-3.75)	4.52 (4.45-4.58)	6.87 (6.73-7.02)
Major revision	1.05 (1.03-1.08)	1.87 (1.83-1.91)	2.42 (2.38-2.47)	2.90 (2.85-2.95)	3.67 (3.61-3.73)	5.84 (5.70-5.98)
Minor revision	0.66 (0.64-0.68)	0.81 (0.78-0.83)	0.88 (0.85-0.91)	0.95 (0.92-0.97)	1.03 (1.00-1.06)	1.28 (1.23-1.33)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.

Major revision: first revision of the acetabulum or femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

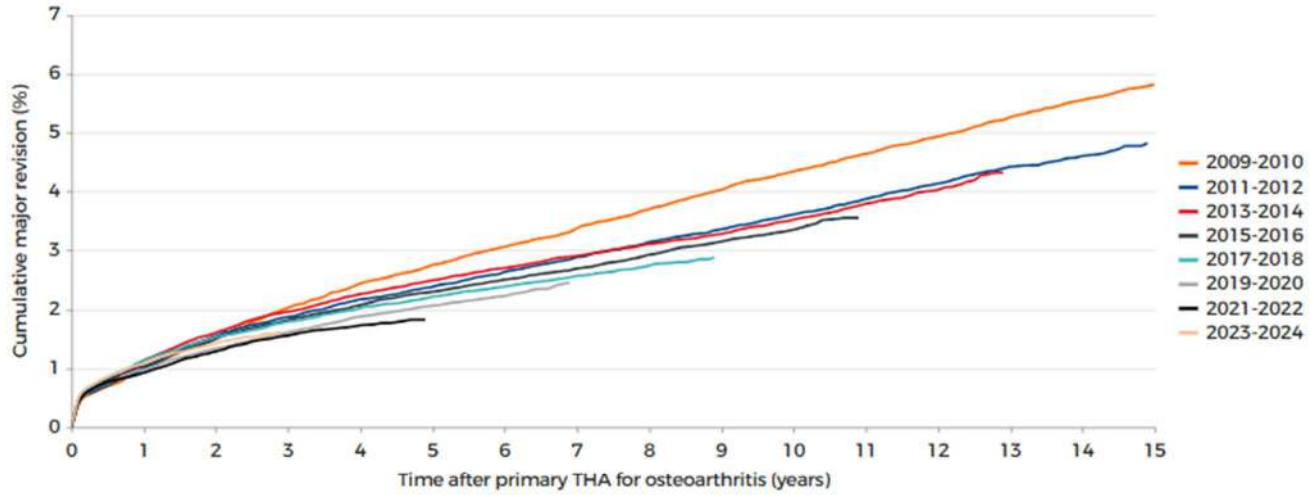
Minor revision: only inlay and/or femoral head exchange (including DAIR procedures).

THA: total hip arthroplasty; CI: confidence interval.

© LROI 2026 | H017B

By procedure year

FIGURE Cumulative major revision percentage (Kaplan-Meier; 95% CI) of total hip arthroplasties for osteoarthritis by procedure year of primary THA in the Netherlands in 2009-2024



© LROI 2026 | H018A

	Number (n)	1yr	3yr	5yr	7yr	10yr	15yr
2009-2010	38,354	0.94 (0.85-1.04)	1.98 (1.84-2.12)	2.71 (2.54-2.87)	3.31 (3.13-3.49)	4.31 (4.10-4.52)	5.79 (5.54-6.04)
2011-2012	42,845	0.93 (0.83-1.02)	1.85 (1.72-1.98)	2.36 (2.22-2.51)	2.85 (2.69-3.01)	3.59 (3.40-3.77)	4.82 (4.56-5.07)
2013-2014	46,787	1.05 (0.96-1.14)	1.93 (1.81-2.06)	2.47 (2.32-2.61)	2.89 (2.74-3.04)	3.49 (3.32-3.67)	n.a.
2015-2016	50,312	1.00 (0.91-1.09)	1.79 (1.67-1.90)	2.28 (2.15-2.41)	2.66 (2.52-2.81)	3.33 (3.16-3.49)	n.a.
2017-2018	53,738	1.08 (0.99-1.16)	1.76 (1.65-1.88)	2.19 (2.06-2.31)	2.54 (2.40-2.67)	n.a.	n.a.
2019-2020	51,622	0.95 (0.87-1.04)	1.59 (1.48-1.69)	2.04 (1.92-2.17)	2.45 (2.29-2.61)	n.a.	n.a.
2021-2022	58,867	0.88 (0.81-0.96)	1.54 (1.44-1.64)	1.82 (1.70-1.95)	n.a.	n.a.	n.a.
2023-2024	63,784	1.05 (0.97-1.13)	1.62 (1.50-1.75)	n.a.	n.a.	n.a.	n.a.

Please note: n.a. if <50 cases were at risk.

Major revision precentage: first revision of the acetabulum or femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

THA: total hip arthroplasty; CI: confidence interval.

© LROI 2026 | H018B

Reasons for revision within 10 years

TABLE Reasons for revision within ten years of primary total hip arthroplasties by type of revision in the Netherlands in 2007-2025

	Major revision (n=14,278)	Minor revision (n=4,453)	Any type of revision (n=18,356)
Reasons for revision	**Proportion (%)**	**Proportion (%)**	**Proportion (%)**
Dislocation	25.61	24.99	24.92
Infection	15.11	53.36	23.27
Loosening of femur component	22.75	0.74	17.65
Peri-prosthetic fracture	19.42	1.95	15.53
Loosening of acetabulum component	14.96	0.61	11.55
Malposition or malalignment	4.28	0.90	3.49
Inlay wear	2.79	2.72	2.73
Girdlestone situation	3.20	0.20	2.11
Symptomatic MoM bearing	2.26	1.12	2.02
Peri-articular ossification	1.13	1.30	1.22
Other	12.94	16.51	14.07

Major revision: first revision of the acetabulum or femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

Minor revision: only inlay and/or femoral head exchange (including DAIR procedures).

Any type of revision includes all first revisions, including revision procedures that could not be classified as minor or major revision.

Please note: More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.

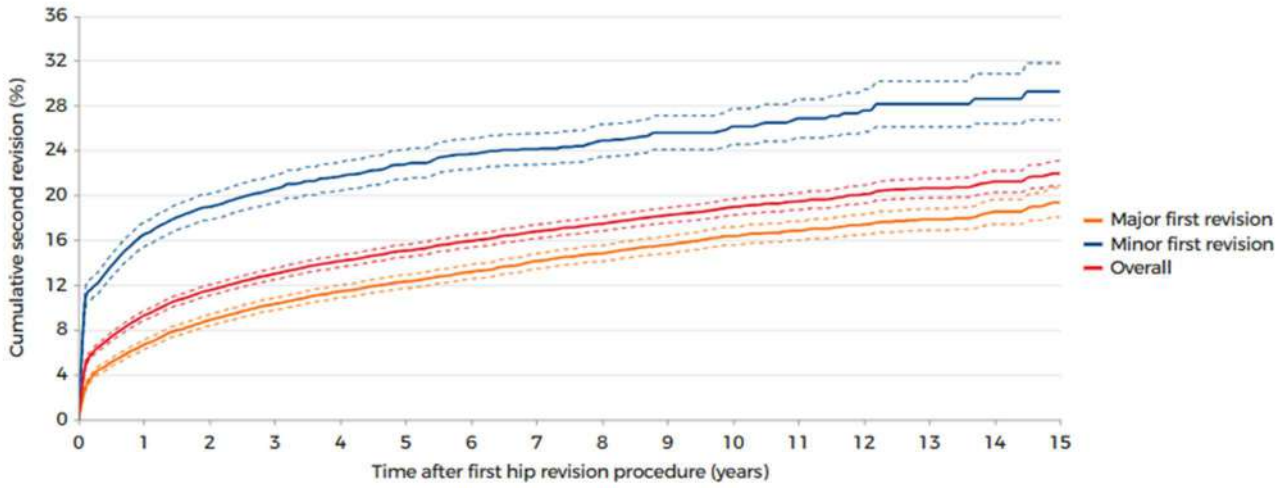
Please note: Malposition or malalignment has been registered since 2022.

© LROI 2026 | H019

Re-revision

By type of first revision

FIGURE Cumulative second revision percentage (Kaplan-Meier; 95% CI) of total hip arthroplasties after a one-stage first revision by type of first revision in the Netherlands in 2007-2025 (n=18,826)



© LROI 2026 | H025A

	Number (n)	1yr	3yr	5yr	7yr	10yr	15yr
Overall	18,826	8.93 (8.52-9.34)	12.87 (12.37-13.37)	15.00 (14.45-15.56)	16.71 (16.10-17.32)	18.88 (18.17-19.59)	21.95 (20.83-23.06)
Major first revision	13,901	6.36 (5.95-6.77)	10.20 (9.66-10.73)	12.25 (11.65-12.85)	14.04 (13.36-14.71)	16.37 (15.56-17.17)	19.36 (18.06-20.67)
Minor first revision	4,573	16.08 (15.00-17.16)	20.41 (19.19-21.63)	22.72 (21.41-24.03)	24.12 (22.73-25.50)	25.86 (24.31-27.41)	29.25 (26.72-31.78)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis.

Major revision: revision of at least the acetabulum or femur component.

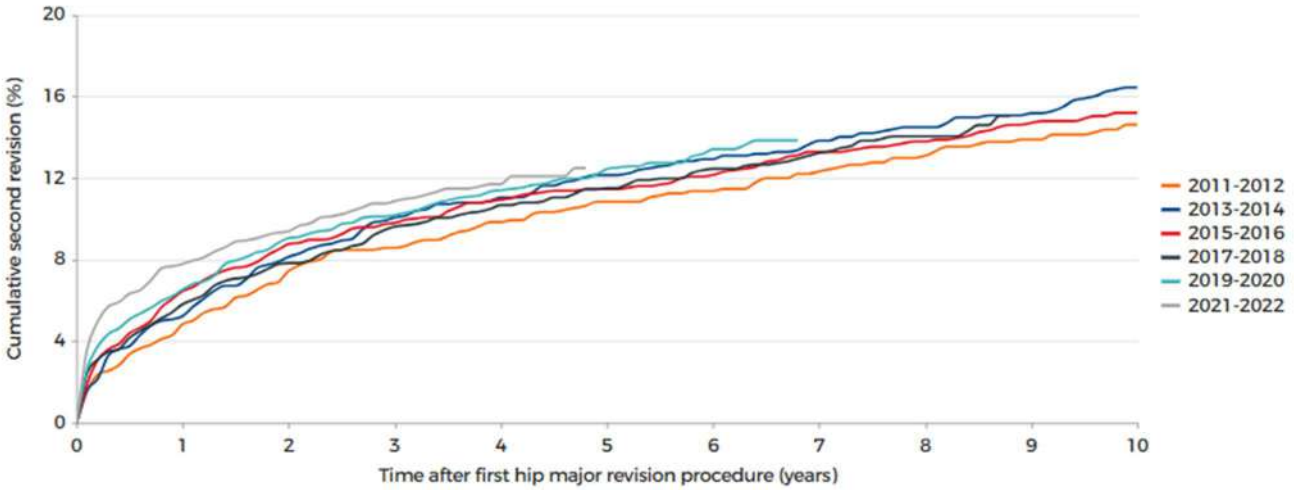
Minor revision: only inlay and/or femoral head exchange (including DAIR procedures).

CI: confidence interval.

© LROI 2026 | H025B

By procedure year of first major revision

FIGURE Cumulative second revision percentage (Kaplan-Meier; 95% CI) of total hip arthroplasties after a one-stage first revision by procedure year of first major revision in the Netherlands in 2011-2022 (n=9,524)



© LROI 2026 | H026A

	Number (n)	1yr	3yr	5yr	7yr	10yr
2011-2012	1,102	4.28 (3.09-5.48)	8.57 (6.91-10.24)	10.83 (8.97-12.70)	12.21 (10.23-14.18)	14.61 (12.43-16.79)
2013-2014	1,311	5.08 (3.88-6.27)	9.90 (8.26-11.53)	12.13 (10.33-13.93)	13.64 (11.73-15.54)	16.43 (14.33-18.54)
2015-2016	1,537	6.06 (4.86-7.26)	9.73 (8.23-11.23)	11.45 (9.83-13.07)	13.27 (11.52-15.03)	15.19 (13.28-17.10)
2017-2018	1,813	5.41 (4.36-6.46)	9.44 (8.07-10.81)	11.44 (9.93-12.94)	13.09 (11.47-14.70)	n.a.
2019-2020	1,830	6.19 (5.08-7.30)	10.11 (8.71-11.51)	12.17 (10.63-13.71)	n.a.	n.a.
2021-2022	1,931	7.67 (6.48-8.87)	10.74 (9.34-12.15)	n.a.	n.a.	n.a.

Please note: n.a. if <50 cases were at risk.

Major revision: revision of at least the acetabulum or femur component.

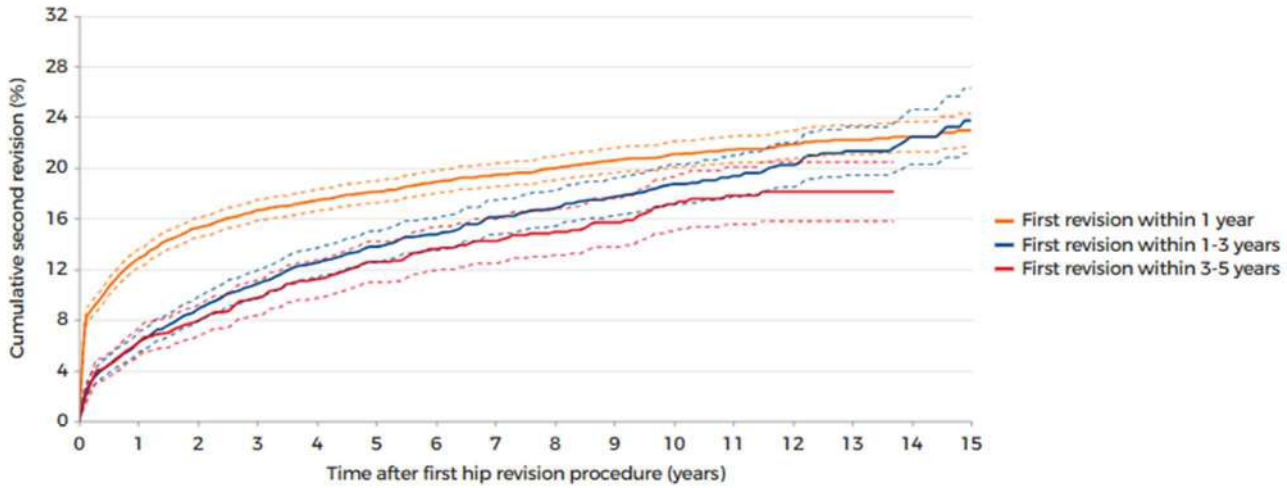
One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis.

CI: confidence interval.

© LROI 2026 | H026B

By time to first revision

FIGURE Cumulative second revision percentage (Kaplan-Meier; 95% CI) of total hip arthroplasties after a one-stage first revision by time to first revision in the Netherlands in 2007-2025 (n=14,106)



© LROI 2026 | H027A

	Number (n)	1yr	3yr	5yr	7yr	10yr	15yr
First revision within 1 year	8,605	12.50 (11.80-13.21)	16.46 (15.64-17.27)	18.05 (17.19-18.91)	19.34 (18.43-20.26)	20.96 (19.95-21.97)	22.94 (21.62-24.26)
First revision within 1-3 years	3,570	5.76 (4.99-6.53)	10.65 (9.59-11.70)	13.76 (12.53-14.98)	16.08 (14.72-17.44)	18.61 (17.05-20.17)	23.71 (21.13-26.28)
First revision within 3-5 years	1,931	5.84 (4.78-6.90)	9.64 (8.27-11.02)	12.56 (10.96-14.17)	14.21 (12.45-15.96)	17.12 (14.98-19.26)	n.a.

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.
One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis.
CI: confidence interval.

© LROI 2026 | H027B

Reasons for second revision

TABLE Reasons for second revision within ten years in patients who underwent a second revision after a one-stage first revision of a total hip arthroplasty by type of first revision in the Netherlands in 2007-2025

	Major revision (n=1,675)	Minor revision (n=993)	Any type of revision (n=2,755)
Reasons for second revision	**Proportion (%)**	**Proportion (%)**	**Proportion (%)**
Infection	32.78	62.03	43.96
Dislocation	25.31	24.27	24.43
Loosening of acetabulum component	18.21	4.43	12.89
Loosening of femur component	17.31	4.03	12.27
Peri-prosthetic fracture	9.85	2.82	7.19
Inlay wear	3.22	2.82	2.98
Malposition or malalignment	2.99	1.21	2.25
Symptomatic MoM bearing	1.07	0.30	0.83
Peri-articular ossification	0.90	0.40	0.73
Other	10.69	6.55	9.36

One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis.
Major first revision: Revision of at least the acetabulum or femur component.
Minor first revision: Only inlay and/or femoral head exchange (including DAIR procedures).
Any type of first revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.
One patient may have more than one reason for second revision or re-surgery. As such, the total proportion is over 100%.
Please note: Malposition or malalignment has been registered since 2022.

© LROI 2026 | H028

Survival by component

By cemented component name - overall revision

TABLE Cumulative revision percentages of cemented primary total hip arthroplasties by prosthesis component combination of patients who underwent a THA for osteoarthritis in the Netherlands in 2007-2025 (n=104,028)

Femur component	Acetabulum component	Primary THAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Type of revision (n)					Cumulative revision percentage (95% CI)					
						Total revision	Only femur	Only acetabulum	Only femoral head/inlay	Unknown	1yr	3yr	5yr	7yr	10yr	17yr
All cemented THAs for osteoarthritis		**104,028**	**97**	**76 (71 - 81)**	**3,415**	**656**	**377**	**1,380**	**948**	**54**	**1.43 (1.35-1.50)**	**2.16 (2.07-2.25)**	**2.67 (2.57-2.78)**	**3.10 (2.99-3.22)**	**3.80 (3.66-3.94)**	**5.52 (5.25-5.79)**
Lubinus SPII	IP Cup	17,572	22	77 (72 - 81)	511	78	60	233	133	7	1.19 (1.03-1.35)	2.03 (1.82-2.25)	2.60 (2.35-2.85)	2.93 (2.66-3.20)	3.38 (3.07-3.69)	4.55 (3.89-5.22)
Original ME Muller	MUller low profile Durasul	11,852	22	75 (71 - 80)	365	42	8	118	193	4	1.94 (1.69-2.19)	2.54 (2.25-2.83)	3.00 (2.67-3.32)	3.19 (2.85-3.53)	3.69 (3.27-4.11)	4.76 (3.68-5.83)
Lubinus SPII	FAL Cup	8,705	14	75 (71 - 80)	277	63	20	100	89	5	1.75 (1.48-2.03)	2.37 (2.04-2.71)	2.88 (2.50-3.25)	3.36 (2.93-3.79)	3.99 (3.46-4.51)	n.a.
Original ME Muller	MUller low profile	6,606	15	77 (73 - 81)	211	28	2	130	45	6	1.41 (1.13-1.70)	2.31 (1.94-2.67)	2.65 (2.26-3.05)	3.07 (2.64-3.50)	3.33 (2.87-3.80)	4.07 (3.38-4.75)
EXETER	EXETER RIMFIT X3	6,114	16	76 (69 - 80)	161	36	36	40	49	0	1.41 (1.11-1.71)	2.00 (1.64-2.36)	2.45 (2.04-2.86)	2.76 (2.31-3.21)	3.32 (2.76-3.89)	n.a.
Spectron EF	Reflection All Poly XLPE	5,116	18	77 (73 - 82)	147	59	16	46	26	0	0.67 (0.44-0.89)	1.45 (1.12-1.78)	1.90 (1.52-2.29)	2.58 (2.11-3.04)	3.16 (2.63-3.69)	3.88 (3.18-4.58)
STANMORE	STANMORE	3,383*	3	75 (70 - 80)	91	29	2	51	6	3	0.71 (0.43-1.00)	1.45 (1.04-1.86)	1.87 (1.41-2.34)	2.08 (1.59-2.58)	2.61 (2.03-3.19)	4.34 (3.08-5.60)
Original ME Muller	AVANTAGE Cemented	3,073	20	77 (71 - 81)	117	6	5	16	89	1	3.16 (2.53-3.79)	3.92 (3.18-4.65)	4.47 (3.61-5.32)	4.63 (3.72-5.54)	4.63 (3.72-5.54)	n.a.
EXETER	EXETER CONTEMPORARY HOODED	2,827*	13	77 (72 - 81)	124	28	24	54	15	3	1.17 (0.78-1.57)	1.72 (1.24-2.20)	2.29 (1.73-2.85)	2.95 (2.31-3.59)	4.35 (3.52-5.19)	6.59 (5.20-7.98)
Lubinus SPII	SHP	2,506*	6	75 (71 - 80)	51	10	3	37	1	0	0.20 (0.02-0.38)	0.65 (0.33-0.97)	0.95 (0.56-1.34)	1.69 (1.17-2.22)	2.00 (1.42-2.59)	2.40 (1.74-3.07)
EXETER	EXETER	2,447*	6	73 (68 - 79)	170	28	17	89	30	6	2.78 (2.13-3.43)	3.57 (2.83-4.31)	4.12 (3.33-4.91)	5.00 (4.13-5.88)	6.15 (5.17-7.12)	8.04 (6.78-9.30)
EXETER	EXETER CONTEMPORARY FLANGED	2,439*	7	75 (67 - 80)	103	21	9	60	11	2	0.78 (0.43-1.13)	1.42 (0.94-1.89)	1.99 (1.43-2.56)	2.28 (1.67-2.89)	3.41 (2.63-4.19)	7.59 (5.70-9.49)
Lubinus SPII	IP Cup X-Linked	2,265	9	78 (74 - 82)	62	12	5	14	31	0	1.86 (1.30-2.43)	2.52 (1.82-3.21)	3.17 (2.33-4.01)	3.17 (2.33-4.01)	4.06 (2.72-5.41)	n.a.
STANMORE	SHP	2,097*	5	75 (71 - 79)	130	43	5	69	11	2	1.58 (1.05-2.12)	3.06 (2.31-3.80)	3.98 (3.13-4.83)	4.60 (3.68-5.52)	5.48 (4.45-6.50)	9.18 (7.14-11.22)
Twinsys stem Cemented	CCB cup Low Profile	1,949	7	80 (76 - 83)	42	6	18	10	7	1	1.08 (0.61-1.55)	2.12 (1.40-2.84)	2.73 (1.84-3.62)	3.08 (2.06-4.09)	3.32 (2.20-4.44)	n.a.
CCA stem	CCB cup Low Profile	1,788	5	77 (73 - 80)	72	11	14	17	29	1	2.02 (1.37-2.67)	2.78 (2.01-3.54)	3.21 (2.38-4.04)	3.69 (2.78-4.60)	4.46 (3.37-5.56)	n.a.
C-Stem AMT	Marathon	1,548	6	79 (74 - 83)	23	2	4	1	16	0	1.04 (0.53-1.54)	1.37 (0.79-1.96)	1.53 (0.91-2.15)	1.53 (0.91-2.15)	n.a.	n.a.
Lubinus SPII	AVANTAGE Cemented	1,455	20	78 (72 - 83)	48	8	2	5	32	1	2.67 (1.83-3.51)	3.11 (2.19-4.03)	3.76 (2.64-4.88)	4.16 (2.80-5.53)	4.16 (2.80-5.53)	n.a.
STANMORE	EXCEED ABT Cemented	1,344*	6	76 (71 - 81)	34	6	1	16	11	0	1.04 (0.50-1.59)	1.50 (0.85-2.16)	2.11 (1.32-2.89)	2.65 (1.73-3.56)	2.88 (1.86-3.90)	n.a.
STANMORE	All Poly Arcom Cup	1,056*	3	74 (69 - 79)	25	5	4	15	0	1	0.29 (0.00-0.61)	1.39 (0.67-2.11)	1.81 (0.98-2.64)	1.93 (1.07-2.78)	2.48 (1.47-3.49)	n.a.
STANMORE	MULLER	879*	3	76 (72 - 81)	14	3	2	8	1	0	0.69 (0.14-1.23)	1.27 (0.52-2.01)	1.27 (0.52-2.01)	1.41 (0.61-2.20)	1.59 (0.72-2.46)	n.a.
Lubinus SPII	FAL Cup X-Linked	836	5	78 (75 - 81)	17	0	1	9	7	0	1.38 (0.57-2.19)	2.05 (1.01-3.08)	2.91 (1.30-4.52)	2.91 (1.30-4.52)	n.a.	n.a.
Spectron EF	Reflection All Poly	617*	11	77 (74 - 82)	54	13	0	37	4	0	0.81 (0.10-1.53)	1.81 (0.75-2.87)	2.69 (1.39-4.00)	3.25 (1.81-4.69)	6.62 (4.48-8.76)	11.36 (8.45-14.27)
EXETER	AVANTAGE Cemented	538	20	74 (66 - 81)	17	3	5	1	8	0	2.44 (1.13-3.75)	3.07 (1.59-4.56)	3.37 (1.78-4.97)	3.37 (1.78-4.97)	3.37 (1.78-4.97)	n.a.
STANMORE	AVANTAGE Cemented	369*	11	79 (74 - 84)	11	0	1	0	10	0	2.18 (0.68-3.67)	3.01 (1.26-4.76)	3.01 (1.26-4.76)	3.01 (1.26-4.76)	n.a.	n.a.
Lubinus SPII	Polarcup cemented	355	5	75 (71 - 80)	5	1	1	0	3	0	1.17 (0.03-2.32)	1.57 (0.19-2.94)	1.57 (0.19-2.94)	n.a.	n.a.	n.a.

* Denotes prosthesis combinations with no reported use in primary THAs in 2025.

Please note: n.a. if <50 cases were at risk; THA: total hip arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | H020

Only combinations with over 250 procedures and reported by at least 3 hospitals have been listed.

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure, femoral head size and articulation of the prosthesis may have influenced the cumulative revision percentages.

By cemented component name - major revision

TABLE Cumulative major revision percentages of the most frequently used cemented primary total hip arthroplasties by prosthesis component combination of patients who underwent a THA for osteoarthritis in the Netherlands in 2007-2025 (n=104,028)

					Cumulative revision percentage (95% CI)					
Femur component	Acetabulum component	Primary THAs (n)	Median (IQR) age (yr)	Major revisions (n)	1yr	3yr	5yr	7yr	10yr	17yr
All cemented THAs for osteoarthritis		**104,028**	**76 (71 - 81)**	**2,549**	**0.68 (0.63-0.73)**	**1.38 (1.30-1.45)**	**1.86 (1.78-1.95)**	**2.27 (2.17-2.38)**	**2.93 (2.81-3.06)**	**4.61 (4.35-4.88)**
Lubinus SPII	IP Cup	17,572	77 (72 - 81)	402	0.58 (0.46-0.69)	1.40 (1.22-1.58)	1.96 (1.74-2.18)	2.28 (2.04-2.53)	2.74 (2.45-3.02)	3.99 (3.33-4.66)
Original ME Muller	MUller low profile Durasul	11,852	75 (71 - 80)	184	0.64 (0.49-0.78)	1.13 (0.93-1.33)	1.50 (1.26-1.74)	1.61 (1.36-1.86)	2.01 (1.68-2.34)	3.06 (2.02-4.10)
Lubinus SPII	FAL Cup	8,705	75 (71 - 80)	197	0.82 (0.63-1.01)	1.46 (1.19-1.72)	2.00 (1.67-2.33)	2.48 (2.09-2.87)	3.08 (2.59-3.56)	n.a.
Original ME Muller	MUller low profile	6,606	77 (73 - 81)	167	0.88 (0.66-1.11)	1.72 (1.40-2.04)	2.03 (1.68-2.37)	2.41 (2.02-2.79)	2.67 (2.25-3.09)	3.34 (2.69-3.98)
EXETER	EXETER RIMFIT X3	6,114	76 (69 - 80)	118	0.77 (0.55-0.99)	1.32 (1.03-1.62)	1.75 (1.40-2.10)	2.06 (1.66-2.46)	2.53 (2.02-3.03)	n.a.
Spectron EF	Reflection All Poly XLPE	5,116	77 (73 - 82)	123	0.37 (0.21-0.54)	1.08 (0.79-1.36)	1.53 (1.18-1.88)	2.15 (1.72-2.57)	2.67 (2.18-3.17)	3.36 (2.69-4.03)
STANMORE	STANMORE	3,383*	75 (70 - 80)	84	0.54 (0.29-0.78)	1.27 (0.89-1.65)	1.66 (1.22-2.10)	1.87 (1.40-2.34)	2.36 (1.81-2.91)	4.16 (2.90-5.41)
EXETER	EXETER CONTEMPORARY HOODED	2,827*	77 (72 - 81)	109	0.71 (0.40-1.02)	1.22 (0.81-1.63)	1.76 (1.26-2.25)	2.38 (1.79-2.96)	3.88 (3.08-4.68)	6.06 (4.69-7.43)
Lubinus SPII	SHP	2,506*	75 (71 - 80)	50	0.20 (0.02-0.38)	0.61 (0.30-0.92)	0.91 (0.53-1.29)	1.65 (1.13-2.17)	1.96 (1.39-2.54)	2.36 (1.70-3.02)
Original ME Muller	AVANTAGE Cemented	3,073	77 (71 - 81)	32	0.51 (0.25-0.76)	1.12 (0.69-1.55)	1.50 (0.93-2.07)	1.66 (1.01-2.32)	1.66 (1.01-2.32)	n.a.

* Denotes prosthesis combinations with no reported use in primary THAs in 2025.

Major revision precentage: first revision of the acetabulum or femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

Please note: n.a. if <50 cases were at risk; THA: total hip arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | H021

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure, femoral head size and articulation of the prosthesis may have influenced the cumulative revision percentages.

By uncemented component name - overall revision

TABLE Cumulative revision percentages of uncemented primary total hip arthroplasties by prosthesis component combination of patients who underwent a THA for osteoarthritis in the Netherlands in 2007-2025 (n=307,471)

						Type of revision (n)					Cumulative revision percentage (95% CI)					
Femur component	Acetabulum component	Primary THAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Total revision	Only femur	Only acetabulum	Only femoral head/inlay	Unknown	1yr	3yr	5yr	7yr	10yr	17yr
All uncemented THAs for osteoarthritis		**307,471**	**102**	**68 (62 - 74)**	**10,993**	**1,795**	**3,793**	**2,849**	**2,371**	**185**	**1.56 (1.51-1.60)**	**2.43 (2.37-2.49)**	**3.00 (2.94-3.07)**	**3.51 (3.43-3.58)**	**4.29 (4.20-4.38)**	**6.74 (6.53-6.95)**
Corail AMT	Pinnacle	56,777	31	69 (63 - 75)	1,338	257	383	307	375	16	1.09 (1.01-1.18)	1.68 (1.57-1.79)	2.10 (1.97-2.22)	2.43 (2.29-2.58)	3.09 (2.91-3.28)	5.53 (4.58-6.48)
TAPERLOC Complete	Allofit	40,540	46	67 (61 - 73)	890	165	296	191	219	19	1.48 (1.36-1.60)	2.12 (1.97-2.26)	2.53 (2.36-2.71)	2.74 (2.55-2.94)	3.54 (2.54-4.55)	n.a.
Polarstem	R3	18,813	17	70 (63 - 76)	437	46	124	79	182	6	1.64 (1.46-1.83)	2.18 (1.97-2.40)	2.57 (2.32-2.82)	2.85 (2.55-3.15)	3.25 (2.60-3.89)	n.a.
Alloclassic Zweymuller SL	Allofit	15,268	18	70 (64 - 77)	627	106	236	153	126	6	1.21 (1.04-1.38)	2.02 (1.79-2.24)	2.62 (2.36-2.88)	3.12 (2.83-3.40)	4.08 (3.74-4.42)	6.05 (5.43-6.67)
CLS Spotorno	Allofit	12,333	19	64 (58 - 69)	665	71	253	201	119	21	2.63 (2.34-2.91)	3.64 (3.31-3.97)	4.16 (3.81-4.52)	4.64 (4.26-5.02)	5.44 (5.02-5.87)	7.88 (6.75-9.01)
ACCOLADE II	TRIDENT	10,276	11	69 (62 - 75)	267	40	104	31	88	4	1.94 (1.67-2.21)	2.77 (2.43-3.12)	3.10 (2.70-3.50)	3.50 (2.93-4.08)	n.a.	n.a.
TAPERLOC Complete	G7 PPS	9,216	19	69 (63 - 75)	188	22	53	37	70	6	1.68 (1.41-1.94)	2.40 (2.04-2.75)	2.52 (2.14-2.91)	n.a.	n.a.	n.a.
TAPERLOC Complete	EXCEED ABT	8,859*	11	69 (63 - 75)	222	40	81	46	51	4	1.40 (1.16-1.65)	1.86 (1.58-2.14)	2.15 (1.85-2.45)	2.41 (2.09-2.74)	2.66 (2.30-3.01)	n.a.
ACCOLADE	TRIDENT	7,608*	10	69 (62 - 76)	407	55	212	59	79	2	1.40 (1.13-1.66)	2.83 (2.45-3.20)	3.69 (3.26-4.11)	4.35 (3.88-4.82)	5.32 (4.76-5.87)	n.a.
Twinsys stem Cementless	RM Pressfit Vitamys cup	6,573	13	67 (60 - 72)	239	22	102	66	43	6	2.07 (1.72-2.42)	2.77 (2.36-3.18)	3.14 (2.69-3.59)	3.55 (3.05-4.05)	4.87 (4.16-5.58)	n.a.
MALLORY HEAD STEMS	MALLORY HEAD	6,019*	15	65 (60 - 69)	265	32	25	119	82	7	1.41 (1.12-1.71)	2.25 (1.88-2.63)	2.68 (2.27-3.09)	3.19 (2.74-3.64)	3.80 (3.31-4.30)	5.94 (5.05-6.84)
FITMORE	Allofit	5,441	16	67 (62 - 73)	94	16	46	7	23	2	1.29 (0.99-1.60)	1.96 (1.54-2.38)	2.18 (1.71-2.65)	n.a.	n.a.	n.a.
Avenir Muller	Allofit	5,219	9	69 (62 - 75)	135	25	33	17	56	4	1.95 (1.57-2.33)	2.63 (2.16-3.10)	3.15 (2.53-3.76)	3.56 (2.72-4.40)	3.56 (2.72-4.40)	n.a.
ACCOLADE	TRIDENT TRITANIUM	4,539*	7	68 (62 - 74)	174	19	55	46	51	3	1.08 (0.78-1.38)	2.21 (1.79-2.64)	2.76 (2.28-3.23)	3.25 (2.73-3.77)	3.81 (3.22-4.40)	n.a.
TAPERLOC HIP system	EXCEED ABT	3,893*	14	68 (62 - 75)	140	24	38	45	25	8	1.18 (0.84-1.52)	2.31 (1.83-2.78)	2.69 (2.17-3.20)	2.91 (2.38-3.44)	3.37 (2.79-3.94)	n.a.
SL Plus	Bicon Plus	3,777*	5	70 (64 - 76)	335	51	168	91	22	3	1.70 (1.29-2.11)	3.97 (3.35-4.60)	5.40 (4.67-6.12)	6.55 (5.75-7.35)	7.89 (7.00-8.78)	11.77 (10.23-13.31)
Twinsys stem Cementless	RM Pressfit cup	3,735	7	73 (68 - 78)	174	22	79	43	29	1	2.53 (2.03-3.04)	3.20 (2.62-3.77)	3.59 (2.98-4.20)	4.10 (3.43-4.77)	4.94 (4.14-5.74)	n.a.
TAPERLOC HIP system	MALLORY HEAD	3,670*	13	67 (61 - 71)	158	28	44	53	32	1	1.45 (1.06-1.83)	2.63 (2.11-3.15)	2.96 (2.41-3.51)	3.42 (2.83-4.02)	3.77 (3.15-4.40)	5.80 (4.62-6.97)
Alloclassic offset	Allofit	3,119	18	71 (65 - 77)	107	23	41	18	21	4	1.38 (0.97-1.79)	1.95 (1.46-2.44)	2.51 (1.95-3.08)	2.78 (2.18-3.38)	3.50 (2.78-4.23)	5.69 (4.12-7.25)
TAPERLOC Complete	MALLORY HEAD	3,116*	14	67 (61 - 72)	123	21	26	34	41	1	2.09 (1.59-2.59)	3.06 (2.46-3.67)	3.36 (2.73-4.00)	3.65 (2.98-4.31)	3.94 (3.24-4.64)	n.a.
Synergy	Reflection	2,930*	14	66 (60 - 72)	175	15	78	33	48	1	2.12 (1.60-2.64)	2.70 (2.11-3.29)	3.09 (2.46-3.71)	3.59 (2.91-4.27)	4.35 (3.59-5.10)	7.91 (6.62-9.19)
Alloclassic Zweymuller SL	ALLOCLASSIC Zweymuller CSF	2,903*	8	69 (63 - 75)	155	20	66	30	37	2	1.11 (0.72-1.49)	2.65 (2.06-3.24)	3.27 (2.62-3.92)	3.53 (2.85-4.21)	4.36 (3.59-5.12)	6.43 (5.38-7.48)
ACCOLADE II	TRIDENT TRITANIUM	2,807	9	68 (61 - 74)	63	14	18	12	19	0	1.43 (0.98-1.88)	2.68 (2.00-3.36)	2.86 (2.09-3.62)	n.a.	n.a.	n.a.
Synergy	R3	2,104*	9	66 (60 - 72)	77	12	40	14	9	2	1.81 (1.24-2.38)	2.29 (1.65-2.93)	2.93 (2.20-3.65)	3.19 (2.43-3.94)	3.77 (2.92-4.61)	n.a.
SYMAX	TRIDENT	2,073*	4	69 (63 - 75)	79	8	21	21	28	1	0.58 (0.25-0.91)	1.66 (1.11-2.22)	2.22 (1.58-2.86)	2.80 (2.07-3.52)	3.25 (2.46-4.03)	4.40 (3.42-5.37)
Anthology	R3	2,026	5	65 (59 - 69)	73	10	22	24	17	0	2.06 (1.43-2.68)	2.60 (1.90-3.31)	3.21 (2.43-4.00)	3.34 (2.53-4.15)	3.72 (2.83-4.61)	n.a.
M/L Taper	Continuum	1,921	4	67 (62 - 72)	50	6	33	7	4	0	1.62 (1.05-2.19)	2.22 (1.55-2.90)	2.56 (1.81-3.30)	2.71 (1.91-3.52)	3.29 (2.25-4.32)	n.a.
SYMAX	TRIDENT TRITANIUM	1,742*	5	67 (61 - 73)	108	12	48	31	16	1	2.30 (1.60-3.01)	3.59 (2.71-4.47)	3.95 (3.03-4.88)	4.78 (3.77-5.80)	5.40 (4.31-6.49)	n.a.
MALLORY HEAD STEMS	EXCEED ABT	1,637*	10	65 (59 - 71)	39	4	16	17	2	0	0.67 (0.28-1.07)	1.60 (0.99-2.21)	1.73 (1.09-2.36)	2.05 (1.36-2.74)	2.33 (1.58-3.07)	n.a.
Corail AMT	Pinnacle Gription	1,608	20	70 (63 - 75)	31	4	10	5	12	0	1.39 (0.80-1.99)	2.50 (1.56-3.44)	2.68 (1.68-3.68)	n.a.	n.a.	n.a.
Optimys stem	RM Pressfit Vitamys cup	1,547	9	63 (56 - 70)	36	4	17	8	6	1	1.83 (1.15-2.52)	2.38 (1.57-3.19)	2.49 (1.65-3.33)	2.72 (1.77-3.68)	3.15 (1.89-4.42)	n.a.
OMNIFIT HA	TRIDENT	1,501*	8	63 (57 - 67)	170	25	80	28	33	4	3.07 (2.20-3.94)	4.55 (3.49-5.61)	6.33 (5.09-7.57)	7.80 (6.43-9.17)	9.64 (8.12-11.16)	12.72 (10.86-14.58)
Alloclassic Zweymuller SL	Continuum	1,294	7	71 (64 - 77)	41	7	16	4	13	1	1.63 (0.94-2.32)	2.19 (1.39-2.99)	2.54 (1.67-3.41)	2.82 (1.90-3.75)	3.07 (2.08-4.05)	n.a.
CLS Spotorno	RM Classic cup	1,177*	3	63 (58 - 68)	95	19	26	42	7	1	1.87 (1.10-2.65)	2.64 (1.73-3.56)	3.34 (2.31-4.37)	3.87 (2.76-4.98)	5.07 (3.80-6.34)	9.36 (7.41-11.31)
SL Plus	Hofer-Imhoff LUBRIMET	978*	3	70 (64 - 76)	67	15	33	11	6	2	1.13 (0.47-1.79)	2.27 (1.33-3.21)	3.56 (2.38-4.73)	4.44 (3.13-5.76)	5.61 (4.13-7.10)	7.90 (6.03-9.78)
Alloclassic Zweymuller SL	Trilogy	966*	5	68 (63 - 75)	36	10	10	8	8	0	1.35 (0.62-2.07)	2.18 (1.26-3.10)	2.60 (1.59-3.60)	2.92 (1.86-3.99)	3.59 (2.40-4.77)	3.82 (2.59-5.04)
Polarstem	Reflection	927*	3	70 (64 - 76)	23	7	6	2	8	0	1.08 (0.41-1.75)	1.63 (0.81-2.45)	1.97 (1.07-2.88)	2.21 (1.25-3.17)	2.76 (1.62-3.90)	n.a.
FITMORE	G7 PPS	895	8	59 (53 - 69)	12	1	6	3	2	0	0.94 (0.29-1.58)	1.89 (0.60-3.17)	n.a.	n.a.	n.a.	n.a.
TAPERLOC Complete	Continuum	831	11	68 (59 - 74)	23	6	7	4	6	0	1.93 (0.99-2.87)	2.67 (1.57-3.77)	2.80 (1.67-3.92)	2.80 (1.67-3.92)	n.a.	n.a.
Optimys stem	RM Pressfit cup	822	4	69 (62 - 75)	18	3	9	1	5	0	1.68 (0.77-2.58)	2.24 (1.13-3.35)	2.59 (1.29-3.89)	2.59 (1.29-3.89)	n.a.	n.a.
H-MAX S	Delta-TT	809	5	64 (58 - 70)	46	7	19	10	10	0	3.56 (2.26-4.85)	5.17 (3.55-6.79)	5.50 (3.76-7.24)	6.40 (4.28-8.52)	7.97 (5.24-10.71)	n.a.
SL Plus	EP-Fit Plus	790*	3	68 (63 - 75)	49	10	25	13	1	0	1.27 (0.49-2.06)	3.08 (1.87-4.30)	3.75 (2.41-5.09)	4.88 (3.35-6.42)	5.66 (3.99-7.33)	7.02 (5.07-8.97)
CLS Spotorno	FITMORE	758*	5	66 (61 - 71)	43	4	22	6	10	1	1.85 (0.89-2.81)	2.38 (1.29-3.46)	2.64 (1.50-3.79)	3.33 (2.04-4.61)	4.33 (2.86-5.80)	6.19 (4.37-8.01)
CLS Spotorno	RM Pressfit cup	625*	5	66 (60 - 71)	64	7	25	23	5	4	3.05 (1.70-4.39)	4.36 (2.75-5.97)	5.69 (3.86-7.53)	6.55 (4.59-8.52)	7.76 (5.60-9.93)	12.26 (9.26-15.27)
CBH stem	RM Pressfit Vitamys cup	593*	4	65 (60 - 70)	25	8	8	7	2	0	1.01 (0.21-1.82)	2.38 (1.15-3.62)	3.25 (1.81-4.69)	3.96 (2.37-5.54)	4.14 (2.52-5.76)	n.a.
M/L Taper	Allofit	592	3	66 (61 - 72)	18	1	5	5	7	0	2.06 (0.91-3.22)	2.43 (1.17-3.68)	2.86 (1.47-4.24)	3.08 (1.63-4.53)	3.32 (1.80-4.83)	n.a.
CBH stem	RM Pressfit cup	551*	4	75 (69 - 79)	26	4	8	12	2	0	2.19 (0.96-3.42)	3.68 (2.10-5.27)	3.88 (2.25-5.51)	4.29 (2.57-6.00)	5.03 (3.13-6.93)	n.a.
Alloclassic Zweymuller SL	Trabecular Metal	547*	5	68 (62 - 75)	33	3	12	10	7	1	0.55 (0.00-1.17)	1.85 (0.71-2.98)	2.61 (1.26-3.95)	3.38 (1.84-4.91)	3.58 (2.00-5.16)	8.25 (5.24-11.26)

* Denotes prosthesis combinations with no reported use in primary THAs in 2025.

Please note: n.a. if <50 cases were at risk; THA: total hip arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | H022

Only combinations with over 500 procedures and reported by at least 3 hospitals have been listed.

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure, femoral head size and articulation of the prosthesis may have influenced the cumulative revision percentages.

By uncemented component name - major revision

TABLE Cumulative major revision percentages of the most frequently used uncemented primary total hip arthroplasties by prosthesis component combination of patients who underwent a THA for osteoarthritis in the Netherlands in 2007-2025 (n=307,471)

					Cumulative revision percentage (95% CI)					
Femur component	Acetabulum component	Primary THAs (n)	Median (IQR) age (yr)	Major revisions (n)	1yr	3yr	5yr	7yr	10yr	17yr
All uncemented THAs for osteoarthritis		**307,471**	**68 (62 - 74)**	**8,849**	**1.07 (1.04-1.11)**	**1.84 (1.79-1.89)**	**2.36 (2.30-2.41)**	**2.81 (2.74-2.87)**	**3.53 (3.45-3.61)**	**5.71 (5.52-5.91)**
TAPERLOC Complete	Allofit	40.540	67 (61 - 73)	690	1.03 (0.93-1.13)	1.61 (1.48-1.74)	2.02 (1.86-2.18)	2.24 (2.05-2.42)	2.74 (1.86-3.63)	n.a.
Polarstem	R3	18.813	70 (63 - 76)	270	0.84 (0.71-0.97)	1.29 (1.12-1.46)	1.64 (1.43-1.85)	1.91 (1.65-2.17)	2.02 (1.72-2.33)	n.a.
Alloclassic Zweymuller SL	Allofit	15.268	70 (64 - 77)	512	0.86 (0.72-1.01)	1.56 (1.36-1.75)	2.10 (1.86-2.33)	2.47 (2.22-2.73)	3.32 (3.01-3.63)	5.04 (4.46-5.61)
CLS Spotorno	Allofit	12.333	64 (58 - 69)	554	1.94 (1.70-2.18)	2.86 (2.56-3.15)	3.35 (3.03-3.67)	3.80 (3.45-4.14)	4.56 (4.16-4.95)	6.44 (5.61-7.27)
TAPERLOC Complete	EXCEED ABT	8.859*	69 (63 - 75)	177	1.06 (0.85-1.28)	1.44 (1.19-1.69)	1.64 (1.38-1.91)	1.88 (1.59-2.17)	2.12 (1.80-2.44)	n.a.
ACCOLADE II	TRIDENT	10.276	69 (62 - 75)	182	1.26 (1.04-1.48)	1.86 (1.57-2.14)	2.15 (1.81-2.49)	2.56 (2.02-3.10)	2.56 (2.02-3.10)	n.a.
ACCOLADE	TRIDENT	7.608*	69 (62 - 76)	339	1.03 (0.80-1.25)	2.23 (1.90-2.57)	3.00 (2.61-3.38)	3.52 (3.10-3.95)	4.36 (3.86-4.87)	n.a.
MALLORY HEAD STEMS	MALLORY HEAD	6.019*	65 (60 - 69)	193	0.95 (0.70-1.20)	1.60 (1.29-1.92)	2.00 (1.64-2.35)	2.42 (2.03-2.81)	2.90 (2.47-3.34)	4.00 (3.35-4.65)
Twinsys stem Cementless	RM Pressfit Vitamys cup	6.573	67 (60 - 72)	199	1.55 (1.25-1.86)	2.22 (1.85-2.59)	2.54 (2.13-2.95)	2.98 (2.52-3.45)	4.25 (3.57-4.94)	n.a.

* Denotes prosthesis combinations with no reported use in primary THAs in 2025.

Major revision precentage: first revision of the acetabulum or femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

Please note: n.a. if <50 cases were at risk; THA: total hip arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | H023

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure, femoral head size and articulation of the prosthesis may have influenced the cumulative revision percentages.

By bone cement

TABLE Cumulative revision percentages of the most frequently types of bone cement by type of mixing system in primary total hip arthroplasties of patients who underwent a THA for osteoarthritis in the Netherlands in 2007-2025

				Cumulative revision percentage (95% CI)					
Bone cement	**Primary THAs (n)**	**Median (IQR) age (yr)**	**Revisions (n)**	**1yr**	**3yr**	**5yr**	**7yr**	**10yr**	**17yr**
Separately packed	**87,044**	**75 (69 - 80)**	**3,229**	**1.36 (1.28-1.43)**	**2.20 (2.10-2.30)**	**2.73 (2.62-2.85)**	**3.20 (3.07-3.32)**	**4.05 (3.90-4.20)**	**6.16 (5.84-6.49)**
PALACOS R+G	68,424	75 (69 - 80)	2,462	1.40 (1.31-1.49)	2.26 (2.14-2.37)	2.77 (2.64-2.90)	3.20 (3.06-3.34)	3.96 (3.79-4.13)	6.10 (5.67-6.52)
Refobacin Bone Cement R	6,018	76 (71 - 80)	203	1.11 (0.84-1.37)	1.87 (1.52-2.22)	2.26 (1.87-2.65)	2.77 (2.32-3.21)	3.76 (3.21-4.30)	4.92 (4.12-5.71)
PALACOS MV+G	3,698	76 (72 - 81)	117	1.21 (0.85-1.56)	1.75 (1.32-2.18)	2.38 (1.86-2.90)	3.25 (2.61-3.88)	3.78 (3.06-4.50)	n.a.
Simplex ABC TOBRA	1,803	74 (68 - 79)	117	1.63 (1.04-2.21)	2.68 (1.92-3.44)	3.32 (2.47-4.16)	4.06 (3.11-5.01)	5.92 (4.74-7.10)	8.60 (6.99-10.21)
Simplex ABC EC	1,795	68 (57 - 75)	105	1.74 (1.13-2.34)	2.60 (1.86-3.34)	3.61 (2.74-4.49)	4.06 (3.13-4.99)	5.74 (4.58-6.91)	10.28 (7.11-13.45)
Simplex P	1,105*	76 (72 - 80)	26	0.82 (0.28-1.35)	1.65 (0.89-2.41)	1.65 (0.89-2.41)	1.86 (1.05-2.68)	2.40 (1.44-3.37)	n.a.
Refobacin Plus Bone Cement	490*	77 (72 - 81)	22	1.43 (0.38-2.48)	2.68 (1.24-4.12)	3.33 (1.73-4.94)	3.79 (2.07-5.52)	4.42 (2.50-6.34)	5.21 (3.01-7.40)
Simplex HV	475*	77 (72 - 81)	13	0.85 (0.02-1.67)	0.85 (0.02-1.67)	1.78 (0.56-3.01)	2.55 (1.06-4.05)	3.50 (1.46-5.54)	n.a.
Subiton G	448	79 (75 - 83)	14	1.14 (0.15-2.13)	2.44 (0.94-3.94)	3.44 (1.58-5.31)	n.a.	n.a.	n.a.
Biomet Plus Bone Cement	426*	74 (70 - 79)	27	0.47 (0.00-1.12)	1.21 (0.15-2.26)	2.24 (0.79-3.68)	3.05 (1.35-4.75)	4.21 (2.18-6.23)	7.85 (4.78-10.93)
PALAMED G	406*	75 (71 - 81)	12	0.25 (0.00-0.74)	0.50 (0.00-1.20)	1.03 (0.03-2.04)	1.58 (0.33-2.84)	2.79 (1.08-4.50)	3.53 (1.55-5.51)
CMW 1 GENTAMICIN Bone Cement	275*	72 (67 - 77)	13	1.09 (0.00-2.32)	1.84 (0.24-3.44)	1.84 (0.24-3.44)	1.84 (0.24-3.44)	2.82 (0.74-4.90)	n.a.
PALACOS R	261	79 (74 - 83)	13	1.15 (0.00-2.45)	1.57 (0.04-3.09)	2.88 (0.77-4.98)	3.87 (1.38-6.36)	5.71 (2.50-8.92)	n.a.
PALAMED	256*	74 (70 - 79)	27	1.17 (0.00-2.49)	2.74 (0.74-4.74)	3.94 (1.55-6.34)	3.94 (1.55-6.34)	6.56 (3.44-9.67)	11.70 (7.53-15.87)
Pre-packed in a vacuum mixing system	**47,185**	**77 (72 - 81)**	**1,387**	**1.82 (1.70-1.95)**	**2.55 (2.40-2.70)**	**3.07 (2.90-3.25)**	**3.57 (3.36-3.77)**	**4.30 (4.02-4.59)**	**5.61 (4.77-6.45)**
PALACOS R+G	22,604	77 (71 - 81)	610	1.95 (1.77-2.13)	2.61 (2.39-2.83)	3.12 (2.85-3.38)	3.59 (3.25-3.92)	4.08 (3.58-4.57)	n.a.
Refobacin Bone Cement R	19,842	77 (72 - 81)	636	1.84 (1.65-2.03)	2.63 (2.40-2.86)	3.19 (2.93-3.46)	3.71 (3.40-4.01)	4.48 (4.07-4.90)	n.a.
Refobacin Plus Bone Cement	3,979*	77 (72 - 82)	118	1.03 (0.72-1.35)	1.82 (1.40-2.24)	2.23 (1.75-2.70)	2.77 (2.22-3.32)	3.35 (2.70-3.99)	n.a.
Cemex Genta	324*	80 (75 - 83)	10	0.93 (0.00-1.99)	1.89 (0.39-3.39)	2.23 (0.60-3.87)	2.23 (0.60-3.87)	3.81 (1.40-6.22)	n.a.

* Denotes types of bone cement with no reported use in primary THAs in 2025.

Please note: n.a. if <50 cases were at risk; THA: total hip arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | H024

Only types of bone cement with over 250 procedures have been listed.

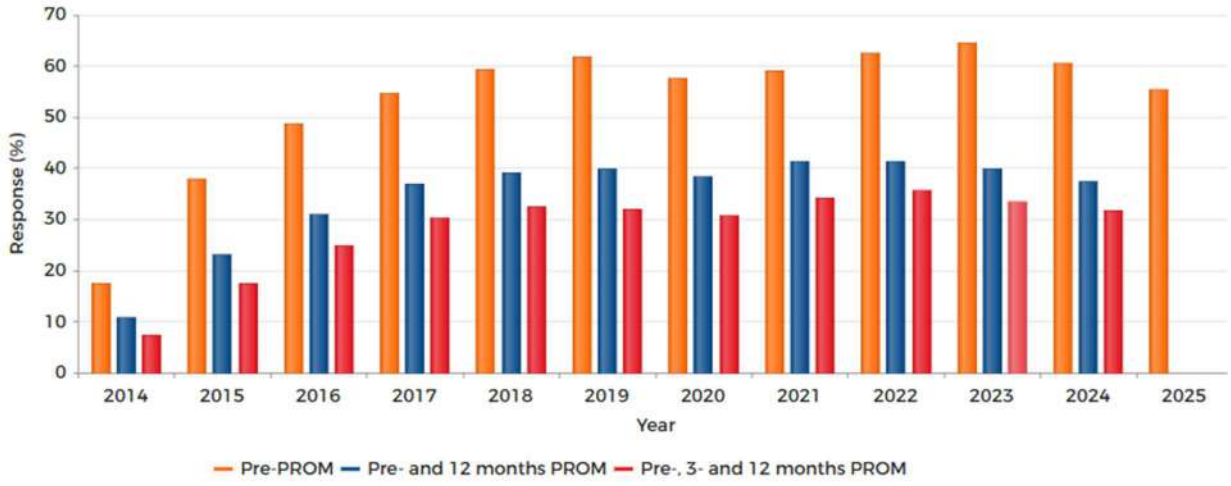
Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure, femoral head size and articulation of the prosthesis may have influenced the cumulative revision percentages.

PROMs

Response

Per year

FIGURE Pre-operative, 3 months and 12 months postoperative response percentage of patients who underwent a THA in the Netherlands in 2014-2025



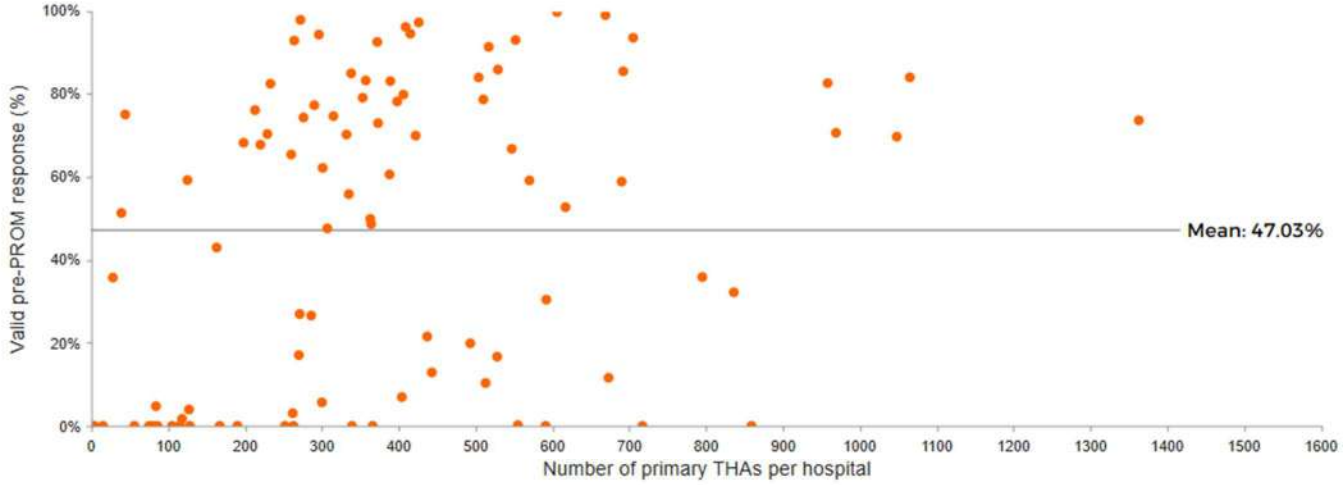
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Pre-PROM	17.41	37.97	48.78	54.60	59.42	61.86	57.47	59.03	62.61	64.40	60.48	55.28
Pre- and 12 months PROM	10.80	23.01	31.11	36.82	39.05	39.81	38.27	41.32	41.40	39.87	37.49	n.a.
Pre-, 3- and 12 months PROM	7.38	17.55	24.87	30.32	32.40	32.08	30.83	34.14	35.57	33.45	31.66	n.a.
Primary THAs (n)	**27,041**	**27,510**	**28,051**	**28,739**	**30,021**	**31,239**	**25,514**	**29,714**	**34,581**	**34,680**	**34,840**	35,604

Please note: The 3 and 12 months postoperative PROMs response percentage is not (yet) available for 2025.
Procedures performed for fracture diagnoses were excluded from the response analysis because preoperative PROMs are generally not collected in this patient group.
THA: total hip arthroplasty; PROM: patient reported outcome measure.

© LROI 2026 | H029A
© LROI 2026 | H029B

Pre-PROM per hospital

FIGURE Scatterplot of pre-operative response percentage of patients who underwent a primary THA per hospital in the Netherlands in 2025



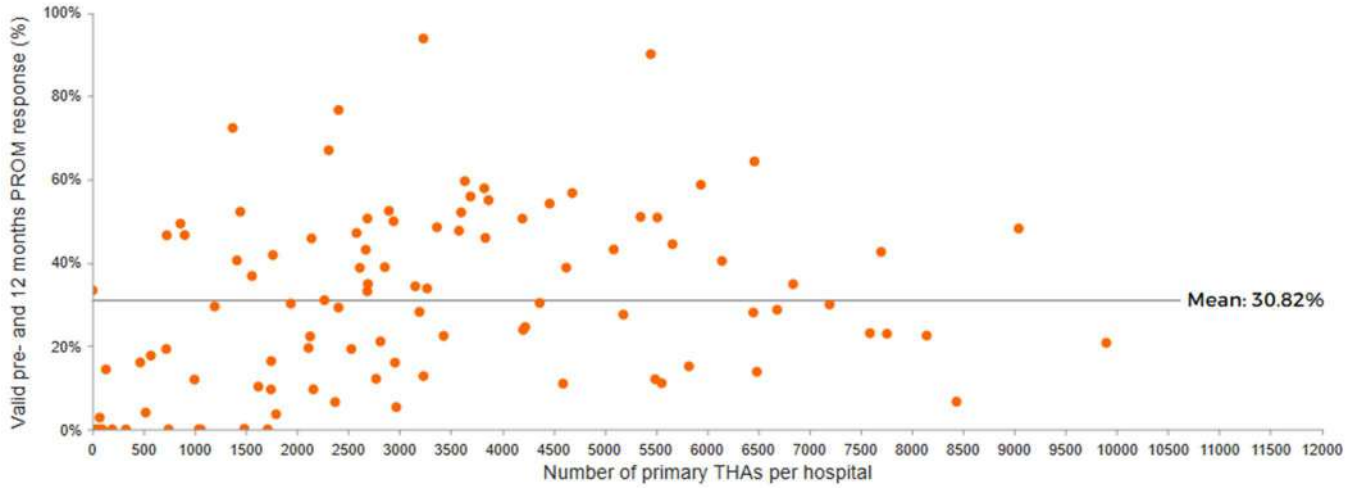
Please note: Procedures performed for fracture diagnoses were excluded from the response analysis because preoperative PROMs are generally not collected in this patient group.
THA: total hip arthroplasty; PROM: patient reported outcome measure.

© LROI 2026 | H031

The mean pre-operative response rate is 47.0% in the Netherlands in 2025.
Of the 92 hospitals, 43 (47%) scored above the 60% response rate.

PROM trajectory per hospital

FIGURE Scatterplot of PROM trajectory (pre-operative and 12 months postoperative) response percentage of patients who underwent a primary THA per hospital in the Netherlands in 2014-2024



Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.
Procedures performed for fracture diagnoses were excluded from the response analysis because preoperative PROMs are generally not collected in this patient group.
THA: total hip arthroplasty; PROM: patient reported outcome measure.

© LROI 2026 | H032

The mean PROM trajectory response rate was 30.8% in the Netherlands between 2014-2024.
Of the 102 hospitals, 6 (6%) scored above the 60% response rate.

Patient characteristics

Responders vs non-responders

TABLE Patient characteristics of PROM responders and non-responders after primary total hip arthroplasty in the Netherlands in 2020-2024

	Non-responder	Pre- and 12-month PROM respondents	Total
N(%)	**106,347 (62.6)**	**63,345 (37.4)**	**169,692**
Mean age (years) (SD)	69.6 (11.3)	68.7 (9.7)	69.3 (10.8)
Age (years) (%)			
<50	4	3	4
50-59	12	14	13
60-69	27	32	29
70-79	39	40	39
>80	17	11	15
Sex (%)			
Male	36	37	36
Female	64	63	64
ASA class (%)			
ASA I	12	16	14
ASA II	59	62	61
ASA III-IV	28	21	26
Type of hospital (%)			
General	84	75	81
UMC	3	1	2
Private	14	24	17
Diagnosis (%)			
Osteoarthritis	82	94	86
Fracture	9	0	6
Other	9	6	8
Mean BMI (kg/m2) (SD)	27.1 (4.7)	27.2 (4.4)	27.1 (4.6)
Revision within 1 yr (%)			
No revision within 1 yr	98	99	98
Revision within 1 yr	2	1	2

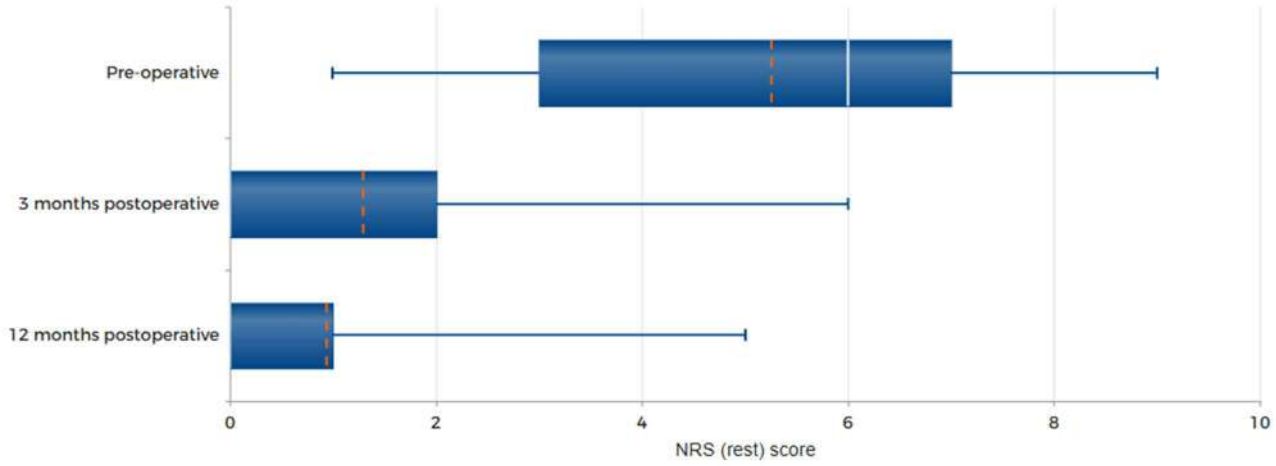
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | H030

Outcomes

NRS (rest)

FIGURE Boxplots of pre-operative, 3-months and 12-months postoperative NRS (rest) scores of patients who underwent a primary THA in the Netherlands in 2020-2024



© LROI 2026 | H033A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (rest) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total hip arthroplasty	52,516	6.00 (3.00-7.00)	0.00 (0.00-2.00)	0.00 (0.00-1.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

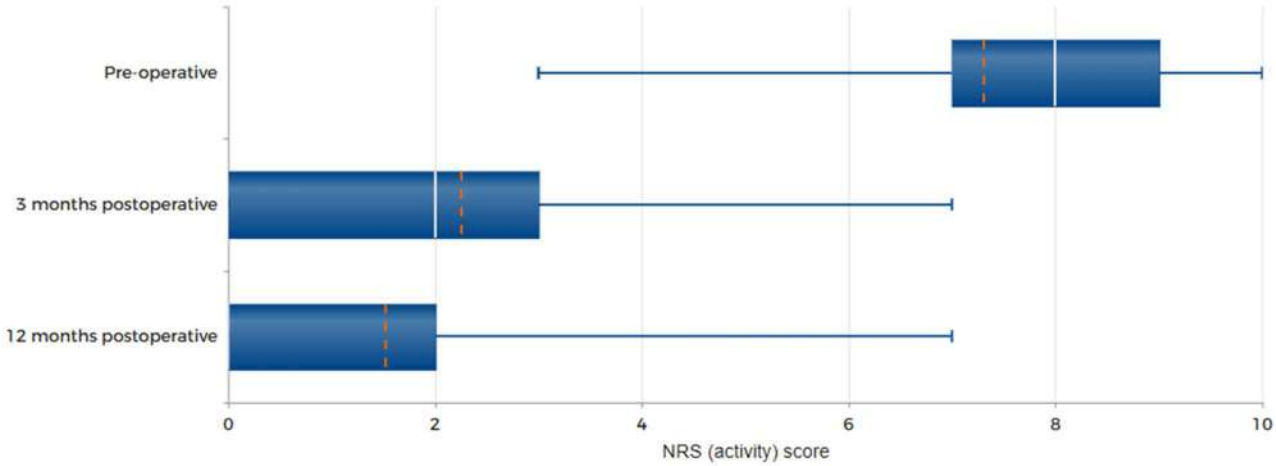
THA: total hip arthroplasty; IQR: interquartile range

© LROI 2026 | H033B

The NRS (rest) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

NRS (activity)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (activity) scores of patients who underwent a THA in the Netherlands in 2020-2024



© LROI 2026 | H034A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (activity) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total hip arthroplasty	52,551	8.00 (7.00-9.00)	2.00 (0.00-3.00)	0.00 (0.00-2.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

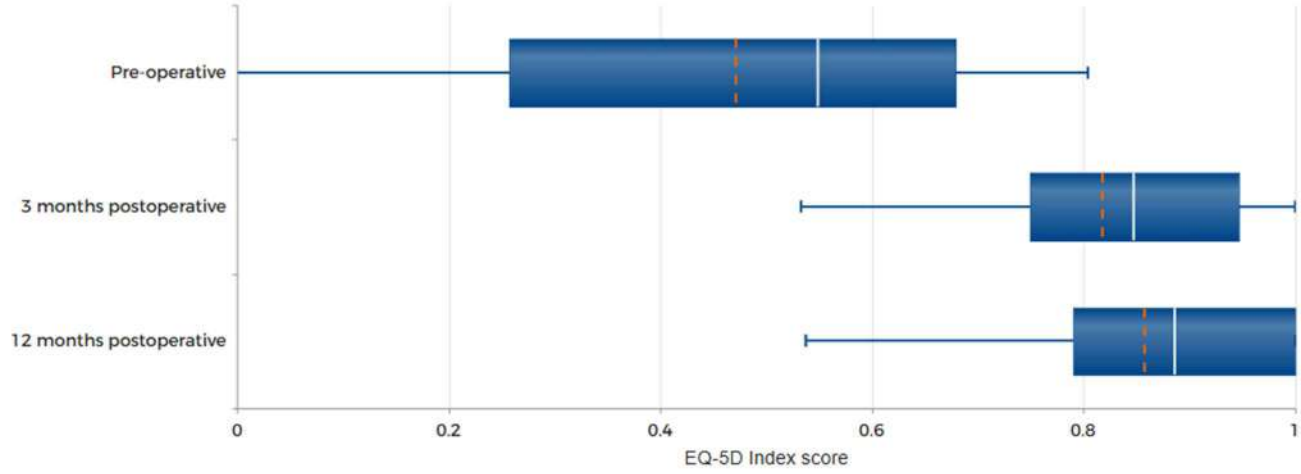
THA: total hip arthroplasty; IQR: interquartile range

© LROI 2026 | H034B

The NRS (activity) score measures pain during activity. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

EQ-5D Index score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D index scores of patients who underwent a THA in the Netherlands in 2020-2024



© LROI 2026 | H035A

EQ-5D Index score	N	Pre-operative Median (IQR)	3 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Total hip arthroplasty	52,383	0.55 (0.26-0.68)	0.85 (0.75-0.95)	0.89 (0.79-1.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

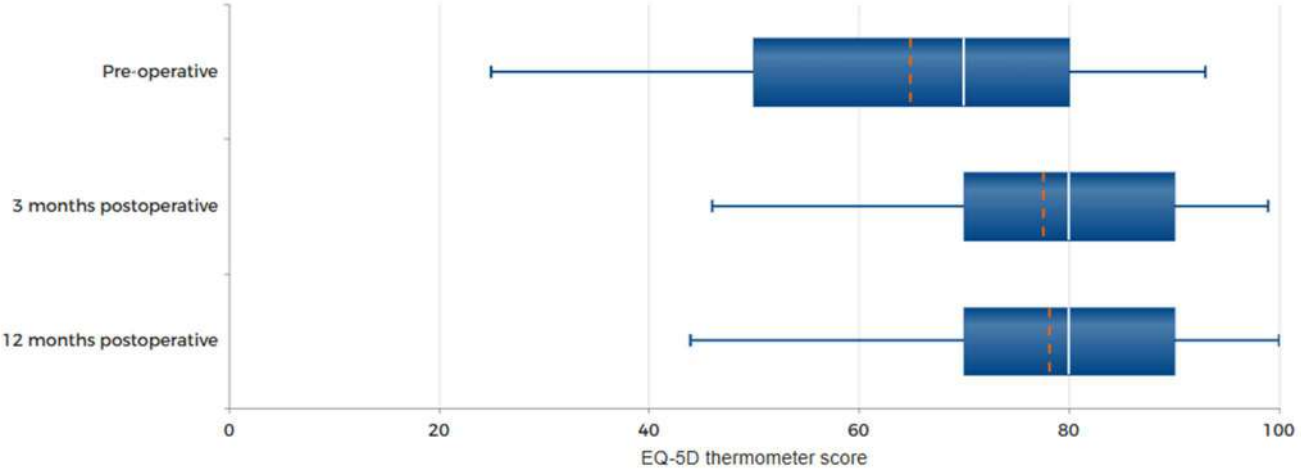
THA: total hip arthroplasty; IQR: interquartile range

© LROI 2026 | H035B

The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.

EQ-5D thermometer

FIGURE Boxplots of preoperative, 3-months and 12-months postoperative EQ-5D thermometer scores after primary THA in the Netherlands in 2020-2024



© LROI 2026 | H036A

EQ-5D thermometer score	N	Pre-operative Median (IQR)	3 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Total hip arthroplasty	52,358	70.00 (50.00-80.00)	80.00 (70.00-90.00)	80.00 (70.00-90.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

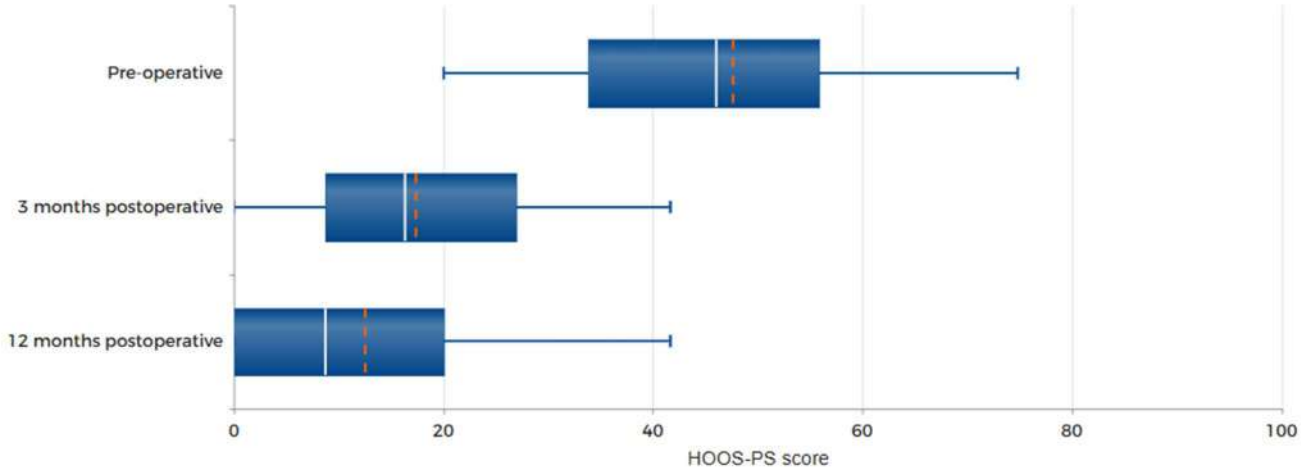
THA: total hip arthroplasty; IQR: interquartile range

© LROI 2026 | H036B

The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation.

HOOS-PS score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative HOOS-PS scores of patients who underwent a THA in the Netherlands in 2020-2024



© LROI 2026 | H037A

HOOS-PS score	N	Pre-operative Median (IQR)	3 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Total hip arthroplasty	48,986	46.10 (33.90-55.90)	16.40 (8.80-26.90)	8.80 (0.00-20.00)

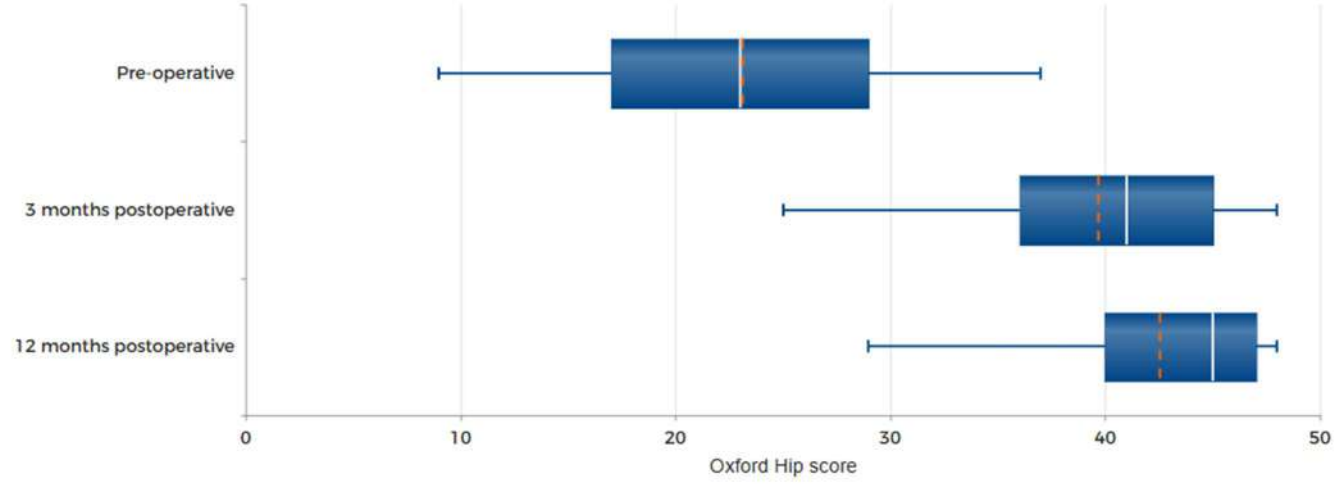
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
THA: total hip arthroplasty; IQR: interquartile range

© LROI 2026 | H037B

The HOOS-PS score measures the physical functioning of patients with osteoarthritis to the hip. The score has a range of 0.0 to 100.0, with 0.0 representing no effort and 100.0 the most possible effort.

Oxford Hip Score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative Oxford Hip scores of patients who underwent a THA in the Netherlands in 2020-2024



© LROI 2026 | H038A

Oxford Hip score	N	Pre-operative Median (IQR)	3 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Total hip arthroplasty	51,005	23.00 (17.00-29.00)	41.00 (36.00-45.00)	45.00 (40.00-47.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
THA: total hip arthroplasty; IQR: interquartile range

© LROI 2026 | H038B

The Oxford Hip score measures the physical functioning and pain of patients with osteoarthritis to the hip. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 the most functional ability.

Hip hemiarthroplasty

In this section you will find all the information on hip hemiarthroplasty:

Patient characteristics

By specialism

TABLE Patient characteristics of all patients with a primary hemiarthroplasty by specialism in the Netherlands in 2025

	Orthopaedic surgery	Trauma surgery	Total
N(%)	**4,293 (69.4)**	**1,888 (30.6)**	**6,189**
Mean age (years) (SD)	80.6 (8.7)	81.2 (7.8)	80.8 (8.4)
Age (years) (%)			
<50	1	0	1
50-59	2	1	2
60-69	7	6	6
70-79	31	32	32
>80	59	61	60
Sex (%)			
Male	37	37	37
Female	63	63	63
ASA class (%)			
ASA I	2	2	2
ASA II	29	29	29
ASA III-IV	69	69	69
Type of hospital (%)			
General	97	96	97
UMC	2	4	3
Private	1	0	1
Diagnosis (%)			
Fracture	88	93	89
Osteoarthritis	8	1	6
Post-traumatic	0	0	0
Tumour	0	0	1
Osteonecrosis	0	0	0
Dysplasia	0	0	0
Rheumatoid arthritis	0	0	0
Post-Perthes	0	0	0
Other	1	5	3
Charnley-score (%)			
A One hip joint affected	7	4	7
B1 Both hip joints affected	3	4	4
B2 Contralateral hip with a THA	5	2	4
C Multiple joints affected or chronic disease that affects quality of life	2	1	2
Mean BMI (kg/m2) (SD)	24.9 (4.4)	24.6 (4.7)	24.8 (4.5)
Body Mass Index (kg/m2) (%)			
Underweight (<=18.5)	4	5	5
Normal weight (>18.5-25)	49	50	54
Overweight (>25-30)	29	25	31
Obesity (>30-40)	9	8	10
Morbid obesity (>40)	0	0	0
Smoking (%)			
No	88	78	89
Yes	10	12	11

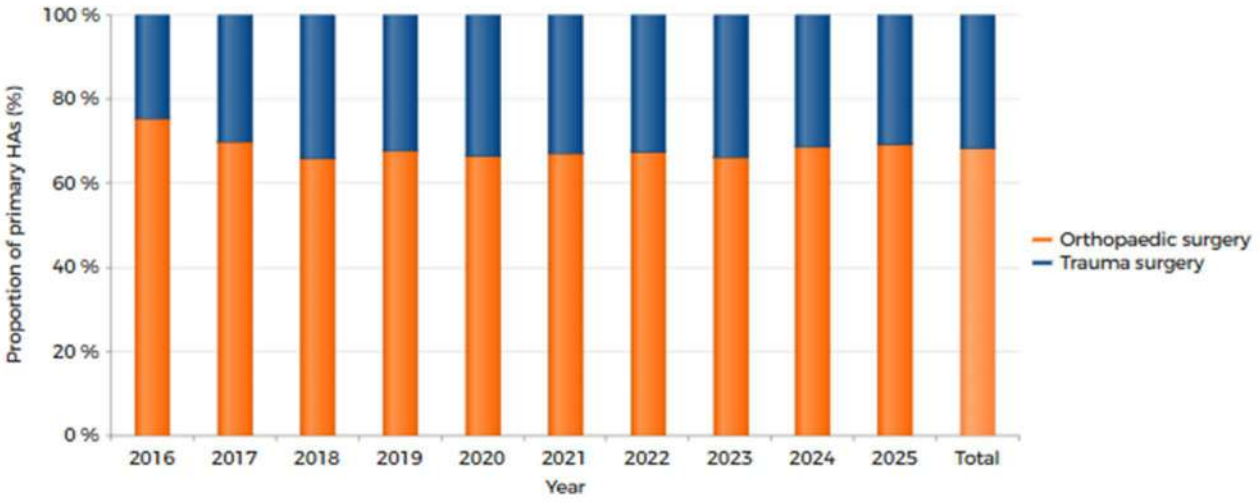
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | H039

Procedure characteristics

Specialism

FIGURE Trend (proportion [%] per year) in specialism for performing a primary hemiarthroplasty in the Netherlands in 2016-2025



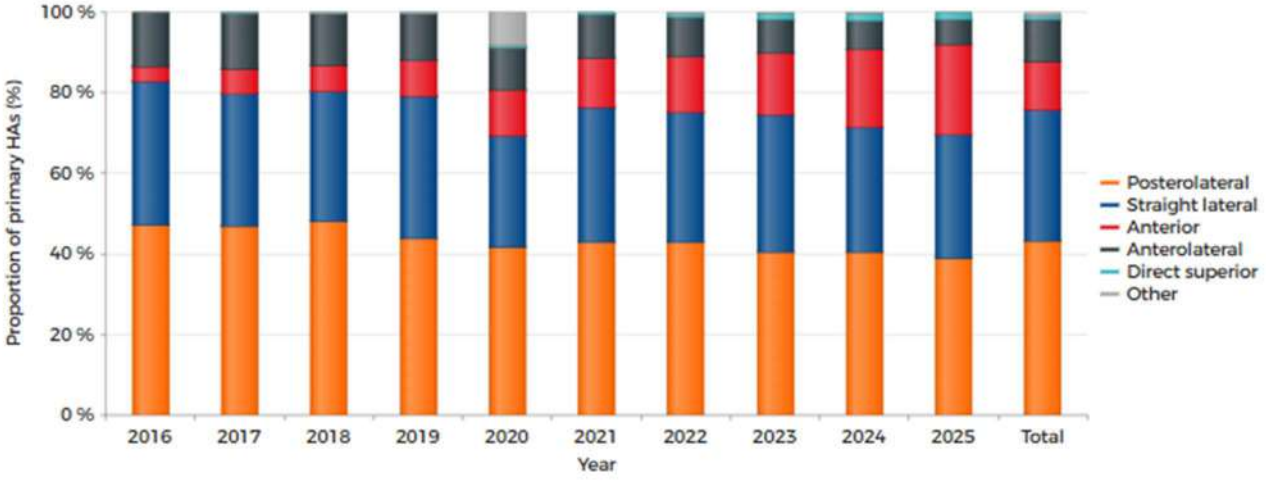
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Orthopaedic surgery	75.35	69.84	66.04	67.69	66.50	67.28	67.40	66.19	68.71	69.45	68.31
Trauma surgery	24.65	30.16	33.96	32.31	33.50	32.72	32.60	33.81	31.29	30.55	31.69
Total (n)	**5,261**	**5,727**	**6,080**	**6,295**	**6,534**	**6,110**	**6,457**	**6,351**	**6,379**	**6,181**	**61,375**

HA: hemiarthroplasty

© LROI 2026 | H040

Surgical approach

FIGURE Trend (proportion [%] per year) in surgical approach for performing a primary hemiarthroplasty in the Netherlands in 2016-2025



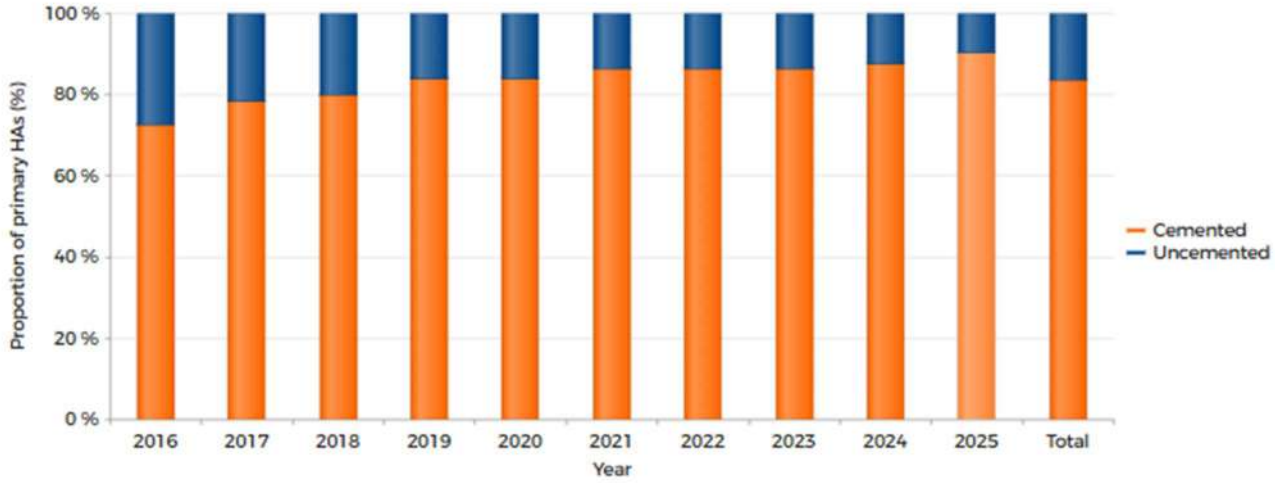
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Posterolateral	47.36	46.81	48.26	43.72	41.59	42.83	42.86	40.56	40.42	39.03	43.27
Straight lateral	35.48	32.95	32.07	35.57	27.87	33.62	32.40	33.98	30.94	30.60	32.49
Anterior	3.62	6.04	6.62	8.67	11.12	12.07	13.62	15.23	19.30	22.37	11.98
Anterolateral	13.41	13.91	12.65	11.69	10.47	10.98	9.79	8.48	7.13	6.06	10.40
Direct superior	0	0.17	0.11	0.19	0.69	0.45	1.17	1.55	2.00	1.82	0.83
Other	0.13	0.12	0.29	0.16	8.26	0.05	0.17	0.21	0.21	0.11	1.02
Total (n)	**5,443**	**5,915**	**6,239**	**6,286**	**6,513**	**5,991**	**6,433**	**6,336**	**6,254**	**6,101**	**61,511**

HA: hemiarthroplasty

© LROI 2026 | H041

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary hemiarthroplasty in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Cemented	72.70	78.59	80.05	83.90	84.07	86.45	86.40	86.64	87.78	90.57	83.88
Uncemented	27.30	21.41	19.95	16.10	15.93	13.55	13.60	13.36	12.22	9.43	16.12
Total (n)	**5,345**	**5,815**	**6,111**	**6,187**	**6,345**	**6,046**	**6,389**	**6,279**	**6,163**	**5,952**	**60,632**

HA: hemiarthroplasty

© LROI 2026 | H042

Most frequently registered – Femur

TABLE The most frequently registered femur components in primary hemiarthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Femur (n)	**5,825**	**6,045**	**6,132**	**6,139**	**5,982**
Femur name; Proportion (%)					
Lubinus SPII	19.11	23.36	22.29	24.35	26.21
Original ME Muller	25.29	25.01	25.24	25.02	22.95
Corail Cemented	3.00	4.37	7.91	7.28	7.69
Polarstem cemented	0.60	1.24	1.14	4.43	7.39
Avenir Muller	1.61	1.72	2.07	2.15	5.45
C-Stem AMT	6.75	5.62	5.33	4.81	5.42
CCA stem	8.57	6.57	5.50	4.35	5.12
EXETER	1.42	3.26	1.94	2.95	3.88
Lubinus Classic Plus	3.16	2.83	2.64	3.16	3.09
Corail AMT	2.64	2.71	2.28	2.85	3.01

© LROI 2026 | H043

Most frequently registered - Femoral head

TABLE The most frequently registered femoral head components in primary hemiarthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Femoral head component (n)	**5,768**	**6,051**	**6,111**	**6,018**	**6,002**
Femoral head name; Proportion (%)					
ZimmerBiomet Unipolar Head	28.28	26.69	27.00	27.60	23.86
Link CoCr head	22.04	25.96	22.76	22.32	20.78
Link Modular Cathcard Unipolar head	13.56	12.91	16.31	16.20	15.84
Link Modular trauma head	1.01	1.75	4.04	4.67	8.45
Mathys Stainless Steel head	9.41	8.74	8.07	6.80	7.31
ZimmerBiomet Versys Endo	5.65	6.31	6.40	6.23	5.98
Smith & Nephew Oxinium Head	0.57	0.78	0.67	3.76	4.73
Stryker UHR Unitrax	3.71	5.12	4.29	3.77	3.55
Smith & Nephew Uni-polar	4.13	2.21	2.31	1.91	3.22
ZimmerBiomet CoCR Modular Heads	0.97	1.26	0.88	2.69	1.98

© LROI 2026 | H044

Most frequently registered - Bone cement

TABLE The most frequently registered bone cement used during primary hemiarthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement pre-packed in a vacuum mixing system (n)	**2,846**	**3,113**	**3,240**	**3,243**	**3,162**
Cement name; Proportion (%)					
PALACOS R+G	49.79	49.25	57.50	54.67	50.38
Refobacin Bone Cement R	43.64	43.98	37.93	45.08	45.29
COPAL G+C	0.00	0.00	0.00	0.09	4.33
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Separately packed bone cement (n)	**1,586**	**1,497**	**1,348**	**1,504**	**1,168**
Cement name; Proportion (%)					
PALACOS R+G	76.04	79.49	65.28	69.28	71.49
Simplex ABC TOBRA	0.00	0.27	0.96	5.65	12.50
PALACOS MV+G	6.05	6.35	7.27	8.44	11.22
Simplex ABC EC	0.25	0.33	0.82	1.80	2.40
Refobacin Bone Cement R	1.13	1.14	12.76	1.40	1.20
COPAL G+C	10.91	11.36	11.94	13.16	0.68
Biomet Bone Cement R	0.00	0.00	0.00	0.00	0.43
Refobacin Revision	0.06	0.07	0.07	0.07	0.09

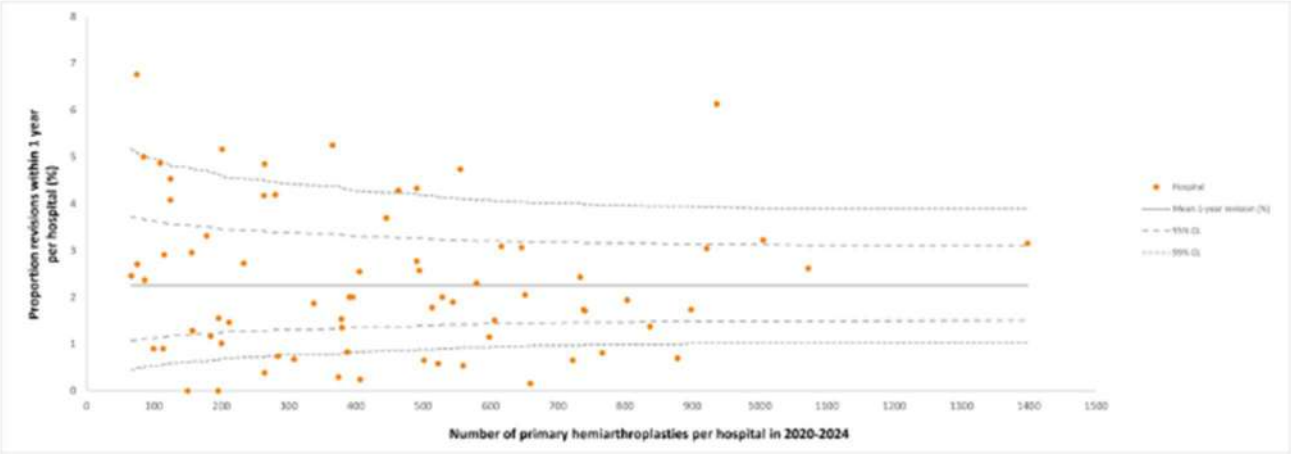
© LROI 2026 | H045

Survival

Short term revision

Overall revision per hospital

Funnel plot of proportion of hip revision arthroplasties within one year after a hemiarthroplasty per hospital in the Netherlands in 2020-2024 (n=31,845)



Please note: The proportions of revisions within 1 year per hospital were adjusted for casemix factors age, gender, ASA score, BMI and smoking; CL: control limits.

The mean 1-year revision percentage is 2.26 in the Netherlands in 2020-2024.
Control limits indicate the plausible range of outcome if all hospitals perform equally well.

Revision and mortality rates within 1 year

TABLE Revision procedures and mortality within 1 year after primary hemiarthroplasty by year in the Netherlands in 2020-2024

Procedure year	Number of hemiarthroplasties	Number of revisions	Percentage revisions	Number of deaths	Percentage deaths
2020	6,511	135	2.1%	1,565	24.0%
2021	6,116	123	2.0%	1,455	23.8%
2022	6,490	157	2.4%	1,459	22.5%
2023	6,359	153	2.4%	1,209	19.0%
2024	6,369	150	2.4%	1,084	17.0%

© LROI 2026 | H046

By type of revision within 1 year

TABLE Cumulative 1-year revision percentage of primary hemiarthroplasties by type of revision in the Netherlands in 2020-2024 (n=31,845)

	Cumulative 1-year revision percentage
	Kaplan Meier (95% CI)
Any type of revision	2.35 (2.18-2.52)
Major revision	1.41 (1.27-1.55)
Minor revision	0.90 (0.79-1.01)
DAIR	0.74 (0.65-0.84)
No DAIR	0.16 (0.11-0.20)

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.
Major revision: revision of the femur component.
Minor revision: only femoral head exchange (including DAIR procedures).
HA: hemiarthroplasty; CI: confidence interval

© LROI 2026 | H047

In 2020-2024, 6,772 (21.3%) primary HAs were implanted in patients who died within one year after the primary procedure.

Reasons for revision within 1 year

TABLE Reasons for revision within one year of primary hemiarthroplasties by type of revision in the Netherlands in 2020-2024

	Major revision (n=461)	Minor revision (n=273)	Any type of revision (n=718)
Reasons for revision	**Proportion (%)**	**Proportion (%)**	**Proportion (%)**
Infection	17.57	82.78	40.81
Dislocation	46.64	9.16	33.15
Peri-prosthetic fracture	16.49	1.47	11.00
Loosening of femur component	7.16	0.00	4.74
Malposition or malalignment	4.99	1.10	3.62
Girdlestone situation	2.60	0.00	0.97
Inlay wear	1.52	0.00	0.97
Peri-articular ossification	1.08	0.00	0.56
Symptomatic MoM bearing	0.00	0.00	0.00
Other	17.79	7.69	14.21

Major revision: first revision of the femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
Minor revision: only inlay and/or femoral head exchange (including DAIR procedures).
Any type of revision includes all first revisions, including revision procedures that could not be classified as minor or major revision.
Please note: More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.
Please note: Malposition or malalignment has been registered since 2022.

© LROI 2026 | H048

Conversion to total hip arthroplasty

TABLE Conversions from primary hemiarthroplasty to total hip arthroplasty within 1 year in the period 2020-2024 (n=31,845)

Number of revision procedures	718
Number of conversions	331
Percentage conversions	46.1 %

© LROI 2026 | H049

Time after primary hemi

TABLE Time after primary hemiarthroplasty until short-term revision in the Netherlands in 2018-2022 (n=31,707)

Time after primary HA	Percentage revisions (%)
Day 0-29	1.20
Day 30-182	0.67
Day 183-364	0.23
Day 365-730 (second year)	0.50
Day 731-1095 (third year)	0.26

HA: hemiarthroplasty

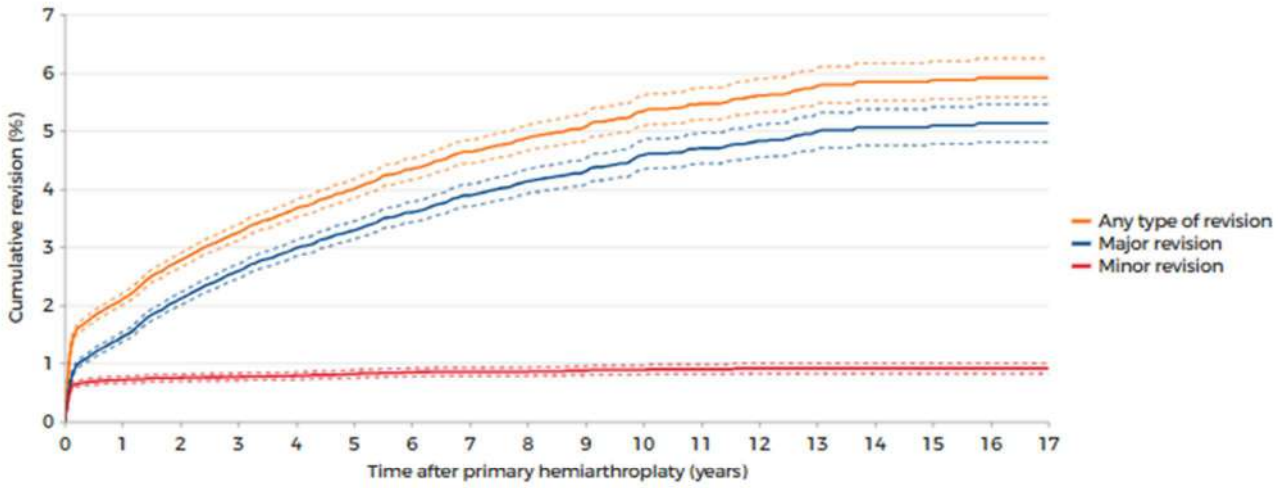
© LROI 2026 | H050

In 2018-2022, 13,966 (44.0%) primary HAs were implanted in patients who died within three years after the primary procedure.

Long term revision

By type of revision

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of hemiarthroplasties by type of revision in the Netherlands in 2007-2025 (n=86,163)



© LROI 2026 | H051A

	1yr	3yr	5yr	7yr	10yr	17yr
Any type of revision	2.04 (1.94-2.14)	3.21 (3.08-3.35)	3.97 (3.80-4.13)	4.64 (4.44-4.84)	5.32 (5.06-5.58)	5.91 (5.57-6.24)
Major revision	1.39 (1.31-1.47)	2.54 (2.42-2.67)	3.26 (3.11-3.42)	3.89 (3.69-4.08)	4.55 (4.31-4.80)	5.13 (4.80-5.45)
Minor revision	0.71 (0.65-0.77)	0.77 (0.71-0.83)	0.81 (0.75-0.88)	0.86 (0.78-0.93)	0.88 (0.81-0.96)	0.91 (0.83-1.00)

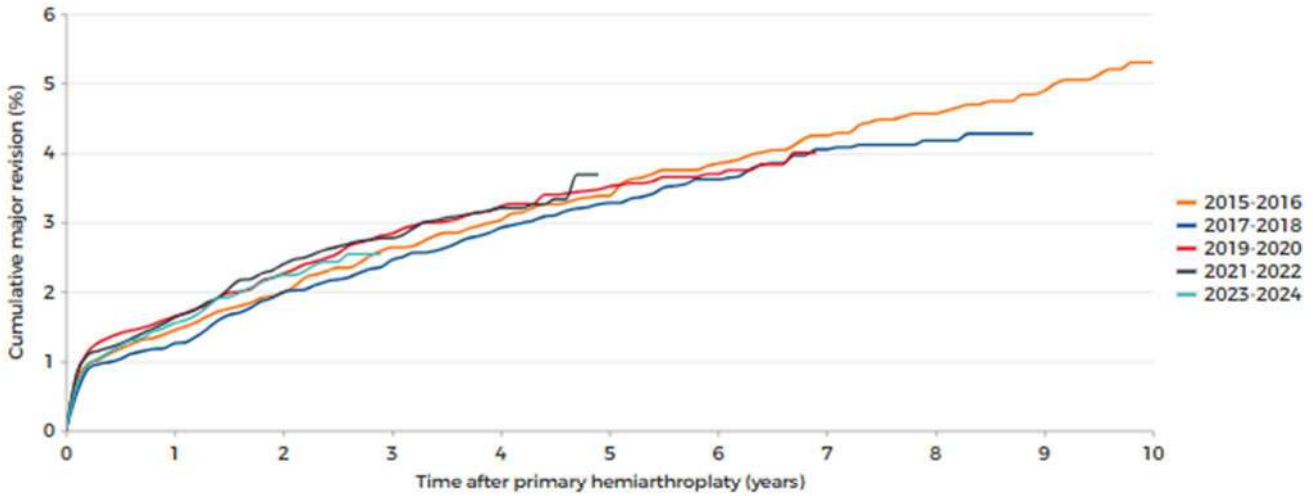
Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.
Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.
Major revision: first revision of the femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
Minor revision: only femoral head exchange (including DAIR procedures).
HA: hemiarthroplasty; CI: confidence interval.

© LROI 2026 | H051B

17,881 (20.8%) of primary hemiarthroplasties were implanted in patients who died within one year, 41,726 (48.4%) within five years, 49,561 (57.5%) within ten years, and 50,612 (58.7%) within seventeen years after the primary procedure.
It is important to note that the Kaplan-Meier method estimates the proportion of failed prostheses assuming patients live indefinitely.

By procedure year

FIGURE Cumulative major revision percentage (Kaplan-Meier; 95% CI) of hemiarthroplasties by procedure year of primary HA in the Netherlands in 2015-2024 (n=60,669)



© LROI 2026 | H052A

	Number (n)	1yr	3yr	5yr	7yr	10yr
2015-2016	10,376	1.38 (1.14-1.62)	2.59 (2.23-2.94)	3.38 (2.95-3.81)	4.25 (3.72-4.78)	5.30 (4.60-6.01)
2017-2018	12,259	1.18 (0.98-1.38)	2.35 (2.05-2.66)	3.26 (2.87-3.64)	4.05 (3.58-4.52)	n.a.
2019-2020	12,781	1.59 (1.36-1.82)	2.81 (2.48-3.13)	3.47 (3.09-3.86)	4.00 (3.44-4.56)	n.a.
2021-2022	12,606	1.54 (1.31-1.76)	2.77 (2.45-3.09)	3.69 (3.11-4.26)	n.a.	n.a.
2023-2024	12,728	1.47 (1.26-1.69)	2.54 (2.18-2.91)	n.a.	n.a.	n.a.

Please note: n.a. if <50 cases were at risk.
Major revision precentage: first revision of the femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
HA: hemiarthroplasty; CI: confidence interval.

© LROI 2026 | H052B

13,526 (22.3%) of primary hemiarthroplasties were implanted in patients who died within one year, 31,960 (52.7%) within five years, and 36,517 (60.2%) within ten years.

It is important to note that the Kaplan-Meier method estimates the proportion of failed prostheses assuming patients live indefinitely.

Reasons for revision within 10 years

TABLE Reasons for revision within ten years of primary hip hemiarthroplasties by type of revision in the Netherlands in 2007-2025

	Major revision (n=2,101)	Minor revision (n=587)	Any type of revision (n=2,662)
Reasons for revision	**Proportion (%)**	**Proportion (%)**	**Proportion (%)**
Infection	11.95	75.30	24.64
Dislocation	27.46	12.61	24.23
Peri-prosthetic fracture	17.09	1.87	13.82
Loosening of femur component	12.57	0.34	9.88
Inlay wear	3.05	0.51	2.59
Malposition or malalignment	2.33	0.51	1.99
Girdlestone situation	2.43	0.17	1.65
Peri-articular ossification	1.48	0.34	1.20
Symptomatic MoM bearing	0.38	0.17	0.34
Other	33.46	10.90	28.70

Major revision: first revision of the femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
Minor revision: only inlay and/or femoral head exchange (including DAIR procedures).
Any type of revision includes all first revisions, including revision procedures that could not be classified as minor or major revision.
Please note: More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.
Please note: Malposition or malalignment has been registered since 2022.

© LROI 2026 | H053

Survival by component

By cemented femur – fracture

TABLE Cumulative revision percentages of cemented primary hemiarthroplasties by femoral component in fracture patients treated by orthopaedic surgeons in the Netherlands in 2007-2025 (n=104,028)

					Type of revision (n)						Cumulative revision percentage (95% CI)					
Femur component	Primary HAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Total revision	Only femur	Only acetabulum	Only femoral head/inlay	Unknown	Of which conversion to THA	1yr	3yr	5yr	7yr	10yr	17yr
All cemented HAs for fracture	43,970	77	83 (78 - 88)	1,205	268	48	579	290	20	786	1.83 (1.69-1.96)	2.90 (2.72-3.08)	3.58 (3.35-3.80)	4.18 (3.90-4.45)	4.60 (4.27-4.93)	4.80 (4.43-5.16)
Original ME Muller	12,651	37	83 (78 - 88)	375	45	3	206	117	7	240	2.23 (1.96-2.50)	3.18 (2.84-3.52)	3.58 (3.20-3.96)	4.10 (3.63-4.57)	4.22 (3.72-4.72)	4.44 (3.86-5.02)
Lubinus SPII	11,280	50	83 (78 - 88)	260	61	4	128	62	5	182	1.50 (1.27-1.74)	2.60 (2.25-2.95)	3.14 (2.71-3.57)	3.78 (3.21-4.36)	4.47 (3.86-5.27)	4.64 (3.77-5.51)
EXETER	5,707	20	83 (78 - 88)	93	39	9	33	12	0	62	1.76 (1.32-2.20)	2.46 (1.91-3.01)	2.82 (2.21-3.43)	3.05 (2.39-3.71)	3.65 (2.80-4.49)	3.80 (2.91-4.69)
C-Stem AMT	2,588	5	84 (79 - 88)	73	21	14	21	17	0	32	2.05 (1.46-2.64)	3.28 (2.45-4.11)	4.48 (3.23-5.73)	6.22 (3.84-8.60)	n.a.	n.a.
STANMORE	2,272*	13	83 (78 - 88)	60	17	1	36	5	1	50	0.82 (0.43-1.21)	1.78 (1.16-2.40)	3.21 (2.27-4.16)	4.46 (3.22-5.70)	5.58 (3.92-7.25)	n.a.
CCA stem	1,971	14	84 (79 - 89)	49	7	2	24	15	1	30	1.37 (0.83-1.90)	2.10 (1.38-2.81)	3.72 (2.52-4.91)	4.45 (3.00-5.90)	4.45 (3.00-5.90)	n.a.
Spectron EF	1,858	17	83 (78 - 88)	64	14	1	31	17	1	44	2.36 (1.64-3.09)	3.56 (2.61-4.52)	4.02 (2.97-5.07)	4.63 (3.38-5.88)	5.55 (3.77-7.32)	n.a.
Corail Cemented	1,501	8	82 (76 - 87)	45	10	1	28	6	0	35	2.05 (1.20-2.85)	4.89 (3.19-6.19)	6.71 (4.26-9.16)	n.a.	n.a.	n.a.
CPT	1,034*	5	83 (77 - 87)	40	14	5	12	8	1	20	3.25 (2.12-4.38)	4.59 (3.12-6.05)	n.a.	n.a.	n.a.	n.a.
TAPERLOC Hip Cemented CoCr	679	5	85 (81 - 89)	16	8	0	10	0	0	16	0.83 (0.01-1.25)	2.56 (0.95-3.77)	4.02 (1.89-6.16)	4.69 (2.29-7.18)	n.a.	n.a.
Twinsys stem Cemented	591	5	84 (79 - 88)	14	4	1	4	4	1	6	2.01 (0.53-3.50)	3.61 (1.24-5.98)	4.95 (1.45-8.45)	n.a.	n.a.	n.a.
Polarstem cemented	570	4	82 (77 - 88)	11	2	3	3	3	0	5	2.27 (0.71-3.83)	n.a.	n.a.	n.a.	n.a.	n.a.
Basis	274*	8	85 (80 - 89)	8	4	0	4	0	0	8	1.16 (0.00-2.46)	3.16 (0.83-5.48)	3.16 (0.83-5.48)	4.19 (1.15-7.25)	4.19 (1.15-7.25)	n.a.
Avenir Muller	251	3	81 (77 - 87)	2	0	0	0	2	0	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Charnley	157*	3	82 (77 - 87)	3	3	0	0	0	0	2	1.50 (0.00-3.09)	2.22 (0.00-4.75)	2.22 (0.00-4.75)	2.22 (0.00-4.75)	2.22 (0.00-4.75)	n.a.
CS Plus	134*	3	84 (78 - 88)	5	3	0	2	0	0	4	0.80 (0.00-2.36)	4.59 (0.10-9.08)	n.a.	n.a.	n.a.	n.a.
Conquest	130*	3	85 (78 - 88)	2	0	0	1	0	1	0	0.87 (0.00-2.58)	2.51 (0.00-5.58)	n.a.	n.a.	n.a.	n.a.
MV40 Hip Stem	98*	3	83 (77 - 88)	4	0	0	2	1	1	2	4.55 (0.17-8.90)	n.a.	n.a.	n.a.	n.a.	n.a.

* Denotes prosthesis combinations with no reported use in primary HAs in 2025.

Please note: n.a. if <50 cases were at risk; HA: hemiarthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | H054

Only combinations with over 50 procedures and reported by at least 3 hospitals have been listed.

8,600 (21.2%) of primary hemiarthroplasties were implanted in patients who died within one year, 19,736 (48.7%) within five years, 23,165 (57.1%) within ten years, and 23,553 (58.1%) within sixteen years after the primary procedure.

It is important to note that the Kaplan-Meier method estimates the proportion of failed prostheses assuming patients live indefinitely.

By uncemented femur – fracture

TABLE Cumulative revision percentages of uncemented primary hemiarthroplasties by femoral component in fracture patients treated by orthopaedic surgeons in the Netherlands in 2007-2025 (n=13,444)

					Type of revision (n)						Cumulative revision percentage (95% CI)					
Femur component	Primary HAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Total revision	Only femur	Only acetabulum	Only femoral head/inlay	Unknown	Of which conversion to THA	1yr	3yr	5yr	7yr	10yr	17yr
All uncemented HAs for fracture	13,444	75	83 (78 - 88)	545	151	151	168	64	11	266	2.72 (2.43-3.00)	3.92 (3.56-4.29)	4.84 (4.22-5.07)	5.35 (4.88-5.84)	6.26 (5.65-6.87)	6.86 (6.09-7.63)
ACCOLADE	1,968*	7	84 (79 - 88)	111	28	48	19	11	5	35	3.79 (2.92-4.66)	5.16 (4.11-6.21)	5.79 (4.65-6.93)	6.56 (5.29-7.82)	7.84 (6.18-9.15)	n.a.
DB10	1,651*	12	84 (78 - 88)	74	27	15	29	5	0	45	2.51 (1.72-3.30)	3.75 (2.74-4.77)	4.54 (3.58-5.71)	5.42 (4.07-6.76)	6.60 (4.97-8.24)	7.74 (5.66-9.82)
Alloclassic Zweymuller SL	1,552	18	84 (80 - 88)	65	14	15	28	4	2	37	2.77 (1.91-3.63)	4.24 (3.10-5.39)	4.55 (3.32-5.74)	5.64 (4.10-7.18)	6.29 (4.52-8.06)	6.80 (4.77-8.82)
Corail AMT	1,374	15	83 (78 - 88)	55	4	5	22	2	0	26	1.07 (0.49-1.65)	2.60 (1.59-3.61)	3.56 (2.04-4.68)	4.00 (2.42-5.58)	5.55 (2.91-8.19)	n.a.
Twinsys stem Cementless	960	7	84 (79 - 88)	38	7	10	15	5	1	22	2.65 (1.59-3.67)	4.23 (2.72-5.74)	5.18 (3.55-7.04)	7.06 (4.24-9.89)	n.a.	n.a.
TAPERLOC Complete	752	17	84 (77 - 89)	22	6	5	6	5	0	10	2.46 (1.50-3.62)	3.09 (1.73-4.44)	3.40 (1.92-4.87)	3.40 (1.92-4.87)	n.a.	n.a.
SL Plus	393*	8	83 (77 - 88)	13	5	3	5	0	0	9	1.90 (0.50-3.30)	2.63 (0.92-4.35)	4.04 (1.72-6.36)	4.04 (1.72-6.36)	4.90 (2.08-7.75)	n.a.
SYMAX	205*	4	83 (78 - 87)	4	1	2	0	1	0	0	1.59 (0.00-3.39)	1.59 (0.00-3.39)	1.59 (0.00-3.39)	1.59 (0.00-3.39)	1.59 (0.00-3.39)	n.a.
TAPERLOC HIP system	183*	7	84 (79 - 88)	9	4	1	2	2	0	5	2.54 (0.07-5.01)	3.31 (0.43-6.19)	5.75 (1.39-10.10)	5.75 (1.39-10.10)	n.a.	n.a.
Polarstem	128	4	80 (75 - 85)	6	2	3	0	1	0	2	4.32 (0.59-8.04)	4.32 (0.59-8.04)	n.a.	n.a.	n.a.	n.a.
Alloclassic offset	118	6	85 (80 - 89)	7	1	3	3	0	0	4	4.46 (0.84-8.32)	5.82 (1.22-10.01)	n.a.	n.a.	n.a.	n.a.
Original ME Muller	80*	21	84 (76 - 89)	1	1	0	0	0	0	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lubinus SPII	61	14	84 (77 - 89)	3	1	0	2	0	0	3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

* Denotes prosthesis combinations with no reported use in primary HAs in 2025.

Please note: n.a. if <50 cases were at risk; HA: hemiarthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | H055

Only combinations with over 50 procedures and reported by at least 3 hospitals have been listed.

2,813 (21.4%) of primary hemiarthroplasties were implanted in patients who died within one year, 6,679 (50.9%) within five years, 8,177 (62.3%) within ten years, and 8,373 (63.8%) within sixteen years after the primary procedure.

It is important to note that the Kaplan-Meier method estimates the proportion of failed prostheses assuming patients live indefinitely.

By cemented femur - other diagnosis

TABLE Cumulative revision percentages of cemented primary hemiarthroplasties by femoral component in patients treated by orthopaedic surgeons for indications other than fracture in the Netherlands in 2007-2025 (n=3,940)

					Type of revision (n)						Cumulative revision percentage (95% CI)					
Femur component	Primary HAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Total revision	Only femur	Only acetabulum	Only femoral head/inlay	Unknown	Of which conversion to THA	1yr	3yr	5yr	7yr	10yr	17yr
All cemented HAs for non-fracture	3,940	80	79 (72 - 85)	156	39	7	77	30	3	107	2.45 (1.95-2.95)	4.01 (3.31-4.71)	4.97 (4.14-5.81)	5.42 (4.51-6.32)	5.65 (4.71-6.64)	6.50 (5.25-7.75)
Lubinus SPII	1,075	54	79 (71 - 85)	29	6	1	12	8	2	18	1.77 (0.96-2.59)	3.12 (1.89-4.36)	3.60 (2.20-5.00)	3.93 (2.40-5.47)	3.93 (2.40-5.47)	n.a.
Original ME Muller	783	55	80 (73 - 86)	35	10	0	18	7	0	27	3.05 (1.79-4.32)	4.59 (2.91-6.28)	5.53 (3.55-7.50)	5.90 (3.80-8.00)	6.54 (4.11-8.97)	n.a.
EXETER	429	21	78 (71 - 83)	20	6	1	11	2	0	15	2.16 (0.76-3.55)	3.45 (1.58-5.29)	4.87 (2.57-7.18)	5.28 (2.85-7.71)	5.28 (2.85-7.71)	n.a.
STANMORE	294*	11	79 (72 - 85)	8	0	0	6	2	0	6	0.70 (0.00-1.66)	2.27 (0.26-4.27)	3.40 (0.88-5.92)	4.23 (1.25-7.21)	4.23 (1.25-7.21)	n.a.
CCA stem	208	15	83 (76 - 87)	7	2	0	3	1	1	5	3.11 (0.86-5.36)	3.81 (1.02-6.61)	3.81 (1.02-6.61)	3.81 (1.02-6.61)	3.81 (1.02-6.61)	n.a.
Spectron EF	200	16	80 (74 - 86)	14	2	0	10	2	0	10	4.40 (1.40-7.39)	7.32 (3.27-11.37)	8.19 (3.83-12.55)	8.19 (3.83-12.55)	n.a.	n.a.
TAPERLOC Hip Cemented CoCr	105	8	82 (77 - 87)	5	1	1	1	0	0	2	1.97 (0.00-4.67)	n.a.	n.a.	n.a.	n.a.	n.a.
C-Stem AMT	91*	5	82 (77 - 88)	1	0	0	0	1	0	0	1.14 (0.00-3.37)	n.a.	n.a.	n.a.	n.a.	n.a.
Basis	78	5	84 (79 - 88)	0	0	0	0	0	0	0	0.00 (0.00-0.00)	0.00 (0.00-0.00)	0.00 (0.00-0.00)	0.00 (0.00-0.00)	n.a.	n.a.
CPT	68	4	82 (77 - 88)	5	2	0	0	3	0	2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Corail Cemented	53	5	80 (71 - 85)	2	2	0	0	0	0	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

* Denotes prosthesis combinations with no reported use in primary HAs in 2025.

Please note: n.a. if <50 cases were at risk; HA: hemiarthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | H056

Only combinations with over 50 procedures and reported by at least 3 hospitals have been listed.

784 (21.6%) of primary hemiarthroplasties were implanted in patients who died within one year, 1,527 (42.1%) within five years, 1,832 (50.5%) within ten years, and 1,931 (53.2%) within sixteen years after th primary procedure.

It is important to note that the Kaplan-Meier method estimates the proportion of failed prostheses assuming patients live indefinitely.

By uncemented femur - other diagnosis

TABLE Cumulative revision percentages of uncemented primary hemiarthroplasties by femoral component in patients treated by orthopaedic surgeons for indications other than fracture in the Netherlands in 2007-2025 (n=1,900)

					Type of revision (n)						Cumulative revision percentage (95% CI)					
Femur component	Primary HAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Total revision	Only femur	Only acetabulum	Only femoral head/inlay	Unknown	Of which conversion to THA	1yr	3yr	5yr	7yr	10yr	17yr
All uncemented HAs for non-fracture	**1,900**	**92**	**77 (65 - 84)**	**100**	**24**	**20**	**37**	**17**	**2**	**51**	**3.01 (2.22-3.80)**	**4.27 (3.29-5.24)**	**5.23 (4.12-6.35)**	**6.05 (4.79-7.32)**	**6.74 (5.31-8.17)**	**8.35 (6.45-10.28)**
Alloclassic Zweymuller SL	291	17	82 (77 - 87)	11	2	4	3	2	0	4	2.84 (0.90-4.78)	3.27 (1.18-5.36)	4.24 (1.76-6.72)	4.24 (1.76-6.72)	4.24 (1.76-6.72)	4.24 (1.76-6.72)
Corail AMT	202	19	73 (64 - 80)	7	0	2	4	1	0	4	1.00 (0.00-2.37)	2.18 (0.06-4.30)	2.97 (0.56-5.37)	4.76 (1.20-8.32)	n.a.	n.a.
TAPERLOC Complete	191	28	70 (63 - 79)	4	0	2	2	0	0	2	1.84 (0.00-3.47)	1.84 (0.00-3.47)	2.88 (0.00-5.91)	n.a.	n.a.	n.a.
DB10	154*	8	83 (75 - 87)	7	1	0	4	2	0	5	2.09 (0.00-4.44)	5.18 (1.45-8.92)	5.18 (1.45-8.92)	5.18 (1.45-8.92)	5.18 (1.45-8.92)	n.a.
ACCOLADE	71*	6	81 (75 - 86)	1	1	0	0	0	0	0	0.00 (0.00-0.00)	0.00 (0.00-0.00)	n.a.	n.a.	n.a.	n.a.
Twinsys stem Cementless	68	8	76 (65 - 84)	3	1	0	0	1	1	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TAPERLOC HIP system	60*	9	66 (45 - 80)	5	2	0	3	0	0	4	1.89 (0.00-4.99)	n.a.	n.a.	n.a.	n.a.	n.a.
SL Plus	59*	7	82 (72 - 87)	4	2	1	1	0	0	3	1.75 (0.00-5.16)	n.a.	n.a.	n.a.	n.a.	n.a.
Avenir Muller	57	3	85 (80 - 89)	1	0	0	1	0	0	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Polarstem	56	10	67 (58 - 73)	3	2	0	0	1	0	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ACCOLADE II	52	9	69 (59 - 79)	3	1	0	2	0	0	2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

* Denotes prosthesis combinations with no reported use in primary HAs in 2025.

Please note: n.a. if <50 cases were at risk; HA: hemiarthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | H057

Only combinations with over 50 procedures and reported by at least 3 hospitals have been listed.

226 (12.6%) of primary hemiarthroplasties were implanted in patients who died within one year, 544 (30.4%) within five years, 719 (40.2%) within ten years, and 765 (42.8%) within sixteen years after the primary procedure.

It is important to note that the Kaplan-Meier method estimates the proportion of failed prostheses assuming patients live indefinitely.

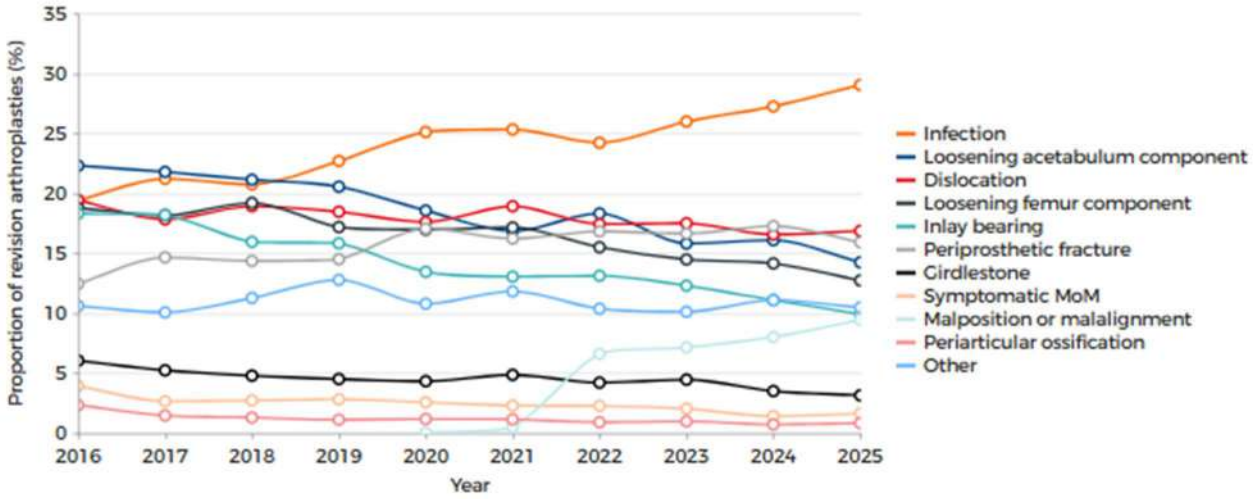
Hip revision arthroplasty

In this section you will find all the information on hip revision arthroplasty:

Revision characteristics

Reasons for revision

FIGURE Trend (proportion [%] per year) in reasons for revision in patients who underwent a hip revision arthroplasty in the Netherlands in 2016-2025



© LROI 2026 | H058A

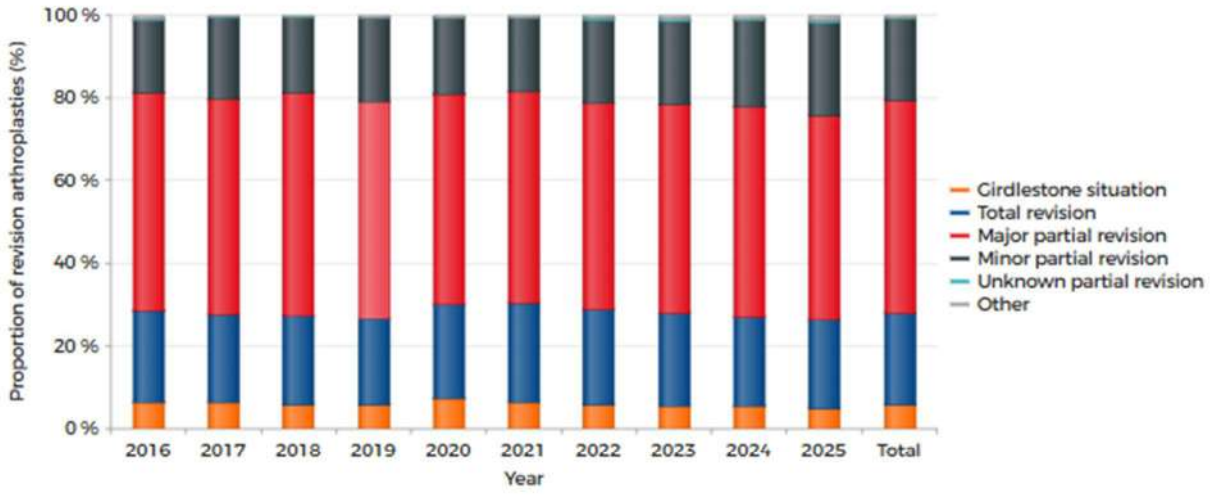
Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Hip revision arthroplasty (n)	**3,883**	**3,871**	**3,843**	**3,835**	**3,465**	**3,563**	**3,614**	**3,972**	**3,822**	**3,589**	**37,457**
Reasons for revision; Proportion (%)											
Infection	19.39	21.21	20.74	22.69	25.11	25.32	24.21	25.98	27.24	29.03	24.04
Loosening of acetabulum component	22.30	21.78	21.13	20.55	18.56	16.84	18.32	15.81	16.09	14.24	18.60
Dislocation	19.42	17.82	18.92	18.46	17.60	18.92	17.43	17.50	16.56	16.86	17.96
Loosening of femur component	18.77	18.16	19.20	17.18	16.97	17.15	15.50	14.48	14.15	12.73	16.45
Peri-prosthetic fracture	12.46	14.65	14.36	14.50	17.06	16.22	16.82	16.64	17.27	15.91	15.56
Inlay wear	18.31	18.19	15.95	15.83	13.45	13.05	13.12	12.29	11.09	9.92	14.17
Malposition or malalignment							6.61	7.15	8.01	9.45	
Cirdlestone situation	6.05	5.24	4.79	4.51	4.33	4.86	4.21	4.46	3.51	3.15	4.52
Symptomatic MoM bearing	3.94	2.66	2.73	2.82	2.57	2.30	2.27	2.04	1.41	1.64	2.45
Peri-articular ossification	2.34	1.47	1.30	1.12	1.18	1.15	0.91	0.98	0.73	0.84	1.21
Other	10.61	10.07	11.27	12.78	10.79	11.82	10.38	10.12	11.09	10.48	10.94

More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.
Please note: Malposition or malalignment has been registered since 2022.

© LROI 2026 | H058B

Type of revision

FIGURE Trend (proportion [%] per year) in type of revision in hip revision arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Girdlestone situation	6.53	6.32	5.87	5.92	7.51	6.32	5.72	5.46	5.43	4.78	5.98
Total revision	21.95	21.17	21.45	20.63	22.48	23.96	23.15	22.46	21.57	21.59	22.02
Major partial revision	52.85	52.18	53.96	52.58	51.13	51.26	49.92	50.57	50.98	49.54	51.52
Minor partial revision	17.55	19.87	18.07	20.14	18.39	17.84	19.93	20.11	20.78	22.23	19.49
Unknown partial revision	0.10	0.08	0.23	0.24	0.03	0.11	0.64	0.51	0.34	0.50	0.28
Other	1.01	0.39	0.42	0.50	0.46	0.51	0.64	0.91	0.89	1.37	0.71
Total (n)	**3,858**	**3,860**	**3,836**	**3,819**	**3,448**	**3,560**	**3,602**	**3,959**	**3,811**	**3,581**	**37,334**

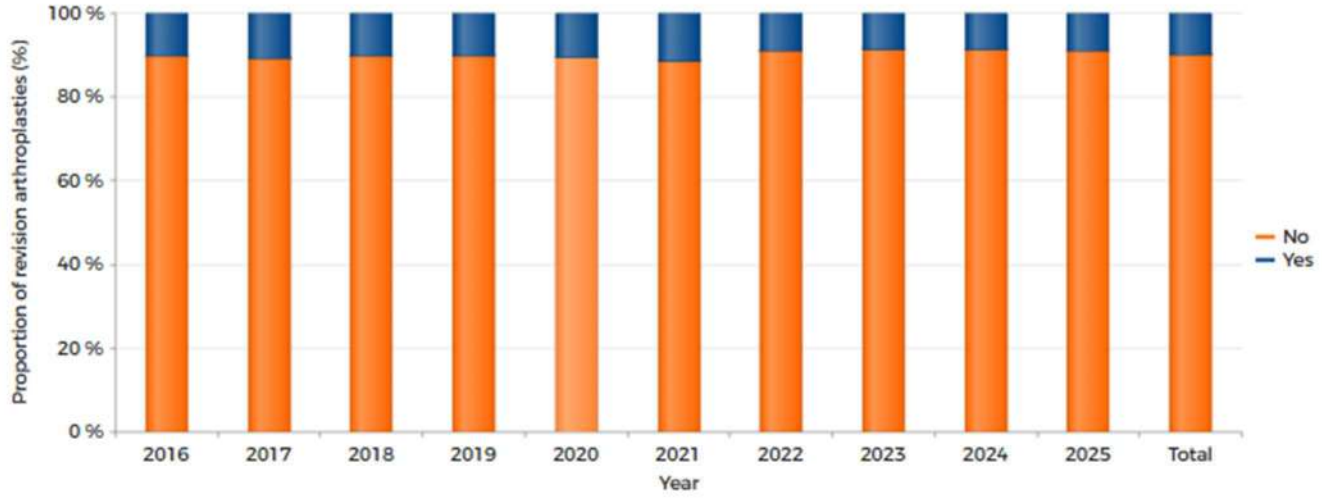
Major partial revision: revision of at least acetabulum or femur component; Minor partial revision: only inlay and/or femoral head exchange (including DAIR procedures); Unknown partial revision: partial revision of which the revised components were unknown.

© LROI 2026 | H059

In 1,100 (62%) major partial hip revision arthroplasties the acetabulum component was revised and in 674 (38%) major partial revision arthroplasties the femur component was revised in 2025.

Conversion to total hip arthroplasty

FIGURE Trend (proportion [%] per year) in conversions from hemiarthroplasty to total hip arthroplasty in the Netherlands in 2016-2025

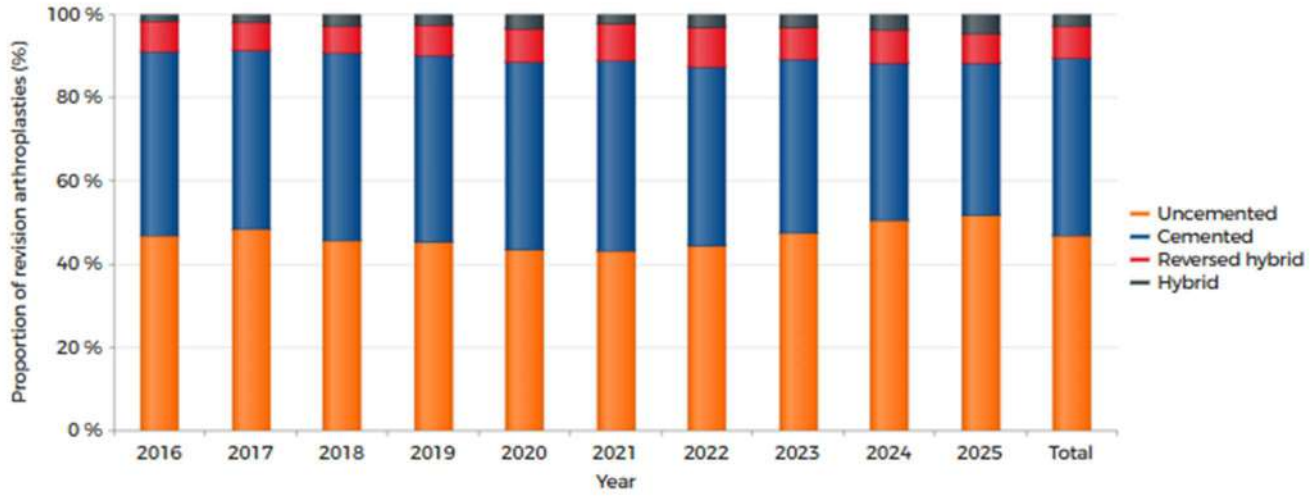


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	89.84	89.28	89.86	89.95	89.62	88.50	91.03	91.28	91.40	91.12	90.22
Yes	10.16	10.72	10.14	10.05	10.38	11.50	8.97	8.72	8.60	8.88	9.78
Total (n)	**3,533**	**3,229**	**3,500**	**3,482**	**3,227**	**3,314**	**3,446**	**3,808**	**3,629**	**3,456**	**34,624**

© LROI 2026 | H060

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in hip revision arthroplasties in the Netherlands in 2016-2025

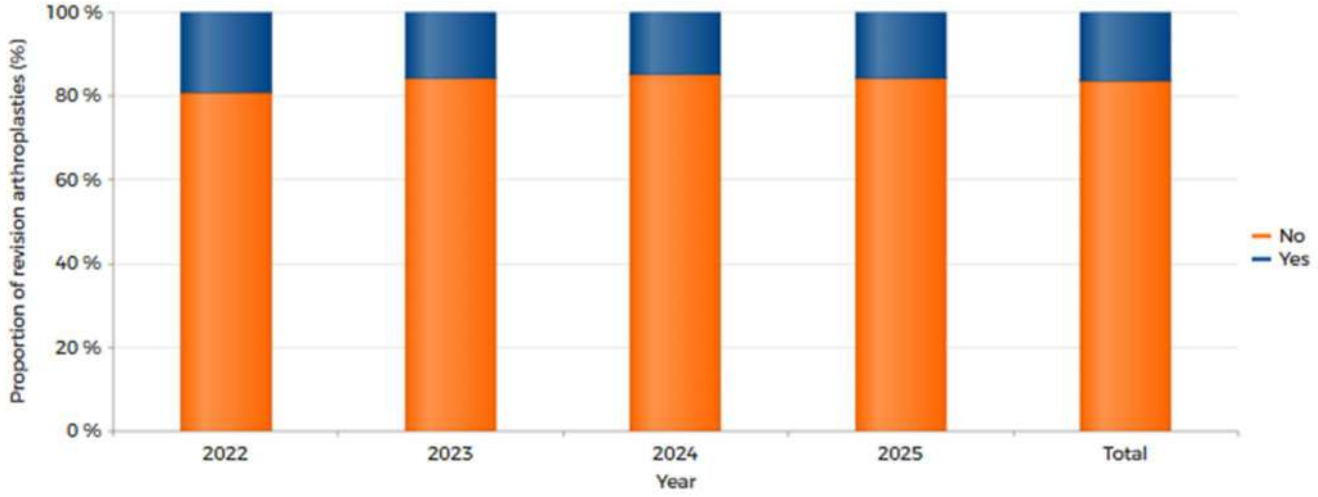


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Uncemented	46.87	48.47	45.83	45.55	43.69	43.23	44.54	47.40	50.69	51.90	46.87
Cemented	44.24	42.82	44.90	44.55	45.08	45.77	43.01	41.82	37.60	36.49	42.60
Reversed hybrid	7.34	6.73	6.61	7.31	7.88	8.79	9.24	7.84	7.89	7.00	7.65
Hybrid	1.55	1.98	2.66	2.60	3.36	2.21	3.21	2.94	3.82	4.61	2.88
Total (n)	**3,542**	**3,536**	**3,572**	**3,502**	**3,097**	**3,264**	**3,334**	**3,673**	**3,535**	**3,343**	**34,398**

© LROI 2026 | H061

Cement-in-cement

FIGURE Trend (proportion [%] per year) in use of cement-in-cement technique in hip revision arthroplasties in the Netherlands in 2022-2025



	2022	2023	2024	2025	Total
No	80.85	84.47	85.21	84.48	83.83
Yes	19.15	15.53	14.79	15.52	16.17
Total (n)	**1,535**	**1,835**	**1,711**	**1,649**	**6,730**

© LROI 2026 | H062

Most frequently registered – Acetabulum

TABLE The most frequently registered acetabulum components in hip revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Acetabulum cemented (n)	**1,891**	**1,807**	**1,970**	**1,779**	**1,681**
Acetabulum name; Proportion (%)					
Avantage Cemented	46.85	39.99	39.43	37.11	33.49
G7 - OSSEOTI	0.85	2.33	3.72	8.95	12.20
Polarcup cemented	9.20	9.43	8.91	8.16	8.92
BiMobile DM	1.22	2.55	6.88	5.35	7.02
Trabecular Metal	5.08	7.10	5.50	3.72	3.15
G7 PPS	0.48	1.00	0.87	3.49	2.91
Bi-Mentum Cemented Cups	3.75	3.88	1.94	3.21	4.70
Continuum	4.44	3.44	3.06	2.36	2.56
Redapt	1.53	1.94	0.87	2.31	1.96
Exeter Rimfit X3	1.96	2.00	0.87	1.80	0.95
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Acetabulum uncemented (n)	**449**	**443**	**540**	**587**	**601**
Acetabulum name; Proportion (%)					
G7 - OSSEOTI	3.34	9.03	12.96	25.21	32.78
G7 PPS	2.00	3.84	3.15	10.22	8.15
Continuum	16.26	12.87	10.56	6.98	6.66
Avantage Reload	7.57	7.00	8.52	4.94	5.82
Avantage Cemented	4.23	2.93	2.78	4.60	5.16
Allofit	11.14	9.71	8.52	5.28	4.83
Trident II Tritanium	0.45	2.93	4.81	4.60	3.99
DELTA-ONE TT	10.47	8.58	7.22	4.94	3.83
Bi-Mentum Press-fit	2.45	2.48	3.70	3.75	2.66
R3	3.34	2.03	1.30	1.19	2.50

© LROI 2026 | H063

Most frequently registered – Femur

TABLE The most frequently registered femur components in hip revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Femur cemented (n)	**599**	**574**	**604**	**562**	**561**
Femur name; Proportion (%)					
Lubinus SPII	23.04	28.05	34.11	33.99	32.09
EXETER	21.54	22.13	17.55	21.71	21.39
Original ME Muller	7.01	10.63	10.76	9.07	6.24
TAPERLOC Hip Cemented CoCr	2.84	3.31	3.15	5.34	5.35
Polarstem cemented	0.83	1.05	1.99	3.02	5.35
C-Stem AMT	4.34	4.70	4.80	3.20	4.28
Spectron EF	5.01	4.88	3.64	4.63	4.10
Twinsys stem Cemented	2.00	2.61	3.97	2.85	4.10
C-Stem AMT Long	6.34	4.18	3.15	1.96	2.85
Lubinus Classic Plus	0.50	0.52	0.83	0.71	1.60
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Femur uncemented (n)	**781**	**784**	**845**	**846**	**740**
Femur name; Proportion (%)					
ARCOS	22.66	21.81	22.01	25.30	25.68
Restoration Modular	10.50	12.76	14.08	13.48	12.97
MP Reconstruction Prosthesis	18.82	16.33	14.67	13.83	12.30
REDAPT	8.19	9.95	5.80	8.16	8.24
Revitan	6.15	4.34	4.14	3.66	4.73
Wagner SL	3.84	2.81	5.44	3.90	3.51
Corail Revision	3.07	3.83	4.73	3.55	3.38
Wagner Cone	0.64	2.42	1.66	1.54	3.24
TAPERLOC Complete	2.94	3.32	3.43	3.66	2.84
RECLAIM Revision hip	1.02	2.17	2.49	3.43	2.30

© LROI 2026 | H064

Most frequently registered - Bone cement

TABLE The most frequently registered bone cement used during hip revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement pre-packed in a vacuum mixing system (n)	**575**	**565**	**591**	**645**	**689**
Cement name; Proportion (%)					
PALACOS R+G	56.70	57.88	66.67	69.77	65.60
Refobacin Bone Cement R	36.52	35.93	30.63	26.82	22.93
COPAL G+C	0.00	0.00	0.00	2.95	11.18
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Separately packed bone cement (n)	**912**	**871**	**868**	**655**	**436**
Cement name; Proportion (%)					
PALACOS R+G	32.02	35.71	29.84	40.76	44.72
Refobacin Revision	15.24	16.65	12.90	13.44	16.74
COPAL G+C	35.31	29.28	36.41	18.78	11.01
Simplex ABC TOBRA	0.55	2.87	4.38	6.56	7.34
COPAL G+V	6.47	5.40	5.88	7.63	7.34
PALACOS MV+G	3.07	4.71	3.80	5.34	5.73
Subiton G	2.85	1.61	1.15	1.68	2.29
Refobacin Bone Cement R	2.19	1.95	3.57	3.82	2.06
Simplex ABC EC	1.97	1.38	1.61	1.53	1.38
Cemex VancoCenx	0.22	0.34	0.35	0.15	0.92

© LROI 2026 | H065

PROMs

Response

per year

FIGURE Pre-operative, 3 months and 12 months postoperative response percentage of patients who underwent a hip revision arthroplasty in the Netherlands in 2014-2025



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Pre-PROM	4.74	9.53	15.83	15.55	18.98	21.27	16.47	20.16	21.31	24.39	22.08	24.59
Pre- and 12 months PROM	2.09	3.83	6.78	6.63	7.88	9.13	6.81	7.71	8.17	9.56	9.12	n.a.
Pre-, 3- and 12 months PROM	1.27	2.43	4.78	4.64	5.55	6.33	4.68	5.37	5.90	6.77	6.57	n.a.

Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.
PROM: patient reported outcome measure.

© LROI 2026 | H066A

Patient characteristics

Responders vs non-responders

TABLE Patient characteristics of PROM responders and non-responders after hip revision arthroplasty in the Netherlands in 2020-2024

	Non-responder	Pre- and 12-month PROM respondents	Total
N(%)	**16,914 (91.8)**	**1,496 (8.2)**	**18,410**
Mean age (years) (SD)	72.9 (11.2)	69.4 (10.6)	72.6 (11.2)
Age (years) (%)			
<50	3	5	3
50-59	9	12	9
60-69	20	28	21
70-79	38	40	38
>80	29	16	28
Sex (%)			
Male	39	40	39
Female	61	60	61
ASA class (%)			
ASA I	5	7	5
ASA II	47	58	48
ASA III-IV	48	34	47
Type of hospital (%)			
General	84	90	84
UMC	14	6	13
Private	2	4	2
Mean BMI (kg/m2) (SD)	27.2 (5)	28 (5.2)	27.3 (5)

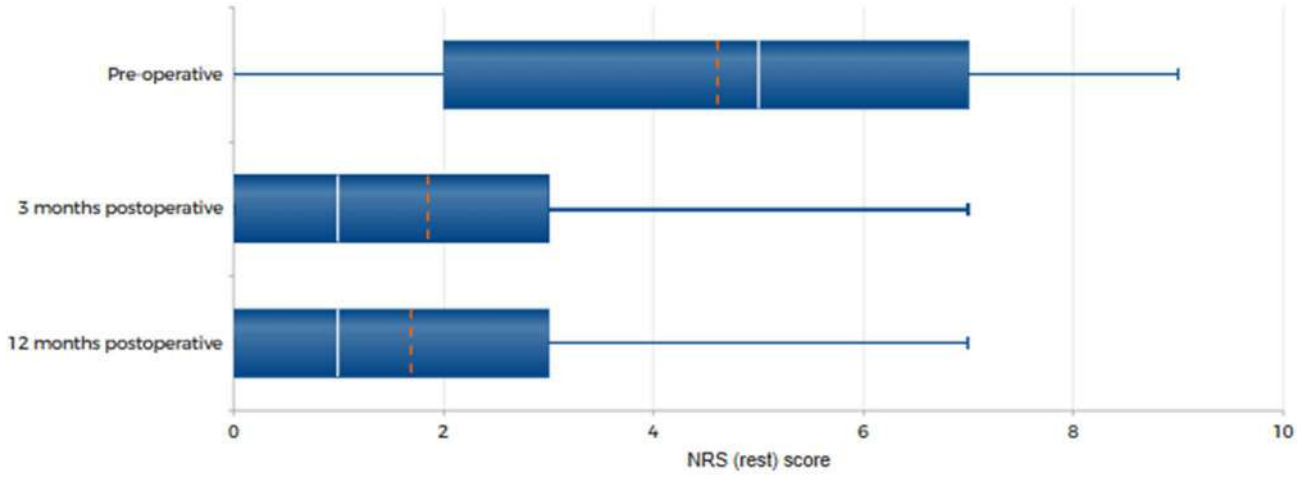
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | H067

Outcomes

NRS (rest)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (rest) scores of patients who underwent a hip revision in the Netherlands in 2020-2024



© LROI 2026 | H068A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (rest) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hip revision arthroplasty	1,019	5.00 (2.00-7.00)	1.00 (0.00-3.00)	1.00 (0.00-3.00)

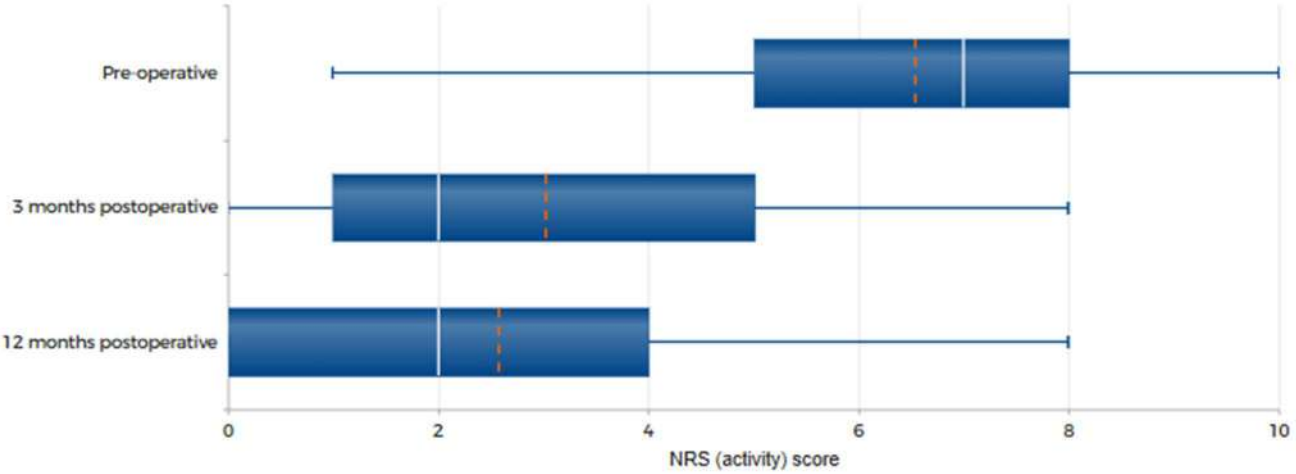
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | H068B

The NRS (rest) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

NRS (activity)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (activity) scores of patients who underwent a hip revision in the Netherlands in 2020-2024



© LROI 2026 | H069A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (activity) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hip revision arthroplasty	1,020	7.00 (5.00-8.00)	2.00 (1.00-5.00)	2.00 (0.00-4.00)

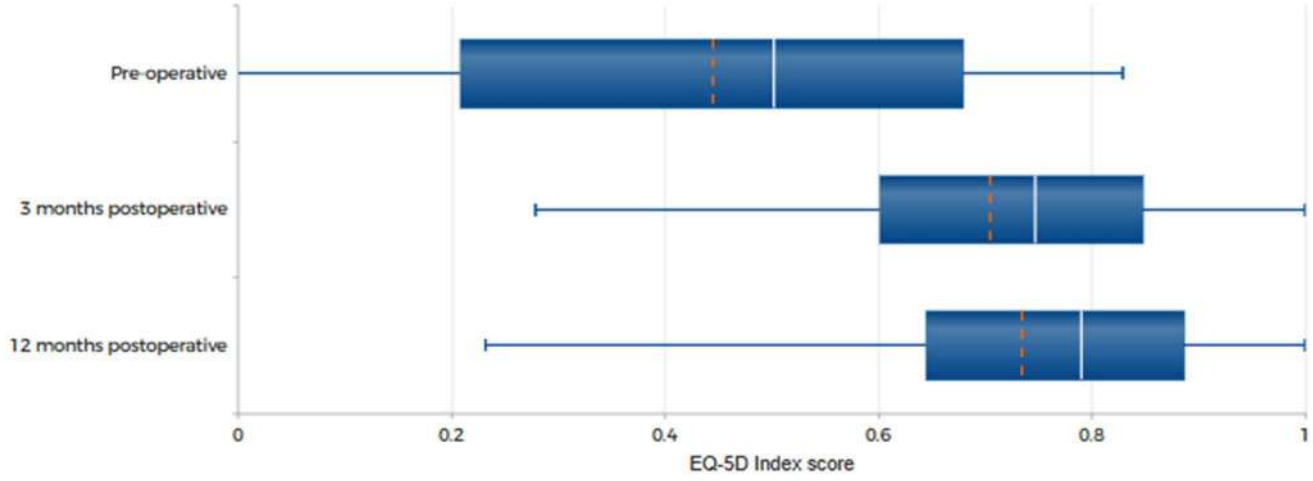
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | H069B

The NRS (activity) score measures pain during activity. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

EQ-5D index score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D index scores of patients who underwent a hip revision in the Netherlands in 2020-2024



© LROI 2026 | H070A

		Pre-operative	3 months postoperative	12 months postoperative
EQ-5D Index score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hip revision arthroplasty	1,042	0.50 (0.21-0.68)	0.75 (0.60-0.85)	0.79 (0.65-0.89)

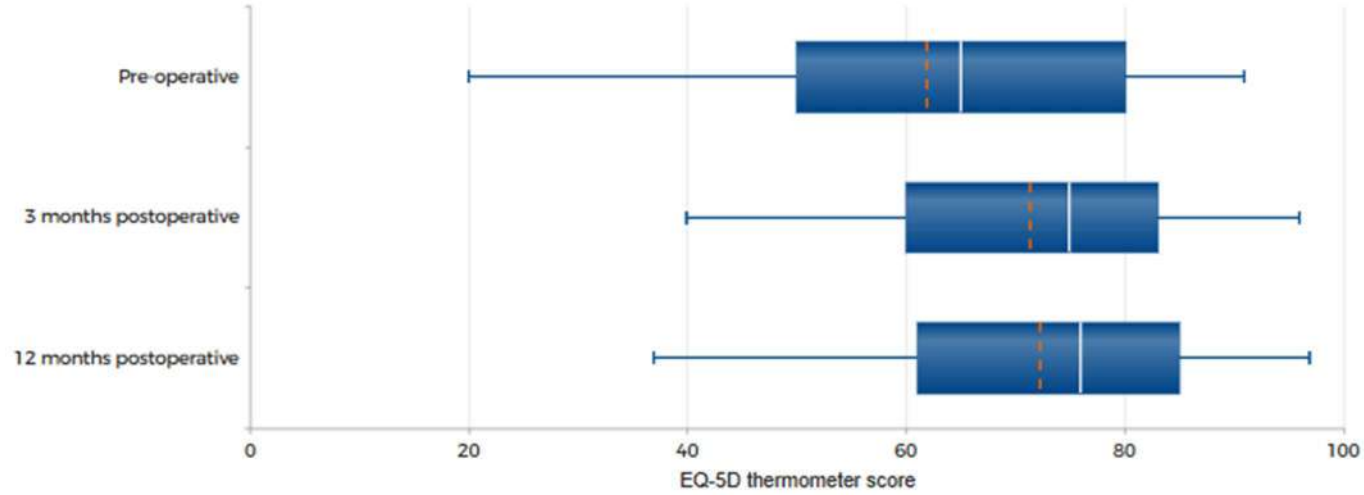
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | H070B

The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.

EQ-5D thermometer

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D thermometer scores of patients who underwent a hip revision in the Netherlands in 22020-2024



© LROI 2026 | H071A

		Pre-operative	3 months postoperative	12 months postoperative
EQ-5D thermometer score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hip revision arthroplasty	1,041	65.00 (50.00-80.00)	75.00 (60.00-83.00)	76.00 (61.00-85.00)

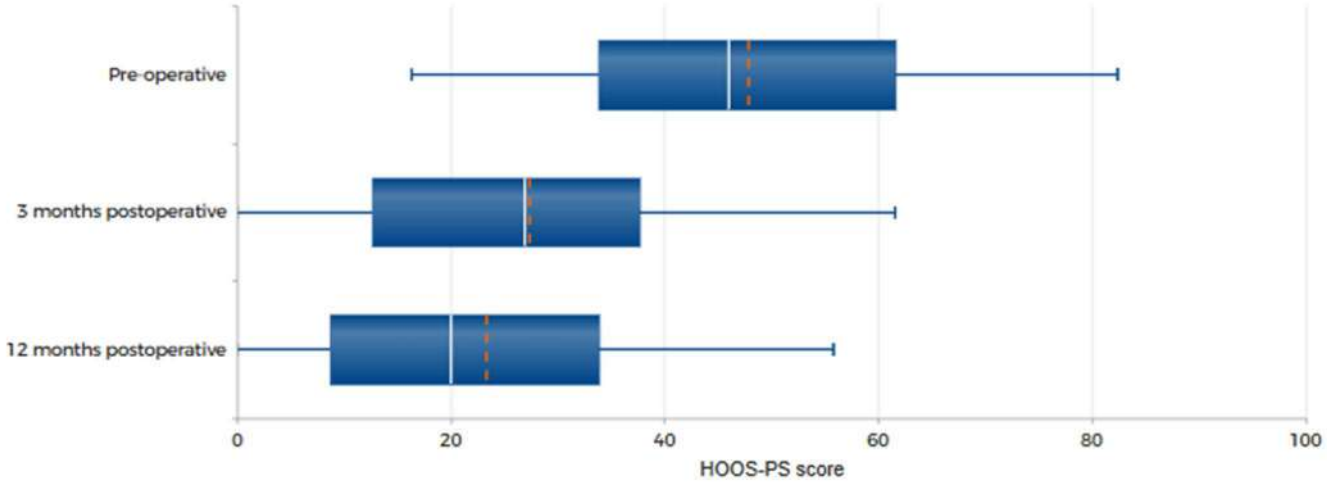
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | H071B

The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation.

HOOS-PS score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative HOOS-PS scores of patients who underwent a hip revision in the Netherlands in 2020-2024



© LROI 2026 | H072A

		Pre-operative	3 months postoperative	12 months postoperative
HOOS-PS score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hip revision arthroplasty	946	46.10 (33.90-61.60)	26.90 (12.70-37.70)	20.00 (8.80-33.90)

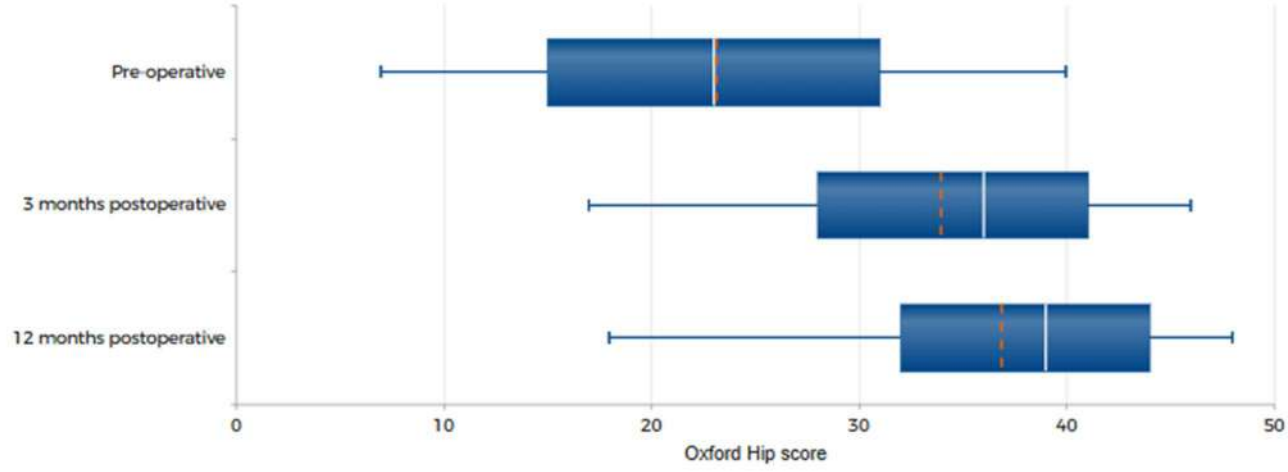
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | H072B

The HOOS-PS score measures the physical functioning of patients with osteoarthritis to the hip. The score has a range of 0.0 to 100.0, with 0.0 representing no effort and 100.0 the most possible effort.

Oxford Hip Score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative Oxford Hip scores of patients who underwent a hip revision in the Netherlands in 2020-2024



© LROI 2026 | H073A

		Pre-operative	3 months postoperative	12 months postoperative
Oxford Hip score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hip revision arthroplasty	989	23.00 (15.00-31.00)	36.00 (28.00-41.00)	39.00 (32.00-44.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | H073B

The Oxford Hip score measures the physical functioning and pain of patients with osteoarthritis to the hip. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 the most functional ability.

Knee arthroplasty

In this section you will find all the information on knee arthroplasty

Numbers

Registered procedures

TABLE Number of registered knee arthroplasties per year of surgery (2007-2025) in the LROI in April 2026

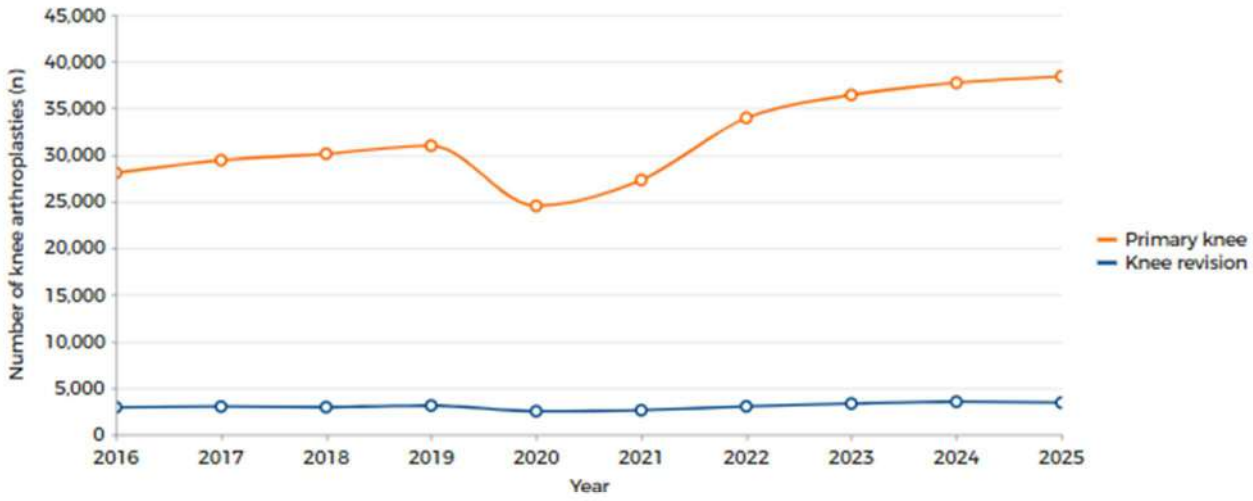
Year of surgery	Total knee arthroplasty	Unicondylar knee arthroplasty	Patellofemoral knee arthroplasty	Unknown/ missing	Revision arthroplasty	Total
2007	7,031	779	47	878	593	**9,328**
2008	11,745	1,221	92	405	900	**14,363**
2009	16,790	1,547	139	175	1,296	**19,947**
2010	18,503	1,715	143	241	1,620	**22,222**
2011	19,513	1,587	116	208	1,786	**23,210**
2012	21,727	1,579	171	254	2,117	**25,848**
2013	22,298	1,805	135	207	2,303	**26,748**
2014	24,242	2,364	116	117	2,547	**29,386**
2015	24,244	2,694	156	48	2,682	**29,824**
2016	24,884	2,948	144	98	2,920	**30,994**
2017	25,555	3,662	168	43	2,994	**32,422**
2018	25,835	4,072	183	29	2,929	**33,048**
2019	25,884	4,888	175	43	3,099	**34,089**
2020	19,620	4,725	158	22	2,495	**27,020**
2021	21,517	5,666	108	13	2,602	**29,906**
2022	26,836	6,995	116	26	3,013	**36,986**
2023	28,343	7,928	126	33	3,310	**39,740**
2024	28,750	8,811	155	15	3,514	**41,245**
2025	28,784	9,474	152	21	3,411	**41,842**
Total (n)	**422,101**	**74,460**	**2,600**	**2,876**	**46,131**	**548,168**

Please note: The LROI is nearly complete as of 2010

© LROI 2026 | K001

Type of procedures

FIGURE Number of primary knee arthroplasties and knee revision arthroplasties registered in the LROI in the Netherlands in 2016-2025



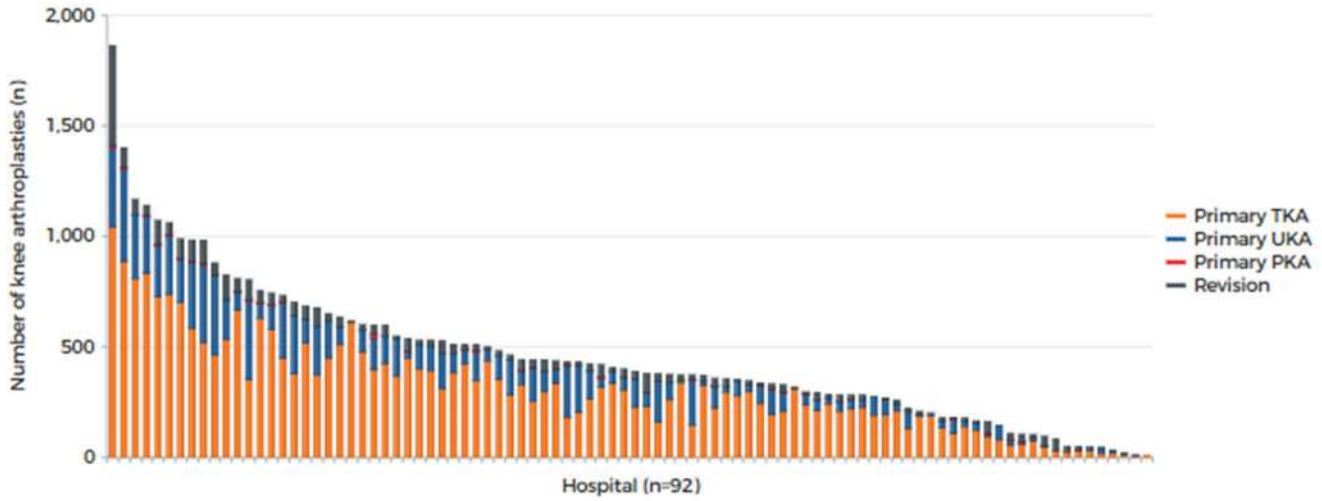
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Primary knee	28,074	29,428	30,119	30,990	24,525	27,304	33,973	36,430	37,731	38,431	**317,005**
Knee revision	2,920	2,994	2,929	3,099	2,495	2,602	3,013	3,310	3,514	3,411	**30,287**
Total (n)	**30,994**	**32,422**	**33,048**	**34,089**	**27,020**	**29,906**	**36,986**	**39,740**	**41,245**	**41,842**	**347,292**

© LROI 2026 | K002

Out of 38,431 primary knee arthroplasties that were performed in 2025, 3.0% (n=1,155) was performed bilaterally.

Type of procedure per hospital

FIGURE Number of primary knee arthroplasties and knee revision arthroplasties per hospital in the Netherlands in 2025 (n=41,821)

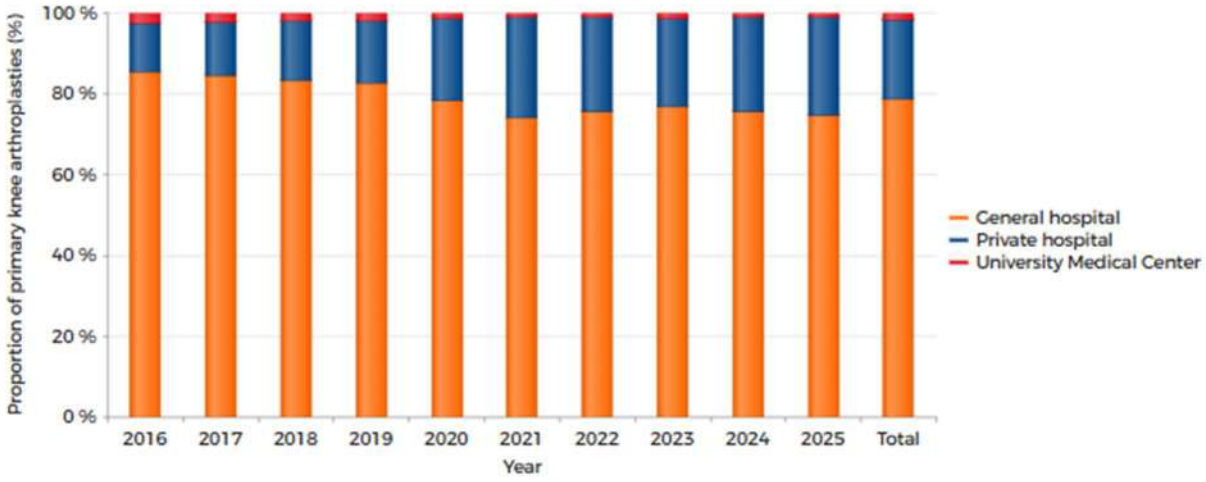


TKA: total knee arthroplasty; UKA: unicondylar knee arthroplasty; PKA: patellofemoral knee arthroplasty

© LROI 2026 | K003

Type of hospital performing primary knee

FIGURE Trend (proportion [%] per year) in type of hospital performing primary knee arthroplasties in the Netherlands in 2016-2025



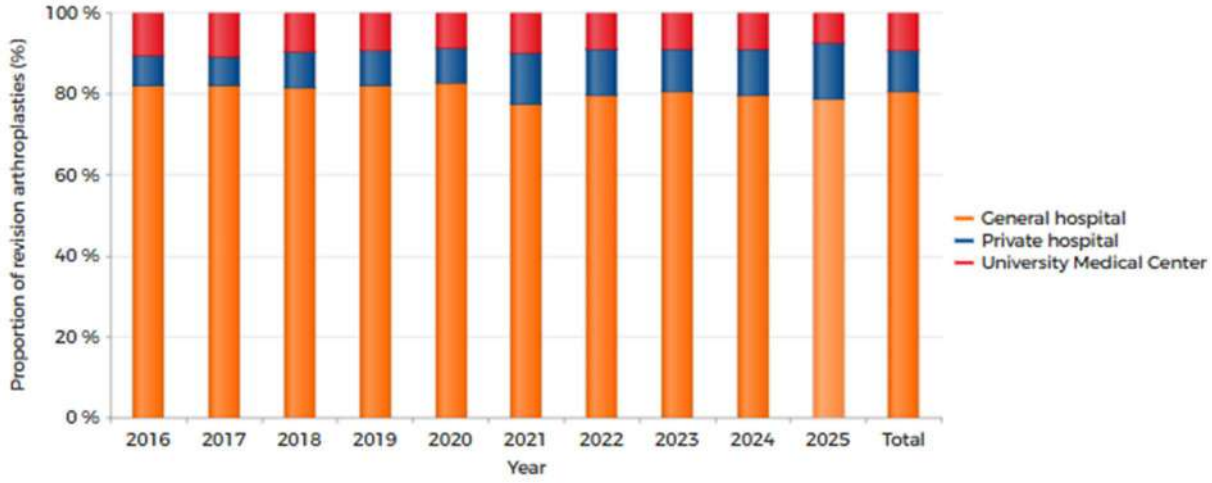
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
General hospital	85.69	84.63	83.33	82.69	78.41	74.36	75.65	76.90	75.73	74.92	78.96
Private hospital	11.80	13.25	14.98	15.54	20.32	24.67	23.31	21.99	23.21	24.10	19.62
University Medical Center	2.51	2.12	1.69	1.77	1.27	0.97	1.04	1.11	1.06	0.98	1.42
Total (n)	**28,074**	**29,428**	**30,119**	**30,990**	**24,525**	**27,304**	**33,973**	**36,430**	**37,731**	**38,431**	**317,005**

Please note: The number of general hospitals that performed primary knee arthroplasties decreased from 69 to 63 between 2016-2025, the number of private hospitals increased from 12 to 22, and the number of University Medical Centers remained 7.

© LROI 2026 | K004

Type of hospital performing knee revisions

FIGURE Trend (proportion [%] per year) in type of hospital performing knee revision arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
General hospital	82.19	82.13	81.53	82.35	82.93	77.67	79.89	80.69	79.85	78.75	80.76
Private hospital	7.40	7.15	8.81	8.52	8.50	12.45	11.18	10.39	11.18	14.04	10.04
University Medical Center	10.41	10.72	9.66	9.13	8.58	9.88	8.93	8.91	8.96	7.21	9.20
Total (n)	**2,920**	**2,994**	**2,929**	**3,099**	**2,495**	**2,602**	**3,013**	**3,310**	**3,514**	**3,411**	**30,287**

Please note: The number of general hospitals that performed knee revision arthroplasties decreased from 68 to 61 between 2016-2025, the number of private hospitals increased from 11 to 16, and the number of University Medical Centers remained 7.

© LROI 2026 | K005

Total knee arthroplasty

In this section you will find all the information on total knee arthroplasty

Patient characteristics

By diagnosis

TABLE Patient characteristics of all patients with a registered primary total knee arthroplasty by type of diagnosis in the Netherlands in 2025

	Osteoarthritis	Post-traumatic	Rheumatoid arthritis	Osteonecrosis	Other	Total
N(%)	**27,676 (96.2)**	**443 (1.6)**	**200 (0.6)**	**160 (0.6)**	**305 (1)**	**28,784**
Mean age (years) (SD)	69.9 (8.6)	64.5 (9.6)	65.1 (10.6)	70.8 (10.8)	66.8 (11.8)	69.8 (8.7)
Age (years) (%)						
<50	1	6	7	3	7	1
50-59	12	22	20	12	13	12
60-69	33	43	38	25	35	33
70-79	42	23	31	41	35	42
>80	12	7	6	19	10	12
Sex (%)						
Male	38	44	28	30	41	38
Female	62	56	72	70	59	62
ASA class (%)						
ASA I	8	14	1	3	7	8
ASA II	60	65	65	46	62	61
ASA III-IV	31	21	35	51	31	31
Type of hospital (%)						
General	77	70	82	84	67	76
UMC	1	8	6	4	12	1
Private	23	22	12	12	21	22
Charnley-score (%)						
A One knee joint affected	35	66	20	43	38	36
B1 Both knee joints affected	36	16	36	15	20	35
B2 Contralateral knee with a TKA	25	7	18	9	16	24
C Multiple joints affected or chronic disease that affects quality of life	4	3	22	6	8	4
Mean BMI (kg/m2) (SD)	29.5 (4.9)	28.2 (4.6)	28.3 (5.2)	27.9 (5.4)	28.6 (4.9)	29.5 (4.9)
Body Mass Index (kg/m2) (%)						
Underweight (<=18.5)	0	1	1	0	1	0
Normal weight (>18.5-25)	18	23	31	35	25	19
Overweight (>25-30)	41	44	34	38	34	41
Obesity (>30-40)	38	30	32	24	35	38
Morbid obesity (>40)	3	2	2	3	1	3
Smoking (%)						
No	92	89	92	85	84	94
Yes	6	10	6	15	10	6

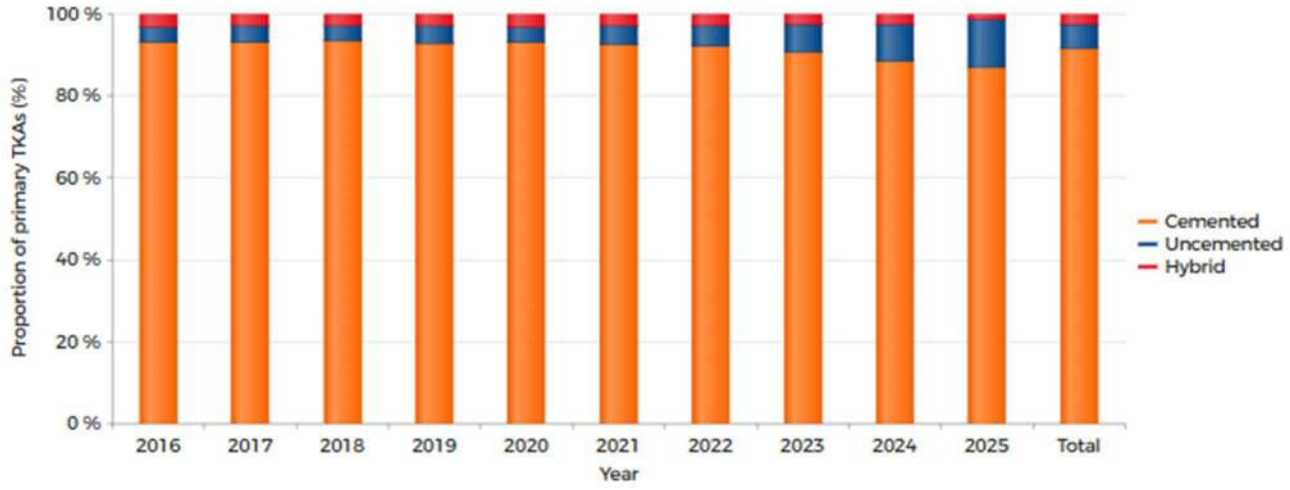
Please note: The diagnosis category 'Other' (305 cases: 1%) includes other (82), inflammatory arthritis (62), fracture (acute) (4), tumour (metastasis) (1), tumour (primary) (16) and 140 primary total knee arthroplasties where the diagnosis was not registered.
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | K006

Procedure characteristics

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary total knee arthroplasties in the Netherlands in 2016-2025



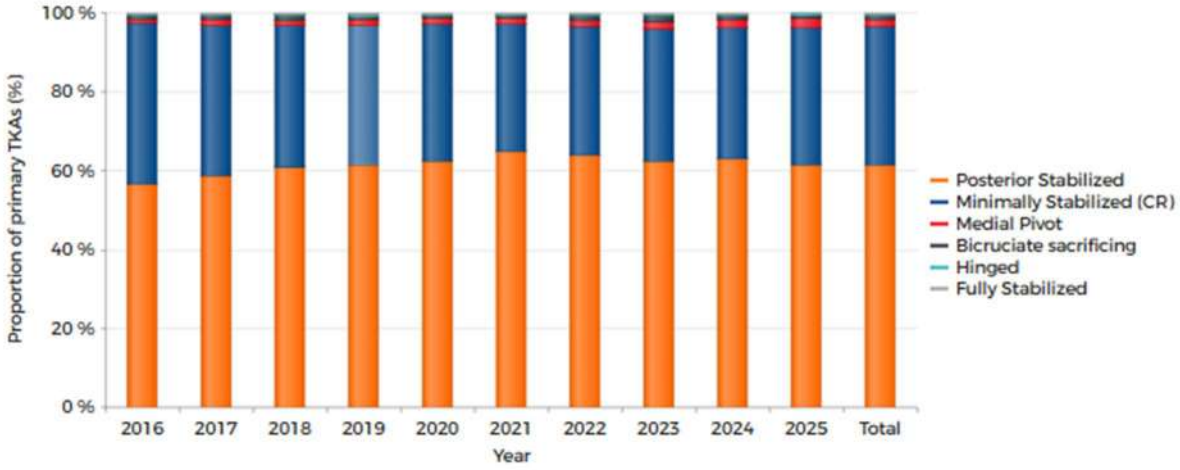
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Cemented	93.29	93.38	93.57	92.83	93.28	92.49	92.27	90.95	88.52	87.06	91.63
Uncemented	3.64	3.94	3.71	4.48	3.63	4.81	5.12	6.73	8.88	11.61	5.82
Hybrid	3.07	2.68	2.72	2.69	3.09	2.70	2.61	2.32	2.61	1.32	2.55
Total (n)	**24,771**	**25,444**	**25,709**	**25,692**	**19,550**	**21,410**	**26,704**	**28,227**	**28,208**	**27,944**	**253,659**

TKA: total knee arthroplasty

© LROI 2026 | K007

Type of femur component

FIGURE Trend (proportion [%] per year) in type of femur component in primary total knee arthroplasties in the Netherlands in 2016-2025



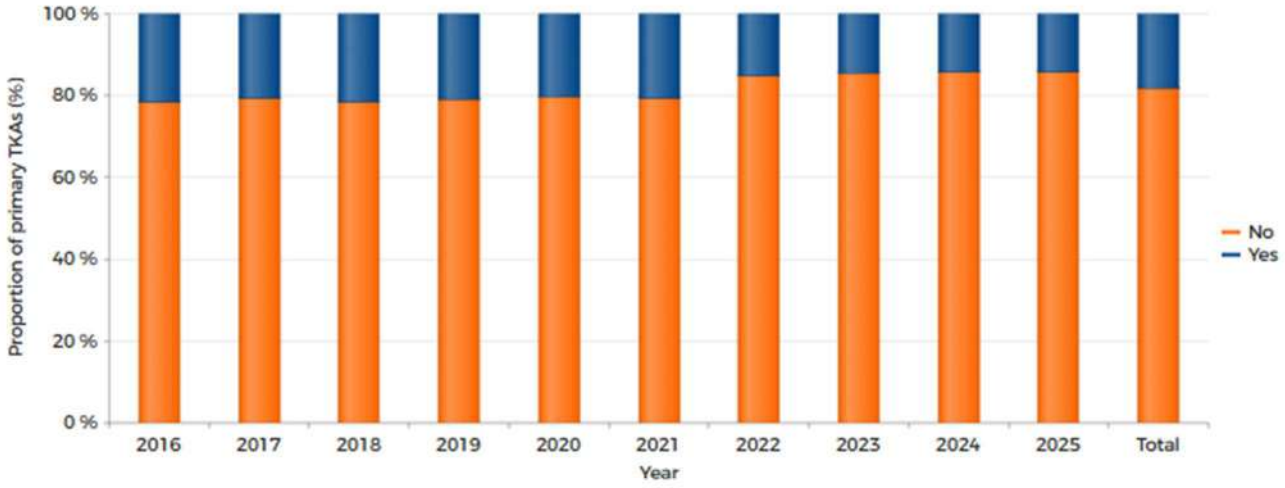
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Posterior Stabilized	56.64	58.74	61.18	61.68	62.51	64.91	64.07	62.53	63.31	61.62	61.73
Minimally Stabilized (CR)	40.97	38.20	35.60	35.32	34.66	32.19	32.45	33.45	33.12	34.85	35.03
Medial Pivot	0.83	1.54	1.24	1.44	1.64	1.67	1.76	2.01	2.14	2.23	1.67
Bicruciate sacrificing	1.06	0.97	1.33	0.77	0.49	0.51	1.08	1.43	0.82	0.80	0.95
Hinged	0.24	0.25	0.31	0.36	0.40	0.42	0.33	0.37	0.43	0.37	0.35
Fully Stabilized	0.26	0.30	0.34	0.44	0.30	0.31	0.31	0.22	0.18	0.13	0.27
Total (n)	**23,757**	**23,980**	**24,994**	**24,865**	**18,186**	**21,149**	**26,399**	**27,911**	**28,367**	**28,470**	**248,078**

TKA: total knee arthroplasty

© LROI 2026 | K008

Implantation of patella

FIGURE Trend (proportion [%] per year) in implantation of patella in primary total knee arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	78.51	79.42	78.55	79.21	79.75	79.47	85.06	85.49	85.88	85.85	81.97
Yes	21.49	20.58	21.45	20.79	20.25	20.53	14.94	14.51	14.12	14.15	18.03
Total (n)	**24,711**	**25,334**	**25,661**	**25,650**	**19,346**	**21,366**	**26,648**	**28,208**	**28,596**	**28,600**	**254,120**

TKA: total knee arthroplasty

© LROI 2026 | K009

Most frequently registered - Total knee prostheses

TABLE The most frequently registered primary total knee arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Total knee arthroplasties (n)	**21,149**	**26,400**	**27,911**	**28,366**	**28,470**
Femur name; Proportion (%)					
Persona	9.44	11.74	15.19	18.57	21.74
Attune	7.04	9.73	12.60	15.68	19.71
Triathlon	9.56	9.50	11.76	14.67	15.71
Genesis II	21.26	20.23	18.73	18.06	15.05
Vanguard Complete Knee	19.05	16.42	13.51	11.97	9.62
Legion	0.16	0.13	0.14	1.89	6.14
NexGen	17.32	17.51	14.03	9.23	5.38
SAIPH	0.01	0.22	0.70	1.12	1.98
balanSys	1.74	1.76	1.77	1.66	1.65
PFC / SIGMA	7.27	6.72	6.14	4.20	1.05

© LROI 2026 | K010

Most frequently registered - Bone cement

TABLE The most frequently registered bone cement used during primary total knee arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement pre-packed in a vacuum mixing system (n)	**12,435**	**16,475**	**17,237**	**17,738**	**16,334**
Cement name; Proportion (%)					
Refobacin Bone Cement R	45.15	43.73	39.47	46.23	50.41
PALACOS R+G	49.26	49.74	55.44	52.75	49.47
COPAL G+C	0.00	0.00	0.00	0.01	0.12
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Separately packed bone cement (n)	**6,281**	**6,868**	**5,976**	**4,860**	**4,604**
Cement name; Proportion (%)					
PALACOS R+G	81.74	80.10	70.88	79.05	76.46
Refobacin Bone Cement R	5.83	6.16	15.04	5.43	6.99
Subiton G	5.80	5.63	5.89	6.17	6.67
PALACOS MV+G	2.37	3.07	3.23	4.88	5.21
Biomet Bone Cement R	3.49	4.16	4.18	4.16	4.37
PALACOS LV+G	0.10	0.00	0.00	0.00	0.09
PALACOS R	0.00	0.01	0.00	0.02	0.07
COPAL G+C	0.30	0.09	0.08	0.10	0.07
COPAL G+V	0.00	0.01	0.00	0.00	0.04
Refobacin Revision	0.19	0.10	0.30	0.06	0.04

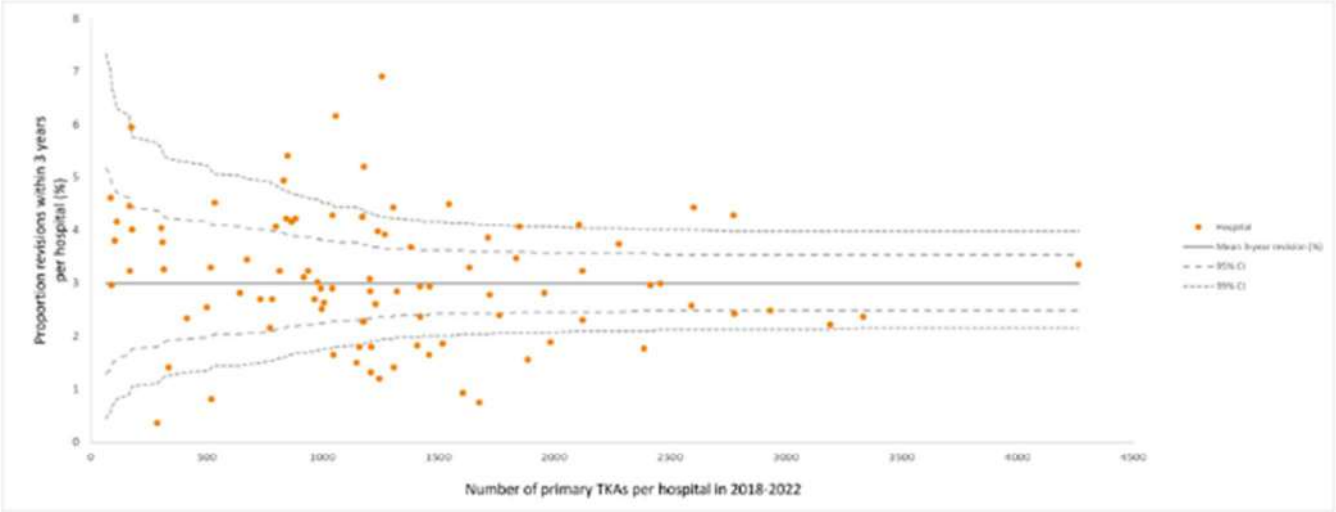
© LROI 2026 | K011

Survival

Short term revision

Overall revision per hospital

Funnel plot of proportion of knee revision arthroplasties within three years after a total knee arthroplasty per hospital in the Netherlands in 2018-2022 (n=119,274)



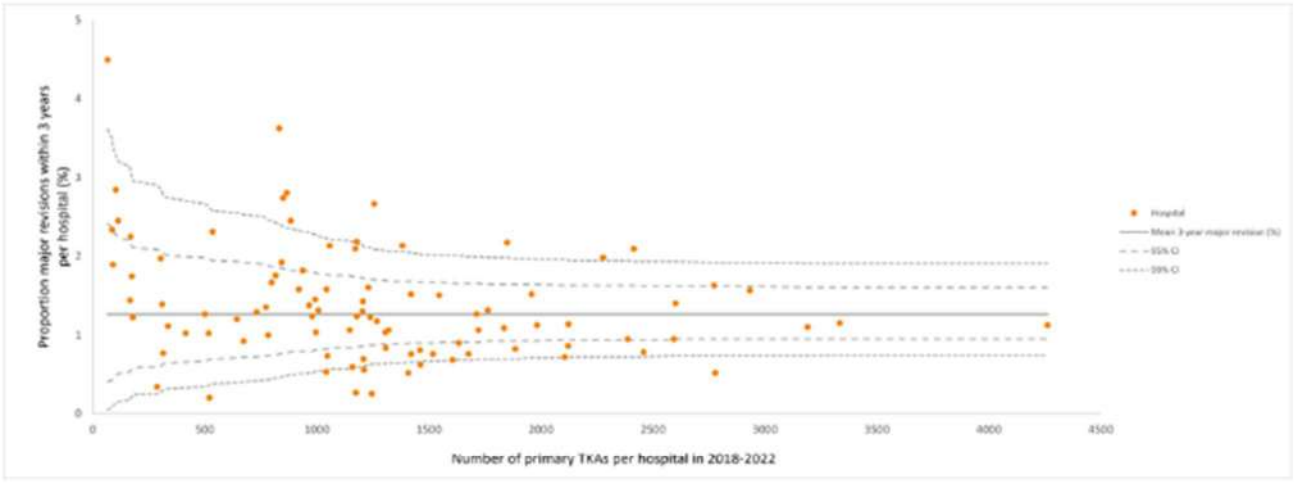
Please note: The proportion of revisions within 3 years per hospital were adjusted for casemix factors age, gender, ASA score and diagnosis (osteoarthritis versus other).

TKA: total knee arthroplasty; CL: control limits.

The mean 3-years revision percentage is 2.99 in the Netherlands in 2018-2022.
Control limits indicate the plausible range of outcome if all hospitals perform equally well.

Major revision per hospital

Funnel plot of proportion of knee major revision arthroplasties within three years after a total knee arthroplasty per hospital in the Netherlands in 2018-2022 (n=119,274



Please note: Major revision is defined as revision of at least femur or tibia component.

Please note: The proportion of revisions within 3 years per hospital were adjusted for casemix factors age, gender, ASA score and diagnosis (osteoarthritis versus other).

TKA: total knee arthroplasty; CL: control limits.

The mean 3-years major revision percentage is 1.26 in the Netherlands in 2018-2022.
Control limits indicate the plausible range of outcome if all hospitals perform equally well.

By type of revision within 3 years

TABLE Cumulative 3-year revision percentage of primary total knee arthroplasties by type of revision in the Netherlands in 2018-2022 (n=119,274)

	Cumulative 3-year revision percentage
	Kaplan Meier (95% CI)
Any type of revision	2.98 (2.88-3.07)
Major revision	1.13 (1.07-1.19)
Only tibia	0.20 (0.17-0.22)
Only femur	0.09 (0.08-0.11)
Femur and tibia	0.84 (0.79-0.89)
Minor revision	1.80 (1.72-1.87)
DAIR	0.63 (0.58-0.67)
No DAIR	0.72 (0.67-0.77)
Patella addition	0.45 (0.41-0.49)

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.
Major revision: revision of at least the femur or tibia component.
Minor revision: only inlay and/or patella exchange (including DAIR procedures).
TKA: total knee arthroplasty; CI: confidence interval

© LROI 2026 | K012

In 2018-2022, 4,021(3.4%) primary TKAs were implanted in patients who died within three years after the primary procedure.

First major or minor revision

TABLE Cumulative 3-year first revision percentage of primary total knee arthroplasties by type of first major or minor revision in the Netherlands in 2018-2022 (n=119,274)

	Cumulative 3-year first revision percentage
	Kaplan Meier (95% CI)
First major revision	1.25 (1.19-1.31)
Tibia	1.15 (1.09-1.21)
Femur	1.05 (1.00-1.11)
First minor revision	1.80 (1.72-1.87)
Inlay	1.32 (1.25-1.38)
Patella addition	0.76 (0.71-0.81)

First major revision: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
First minor revision: only inlay and/or patella exchange (including DAIR procedures).
TKA: total knee arthroplasty; CI: confidence interval

© LROI 2026 | K013

In 2018-2022, 4,021(3.4%) primary TKAs were implanted in patients who died within three years after the primary procedure.

Reasons for revision by type of revision

TABLE Reasons for revision within three years of primary total knee arthroplasties by type of revision in the Netherlands in 2018-2022

	Major revision (n=1,506)	Minor revision (n=2,145)	Any type of revision (n=3,567)
Reasons for revision	**Proportion (%)**	**Proportion (%)**	**Proportion (%)**
Infection	23.57	34.92	28.93
Patellar pain	12.82	33.71	25.85
Instability	29.42	21.31	24.36
Malalignment	26.49	1.12	11.38
Loosening of tibia component	26.43	0.19	10.74
Arthrofibrosis	11.49	5.83	8.33
Patellar dislocation	4.05	4.34	4.21
Loosening of femur component	7.50	0.19	3.20
Peri-prosthetic fracture	6.24	0.23	2.80
Progression of osteoarthritis	0.33	3.96	2.52
Revision after knee removal	3.32	0.65	1.63
Insert wear	0.53	0.93	0.81
Loosening of patella component	0.53	0.75	0.67
Other	5.11	13.38	10.37

Major revision: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
Minor revision: only inlay and/or patella exchange (including DAIR procedures).
Any type of revision includes all first revisions, including revision procedures that could not be classified as minor or major revision.
Please note: More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.

© LROI 2026 | K014

Time after primary TKA

TABLE Time after primary total knee arthroplasty until short-term revision in the Netherlands in 2018-2022 (n=119,274)

Time after primary TKA	Percentage revisions (%)
Day 0-29	0.39
Day 30-182	0.38
Day 183-364	0.37
Day 365-730 (second year)	1.15
Day 731-1095 (third year)	0.69

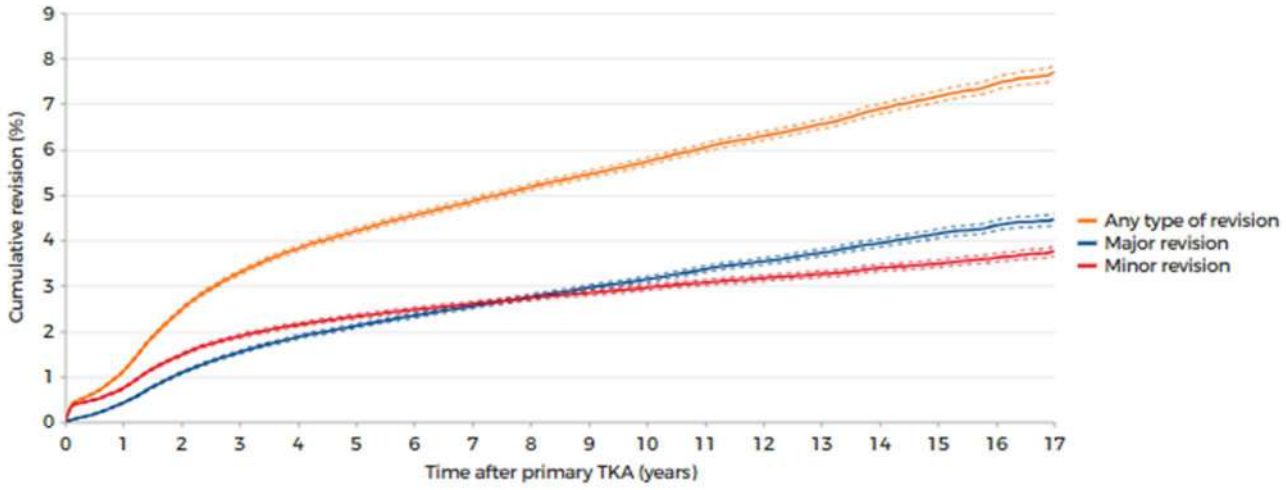
TKA: total knee arthroplasty

© LROI 2026 | K015

Long term revision

By type of revision

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of total knee arthroplasties by type of revision in the Netherlands in 2007-2025 (n=420,896)



© LROI 2026 | K016A

	1yr	3yr	5yr	7yr	10yr	17yr
Any type of revision	1.00 (0.97-1.03)	3.22 (3.16-3.28)	4.17 (4.10-4.23)	4.82 (4.75-4.89)	5.70 (5.61-5.78)	7.64 (7.48-7.79)
Major revision	0.36 (0.34-0.38)	1.49 (1.45-1.53)	2.08 (2.03-2.13)	2.52 (2.47-2.57)	3.12 (3.05-3.18)	4.43 (4.31-4.55)
Minor revision	0.68 (0.65-0.70)	1.85 (1.81-1.90)	2.31 (2.26-2.35)	2.59 (2.53-2.64)	2.94 (2.88-3.00)	3.72 (3.62-3.83)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.

Major revision: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

Minor revision: only insert and/or patella exchange (including patella addition).

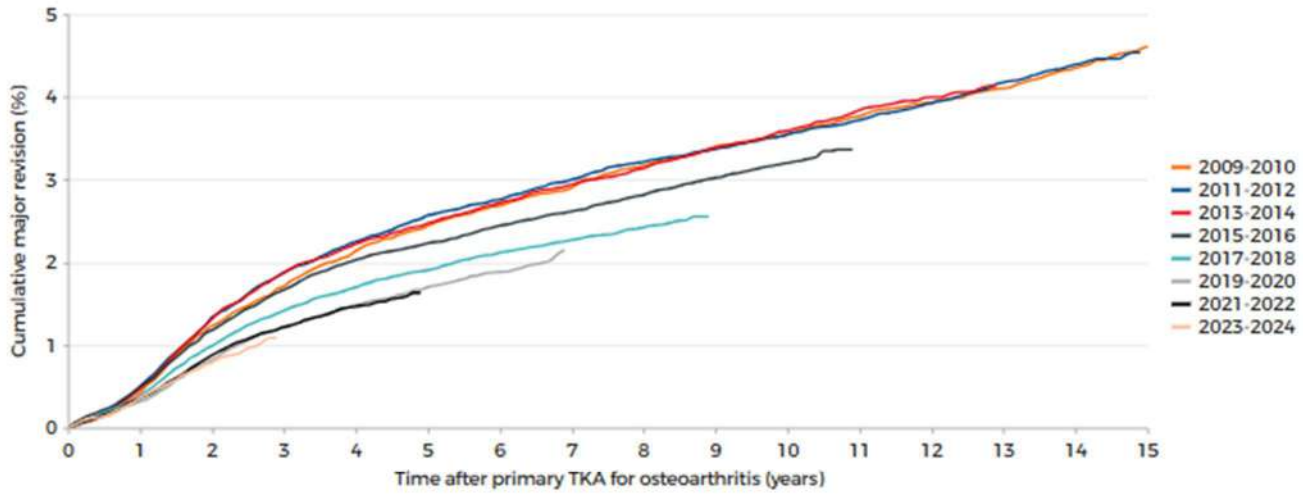
TKA: total knee arthroplasty; CI: confidence interval.

© LROI 2026 | K016B

In 2007-2025, 72,110 (17.1%) primary TKAs were implanted in patients who died within seventeen years after the primary diagnosis.

By procedure year

FIGURE Cumulative major revision percentage (Kaplan-Meier; 95% CI) of total knee arthroplasties by procedure year of primary TKA in the Netherlands in 2009-2024



© LROI 2026 | K017A

	Number (n)	1yr	3yr	5yr	7yr	10yr	15yr
2009-2010	33,203	0.35 (0.28-0.41)	1.68 (1.54-1.82)	2.40 (2.24-2.57)	2.87 (2.69-3.06)	3.53 (3.32-3.73)	4.58 (4.34-4.82)
2011-2012	39,191	0.41 (0.34-0.47)	1.83 (1.69-1.96)	2.53 (2.37-2.68)	2.98 (2.81-3.15)	3.53 (3.34-3.71)	4.54 (4.30-4.78)
2013-2014	44,083	0.40 (0.34-0.46)	1.83 (1.70-1.95)	2.44 (2.30-2.59)	2.92 (2.76-3.07)	3.58 (3.40-3.76)	n.a.
2015-2016	46,986	0.43 (0.37-0.49)	1.63 (1.52-1.75)	2.21 (2.07-2.34)	2.60 (2.45-2.74)	3.19 (3.02-3.35)	n.a.
2017-2018	49,418	0.33 (0.28-0.38)	1.38 (1.28-1.48)	1.89 (1.77-2.01)	2.26 (2.12-2.39)	n.a.	n.a.
2019-2020	43,533	0.28 (0.23-0.33)	1.19 (1.08-1.29)	1.67 (1.55-1.79)	2.15 (1.97-2.32)	n.a.	n.a.
2021-2022	46,358	0.32 (0.27-0.37)	1.19 (1.09-1.29)	1.63 (1.49-1.78)	n.a.	n.a.	n.a.
2023-2024	54,999	0.31 (0.26-0.35)	1.09 (0.96-1.21)	n.a.	n.a.	n.a.	n.a.

Please note: n.a. if <50 cases were at risk.
Major revision percentage: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
TKA: total knee arthroplasty; CI: confidence interval.

© LROI 2026 | K017B

Reasons for revision within 10 years

TABLE Reasons for revision within ten years of primary total knee arthroplasties by type of revision in the Netherlands in 2007-2025

	Major revision (n=9,494)	Minor revision (n=9,368)	Any type of revision (n=18,240)
Reasons for revision	**Proportion (%)**	**Proportion (%)**	**Proportion (%)**
Instability	30.50	23.05	25.99
Pain	12.76	44.20	29.51
Infection	18.73	24.06	20.32
Loosening of tibia component	37.23	0.45	18.59
Malalignment	25.41	1.29	12.88
Loosening of femur component	11.45	0.17	5.64
Arthrofibrosis	6.22	4.48	5.32
Patellar dislocation	2.72	3.51	2.99
Insert wear	2.75	2.67	2.71
Revision after knee removal	4.59	0.50	2.20
Peri-prosthetic fracture	3.92	0.23	2.18
Progression of osteoarthritis	0.41	3.28	1.96
Loosening of patella component	0.84	1.25	1.07
Other	7.01	11.02	9.31

Major revision: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

Minor revision: only inlay and/or patella exchange (including DAIR procedures).

Any type of revision includes all first revisions, including revision procedures that could not be classified as minor or major revision.

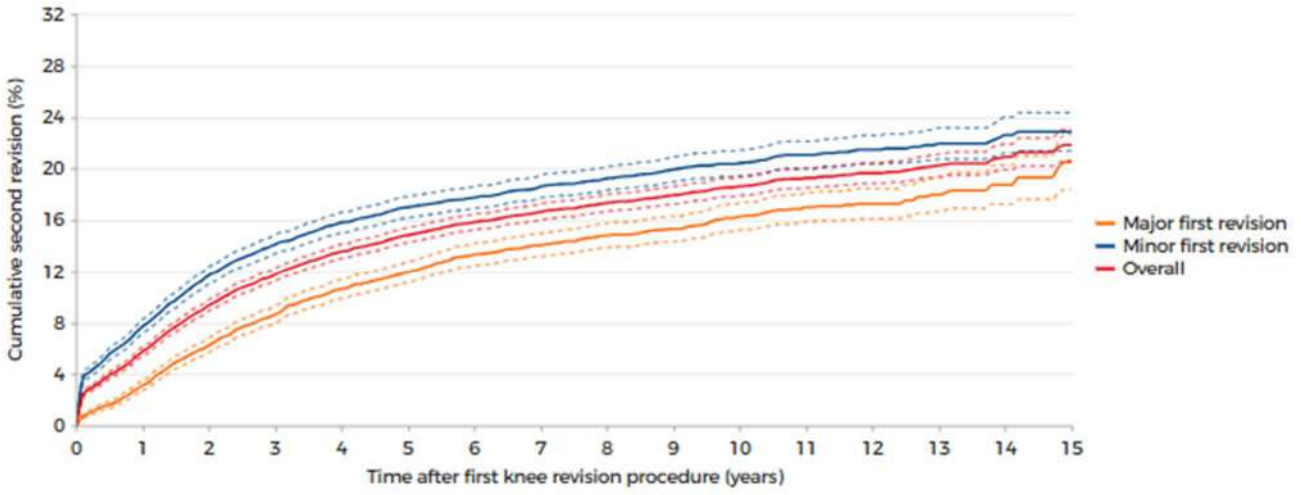
Please note: More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.

© LROI 2026 | K023

Rerevision

By type of first revision

FIGURE Cumulative second revision percentage (Kaplan-Meier; 95% CI) of total knee arthroplasties after a one-stage first revision by type of first revision in the Netherlands in 2007-2025 (n=18,211)



© LROI 2026 | K024A

	Number (n)	1yr	3yr	5yr	7yr	10yr	15yr
Overall	18,211	5.32 (4.99-5.65)	11.51 (11.01-12.00)	14.74 (14.17-15.31)	16.53 (15.91-17.15)	18.54 (17.83-19.26)	21.83 (20.60-23.07)
Major first revision	8,033	2.79 (2.42-3.16)	8.39 (7.73-9.04)	11.80 (11.01-12.60)	14.02 (13.13-14.92)	16.17 (15.12-17.21)	20.52 (18.38-22.67)
Minor first revision	9,848	7.19 (6.67-7.71)	13.87 (13.15-14.60)	16.94 (16.12-17.77)	18.43 (17.55-19.31)	20.37 (19.38-21.36)	22.86 (21.37-24.34)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis (excluding patella addition).

Major revision: revision of at least the femur or tibia component.

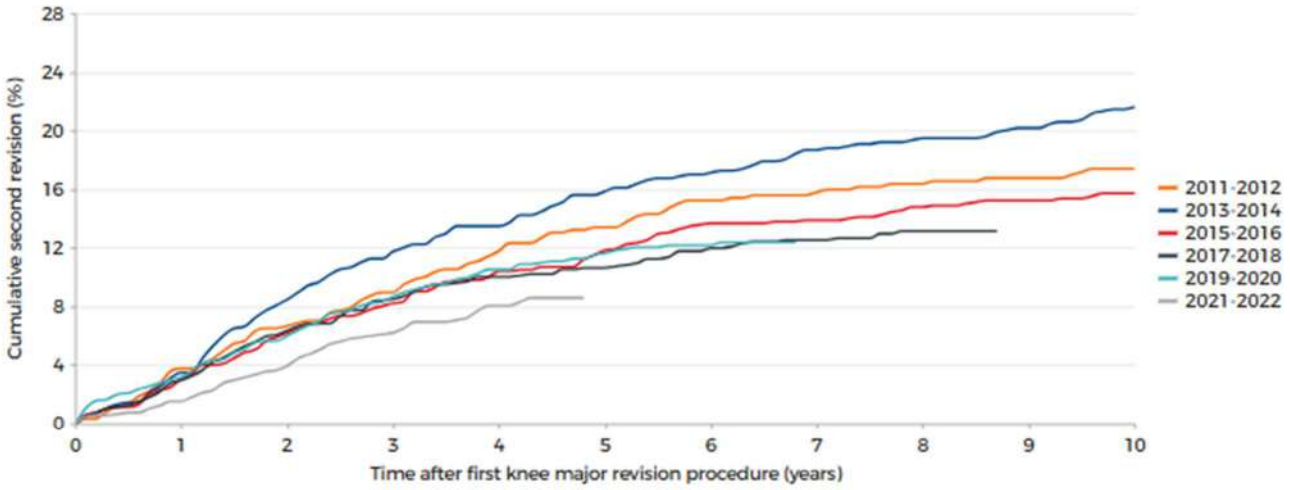
Minor revision: only insert and/or patella exchange (excluding patella addition).

CI: confidence interval.

© LROI 2026 | K024B

By procedure year of first major revision

FIGURE Cumulative second revision percentage (Kaplan-Meier; 95% CI) of total knee arthroplasties after a one-stage first revision by procedure year of first major revision in the Netherlands in 2011-2022 (n=5,731)



© LROI 2026 | K025A

	Number (n)	1yr	3yr	5yr	7yr	10yr
2011-2012	591	3.58 (2.08-5.09)	8.96 (6.63-11.28)	13.40 (10.62-16.19)	15.60 (12.62-18.59)	17.39 (14.25-20.53)
2013-2014	838	3.12 (1.94-4.30)	11.27 (9.11-13.42)	15.61 (13.12-18.09)	18.69 (16.01-21.37)	21.46 (18.61-24.32)
2015-2016	1,051	2.48 (1.54-3.42)	8.04 (6.39-9.68)	11.51 (9.57-13.46)	13.90 (11.77-16.02)	15.71 (13.44-17.99)
2017-2018	1,049	2.78 (1.78-3.77)	8.42 (6.72-10.11)	10.63 (8.74-12.52)	12.53 (10.49-14.58)	n.a.
2019-2020	1,144	2.98 (1.99-3.96)	8.32 (6.71-9.94)	11.55 (9.67-13.42)	n.a.	n.a.
2021-2022	1,058	1.53 (0.78-2.27)	6.10 (4.64-7.56)	n.a.	n.a.	n.a.

Please note: n.a. if <50 cases were at risk.

One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis.

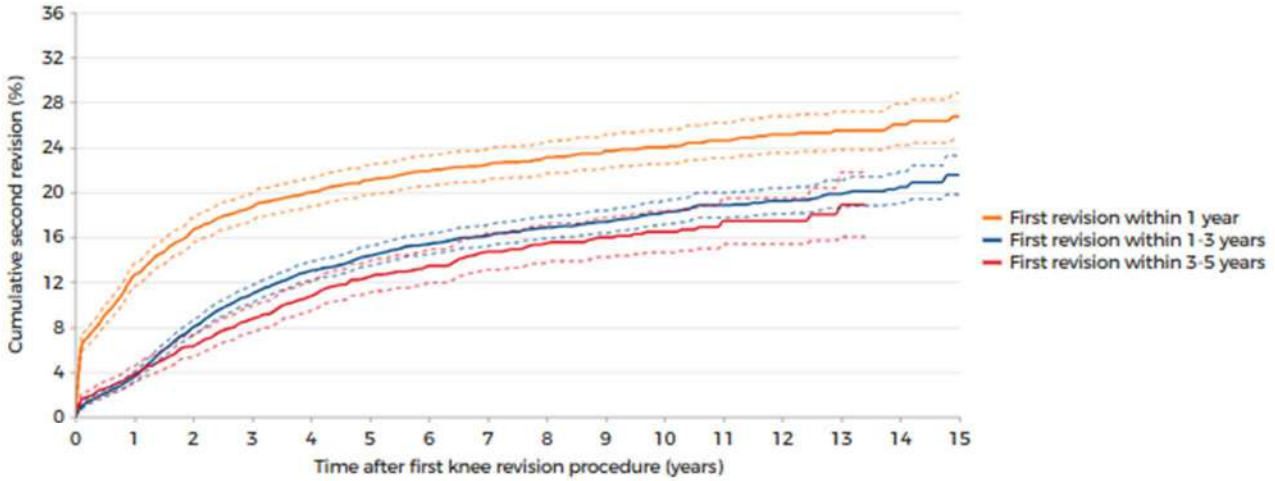
Major revision: revision of at least the femur or tibia component.

CI: confidence interval.

© LROI 2026 | K025B

By time to first revision

FIGURE Cumulative second revision percentage (Kaplan-Meier; 95% CI) of total knee arthroplasties after a one-stage first revision by time to first revision in the Netherlands in 2007-2025 (n=14,117)



© LROI 2026 | K026A

	Number (n)	1yr	3yr	5yr	7yr	10yr	15yr
First revision within 1 year	4,288	11.85 (10.87-12.83)	18.47 (17.25-19.70)	21.04 (19.72-22.36)	22.36 (20.98-23.74)	24.00 (22.50-25.50)	26.73 (24.66-28.81)
First revision within 1-3 years	7,283	3.20 (2.79-3.61)	10.68 (9.93-11.43)	14.24 (13.37-15.11)	16.06 (15.12-17.00)	18.07 (17.02-19.12)	21.53 (19.80-23.26)
First revision within 3-5 years	2,546	3.51 (2.78-4.23)	8.50 (7.36-9.64)	12.33 (10.91-13.74)	14.62 (13.02-16.21)	16.46 (14.63-18.29)	n.a.

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.
One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis (excluding patella addition).
CI: confidence interval.

© LROI 2026 | K026B

Reasons for second revision by type of first revision

TABLE Reasons for second revision within ten years in patients who underwent a second revision after a one-stage first revision of a total knee arthroplasty by type of first revision in the Netherlands in 2007-2025

	Major revision (n=921)	Minor revision (n=1,130)	Any type of revision (n=2,137)
Reasons for second revision	Proportion (%)	Proportion (%)	Proportion (%)
Infection	24.76	51.95	39.92
Instability	30.94	24.07	27.00
Loosening of tibia component	19.00	11.33	14.74
Patellar pain	17.59	10.35	13.85
Malalignment	9.99	9.20	9.73
Loosening of femur component	11.18	4.16	7.44
Arthrofibrosis	8.47	4.42	6.32
Patellar dislocation	3.58	3.54	3.46
Insert wear	2.61	2.30	2.62
Loosening of patella component	2.61	1.24	1.97
Peri-prosthetic fracture	1.19	0.53	0.80
Progression of osteoarthritis	0.33	0.44	0.37
Other	8.14	5.40	6.74

One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis.
Major first revision: Revision of at least the femur or tibia component.
Minor first revision: Only insert and/or patella exchange (including DAIR procedures).
Any type of first revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.
One patient may have more than one reason for second revision or re-surgery. As such, the total proportion is over 100%.

© LROI 2026 | K027

Survival by component

By cemented component name - overall revision

TABLE Cumulative revision percentages of cemented primary total knee arthroplasties by prosthesis component combination of patients who underwent a TKA for osteoarthritis in the Netherlands in 2007-2025 (n=360,151)

Femur component	Tibia component	Primary TKAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Type of revision (n)						Cumulative revision percentage (95% CI)					
						Total revision	Patella addition	Only femur	Only tibia	Only insert/patella	Unknown	1yr	3yr	5yr	7yr	10yr	17yr
All cemented TKAs for osteoarthritis		360,151	105	70 (63 - 76)	16,501	5,810	2,876	611	1,336	5,497	371	0.97 (0.94-1.01)	3.18 (3.11-3.24)	4.11 (4.04-4.18)	4.75 (4.67-4.83)	5.64 (5.55-5.73)	7.62 (7.45-7.79)
Genesis II	Genesis II	77,877	56	70 (63 - 76)	4,150	957	871	282	305	1,852	83	1.22 (1.15-1.30)	3.85 (3.70-3.99)	4.88 (4.72-5.05)	5.53 (5.35-5.71)	6.42 (6.21-6.62)	8.44 (8.05-8.82)
NexGen	NexGen	68,070	46	70 (63 - 76)	3,512	1,440	329	88	382	1,000	73	0.85 (0.78-0.92)	2.70 (2.58-2.83)	3.69 (3.54-3.84)	4.31 (4.14-4.48)	5.71 (5.51-5.92)	7.74 (7.39-8.09)
VANGUARD COMPLETE KNEE	VANGUARD COMPLETE KNEE	56,246	37	69 (63 - 76)	2,457	874	411	53	156	886	57	1.02 (0.93-1.10)	3.06 (2.91-3.21)	3.80 (3.63-3.96)	4.35 (4.15-4.53)	5.02 (4.81-5.23)	7.15 (6.55-7.73)
PFC / SIGMA	PFC / SIGMA	34,975	22	70 (63 - 76)	1,426	459	294	33	98	506	36	0.88 (0.78-0.98)	2.89 (2.71-3.06)	3.61 (3.41-3.81)	3.95 (3.74-4.17)	4.49 (4.25-4.72)	5.18 (4.84-5.48)
Persona	Persona	20,800	27	69 (63 - 75)	407	83	50	3	18	247	8	0.90 (0.77-1.04)	2.85 (2.56-2.93)	3.51 (3.09-3.92)	3.91 (3.22-4.60)	5.46 (3.58-7.35)	n.a.
LCS	LCS	17,253*	24	70 (63 - 76)	889	465	92	35	149	114	14	0.61 (0.49-0.73)	3.11 (2.85-3.37)	4.14 (3.84-4.44)	4.78 (4.46-5.11)	5.33 (4.97-5.68)	6.84 (6.11-7.56)
ATTUNE	ATTUNE	16,592	27	71 (64 - 76)	291	84	65	12	17	107	6	0.75 (0.61-0.88)	2.26 (1.97-2.54)	2.79 (2.45-3.16)	3.46 (2.89-4.05)	3.96 (3.16-4.77)	n.a.
TRIATHLON	TRIATHLON	15,844	25	71 (64 - 76)	616	153	89	27	59	278	10	1.45 (1.26-1.64)	3.57 (3.26-3.88)	4.35 (3.99-4.71)	4.84 (4.44-5.25)	5.66 (5.14-6.19)	n.a.
balanSys	balanSys	5,469	9	69 (62 - 76)	297	84	108	7	20	72	6	0.95 (0.69-1.21)	4.29 (3.71-4.86)	5.53 (4.85-6.20)	6.28 (5.54-7.02)	7.11 (6.26-7.96)	8.28 (7.09-9.47)
ACC V2	ACC V2	4,420*	14	71 (65 - 77)	196	118	59	1	2	12	6	0.50 (0.14-0.46)	2.02 (1.61-2.44)	2.60 (2.12-3.07)	3.18 (2.65-3.71)	3.84 (3.25-4.43)	5.43 (4.65-6.21)
TC Plus	TC Plus	3,867*	5	70 (63 - 76)	158	85	35	2	5	26	5	0.65 (0.40-0.90)	2.36 (1.88-2.84)	3.20 (2.63-3.76)	3.56 (2.95-4.17)	4.36 (3.64-5.09)	6.81 (4.86-8.35)
Optetrak	Optetrak	3,071*	9	70 (62 - 76)	507	350	90	4	33	23	7	1.05 (0.89-1.41)	5.33 (4.53-6.13)	7.16 (6.24-8.09)	9.18 (8.13-10.23)	12.80 (11.55-14.05)	24.18 (21.92-26.44)
ACS	ACS	2,698	10	67 (60 - 73)	149	59	24	9	12	57	8	0.87 (0.56-0.98)	3.75 (3.03-4.47)	4.71 (3.90-5.52)	5.05 (4.20-5.87)	5.50 (4.65-6.36)	n.a.
SCORPIO NRC	SCORPIO	2,631*	8	70 (63 - 76)	147	56	47	10	4	29	1	0.84 (0.40-1.19)	3.16 (2.49-3.83)	4.48 (3.68-5.28)	5.11 (4.26-5.97)	5.65 (4.72-6.55)	n.a.
Journey II BCS	Journey BCS	2,625	10	68 (62 - 75)	132	22	41	0	0	66	3	0.94 (0.56-1.31)	3.84 (3.05-4.64)	5.16 (4.19-6.14)	6.02 (4.93-7.11)	7.89 (6.36-9.41)	n.a.
SCORPIO	SCORPIO	2,240*	10	71 (63 - 76)	127	70	23	3	6	21	4	0.31 (0.08-0.55)	2.35 (1.72-2.98)	3.19 (2.46-3.93)	3.74 (2.94-4.54)	4.71 (3.80-5.61)	6.57 (5.43-7.72)
Legion	Genesis II	2,216	17	70 (63 - 76)	58	5	0	2	1	30	0	1.87 (1.18-2.56)	4.28 (3.27-5.28)	5.68 (4.65-6.72)	n.a.	n.a.	n.a.
MRK	MRK	2,089	7	70 (63 - 76)	54	26	11	0	0	15	2	0.38 (0.12-0.65)	1.54 (0.98-2.10)	2.55 (1.77-3.33)	3.32 (2.36-4.28)	4.51 (3.08-5.95)	n.a.
NexGen CSF	NexGen	1,589	8	68 (61 - 74)	41	25	5	0	2	8	1	0.44 (0.09-0.79)	1.43 (0.79-2.07)	2.45 (1.59-3.30)	2.73 (1.82-3.64)	3.28 (2.28-4.30)	n.a.
PFC / SIGMA	LCS	1,212*	9	66 (58 - 75)	60	32	11	3	1	11	2	0.33 (0.01-0.65)	1.93 (1.15-2.71)	2.88 (1.93-3.84)	3.88 (2.77-5.00)	4.49 (3.28-5.69)	6.15 (4.50-7.80)
Innex	Innex	1,126*	10	70 (62 - 77)	41	15	11	0	4	11	0	0.98 (0.40-1.55)	2.15 (1.50-2.99)	2.79 (1.82-3.76)	3.18 (2.14-4.21)	3.57 (2.30-4.44)	4.00 (2.77-5.24)
Journey BCS	Journey BCS	890*	8	66 (59 - 72)	151	18	61	1	3	66	2	1.13 (0.43-1.82)	6.84 (5.17-8.51)	8.36 (6.52-10.20)	10.22 (8.19-12.25)	12.34 (10.11-14.58)	22.94 (19.15-26.74)
Profix	Profix	772*	6	68 (61 - 76)	62	43	7	2	2	7	1	0.52 (0.01-1.03)	3.68 (2.54-5.02)	5.58 (3.94-7.21)	6.55 (4.77-8.32)	7.72 (5.79-9.65)	8.57 (6.52-10.62)
Advance MP	Advance	314*	5	71 (65 - 78)	33	7	7	1	5	10	3	1.92 (0.40-3.44)	7.87 (4.72-10.62)	8.96 (5.80-12.13)	9.30 (6.08-12.53)	9.65 (6.36-12.93)	n.a.
MAXIM	VANGUARD COMPLETE KNEE	272*	5	70 (63 - 77)	14	3	3	1	2	5	0	1.47 (0.04-2.90)	2.94 (0.93-4.95)	3.31 (1.18-5.44)	4.06 (1.71-6.41)	4.81 (2.26-7.37)	5.19 (2.54-7.84)

* Denotes prosthesis combinations with no reported use in primary TKAs in 2025.

Please note: n.a. if <50 cases were at risk; TKA: total knee arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | K018

Only combinations with over 250 procedures and reported by at least 3 hospitals have been listed.

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

By cemented component name - major revision

TABLE Cumulative major revision percentages of cemented primary total knee arthroplasties by prosthesis component combination of patients who underwent a TKA for osteoarthritis in the Netherlands in 2007-2025 (n=360,151)

Femur component	Tibia component	Primary TKAs (n)	Median (IQR) age (yr)	Major revisions (n)	Cumulative revision percentage (95% CI)					
					1yr	3yr	5yr	7yr	10yr	17yr
All cemented TKAs for osteoarthritis		**360,151**	**70 (63 - 76)**	**8,714**	**0.33 (0.32-0.35)**	**1.45 (1.41-1.49)**	**2.03 (1.98-2.09)**	**2.47 (2.41-2.52)**	**3.07 (3.00-3.14)**	**4.41 (4.27-4.54)**
Genesis II	Genesis II	77,877	70 (63 - 76)	1,776	0.39 (0.33-0.44)	1.56 (1.47-1.65)	2.07 (1.96-2.18)	2.41 (2.29-2.53)	2.84 (2.70-2.98)	3.58 (3.32-3.80)
NexGen	NexGen	68,070	70 (63 - 76)	2,097	0.29 (0.25-0.33)	1.58 (1.29-1.47)	2.04 (1.95-2.16)	2.73 (2.59-2.88)	3.76 (3.59-3.94)	5.35 (5.06-5.65)
VANGUARD COMPLETE KNEE	VANGUARD COMPLETE KNEE	56,248	69 (63 - 76)	1,243	0.39 (0.33-0.44)	1.43 (1.32-1.53)	1.89 (1.77-2.01)	2.19 (2.05-2.32)	2.62 (2.47-2.78)	3.82 (3.41-4.24)
PFC / SIGMA	PFC / SIGMA	34,975	70 (63 - 76)	668	0.26 (0.21-0.32)	1.18 (1.06-1.29)	1.65 (1.49-1.76)	1.83 (1.68-1.98)	2.14 (1.97-2.31)	2.50 (2.28-2.72)
Persona	Persona	20,800	69 (63 - 75)	127	0.22 (0.15-0.28)	0.79 (0.63-0.95)	1.42 (1.10-1.75)	1.79 (1.00-2.58)	2.82 (1.19-4.46)	n.a.
LCS	LCS	17,253*	70 (63 - 76)	708	0.58 (0.29-0.47)	2.29 (2.06-2.51)	3.16 (2.89-3.42)	3.79 (3.50-4.06)	4.28 (3.96-4.60)	5.40 (4.78-6.01)
ATTUNE	ATTUNE	16,592	71 (64 - 76)	126	0.29 (0.20-0.38)	0.93 (0.74-1.12)	1.36 (1.08-1.64)	1.65 (1.25-2.05)	1.97 (1.36-2.58)	n.a.
TRIATHLON	TRIATHLON	15,844	71 (64 - 76)	276	0.42 (0.32-0.53)	1.52 (1.31-1.74)	2.08 (1.80-2.32)	2.54 (2.05-2.65)	2.84 (2.28-2.99)	n.a.
balanSys	balanSys	5,469	69 (62 - 76)	122	0.31 (0.16-0.45)	1.54 (1.18-1.89)	2.26 (1.81-2.71)	2.73 (2.22-3.24)	3.02 (2.46-3.59)	3.44 (2.75-4.13)
ACC V2	ACC V2	4,420*	71 (65 - 77)	129	0.14 (0.03-0.25)	1.08 (0.77-1.39)	1.49 (1.13-1.85)	1.94 (1.53-2.36)	2.36 (1.91-2.85)	3.69 (3.02-4.35)

* Denotes prosthesis combinations with no reported use in primary TKAs in 2025.

Please note: n.a. if <50 cases were at risk.

Majore revision: Revision of at least the femur or tibia component

TKA: total knee arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | K019

Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

By uncemented component name - overall revision

TABLE Cumulative revision percentages of uncemented primary total knee arthroplasties by prosthesis component combination of patients who underwent a TKA for osteoarthritis in the Netherlands in 2007-2025 (n=22,445)

Femur component	Tibia component	Primary TKAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Type of revision (n)						Cumulative revision percentage (95% CI)					
						Total revision	Patella addition	Only femur	Only tibia	Only insert/patella	Unknown	1yr	3yr	5yr	7yr	10yr	17yr
All uncemented TKAs for osteoarthritis		**22,445**	**96**	**69 (62 - 75)**	**865**	**311**	**122**	**18**	**136**	**268**	**10**	**0.99 (0.86-1.13)**	**3.26 (3.01-3.52)**	**4.04 (3.75-4.34)**	**4.60 (4.27-4.93)**	**5.22 (4.85-5.58)**	**6.47 (5.91-7.02)**
LCS	LCS	8,918	23	70 (63 - 76)	433	136	53	10	98	132	4	0.93 (0.73-1.13)	3.49 (3.10-3.87)	4.15 (3.73-4.57)	4.53 (4.08-4.97)	4.97 (4.50-5.45)	5.57 (5.02-6.12)
TRIATHLON	TRIATHLON	3,777	14	66 (62 - 74)	85	28	7	2	6	42	0	0.88 (0.56-1.18)	1.85 (1.39-2.31)	2.42 (1.82-3.02)	2.94 (2.19-3.69)	3.53 (2.41-4.25)	n.a.
TRIATHLON	TRIATHLON TRITANIUM	3,306	12	69 (62 - 74)	36	6	5	0	3	22	0	0.92 (0.56-1.28)	2.23 (1.07-3.40)	n.a.	n.a.	n.a.	n.a.
ATTUNE	ATTUNE	2,343	15	66 (62 - 74)	31	6	6	1	0	18	0	0.75 (0.36-1.12)	2.72 (1.85-3.60)	2.72 (1.85-3.60)	2.72 (1.65-3.80)	n.a.	n.a.
ACS	ACS	1,022	7	69 (61 - 75)	43	12	8	2	9	11	1	1.72 (0.91-2.53)	3.86 (2.60-5.12)	4.57 (3.14-6.00)	4.81 (3.30-6.31)	5.69 (3.90-7.49)	n.a.
Genesis II	Genesis II	247	29	69 (63 - 75)	11	5	3	0	1	1	1	0.82 (0.00-1.96)	4.33 (1.70-6.96)	4.33 (1.70-6.96)	4.85 (2.05-7.66)	4.85 (2.05-7.66)	n.a.
NexGen	NexGen	245	24	70 (63 - 77)	22	11	1	1	3	6	0	1.86 (0.05-3.27)	5.48 (2.56-8.38)	6.89 (3.63-10.16)	7.97 (4.42-11.52)	10.68 (6.09-15.27)	n.a.
ACS LD	ACS LD	234*	3	70 (61 - 76)	15	6	3	0	2	4	0	1.30 (0.00-2.75)	5.69 (2.66-8.69)	6.15 (3.03-9.28)	6.63 (3.39-9.88)	n.a.	n.a.
VANGUARD COMPLETE KNEE	VANGUARD COMPLETE KNEE	172	23	66 (61 - 75)	15	7	2	0	4	2	0	2.33 (0.07-4.58)	5.37 (1.95-8.79)	5.37 (1.95-8.79)	7.56 (3.42-11.70)	9.31 (4.56-14.05)	n.a.
SCORPIO	SCORPIO	78	3	67 (61 - 71)	6	3	0	0	0	2	1	0.00 (0.00-0.00)	2.67 (0.00-6.31)	5.39 (0.25-10.53)	6.80 (1.04-12.56)	6.80 (1.04-12.56)	n.a.
ACS	ACS LD	77	3	66 (63 - 74)	3	1	1	0	0	1	0	1.30 (0.00-3.85)	2.67 (0.00-6.32)	2.67 (0.00-6.32)	2.67 (0.00-6.32)	n.a.	n.a.
ACS LD	ACS	65	3	70 (63 - 74)	1	1	0	0	0	0	0	0.00 (0.00-0.00)	n.a.	n.a.	n.a.	n.a.	n.a.
PFC / SIGMA	PFC / SIGMA	63	9	66 (63 - 74)	3	0	2	0	1	0	0	0.00 (0.00-0.00)	4.79 (0.00-10.06)	4.79 (0.00-10.06)	n.a.	n.a.	n.a.
ACC V2	ACC V2	62	6	72 (65 - 76)	5	3	1	0	0	1	0	0.00 (0.00-0.00)	3.23 (0.00-7.62)	6.67 (0.35-12.99)	6.67 (0.35-12.99)	n.a.	n.a.

* Denotes prosthesis combinations with no reported use in primary TKAs in 2025.

Please note: n.a. if <50 cases were at risk; TKA: total knee arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | K020

Only combinations with over 50 procedures and reported by at least 3 hospitals have been listed.

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

By uncemented component name - major revision

TABLE Cumulative major revision percentages of uncemented primary total knee arthroplasties by prosthesis component combination of patients who underwent a TKA for osteoarthritis in the Netherlands in 2007-2025 (n=22,445)

Femur component	Tibia component	Primary TKAs (n)	Median (IQR) age (yr)	Major revisions (n)	Cumulative revision percentage (95% CI)					
					1yr	3yr	5yr	7yr	10yr	17yr
All uncemented TKAs for osteoarthritis		**22,445**	**69 (62 - 75)**	**525**	**0.55 (0.45-0.65)**	**1.84 (1.65-2.04)**	**2.42 (2.19-2.66)**	**2.79 (2.53-3.05)**	**3.23 (2.93-3.53)**	**4.25 (3.75-4.76)**
LCS	LCS	6.918	70 (63 - 76)	266	0.59 (0.43-0.74)	2.15 (1.85-2.45)	2.64 (2.30-2.98)	2.80 (2.46-3.15)	3.05 (2.67-3.42)	3.59 (2.96-3.82)
TRIATHLON	TRIATHLON	5.777	68 (62 - 74)	46	0.42 (0.21-0.63)	0.83 (0.51-1.14)	1.27 (0.82-1.73)	1.70 (1.08-2.31)	2.27 (1.38-3.17)	n.a.
TRIATHLON	TRIATHLON TRITANIUM	3.306	69 (62 - 74)	9	0.29 (0.07-0.51)	0.84 (0.00-1.82)	n.a.	n.a.	n.a.	n.a.
ATTUNE	ATTUNE	2.543	68 (62 - 74)	14	0.31 (0.06-0.56)	1.11 (0.41-1.81)	1.65 (0.39-2.90)	2.46 (0.44-4.47)	n.a.	n.a.
ACS	ACS	1.022	69 (61 - 75)	27	1.12 (0.46-1.79)	2.31 (1.33-3.29)	3.02 (1.82-4.22)	3.28 (1.98-4.55)	3.56 (2.15-4.97)	n.a.
Genesis II	Genesis II	247	69 (63 - 75)	6	0.41 (0.00-1.22)	2.61 (0.55-4.67)	2.61 (0.55-4.67)	2.61 (0.55-4.67)	2.61 (0.55-4.67)	n.a.
NexGen	NexGen	245	70 (63 - 77)	16	1.25 (0.00-2.85)	4.23 (1.66-6.80)	5.15 (2.31-7.99)	6.22 (3.05-9.39)	7.18 (3.52-10.85)	n.a.
ACS LD	ACS LD	234*	70 (61 - 78)	9	1.30 (0.00-2.76)	3.50 (1.12-5.89)	3.97 (1.43-6.51)	3.97 (1.43-6.51)	n.a.	n.a.

* Denotes prosthesis combinations with no reported use in primary TKAs in 2025.

Please note: n.a. if <50 cases were at risk.

Majore revision: Revision of at least the femur or tibia component

TKA: total knee arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | K021

Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

By bone cement

TABLE Cumulative revision percentages of the most frequently registered types of bone cement by type of mixing system in primary total knee arthroplasties in the Netherlands in 2007-2025

Bone cement	Primary TKAs (n)	Median (IQR) age (yr)	Revisions (n)	Cumulative revision percentage (95% CI)					
				1yr	3yr	5yr	7yr	10yr	17yr
Separately packed	**192,859**	**69 (63 - 76)**	**10,329**	**0.90 (0.85-0.94)**	**3.23 (3.15-3.31)**	**4.20 (4.10-4.29)**	**4.86 (4.76-4.96)**	**5.74 (5.62-5.85)**	**7.71 (7.50-7.91)**
PALACOS R+G	144,667	69 (63 - 76)	7,665	0.92 (0.87-0.97)	3.24 (3.15-3.33)	4.20 (4.09-4.31)	4.84 (4.73-4.96)	5.73 (5.59-5.86)	7.74 (7.49-7.99)
Refobacin Bone Cement R	13,917	69 (63 - 76)	788	0.84 (0.69-0.99)	3.05 (2.76-3.34)	3.92 (3.58-4.25)	4.85 (4.47-5.23)	6.20 (5.74-6.66)	8.53 (7.82-9.25)
PALACOS MV+G	8,682	70 (64 - 76)	425	0.83 (0.64-1.02)	3.06 (2.68-3.43)	4.01 (3.59-4.44)	4.78 (4.30-5.25)	5.36 (4.85-5.87)	n.a.
Simplex ABC EC	5,077*	69 (62 - 76)	374	0.93 (0.66-1.19)	3.70 (3.18-4.22)	4.98 (4.38-5.59)	5.98 (5.32-6.65)	7.13 (6.40-7.86)	10.04 (8.32-11.75)
Simplex ABC TOBRA	4,864*	66 (60 - 73)	244	0.78 (0.53-1.03)	2.25 (1.84-2.67)	3.06 (2.58-3.55)	3.61 (3.08-4.14)	4.51 (3.91-5.11)	6.25 (5.40-7.10)
Refobacin Plus Bone Cement	3,055*	68 (60 - 75)	202	1.02 (0.66-1.37)	4.28 (3.56-5.00)	5.36 (4.56-6.16)	5.78 (4.95-6.61)	6.30 (5.43-7.17)	7.19 (6.19-8.19)
Subiton G	2,452	68 (61 - 75)	126	1.51 (1.01-2.00)	5.28 (4.30-6.26)	6.57 (5.41-7.72)	7.05 (5.71-8.39)	n.a.	n.a.
PALACOS R	1,677	69 (62 - 76)	75	0.54 (0.19-0.89)	2.60 (1.83-3.37)	3.22 (2.37-4.08)	3.74 (2.82-4.67)	4.44 (3.43-5.46)	4.79 (3.72-5.85)
Biomet Bone Cement R	1,500	69 (62 - 75)	47	0.71 (0.27-1.15)	2.85 (1.89-3.80)	4.21 (2.91-5.50)	5.00 (3.31-6.68)	5.00 (3.31-6.68)	n.a.
Biomet Plus Bone Cement	1,451*	68 (61 - 76)	69	1.04 (0.52-1.57)	3.44 (2.50-4.39)	4.34 (3.27-5.40)	4.49 (3.41-5.57)	4.90 (3.75-6.06)	n.a.
PALAMED G	1,345*	70 (63 - 76)	67	0.22 (0.00-0.48)	2.25 (1.46-3.05)	3.18 (2.24-4.13)	3.50 (2.51-4.50)	4.01 (2.94-5.08)	5.65 (4.31-7.00)
VERSABOND	631*	71 (63 - 78)	60	0.63 (0.01-1.25)	5.43 (3.65-7.20)	6.42 (4.50-8.35)	6.93 (4.93-8.93)	7.48 (5.40-9.56)	n.a.
cemSys 1G	547*	64 (58 - 69)	42	1.10 (0.22-1.97)	3.31 (1.80-4.81)	5.73 (3.77-7.69)	6.87 (4.73-9.00)	7.47 (5.24-9.69)	n.a.
Simplex P	398*	70 (62 - 77)	24	0.00 (0.00-0.00)	2.83 (1.18-4.48)	3.90 (1.96-5.84)	4.48 (2.40-6.57)	5.41 (3.10-7.73)	7.20 (4.33-10.07)
Simplex HV	377*	66 (61 - 73)	9	0.27 (0.00-0.78)	1.60 (0.33-2.87)	2.16 (0.68-3.64)	2.44 (0.87-4.02)	n.a.	n.a.
Synicem1G	334*	71 (65 - 77)	12	0.60 (0.00-1.43)	3.68 (1.63-5.72)	3.68 (1.63-5.72)	3.68 (1.63-5.72)	n.a.	n.a.
PALAMED	232*	70 (61 - 76)	15	0.86 (0.00-2.05)	2.59 (0.54-4.63)	3.89 (1.40-6.39)	4.80 (2.03-7.57)	5.27 (2.36-8.17)	7.19 (3.60-10.78)
COPAL G+C	112	68 (60 - 74)	9	0.00 (0.00-0.00)	2.85 (0.00-6.03)	7.20 (2.04-12.37)	7.20 (2.04-12.37)	n.a.	n.a.
CMW 1 GENTAMICIN Bone Cement	111	67 (59 - 72)	12	1.80 (0.00-4.28)	6.31 (1.79-10.84)	6.31 (1.79-10.84)	6.31 (1.79-10.84)	7.40 (2.45-12.35)	n.a.
Pre-packed in a vacuum mixing system	**142,286**	**70 (64 - 76)**	**5,122**	**1.08 (1.03-1.14)**	**3.16 (3.06-3.26)**	**3.99 (3.88-4.11)**	**4.62 (4.48-4.75)**	**5.46 (5.29-5.64)**	**7.48 (6.85-8.10)**
Refobacin Bone Cement R	63,991	70 (64 - 76)	2,270	1.05 (0.97-1.13)	3.06 (2.91-3.21)	3.94 (3.76-4.11)	4.64 (4.44-4.85)	5.56 (5.29-5.82)	n.a.
PALACOS R+G	59,694	71 (64 - 76)	1,914	1.22 (1.13-1.31)	3.24 (3.08-3.40)	4.01 (3.82-4.20)	4.57 (4.35-4.80)	5.32 (4.92-5.72)	n.a.
Refobacin Plus Bone Cement	16,671*	68 (62 - 74)	809	0.72 (0.59-0.84)	3.06 (2.80-3.32)	3.90 (3.59-4.20)	4.42 (4.09-4.75)	5.21 (4.84-5.58)	6.85 (6.08-7.62)
Cemex Genta	1,355*	71 (65 - 77)	104	1.04 (0.50-1.57)	4.91 (3.76-6.07)	5.67 (4.43-6.91)	6.31 (5.00-7.62)	7.35 (5.93-8.77)	n.a.
Refobacin Revision	66*	66 (61 - 77)	6	1.53 (0.00-4.50)	3.07 (0.00-7.25)	3.07 (0.00-7.25)	3.07 (0.00-7.25)	n.a.	n.a.

* Denotes types of bone cement with no reported use in primary TKAs in 2025.

Please note: n.a. if <50 cases were at risk; TKA: total knee arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | K022

Only types of bone cement with over 50 procedures have been listed.

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

PROMs

Response

Per year

FIGURE Pre-operative, 6 months and 12 months postoperative response percentage of patients who underwent a TKA in the Netherlands in 2014-2025



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Pre-PROM	3.49	16.72	44.56	53.27	56.05	58.26	53.85	54.97	54.89	57.29	60.75	56.86
Pre- and 12 months PROM	2.03	8.13	27.22	34.68	34.53	36.46	34.98	35.43	33.58	34.39	36.98	n.a.
Pre-, 6- and 12 months PROM	0.77	4.47	18.53	27.40	27.81	29.58	29.10	29.77	27.77	28.72	31.20	n.a.
Total TKAs (n)	**23,983**	**23,930**	**24,609**	**25,328**	**25,592**	**25,781**	**19,565**	**21,437**	**26,734**	**28,184**	**28,562**	28,527

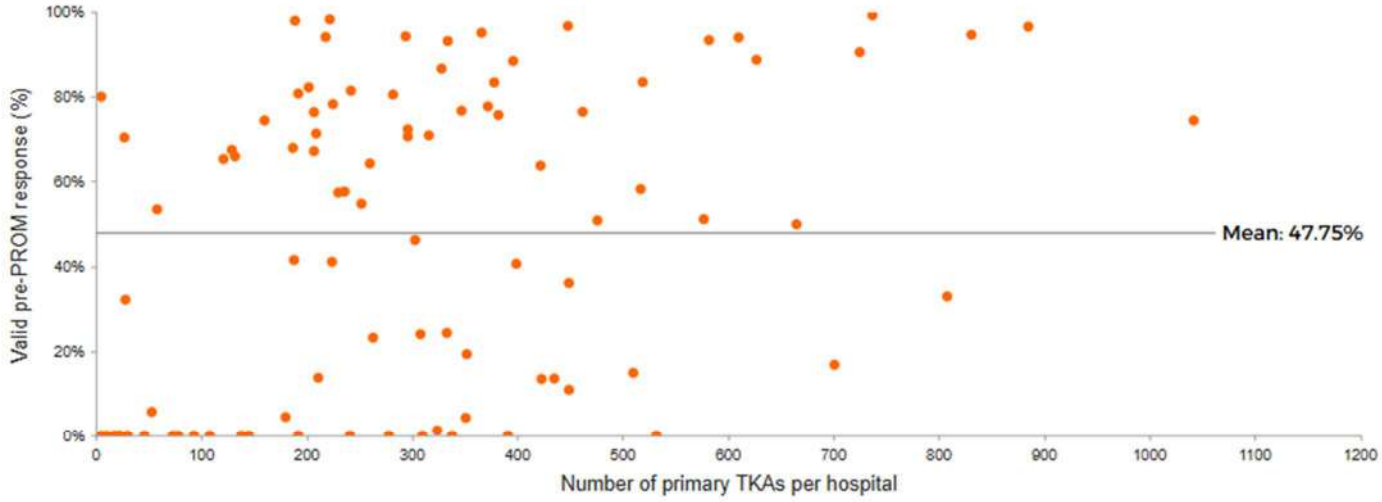
Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.

TKA: total knee arthroplasty; PROM: patient reported outcome measure.

© LROI 2026 | K028A
© LROI 2026 | K028B

Pre-PROM per hospital

FIGURE Scatterplot of pre-operative response percentage of patients who underwent a primary TKA per hospital in the Netherlands in 2025



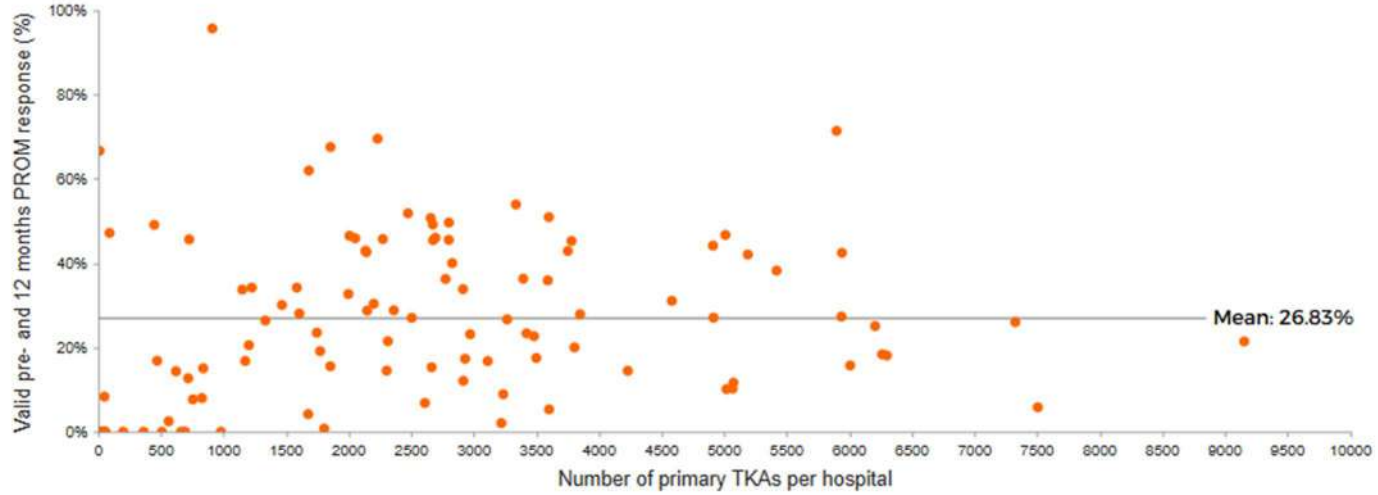
TKA: total knee arthroplasty; PROM: patient reported outcome measure.

© LROI 2026 | K030

The mean pre-operative response rate is 47.7% in the Netherlands in 2025.
Of the 92 hospitals, 43 (47%) scored above the 60% response rate.

PROM trajectory per hospital

FIGURE Scatterplot of PROM trajectory (pre-operative and 12 months postoperative) response percentage of patients who underwent a primary TKA per hospital in the Netherlands in 2014-2024



Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.
TKA: total knee arthroplasty; PROM: patient reported outcome measure.

© LROI 2026 | K031

The mean PROM trajectory response rate was 26.8% in the Netherlands between 2014-2023.
Of the 104 hospitals, 6 (6%) scored above the 60% response rate.

Patient characteristics

Responders vs non-responders

TABLE Patient characteristics of PROM responders and non-responders after primary total knee arthroplasty in the Netherlands in 2020-2024

	Non-responder	Pre- and 12-month PROM respondents	Total
N(%)	**81,393 (65)**	**43,671 (35)**	**125,064**
Mean age (years) (SD)	69.8 (9)	68.8 (8.3)	69.4 (8.8)
Age (years) (%)			
<50	1	1	1
50-59	13	14	13
60-69	32	36	33
70-79	41	40	41
>80	13	9	12
Sex (%)			
Male	37	40	38
Female	63	60	62
ASA class (%)			
ASA I	9	11	10
ASA II	62	65	63
ASA III-IV	29	24	27
Type of hospital (%)			
General	79	76	78
UMC	2	1	1
Private	19	23	21
Diagnosis (%)			
Osteoarthritis	96	97	97
Other	4	3	3
Mean BMI (kg/m2) (SD)	29.5 (5)	29.3 (4.8)	29.5 (4.9)
Revision within 1 yr (%)			
No revision within 1 yr	98	99	99
Revision within 1 yr	1	1	1

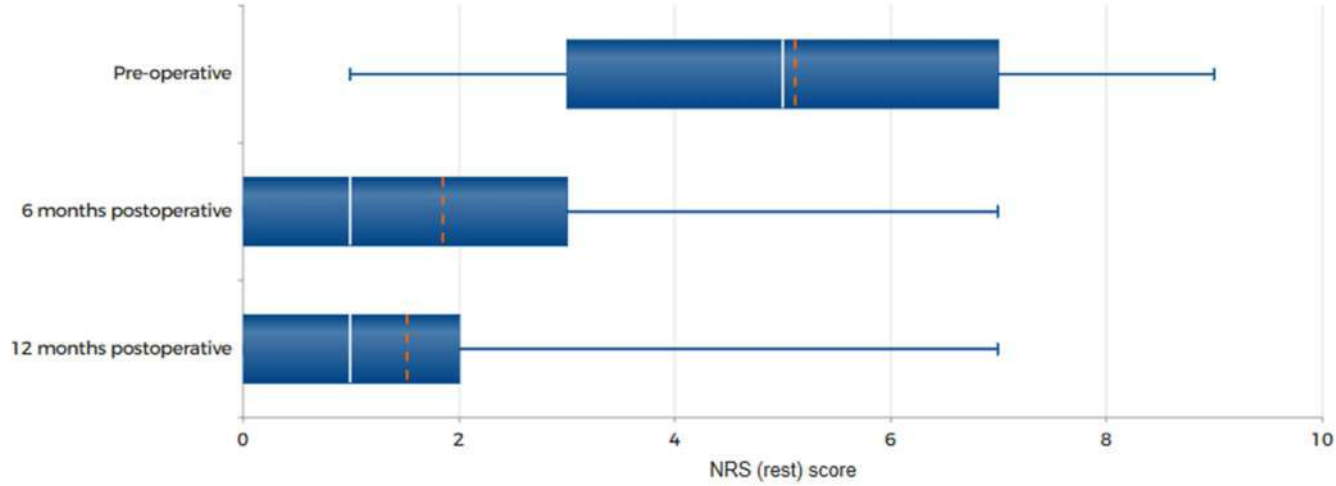
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | K029

Outcomes

NRS (rest)

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative NRS (rest) scores of patients who underwent a TKA in the Netherlands in 2020-2024



© LROI 2026 | K032A

		Pre-operative	6 months postoperative	12 months postoperative
NRS (rest) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total knee arthroplasty	36,090	5.00 (3.00-7.00)	1.00 (0.00-3.00)	1.00 (0.00-2.00)

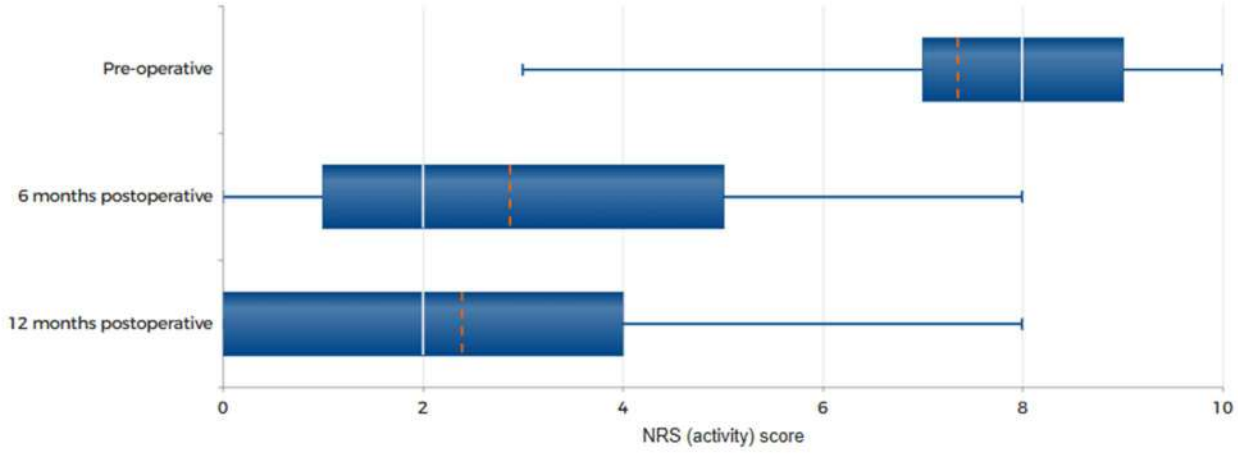
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
TKA: total knee arthroplasty; IQR: interquartile range

© LROI 2026 | K032B

The NRS (rest) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

NRS (activity)

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative NRS (activity) scores of patients who underwent a TKA in the Netherlands 2020-2024



© LROI 2026 | K033A

		Pre-operative	6 months postoperative	12 months postoperative
NRS (activity) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total knee arthroplasty	36,072	8.00 (7.00-9.00)	2.00 (1.00-5.00)	2.00 (0.00-4.00)

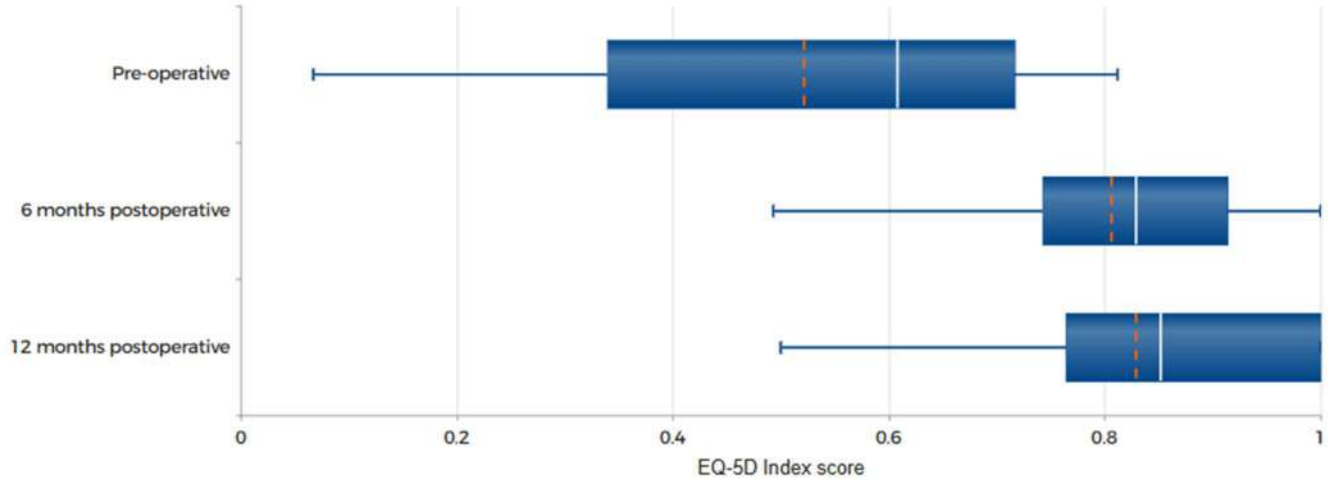
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
TKA: total knee arthroplasty; IQR: interquartile range

© LROI 2026 | K033B

The NRS (activity) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

EQ-5D Index score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative EQ-5D index scores of patients who underwent a TKA in the Netherlands in 2020-2024



© LROI 2026 | K034A

		Pre-operative	6 months postoperative	12 months postoperative
EQ-5D Index score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total knee arthroplasty	35,931	0.61 (0.34-0.72)	0.83 (0.74-0.91)	0.85 (0.77-1.00)

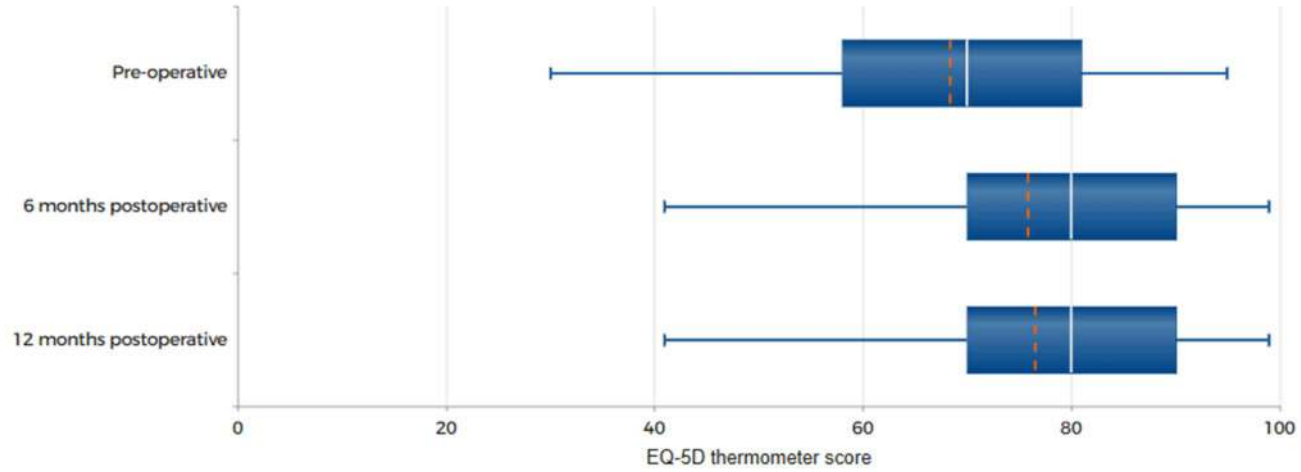
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
TKA: total knee arthroplasty; IQR: interquartile range

© LROI 2026 | K034B

The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.

EQ-5D thermometer

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative EQ-5D thermometer scores of patients who underwent a TKA in the Netherlands in 2020-2024



© LROI 2026 | K035A

		Pre-operative	6 months postoperative	12 months postoperative
EQ-5D thermometer score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total knee arthroplasty	35,862	70.00 (58.00-81.00)	80.00 (70.00-90.00)	80.00 (70.00-90.00)

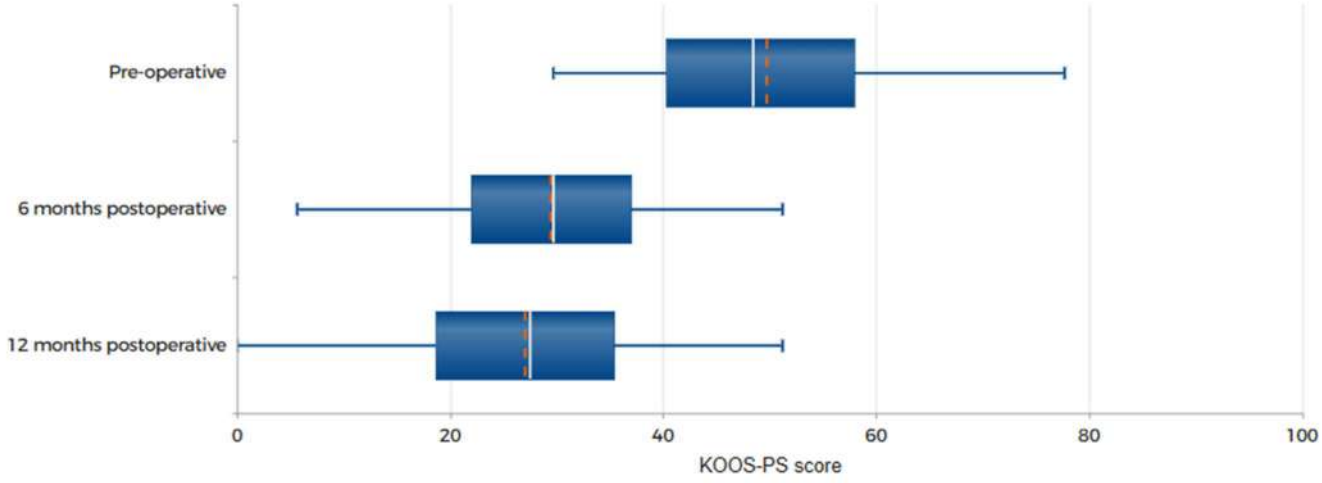
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
TKA: total knee arthroplasty; IQR: interquartile range

© LROI 2026 | K035B

The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation.

KOOS-PS score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative KOOS-PS scores of patients who underwent a TKA in the Netherlands in 2020-2024



© LROI 2026 | K036A

		Pre-operative	6 months postoperative	12 months postoperative
KOOS-PS score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total knee arthroplasty	34,132	48.50 (40.30-57.90)	29.70 (22.00-37.00)	27.50 (18.60-35.30)

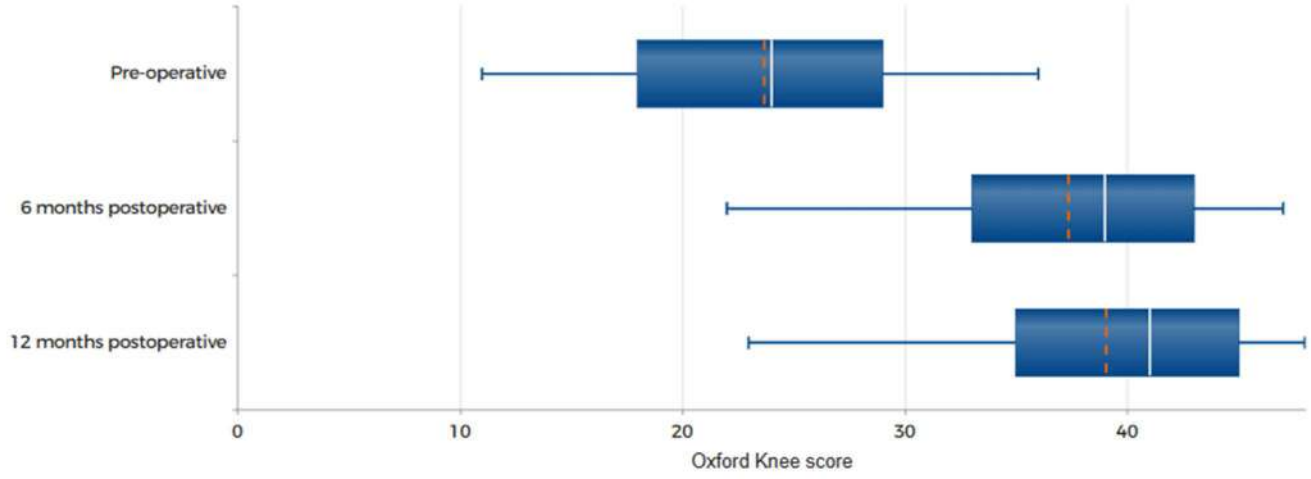
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
TKA: total knee arthroplasty; IQR: interquartile range

© LROI 2026 | K036B

The KOOS-PS score measures the physical functioning of patients with osteoarthritis to the knee. The score has a range of 0.0 to 100.0, with 0.0 representing no effort and 100.0 the most possible effort.

Oxford Knee Score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative Oxford Knee scores of patients who underwent a TKA in the Netherlands in 2020-2024



© LROI 2026 | K037A

		Pre-operative	6 months postoperative	12 months postoperative
Oxford Knee Score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total knee arthroplasty	35,292	24.00 (18.00-29.00)	39.00 (33.00-43.00)	41.00 (35.00-45.00)

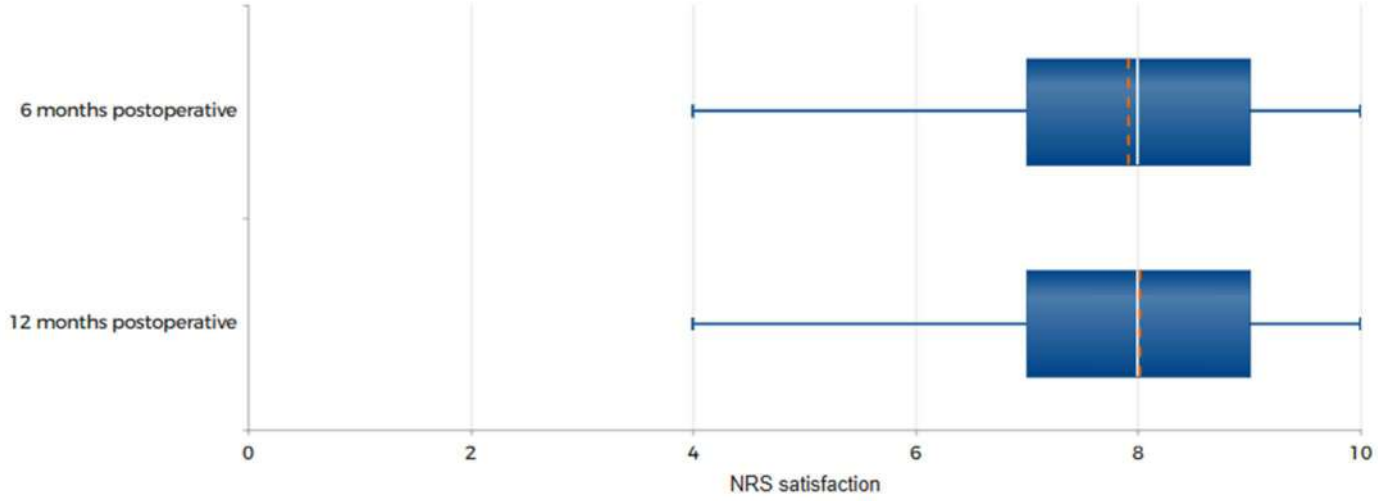
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
TKA: total knee arthroplasty; IQR: interquartile range

© LROI 2026 | K037B

The Oxford Knee score measures the physical functioning and pain of patients with osteoarthritis to the knee. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 the most functional ability.

NRS (satisfaction)

FIGURE Boxplots of 6 months and 12 months postoperative NRS (satisfaction) scores of patients who underwent a TKA in the Netherlands in 2020-2024



© LROI 2026 | K038A

		6 months postoperative	12 months postoperative
NRS satisfaction	N	Median (IQR)	Median (IQR)
Total knee arthroplasty	39,294	8.00 (7.00-9.00)	8.00 (7.00-9.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
TKA: total knee arthroplasty; IQR: interquartile range

© LROI 2026 | K038B

The NRS (satisfaction) score measures patients' satisfaction with the outcome of after joint replacement. The score has a range of 0.0 to 10.0, with 0.0 representing very unsatisfied and 10.0 representing very satisfied.

Unicondylar knee arthroplasty

In this section you will find all the information on unicondylar knee arthroplasty

Patient characteristics

By diagnosis

TABLE Patient characteristics of all patients with a registered primary unicondylar knee arthroplasty by type of diagnosis in the Netherlands in 2025

	Osteoarthritis	Other	Total
N(%)	**9,279 (98.4)**	**153 (1.6)**	**9,474**
Mean age (years) (SD)	66.6 (8.6)	66.2 (9.5)	66.6 (8.6)
Age (years) (%)			
<50	2	2	2
50-59	20	21	20
60-69	40	40	40
70-79	32	29	32
>80	6	8	6
Sex (%)			
Male	47	50	47
Female	53	50	53
ASA class (%)			
ASA I	12	7	12
ASA II	65	71	65
ASA III-IV	23	22	23
Type of hospital (%)			
General	71	68	70
UMC	0	1	0
Private	29	31	29
Charnley-score (%)			
A One knee joint affected	44	62	45
B1 Both knee joints affected	33	10	33
B2 Contralateral knee with a TKA	20	10	20
C Multiple joints affected or chronic disease that affects quality of life	2	1	2
Mean BMI (kg/m2) (SD)	29 (4.4)	28.8 (4.6)	29 (4.4)
Body Mass Index (kg/m2) (%)			
Underweight (<=18.5)	0	0	0
Normal weight (>18.5-25)	18	22	19
Overweight (>25-30)	44	39	44
Obesity (>30-40)	36	37	36
Morbid obesity (>40)	1	2	1
Smoking (%)			
No	92	93	93
Yes	7	7	7

Please note: The diagnosis category 'Other' (153 cases: 2%) includes osteonecrosis (104), other (26), post-traumatic (18) and rheumatoid arthritis (4). In addition, there were 42 primary unicondylar knee arthroplasties for which no diagnosis was registered.

General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | K039

By unicondylar side

TABLE Patient characteristics of all patients with a registered primary unicondylar knee arthroplasty by unicondylar side in the Netherlands in 2025

	Medial	Lateral	Total
N(%)	**8,795 (96.8)**	**292 (3.2)**	**9,474**
Mean age (years) (SD)	66.5 (8.5)	66.1 (10.7)	66.6 (8.6)
Age (years) (%)			
<50	2	4	2
50-59	20	24	20
60-69	41	34	40
70-79	32	25	32
>80	6	13	6
Sex (%)			
Male	48	30	47
Female	52	70	53
ASA class (%)			
ASA I	12	17	12
ASA II	65	68	65
ASA III-IV	23	15	23
Diagnosis (%)			
Osteoarthritis	98	98	98
Other	2	2	2
Type of hospital (%)			
General	70	59	70
UMC	0	0	0
Private	29	41	29
Charnley-score (%)			
A One knee joint affected	43	65	45
B1 Both knee joints affected	34	21	33
B2 Contralateral knee with a TKA	21	12	20
C Multiple joints affected or chronic disease that affects quality of life	2	2	2
Mean BMI (kg/m2) (SD)	29.1 (4.4)	27.3 (4)	29 (4.4)
Body Mass Index (kg/m2) (%)			
Underweight (<=18.5)	0	0	0
Normal weight (>18.5-25)	18	30	19
Overweight (>25-30)	44	46	44
Obesity (>30-40)	36	23	36
Morbid obesity (>40)	1	0	1
Smoking (%)			
No	94	94	93
Yes	6	6	7

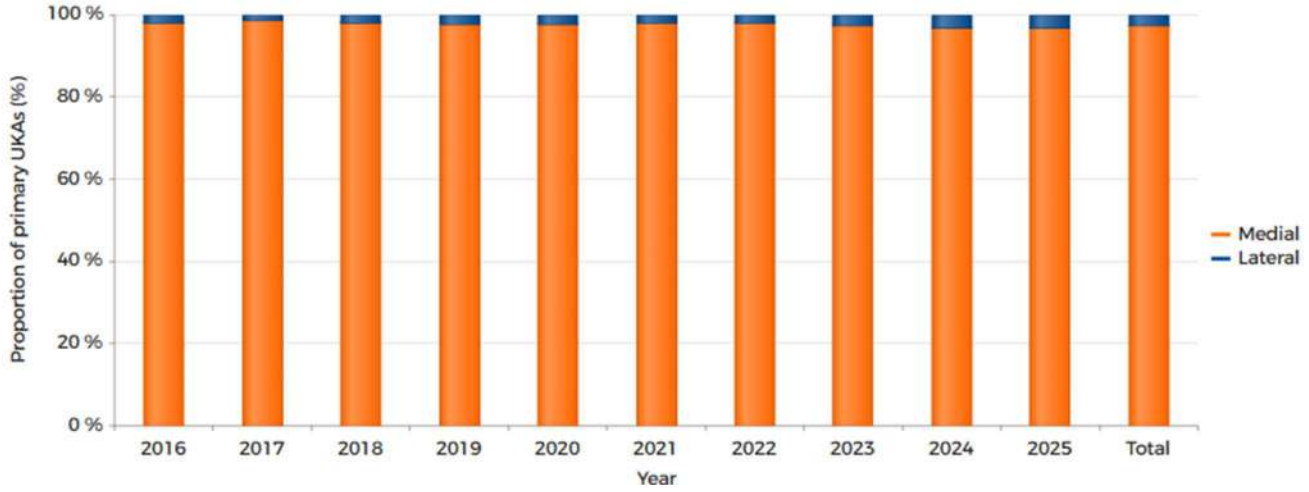
Please note: The total number of primary unicondylar knee arthroplasties includes 387 procedures (4%) in which the unicondylar side was not registered or is missing.
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | K040

Procedure characteristics

Unicondylar side

FIGURE Trend (proportion [%] per year) in medial and lateral unicondylar knee arthroplasties in the Netherlands in 2016-2025



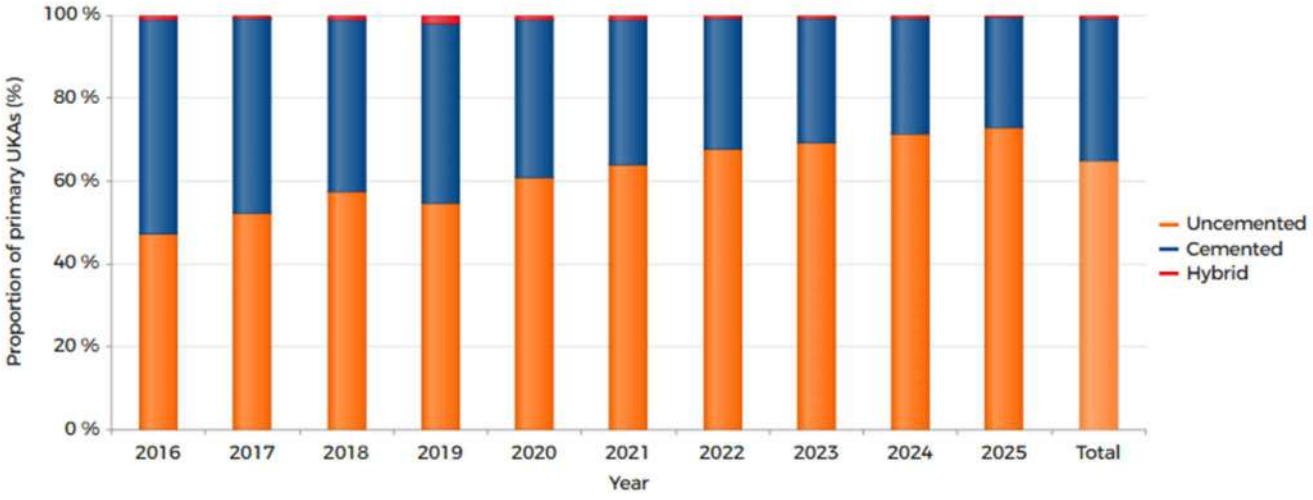
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Medial	97.94	98.58	98.04	97.62	97.57	97.89	97.86	97.29	96.64	96.79	97.44
Lateral	2.06	1.42	1.96	2.38	2.43	2.11	2.14	2.71	3.36	3.21	2.56
Total (n)	**2,817**	**3,229**	**3,563**	**4,446**	**4,494**	**5,397**	**6,686**	**7,559**	**8,369**	**9,087**	**55,647**

UKA: unicondylar knee arthroplasty

© LROI 2026 | K041

Medial UKA fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary medial unicondylar knee arthroplasties in the Netherlands in 2016-2025



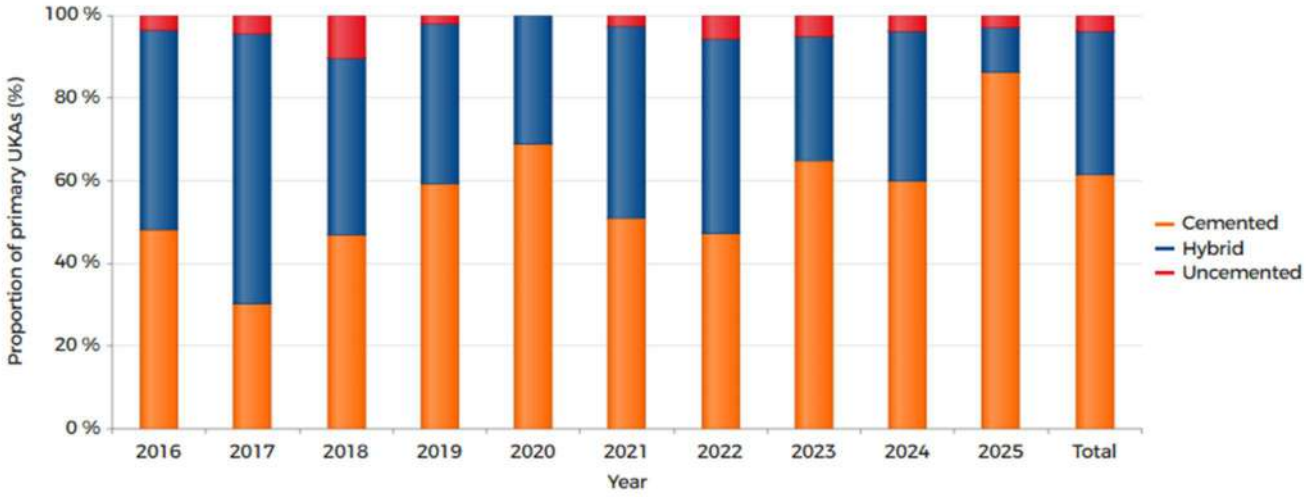
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Uncemented	47.28	52.34	57.45	54.68	60.80	64.03	67.85	69.25	71.41	72.95	64.77
Cemented	51.71	46.81	41.55	43.31	38.26	34.89	31.35	29.83	27.74	26.71	34.32
Hybrid	1.02	0.85	1.00	2.01	0.94	1.08	0.80	0.91	0.85	0.34	0.91
Total (n)	**2,756**	**3,181**	**3,490**	**4,325**	**4,378**	**5,277**	**6,535**	**7,344**	**8,075**	**8,736**	**54,097**

UKA: unicondylar knee arthroplasty

© LROI 2026 | K042

Lateral UKA fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary lateral unicondylar knee arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Cemented	48.28	30.43	47.06	59.41	68.87	50.91	47.14	64.85	59.86	86.34	61.56
Hybrid	48.28	65.22	42.65	38.61	31.13	46.36	47.14	30.20	36.20	10.57	34.55
Uncemented	3.45	4.35	10.29	1.98	0	2.73	5.71	4.95	3.94	3.08	3.89
Total (n)	**58**	**46**	**68**	**101**	**106**	**110**	**140**	**202**	**279**	**227**	**1,337**

UKA: unicondylar knee arthroplasty

© LROI 2026 | K043

Most frequently registered - Unicondylar knee prostheses

TABLE The most frequently registered primary unicondylar knee arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Unicondylar knee arthroplasties (n)	**5,467**	**6,859**	**7,810**	**8,612**	**9,324**
Femur name; Proportion (%)					
Oxford PKR Uncemented	65.76	68.60	69.81	72.03	72.18
Physica ZUK	16.57	15.18	14.08	13.79	14.75
Oxford PKR Cemented	13.99	11.72	10.85	9.28	8.18
Restoris MCK	1.54	2.01	1.22	1.61	1.67
Journey Uni	0.70	1.33	1.83	2.00	1.63

© LROI 2026 | K044

Most frequently registered - Bone cement

TABLE The most frequently registered bone cement used during primary unicondylar knee arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement pre-packed in a vacuum mixing system (n)	**935**	**1,113**	**1,066**	**1,262**	**1,297**
Cement name; Proportion (%)					
PALACOS R+G	63.42	59.12	66.32	56.50	47.26
Refobacin Bone Cement R	34.97	38.81	31.52	42.55	52.58
Refobacin Plus Bone Cement	1.60	2.07	2.16	0.95	0.00
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Separately packed bone cement (n)	**965**	**1,011**	**1,162**	**1,055**	**1,176**
Cement name; Proportion (%)					
PALACOS R+G	78.86	79.33	74.61	75.73	68.45
Biomet Bone Cement R	7.36	10.78	8.61	13.08	17.69
PALACOS MV+G	7.77	6.63	7.40	8.91	11.90
Subiton G	2.49	2.47	2.67	1.61	1.87
PALACOS R	0.00	0.00	0.00	0.00	0.09

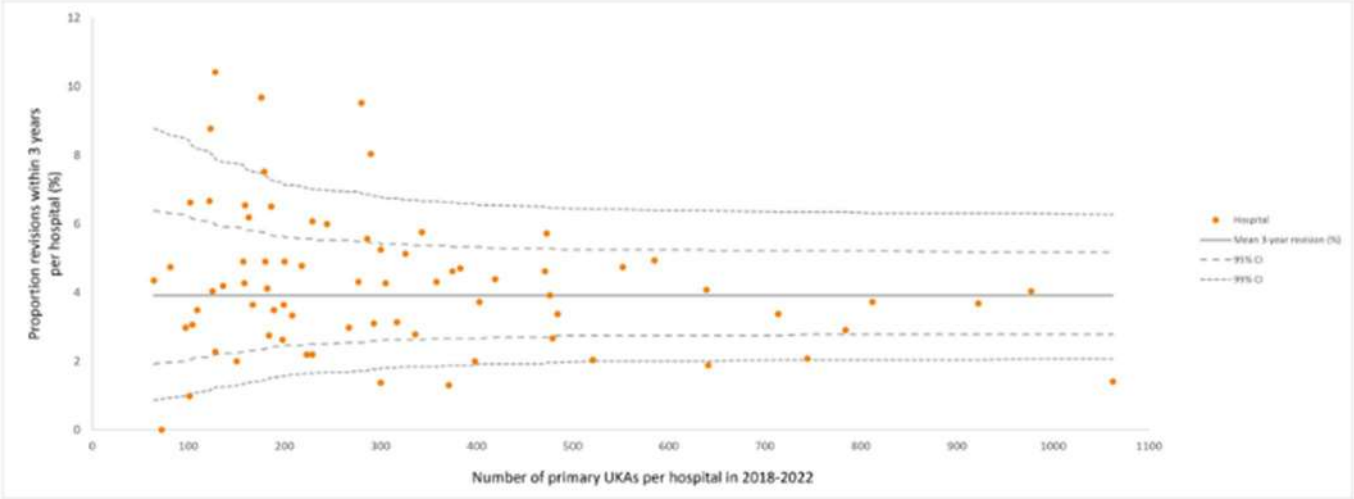
© LROI 2026 | K045

Survival

Short term revision

Overall revision per hospital

Funnel plot of proportion of knee revision arthroplasties within three years after a medial unicondylar knee arthroplasty per hospital in the Netherlands in 2018-2022 (n=23,968)



Please note: The proportion of revisions within 3 years per hospital were adjusted for casemix factors age, gender, ASA score and diagnosis (osteoarthritis versus other).

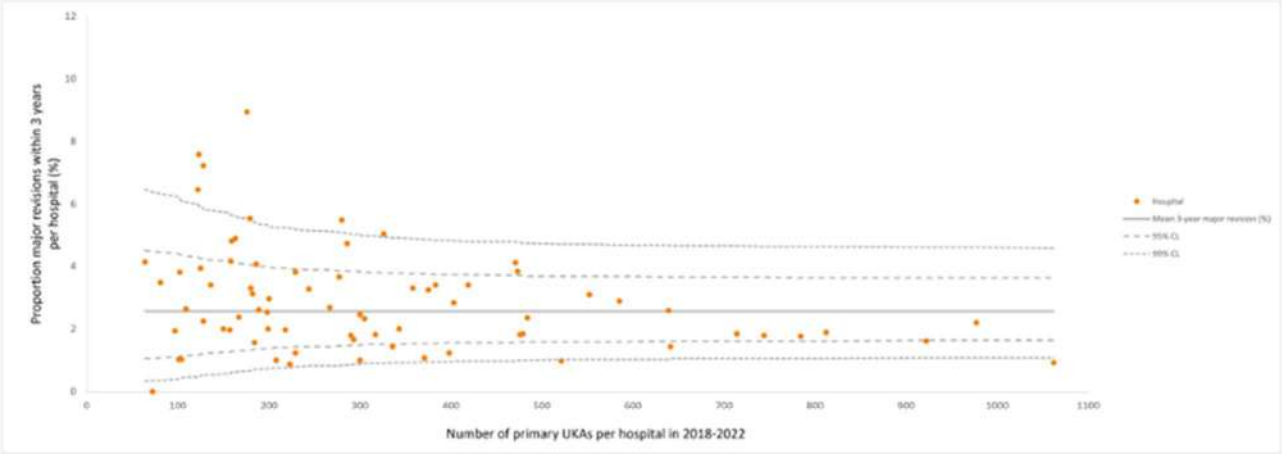
UKA: unicondylar knee arthroplasty; CL: control limits.

The mean 3-years revision percentage is 3.92 in the Netherlands in 2018-2022.

Control limits indicate the plausible range of outcome if all hospitals perform equally well.

Major revision per hospital

Funnel plot of proportion of knee major revision arthroplasties within three years after a medial unicondylar knee arthroplasty per hospital in the Netherlands in 2018-2022 (n=23,968)



Please note: The proportion of revisions within 3 years per hospital were adjusted for casemix factors age, gender, ASA score and diagnosis (osteoarthritis versus other).
UKA: unicondylar knee arthroplasty; CL: control limits.

The mean 3-years major revision percentage is 2.56 in the Netherlands in 2018-2022.
Control limits indicate the plausible range of outcome if all hospitals perform equally well.

By type of revision 3 years

TABLE Cumulative 3-year revision percentage of primary unicondylar knee arthroplasties by type of revision in the Netherlands in 2018-2022 (n=26,237)

	Cumulative 3-year revision percentage
	Kaplan Meier (95% CI)
Any type of revision	3.91 (3.67-4.14)
Major revision	2.30 (2.12-2.48)
Only tibia	0.07 (0.04-0.10)
Only femur	0.01 (-0.00-0.02)
Femur and tibia	2.22 (2.04-2.40)
Minor revision	1.58 (1.43-1.73)
DAIR	0.32 (0.26-0.39)
No DAIR	1.25 (1.11-1.38)
Patella addition	0.01 (-0.00-0.02)

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.
Major revision: revision of at least the femur or tibia component.
Minor revision: only inlay and/or patella exchange (including DAIR procedures).
UKA: unicondylar knee arthroplasty; CI: confidence interval

© LROI 2026 | K046

In 2018-2022, 477 (1.8%) primary UKAs were implanted in patients who died within three years after the primary procedure.

First major or minor revision

TABLE Cumulative 3-year first revision percentage of primary unicondylar knee arthroplasties by type of first major or minor revision in the Netherlands in 2018-2022 (n=26,237)

	Cumulative 3-year first revision percentage
	Kaplan Meier (95% CI)
First major revision	2.57 (2.38-2.76)
Tibia	2.56 (2.36-2.75)
Femur	2.51 (2.32-2.70)
First minor revision	1.58 (1.43-1.73)
Inlay	1.57 (1.42-1.72)
Patella addition	0.02 (0.00-0.03)

First major revision: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
First minor revision: only inlay and/or patella exchange (including DAIR procedures).
UKA: unicondylar knee arthroplasty; CI: confidence interval

© LROI 2026 | K047

In 2018-2022, 477 (1.8%) primary UKAs were implanted in patients who died within three years after the primary procedure.

Conversion to total knee artroplasty

TABLE Conversions from primary unicondylar knee arthroplasty to total knee arthroplasty within 3 years in the period 2018-2022

Number of revision procedures	1036
Number of conversions	510
Percentage conversions	49.2 %

© LROI 2026 | K048

Reasons for revision by type of revision

TABLE Reasons for revision within three years of primary unicondylar knee arthroplasties by type of revision in the Netherlands in 2018-2022

	Major revision (n=684)	Minor revision (n=417)	Any type of revision (n=1,036)
Reasons for revision	Proportion (%)	Proportion (%)	Proportion (%)
Instability	21.20	26.86	22.01
Progression of osteoarthritis	27.49	0.24	17.18
Patellar pain	21.49	3.36	14.77
Loosening of tibia component	21.05	0.24	13.80
Malalignment	17.69	1.92	12.07
Infection	6.58	20.38	11.87
Peri-prosthetic fracture	10.23	1.68	7.14
Loosening of femur component	3.36	0.00	2.12
Revision after knee removal	3.36	0.24	2.12
Insert wear	0.58	3.84	1.93
Arthrofibrosis	1.90	0.72	1.54
Patellar dislocation	0.73	0.48	0.58
Loosening of patella component	0.15	0.24	0.19
Other	10.38	30.22	18.53

Major revision: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
Minor revision: only inlay and/or patella exchange (including DAIR procedures).
Any type of revision includes all first revisions, including revision procedures that could not be classified as minor or major revision.
Please note: More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.

© LROI 2026 | K049

Time after primary UKA

TABLE Time after primary unicondylar knee arthroplasty until short-term revision in the Netherlands in 2018-2022 (n=26,237)

Time after primary UKA	Percentage revisions (%)
Day 0-29	0.24
Day 30-182	0.88
Day 183-364	0.67
Day 365-730 (second year)	1.29
Day 731-1095 (third year)	0.86

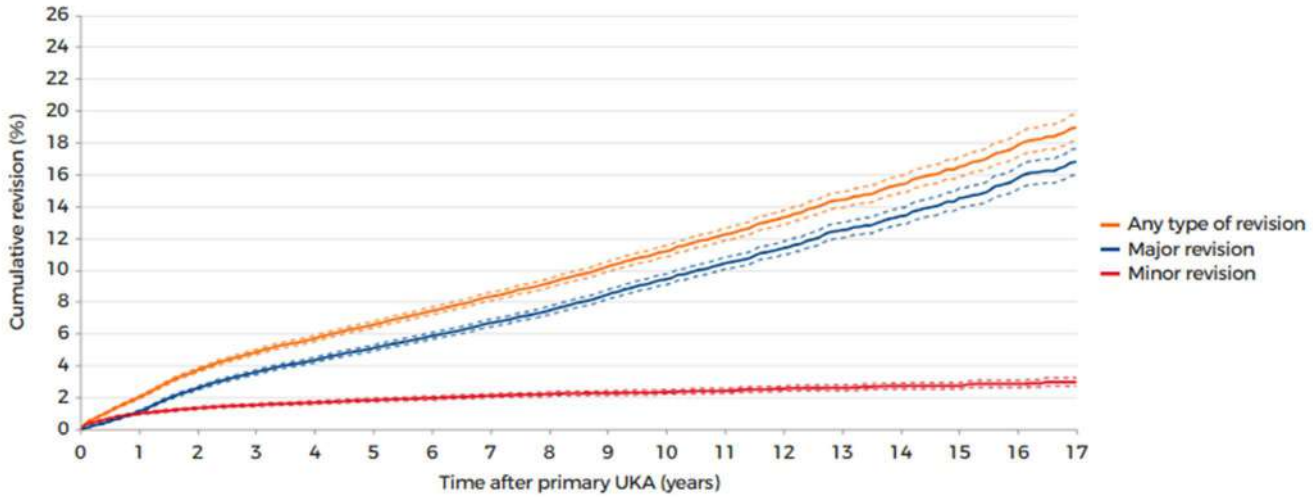
UKA: unicondylar knee arthroplasty

© LROI 2026 | K050

Long term revision

By type of revision

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of unicondylar knee arthroplasties by type of revision in the Netherlands in 2007-2025 (n=74,229)



© LROI 2026 | K051A

	1yr	3yr	5yr	7yr	10yr	17yr
Any type of revision	1.82 (1.73-1.92)	4.75 (4.58-4.92)	6.48 (6.27-6.69)	8.26 (8.00-8.51)	11.10 (10.75-11.45)	18.86 (18.03-19.70)
Major revision	0.97 (0.90-1.04)	3.50 (3.35-3.65)	5.02 (4.83-5.21)	6.59 (6.36-6.83)	9.35 (9.02-9.68)	16.72 (15.90-17.54)
Minor revision	0.94 (0.87-1.01)	1.50 (1.41-1.60)	1.82 (1.71-1.93)	2.09 (1.97-2.22)	2.33 (2.19-2.47)	2.97 (2.71-3.23)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.

Major revision: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

Minor revision: only insert and/or patella exchange (including patella addition).

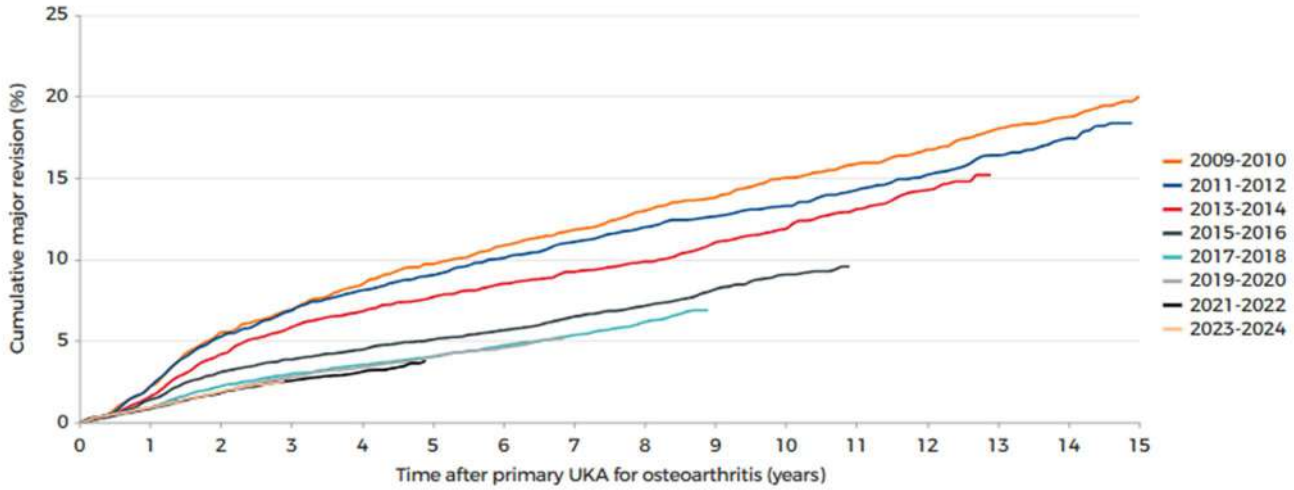
UKA: unicondylar knee arthroplasty; CI: confidence interval.

© LROI 2026 | K051B

In 2007-2025, 4,160 (5.6%) primary UKAs were implanted in patients who died within seventeen years after the primary diagnosis

By procedure year

FIGURE Cumulative major revision percentage (Kaplan-Meier; 95% CI) of unicondylar knee arthroplasties for osteoarthritis by procedure year of primary UKA in the Netherlands in 2009-2024



© LROI 2026 | K052A

	Number (n)	1yr	3yr	5yr	7yr	10yr	15yr
2009-2010	3,153	1.81 (1.35-2.28)	6.80 (5.92-7.68)	9.71 (8.67-10.75)	11.70 (10.56-12.83)	14.93 (13.67-16.19)	19.69 (18.25-21.12)
2011-2012	3,075	1.79 (1.32-2.26)	6.74 (5.85-7.63)	8.96 (7.95-9.98)	10.99 (9.88-12.11)	13.23 (12.02-14.44)	18.34 (16.81-19.88)
2013-2014	4,039	1.34 (0.99-1.70)	5.63 (4.92-6.35)	7.55 (6.73-8.37)	9.23 (8.33-10.13)	11.80 (10.78-12.81)	n.a.
2015-2016	5,517	1.22 (0.93-1.51)	3.85 (3.34-4.36)	5.00 (4.43-5.58)	6.38 (5.72-7.03)	9.03 (8.24-9.82)	n.a.
2017-2018	7,588	0.86 (0.65-1.07)	2.88 (2.50-3.26)	3.98 (3.53-4.42)	5.28 (4.77-5.79)	n.a.	n.a.
2019-2020	9,385	0.78 (0.60-0.96)	2.70 (2.37-3.02)	3.94 (3.55-4.34)	5.26 (4.68-5.85)	n.a.	n.a.
2021-2022	12,405	0.76 (0.61-0.91)	2.52 (2.24-2.79)	3.77 (3.26-4.28)	n.a.	n.a.	n.a.
2023-2024	16,424	0.82 (0.69-0.96)	2.58 (2.20-2.97)	n.a.	n.a.	n.a.	n.a.

Please note: n.a. if <50 cases were at risk.

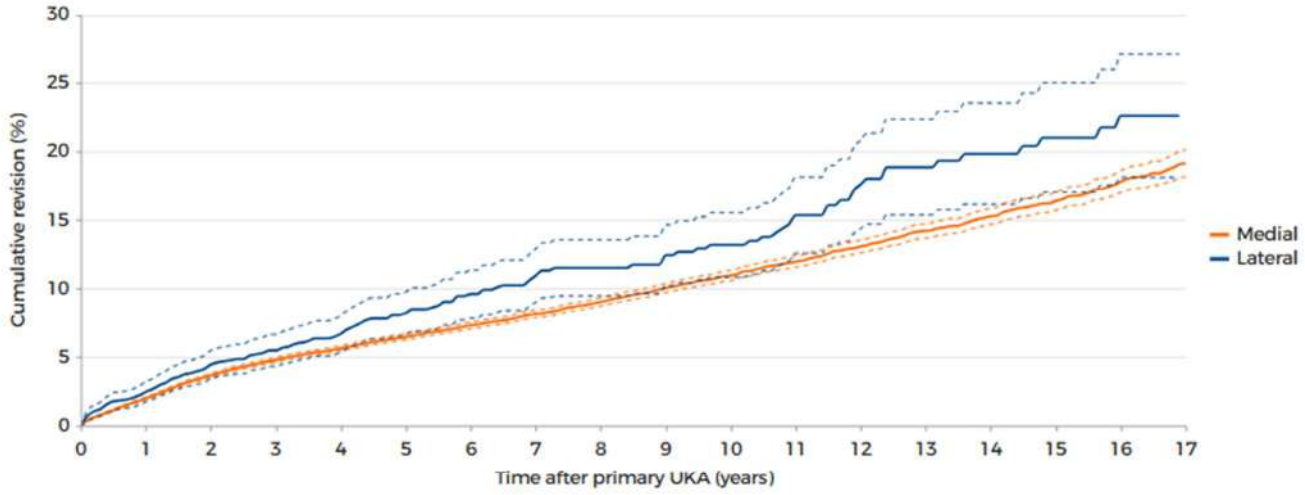
Major revision precentage: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

UKA: unicondylar knee arthroplasty

© LROI 2026 | K052B

By unicondylar side

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of unicondylar knee arthroplasties by unicondylar side of primary UKA in the Netherlands in 2007-2025 (n=69,343)



© LROI 2026 | K053A

	Number (n)	1yr	3yr	5yr	7yr	10yr	17yr
Medial	67,489	1.81 (1.71-1.92)	4.69 (4.52-4.87)	6.39 (6.17-6.61)	8.09 (7.82-8.36)	10.88 (10.52-11.25)	19.07 (18.09-20.05)
Lateral	1,854	2.21 (1.52-2.90)	5.48 (4.32-6.65)	8.08 (6.55-9.61)	10.58 (8.68-12.48)	13.18 (10.82-15.53)	22.63 (18.13-27.12)

UKA: unicondylar knee arthroplasty; CI: confidence interval.

© LROI 2026 | K053B

Reasons for revision within 10 years

TABLE Reasons for revision within ten years of primary unicondylar knee arthroplasties by type of revision in the Netherlands in 2007-2025

	Major revision (n=3,722)	Minor revision (n=1,213)	Any type of revision (n=4,729)
Reasons for revision	**Proportion (%)**	**Proportion (%)**	**Proportion (%)**
Progression of osteoarthritis	39.39	0.49	29.88
Loosening of tibia component	22.97	0.82	17.95
Instability	15.13	27.37	17.26
Pain	17.38	4.37	14.25
Malalignment	14.94	2.06	11.82
Infection	4.03	20.45	7.97
Loosening of femur component	7.68	0.49	5.98
Peri-prosthetic fracture	5.43	1.81	4.59
Insert wear	3.28	6.27	4.17
Revision after knee removal	2.53	0.58	2.03
Arthrofibrosis	0.94	0.58	0.85
Patellar dislocation	0.48	0.58	0.49
Loosening of patella component	0.30	0.16	0.27
Other	11.63	27.21	15.78

Major revision: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

Minor revision: only inlay and/or patella exchange (including DAIR procedures).

Any type of revision includes all first revisions, including revision procedures that could not be classified as minor or major revision.

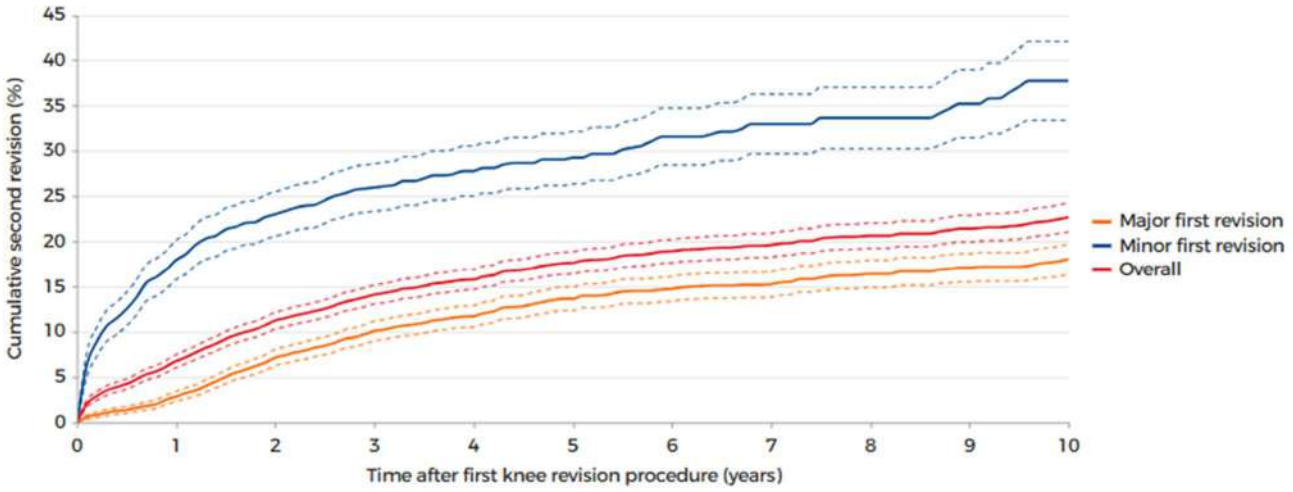
Please note: More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.

© LROI 2026 | K054

Rerevision

By type of first revision

FIGURE Cumulative second revision percentage (Kaplan-Meier; 95% CI) of unicondylar knee arthroplasties after a one-stage first revision by type of first revision in the Netherlands in 2007-2025 (n=5,501)



© LROI 2026 | K057A

	Number (n)	1yr	3yr	5yr	7yr	10yr
Overall	5,051	6.17 (5.49-6.85)	13.80 (12.76-14.85)	17.59 (16.37-18.81)	19.55 (18.22-20.88)	22.48 (20.90-24.06)
Major first revision	3,762	2.50 (1.99-3.02)	9.72 (8.66-10.77)	13.65 (12.34-14.95)	15.18 (13.77-16.59)	17.79 (16.13-19.46)
Minor first revision	1,249	16.85 (14.74-18.97)	25.84 (23.22-28.46)	29.06 (26.19-31.92)	32.98 (29.68-36.28)	37.74 (33.39-42.08)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis (excluding patella addition).

Major revision: revision of at least the femur or tibia component.

Minor revision: only insert and/or patella exchange (excluding patella addition).

CI: confidence interval.

© LROI 2026 | K057B

Survival by component

By cemented component name

TABLE Cumulative revision percentages of primary cemented unicondylar knee arthroplasties by prosthesis component combination of patients who underwent a UKA for osteoarthritis in the Netherlands in 2007-2025 (n=31,931)

Femur component	Tibia component	Primary UKAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Type of revision (n)						Cumulative revision percentage (95% CI)					
						Total revision	Patella addition	Only femur	Only tibia	Only insert/patella	Unknown	1yr	3yr	5yr	7yr	10yr	17yr
All cemented UKAs for osteoarthritis		**31,931**	**101**	**64 (58 - 70)**	**3,042**	**2,484**	**8**	**13**	**41**	**467**	**29**	**1.58 (1.44-1.72)**	**5.20 (4.94-5.46)**	**7.20 (6.89-7.52)**	**9.05 (8.69-9.42)**	**12.05 (11.59-12.51)**	**19.91 (18.96-20.87)**
OXFORD PKR Cemented	OXFORD PKR Cemented	16,906	75	64 (58 - 70)	2,014	1,626	5	11	25	326	21	1.69 (1.50-1.89)	5.60 (5.24-5.96)	7.77 (7.34-8.19)	9.66 (9.17-10.14)	12.72 (12.14-13.31)	20.86 (19.72-22.00)
Physica ZUK	Physica ZUK	8,281	39	65 (59 - 71)	293	235	1	0	1	56	0	0.83 (0.63-1.04)	3.07 (2.65-3.50)	3.86 (3.35-4.36)	4.94 (4.26-5.62)	7.45 (6.28-8.63)	12.74 (9.47-16.01)
Genesis Uni	Genesis Uni	1,244*	25	62 (56 - 69)	245	233	1	0	2	6	3	2.82 (1.90-3.74)	9.05 (7.45-10.65)	12.59 (10.73-14.44)	14.93 (12.93-16.93)	17.32 (15.10-19.45)	22.82 (20.00-25.63)
Journey Uni	Journey Uni	984	11	63 (57 - 70)	53	44	0	2	1	5	1	1.50 (0.72-2.28)	4.76 (3.21-6.31)	6.73 (4.74-8.71)	7.95 (5.66-10.25)	10.95 (7.20-14.70)	n.a.
balanSys UNI	balanSys UNI	927	12	63 (57 - 70)	93	72	1	0	7	11	2	2.55 (1.52-3.57)	7.39 (5.56-9.23)	8.56 (6.53-10.60)	10.46 (8.03-12.90)	13.76 (10.67-16.85)	n.a.
Restoris MCK	Restoris MCK	573	3	69 (62 - 75)	4	2	0	0	0	2	0	0.75 (0.01-1.48)	0.75 (0.01-1.48)	n.a.	n.a.	n.a.	n.a.
TRIATHLON	TRIATHLON	196*	3	60 (54 - 65)	30	29	0	0	0	1	0	1.53 (0.00-3.25)	7.15 (3.54-10.76)	9.21 (5.15-13.26)	10.38 (6.06-14.69)	13.56 (8.09-19.02)	n.a.
HLS uni	HLS Uni	165*	3	58 (53 - 65)	41	40	0	0	0	1	0	2.42 (0.08-4.77)	9.11 (4.72-13.51)	16.44 (10.77-22.11)	19.52 (13.45-25.59)	20.79 (14.56-27.01)	n.a.
Sigma HP Uni	Sigma HP Uni	114	4	61 (56 - 67)	13	12	0	0	0	1	0	6.57 (1.47-11.68)	7.71 (2.20-13.22)	11.22 (4.64-17.79)	12.67 (5.62-19.73)	n.a.	n.a.
Allegretto	Allegretto	106*	4	57 (51 - 65)	25	21	0	0	4	0	0	6.60 (1.88-11.33)	12.26 (6.02-18.51)	17.98 (10.65-25.30)	19.94 (12.31-27.58)	23.65 (15.28-32.01)	n.a.
Persona	Persona	79	6	60 (55 - 67)	3	3	0	0	0	0	0	1.44 (0.00-4.24)	n.a.	n.a.	n.a.	n.a.	n.a.
Sled Prosthesis	Sled Prosthesis	78	6	65 (58 - 72)	20	20	0	0	0	0	0	5.13 (0.23-10.02)	14.15 (6.40-21.90)	15.49 (7.43-23.55)	20.92 (11.79-30.06)	23.78 (14.15-33.40)	n.a.
OXFORD PKR Cemented	VANGUARD M	54	11	60 (54 - 66)	13	13	0	0	0	0	0	1.85 (0.00-5.45)	n.a.	n.a.	n.a.	n.a.	n.a.

* Denotes prosthesis combinations with no reported use in primary UKAs in 2025.

Please note: n.a. if <50 cases were at risk; UKA: unicondylar knee arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | K055

Only combinations with over 50 procedures and reported by at least 3 hospitals have been listed.

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

By uncemented component

TABLE Cumulative revision percentages of primary uncemented unicondylar knee arthroplasties by prosthesis component combination of patients who underwent a UKA for osteoarthritis in the Netherlands in 2007-2025 (n=39,064)

Femur component	Tibia component	Primary UKAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Type of revision (n)						Cumulative revision percentage (95% CI)					
						Total revision	Patella addition	Only femur	Only tibia	Only insert/patella	Unknown	1yr	3yr	5yr	7yr	10yr	17yr
All uncemented UKAs for osteoarthritis		**39,064**	**86**	**65 (59 - 72)**	**1,902**	**1,109**	**2**	**8**	**44**	**726**	**13**	**1.98 (1.84-2.12)**	**4.17 (3.94-4.39)**	**5.53 (5.25-5.81)**	**7.19 (6.82-7.56)**	**9.83 (9.21-10.44)**	**17.06 (13.66-20.46)**
OXFORD PKR Uncemented	OXFORD PKR Uncemented	36,515	75	65 (59 - 72)	1,675	949	2	6	36	672	10	1.93 (1.79-2.08)	4.05 (3.83-4.28)	5.33 (5.04-5.63)	6.84 (6.46-7.22)	9.46 (8.82-10.09)	n.a.

* Denotes prosthesis combinations with no reported use in primary UKAs in 2025.

Please note: n.a. if <50 cases were at risk; UKA: unicondylar knee arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | K056

Only combinations with over 50 procedures and reported by at least 3 hospitals have been listed.

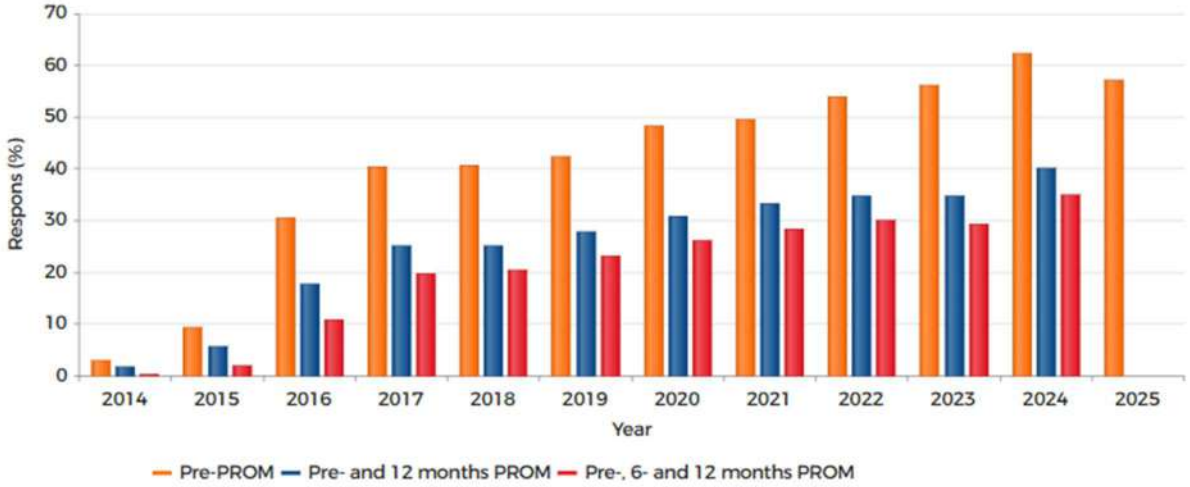
Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

PROMs

Response

Per year

FIGURE Pre-operative, 6 months and 12 months postoperative response percentage of patients who underwent a UKA in the Netherlands in 2014-2025



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Pre-PROM	2.88	9.32	30.51	40.45	40.58	42.32	48.24	49.49	53.85	56.17	62.19	57.01
Pre- and 12 months PROM	1.72	5.58	17.64	25.11	25.17	27.83	30.74	33.10	34.74	34.69	40.01	n.a.
Pre-, 6- and 12 months PROM	0.30	1.96	10.91	19.59	20.49	23.08	26.17	28.32	30.01	29.26	35.01	n.a.
Total UKAs (n)	**2,327**	**2,651**	**2,914**	**3,644**	**4,041**	**4,879**	**4,720**	**5,656**	**6,975**	**7,914**	**8,770**	9,379

Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.

UKA: unicondylar knee arthroplasty; PROM: patient reported outcome measure.

© LROI 2026 | K058A

© LROI 2026 | K058B

Patient characteristics

Responders vs non-responders

TABLE Patient characteristics of PROM responders and non-responders after primary unicondylar knee arthroplasty in the Netherlands in 2020-2024

	Non-responder	Pre- and 12-month PROM respondents	Total
N(%)	**22,125 (64.8)**	**12,000 (35.2)**	**34,125**
Mean age (years) (SD)	65.7 (8.8)	65.8 (8.5)	65.7 (8.7)
Age (years) (%)			
<50	3	2	3
50-59	23	22	23
60-69	39	40	39
70-79	30	31	30
>80	6	5	5
Sex (%)			
Male	46	47	47
Female	54	53	53
ASA class (%)			
ASA I	14	15	15
ASA II	66	68	67
ASA III-IV	19	17	18
Type of hospital (%)			
General	68	72	70
UMC	1	0	0
Private	31	28	30
Diagnosis (%)			
Osteoarthritis	98	98	99
Other	1	1	1
Mean BMI (kg/m2) (SD)	29 (4.5)	28.9 (4.4)	29 (4.4)
Revision within 1 yr (%)			
No revision within 1 yr	98	98	98
Revision within 1 yr	2	2	2

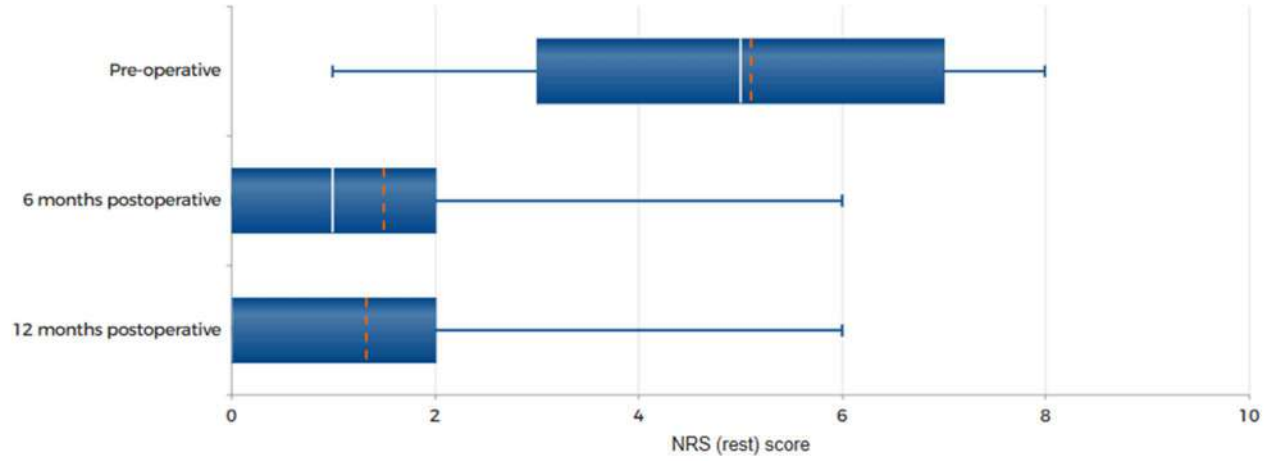
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | K059

Outcomes

NRS (rest)

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative NRS (rest) scores of patients who underwent a UKA in the Netherlands in 2020-2024



© LROI 2026 | K060A

		Pre-operative	6 months postoperative	12 months postoperative
NRS (rest) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Unicondylar knee arthroplasty	10,250	5.00 (3.00-7.00)	1.00 (0.00-2.00)	0.00 (0.00-2.00)

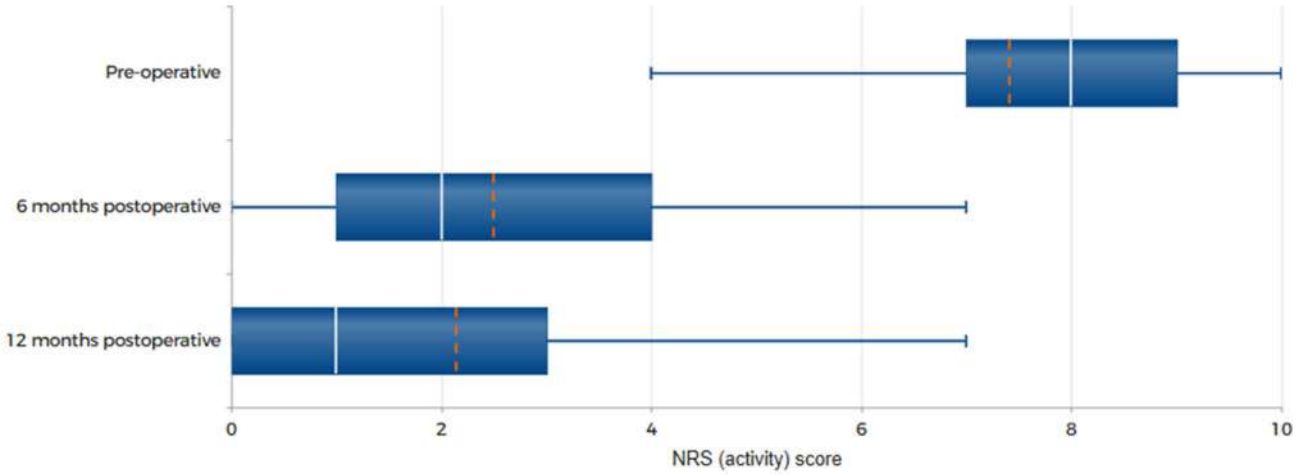
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
UKA: unicondylar knee arthroplasty; IQR: interquartile range

© LROI 2026 | K060B

The NRS (rest) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

NRS (activity)

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative NRS (activity) scores of patients who underwent a UKA in the Netherlands in 2020-2024



© LROI 2026 | K061A

		Pre-operative	6 months postoperative	12 months postoperative
NRS (activity) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Unicondylar knee arthroplasty	10,249	8.00 (7.00-9.00)	2.00 (1.00-4.00)	1.00 (0.00-3.00)

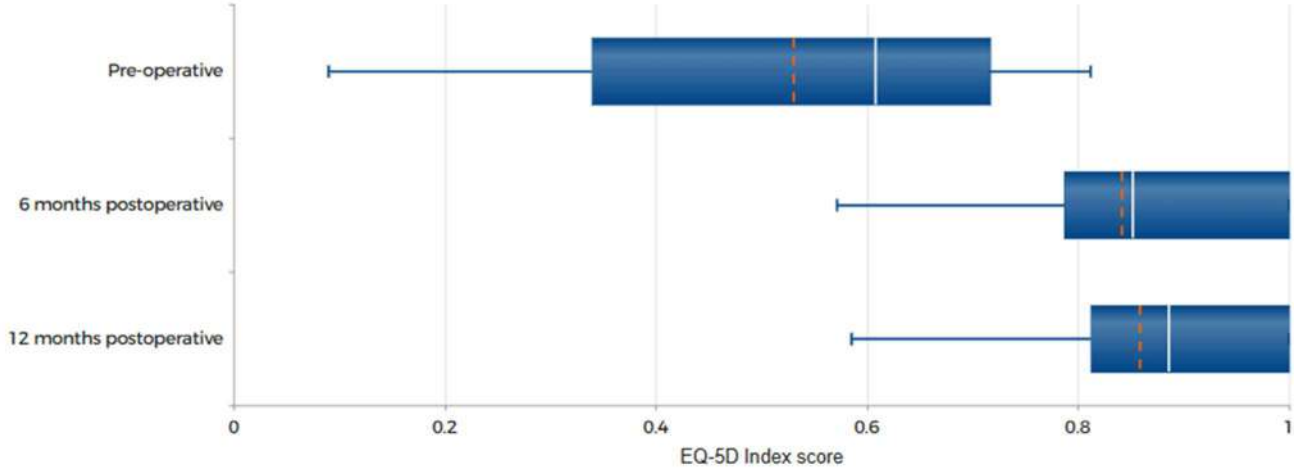
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
UKA: unicondylar knee arthroplasty; IQR: interquartile range

© LROI 2026 | K061B

The NRS (activity) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

EQ-5D Index score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative EQ-5D index scores of patients who underwent a UKA in the Netherlands in 2020-2024



© LROI 2026 | K062A

EQ-5D Index score	N	Pre-operative Median (IQR)	6 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Unicondylar knee arthroplasty	10,190	0.61 (0.34-0.72)	0.85 (0.79-1.00)	0.89 (0.81-1.00)

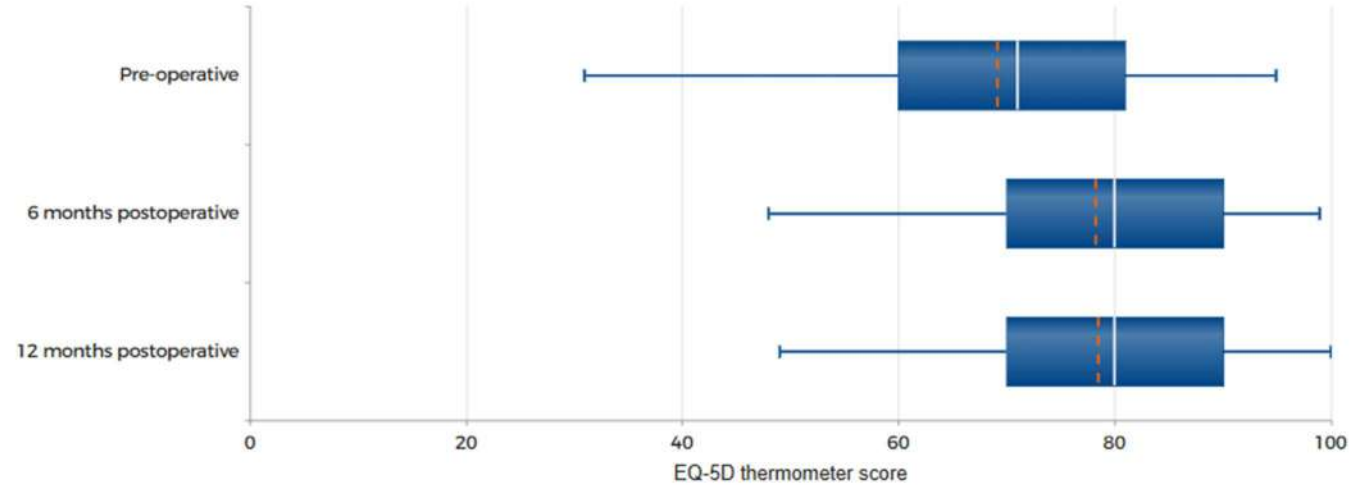
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
UKA: unicondylar knee arthroplasty; IQR: interquartile range

© LROI 2026 | K062B

The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.

EQ-5D thermometer

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative EQ-5D thermometer scores of patients who underwent a UKA in the Netherlands in 2020-2024



© LROI 2026 | K063A

EQ-5D thermometer score	N	Pre-operative Median (IQR)	6 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Unicondylar knee arthroplasty	10,178	71.00 (60.00-81.00)	80.00 (70.00-90.00)	80.00 (70.00-90.00)

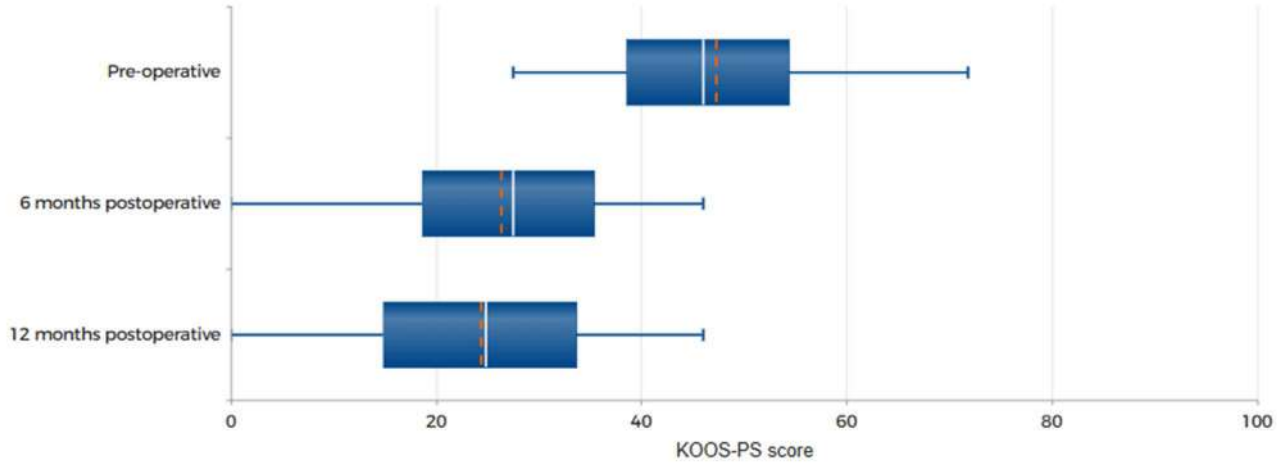
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
UKA: unicondylar knee arthroplasty; IQR: interquartile range

© LROI 2026 | K063B

The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation.

KOOS-PS score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative KOOS-PS scores of patients who underwent a UKA in the Netherlands in 2020-2024



© LROI 2026 | K064A

		Pre-operative	6 months postoperative	12 months postoperative
KOOS-PS score	N	Median (IQR)	Median (IQR)	Median (IQR)
Unicondylar knee arthroplasty	9,990	46.10 (38.60-54.40)	27.50 (18.60-35.30)	24.90 (14.80-33.60)

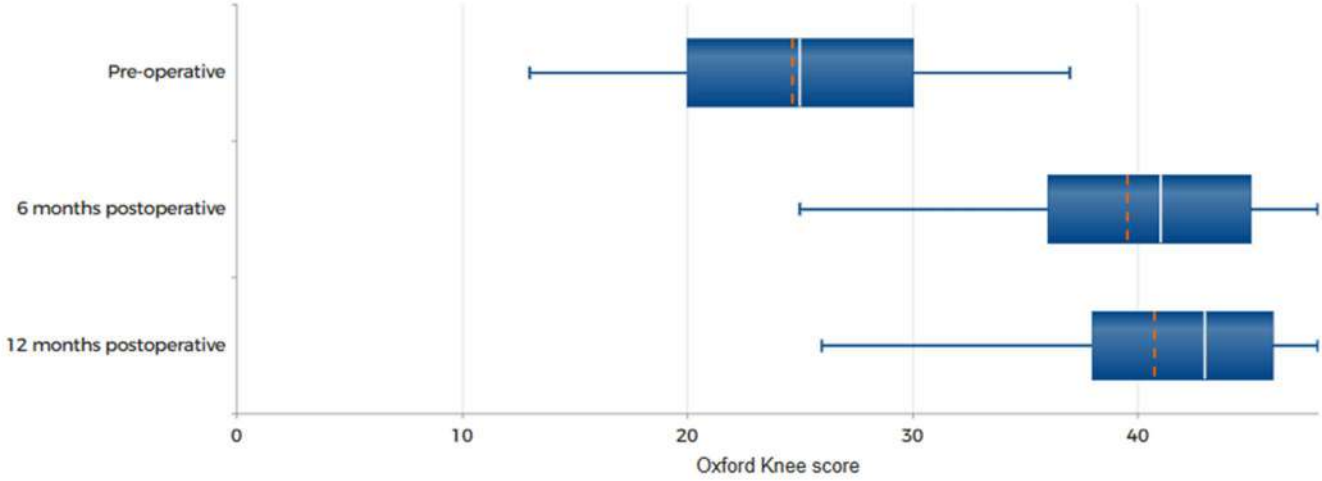
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
UKA: unicondylar knee arthroplasty; IQR: interquartile range

© LROI 2026 | K064B

The KOOS-PS score measures the physical functioning of patients with osteoarthritis to the knee. The score has a range of 0.0 to 100.0, with 0.0 representing no effort and 100.0 the most possible effort.

Oxford Knee Score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative Oxford Knee scores of patients who underwent a UKA in the Netherlands in 2020-2024



© LROI 2026 | K065A

		Pre-operative	6 months postoperative	12 months postoperative
Oxford Knee Score	N	Median (IQR)	Median (IQR)	Median (IQR)
Unicondylar knee arthroplasty	9,996	25.00 (20.00-30.00)	41.00 (36.00-45.00)	43.00 (38.00-46.00)

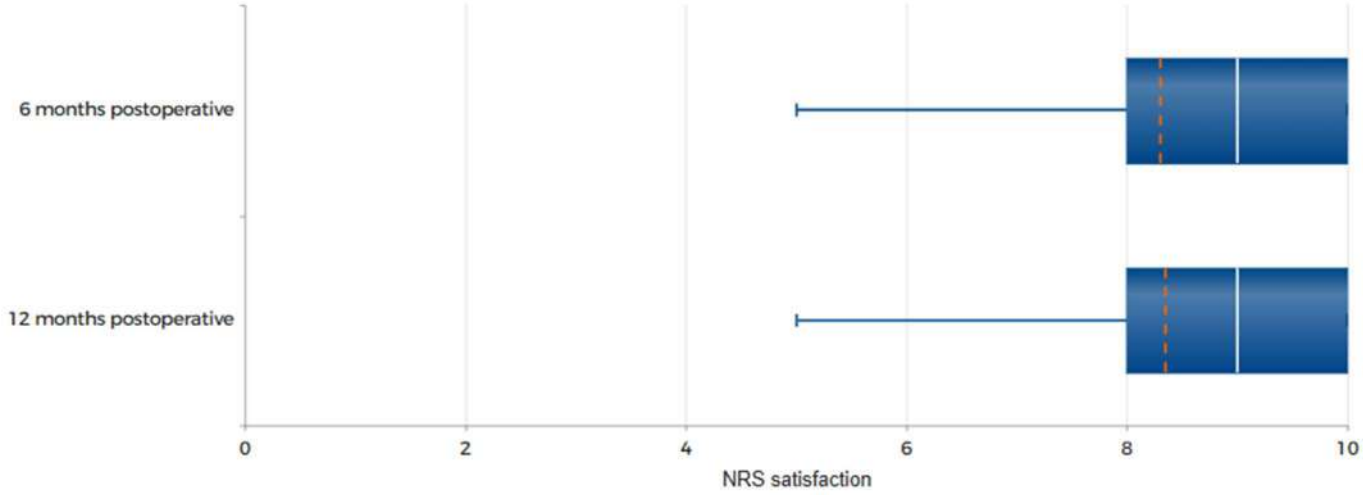
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
UKA: unicondylar knee arthroplasty; IQR: interquartile range

© LROI 2026 | K065B

The Oxford Knee score measures the physical functioning and pain of patients with osteoarthritis to the knee. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 the most functional ability.

NRS (satisfaction)

FIGURE Boxplots of 6 months and 12 months postoperative NRS (satisfaction) scores of patients who underwent a UKA in the Netherlands in 2020-2024



© LROI 2026 | K066A

		6 months postoperative	12 months postoperative
NRS satisfaction	N	Median (IQR)	Median (IQR)
Unicondylar knee arthroplasty	10,849	9.00 (8.00-10.00)	9.00 (8.00-10.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

UKA: unicondylar knee arthroplasty; IQR: interquartile range

© LROI 2026 | K066B

The NRS (satisfaction) score measures patients' satisfaction with the outcome of after joint replacement. The score has a range of 0.0 to 10.0, with 0.0 representing very unsatisfied and 10.0 representing very satisfied.

Patellofemoral knee arthroplasty

In this section you will find all the information on patellofemoral knee arthroplasty

Patient characteristics

Demographics

TABLE Patient characteristics of all patients with a registered primary patellofemoral knee arthroplasty in the Netherlands in 2025

	PFA
N	152
Mean age (years) (SD)	57.2 (10)
Mean BMI (kg/m2) (SD)	27.5 (4.2)
Age (years) (%)	
<50	18
50-59	43
60-69	26
70-79	11
>80	1
Sex (%)	
Female	76
Male	24
ASA class (%)	
ASA I	22
ASA II	68
ASA III-IV	10
Diagnosis (%)	
Late post-traumatic	1
Osteoarthritis	98
Osteonecrosis	1
Type of hospital (%)	
General	59
Private	34
UMC	7
Charnley score (%)	
A One knee joint affected	54
B1 Both knee joints affected	27
B2 Contralateral knee with a TKA	17
C Multiple joints affected	2
Body Mass Index (kg/m2) (%)	
Normal weight (>18.5-25)	32
Overweight (>25-30)	40
Obesity (>30-40)	28
Smoking (%)	
No	91
Yes	9

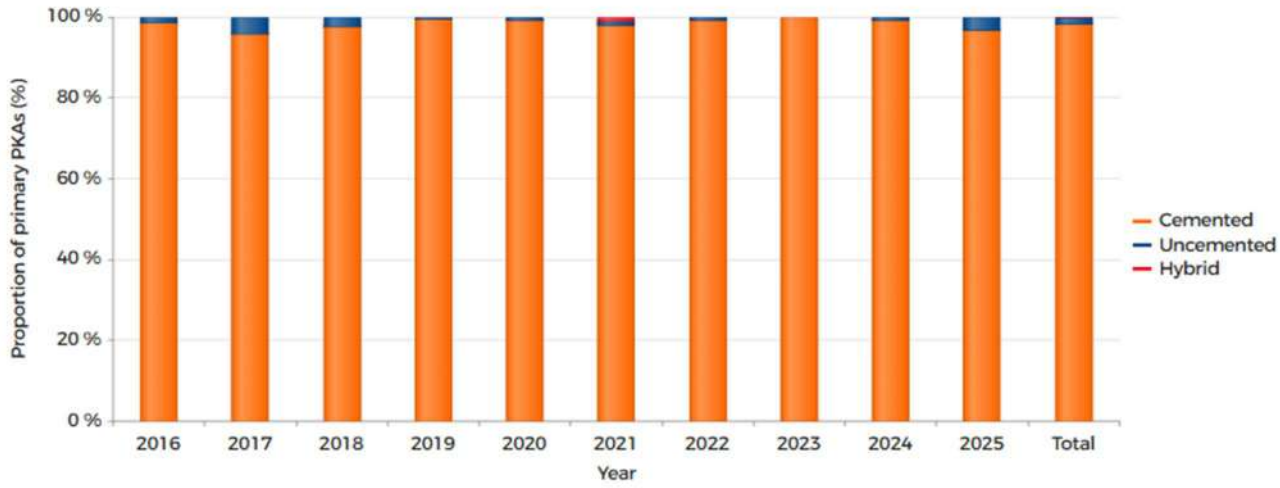
PFA: patellofemoral knee arthroplasty; General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation.

© LROI 2026 | K067

Procedure characteristics

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary patellofemoral knee arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Cemented	98.61	95.83	97.80	99.43	99.37	98.13	99.13	100	99.35	96.69	98.38
Uncemented	1.39	4.17	2.20	0.57	0.63	0.93	0.87	0	0.65	3.31	1.55
Hybrid	0	0	0	0	0	0.93	0	0	0	0	0.07
Total (n)	**144**	**168**	**182**	**175**	**158**	**107**	**115**	**126**	**155**	**151**	**1,481**

PKA: patellofemoral knee arthroplasty

© LROI 2026 | K068

Most frequently registered - Patellofemoral knee prostheses

TABLE The most frequently registered primary patellofemoral knee arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Patellofemoral knee arthroplasties (n)	**101**	**97**	**114**	**144**	**129**
Femur name; Proportion (%)					
Gender Solutions Patello-Femoral Joint	49.50	71.13	57.89	61.11	54.26
Journey PFJ	24.75	12.37	19.30	27.08	36.43
Patellofemoral Hermes	0.00	0.00	4.39	4.17	5.43
Restoris MCK	1.98	4.12	5.26	2.78	3.88

© LROI 2026 | K069

Most frequently registered - Bone cement

TABLE The most frequently registered bone cement used during primary patellofemoral knee arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement pre-packed in a vacuum mixing system (n)	**43**	**36**	**45**	**66**	**83**
Cement name; Proportion (%)					
PALACOS R+G	62.79	55.56	62.22	63.64	61.45
Refobacin Bone Cement R	25.58	30.56	31.11	36.36	37.35
COPAL G+C	0.00	0.00	0.00	0.00	1.20
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Separately packed bone cement (n)	**50**	**57**	**59**	**54**	**20**
Cement name; Proportion (%)					
PALACOS R+G	96.00	96.49	89.83	88.89	50.00
Subiton G	2.00	1.75	6.78	9.26	30.00
PALACOS MV+G	0.00	0.00	1.69	1.85	15.00
Refobacin Bone Cement R	2.00	1.75	1.69	0.00	5.00

Survival

Short term revision

By type of revision within 3 years

TABLE Cumulative 3-year revision percentage of primary patellofemoral knee arthroplasties by type of revision in the Netherlands in 2018-2022 (n=717)

	Cumulative 3-year revision percentage
	Kaplan Meier (95% CI)
Any type of revision	7.29 (5.39-9.20)
Major revision	6.59 (4.77-8.42)
Only tibia	0.00 (0.00-0.00)
Only femur addition	0.56 (0.01-1.11)
Femur and tibia	6.03 (4.29-7.78)
Minor revision	0.70 (0.09-1.31)
DAIR	0.00 (0.00-0.00)
No DAIR	0.42 (-0.05-0.89)
Only patella	0.28 (-0.11-0.67)

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.
Major revision: revision of at least the femur component.
Minor revision: only inlay and/or patella exchange (including DAIR procedures).
PFA: patellofemoral knee arthroplasty; CI: confidence interval

© LROI 2026 | K071

In 2018-2022, 8 (1.1%) primary PFAs were implanted in patients who died within three years after the primary procedure.

First major or minor revision

TABLE Cumulative 3-year first revision percentage of primary patellofemoral knee arthroplasties by type of first major or minor revision in the Netherlands in 2018-2022 (n=717)

	Cumulative 3-year first revision percentage
	Kaplan Meier (95% CI)
First major revision	6.59 (4.77-8.42)
Tibia addition	6.03 (4.29-7.78)
Femur	6.59 (4.77-8.42)
First minor revision	0.70 (0.09-1.31)
Inlay	0.00 (0.00-0.00)
Patella	0.70 (0.09-1.31)

First major revision: first revision of the femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
First minor revision: only inlay and/or patella exchange (including DAIR procedures).
PFA: Patellofemoral knee arthroplasty; CI: confidence interval

© LROI 2026 | K072

In 2018-2022, 8 (1.1%) primary PFAs were implanted in patients who died within three years after the primary procedure.

Conversion to total knee arthroplasty

TABLE Conversions from primary patellofemoral knee arthroplasty to total knee arthroplasty within 3 years in the period 2018-2022

Number of revision procedures	53
Number of conversions	36
Percentage conversions	67.9 %

© LROI 2026 | K073

Reasons for revision by type of revision

TABLE Reasons for revision within three years of primary patellofemoral knee arthroplasties in the Netherlands in 2018-2022

	Any type of revision (n=53)
Reasons for revision	**Proportion (%)**
Progression of osteoarthritis	49.06
Patellar pain	32.08
Malalignment	13.21
Infection	9.43
Loosening of patella component	5.66
Arthrofibrosis	3.77
Patellar dislocation	3.77
Peri-prosthetic fracture	1.89
Revision after knee removal	1.89
Loosening of femur component	0.00
Insert wear	0.00
Instability	0.00
Other	9.43

Any type of revision includes all first revisions, including revision procedures that could not be classified as minor or major revision.
Please note: More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.

© LROI 2026 | K074

Time after PFA until revision

TABLE Time after primary patellofemoral knee arthroplasty until short-term revision in the Netherlands in 2018-2022 (n=717)

Time after primary PFA	Percentage revisions (%)
Day 0-29	0.00
Day 30-182	0.00
Day 183-364	0.56
Day 365-730 (second year)	3.91
Day 731-1095 (third year)	2.93

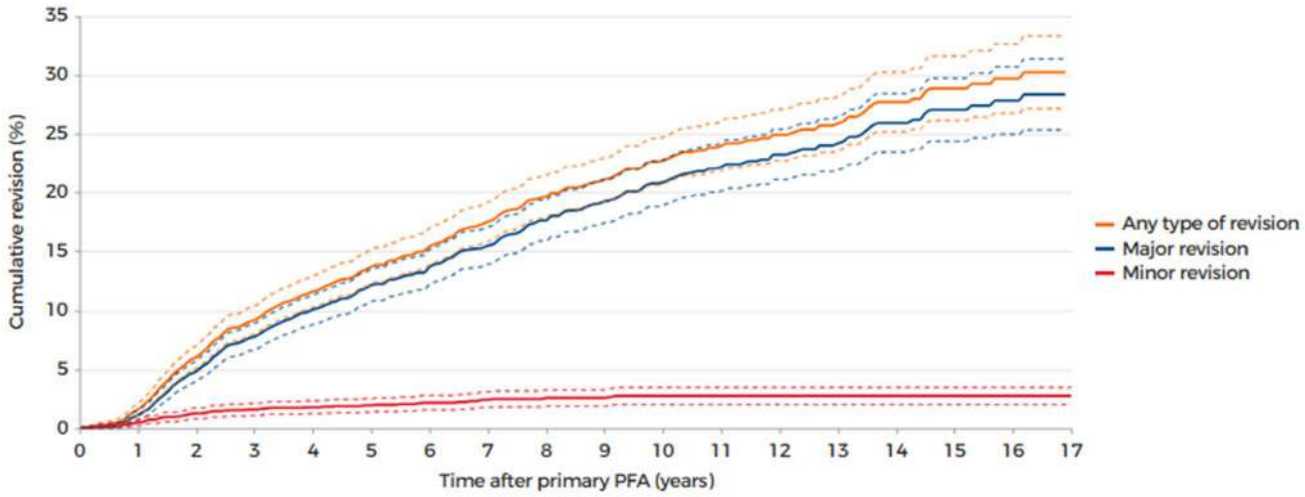
PFA: patellofemoral knee arthroplasty

© LROI 2026 | K075

Long term revision

By type of revision

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of patellofemoral knee arthroplasties by type of revision in the Netherlands in 2007-2025 (n=2,540)



© LROI 2026 | K076A

	1yr	3yr	5yr	7yr	10yr	17yr
Any type of revision	1.31 (0.86-1.76)	9.02 (7.84-10.20)	13.42 (11.98-14.86)	17.29 (15.64-18.95)	22.61 (20.62-24.60)	30.20 (27.12-33.29)
Major revision	0.91 (0.53-1.28)	7.63 (6.54-8.73)	11.84 (10.47-13.21)	15.28 (13.70-16.86)	20.73 (18.79-22.67)	28.33 (25.32-31.34)
Minor revision	0.41 (0.15-0.66)	1.59 (1.08-2.10)	1.94 (1.37-2.51)	2.43 (1.77-3.09)	2.74 (2.02-3.47)	2.74 (2.02-3.47)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.

Major revision: first revision of the femur or tibia component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.

Minor revision: only insert and/or patella exchange (including patella addition).

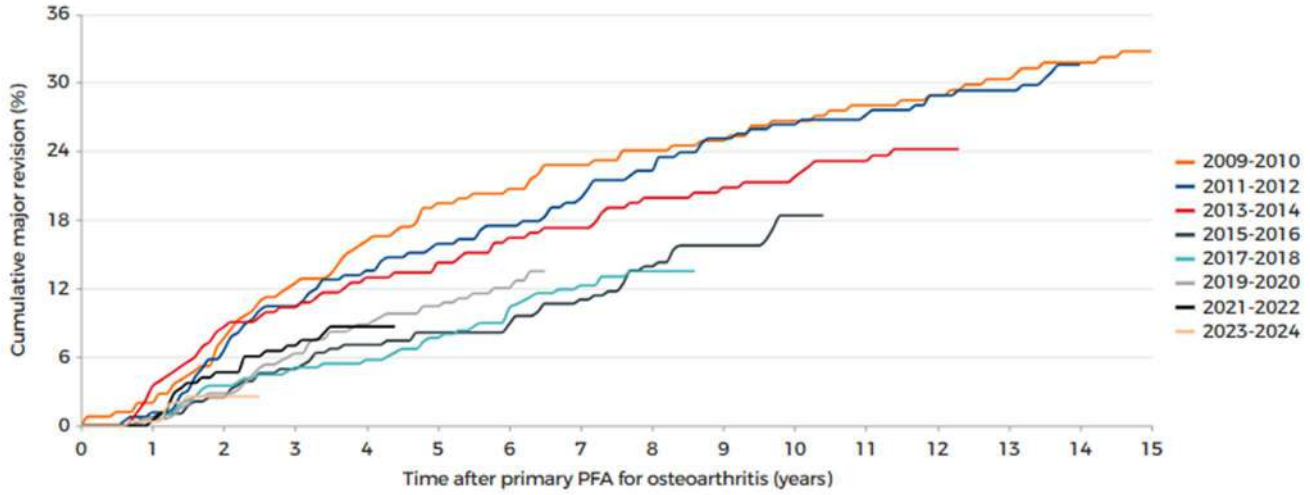
PFA: patellofemoral knee arthroplasty; CI: confidence interval.

© LROI 2026 | K076B

In 2007-2025, 145 (5.7%) primary PFAs were implanted in patients who died within seventeen years after the primary diagnosis

By procedure year

FIGURE Cumulative major revision percentage (Kaplan-Meier; 95% CI) of patellofemoral knee arthroplasties for osteoarthritis by procedure year of primary PFA in the Netherlands in 2009-2024



© LROI 2026 | K077A

	Number (n)	1yr	3yr	5yr	7yr	10yr	15yr
2009-2010	251	2.01 (0.27-3.75)	12.06 (8.01-16.11)	19.04 (14.14-23.95)	22.79 (17.54-28.05)	26.66 (21.10-32.23)	32.74 (26.74-38.75)
2011-2012	261	0.77 (-0.29-1.84)	10.46 (6.72-14.19)	15.52 (11.10-19.94)	19.49 (14.64-24.34)	26.35 (20.93-31.78)	n.a.
2013-2014	232	2.16 (0.29-4.02)	10.36 (6.43-14.28)	13.39 (9.00-17.77)	17.31 (12.43-22.18)	21.29 (16.00-26.58)	n.a.
2015-2016	284	0.71 (-0.27-1.68)	4.96 (2.43-7.50)	8.16 (4.97-11.36)	10.67 (7.06-14.28)	18.39 (13.67-23.12)	n.a.
2017-2018	314	0.64 (-0.24-1.52)	4.79 (2.42-7.15)	7.69 (4.73-10.64)	11.93 (8.32-15.54)	n.a.	n.a.
2019-2020	319	0.63 (-0.24-1.50)	6.00 (3.38-8.61)	10.46 (7.08-13.83)	n.a.	n.a.	n.a.
2021-2022	215	0.00 (0.00-0.00)	7.01 (3.59-10.43)	n.a.	n.a.	n.a.	n.a.
2023-2024	273	0.37 (-0.35-1.09)	n.a.	n.a.	n.a.	n.a.	n.a.

Please note: n.a. if <50 cases were at risk.
Major revision precentage: first revision of the femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
PFA: patellofemoral knee arthroplasty

© LROI 2026 | K077B

Reasons for revision within 10 years

TABLE Reasons for revision within ten years of primary patellofemoral knee arthroplasties by type of revision in the Netherlands in 2007-2025

	Major revision (n=384)	Minor revision (n=46)	Any type of revision (n=426)
Reasons for revision	**Proportion (%)**	**Proportion (%)**	**Proportion (%)**
Progression of osteoarthritis	60.42	6.52	53.76
Pain	22.14	47.83	25.12
Malalignment	11.46	15.22	11.74
Loosening of patella component	4.69	21.74	6.81
Patellar dislocation	3.91	2.17	5.40
Infection	3.39	0.00	3.52
Loosening of femur component	3.91	6.52	3.52
Insert wear	2.60	4.35	3.05
Arthrofibrosis	1.82	2.17	2.35
Instability	1.82	0.00	1.88
Revision after knee removal	1.30	0.00	0.94
Peri-prosthetic fracture	0.52	13.04	0.47
Other	10.94	4.35	9.15

Major revision: first revision of the femur component, regardless of whether a minor revision has already taken place. Therefor, the first three revision procedures were reviewed.
Minor revision: only inlay and/or patella exchange (including DAIR procedures).
Any type of revision includes all first revisions, including revision procedures that could not be classified as minor or major revision.
Please note: More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.

© LROI 2026 | K078

Survival by component

By component

TABLE Cumulative revision percentages of primary patellofemoral knee arthroplasties by prosthesis component combination of patients who underwent a PFA for osteoarthritis in the Netherlands in 2007-2025 (n=2,405)

Femur component	Patella component	Primary PFAs (n)	Hospitals (n)	Median (IQR) age (yr)	Revisions (n)	Type of revision (n)				Cumulative revision percentage (95% CI)					
						Total revision	Only femur	Only insert/patella	Unknown	1yr	3yr	5yr	7yr	10yr	17yr
All PFAs for osteoarthritis		**2,405**	**89**	**55 (48 - 62)**	**436**	**370**	**16**	**31**	**9**	**1.26 (0.80-1.71)**	**9.01 (7.80-10.22)**	**13.48 (11.99-14.97)**	**17.30 (15.59-19.01)**	**22.50 (20.45-24.55)**	**30.51 (27.16-33.85)**
Gender Solutions Patello-Femoral Joint	NexGen	754	40	54 (48 - 61)	111	104	1	5	1	0.43 (0.00-0.92)	5.55 (3.76-7.31)	10.06 (7.67-12.44)	14.11 (11.27-16.94)	19.86 (16.20-23.52)	n.a.
Journey PFJ	Genesis II	440	35	55 (49 - 62)	81	62	6	9	4	1.93 (0.60-3.26)	10.70 (7.55-13.84)	12.58 (9.16-16.01)	17.95 (13.75-22.17)	25.36 (20.01-30.70)	n.a.
AVON	AVON	253	17	52 (47 - 59)	43	37	3	2	1	1.19 (0.00-2.53)	7.27 (4.03-10.50)	10.73 (6.82-14.63)	11.80 (7.67-15.92)	17.09 (11.80-22.37)	n.a.
Gender Solutions Patello-Femoral Joint	Persona	109	3	54 (48 - 61)	13	13	0	0	0	0.00 (0.00-0.00)	5.89 (1.89-9.89)	n.a.	n.a.	n.a.	n.a.
VANGUARD PFR	VANGUARD	52	13	52 (47 - 57)	12	12	0	0	0	1.92 (0.00-5.66)	n.a.	n.a.	n.a.	n.a.	n.a.

Please note: n.a. if <50 cases were at risk; PFA: patellofemoral knee arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | K079

Only combinations with over 50 procedures have been listed.

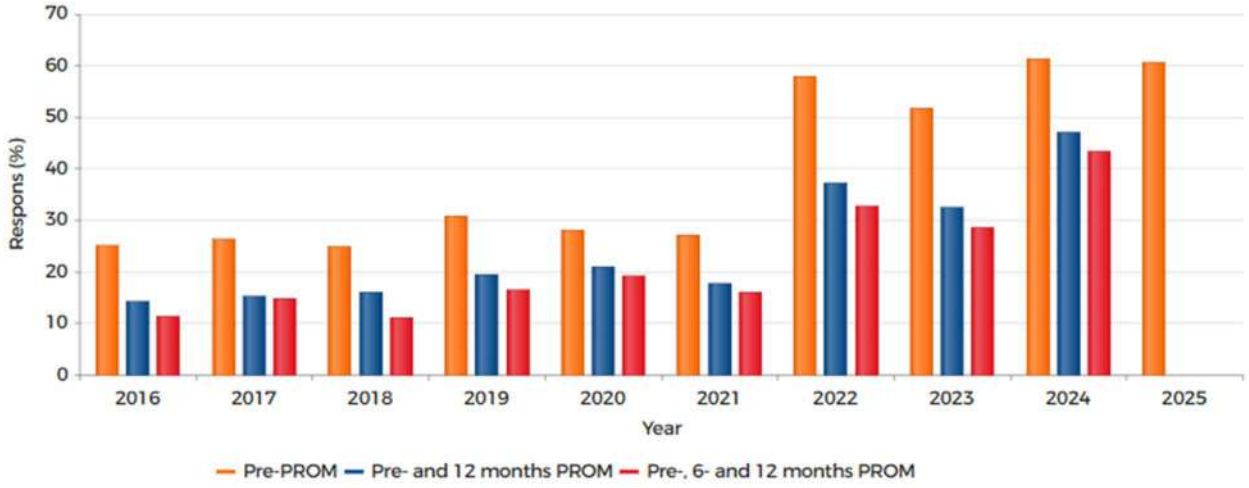
Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

PROMs

Response

Per year

FIGURE Pre-operative, 6 months and 12 months postoperative response percentage of patients who underwent a PFA in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Pre-PROM	25.00	26.38	24.73	30.86	28.03	27.10	57.76	51.59	61.29	60.53
Pre- and 12 months PROM	14.29	15.34	15.93	19.43	21.02	17.76	37.07	32.54	47.10	n.a.
Pre-, 6- and 12 months PROM	11.43	14.72	10.99	16.57	19.11	15.89	32.76	28.57	43.23	n.a.
Total PFAs (n)	**140**	**163**	**182**	**175**	**157**	**107**	**116**	**126**	**155**	**152**

Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.

PFA: patellofemoral knee arthroplasty; PROM: patient reported outcome measure.

© LROI 2026 | K080A
© LROI 2026 | K080B

Patient characteristics

Responders vs non-responders

TABLE Patient characteristics of PROM responders and non-responders after primary patellofemoral knee arthroplasty in the Netherlands in 2020-2024

	Non-responder	Pre- and 12-month PROM respondents	Total
N(%)	**454 (68.4)**	**209 (31.6)**	**663**
Mean age (years) (SD)	55.9 (10.3)	57.5 (9.6)	56.4 (10.1)
Age (years) (%)			
<50	26	21	24
50-59	40	38	40
60-69	24	25	24
70-79	8	15	11
>80	2	0	1
Sex (%)			
Male	27	22	26
Female	73	78	74
ASA class (%)			
ASA I	27	29	27
ASA II	60	66	62
ASA III-IV	13	6	11
Type of hospital (%)			
General	73	58	68
UMC	4	0	3
Private	22	42	29
Diagnosis (%)			
Osteoarthritis	96	98	97
Other	3	1	3
Mean BMI (kg/m2) (SD)	28.2 (4.2)	27.9 (4)	28.1 (4.1)
Revision within 1 yr (%)			
No revision within 1 yr	99	100	99
Revision within 1 yr	1	0	1

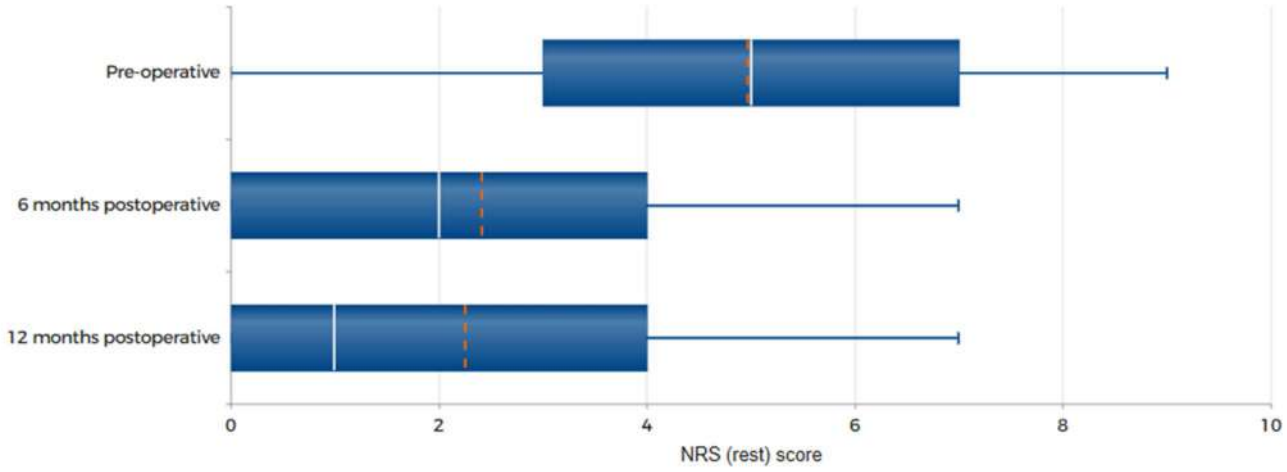
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | K081

Outcomes

NRS (rest)

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative NRS (rest) scores of patients who underwent a PFA in the Netherlands in 2020-2024



© LROI 2026 | K082A

NRS (rest) score	N	Pre-operative Median (IQR)	6 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Patellofemoral knee arthroplasty	183	5.00 (3.00-7.00)	2.00 (0.00-4.00)	1.00 (0.00-4.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

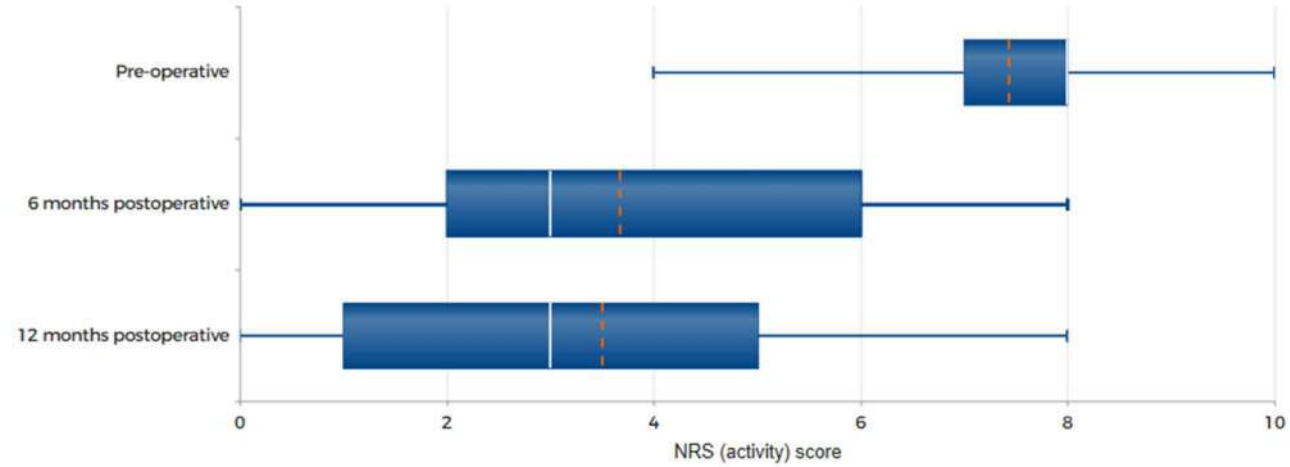
PFA: patellofemoral knee arthroplasty; IQR: interquartile range

© LROI 2026 | K082B

The NRS (rest) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

NRS (activity)

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative NRS (activity) scores of patients who underwent a PFA in the Netherlands in 2020-2024



© LROI 2026 | K083A

NRS (activity) score	N	Pre-operative Median (IQR)	6 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Patellofemoral knee arthroplasty	185	8.00 (7.00-8.00)	3.00 (2.00-6.00)	3.00 (1.00-5.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

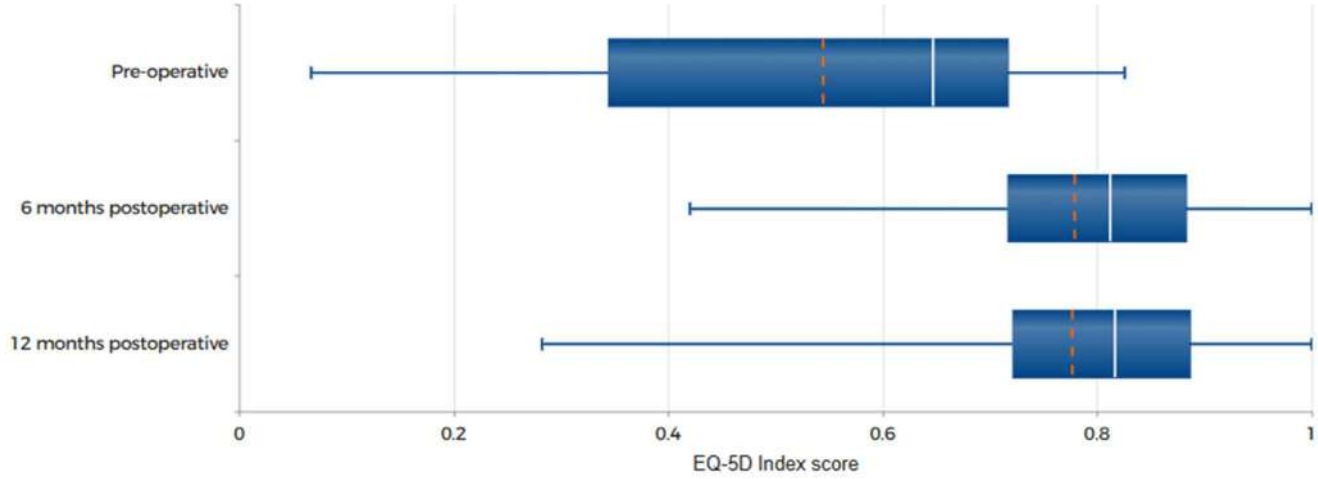
PFA: patellofemoral knee arthroplasty; IQR: interquartile range

© LROI 2026 | K083B

The NRS (activity) score measures pain during activity. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

EQ-5D Index score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative EQ-5D index scores of patients who underwent a PFA in the Netherlands in 2020-2024



© LROI 2026 | K084A

		Pre-operative	6 months postoperative	12 months postoperative
EQ-5D Index score	N	Median (IQR)	Median (IQR)	Median (IQR)
Patellofemoral knee arthroplasty	186	0.65 (0.34-0.72)	0.81 (0.72-0.88)	0.82 (0.72-0.89)

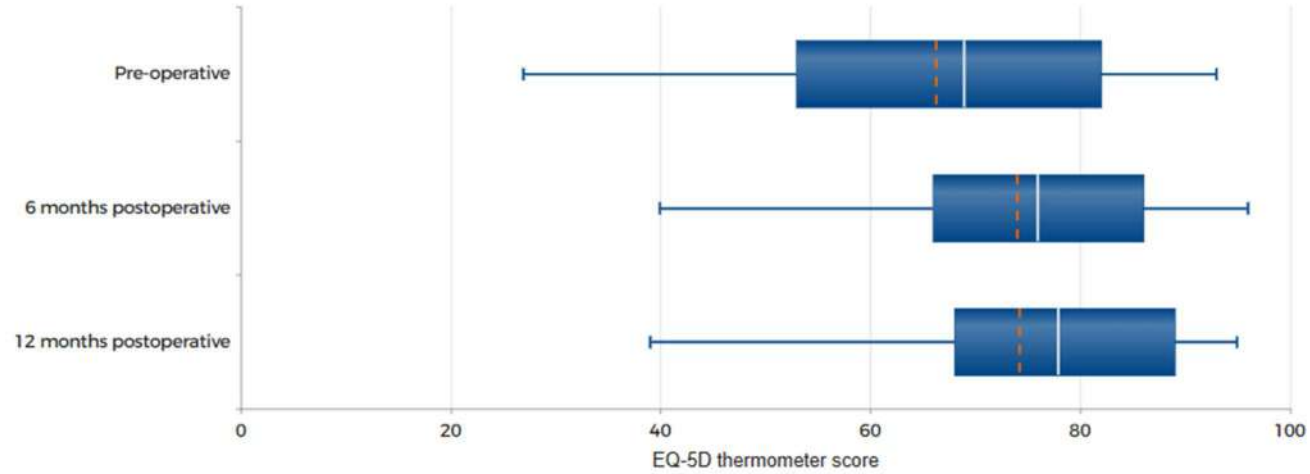
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
PFA: patellofemoral knee arthroplasty; IQR: interquartile range

© LROI 2026 | K084B

The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.

EQ-5D thermometer

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative EQ-5D thermometer scores of patients who underwent a PFA in the Netherlands in 2020-2024



© LROI 2026 | K085A

		Pre-operative	6 months postoperative	12 months postoperative
EQ-5D thermometer score	N	Median (IQR)	Median (IQR)	Median (IQR)
Patellofemoral knee arthroplasty	187	69.00 (53.00-82.00)	76.00 (66.00-86.00)	78.00 (68.00-89.00)

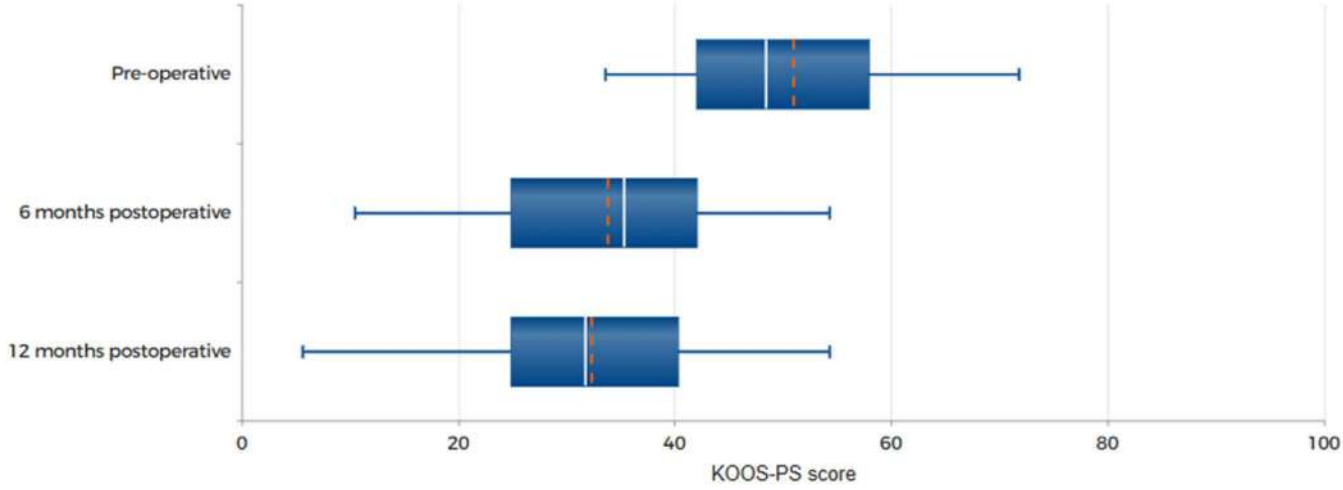
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
PFA: patellofemoral knee arthroplasty; IQR: interquartile range

© LROI 2026 | K085B

The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation.

KOOS-PS score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative KOOS-PS scores of patients who underwent a PFA in the Netherlands in 2020-2024



© LROI 2026 | K086A

		Pre-operative	6 months postoperative	12 months postoperative
KOOS-PS score	N	Median (IQR)	Median (IQR)	Median (IQR)
Patellofemoral knee arthroplasty	180	48.50 (42.00-57.90)	35.30 (24.90-42.00)	31.80 (24.90-40.30)

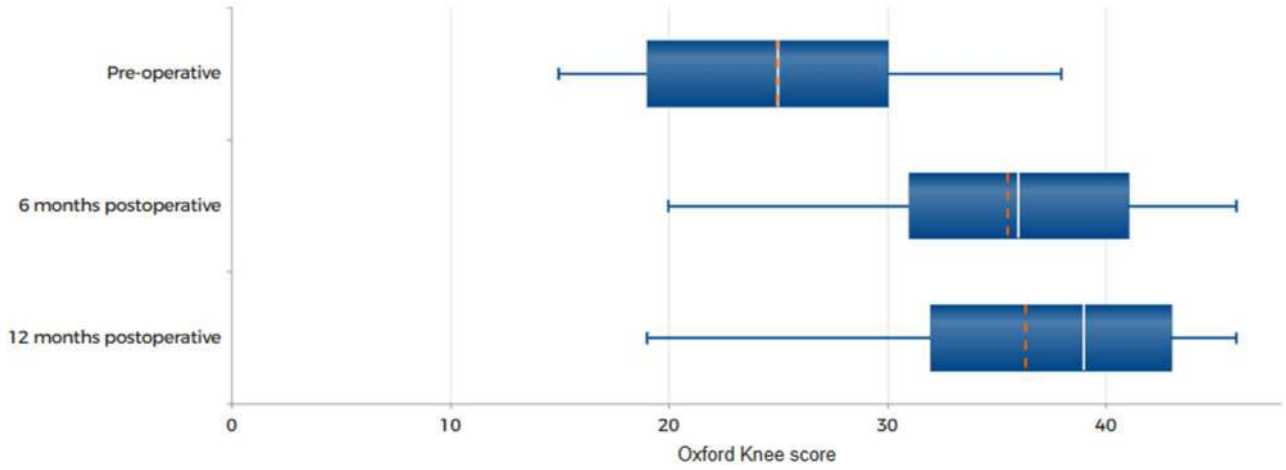
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
PFA: patellofemoral knee arthroplasty; IQR: interquartile range

© LROI 2026 | K086B

The KOOS-PS score measures the physical functioning of patients with osteoarthritis to the hip. The score has a range of 0.0 to 100.0, with 0.0 representing no effort and 100.0 the most possible effort.

Oxford Knee Score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative Oxford Knee Scores of patients who underwent a PFA in the Netherlands in 2020-2024



© LROI 2026 | K087A

		Pre-operative	6 months postoperative	12 months postoperative
Oxford Knee Score	N	Median (IQR)	Median (IQR)	Median (IQR)
Patellofemoral knee arthroplasty	180	25.00 (19.00-30.00)	36.00 (31.00-41.00)	39.00 (32.00-43.00)

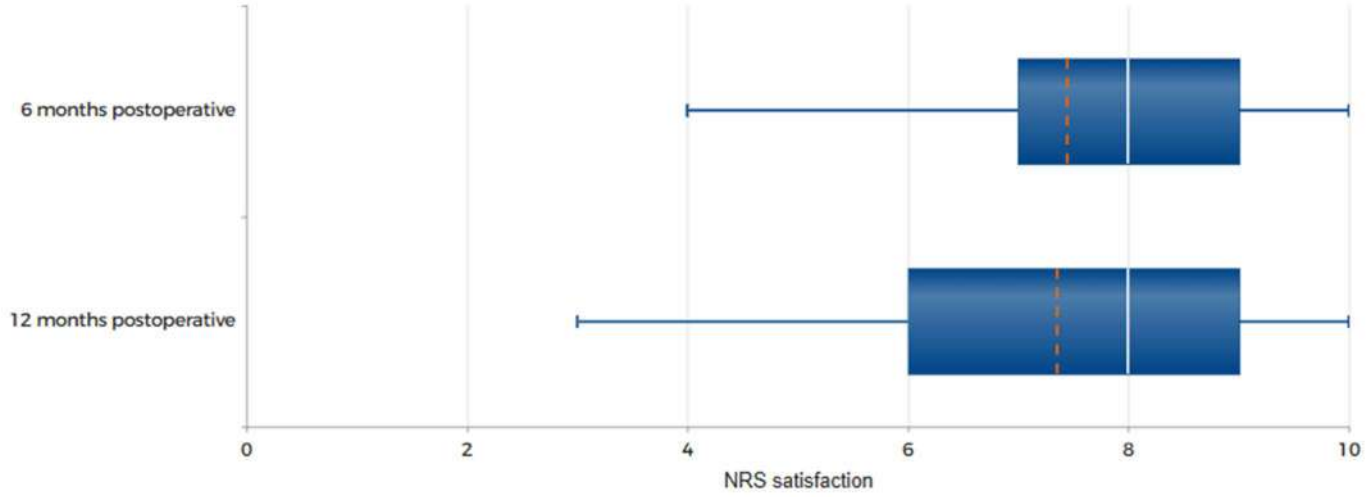
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
PFA: patellofemoral knee arthroplasty; IQR: interquartile range

© LROI 2026 | K087B

The Oxford Knee score measures the physical functioning and pain of patients with osteoarthritis to the knee. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 the most functional ability.

NRS (satisfaction)

FIGURE Boxplots of 6 months and 12 months postoperative NRS (satisfaction) scores of patients who underwent a PFA in the Netherlands in 2020-2024



© LROI 2026 | K088A

		6 months postoperative	12 months postoperative
NRS satisfaction	N	Median (IQR)	Median (IQR)
Patellofemoral knee arthroplasty	181	8.00 (7.00-9.00)	8.00 (6.00-9.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
PFA: patellofemoral knee arthroplasty; IQR: interquartile range

© LROI 2026 | K088B

The NRS (satisfaction) score measures patients' satisfaction with the outcome of after joint replacement. The score has a range of 0.0 to 10.0, with 0.0 representing very unsatisfied and 10.0 representing very satisfied.

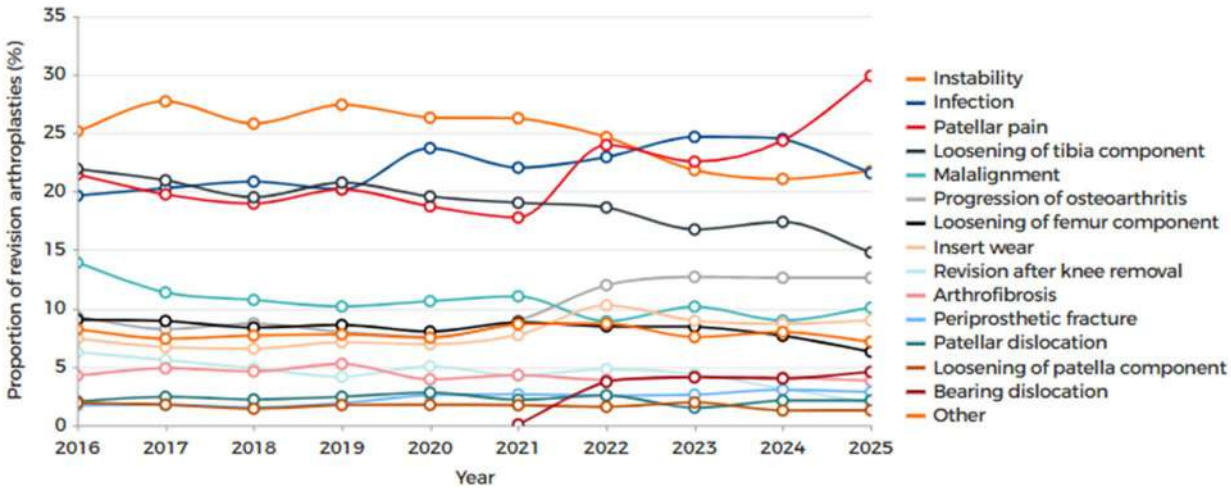
Knee revision arthroplasty

In this section you will find all the information on knee revision arthroplasty

Revision characteristics

Reasons for revision

FIGURE Trend (proportion [%] per year) in reasons for revision in patients who underwent a knee revision arthroplasty in the Netherlands in 2016-2025



© LROI 2026 | K089A

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Knee revision arthroplasty (n)	**2,920**	**2,994**	**2,929**	**3,099**	**2,495**	**2,602**	**3,013**	**3,310**	**3,514**	**3,411**	**30,287**
Reasons for revision; Proportion (%)											
Instability	25.14	27.69	25.78	27.40	26.29	26.25	24.63	21.81	21.06	21.72	24.60
Infection	19.62	20.27	20.83	20.17	23.69	22.02	22.93	24.65	24.47	21.55	22.06
Patellar pain	21.44	19.74	18.95	20.17	18.72	17.76	23.96	22.54	24.33	29.87	22.02
Loosening of tibia component	21.92	20.94	19.49	20.75	19.56	19.02	18.62	16.74	17.39	14.78	18.80
Malalignment	13.90	11.36	10.72	10.16	10.62	11.03	8.89	10.15	8.96	10.06	10.53
Progression of osteoarthritis	9.28	8.22	8.71	7.97	7.58	8.95	11.98	12.69	12.61	12.61	10.22
Loosening of femur component	9.04	8.92	8.36	8.58	8.02	8.80	8.46	8.43	7.66	6.30	8.22
Inlay wear	7.40	6.68	6.56	7.10	6.93	7.72	10.26	8.94	8.68	8.97	7.98
Revision after knee removal	6.27	5.58	4.88	4.16	5.05	4.27	4.81	4.38	3.13	1.93	4.37
Arthrofibrosis	4.25	4.88	4.61	5.26	3.93	4.30	3.88	4.14	4.10	3.81	4.31
Peri-prosthetic fracture	1.71	1.77	1.54	1.90	2.61	2.65	2.56	2.63	3.04	2.84	2.34
Patella dislocation	2.05	2.44	2.22	2.45	2.81	2.19	2.56	1.51	2.13	2.14	2.23
Loosening of patella component	1.92	1.77	1.43	1.74	1.76	1.73	1.59	1.96	1.28	1.29	1.64
Bearing dislocation							3.72	4.11	4.01	4.57	
Other	8.22	7.41	7.68	7.78	7.49	8.65	8.70	7.55	7.97	7.15	7.84

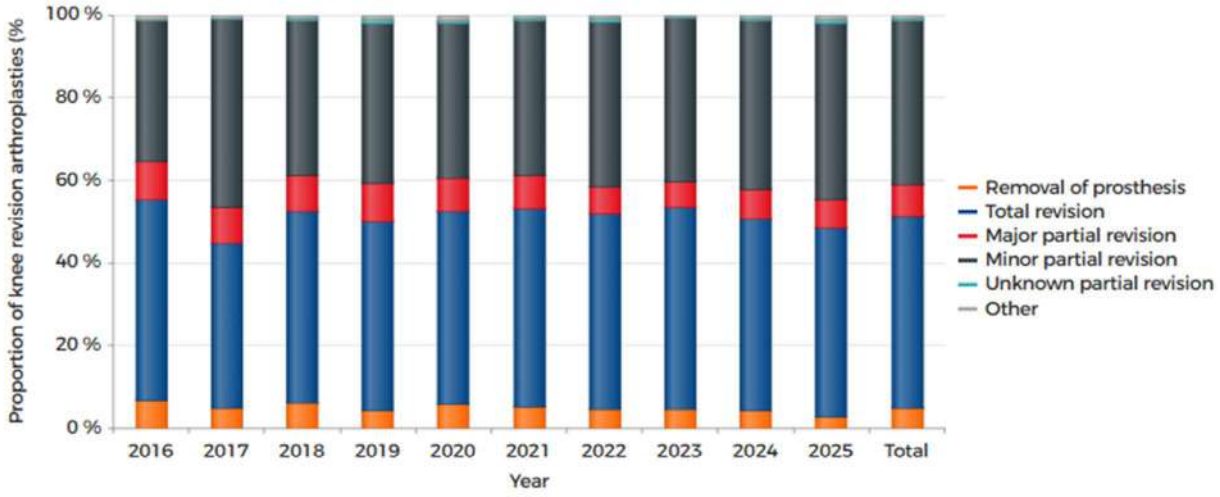
More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.

Please note: Bearing dislocation was not registered before 2022.

© LROI 2026 | K089B

Type of revision

FIGURE Trend (proportion [%] per year) in type of revision in knee revision arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Removal of prosthesis	6.69	4.80	6.20	4.40	5.98	5.28	4.73	4.69	4.45	2.85	4.93
Total revision	48.53	39.99	46.49	45.58	46.57	47.96	47.24	48.68	46.28	45.60	46.28
Major partial revision	9.48	8.82	8.46	9.29	8.03	7.82	6.46	6.42	7.01	6.84	7.81
Minor partial revision	33.88	45.33	37.48	38.59	37.54	37.63	40.01	39.33	40.89	42.84	39.49
Unknown partial revision	0.21	0.24	0.65	1.13	0.64	0.42	0.83	0.39	0.57	0.94	0.61
Other	1.21	0.82	0.72	1.00	1.24	0.89	0.73	0.48	0.80	0.94	0.87
Total (n)	**2,901**	**2,936**	**2,919**	**3,089**	**2,491**	**2,596**	**3,002**	**3,303**	**3,509**	**3,406**	**30,152**

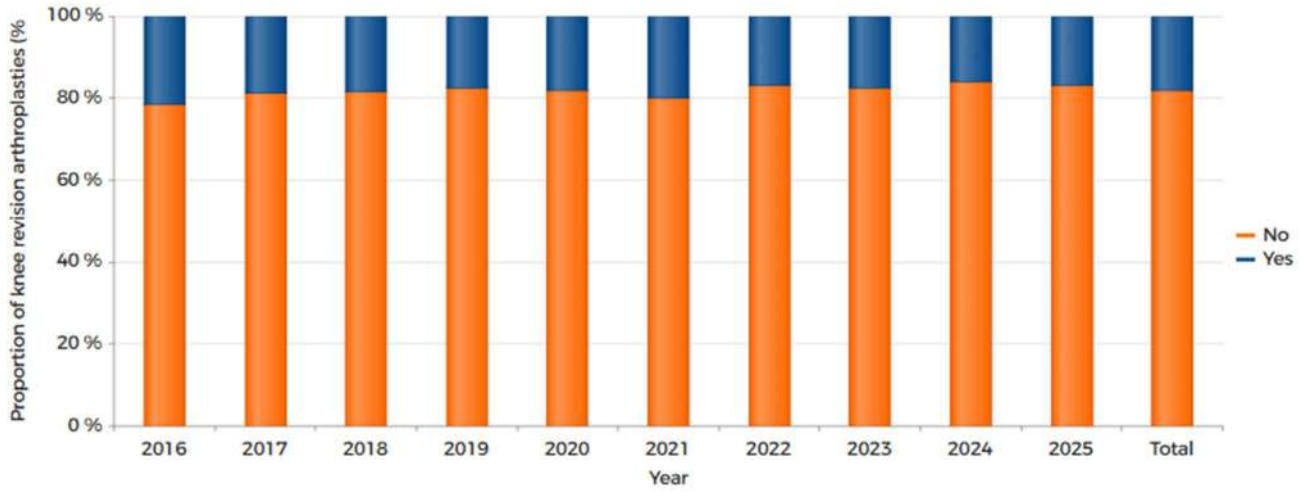
Major partial revision: revision of at least femur or tibia component. Minor partial revision: Only insert and/patella exchange (including patella addition). Unknown partial revision: partial revision of which the revised components were unknown.

© LROI 2026 | K090

In 139 (60%) major partial knee revision arthroplasties the tibia component was revised and in 94 (40%) major partial revision arthroplasties the femur component was revised in 2025.

Conversion to TKA

FIGURE Trend (proportion [%] per year) in conversion of a unicondylar or patellofemoral knee arthroplasty to a total knee arthroplasty in the Netherlands in 2016-2025

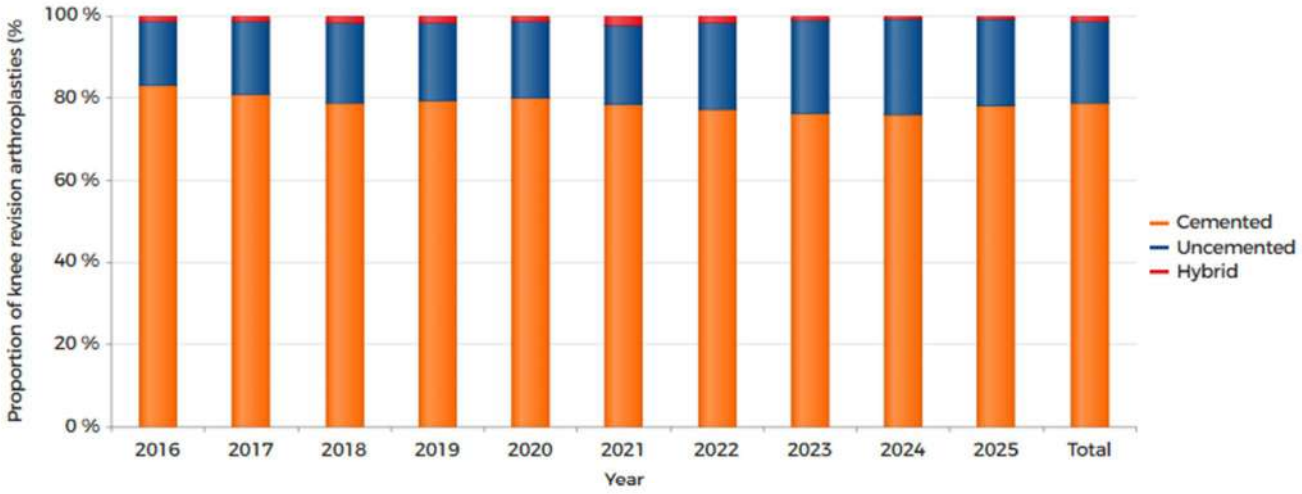


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	78.61	81.26	81.49	82.43	82.01	80.09	83.12	82.45	84.09	83.11	82.00
Yes	21.39	18.74	18.51	17.57	17.99	19.91	16.88	17.55	15.91	16.89	18.00
Total (n)	**2,632**	**2,769**	**2,636**	**2,777**	**2,284**	**2,401**	**2,902**	**3,242**	**3,444**	**3,358**	**28,445**

© LROI 2026 | K091

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in knee revision arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Cemented	83.30	80.90	78.83	79.44	80.15	78.44	77.24	76.21	75.91	78.19	78.74
Uncemented	15.38	17.87	19.52	18.81	18.38	19.37	21.11	22.78	23.44	21.18	19.95
Hybrid	1.32	1.24	1.65	1.75	1.47	2.19	1.65	1.01	0.65	0.63	1.32
Total (n)	**2,659**	**2,748**	**2,669**	**2,855**	**2,252**	**2,375**	**2,781**	**3,073**	**3,246**	**3,154**	**27,812**

© LROI 2026 | K092

Most frequenly registered - Femur components

TABLE The most frequently registered femur components in knee revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Femur (n)	**1,158**	**1,279**	**1,418**	**1,493**	**1,474**
Femur name; Proportion (%)					
Legion	20.03	17.83	18.05	18.05	20.96
Attune	4.15	8.84	9.94	9.94	18.59
NexGen	18.65	19.62	18.48	18.48	17.16
Persona	2.16	3.05	6.21	6.21	7.80
Triathlon	8.46	7.97	8.32	8.32	6.99
Genesis II	7.51	9.70	9.31	9.31	5.56
Vanguard Complete Knee	7.94	6.72	7.19	7.19	5.02
RT Plus	3.97	3.99	3.46	3.46	4.61
Vanguard 360	6.04	6.33	4.58	4.58	3.73
balanSys	2.07	1.64	1.55	1.55	1.90

© LROI 2026 | K093

Most frequenly registered - Tibia components

TABLE The most frequently registered tibia components in knee revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Tibia (n)	**1,250**	**1,376**	**1,549**	**1,546**	**1,507**
Tibia name; Proportion (%)					
Legion	20.24	17.59	19.56	17.59	18.85
Attune	4.72	8.36	9.36	18.37	17.98
NexGen	15.52	17.59	17.30	15.91	16.06
Persona	2.00	2.83	5.49	5.11	7.43
Genesis II	4.80	7.05	6.78	7.44	6.64
Triathlon	9.04	8.65	8.59	7.12	6.57
Vanguard 360	7.52	6.76	5.55	6.47	4.98
RT Plus	5.76	5.31	5.04	4.72	4.25
Vanguard Complete Knee	5.52	5.60	4.91	3.88	3.45
Rotation Hinged Knee	3.28	4.07	3.23	3.04	2.85

© LROI 2026 | K094

Most frequenly registered - Insert components

TABLE The most frequently registered insert components in knee revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Insert (n)	**1,974**	**2,248**	**2,582**	**2,814**	**2,672**
Insert name; Proportion (%)					
Genesis II	24.42	23.75	23.78	25.34	24.63
Attune	3.14	5.83	7.44	12.26	12.80
NexGen	14.13	14.50	13.52	11.87	12.20
Triathlon	7.95	8.05	8.13	7.29	8.20
Vanguard Complete Knee	8.66	8.85	8.52	8.00	7.00
Oxford PKR	5.93	7.38	7.40	7.21	6.89
Persona	1.72	2.76	5.00	4.41	5.09
Legion	4.61	3.47	2.90	2.74	3.29
RT Plus	3.50	3.47	3.68	3.13	2.96
Vanguard SSK	4.00	4.36	3.14	3.45	2.51

© LROI 2026 | K095

Most frequenly registered - Patella components

TABLE The most frequently registered patella components in knee revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Patella (n)	**945**	**988**	**1,063**	**1,163**	**1,169**
Patella name; Proportion (%)					
Genesis II	44.97	44.53	48.17	51.59	47.99
Attune	3.81	5.97	7.53	11.01	13.60
Vanguard	15.03	17.51	14.96	11.35	12.32
Persona	2.12	3.95	4.05	5.07	8.64
NexGen	12.38	10.63	11.38	9.29	7.10
Triathlon	7.51	4.86	4.33	2.67	3.85
balanSys	2.75	2.33	2.54	2.75	2.91
PFC / SIGMA	6.03	4.76	4.05	3.35	2.22
LCS	2.12	1.92	1.03	0.95	0.43
SAIPH	0.00	0.00	0.00	0.09	0.26

© LROI 2026 | K096

Most frequenly registered - Bone cement

TABLE The most frequently registered bone cement used during knee revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement pre-packed in a vacuum mixing system (n)	**674**	**801**	**882**	**1,275**	**1,253**
Cement name; Proportion (%)					
PALACOS R+G	48.66	48.44	55.90	65.88	58.82
Refobacin Bone Cement R	41.10	43.45	39.57	32.16	33.84
COPAL G+C	0.00	0.00	0.00	1.65	7.34
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Separately packed bone cement (n)	**1,007**	**1,012**	**1,059**	**785**	**599**
Cement name; Proportion (%)					
PALACOS R+G	33.76	32.51	27.10	43.82	53.09
Refobacin Revision	12.31	14.23	12.28	13.76	14.19
COPAL G+C	38.93	39.92	43.72	25.48	12.85
Subiton G	4.67	4.15	3.87	5.99	9.52
PALACOS MV+G	1.59	1.88	2.55	1.91	3.01
COPAL G+V	5.16	4.25	4.25	4.20	2.67
Refobacin Bone Cement R	1.89	1.98	3.40	1.53	1.84
Biomet Bone Cement R	0.40	0.00	0.57	0.51	1.50
Cemex VancoGenx	0.89	0.79	1.61	2.04	1.34

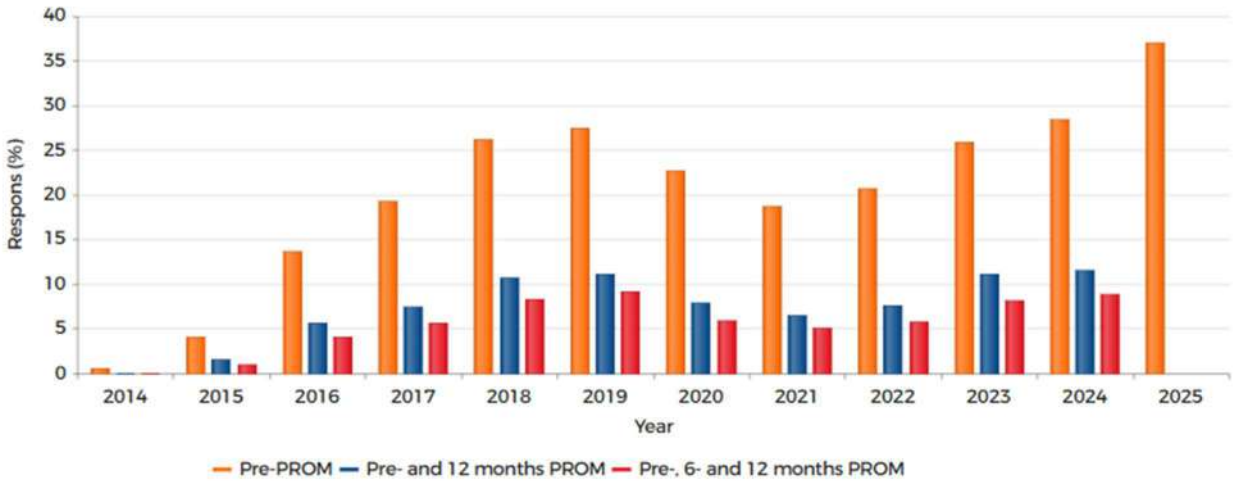
© LROI 2026 | K097

PROMs

Response

Per year

FIGURE Pre-operative, 6 months and 12 months postoperative response percentage of patients who underwent a knee revision arthroplasty in the Netherlands in 2014-2025



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Pre-PROM	0.53	4.04	13.62	19.33	26.13	27.40	22.66	18.67	20.70	25.90	28.39	36.97
Pre- and 12 months PROM	0.04	1.54	5.68	7.51	10.63	11.10	7.85	6.48	7.54	11.06	11.52	n.a.
Pre-, 6- and 12 months PROM	0.04	1.00	4.11	5.68	8.23	9.09	5.96	5.09	5.70	8.21	8.83	n.a.
Total knee revision arthroplasties (n)	**2,451**	**2,601**	**2,798**	**2,850**	**2,832**	**2,982**	**2,432**	**2,517**	**2,932**	**3,228**	**3,410**	3,332

Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.

PROM: patient reported outcome measure.

© LROI 2026 | K098A
© LROI 2026 | K098B

Patient characteristics

Responders vs non-responders

TABLE Patient characteristics of PROM responders and non-responders after knee revision arthroplasty in the Netherlands in 2020-2024

	Non-responder	Pre- and 12-month PROM respondents	Total
N(%)	**13,593 (91.2)**	**1,325 (8.8)**	**14,918**
Mean age (years) (SD)	68.8 (9.3)	67.6 (8.5)	68.7 (9.3)
Age (years) (%)			
<50	2	2	2
50-59	14	16	14
60-69	34	39	34
70-79	39	36	39
>80	11	7	11
Sex (%)			
Male	42	43	42
Female	58	57	58
ASA class (%)			
ASA I	6	10	6
ASA II	58	65	59
ASA III-IV	35	25	35
Type of hospital (%)			
General	81	70	80
UMC	10	4	9
Private	9	26	11
Mean BMI (kg/m2) (SD)	29.8 (5.1)	29.9 (4.6)	29.8 (5.1)

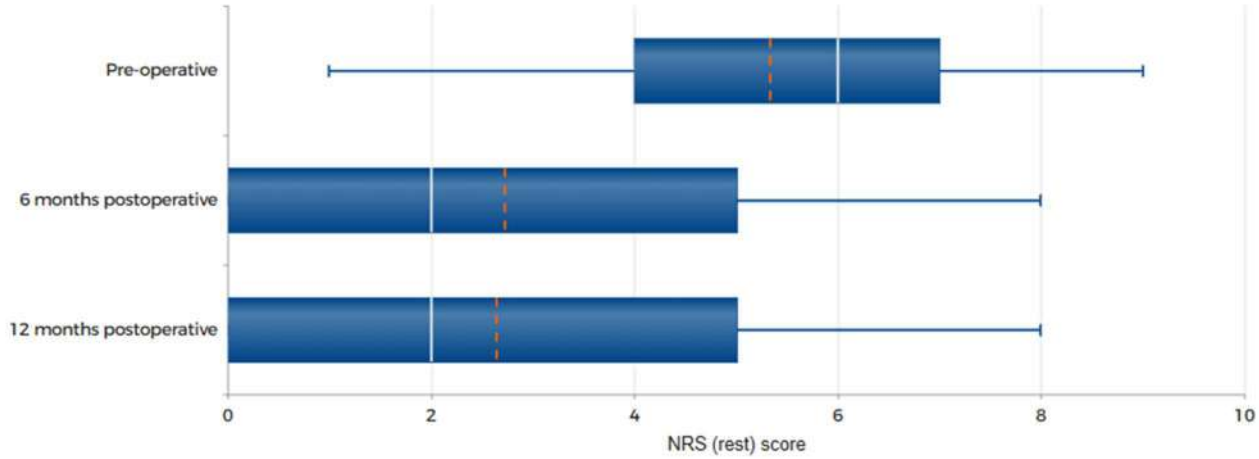
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | K099

Outcomes

NRS (rest)

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative NRS (rest) scores of patients who underwent a knee revision in the Netherlands in 2020-2024



© LROI 2026 | K100A

NRS (rest) score	N	Pre-operative Median (IQR)	6 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Knee revision arthroplasty	981	6.00 (4.00-7.00)	2.00 (0.00-5.00)	2.00 (0.00-5.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

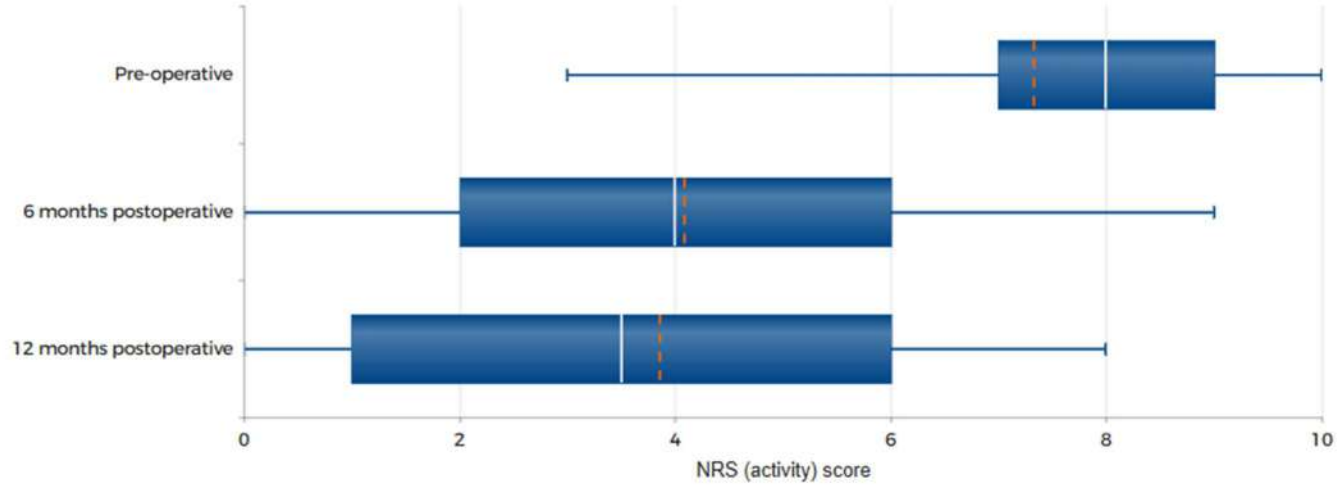
IQR: interquartile range

© LROI 2026 | K100B

The NRS (rest) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

NRS (activity)

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative NRS (activity) scores of patients who underwent a knee revision in the Netherlands in 2020-2024



© LROI 2026 | K101A

NRS (activity) score	N	Pre-operative Median (IQR)	6 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Knee revision arthroplasty	978	8.00 (7.00-9.00)	4.00 (2.00-6.00)	3.50 (1.00-6.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

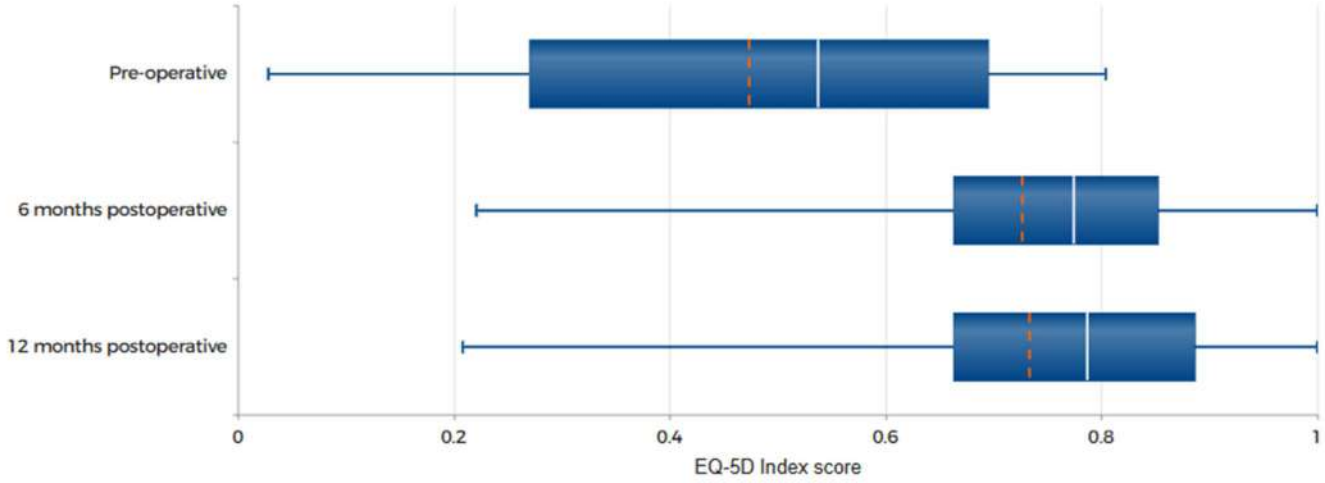
IQR: interquartile range

© LROI 2026 | K101B

The NRS (activity) score measures pain during activity. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

EQ-5D Index score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative EQ-5D index scores of patients who underwent a knee revision in the Netherlands in 2020-2024



© LROI 2026 | K102A

EQ-5D Index score	N	Pre-operative Median (IQR)	6 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Knee revision arthroplasty	975	0.54 (0.27-0.70)	0.78 (0.66-0.85)	0.79 (0.66-0.89)

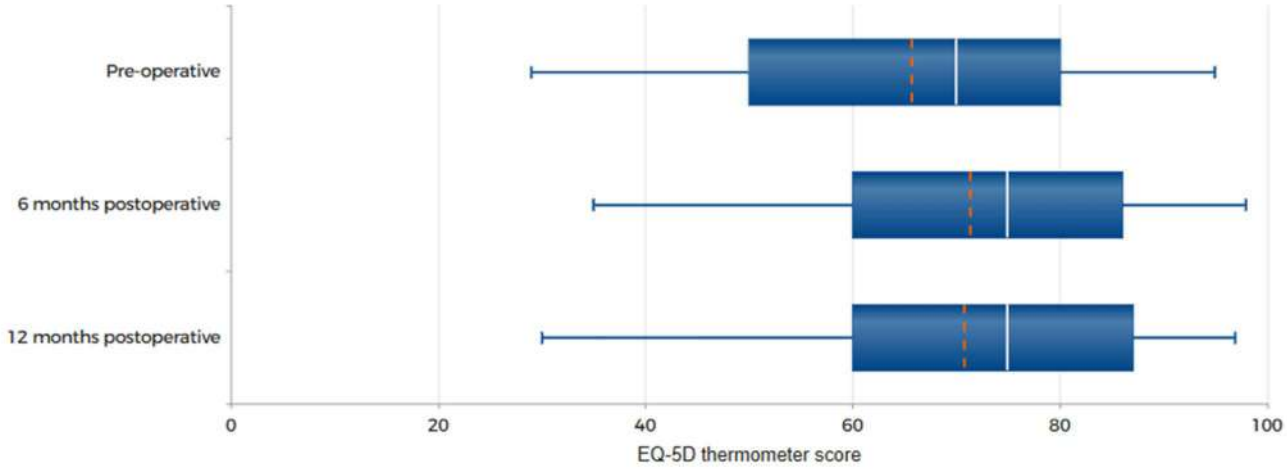
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | K102B

The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.

EQ-5D thermometer

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative EQ-5D thermometer scores of patients who underwent a knee revision in the Netherlands in 2020-2024



© LROI 2026 | K103A

EQ-5D thermometer score	N	Pre-operative Median (IQR)	6 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Knee revision arthroplasty	971	70.00 (50.00-80.00)	75.00 (60.00-86.00)	75.00 (60.00-87.00)

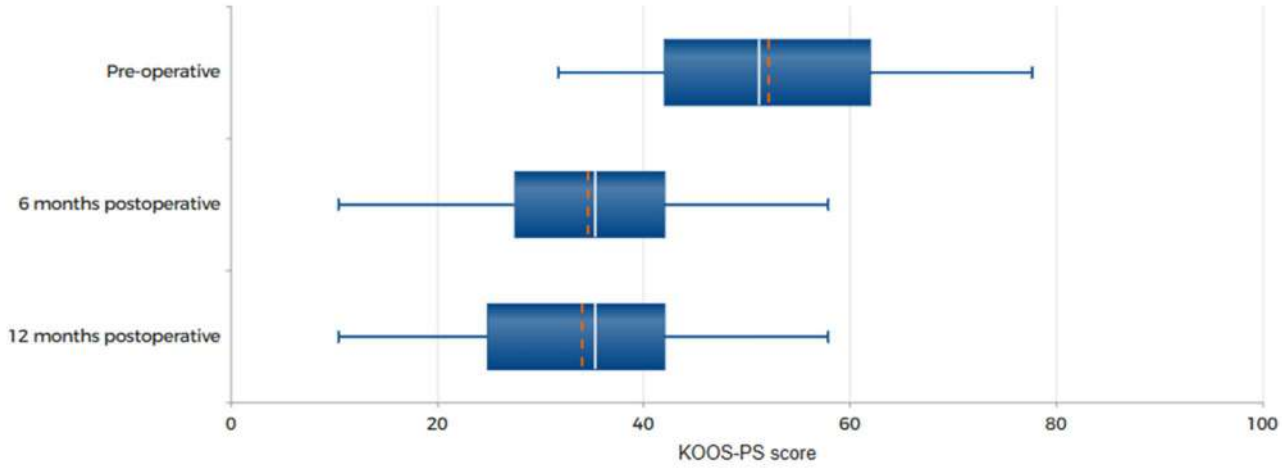
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | K103B

The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation.

KOOS-PS score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative KOOS-PS scores of patients who underwent a knee revision in the Netherlands in 2020-2024



© LROI 2026 | K104A

		Pre-operative	6 months postoperative	12 months postoperative
KOOS-PS score	N	Median (IQR)	Median (IQR)	Median (IQR)
Knee revision arthroplasty	922	51.20 (42.00-62.00)	35.30 (27.50-42.00)	35.30 (24.90-42.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

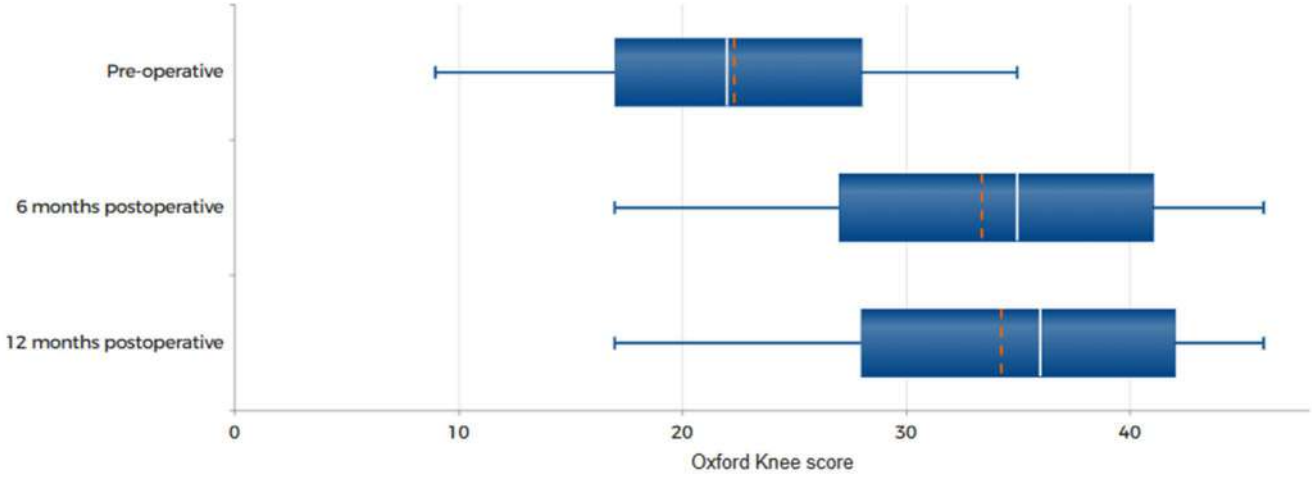
IQR: interquartile range

© LROI 2026 | K104B

The KOOS-PS score measures the physical functioning of patients with osteoarthritis to the hip. The score has a range of 0.0 to 100.0, with 0.0 representing no effort and 100.0 the most possible effort.

Oxford Knee Score

FIGURE Boxplots of pre-operative, 6 months and 12 months postoperative Oxford Knee scores of patients who underwent a knee revision in the Netherlands in 2020-2024



© LROI 2026 | K105A

		Pre-operative	6 months postoperative	12 months postoperative
Oxford Knee Score	N	Median (IQR)	Median (IQR)	Median (IQR)
Knee revision arthroplasty	965	22.00 (17.00-28.00)	35.00 (27.00-41.00)	36.00 (28.00-42.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

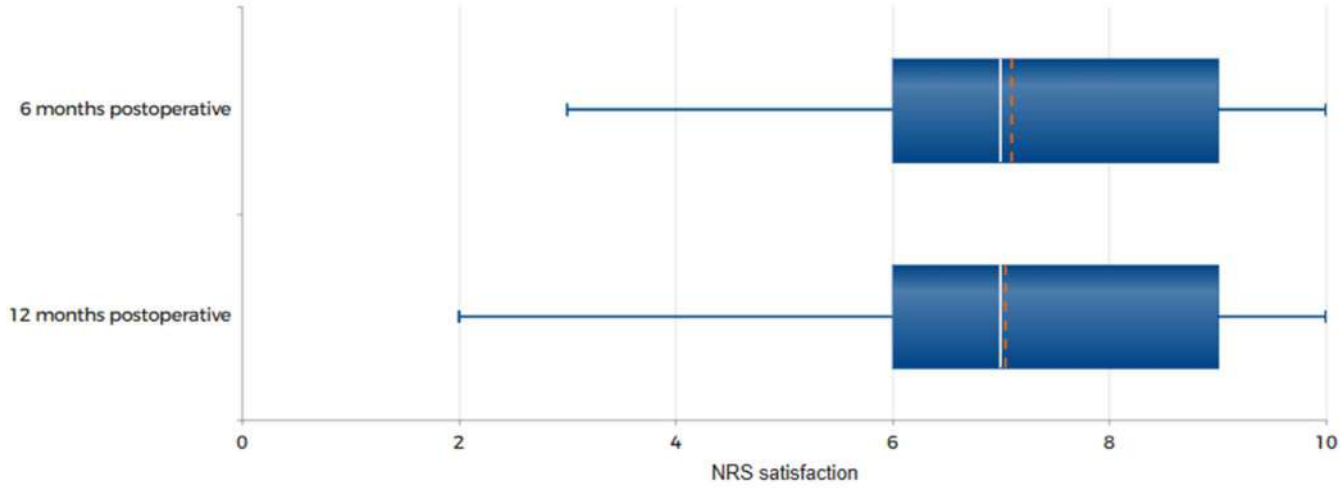
IQR: interquartile range

© LROI 2026 | K105B

The Oxford Knee score measures the physical functioning and pain of patients with osteoarthritis to the knee. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 the most functional ability.

NRS (satisfaction)

FIGURE Boxplots of 6 months and 12 months postoperative NRS (satisfaction) scores of patients who underwent a knee revision in the Netherlands in 2020-2024



© LROI 2026 | K106A

		6 months postoperative	12 months postoperative
NRS satisfaction	N	Median (IQR)	Median (IQR)
Knee revision arthroplasty	1,048	7.00 (6.00-9.00)	7.00 (6.00-9.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | K106B

The NRS (satisfaction) score measures patients' satisfaction with the outcome of after joint replacement. The score has a range of 0.0 to 10.0, with 0.0 representing very unsatisfied and 10.0 representing very satisfied.

Ankle arthroplasty

Numbers

Registered procedures

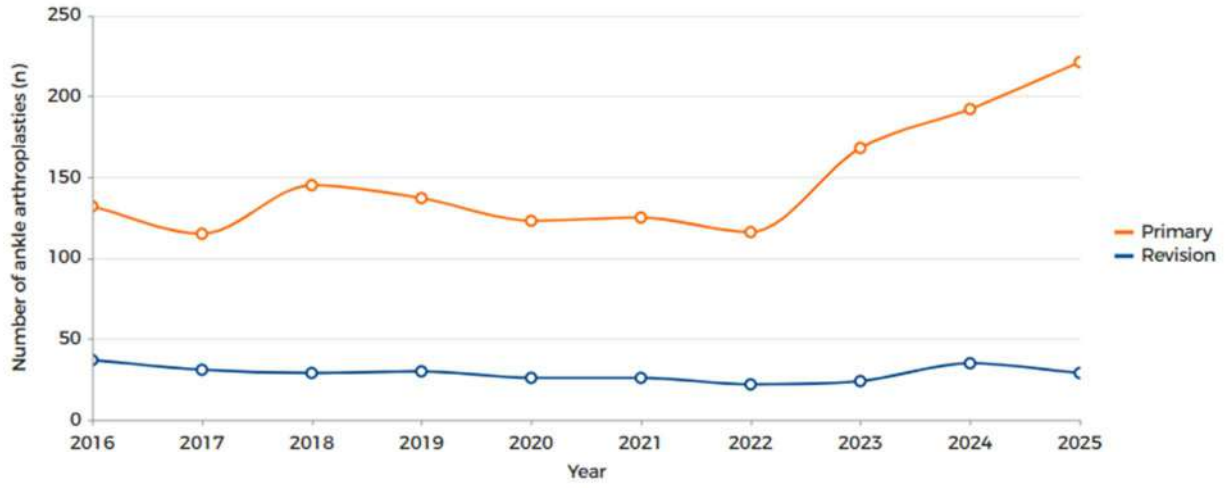
TABLE Number of registered ankle arthroplasties per year of surgery (2014-2025) in the LROI in April 2026

Year of surgery	Total ankle arthroplasty	Other	Unknown/ missing	Revision arthroplasty	Total
2014	102	0	1	16	**119**
2015	105	0	0	19	**124**
2016	125	6	1	37	**169**
2017	111	3	1	31	**146**
2018	143	1	1	29	**174**
2019	134	2	1	30	**167**
2020	122	0	1	26	**149**
2021	125	0	0	26	**151**
2022	115	1	0	22	**138**
2023	167	1	0	24	**192**
2024	192	0	0	35	**227**
2025	221	0	0	29	**250**
Total (n)	**1,662**	**14**	**6**	**324**	**2,006**

© LROI 2026 | A001

Type of procedures

FIGURE Number of primary ankle arthroplasties and ankle revision arthroplasties registered in the LROI in the Netherlands in 2016-2025

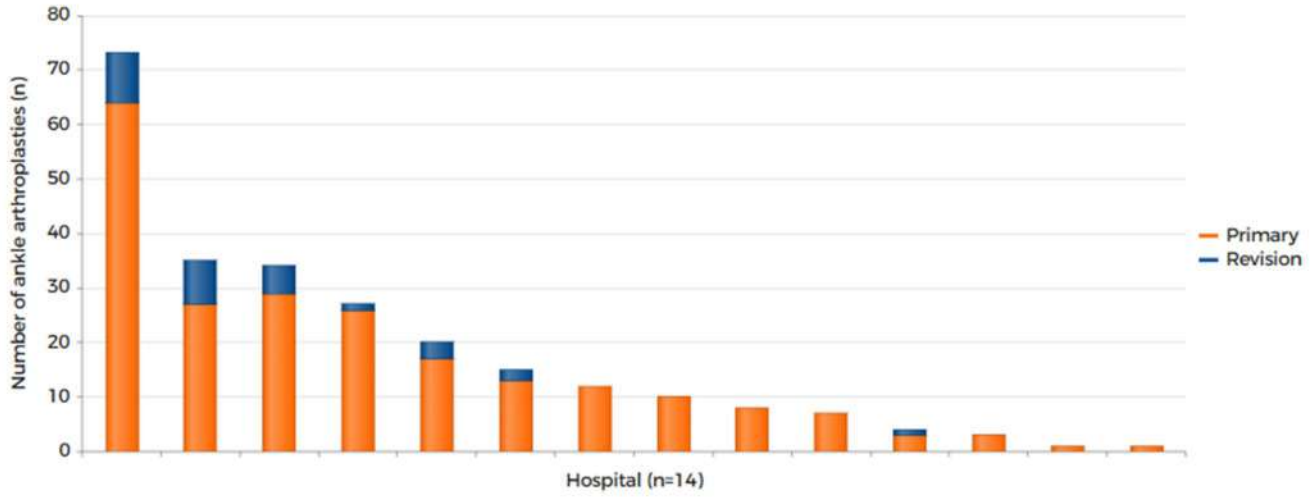


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Primary	132	115	145	137	123	125	116	168	192	221	**1,474**
Revision	37	31	29	30	26	26	22	24	35	29	**289**
Total (n)	**169**	**146**	**174**	**167**	**149**	**151**	**138**	**192**	**227**	**250**	**1,763**

© LROI 2026 | A002

Type of procedure per hospital

FIGURE Number of primary ankle arthroplasties and ankle revision arthroplasties per hospital in the Netherlands in 2025 (n=250)



© LROI 2026 | A003

Primary ankle arthroplasty

In this section you will find all the information on primary ankle arthroplasty

Patient characteristics

By diagnosis

TABLE Patient characteristics of all patients with a registered primary ankle arthroplasty by diagnosis in the Netherlands in 2025

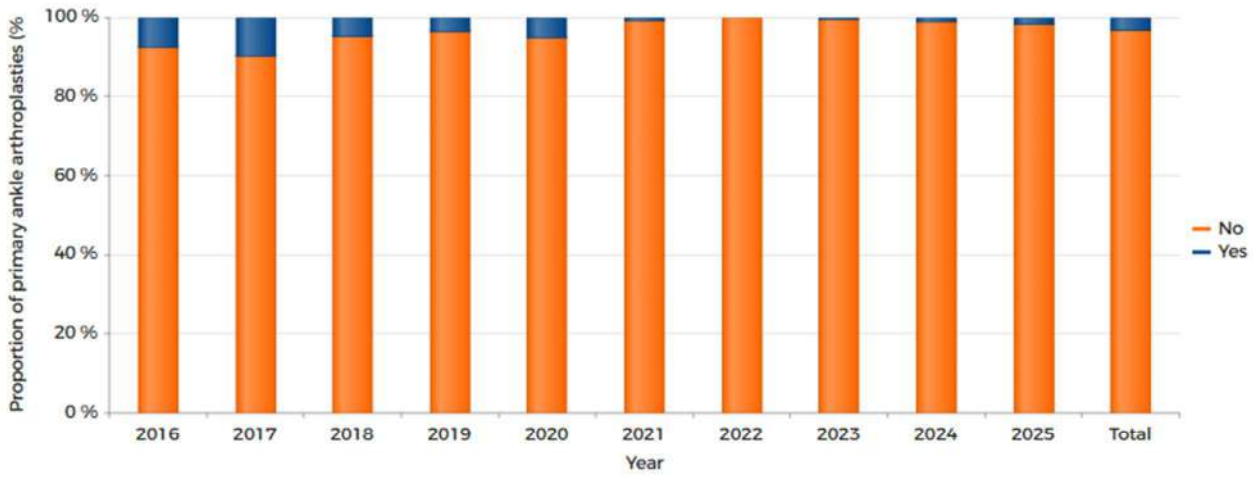
	Osteoarthritis	No osteoarthritis	Total
N(%)	**183 (84.0)**	**35 (16.0)**	**221**
Mean age (years) (SD)	70.2 (6.9)	66.9 (10.6)	69.6 (7.7)
Age (years) (%)			
<50	0	6	1
50-59	7	17	8
60-69	34	37	35
70-79	52	34	49
>80	8	6	7
Sex (%)			
Male	55	51	54
Female	45	49	46
ASA class (%)			
ASA I	8	6	8
ASA II	73	74	73
ASA III-IV	19	20	19
Type of hospital (%)			
General	67	94	71
UMC	11	0	9
Private	22	6	20
Charnley-score (%)			
A One ankle joint affected	70	60	69
B1 Both ankle joints affected	14	23	16
B2 Contralateral ankle joint with a total ankle prosthesis	8	3	7
C Multiple joints affected or chronic disease that affects quality of life	7	14	8
Mean BMI (kg/m2) (SD)	27.4 (3.8)	27.0 (3.9)	27.3 (3.8)
Body Mass Index (kg/m2) (%)			
Underweight (<=18.5)	1	3	1
Normal weight (>18.5-25)	31	29	30
Overweight (>25-30)	42	43	42
Obesity (>30-40)	27	26	27
Morbid obesity (>40)	0	0	0
Smoking (%)			
No	97	97	97
Yes	3	3	3

No osteoarthritis: another diagnosis than osteoarthritis registered as primary diagnosis, specifically post-traumatic (n=18) and rheumatoid arthritis (n=14).
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | A004

Procedure characteristics
Medial malleolus osteotomy

FIGURE Trend (proportion [%] per year) in medial malleolus osteostomy in primary ankle arthroplasty in the Netherlands in 2016-2025

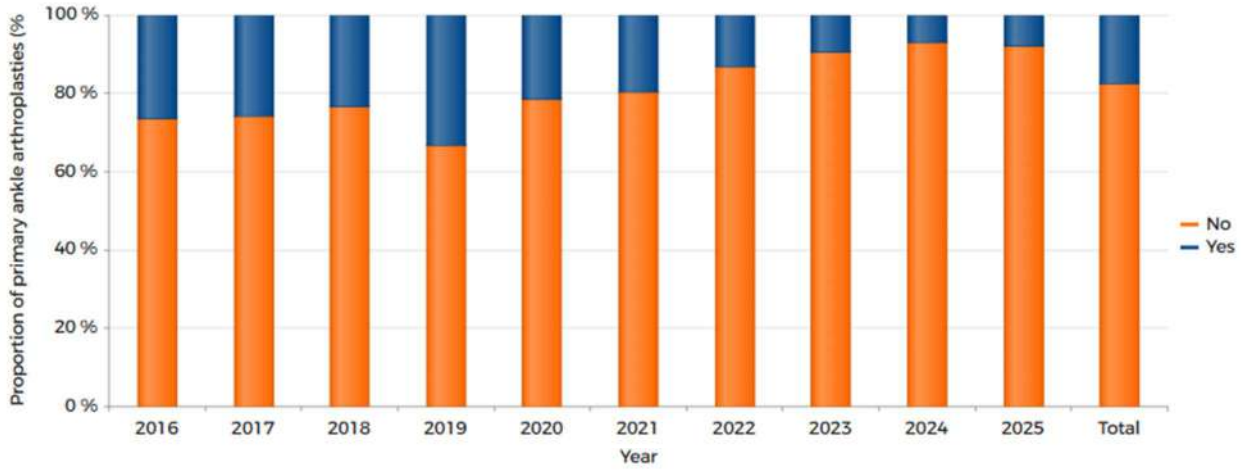


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	92.31	90.18	95.07	96.32	95.04	99.19	100	99.40	98.95	98.19	96.77
Yes	7.69	9.82	4.93	3.68	4.96	0.81	0	0.60	1.05	1.81	3.23
Total (n)	**130**	**112**	**142**	**136**	**121**	**124**	**112**	**168**	**190**	**221**	**1,456**

© LROI 2026 | A005

Extension heel cord

FIGURE Trend (proportion [%] per year) in heel cord extension in primary ankle arthroplasty in the Netherlands in 2016-2025

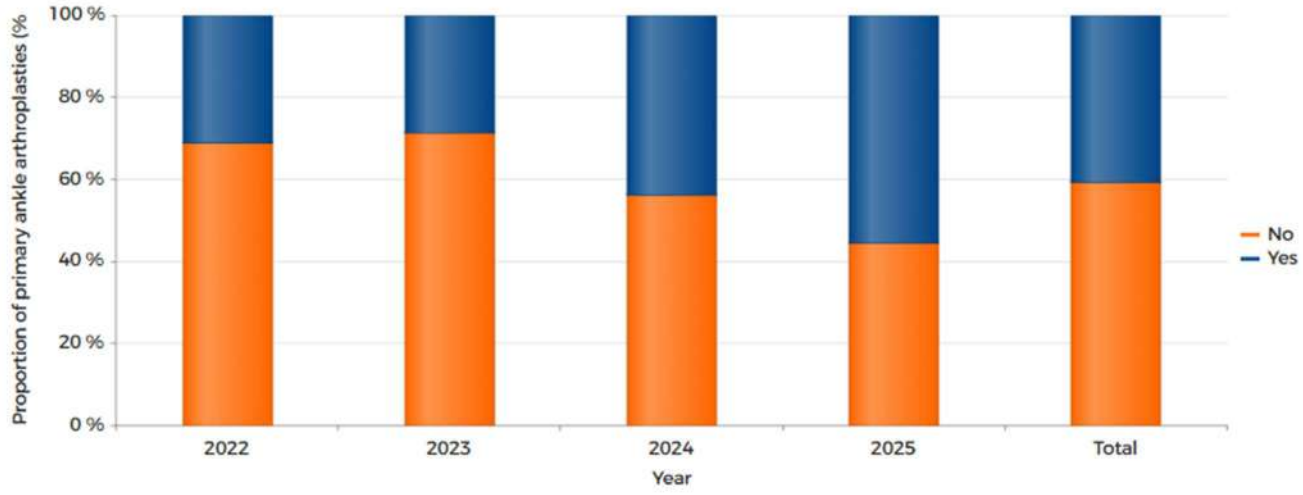


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	73.64	74.11	76.76	66.91	78.51	80.49	86.84	90.48	93.12	92.24	82.66
Yes	26.36	25.89	23.24	33.09	21.49	19.51	13.16	9.52	6.88	7.76	17.34
Total (n)	**129**	**112**	**142**	**136**	**121**	**123**	**114**	**168**	**189**	**219**	**1,453**

© LROI 2026 | A006

PSI

FIGURE Trend (proportion [%] per year) in PSI in primary ankle arthroplasty in the Netherlands in 2022-2025



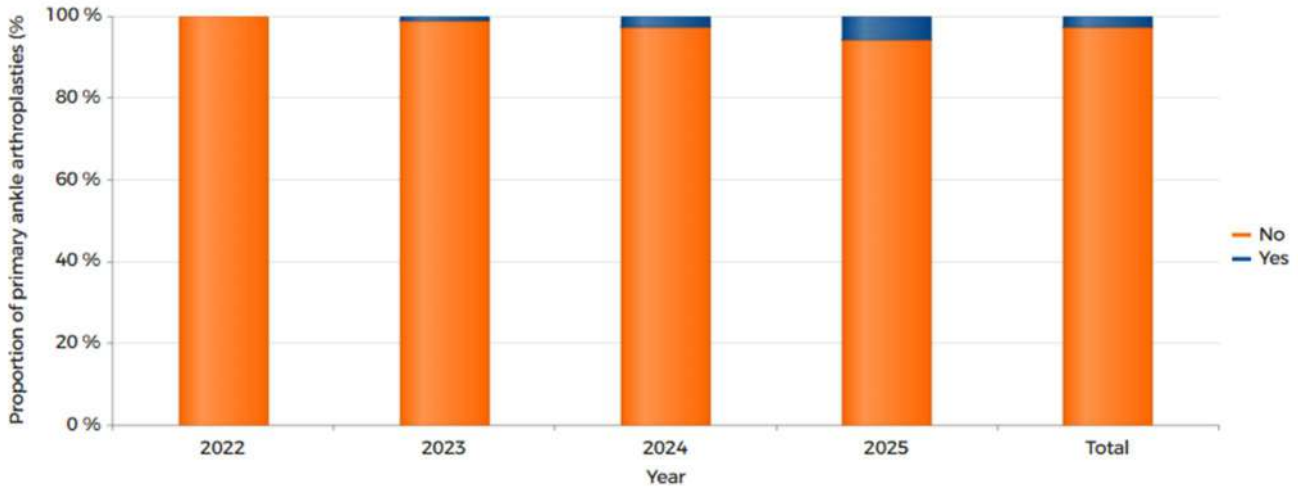
	2022	2023	2024	2025	Total
No	68.87	71.43	56.25	44.38	59.42
Yes	31.13	28.57	43.75	55.63	40.58
Total (n)	**106**	**168**	**192**	**160**	**626**

PSI: patient-specific instrumentation

© LROI 2026 | A007

Navigation

FIGURE Trend (proportion [%] per year) in navigation in primary ankle arthroplasty in the Netherlands in 2022-2025

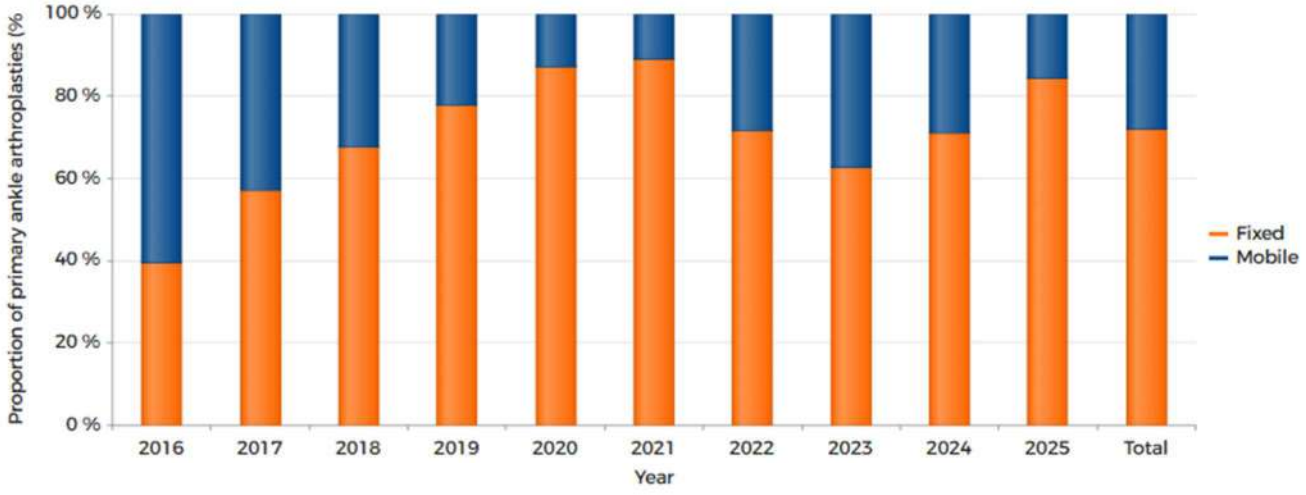


	2022	2023	2024	2025	Total
No	100	98.80	97.38	94.38	97.44
Yes	0	1.20	2.62	5.63	2.56
Total (n)	**106**	**167**	**191**	**160**	**624**

© LROI 2026 | A008

Type bearing

FIGURE Trend (proportion [%] per year) in tibial bearing type in primary ankle arthroplasty in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Fixed	39.56	57.14	67.54	77.78	87.23	88.89	71.72	62.73	71.20	84.51	71.89
Mobile	60.44	42.86	32.46	22.22	12.77	11.11	28.28	37.27	28.80	15.49	28.11
Total (n)	**91**	**84**	**114**	**108**	**94**	**90**	**99**	**161**	**184**	**213**	**1,238**

© LROI 2026 | A009

Most frequently registered- ankle prostheses

TABLE The most frequently registered primary ankle arthroplasties in the Netherlands in 2020-2024

Year	2021	2022	2023	2024	2025
Total ankle arthroplasties (n)	**115**	**110**	**161**	**180**	**208**
Name; Proportion (%)					
INFINITY	33.91	54.55	60.25	66.11	79.33
Hintegra Regular	0.00	0.00	16.15	20.00	8.17
Salto	59.13	39.09	19.25	7.22	5.29
INBONE	1.74	0.00	1.86	3.33	5.29
Taric	0.00	0.00	2.48	2.22	1.44
Quantum	0.00	0.00	0.00	1.11	0.48

© LROI 2026 | A010

Survival

Short term revision

Revision within 1 year

TABLE Revision procedures within 1 year after primary ankle arthroplasty by year in the Netherlands in 2014-2024

Procedure year	Number of primary ankle arthroplasties	Number of revisions	Percentage revisions
2014	103	0	0.0%
2015	105	3	2.9%
2016	131	0	0.0%
2017	115	0	0.0%
2018	145	2	1.4%
2019	137	1	0.7%
2020	123	1	0.8%
2021	125	2	1.6%
2022	116	2	1.7%
2023	168	3	1.8%
2024	192	4	2.1%

© LROI 2026 | A011

In 2014-2025, 5 (0.3%) primary ankle arthroplasties were implanted in patients who died within one year after the primary procedure.

Time after primary ankle

TABLE Time after primary ankle arthroplasty until short-term revision in the Netherlands in 2014-2022 (n=1.100)

Time after primary ankle	Percentage revisions (%)
Day 0-29	0.09
Day 30-182	0.36
Day 183-364	0.55
Day 365-730 (second year)	2.00
Day 731-1095 (third year)	1.27

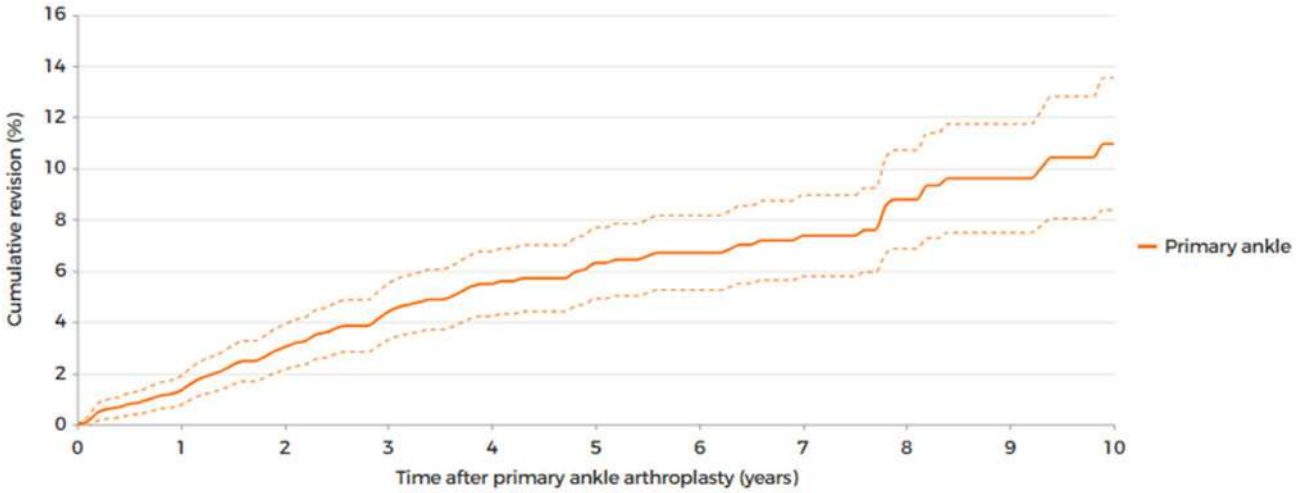
© LROI 2026 | A012

In 2014-2022, 27 (2.5%) primary ankle arthroplasties were implanted in patients who died within three years after the primary procedure.

Long term revision

Overall revision

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary ankle arthroplasties in the Netherlands in 2014-2025 (n=1,681)



© LROI 2026 | A013A

	1yr	3yr	5yr	7yr	10yr
Primary ankle	1.19 (0.66-1.72)	4.12 (3.06-5.18)	6.06 (4.71-7.41)	7.18 (5.64-8.73)	10.95 (8.37-13.53)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

Please note: The number of registered ankle revision arthroplasties is not complete.

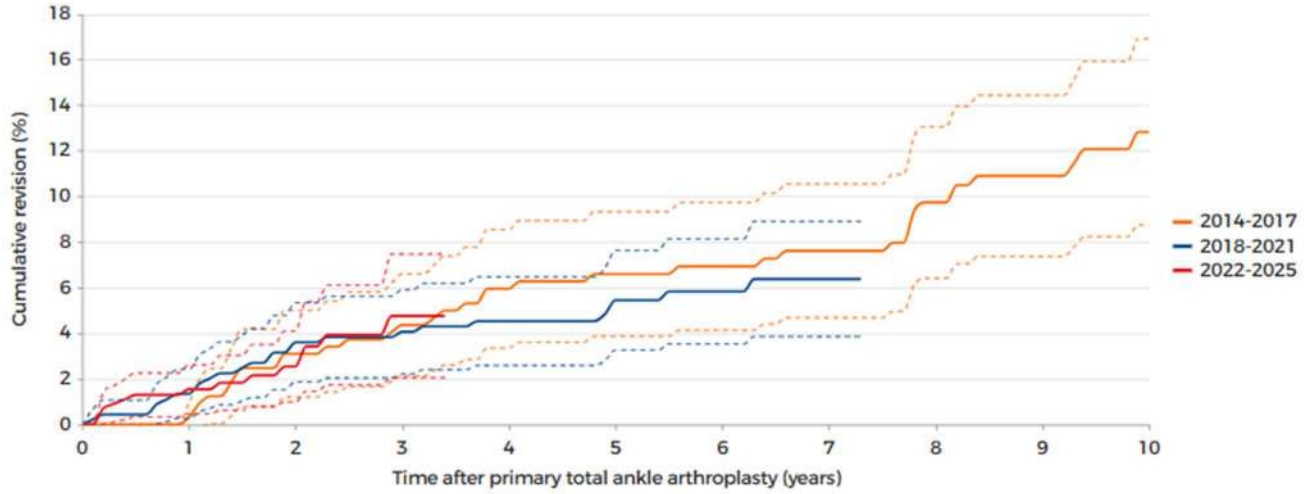
CI: confidance interval.

© LROI 2026 | A013B

In 2014-2025, 110 (6.5%) primary ankle arthroplasties were implanted in patients who died within ten years after the primary procedure.

By procedure year

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary total ankle arthroplasties for osteoarthritis by procedure year of primary arthroplasty in the Netherlands in 2014-2025



© LROI 2026 | A014A

	Number (n)	1yr	3yr	5yr	7yr	10yr
2014-2017	323	0.00 (0.00-0.00)	4.05 (1.89-6.21)	6.60 (3.87-9.33)	7.62 (4.69-10.55)	12.83 (8.75-16.91)
2018-2021	445	1.35 (0.28-2.42)	3.84 (2.05-5.63)	4.83 (2.81-6.86)	6.38 (3.86-8.91)	n.a.
2022-2025	584	1.30 (0.34-2.26)	4.77 (2.06-7.48)	n.a.	n.a.	n.a.

Please note: Dotted lines represent the upper and lower limits of the 95% confidence intervall; n.a. if <50 cases were at risk.

CI: confidence interval.

© LROI 2026 | A014B

Ankle revision arthroplasty

In this section you will find all the information on ankle revision arthroplasty

Revision characteristics

Reasons for revision

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Ankle revision arthroplasty (n)	**37**	**31**	**29**	**30**	**26**	**26**	**22**	**24**	**35**	**29**	**289**
Reasons for revision; Proportion (%)											
Cyst formation	21.62	41.94	41.38	53.33	23.08	53.85	31.82	45.83	40.00	55.17	40.48
Inlay wear	35.14	45.16	31.03	40.00	30.77	30.77	22.73	37.50	37.14	41.38	35.64
Loosening of talus component	29.73	38.71	37.93	40.00	11.54	30.77	31.82	33.33	40.00	51.72	34.95
Loosening of tibia component	18.92	22.58	34.48	26.67	19.23	23.08	36.36	29.17	28.57	55.17	29.07
Malalignment	8.11	29.03	24.14	26.67	11.54	15.38	22.73	29.17	14.29	24.14	20.07
Instability	8.11	25.81	20.69	26.67	19.23	7.69	4.55	16.67	14.29	10.34	15.57
Infection	13.51	3.23	24.14	10.00	11.54	15.38	4.55	12.50	25.71	17.24	14.19
Peri-articular arthrofibrosis	5.41	9.68	3.45	6.67	23.08	26.92	4.55	12.50	0.00	17.24	10.38
Malposition						3.85	13.64	12.50	5.71	37.93	
Peri-prosthetic fracture	0.00	3.23	3.45	3.33	7.69	0.00	4.55	0.00	14.29	10.34	4.84
Dislocation	5.41	9.68	6.90	10.00	7.69	3.85					
Revision after ankle prosthesis removal						7.69	0.00	4.17	2.86	3.45	
Other	5.41	0.00	10.34	10.00	15.38	3.85	13.64	4.17	2.86	6.90	6.92

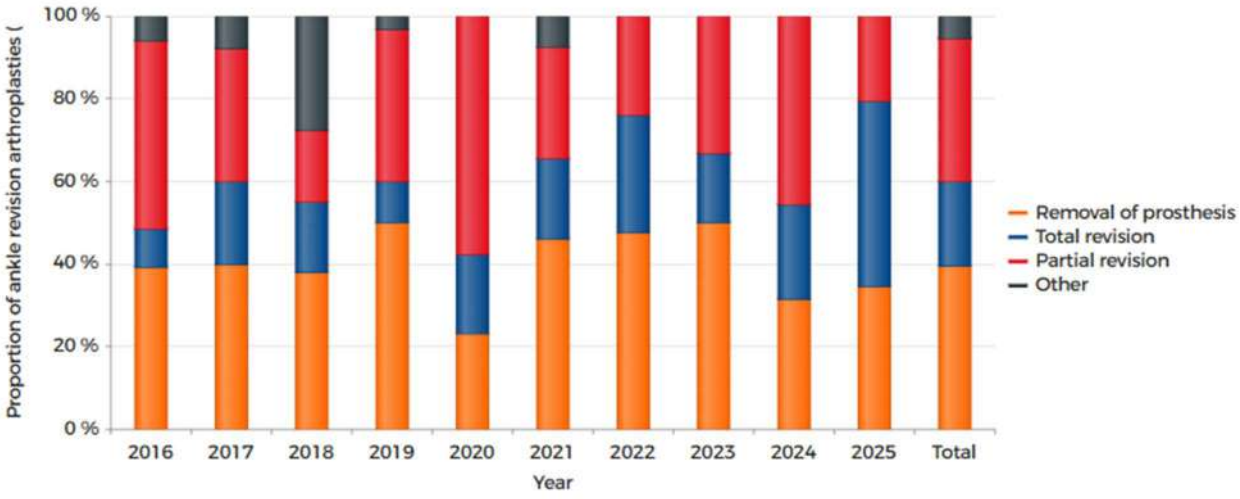
Please note: As of 2022, the registration form has changed. Malposition and removal after ankle revision were not registered before 2022, while dislocation is no longer registered from 2022 onwards.

More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.

© LROI 2026 | A015

Type of revision

FIGURE Trend (proportion [%] per year) in type of revision in ankle revision arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Removal of prosthesis	39.39	40	37.93	50	23.08	46.15	47.62	50	31.43	34.48	39.57
Total revision	9.09	20	17.24	10	19.23	19.23	28.57	16.67	22.86	44.83	20.50
Partial revision	45.45	32	17.24	36.67	57.69	26.92	23.81	33.33	45.71	20.69	34.53
Other	6.06	8	27.59	3.33	0	7.69	0	0	0	0	5.40
Total (n)	**33**	**25**	**29**	**30**	**26**	**26**	**21**	**24**	**35**	**29**	**278**

Please note in 11 ankle revision arthroplasties, the type of revision was not registered.

© LROI 2026 | A016

Shoulder arthroplasty

In this section you will find all the information on shoulder arthroplasty

Numbers

Registered procedures

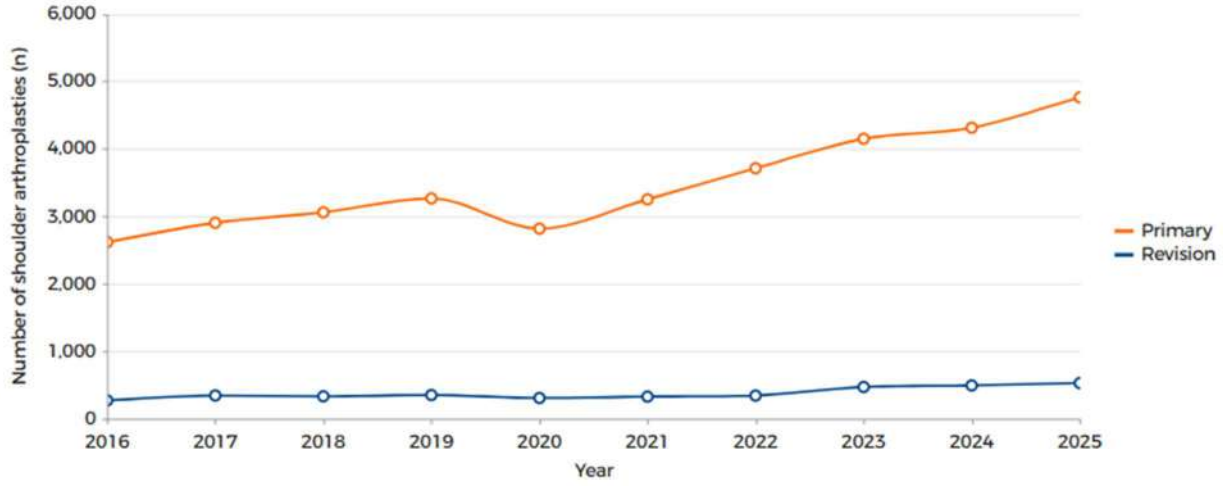
TABLE Number of registered shoulder arthroplasties per year of surgery (2014-2025) in the LROI in April 2026

Year of surgery	Reversed shoulder arthroplasty	Total anatomical shoulder arthroplasty	Hemi shoulder arthroplasty	Resurfacing shoulder arthroplasty	Other	Unknown/ missing	Revision arthroplasty	Total
2014	1,278	381	359	89	0	13	208	**2,328**
2015	1,646	468	319	70	0	7	272	**2,782**
2016	1,818	477	271	39	0	14	274	**2,893**
2017	2,057	521	279	38	0	10	346	**3,251**
2018	2,219	578	222	35	0	6	334	**3,394**
2019	2,500	566	175	22	0	3	353	**3,619**
2020	2,206	444	148	16	0	4	309	**3,127**
2021	2,545	520	140	10	0	37	329	**3,581**
2022	2,966	563	166	14	2	1	345	**4,057**
2023	3,375	612	144	13	3	3	472	**4,622**
2024	3,570	584	138	15	4	2	495	**4,808**
2025	3,895	725	137	3	1	3	530	**5,294**
Total (n)	**30,075**	**6,439**	**2,498**	**364**	**10**	**103**	**4,267**	**43,756**

© LROI 2026 | S001

Type of procedures

FIGURE Number of primary shoulder arthroplasties and shoulder revision arthroplasties registered in the LROI in the Netherlands 2016-2025

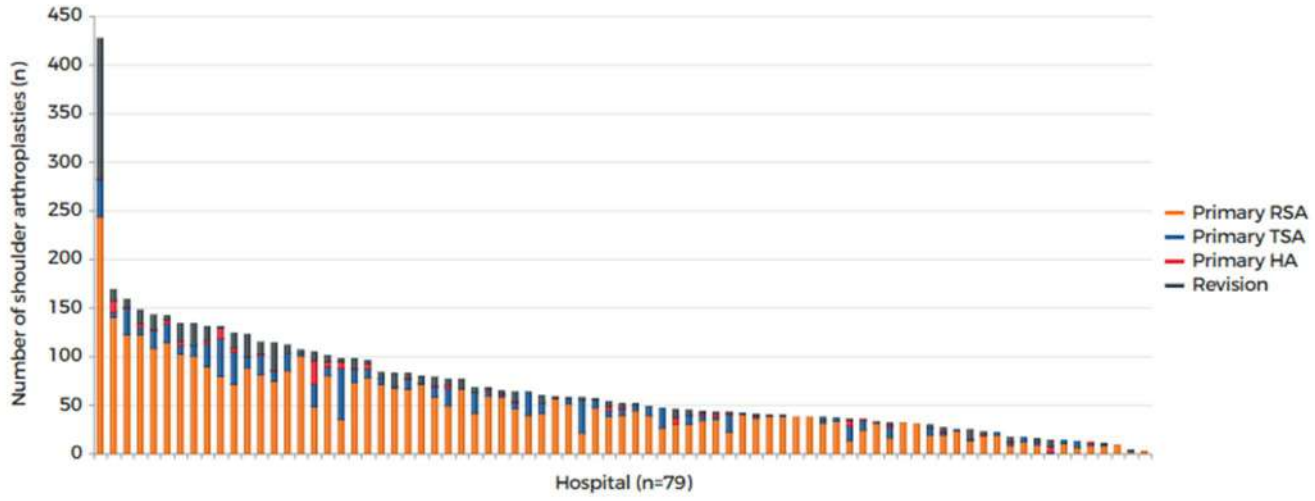


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Primary	2,619	2,905	3,060	3,266	2,818	3,252	3,712	4,150	4,313	4,764	**34,859**
Revision	274	346	334	353	309	329	345	472	495	530	**3,787**
Total (n)	**2,893**	**3,251**	**3,394**	**3,619**	**3,127**	**3,581**	**4,057**	**4,622**	**4,808**	**5,294**	**38,646**

© LROI 2026 | S002

Type of procedure per hospital

FIGURE Number of primary shoulder arthroplasties and shoulder revision arthroplasties per hospital in the Netherlands in 2025 (n=5,287)

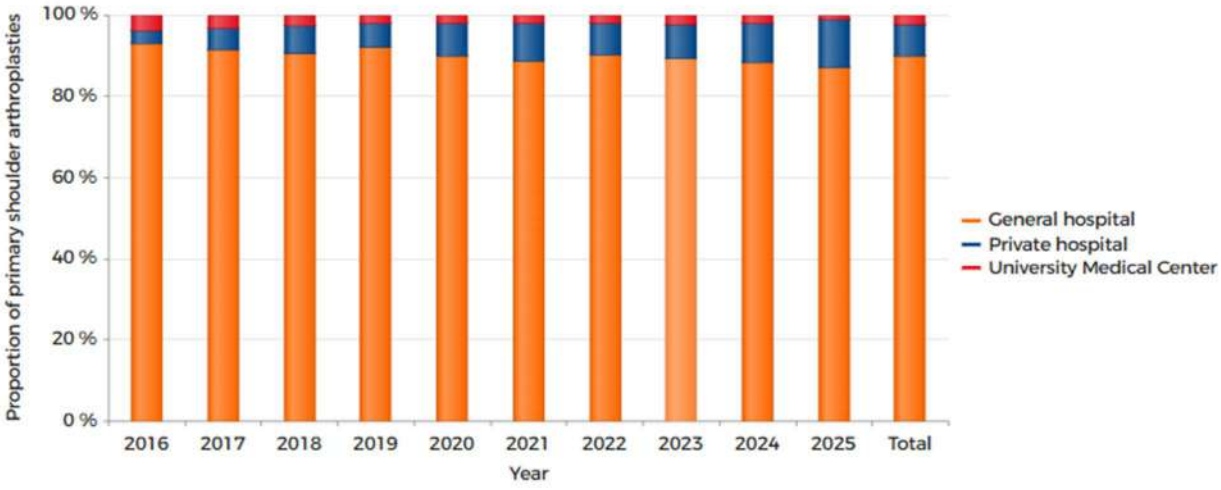


RSA: reversed shoulder arthroplasty; TSA: total anatomical shoulder arthroplasty; HA: hemiarthroplasty

© LROI 2026 | S003

Type of hospital performing primary shoulders

FIGURE Trend (proportion [%] per year) in type of hospital performing primary shoulder arthroplasties in the Netherlands in 2016-2025



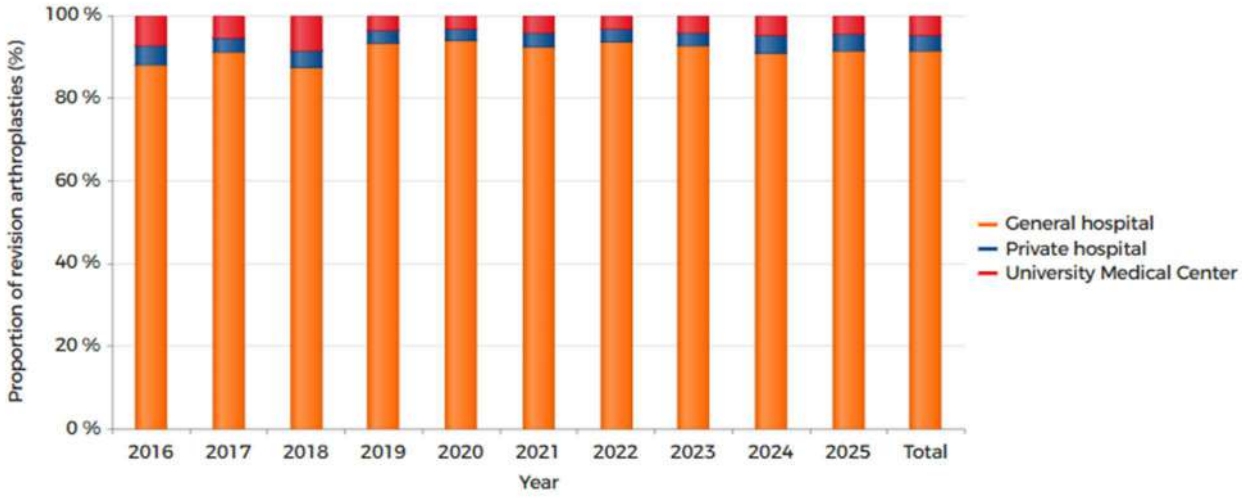
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
General hospital	92.94	91.46	90.69	92.04	90.06	88.65	90.17	89.42	88.43	87.22	89.85
Private hospital	3.32	5.37	6.70	6.06	7.88	9.35	7.92	8.14	9.69	11.63	7.96
University Medical Center	3.74	3.17	2.61	1.90	2.06	2.00	1.91	2.43	1.88	1.15	2.19
Total (n)	**2,619**	**2,905**	**3,060**	**3,266**	**2,818**	**3,252**	**3,712**	**4,150**	**4,313**	**4,764**	**34,859**

Please note: The number of general hospitals that performed primary shoulder arthroplasties decreased from 67 to 60 between 2016-2025, the number of private hospitals increased from 9 to 14, and the number of University Medical Centers decreased from 6 to 5.

© LROI 2026 | S004

Type of hospital performing shoulder revisions

FIGURE Trend (proportion [%] per year) in type of hospital performing shoulder revision arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
General hospital	87.96	91.33	87.43	93.20	93.85	92.40	93.62	92.58	90.91	91.51	91.55
Private hospital	4.74	3.18	4.19	3.12	2.91	3.34	3.19	3.39	4.44	4.15	3.70
University Medical Center	7.30	5.49	8.38	3.68	3.24	4.26	3.19	4.03	4.65	4.34	4.75
Total (n)	**274**	**346**	**334**	**353**	**309**	**329**	**345**	**472**	**495**	**530**	**3,787**

Please note: The number of general hospitals that performed shoulder revision arthroplasties decreased from 49 to 47 between 2016-2025, the number of private hospitals increased from 5 to 8, and the number of University Medical Centers decreased from 5 to 4.

© LROI 2026 | S005

Reversed total shoulder arthroplasty

Patient characteristics

by diagnosis

TABLE Patient characteristics of all patients with a registered primary reverse total shoulder arthroplasty by diagnosis in the Netherlands in 2025

	Osteoarthritis	Cuff arthropathy	Fracture	Late post-traumatic	Unrecoverable cuff rupture	Other	Total
N(%)	**1,424 (36.6)**	**872 (22.4)**	**742 (19)**	**347 (9)**	**295 (7.6)**	**215 (5.6)**	**3,895**
Mean age (years) (SD)	73.8 (8)	73.7 (7.1)	72.9 (8.4)	70.7 (9.3)	71.7 (7.1)	70.6 (10.6)	73 (8.2)
Age (years) (%)							
<50	1	0	1	2	0	6	1
50-59	4	3	6	10	4	6	5
60-69	21	22	26	29	32	28	24
70-79	50	54	44	42	51	42	49
>80	24	21	24	17	13	19	21
Sex (%)							
Male	28	33	18	18	38	25	27
Female	72	67	82	82	62	75	73
ASA class (%)							
ASA I	5	4	7	6	6	3	5
ASA II	51	53	51	47	53	41	51
ASA III-IV	43	42	42	47	40	55	44
Type of hospital (%)							
General	89	84	98	93	89	92	90
UMC	0	0	2	2	1	3	1
Private	10	16	0	5	11	5	9
Specialism (%)							
Orthopaedic surgeon	99	99	93	99	99	98	98
Trauma surgeon	0	0	7	1	0	2	2
Walch-score (%)							
A1	19	49	81	61	83	41	40
A2	35	29	6	21	11	39	30
B1	14	12	3	8	3	5	12
B2	16	5	1	5	0	5	10
B3	9	2	2	2	0	4	6
C	4	1	1	2	0	3	3
Mean BMI (kg/m2) (SD)	28.4 (4.9)	27.8 (4.7)	28.1 (5.6)	28.3 (5.7)	28.3 (5)	28 (5.1)	28.2 (5.1)
Body Mass Index (kg/m2) (%)							
Underweight (<=18.5)	1	1	1	1	1	1	1
Normal weight (>18.5-25)	25	29	30	30	25	25	28
Overweight (>25-30)	41	43	39	36	41	42	41
Obesity (>30-40)	31	25	24	29	30	29	28
Morbid obesity (>40)	2	2	4	4	2	2	3
Smoking (%)							
No	93	90	86	84	91	89	91
Yes	6	8	13	15	8	10	9

Please note: diagnosis 'Other' (215; 5.5%) includes other (69), reumatoid arthritis (44), osteonecrosis (42), chronic (sub)dislocation (35), inflammatory arthritis (6), tumour (4), and 15 primary reverse total shoulder arthroplasties where the diagnosis was not registered.

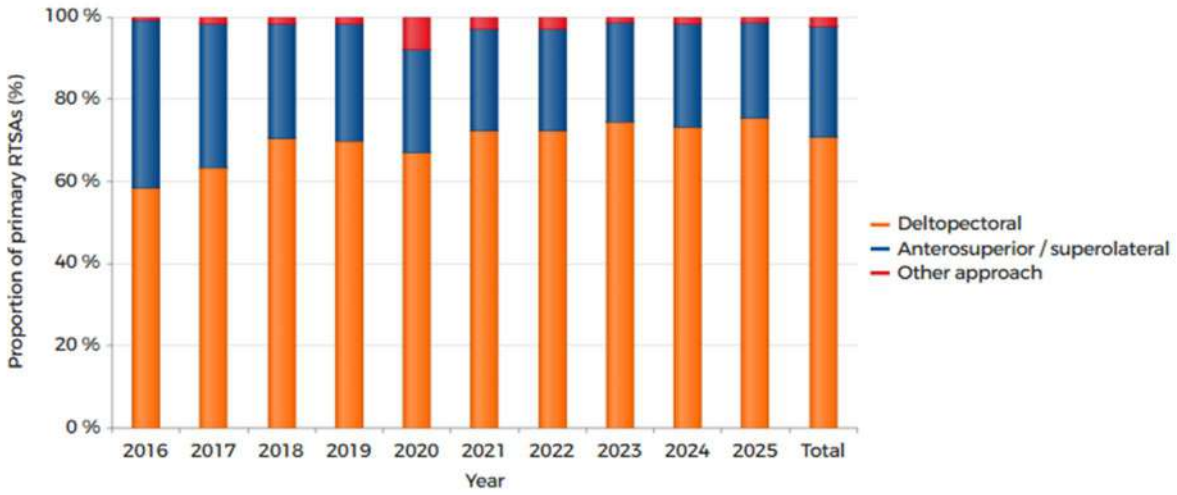
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation.

© LROI 2026 | S006

Procedure characteristics

Surgical approach

FIGURE Trend (proportion [%] per year) in surgical approach for performing a primary reverse total shoulder arthroplasty in the Netherlands in 2016-2025



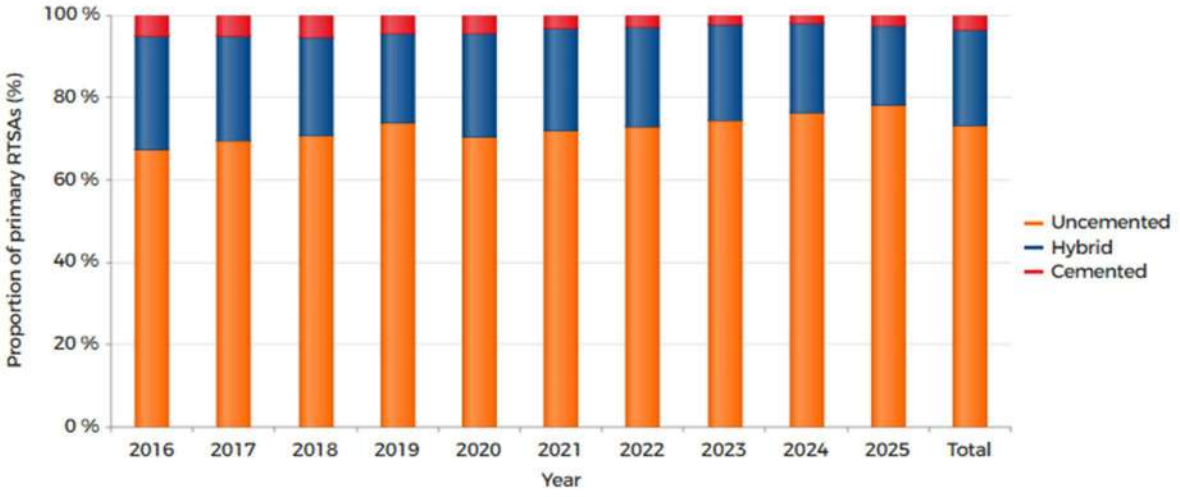
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Deltopectoral	58.50	63.38	70.41	69.94	66.96	72.30	72.44	74.48	73.37	75.35	70.71
Anterosuperior / superolateral	40.84	34.92	27.79	28.46	25.07	24.78	24.52	24.11	24.83	23.29	26.95
Other approach	0.66	1.70	1.80	1.60	7.98	2.92	3.04	1.41	1.80	1.37	2.34
Total (n)	**1,817**	**2,056**	**2,217**	**2,495**	**2,194**	**2,538**	**2,928**	**3,335**	**3,436**	**3,736**	**26,752**

RTSA: reverse total shoulder arthroplasty

© LROI 2026 | S007

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary reverse total shoulder arthroplasties in the Netherlands in 2016-2025



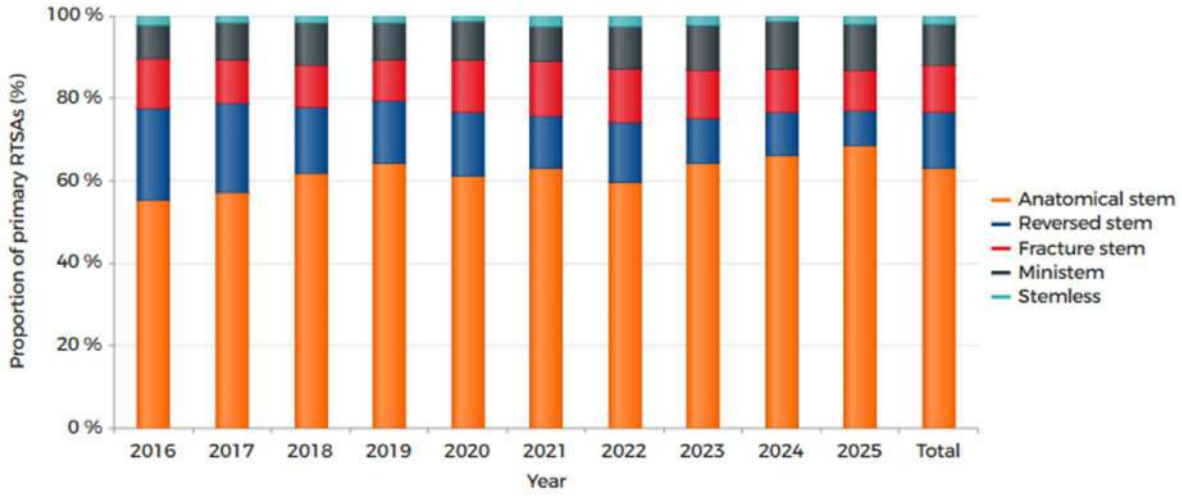
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Uncemented	67.44	69.47	70.89	73.94	70.61	72.03	72.92	74.49	76.44	78.19	73.36
Hybrid	27.38	25.37	23.78	21.66	24.93	24.74	24.05	23.20	21.51	19.06	23.11
Cemented	5.18	5.16	5.32	4.40	4.46	3.23	3.04	2.31	2.05	2.75	3.53
Total (n)	**1,815**	**2,054**	**2,216**	**2,498**	**2,198**	**2,542**	**2,965**	**3,371**	**3,565**	**3,888**	**27,112**

RTSA: reverse total shoulder arthroplasty

© LROI 2026 | S008

Type humeral stem

FIGURE Trend (proportion [%] per year) in type of humeral stem in primary reverse total shoulder arthroplasties in the Netherlands in 2016-2025



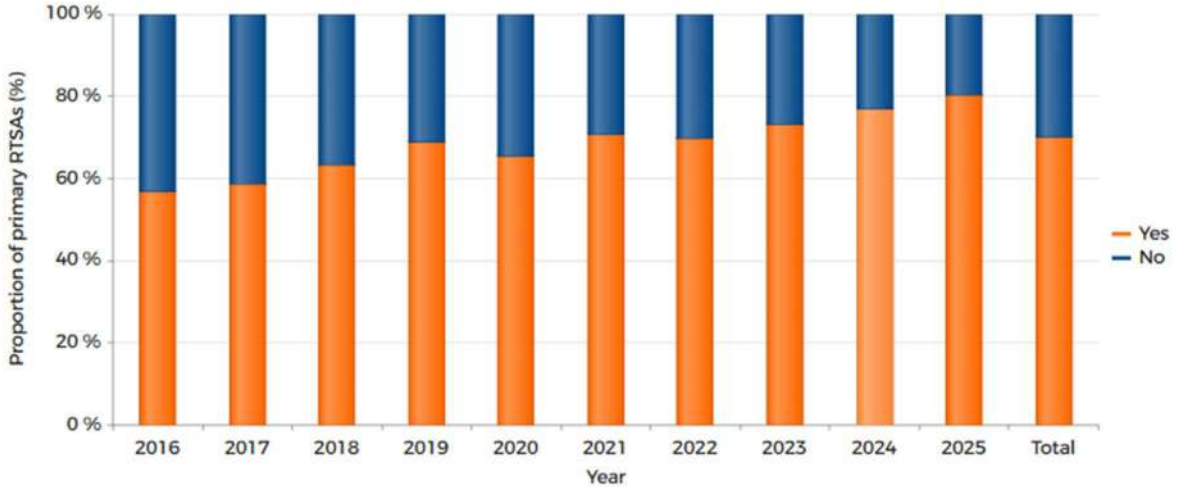
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Anatomical stem	55.46	57.12	61.87	64.24	61.24	63.01	59.69	64.33	66.27	68.70	63.03
Reversed stem	22.24	21.73	16.17	15.17	15.58	12.74	14.59	10.92	10.45	8.23	13.77
Fracture stem	12.02	10.39	10.07	9.97	12.63	13.36	12.95	11.74	10.59	9.99	11.31
Ministem	7.90	9.12	10.07	9.02	9.28	8.23	10.22	10.63	11.35	11.03	9.92
Stemless	2.38	1.64	1.82	1.60	1.27	2.65	2.55	2.38	1.34	2.05	1.98
Total (n)	**1,722**	**1,896**	**2,035**	**2,307**	**1,971**	**2,417**	**2,741**	**3,151**	**3,427**	**3,754**	**25,421**

RTSA: reverse total shoulder arthroplasty

© LROI 2026 | S009

Modular humeral stem

FIGURE Trend (proportion [%] per year) in modular humeral stem in primary reverse total shoulder arthroplasties in the Netherlands in 2016-2025

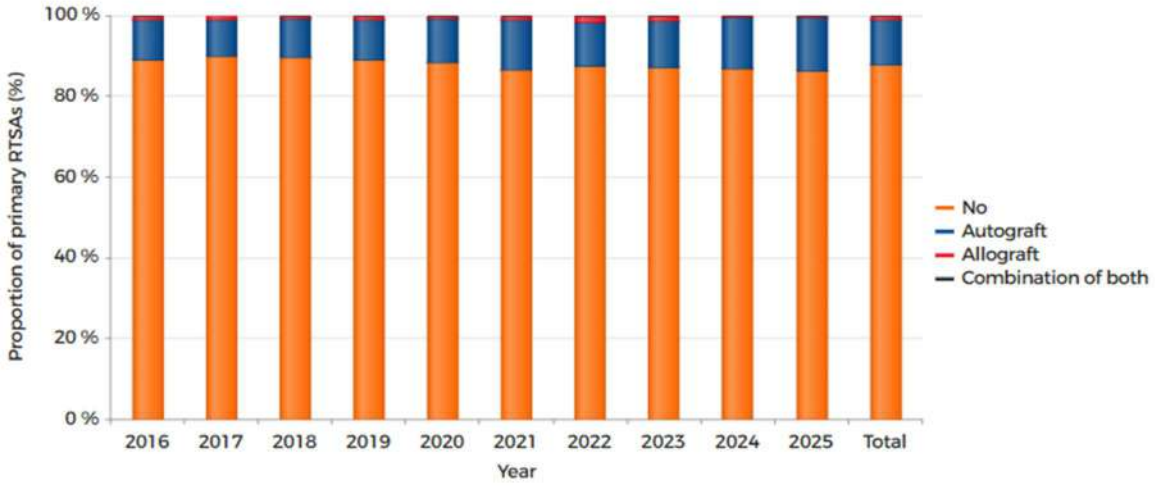


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Yes	56.89	58.68	63.34	68.79	65.62	70.66	69.80	73.26	77.11	80.46	70.23
No	43.11	41.32	36.66	31.21	34.38	29.34	30.20	26.74	22.89	19.54	29.77
Total (n)	**1,726**	**1,895**	**2,032**	**2,307**	**1,972**	**2,420**	**2,742**	**3,152**	**3,425**	**3,756**	**25,427**

RTSA: reverse total shoulder arthroplasty

Bonegraft

FIGURE Trend (proportion [%] per year) in type of bonegraft in primary reverse total shoulder arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	88.97	89.90	89.62	89.06	88.33	86.68	87.47	87.20	86.81	86.30	87.79
Autograft	9.85	8.97	9.54	9.77	10.94	12.33	10.85	11.45	12.62	13.15	11.21
Allograft	1.06	1.13	0.79	1.04	0.69	0.95	1.57	1.29	0.54	0.49	0.94
Combination of both	0.11	0	0.05	0.12	0.05	0.04	0.10	0.06	0.03	0.05	0.06
Total (n)	**1,786**	**2,029**	**2,148**	**2,405**	**2,185**	**2,515**	**2,921**	**3,337**	**3,534**	**3,672**	**26,532**

RTSA: reverse total shoulder arthroplasty

© LROI 2026 | S011

Most frequently registered humeral stems, humeral liners, glenospheres, metaphyses and glenoid baseplates

TABLE The most frequently registered humeral stems, humeral liners, glenospheres, metaphyses and glenoid baseplates in primary reverse total shoulder arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Humeral stem (n)	**2,422**	**2,743**	**3,154**	**3,429**	**3,758**
Name; Proportion (%)					
Delta X-tend	26.55	29.46	27.77	26.74	23.47
Aequalis Ascend Flex	15.52	13.23	16.80	18.69	20.20
Comprehensive Mini	8.22	10.21	10.62	11.34	11.02
Global Unite	4.13	5.40	5.68	6.47	9.74
SMR stem Cementless	4.50	3.17	5.42	7.26	9.61
Aequalis Reversed Fractuur	6.81	6.49	6.21	5.34	5.51
Univers Revers	1.57	2.26	2.44	3.97	3.65
Affinis Inverse	3.43	4.81	3.65	3.65	3.22
Comprehensive Fracture	3.76	3.54	3.20	3.18	2.71
Aequalis Flex Revive	3.47	1.60	2.73	2.80	2.55
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Humeral liner (n)	**2,355**	**2,623**	**3,012**	**3,289**	**3,575**
Name; Proportion (%)					
Delta X-tend	30.79	35.99	34.96	34.17	34.71
Aequalis Ascend Flex	19.53	15.25	19.22	21.07	23.80
Comprehensive	15.12	17.27	16.93	16.66	11.05
SMR reversed liner	5.14	3.13	5.28	7.97	10.35
Aequalis Reversed Fractuur	6.37	6.06	5.54	4.62	5.03
Univers Revers	1.57	2.25	2.59	4.13	3.89
Affinis Inverse	3.18	4.84	3.39	3.44	3.47
Equinoxe	4.93	5.34	5.41	3.65	2.63
Comprehensive Prolong	0.00	0.00	0.00	0.00	2.57
Aequalis Reversed II	5.86	5.18	3.88	1.92	0.98
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Glenosphere (n)	**2,307**	**2,727**	**3,163**	**3,445**	**3,688**
Name; Proportion (%)					
Delta X-tend	26.96	34.54	32.88	32.80	33.38
Aequalis Reversed II	25.49	20.21	22.29	20.09	18.11
Comprehensive	14.78	16.65	15.71	15.53	13.12
Perform Reversed	9.32	6.89	8.31	9.99	12.99
SMR reversed head	5.46	4.22	6.48	8.91	11.04
Univers Revers	1.65	2.16	2.40	3.72	3.61
Affinis Inverse Vitamys	1.73	3.63	1.77	2.73	2.71
Equinoxe	5.03	5.13	5.18	3.40	2.52
Alliance Glenoid	0.00	0.00	0.00	0.17	0.98
Comprehensive Versa-Dial	0.00	0.00	0.00	0.00	0.73

Year	2021	2022	2023	2024	2025
Metaphysis (n)	**1,876**	**2,134**	**2,501**	**2,815**	**3,054**
Name; Proportion (%)					
Delta X-tend	26.87	33.13	30.67	29.80	29.57
Aequalis Ascend Flex	23.13	17.53	22.35	25.93	28.65
Comprehensive	18.60	21.18	20.07	18.51	15.23
SMR reversed body	6.34	4.08	6.72	8.77	11.98
Global Unite Fracture	3.73	4.69	3.96	4.62	4.98
Univers Revers	1.44	2.34	3.04	4.48	4.39
Equinoxe	6.18	6.51	6.52	4.19	3.08
Aequalis Reversed II	7.20	6.51	4.60	2.17	1.11
Affinis Fracture Inverse	0.43	1.69	0.84	0.89	0.65
Anatomical inverse Humeral Cups	5.86	1.97	1.04	0.46	0.20
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Glenoid baseplate (n)	**2,258**	**2,599**	**2,971**	**3,331**	**3,629**
Name; Proportion (%)					
Delta X-tend	29.76	36.44	34.87	33.62	33.98
Aequalis Reversed II	26.13	21.59	24.07	20.86	18.68
Comprehensive	12.36	15.12	14.74	15.04	14.11
Perform Reversed	9.39	7.23	7.91	10.09	13.36
SMR uncemented glenoid	5.36	3.12	5.02	7.96	10.50
Equinoxe	4.87	5.16	5.35	3.54	2.56
Universal Glenoid	1.68	2.08	0.98	2.07	2.01
Univers Revers	0.00	0.15	1.58	1.86	1.71
Affinis Fracture Inverse	0.58	2.73	1.41	2.07	1.43
Affinis Inverse	3.10	2.46	1.92	1.05	0.63

© LROI 2026 | S012

Most frequently registered bone cement

TABLE The most frequently registered types of bone cement by type of mixing system used during primary reverse total shoulder arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement pre-packed in a vacuum mixing system (n)	**439**	**467**	**457**	**432**	**417**
Cement name; Proportion (%)					
PALACOS R+G	56.04	46.47	66.52	62.50	46.28
Refobacin Bone Cement R	38.04	47.75	31.51	37.04	43.41
COPAL G+C	0.00	0.00	0.00	0.00	10.31
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Separately packed bone cement components (n)	**202**	**251**	**260**	**265**	**170**
Cement name; Proportion (%)					
PALACOS R+G	79.70	68.13	62.31	57.36	72.94
PALACOS MV+G	4.95	5.98	7.69	9.81	14.71
COPAL G+C	2.48	12.35	16.15	17.74	7.06
Simplex ABC EC	0.50	0.00	1.15	2.64	2.35
Biomet Bone Cement R	3.96	3.98	1.54	1.89	1.76
COPAL G+V	0.00	0.40	0.38	0.38	0.59
Refobacin Revision	0.50	0.40	0.38	0.38	0.59

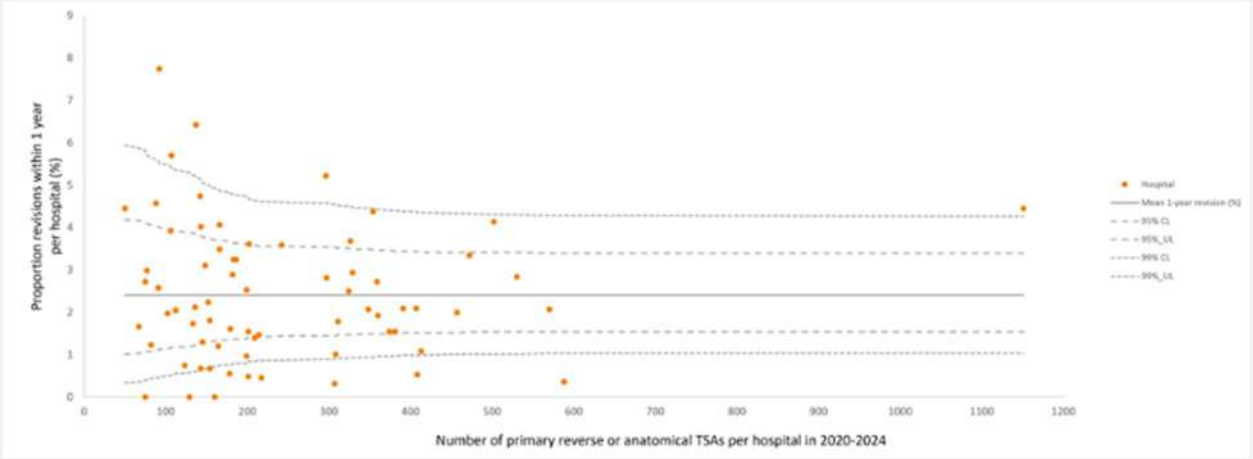
© LROI 2026 | S013

Survival

Short term revision

Overall revision per hospital

Funnel plot of proportion of shoulder revision arthroplasties within one year after a total (reverse or anatomical) shoulder arthroplasty per hospital in the Netherlands in 2020-2024 (n=17,339)



Please note: The proportions of revisions within 1 year per hospital were adjusted for casemix factor diagnosis (fracture versus other). TSA: total shoulder arthroplasty; CL: control limits.

The mean 1-year revision percentage is 2.41 in the Netherlands in 2020-2024.
Control limits indicate the plausible range of outcome if all hospitals perform equally well.

By type of revision within 1 year

TABLE Cumulative 1-year revision percentage of primary reverse total shoulder arthroplasties by type of revision in the Netherlands in 2020-2024 (n=14,620)

	Cumulative 1-year revision percentage - Kaplan Meier (95% CI)
Any type of revision	2.50 (2.24-2.75)
Major revision	1.05 (0.89-1.22)
Only humeral stem	0.22 (0.14-0.30)
Only glenoid baseplate	0.35 (0.26-0.45)
Humeral stem and glenoid baseplate	0.39 (0.29-0.50)
Minor revision	1.39 (1.20-1.58)
DAIR	0.46 (0.35-0.57)
No DAIR	0.93 (0.77-1.08)

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.
Major revision: Revision of at least the humeral stem or glenoid baseplate component.
Minor revision: Only liner and/or metaphysis exchange (including DAIR procedures).
CI: confidence interval.

© LROI 2026 | S014

In 2020-2024, 255 (1.7%) primary reverse total shoulder arthroplasties were implanted in patients who died within one year after the primary procedure.

Time after primary reversed TSA

TABLE Time after primary reverse total shoulder arthroplasty until short-term revision in the Netherlands in 2018-2022 (n=12,392)

Time after primary reverse TSA	Percentage revisions (%)
Day 0-29	0.56
Day 30-182	1.33
Day 183-364	0.61
Day 365-730 (second year)	1.08
Day 731-1095 (third year)	0.58

TSA: total shoulder arthroplasty

© LROI 2026 | S015

Reasons for revision

TABLE Reasons for revision within one year in patients that underwent a shoulder revision arthroplasty after a primary reverse total shoulder arthroplasty in the Netherlands in 2020-2024 (n=384)

Reasons for revision	Proportion (%)
Instability	37.24
Infection	35.68
Loosening of glenoid component	11.46
Malalignment	8.85
Peri-prosthetic fracture	5.99
Loosening of humeral component	4.43
Progression of osteoarthritis	0.78
Cuff arthropathy	n.a.
Cuff rupture	n.a.
Other	9.64

Please note: After a reverse total shoulder arthroplasty, the rotater cuff is no longer present.

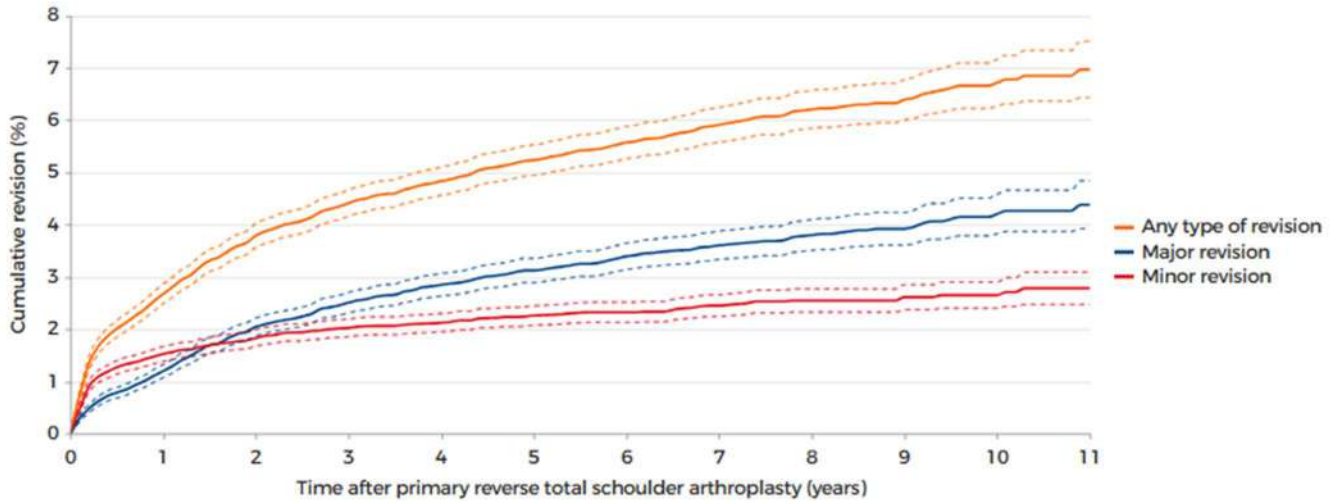
Please note: One patient may have more than one reason of revision.

© LROI 2026 | S016

Long term revision

By type of revision

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary reverse total shoulder arthroplasties by type of revision in the Netherlands in 2014-2025 (n=29,982)



© LROI 2026 | S017A

	1yr	3yr	5yr	7yr	11yr
Any type of revision	2.53 (2.35-2.72)	4.35 (4.10-4.60)	5.22 (4.93-5.50)	5.88 (5.55-6.21)	6.96 (6.43-7.50)
Major revision	1.11 (0.99-1.23)	2.46 (2.26-2.65)	3.12 (2.89-3.35)	3.58 (3.31-3.84)	4.38 (3.92-4.84)
Minor revision	1.48 (1.34-1.62)	2.01 (1.85-2.18)	2.24 (2.06-2.43)	2.45 (2.24-2.66)	2.78 (2.47-3.09)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.

Major revision: Revision of at least the humeral stem or glenoid baseplate component.

Minor revision: Only liner and/or metaphysis exchange (including DAIR procedures).

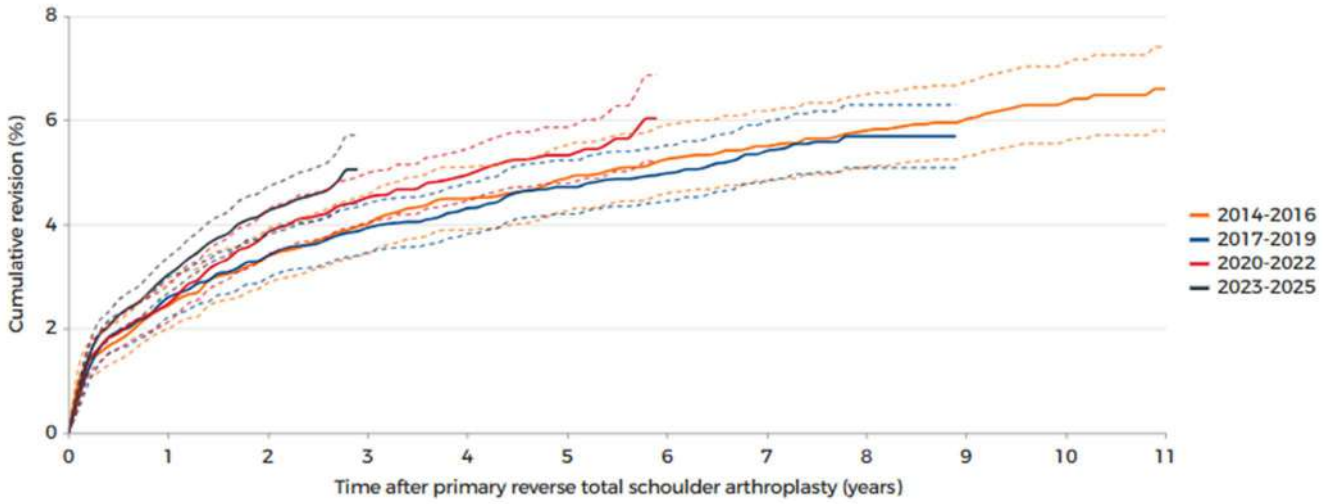
RTSA: reverse total shoulder arthroplasty; CI: confidence interval.

© LROI 2026 | S017B

In 2014-2025, 4,828 (16.1%) primary RTSAs were implanted in patients who died within eleven years after the primary diagnosis

By procedure year

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary reverse total shoulder arthroplasties by procedure year of primary arthroplasty in the Netherlands in 2014-2025



© LROI 2026 | S018A

	Number (n)	1yr	3yr	5yr	7yr	11yr
2014-2016	4,719	2.35 (1.91-2.78)	3.96 (3.40-4.52)	4.84 (4.22-5.47)	5.50 (4.83-6.17)	6.60 (5.80-7.40)
2017-2019	6,754	2.43 (2.06-2.79)	3.87 (3.41-4.34)	4.72 (4.20-5.23)	5.35 (4.79-5.91)	n.a.
2020-2022	7,691	2.35 (2.01-2.69)	4.45 (3.98-4.91)	5.32 (4.79-5.86)	n.a.	n.a.
2023-2025	10,818	2.86 (2.52-3.19)	5.05 (4.40-5.71)	n.a.	n.a.	n.a.

Please note: Dotted lines represent the upper and lower limits of the 95% confidence intervall; n.a. if <50 cases were at risk.

CI: confidence interval.

© LROI 2026 | S018B

Reasons for second revision in 10 years

TABLE Reasons for revision within ten years in patients that underwent a shoulder revision arthroplasty after a primary reverse total shoulder arthroplasty in the Netherlands in 2014-2025 (n=1,366)

Reasons for revision	Proportion (%)
Infection	34.85
Instability	28.26
Loosening of glenoid component	12.45
Malalignment	9.15
Peri-prosthetic fracture	8.71
Loosening of humeral component	8.13
Progression of osteoarthritis	1.17
Cuff arthropathy	n.a.
Cuff rupture	n.a.
Other	12.30

Please note: After a reverse total shoulder arthroplasty, the rotater cuff is no longer present.

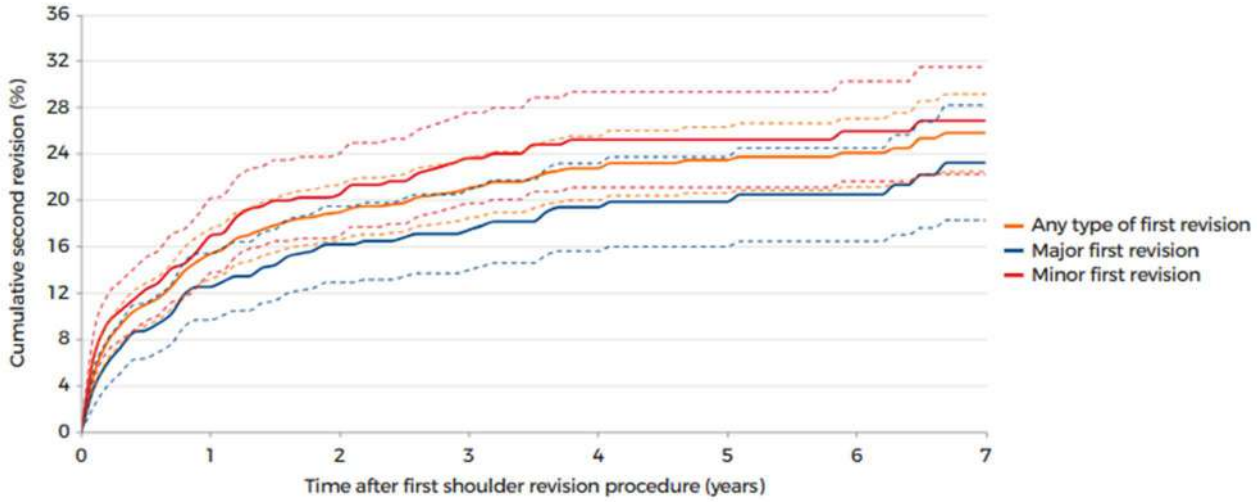
Please note: One patient may have more than one reason of revision.

© LROI 2026 | S019

Re-revision

By type of first revision

FIGURE Cumulative second revision percentage (Kaplan-Meier; 95% CI) of reverse total shoulder arthroplasties after a one-stage first revision by type of first revision in the Netherlands in 2014-2025 (n=1,165)



© LROI 2026 | S023A

By time to first revision

FIGURE Cumulative second revision percentage (Kaplan-Meier; 95% CI) of reverse total shoulder arthroplasties after a one-stage first revision by time to first revision in the Netherlands in 2014-2025 (n=1,091)



© LROI 2026 | S024A

	Number (n)	1yr	3yr	5yr	7yr
First revision within 1 year	709	17.33 (14.47-20.20)	22.83 (19.50-26.16)	24.29 (20.78-27.80)	25.77 (21.94-29.61)
First revision within 1-3 years	295	10.69 (7.00-14.38)	17.79 (12.93-22.65)	24.22 (18.00-30.44)	n.a.
First revision within 3-5 years	87	12.30 (5.14-19.46)	n.a.	n.a.	n.a.

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis.

CI: confidence interval.

© LROI 2026 | S024B

Reasons for second revision

TABLE Reasons for second revision in patients who underwent a second revision after a one-stage first revision of a reverse total shoulder arthroplasty in the Netherlands in 2014-2025

	Second revision (n=231)
Reasons for second revision	**Proportion (%)**
Instability	41.56
Infection	37.66
Malalignment	10.39
Loosening of glenosphere component	9.09
Peri-prosthetic fracture	5.63
Loosening of humeral stem component	3.03
Cuff rupture	0.87
Progression of osteoarthritis	0.87
Other	11.69

One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis.
One patient may have more than one reason for second revision or re-surgery. As such, the total proportion is over 100%.

© LROI 2026 | S025

Survival by component

By osteoarthritis

TABLE Cumulative revision percentages of primary reverse total shoulder arthroplasties by prosthesis component combination of patients who underwent a RTSA for osteoarthritis in the Netherlands in 2014-2025 (n=10,104)

						Type of revision (n)				Cumulative revision percentage (95% CI)				
Humeral stem component	Glenosphere component	Primary RTSAs (n)	Hospital (n)	Median (IQR) age (yr)	Revisions (n)	Total revision	Partial major	Partial minor	Other	1yr	3yr	5yr	7yr	10yr
All RTSAs for osteoarthritis		**10,104**	**94**	**75 (70 - 80)**	**357**	**111**	**116**	**108**	**17**	**1.76 (1.49-2.02)**	**3.36 (2.97-3.74)**	**4.24 (3.77-4.70)**	**4.67 (4.15-5.18)**	**5.26 (4.58-5.94)**
Delta X-tend	Delta X-tend	2,594	29	75 (71 - 80)	62	16	13	25	6	1.05 (0.65-1.45)	2.32 (1.69-2.95)	2.74 (2.03-3.45)	2.87 (2.12-3.63)	3.28 (2.33-4.23)
Aequalis Ascend Flex	Aequalis Reversed II	1,165	29	76 (70 - 80)	55	19	18	17	1	2.66 (1.70-3.62)	4.05 (2.79-5.30)	6.31 (4.50-8.12)	7.52 (5.27-9.76)	n.a.
COMPREHENSIVE MINI	COMPREHENSIVE	1,099	29	75 (69 - 79)	25	6	15	4	0	0.94 (0.36-1.52)	2.30 (1.31-3.28)	2.79 (1.59-3.98)	2.79 (1.59-3.98)	n.a.
Aequalis Reversed II	Aequalis Reversed II	859	30	76 (72 - 80)	34	10	10	13	1	2.22 (1.23-3.21)	3.48 (2.23-4.73)	3.77 (2.46-5.08)	3.96 (2.61-5.32)	4.46 (2.80-6.12)
Aequalis Ascend Flex	Perform Reversed	604	25	75 (70 - 80)	35	9	16	8	2	4.25 (2.54-5.95)	6.21 (3.92-8.50)	8.47 (5.34-11.59)	n.a.	n.a.
Equinoxe	Equinoxe	447	5	76 (71 - 81)	21	4	7	10	0	1.37 (0.28-2.46)	4.08 (2.11-6.05)	5.30 (2.91-7.68)	6.09 (3.26-8.91)	n.a.
SMR stem Cementless	SMR reversed head	399	14	77 (73 - 80)	8	4	1	0	2	0.83 (0.00-1.78)	2.48 (0.57-4.40)	3.40 (0.80-5.99)	n.a.	n.a.
Global Unite	Delta X-tend	389	16	75 (70 - 79)	10	2	4	4	0	2.14 (0.57-3.72)	3.77 (1.31-6.24)	n.a.	n.a.	n.a.
COMPREHENSIVE NANO	COMPREHENSIVE	291	20	66 (60 - 71)	15	10	4	1	0	1.38 (0.04-2.72)	3.54 (1.38-5.70)	6.07 (3.03-9.11)	6.07 (3.03-9.11)	n.a.
Anatomical Shoulder Stems	TM Reverse Glenoid Heads	241	3	75 (71 - 80)	18	7	5	6	0	2.50 (0.52-4.47)	4.25 (1.67-6.83)	7.40 (3.88-10.92)	9.00 (4.89-13.12)	n.a.
Affinis Inverse	Affinis Inverse Vitamys	204	8	75 (71 - 79)	5	1	1	2	1	1.14 (0.00-2.71)	3.84 (0.40-7.27)	n.a.	n.a.	n.a.
Affinis Inverse	Affinis Inverse	184	12	76 (72 - 79)	6	3	2	1	0	1.65 (0.00-3.51)	3.46 (0.73-6.18)	3.46 (0.73-6.18)	n.a.	n.a.
UNIVERS REVERS	UNIVERS REVERS	151	4	75 (68 - 80)	4	1	1	2	0	2.21 (0.00-4.70)	2.21 (0.00-4.70)	n.a.	n.a.	n.a.
SMR Stemless	SMR reversed head	58	6	74 (69 - 76)	4	0	4	0	0	n.a.	n.a.	n.a.	n.a.	n.a.

Please note: n.a. if <50 cases were at risk; RTSA: reverse total shoulder arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | S020

Only combinations with over 50 procedures and reported by at least 3 hospitals have been listed.

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

By fracture

TABLE Cumulative revision percentages of primary reverse total shoulder arthroplasties by prosthesis component combination of patients who underwent a RTSA for fracture in the Netherlands in 2014-2025 (n=5,516)

Humeral stem component	Glenosphere component	Primary RTSAs (n)	Hospital (n)	Median (IQR) age (yr)	Revisions (n)	Type of revision (n)				Cumulative revision percentage (95% CI)				
						Total revision	Partial major	Partial minor	Other	1yr	3yr	5yr	7yr	10yr
All RTSAs for fracture		**5,516**	**83**	**74 (68 - 79)**	**210**	**41**	**60**	**91**	**12**	**2.71 (2.27-3.14)**	**3.85 (3.31-4.40)**	**4.41 (3.79-5.03)**	**4.96 (4.22-5.70)**	**4.96 (4.22-5.70)**
Aequalis Reversed Fractuur	Aequalis Reversed II	1,183	31	74 (69 - 79)	21	4	4	11	2	1.57 (0.85-2.30)	1.78 (1.00-2.55)	1.92 (1.10-2.74)	1.92 (1.10-2.74)	1.92 (1.10-2.74)
Delta X-tend	Delta X-tend	1,092	27	74 (69 - 80)	54	11	10	28	3	3.65 (2.53-4.78)	5.07 (3.70-6.43)	5.43 (3.98-6.87)	5.74 (4.17-7.31)	5.74 (4.17-7.31)
COMPREHENSIVE FRACTURE	COMPREHENSIVE	604	18	75 (70 - 80)	14	2	4	5	1	1.52 (0.54-2.51)	2.50 (1.13-3.87)	2.92 (1.33-4.52)	2.92 (1.33-4.52)	n.a.
Global Unite	Delta X-tend	460	15	74 (68 - 79)	12	3	2	4	3	1.95 (0.61-3.29)	2.35 (0.80-3.90)	4.01 (1.16-6.86)	n.a.	n.a.
Aequalis Flex Revive	Perform Reversed	288	4	74 (68 - 79)	19	3	5	11	0	5.63 (2.86-8.40)	7.35 (4.00-10.71)	n.a.	n.a.	n.a.
Equinoxe	Equinoxe	262	4	73 (69 - 79)	11	2	3	6	0	2.32 (0.49-4.16)	3.92 (1.37-6.48)	5.30 (1.63-8.97)	n.a.	n.a.
SMR stem Cementless	SMR reversed head	215	11	74 (67 - 79)	10	1	2	6	1	3.75 (1.00-6.50)	n.a.	n.a.	n.a.	n.a.
Anatomical Shoulder Stems	TM Reverse Glenoid Heads	129	3	73 (67 - 77)	12	0	9	3	0	7.80 (3.16-12.45)	8.73 (3.79-13.66)	n.a.	n.a.	n.a.
COMPREHENSIVE MINI	COMPREHENSIVE	115	13	74 (68 - 80)	5	1	4	0	0	3.74 (0.13-7.34)	5.16 (0.66-9.67)	n.a.	n.a.	n.a.
Aequalis Reversed Fractuur	Perform Reversed	60	10	72 (66 - 76)	5	2	0	2	1	n.a.	n.a.	n.a.	n.a.	n.a.
Affinis Fracture	Affinis Inverse	56*	5	77 (73 - 82)	1	0	0	1	0	n.a.	n.a.	n.a.	n.a.	n.a.

* Denotes prosthesis combinations with no reported use in primary RTSAs in 2025.

Please note: n.a. if <50 cases were at risk; RTSA: reverse total shoulder arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | S021

Only combinations with over 50 procedures and reported by at least 3 hospitals have been listed.

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

By cuff arthropathy

TABLE Cumulative revision percentages of primary reverse total shoulder arthroplasties by prosthesis component combination of patients who underwent a RTSA for cuff arthropathy in the Netherlands in 2014-2025 (n=7,369)

Humeral stem component	Glenosphere component	Primary RTSAs (n)	Hospital (n)	Median (IQR) age (yr)	Revisions (n)	Type of revision (n)				Cumulative revision percentage (95% CI)				
						Total revision	Partial major	Partial minor	Other	1yr	3yr	5yr	7yr	10yr
All RTSAs for cuff arthropathy		**7,369**	**92**	**75 (70 - 79)**	**347**	**87**	**95**	**138**	**24**	**2.38 (2.03-2.74)**	**4.16 (3.67-4.65)**	**5.07 (4.50-5.64)**	**6.00 (5.34-6.67)**	**6.92 (6.08-7.76)**
Delta X-tend	Delta X-tend	2,193	29	74 (69 - 78)	98	19	11	62	5	2.42 (1.76-3.07)	4.00 (3.13-4.87)	4.50 (3.55-5.46)	5.17 (4.08-6.26)	6.50 (5.01-7.98)
Aequalis Reversed II	Aequalis Reversed II	881	26	75 (71 - 79)	44	9	14	16	4	2.28 (1.29-3.27)	3.61 (2.36-4.86)	4.47 (3.05-5.88)	5.38 (3.76-6.99)	6.05 (4.19-7.90)
Aequalis Ascend Flex	Aequalis Reversed II	864	29	74 (69 - 78)	46	8	21	16	1	3.04 (1.86-4.21)	4.24 (2.81-5.66)	5.92 (3.98-7.87)	7.85 (5.31-10.39)	n.a.
COMPREHENSIVE MINI	COMPREHENSIVE	857	22	75 (71 - 79)	17	5	8	4	0	0.96 (0.30-1.63)	1.99 (0.99-3.00)	2.46 (1.27-3.65)	2.46 (1.27-3.65)	2.46 (1.27-3.65)
Aequalis Ascend Flex	Perform Reversed	386	15	75 (70 - 79)	25	8	8	4	5	4.74 (2.46-7.02)	7.57 (4.54-10.60)	8.88 (4.95-12.81)	n.a.	n.a.
SMR stem Cementless	SMR reversed head	256	11	76 (71 - 80)	5	0	3	1	1	1.24 (0.00-2.63)	2.02 (0.00-4.07)	2.02 (0.00-4.07)	3.63 (0.00-7.37)	n.a.
Equinoxe	Equinoxe	206	4	75 (70 - 79)	13	4	5	4	0	1.47 (0.00-3.12)	3.09 (0.65-5.53)	6.11 (2.34-9.88)	8.76 (3.61-13.92)	n.a.
UNIVERS REVERS	UNIVERS REVERS	192	4	74 (70 - 79)	15	5	3	2	4	5.57 (2.21-8.93)	7.10 (3.17-11.04)	8.49 (3.77-13.21)	n.a.	n.a.
Affinis Inverse	Affinis Inverse	188	9	75 (72 - 79)	14	4	3	6	1	3.21 (0.68-5.75)	4.88 (1.77-7.99)	7.12 (3.18-11.07)	9.09 (4.38-13.81)	n.a.
Anatomical Shoulder Stems	TM Reverse Glenoid Heads	163*	3	76 (71 - 80)	12	5	2	5	0	1.86 (0.00-3.95)	5.07 (1.64-8.49)	6.58 (2.62-10.54)	8.95 (3.91-14.00)	n.a.
Global Unite	Delta X-tend	146	15	74 (68 - 79)	2	0	1	0	1	0.00 (0.00-0.00)	1.15 (0.00-3.39)	n.a.	n.a.	n.a.
Affinis Inverse	Affinis Inverse Vitamys	112	8	74 (68 - 79)	4	2	1	1	0	3.08 (0.00-6.52)	n.a.	n.a.	n.a.	n.a.

Please note: n.a. if <50 cases were at risk; RTSA: reverse total shoulder arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | S022

Only combinations with over 50 proceduresand reported by at least 3 hospitals have been listed.

Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

PROMs

Response

Per year

FIGURE Pre-operative, 3 months and 12 months postoperative response percentage of patients who underwent a primary reverse total shoulder arthroplasty in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Pre-PROM	5.31	26.29	31.35	41.75	44.93	46.38	47.23	51.95	51.55	51.64
Pre- and 12 months PROM	2.41	14.87	19.17	25.95	29.48	28.31	29.22	27.86	29.30	n.a.
Pre-, 3- and 12 months PROM	1.61	11.14	15.35	19.18	22.90	23.58	23.95	21.68	23.76	n.a.
Reverse total shoulder arthroplasty (n)	**1,243**	**1,392**	**1,544**	**1,715**	**1,489**	**1,671**	**1,971**	**2,279**	**2,386**	**2,618**

Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.

Procedures performed for fracture diagnoses were excluded from the response analysis because preoperative PROMs are generally not collected in this patient group.

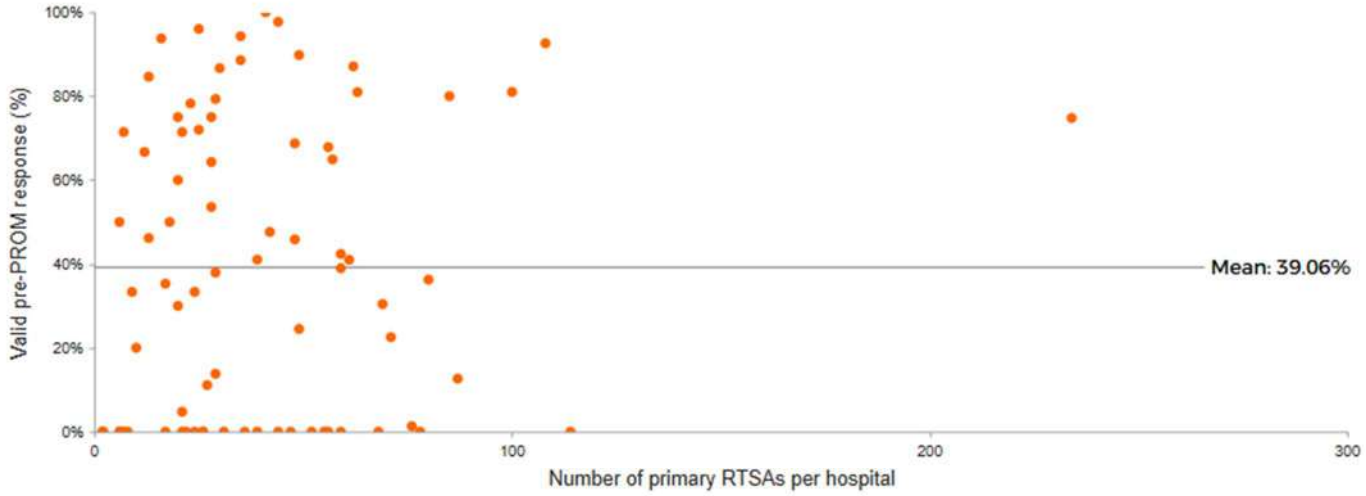
PROM: patient reported outcome measure.

© LROI 2026 | S026A

© LROI 2026 | S026B

Per pre-PROM per hospital

FIGURE Scatterplot of pre-operative response percentage of patients who underwent a primary reverse total shoulder arthroplasty per hospital in the Netherlands in 2025



Please note: Procedures performed for fracture diagnoses were excluded from the response analysis because preoperative PROMs are generally not collected in this patient group.

PROM: patient reported outcome measure; RTSA: reverse total shoulder arthropalsty

© LROI 2026 | S027

The mean pre-operative response rate is 39.1% in the Netherlands in 2025.
Of the 78 hospitals, 28 (36%) scored above the 60% response rate.

Patient characteristics

Responders vs non-responders

TABLE Patient characteristics of PROM responders and non-responders after primary reverse total shoulder arthroplasty in the Netherlands in 2020-2024

	Non-responder	Pre- and 12-month PROM respondents	Total
N(%)	**11,599 (79.2)**	**3,063 (20.8)**	**14,662**
Mean age (years) (SD)	73.2 (8.3)	72.3 (7.8)	73 (8.2)
Age (years) (%)			
<50	1	1	1
50-59	5	5	5
60-69	22	25	23
70-79	50	53	51
>80	22	16	21
Sex (%)			
Male	25	29	26
Female	75	71	74
ASA class (%)			
ASA I	5	6	5
ASA II	53	59	54
ASA III-IV	42	35	41
Type of hospital (%)			
General	94	87	92
UMC	2	1	2
Private	4	12	6
Diagnosis (%)			
Osteoarthritis	33	42	35
Cuff arthropathy	20	28	22
Fracture	24	8	20
Late post-traumatic	11	9	10
Unrecoverable cuff rupture	6	8	6
Other	7	6	7
Mean BMI (kg/m2) (SD)	28.1 (5.4)	28.1 (5)	28.1 (5.3)
Revision within 1 yr (%)			
No revision within 1 yr	97	98	97
Revision within 1 yr	3	2	3

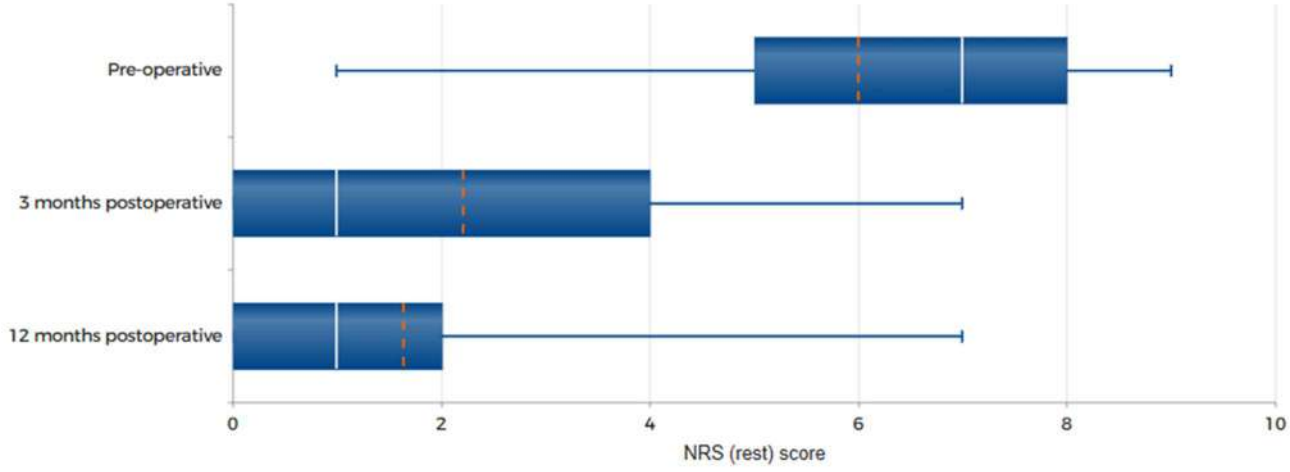
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | S028

Outcomes

NRS (rest)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (rest) scores of patients who underwent a primary reverse total shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S029A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (rest) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Reversed shoulder arthroplasty	2,425	7.00 (5.00-8.00)	1.00 (0.00-4.00)	1.00 (0.00-2.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

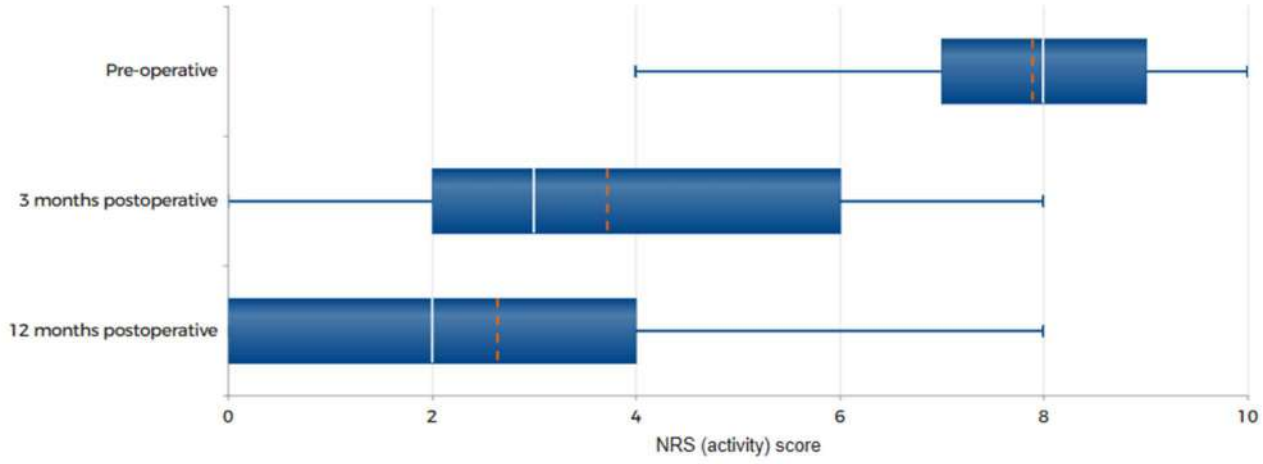
IQR: interquartile range

© LROI 2026 | S029B

The NRS (rest) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

NRS (activity)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (activity) scores of patients who underwent a primary reverse total shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S030A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (activity) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Reversed shoulder arthroplasty	2,417	8.00 (7.00-9.00)	3.00 (2.00-6.00)	2.00 (0.00-4.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

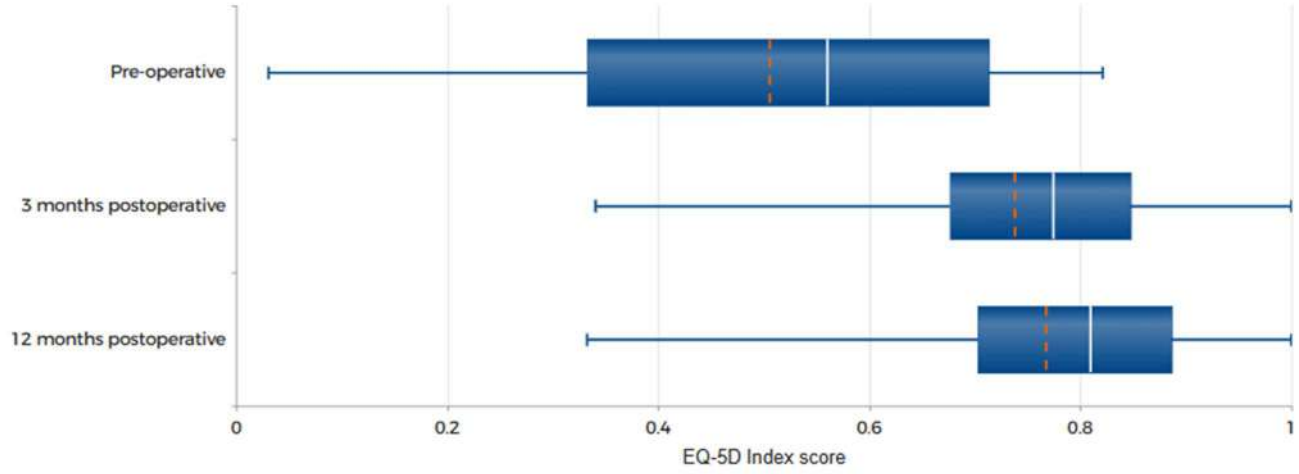
IQR: interquartile range

© LROI 2026 | S030B

The NRS (activity) score measures pain during activity. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

EQ-5D index score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D Index scores of patients who underwent a primary reverse total shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S031A

		Pre-operative	3 months postoperative	12 months postoperative
EQ-5D Index score	N	Median (IQR)	Median (IQR)	Median (IQR)
Reversed shoulder arthroplasty	2,366	0.56 (0.33-0.71)	0.78 (0.68-0.85)	0.81 (0.70-0.89)

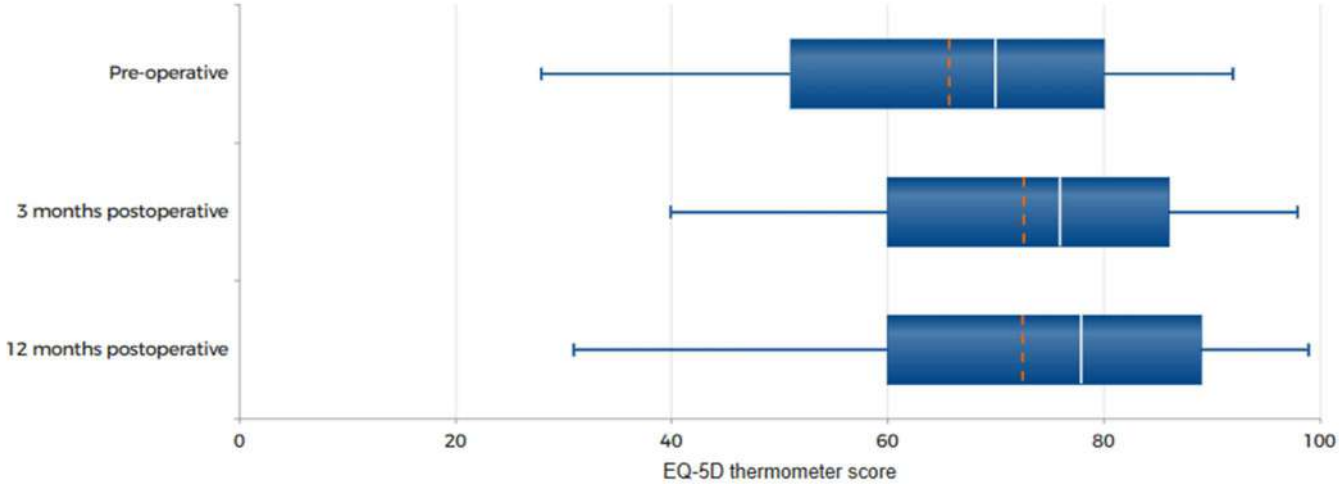
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S031B

The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.

EQ-5D thermometer

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D thermometer scores of patients who underwent a primary reverse total shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S032A

		Pre-operative	3 months postoperative	12 months postoperative
EQ-5D thermometer score	N	Median (IQR)	Median (IQR)	Median (IQR)
Reversed shoulder arthroplasty	2,362	70.00 (51.00-80.00)	76.00 (60.00-86.00)	78.00 (60.00-89.00)

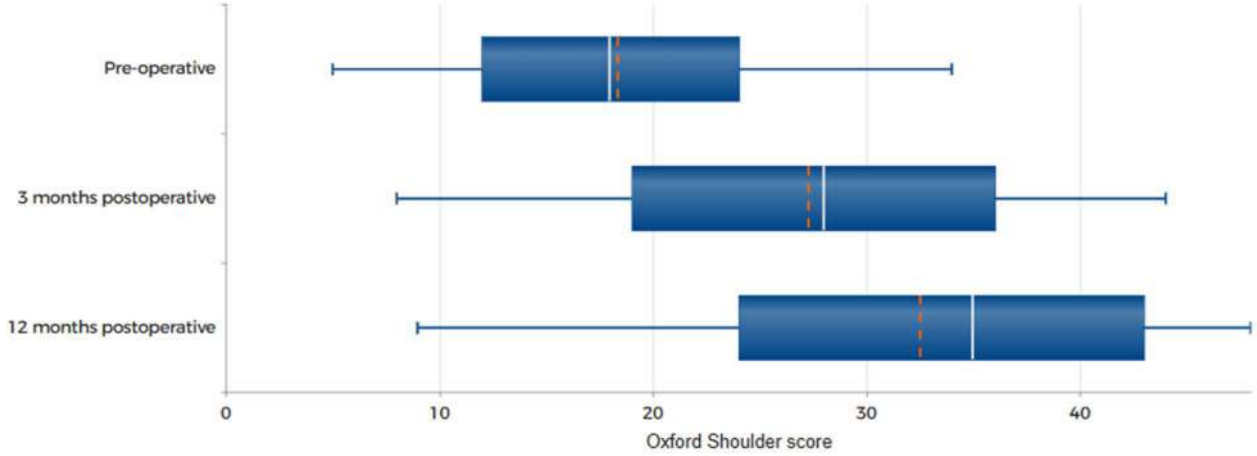
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S032B

The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation.

Oxford Shoulder Score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative Oxford Shoulder scores of patients who underwent a primary reverse total shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S033A

		Pre-operative	3 months postoperative	12 months postoperative
Oxford Shoulder Score	N	Median (IQR)	Median (IQR)	Median (IQR)
Reversed shoulder arthroplasty	2,395	18.00 (12.00-24.00)	28.00 (19.00-36.00)	35.00 (24.00-43.00)

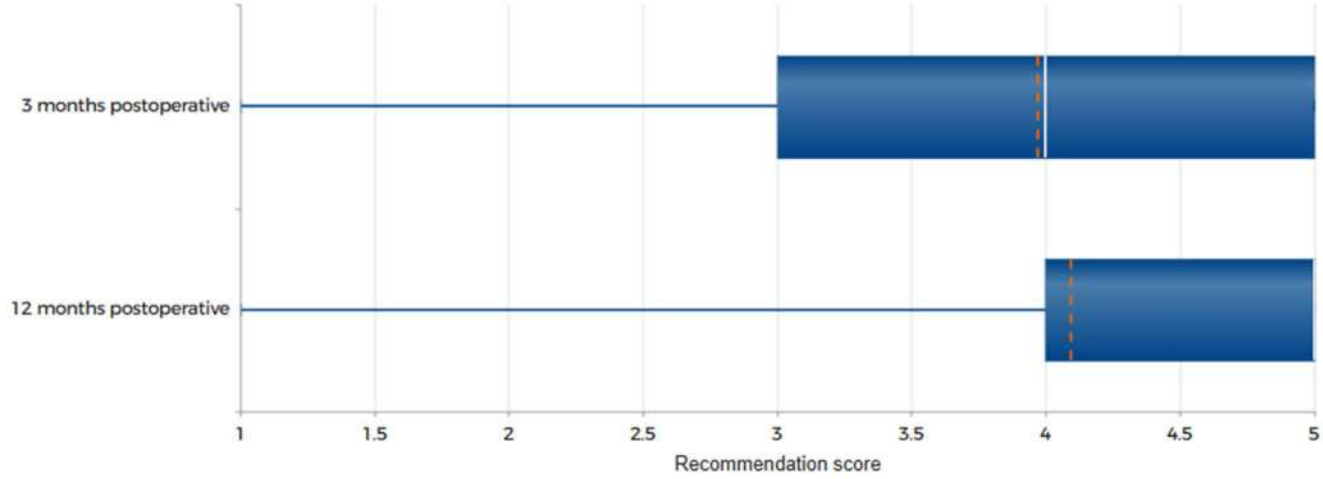
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S033B

The Oxford Shoulder score measures the physical functioning and pain of patients with osteoarthritis to the shoulder. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 the most functional ability.

Recommendation score

FIGURE Boxplots of 3 months and 12 months postoperative recommendation scores of patients who underwent a primary reverse total shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S034A

		3 months postoperative	12 months postoperative
Recommendation score	N	Median (IQR)	Median (IQR)
Reversed shoulder arthroplasty	2,620	4.00 (3.00-5.00)	5.00 (4.00-5.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S034B

The recommendation score measures to what extend the patient would recommend joint replacement to a friend or relative. The score has a range of 1.0 to 5.0, with 1.0 representing totally disagreement and 5.0 representing totally agreement.

anatomical shoulder arthroplasty

In this section you will find information on total anatomical shoulder arthroplasty:

Patient characteristics

By diagnosis

TABLE Patient characteristics of all patients with a registered primary total anatomical shoulder arthroplasty by diagnosis in the Netherlands in 2025

	Osteoarthritis	Other	Total
N(%)	**667 (92)**	**58 (8)**	**725**
Mean age (years) (SD)	65.9 (8.4)	60.2 (10.7)	65.5 (8.7)
Age (years) (%)			
<50	2	16	3
50-59	19	34	21
60-69	43	34	43
70-79	31	12	29
>80	4	3	4
Sex (%)			
Male	36	33	36
Female	64	67	64
ASA class (%)			
ASA I	13	19	13
ASA II	65	57	65
ASA III-IV	22	24	22
Type of hospital (%)			
General	72	81	73
UMC	1	2	1
Private	27	17	26
Specialism (%)			
Orthopaedic surgeon	98	100	100
Trauma surgeon	0	0	
Walch-score (%)			
A1	32	51	34
A2	35	25	35
B1	18	14	18
B2	12	6	12
B3	2	0	1
C	1	0	1
Mean BMI (kg/m2) (SD)	28.3 (4.7)	28.4 (6)	28.3 (4.8)
Body Mass Index (kg/m2) (%)			
Underweight (<=18.5)	1	2	1
Normal weight (>18.5-25)	26	34	27
Overweight (>25-30)	42	21	40
Obesity (>30-40)	30	33	30
Morbid obesity (>40)	2	5	2
Smoking (%)			
No	87	83	88
Yes	11	16	12

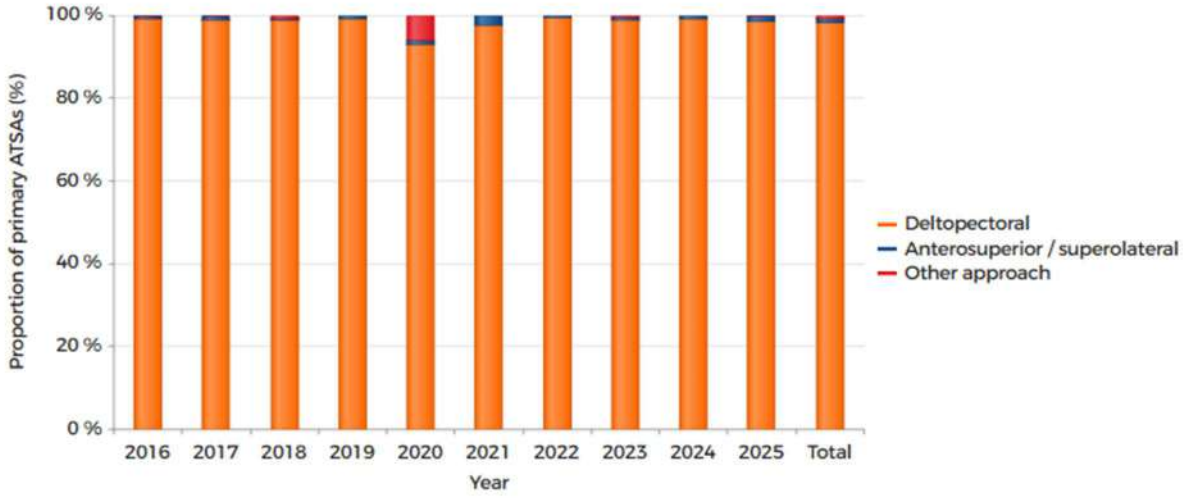
Please note: diagnosis 'Other' (58; 8%) includes late post-traumatic (20), osteonecrosis (10), reumatoid arthritis (6), cuff arthropathy (3), other (3), fracture (3), inflammatory arthritis (2), unrecoverable cuff rupture (1) and 10 primary total anatomical shoulder arthroplasties where the diagnosis was not registered.
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation.

© LROI 2026 | S035

Procedure characteristics

Surgical approach

FIGURE Trend (proportion [%] per year) in surgical approach for performing a primary total anatomical shoulder arthroplasty in the Netherlands in 2016-2025



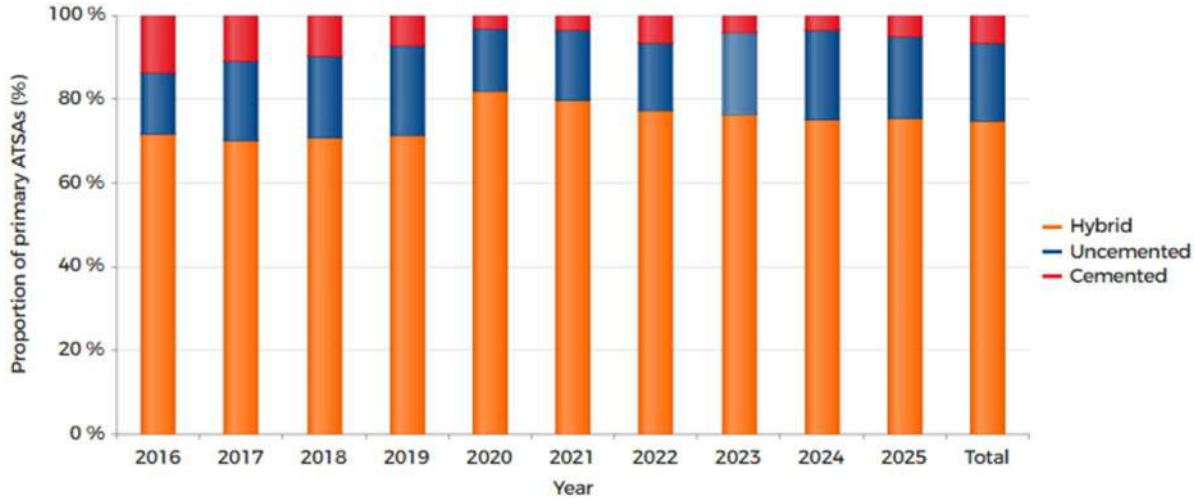
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Deltopectoral	99.16	99.04	98.79	99.29	93.10	97.64	99.63	99.00	99.10	98.51	98.44
Anterosuperior / superolateral	0.63	0.77	0.52	0.71	0.92	2.36	0.37	0.66	0.90	1.35	0.92
Other approach	0.21	0.19	0.69	0	5.98	0	0	0.33	0	0.15	0.64
Total (n)	**477**	**521**	**578**	**563**	**435**	**508**	**543**	**602**	**555**	**669**	**5,451**

ATSA: total anatomical shoulder arthroplasty

© LROI 2026 | S036

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary total anatomical shoulder arthroplasties in the Netherlands in 2016-2025



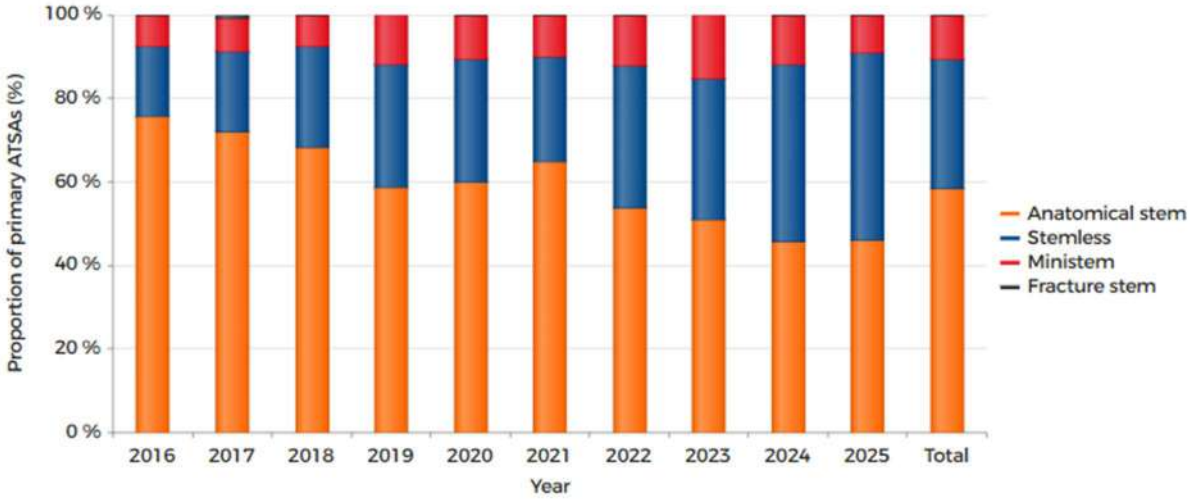
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Hybrid	71.70	70.25	70.71	71.55	81.90	79.77	77.22	76.23	75.04	75.55	74.91
Uncemented	14.68	18.81	19.41	21.20	14.71	16.76	16.19	19.51	21.51	19.34	18.41
Cemented	13.63	10.94	9.88	7.24	3.39	3.47	6.58	4.26	3.44	5.11	6.69
Total (n)	**477**	**521**	**577**	**566**	**442**	**519**	**562**	**610**	**581**	**724**	**5,579**

ATSA: total anatomical shoulder arthroplasty

© LROI 2026 | S037

Type humeral stem

FIGURE Trend (proportion [%] per year) in type of humeral stem in primary total anatomical shoulder arthroplasties in the Netherlands in 2016-2025



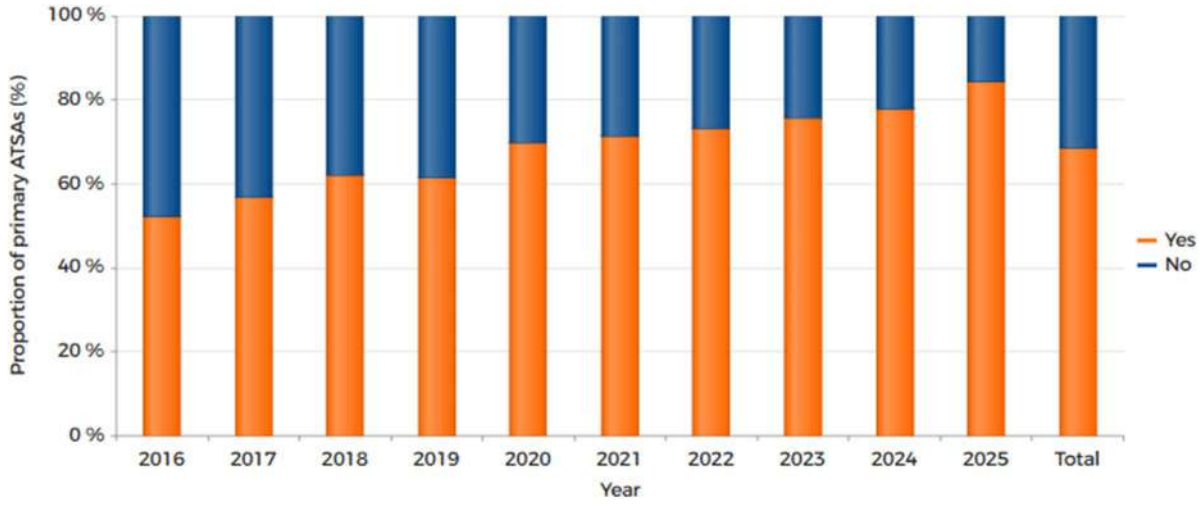
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Anatomical stem	75.74	71.95	68.32	58.85	60.06	64.86	53.92	50.92	45.67	46.07	58.57
Stemless	16.78	19.23	24.22	29.22	29.18	25.16	34.00	33.76	42.36	44.86	30.88
Ministem	7.26	8.14	7.25	11.93	10.48	9.76	11.87	15.31	11.79	8.91	10.35
Fracture stem	0.23	0.68	0.21	0	0.28	0.22	0.20	0	0.18	0.15	0.20
Total (n)	**441**	**442**	**483**	**486**	**353**	**461**	**497**	**542**	**543**	**662**	**4,910**

ATSA: total anatomical shoulder arthroplasty

© LROI 2026 | S038

Modular humeral stem

FIGURE Trend (proportion [%] per year) in modular humeral stem in primary total anatomical shoulder arthroplasties in the Netherlands in 2016-2025



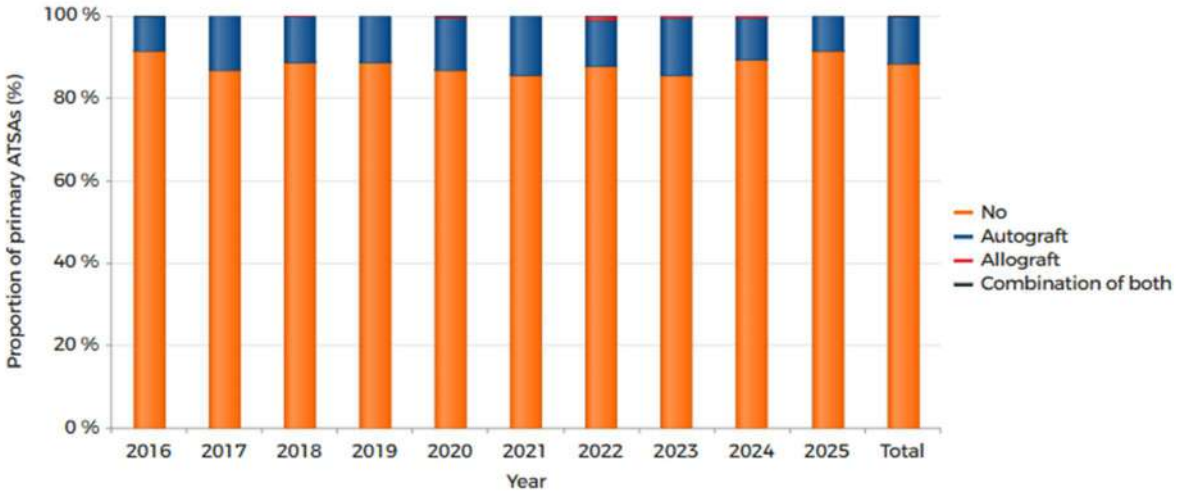
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Yes	52.27	56.79	62.01	61.45	69.94	71.36	73.35	75.66	77.91	84.52	68.51
No	47.73	43.21	37.99	38.55	30.06	28.64	26.65	24.34	22.09	15.48	31.49
Total (n)	**440**	**442**	**458**	**454**	**326**	**426**	**424**	**456**	**412**	**478**	**4,316**

ATSA: total anatomical shoulder arthroplasty

© LROI 2026 | S039

Bonegraft

FIGURE Trend (proportion [%] per year) in type of bonegraft in primary total anatomical shoulder arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	91.63	86.80	88.57	88.74	86.84	85.74	87.94	85.62	89.35	91.55	88.37
Autograft	8.15	13.20	11.25	11.26	12.68	14.26	11.13	13.87	10.30	8.45	11.37
Allograft	0	0	0.18	0	0.24	0	0.93	0.51	0.35	0	0.22
Combination of both	0.21	0	0	0	0.24	0	0	0	0	0	0.04
Total (n)	**466**	**515**	**551**	**533**	**418**	**491**	**539**	**591**	**573**	**698**	**5,375**

ATSA: total anatomical shoulder arthroplasty

© LROI 2026 | S040

Most frequently registered humeral stem, humeral head, glenoid

TABLE The most frequently registered humeral stems, humeral heads and glenoid components in primary total anatomical shoulder arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Humeral stem (n)	**461**	**497**	**542**	**543**	**662**
Name; Proportion (%)					
Aequalis Ascend Flex	41.43	37.63	38.38	33.15	38.22
Global Icon	7.38	14.08	14.94	21.55	24.32
SMR Stemless	5.64	10.66	11.99	13.81	13.90
Affinis Short	8.68	11.07	15.13	11.60	8.91
Global Unite	9.33	8.85	8.12	8.29	5.74
Eclipse	1.95	1.01	0.37	2.58	2.57
Simpliciti Shoulder System	1.52	2.62	2.77	2.03	1.66
Comprehensive Nano	3.25	2.41	2.21	1.47	1.51
Equinoxe	3.90	3.02	1.85	2.21	1.36
SMR stem Cementless	4.56	0.80	1.85	1.66	1.06
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Humeral head (n)	**475**	**512**	**545**	**535**	**667**
Name; Proportion (%)					
Aequalis Ascend Flex	41.47	37.70	38.35	33.64	37.93
Global Icon	7.37	14.26	14.68	21.50	23.99
SMR head	8.42	10.16	11.93	13.83	14.54
Affinis Short	8.21	9.96	14.68	11.21	8.85
Global Unite/ Global AP	14.11	12.11	8.99	8.79	5.70
Simpliciti Shoulder System	2.74	2.93	3.67	3.18	3.75
Eclipse	3.37	3.71	2.39	2.62	2.55
Comprehensive	4.21	3.13	2.39	1.68	1.35
Equinoxe	3.79	2.73	1.83	2.24	1.20
Aequalis humeral head	0.21	0.00	0.00	0.00	0.15
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Glenoid (n)	**480**	**510**	**548**	**541**	**675**
Name; Proportion (%)					
Global APG+	20.21	27.84	24.09	29.94	29.93
Aequalis Perform Keeled	31.25	29.22	30.29	22.55	23.11
Aequalis Perform Pegged	11.88	10.98	12.41	14.79	17.19
SMR TT hybrid glenoid	5.63	6.47	8.94	12.20	14.37
Affinis Vitamys	5.83	5.29	7.30	6.28	6.96
Univers Vaultlock	0.21	1.76	1.46	0.92	2.07
Tornier Perform	0.83	1.18	0.18	0.37	1.78
Equinoxe Cage	3.75	2.94	1.82	2.40	1.48
Alliance Glenoid	0.00	0.00	0.00	0.37	1.48
Affinis Vitamys uncemented	0.00	0.59	1.64	1.48	1.04

© LROI 2026 | S041

Most frequently registered bone cement

TABLE The most frequently registered types of bone cement by type of mixing system used during primary total anatomical shoulder arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement pre-packed in a vacuum mixing system (n)	**245**	**293**	**276**	**262**	**315**
Cement name; Proportion (%)					
Refobacin Bone Cement R	45.31	48.12	44.20	45.42	51.75
PALACOS R+G	46.94	40.96	48.91	51.91	45.08
COPAL G+C	0.00	0.00	0.00	0.00	3.17
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Separately packed bone cement components (n)	**112**	**114**	**114**	**94**	**95**
Cement name; Proportion (%)					
PALACOS R+G	78.57	45.61	40.35	45.74	56.84
COPAL G+C	0.00	26.32	25.44	28.72	24.21
Simplex ABC EC	8.04	14.91	12.28	12.77	10.53
Subiton G	2.68	3.51	5.26	5.32	5.26
Refobacin Bone Cement R	6.25	4.39	14.91	6.38	2.11
Biomet Bone Cement R	0.89	0.88	0.88	0.00	1.05

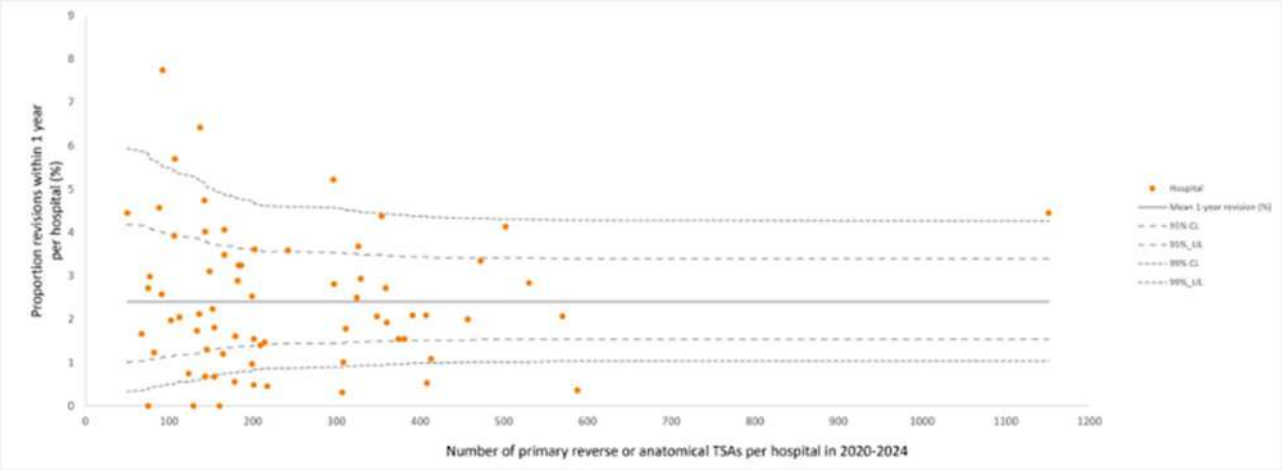
© LROI 2026 | S042

Survival

Short term revision

Overall revision per hospital

Funnel plot of proportion of shoulder revision arthroplasties within one year after a total (reverse or anatomical) shoulder arthroplasty per hospital in the Netherlands in 2020-2024 (n=17,339)



Please note: The proportions of revisions within 1 year per hospital were adjusted for casemix factor diagnosis (fracture versus other). TSA: total shoulder arthroplasty; CL: control limits.

The mean 1-year revision percentage is 2.41 in the Netherlands in 2020-2024.
Control limits indicate the plausible range of outcome if all hospitals perform equally well.

By type of revision within 1 year

TABLE Cumulative 1-year revision percentage of primary total anatomical shoulder arthroplasties by type of revision in the Netherlands in 2020-2024 (n=2,719)

	Cumulative 1-year revision percentage - Kaplan Meier (95% CI)
Any type of revision	1.18 (0.77-1.59)
Major revision	1.11 (0.71-1.50)
Only humeral stem	0.15 (0.00-0.29)
Only glenoid	0.18 (0.02-0.35)
Humeral stem and glenoid	0.59 (0.30-0.88)
Minor revision	0.07 (0.00-0.18)
DAIR	0.04 (0.00-0.11)
No DAIR	0.04 (0.00-0.11)

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.
Major revision: Revision of at least the humeral stem or glenoid component.
Minor revision: Only liner and/or metaphysis exchange (including DAIR procedures).
CI: confidence interval.

© LROI 2026 | S043

In 2020-2024, 23 (0.8%) primary total anatomical shoulder arthroplasties were implanted in patients who died within one year after the primary procedure.

Time after primary anatomical TSA

TABLE Time after primary total anatomical shoulder arthroplasty until short-term revision in the Netherlands in 2018-2022 (n=2,659)

Time after primary anatomical TSA	Percentage revisions (%)
Day 0-29	0.11
Day 30-182	0.34
Day 183-364	0.56
Day 365-730 (second year)	1.99
Day 731-1095 (third year)	1.02

TSA: total shoulder arthroplasty

© LROI 2026 | S044

Reasons for revision by type of revision

TABLE Reasons for revision within one year in patients that underwent a shoulder revision arthroplasty after a primary total anatomical shoulder arthroplasty in the Netherlands in 2020-2024 (n=33)

Reasons for revision	Proportion (%)
Cuff rupture	51.52
Malalignment	21.21
Instability	15.15
Loosening of glenoid component	15.15
Peri-prosthetic fracture	12.12
Loosening of humeral component	6.06
Cuff arthropathy	6.06
Infection	3.03
Progression of osteoarthritis	0.00
Other	6.06

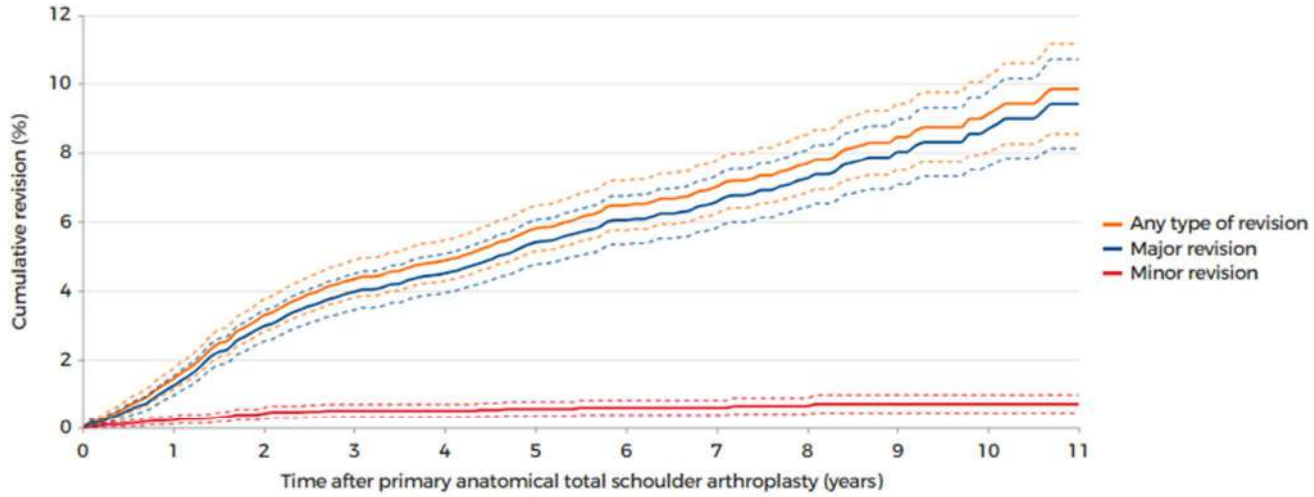
Please note: One patient may have more than one reason of revision.

© LROI 2026 | S045

Long term revision

By type of revision

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary anatomical total shoulder arthroplasties by type of revision in the Netherlands in 2014-2025 (n=6,422)



© LROI 2026 | S046A

	1yr	3yr	5yr	7yr	11yr
Any type of revision	1.28 (1.00-1.57)	4.27 (3.73-4.81)	5.71 (5.05-6.36)	6.91 (6.15-7.68)	9.86 (8.55-11.16)
Major revision	1.09 (0.83-1.35)	3.90 (3.38-4.42)	5.31 (4.68-5.95)	6.48 (5.74-7.23)	9.42 (8.13-10.71)
Minor revision	0.21 (0.10-0.33)	0.52 (0.33-0.71)	0.58 (0.37-0.78)	0.61 (0.39-0.82)	0.72 (0.45-0.98)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.

Major revision: Revision of at least the humeral stem or glenoid component.

Minor revision: Only liner and/or metaphysis exchange (including DAIR procedures).

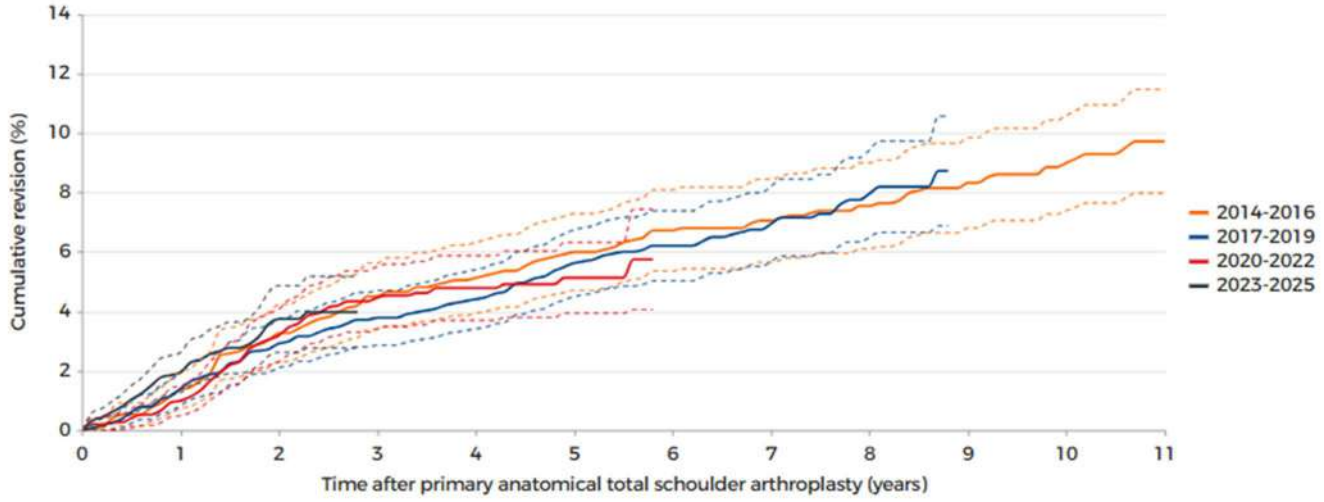
ATSA: anatomical total shoulder arthroplasty; CI: confidence interval.

© LROI 2026 | S046B

In 2007-2025, 490 (7.6%) primary ATSAs were implanted in patients who died within eleven years after the primary diagnosis

By procedure year

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary anatomical total shoulder arthroplasties by procedure year of primary arthroplasty in the Netherlands in 2014-2025



© LROI 2026 | S047A

	Number (n)	1yr	3yr	5yr	7yr	11yr
2014-2016	1,323	1.14 (0.56-1.71)	4.50 (3.38-5.62)	5.91 (4.63-7.19)	7.05 (5.65-8.44)	9.71 (7.97-11.46)
2017-2019	1,656	1.15 (0.64-1.67)	3.72 (2.80-4.63)	5.49 (4.38-6.60)	6.75 (5.51-7.98)	n.a.
2020-2022	1,523	0.92 (0.44-1.40)	4.33 (3.30-5.36)	5.12 (3.94-6.31)	n.a.	n.a.
2023-2025	1,920	1.85 (1.19-2.51)	n.a.	n.a.	n.a.	n.a.

Please note: Dotted lines represent the upper and lower limits of the 95% confidence intervall; n.a. if <50 cases were at risk.
CI: confidence interval.

© LROI 2026 | S047B

Reasons for revision within 10 years

TABLE Reasons for revision within ten years in patients that underwent a shoulder revision arthroplasty after a primary total anatomical shoulder arthroplasty in the Netherlands in 2014-2025 (n=353)

Reasons for revision	Proportion (%)
Cuff rupture	33.14
Loosening of glenoid component	23.80
Instability	20.11
Cuff arthropathy	14.73
Infection	12.18
Malalignment	11.33
Loosening of humeral component	8.50
Peri-prosthetic fracture	4.25
Progression of osteoarthritis	0.85
Other	13.60

Please note: One patient may have more than one reason of revision.

© LROI 2026 | S048

Re-revision

Second revision

FIGURE Cumulative second revision percentage (Kaplan-Meier; 95% CI) of total anatomical shoulder arthroplasties after a one-stage first revision in the Netherlands in 2014-2025 (n=326)



© LROI 2026 | S050A

	Number (n)	1yr	3yr	5yr	7yr
Overall	326	5.84 (3.22-8.46)	10.46 (6.80-14.13)	11.29 (7.32-15.27)	14.50 (9.22-19.78)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis.

CI: confidence interval.

© LROI 2026 | S050B

Reasons for second revision

TABLE Reasons for second revision in patients who underwent a second revision after a one-stage first revision of a total anatomical shoulder arthroplasty in the Netherlands in 2014-2025

	Second revision (n=34)
Reasons for second revision	**Proportion (%)**
Infection	29.41
Loosening of glenoid component	23.53
Instability	17.65
Cuff rupture	11.76
Peri-prosthetic fracture	8.82
Loosening of humeral stem component	8.82
Malalignment	2.94
Progression of osteoarthritis	2.94
Other	14.71

One-stage revision: A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis.

One patient may have more than one reason for second revision or re-surgery. As such, the total proportion is over 100%.

© LROI 2026 | S051

Survival by component

TABLE Cumulative revision percentages of primary anatomical total shoulder arthroplasties by prosthesis component combination of patients who underwent a ATSA for osteoarthritis in the Netherlands in 2014-2025 (n=5,689)

						Type of revision (n)				Cumulative revision percentage (95% CI)				
Humeral stem component	Glenoid component	Primary ATSAs (n)	Hospital (n)	Median (IQR) age (yr)	Revisions (n)	Total revision	Partial major	Partial minor	Other	1yr	3yr	5yr	7yr	10yr
All ATSAs for osteoarthritis		**5,689**	**92**	**67 (61 - 72)**	**289**	**167**	**83**	**13**	**23**	**1.10 (0.82-1.38)**	**3.83 (3.28-4.37)**	**5.10 (4.43-5.76)**	**6.36 (5.57-7.15)**	**8.66 (7.50-9.82)**
Aequalis Ascend Flex	Aequalis Perform Keeled	969	25	69 (62 - 73)	15	7	7	1	0	0.33 (0.00-0.69)	1.52 (0.66-2.38)	1.52 (0.66-2.38)	3.01 (1.11-4.90)	n.a.
GLOBAL ICON	Global APC+	506	21	65 (58 - 70)	24	19	1	3	0	1.37 (0.28-2.46)	6.80 (3.97-9.63)	8.10 (4.78-11.42)	n.a.	n.a.
Global Unite	Global APC+	488	20	67 (61 - 73)	21	9	8	2	2	1.70 (0.53-2.87)	3.81 (2.03-5.59)	4.46 (2.47-6.44)	4.84 (2.73-6.95)	n.a.
Aequalis Ascend Flex	Aequalis Perform Pegged	439	24	67 (61 - 73)	22	9	9	3	1	1.21 (0.15-2.27)	5.20 (2.76-7.65)	5.73 (3.09-8.37)	7.86 (4.35-11.38)	n.a.
Global AP	Global APC+	381*	16	66 (60 - 71)	24	18	2	1	1	1.05 (0.03-2.08)	3.44 (1.60-5.28)	5.13 (2.88-7.38)	5.79 (3.38-8.20)	7.36 (4.39-10.33)
SMR Stemless	SMR TT hybrid glenoid	224	11	66 (60 - 72)	1	1	0	0	0	0.60 (0.00-1.76)	n.a.	n.a.	n.a.	n.a.
Affinis Short	Affinis	223	8	70 (65 - 75)	3	2	0	0	1	0.00 (0.00-0.00)	1.02 (0.00-2.43)	1.02 (0.00-2.43)	1.02 (0.00-2.43)	n.a.
Affinis Short	Affinis Vitamys	200	9	62 (58 - 68)	8	5	0	1	2	3.49 (0.74-6.24)	5.02 (1.59-8.44)	n.a.	n.a.	n.a.
Aequalis Ascend Flex	Aequalis Spherical Glenoid	170*	16	67 (60 - 73)	19	5	11	1	2	0.00 (0.00-0.00)	4.17 (1.15-7.20)	7.22 (3.28-11.15)	9.77 (5.22-14.33)	n.a.
COMPREHENSIVE NANO	COMPREHENSIVE	143*	13	66 (61 - 74)	5	3	0	0	2	1.41 (0.00-3.34)	2.14 (0.00-4.53)	3.03 (0.09-5.98)	3.03 (0.09-5.98)	n.a.
Aequalis Primair	Aequalis Spherical Glenoid	113*	13	69 (63 - 75)	7	6	1	0	0	1.77 (0.00-4.20)	3.56 (0.13-6.98)	3.56 (0.13-6.98)	3.56 (0.13-6.98)	6.26 (1.28-11.24)
Aequalis Press-fit	Aequalis Spherical Glenoid	111*	8	70 (65 - 76)	5	4	1	0	0	0.90 (0.00-2.66)	2.73 (0.00-5.78)	3.69 (0.14-7.23)	4.82 (0.68-8.96)	n.a.
Sidus Baseplate	Anatomical Shoulder Glenoids	104*	6	63 (55 - 68)	15	13	1	1	0	0.96 (0.00-2.84)	9.08 (3.42-14.75)	10.35 (4.25-16.45)	n.a.	n.a.
SMR Stemless	SMR uncemented glenoid	81*	8	61 (56 - 67)	14	2	10	0	2	3.70 (0.00-7.82)	12.36 (5.19-19.54)	15.16 (7.24-23.08)	n.a.	n.a.
Equinoxe	Equinoxe Cage	78	4	66 (59 - 71)	4	1	3	0	0	1.34 (0.00-3.96)	2.78 (0.00-6.59)	n.a.	n.a.	n.a.
Simpliciti Shoulder System	Aequalis Perform Pegged	66	7	67 (62 - 72)	3	2	0	0	1	0.00 (0.00-0.00)	n.a.	n.a.	n.a.	n.a.
SMR stem Cementless	SMR uncemented glenoid	56*	5	69 (62 - 73)	11	1	9	0	1	1.79 (0.00-5.25)	9.03 (1.48-16.58)	n.a.	n.a.	n.a.

* Denotes prosthesis combinations with no reported use in primary ATSAs in 2025.

Please note: n.a. if <50 cases were at risk; ATSA: anatomical total shoulder arthroplasty; CI: confidence interval; IQR: interquartile range.

© LROI 2026 | S049

Only combinations with over 50 procedures and reported by at least 3 hospitals have been listed.

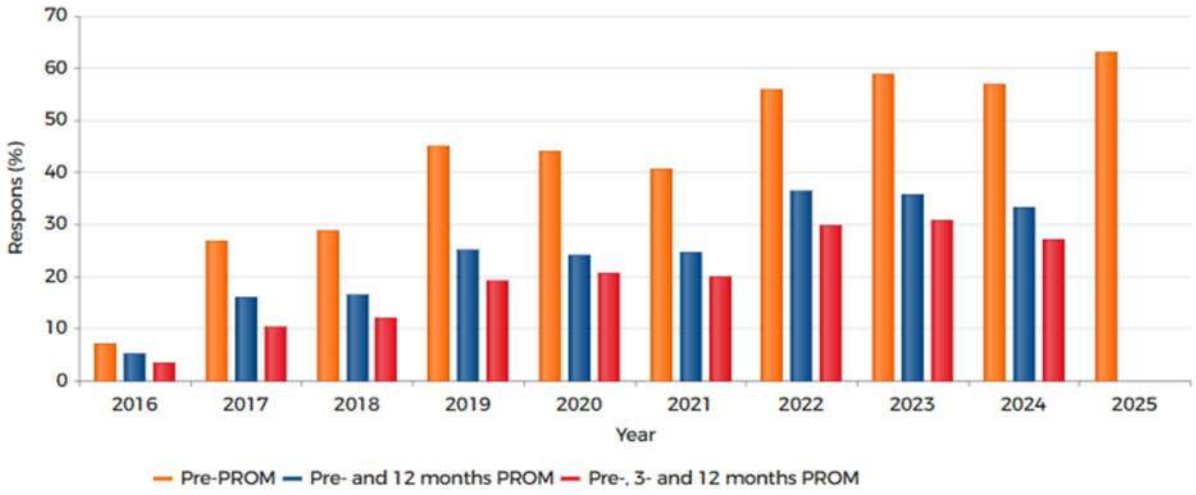
Results must be interpreted with caution. Patient characteristics like age and diagnosis, as well as procedure characteristics like the experience of the surgeon performing the procedure of the prosthesis may have influenced the cumulative revision percentages.

PROMs

Response

Per year

FIGURE Pre-operative, 3 months and 12 months postoperative response percentage of patients who underwent a primary total anatomical shoulder arthroplasty in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Pre-PROM	7.18	26.93	28.82	44.94	44.09	40.61	55.80	58.86	56.75	63.02
Pre- and 12 months PROM	5.20	15.89	16.47	25.10	24.14	24.67	36.46	35.62	33.33	n.a.
Pre-, 3- and 12 months PROM	3.47	10.38	12.16	19.26	20.69	19.87	29.74	30.86	27.18	n.a.
Total anatomical shoulder arthroplasty (n)	**404**	**453**	**510**	**514**	**406**	**458**	**491**	**525**	**504**	**622**

Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.

Procedures performed for fracture diagnoses were excluded from the response analysis because preoperative PROMs are generally not collected in this patient group.

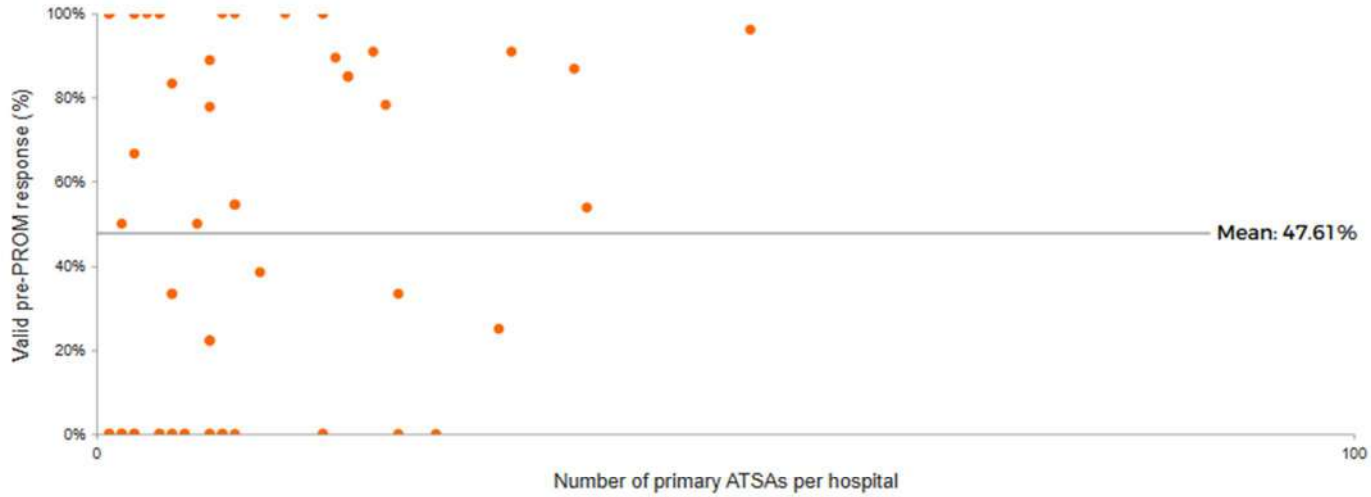
PROM: patient reported outcome measure.

© LROI 2026 | S052A

© LROI 2026 | S052B

Per pre-PROM per hospital

FIGURE Scatterplot of pre-operative response percentage of patients who underwent a primary total anatomical shoulder arthroplasty for osteoarthritis per hospital in the Netherlands in 2025



Please note: Procedures performed for fracture diagnoses were excluded from the response analysis because preoperative PROMs are generally not collected in this patient group.

PROM: patient reported outcome measure; ATSA: total anatomical shoulder arthroplasty

© LROI 2026 | S053

The mean pre-operative response rate is 47.6% in the Netherlands in 2025.
Of the 67 hospitals, 29 (43%) scored above the 60% response rate.

Patient characteristics

Responders vs non-responders

TABLE Patient characteristics of PROM responders and non-responders after primary total anatomical shoulder arthroplasty in the Netherlands in 2020-2024

	Non-responder	Pre- and 12-month PROM respondents	Total
N(%)	**1,975 (72.6)**	**748 (27.4)**	**2,723**
Mean age (years) (SD)	65.6 (8.9)	66 (8.2)	65.7 (8.7)
Age (years) (%)			
<50	4	3	4
50-59	20	19	20
60-69	40	40	40
70-79	31	35	32
>80	5	3	4
Sex (%)			
Male	34	33	34
Female	66	67	66
ASA class (%)			
ASA I	11	13	12
ASA II	64	67	65
ASA III-IV	24	20	23
Type of hospital (%)			
General	80	68	77
UMC	2	1	1
Private	18	32	22
Diagnosis (%)			
Osteoarthritis	88	94	89
Cuff arthropathy	1	1	1
Fracture	1	0	1
Late post-traumatic	4	3	3
Unrecoverable cuff rupture	0	0	0
Other	6	3	5
Mean BMI (kg/m2) (SD)	28.7 (5.3)	28.6 (5.1)	28.7 (5.2)
Revision within 1 yr (%)			
No revision within 1 yr	98	100	99
Revision within 1 yr	2	0	1

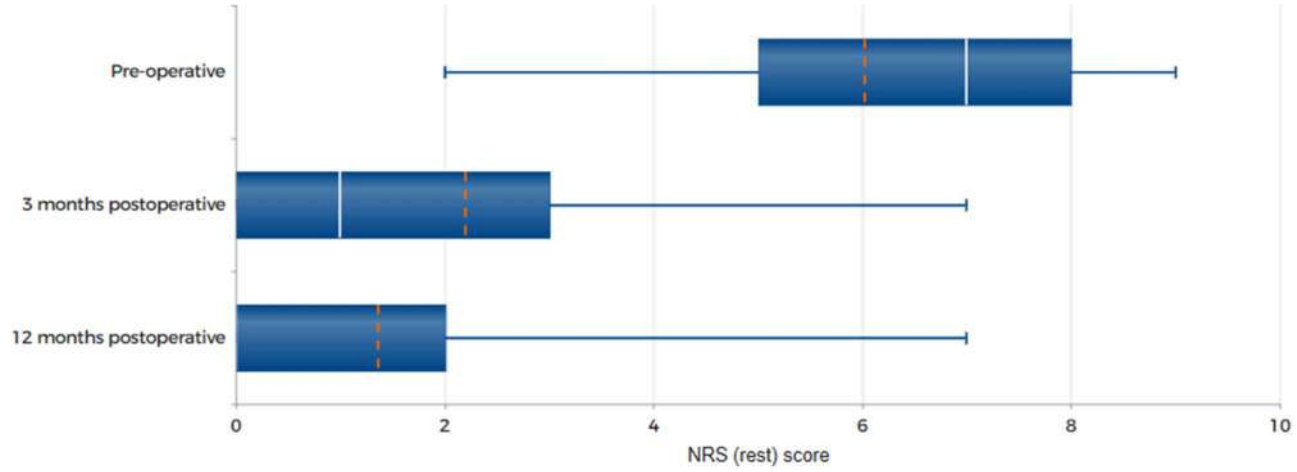
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | S054

Outcomes

NRS (rest)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (rest) scores of patients who underwent a primary total anatomical shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S055A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (rest) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total anatomical shoulder arthroplasty	599	7.00 (5.00-8.00)	1.00 (0.00-3.00)	0.00 (0.00-2.00)

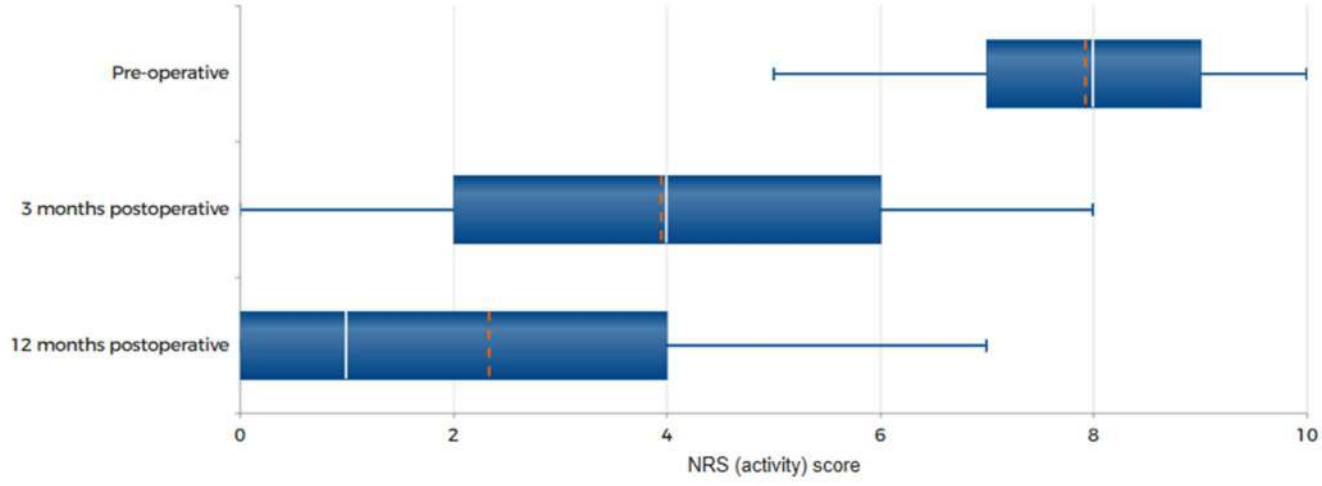
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S055B

The NRS (rest) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

NRS (activity)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (activity) scores of patients who underwent a primary total anatomical shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S056A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (activity) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total anatomical shoulder arthroplasty	600	8.00 (7.00-9.00)	4.00 (2.00-6.00)	1.00 (0.00-4.00)

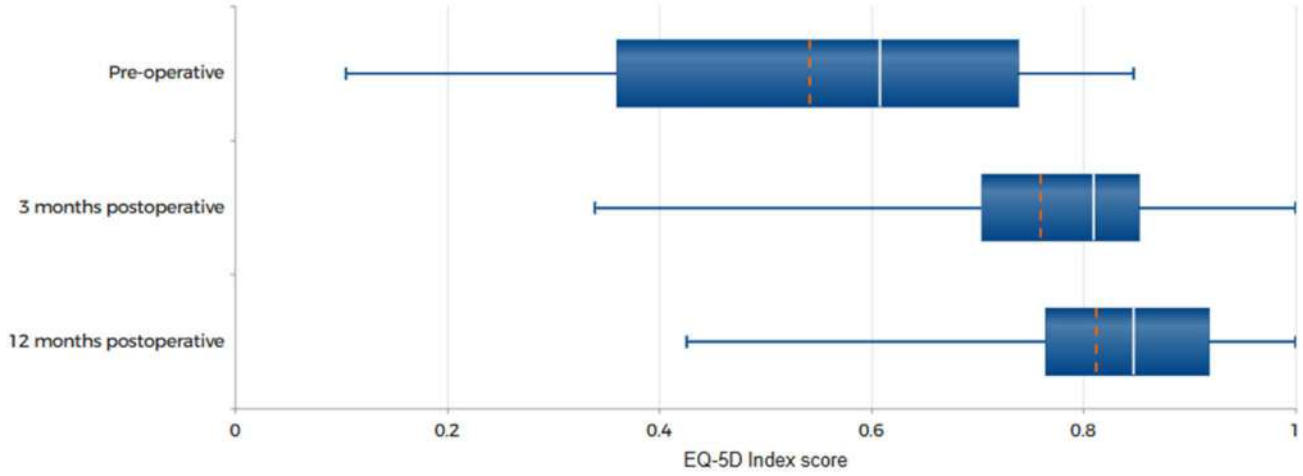
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S056B

The NRS (activity) score measures pain during activity. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

EQ-5D index score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D Index scores of patients who underwent a primary total anatomical shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S057A

		Pre-operative	3 months postoperative	12 months postoperative
EQ-5D Index score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total anatomical shoulder arthroplasty	610	0.61 (0.36-0.74)	0.81 (0.70-0.85)	0.85 (0.77-0.92)

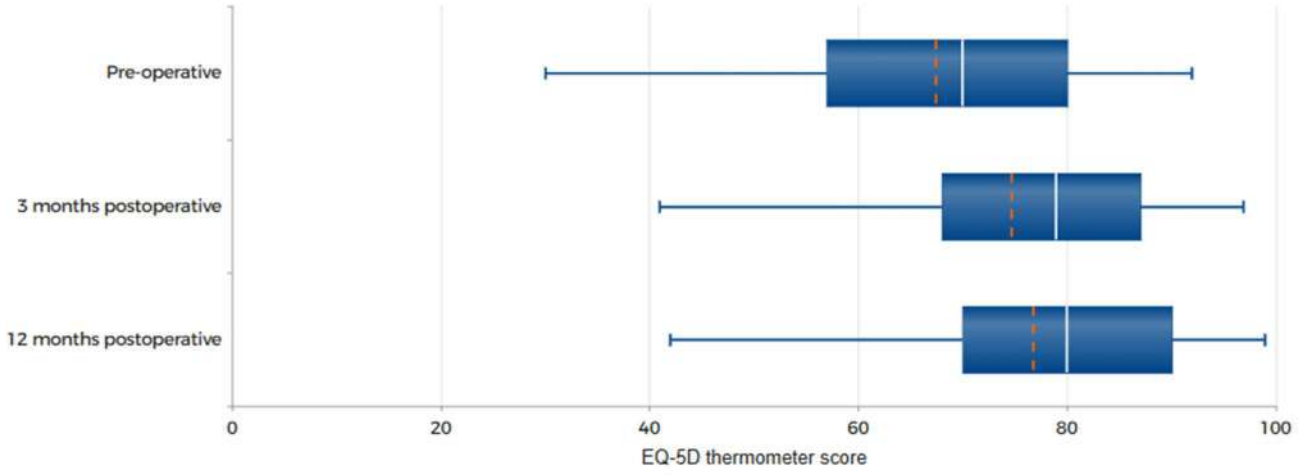
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S057B

The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.

EQ-5D thermometer

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D thermometer scores of patients who underwent a primary total anatomical shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S058A

		Pre-operative	3 months postoperative	12 months postoperative
EQ-5D thermometer score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total anatomical shoulder arthroplasty	612	70.00 (57.00-80.00)	79.00 (68.00-87.00)	80.00 (70.00-90.00)

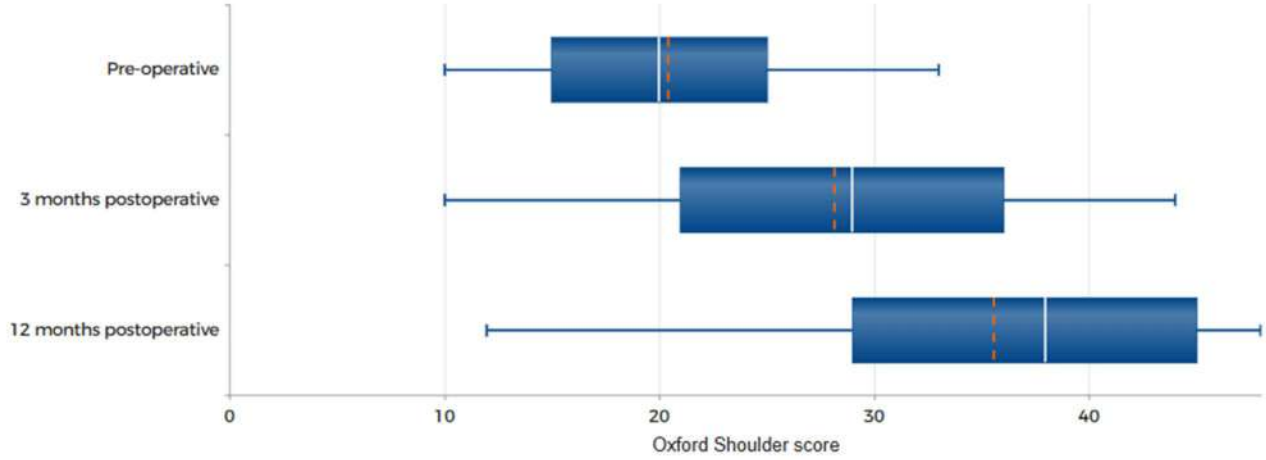
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S058B

The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation.

Oxford Shoulder Score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative Oxford Shoulder scores of patients who underwent a primary total anatomical shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S059A

		Pre-operative	3 months postoperative	12 months postoperative
Oxford Shoulder Score	N	Median (IQR)	Median (IQR)	Median (IQR)
Total anatomical shoulder arthroplasty	607	20.00 (15.00-25.00)	29.00 (21.00-36.00)	38.00 (29.00-45.00)

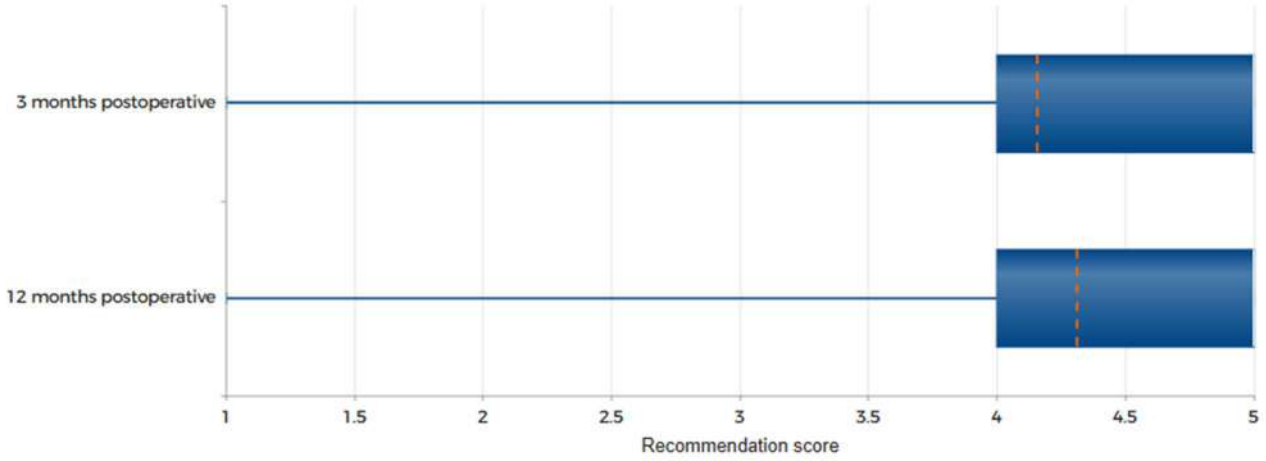
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S059B

The Oxford Shoulder score measures the physical functioning and pain of patients with osteoarthritis to the shoulder. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 the most functional ability.

Recommendation score

FIGURE Boxplots of 3 months and 12 months postoperative recommendation scores of patients who underwent a primary total anatomical shoulder arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S060A

		3 months postoperative	12 months postoperative
Recommendation score	N	Median (IQR)	Median (IQR)
Total anatomical shoulder arthroplasty	623	5.00 (4.00-5.00)	5.00 (4.00-5.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S060B

The recommendation score measures to what extend the patient would recommend joint replacement to a friend or relative. The score has a range of 1.0 to 5.0, with 1.0 representing totally disagreement and 5.0 representing totally agreement.

Hemi shoulder arthroplasty

Patient characteristics

By diagnosis

TABLE Patient characteristics of all patients with a registered shoulder hemiarthroplasty by diagnosis in the Netherlands in 2025

	Osteoarthritis	Fracture	Other	Total
N(%)	**78 (57)**	**19 (13.8)**	**40 (29.2)**	**137**
Mean age (years) (SD)	64.4 (11)	63.1 (10.5)	60.1 (15.8)	63 (12.6)
Age (years) (%)				
<50	6	5	28	12
50-59	23	37	18	23
60-69	33	37	20	30
70-79	35	11	25	28
>80	3	11	10	6
Sex (%)				
Male	44	63	53	49
Female	56	37	48	51
ASA class (%)				
ASA I	12	5	8	9
ASA II	67	63	38	58
ASA III-IV	22	32	55	33
Type of hospital (%)				
General	74	95	80	79
UMC	4	5	10	6
Private	22	0	10	15
Specialism (%)				
Orthopaedic surgeon	100	89	100	99
Trauma surgeon	0	11	0	1
Walch-score (%)				
A1	40	100	76	50
A2	21	0	12	19
B1	13	0	8	12
B2	18	0	0	14
B3	5	0	0	4
C	1	0	4	2
Mean BMI (kg/m2) (SD)	28.8 (5)	31 (5)	29.2 (6.3)	29.2 (5.4)
Body Mass Index (kg/m2) (%)				
Underweight (<=18.5)	0	0	0	0
Normal weight (>18.5-25)	28	16	25	26
Overweight (>25-30)	35	32	38	35
Obesity (>30-40)	35	53	28	35
Morbid obesity (>40)	3	0	8	4
Smoking (%)				
No	87	79	88	88
Yes	10	16	13	12

Please note: diagnosis 'Other' (40; 29.2%) includes other (13), osteonecrosis (10), late post-traumatic (7), cuff arthropathy (5), chronic (sub)dislocation (1), unrecoverable cuff rupture (1) and 3 primary shoulder hemiarthroplasties where the diagnosis was not registered.

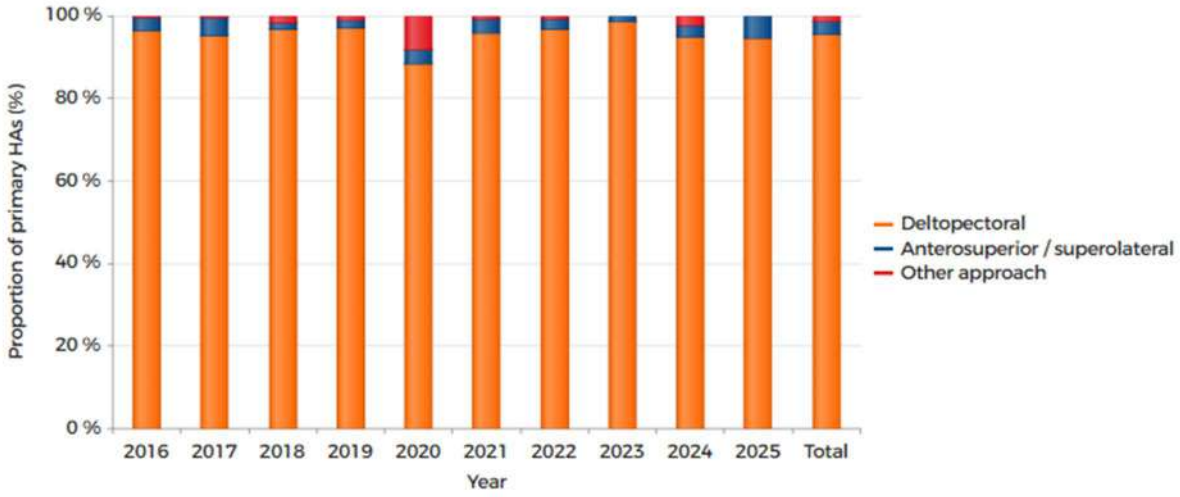
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation.

© LROI 2026 | S061

Procedure characteristics

Surgical approach

FIGURE Trend (proportion [%] per year) in surgical approach for performing a primary shoulder hemiarthroplasty in the Netherlands in 2016-2025



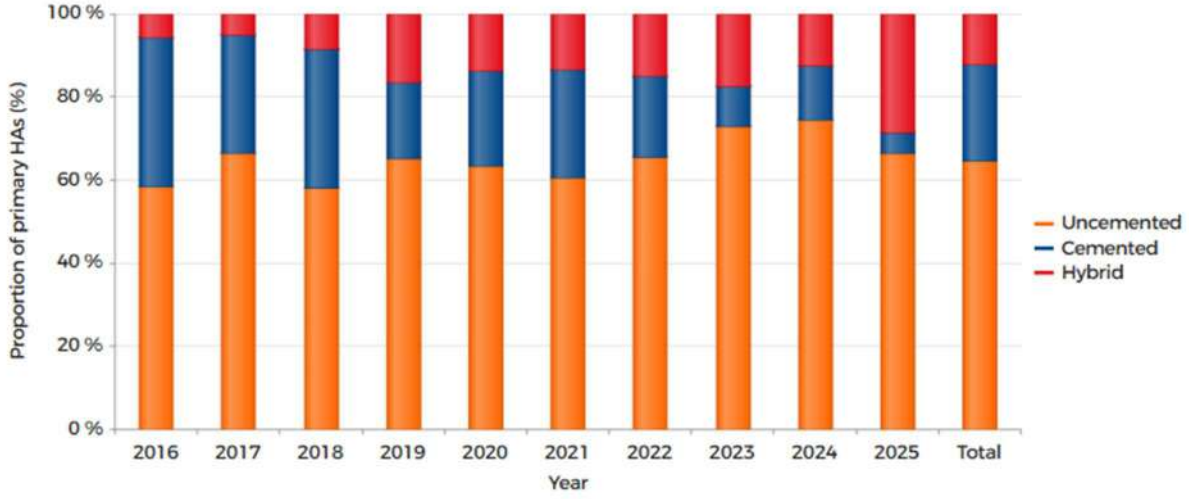
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Deltopectoral	96.31	95.34	96.85	97.14	88.44	95.68	96.86	98.60	94.78	94.57	95.61
Anterosuperior / superolateral	3.32	4.30	1.35	1.71	3.40	3.60	2.52	1.40	2.99	5.43	3.00
Other approach	0.37	0.36	1.80	1.14	8.16	0.72	0.63	0	2.24	0	1.39
Total (n)	**271**	**279**	**222**	**175**	**147**	**139**	**159**	**143**	**134**	**129**	**1,798**

HA: shoulder hemiarthroplasty

© LROI 2026 | S062

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary shoulder hemiarthroplasties in the Netherlands in 2016-2025



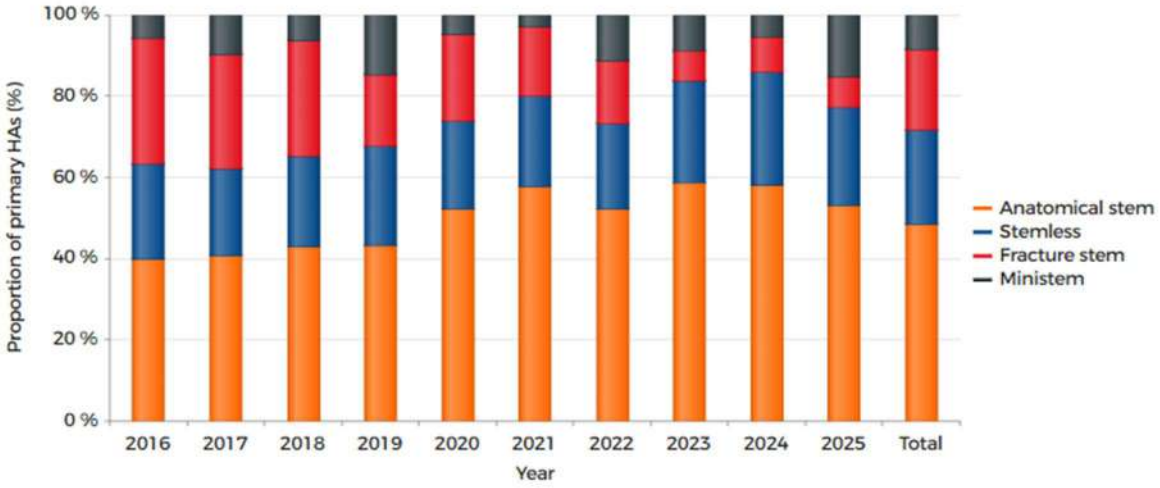
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Uncemented	58.36	66.55	58.11	65.14	63.27	60.71	65.66	72.92	74.45	66.42	64.46
Cemented	36.06	28.42	33.33	18.29	23.13	25.71	19.28	9.72	13.14	5.11	23.31
Hybrid	5.58	5.04	8.56	16.57	13.61	13.57	15.06	17.36	12.41	28.47	12.23
Total (n)	**269**	**278**	**222**	**175**	**147**	**140**	**166**	**144**	**137**	**137**	**1,815**

HA: shoulder hemiarthroplasty

© LROI 2026 | S063

Type humeral stem

FIGURE Trend (proportion [%] per year) in type of humeral stem in primary shoulder hemiarthroplasties in the Netherlands in 2016-2025



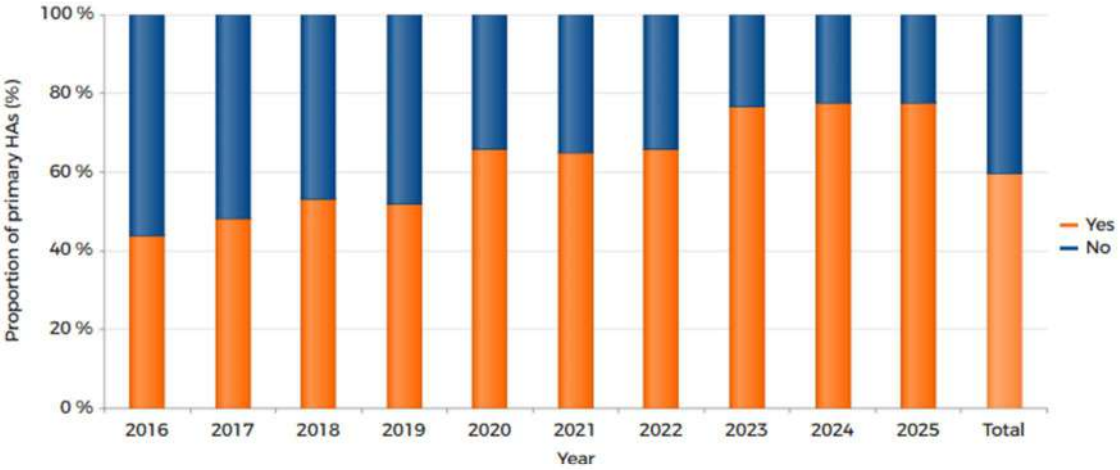
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Anatomical stem	39.92	40.89	42.86	43.38	52.38	57.69	52.11	58.82	58.27	53.03	48.42
Stemless	23.46	21.33	22.22	24.26	21.43	22.31	21.13	25	27.56	24.24	23.14
Fracture stem	30.86	28	28.57	17.65	21.43	16.92	15.49	7.35	8.66	7.58	20.05
Ministem	5.76	9.78	6.35	14.71	4.76	3.08	11.27	8.82	5.51	15.15	8.39
Total (n)	**243**	**225**	**189**	**136**	**126**	**130**	**142**	**136**	**127**	**132**	**1,586**

HA: shoulder hemiarthroplasty

© LROI 2026 | S064

Modular humeral stem

FIGURE Trend (proportion [%] per year) in modular humeral stem in primary shoulder hemiarthroplasties in the Netherlands in 2016-2025



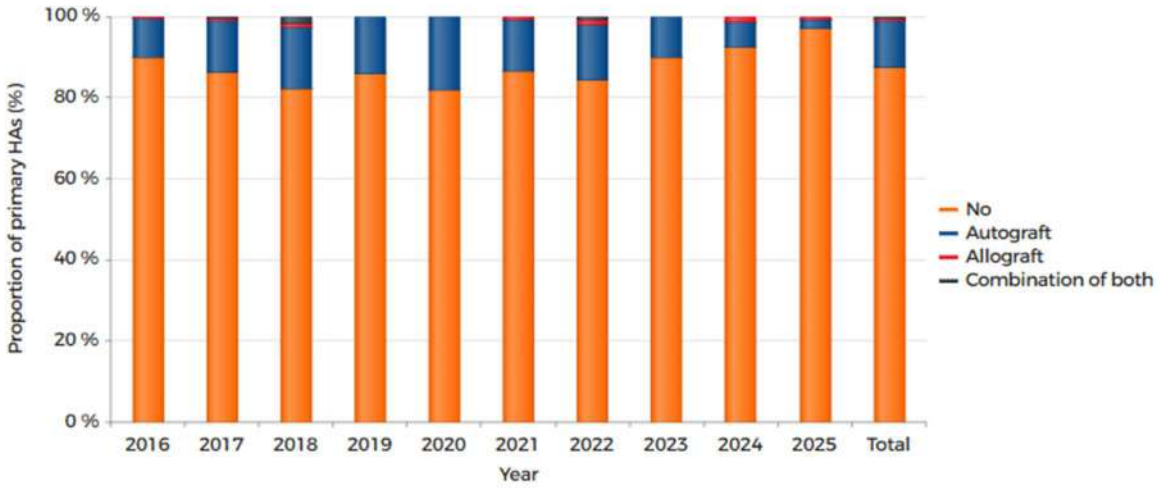
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Yes	44.03	48.23	53.19	51.88	65.83	64.80	65.71	76.52	77.69	77.69	59.78
No	55.97	51.77	46.81	48.12	34.17	35.20	34.29	23.48	22.31	22.31	40.22
Total (n)	**243**	**226**	**188**	**133**	**120**	**125**	**140**	**132**	**121**	**121**	**1,549**

HA: shoulder hemiarthroplasty

© LROI 2026 | S065

Bonegraft

FIGURE Trend (proportion [%] per year) in type of bonegraft in primary shoulder hemiarthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	90	86.38	82.19	85.80	81.82	86.47	84.28	90.07	92.37	96.99	87.34
Autograft	9.63	12.54	15.07	14.20	18.18	12.78	13.84	9.93	6.11	2.26	11.71
Allograft	0.37	0.72	0.91	0	0	0.75	1.26	0	1.53	0.75	0.62
Combination of both	0	0.36	1.83	0	0	0	0.63	0	0	0	0.34
Total (n)	**270**	**279**	**219**	**169**	**143**	**133**	**159**	**141**	**131**	**133**	**1,777**

HA: shoulder hemiarthroplasty

© LROI 2026 | S066

Most frequently registered humeral stem and humeral liner

TABLE The most frequently registered humeral stems and humeral heads in primary shoulder hemiarthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Humeral stem (n)	**130**	**143**	**136**	**127**	**132**
Name; Proportion (%)					
Aequalis Ascend Flex	27.69	25.87	33.82	30.71	33.33
Affinis Short	3.08	10.49	5.88	4.72	14.39
SMR Stemless	4.62	6.29	13.24	17.32	9.85
Global Icon	3.85	0.70	2.21	0.79	7.58
Aequalis Flex Revive	3.85	4.20	12.50	3.94	7.58
SMR stem Cementless	6.92	5.59	2.21	10.24	6.06
Affinis Fracture	0.77	4.20	0.74	2.36	3.79
Global Unite	7.69	9.09	4.41	3.94	3.79
Simpliciti Shoulder System	4.62	3.50	1.47	4.72	3.79
Comprehensive Nano	0.00	0.00	0.00	0.00	2.27
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Humeral head (n)	**125**	**136**	**130**	**122**	**108**
Name; Proportion (%)					
Aequalis pyrocarbon humeral head	20.00	16.18	27.69	22.13	21.30
SMR head	14.40	13.24	15.38	31.97	18.52
Aequalis Ascend Flex	12.00	16.18	18.46	15.57	18.52
Affinis Short	3.20	8.82	6.15	4.10	14.81
Global Icon	4.00	0.74	1.54	0.82	8.33
Simpliciti Shoulder System	4.80	3.68	1.54	6.56	5.56
Comprehensive	4.00	2.94	2.31	0.00	4.63
Global Unite/ Global AP	8.00	9.56	5.38	4.10	3.70
Aequalis humerus kop	12.00	7.35	5.38	4.92	1.85
Eclipse	0.80	5.15	3.08	1.64	0.93

© LROI 2026 | S067

Most frequently registered bone cement

TABLE The most frequently registered types of bone cement used during primary shoulder hemiarthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement pre-packed in a vacuum mixing system (n)	**37**	**26**	**15**	**14**	**16**
Cement name; Proportion (%)					
Refobacin Bone Cement R	37.84	38.46	33.33	21.43	68.75
PALACOS R+G	40.54	23.08	60.00	78.57	31.25
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Separately packed bone cement components (n)	**10**	**26**	**12**	**9**	**13**
Cement name; Proportion (%)					
PALACOS R+G	100.00	46.15	41.67	11.11	46.15
Simplex ABC EC	0.00	26.92	0.00	22.22	23.08
Refobacin Bone Cement R	0.00	11.54	41.67	44.44	15.38
COPAL G+C	0.00	7.69	16.67	11.11	7.69
PALACOS MV+G	0.00	3.85	0.00	0.00	7.69

© LROI 2026 | S068

Survival

Short term revision

By type of revision within 1 year

TABLE Cumulative 1-year revision percentage of primary shoulder hemiarthroplasties by type of revision in the Netherlands in 2020-2024 (n=882)

	Cumulative 1-year revision percentage - Kaplan Meier (95% CI)
Any type of revision	3.43 (2.11-4.76)
Major revision	1.37 (0.53-2.22)
Only humeral stem	0.00 (0.00-0.00)
Minor revision	2.06 (1.03-3.09)
DAIR	0.68 (0.09-1.28)
No DAIR	1.38 (0.53-2.22)

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.
Major revision: Revision of at least the humeral stem.
Minor revision: Only humeralhead (including DAIR procedures).
CI: confidence interval.

© LROI 2026 | S069

In 2020-2024, 16 (2.2%) primary shoulder hemiarthroplasties were implanted in patients who died within one year after the primary procedure.

Time after primary hemi arthroplasty

TABLE Time after primary shoulder hemiarthroplasty until short-term revision in the Netherlands in 2018-2022 (n=845)

Time after primary hemi	Percentage revisions (%)
Day 0-29	0.36
Day 30-182	0.95
Day 183-364	2.13
Day 365-730 (second year)	3.08
Day 731-1095 (third year)	1.30

© LROI 2026 | S070

Reasons for revision

TABLE Reasons for revision within one year in patients that underwent a shoulder revision arthroplasty after a primary shoulder hemiarthroplasty in the Netherlands in 2020-2024 (n=31)

Reasons for revision	Proportion (%)
Infection	32.26
Cuff rupture	19.35
Malalignment	19.35
Cuff arthropathy	9.68
Loosening of humeral component	9.68
Progression of osteoarthritis	9.68
Instability	3.23
Loosening of glenoid component	3.23
Peri-prosthetic fracture	0.00
Other	9.68

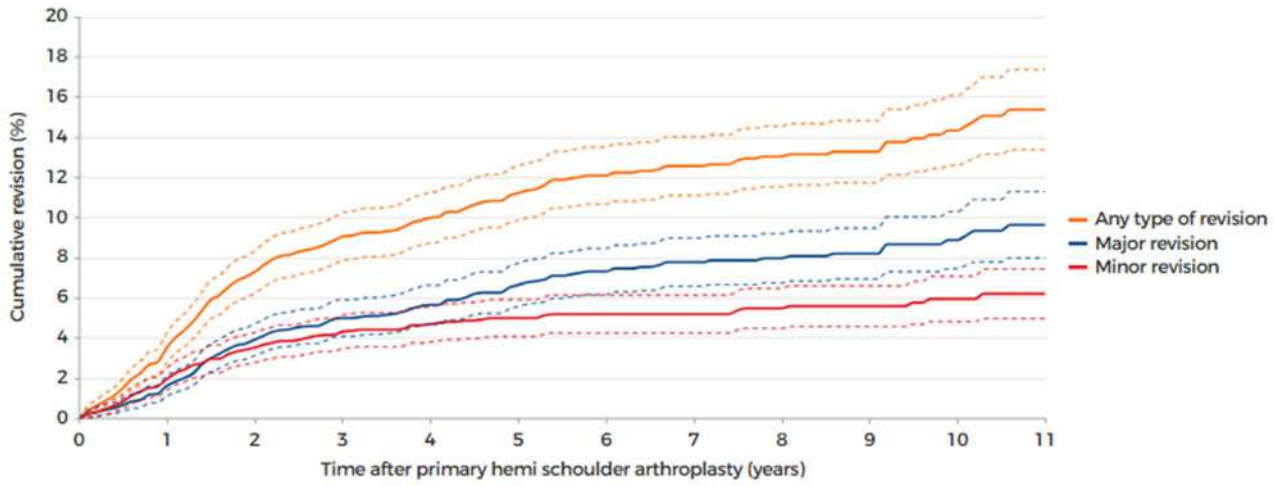
Please note: One patient may have more than one reason of revision.

© LROI 2026 | S071

Long term revision

By type of revision

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary shoulder hemiarthroplasties by type of revision in the Netherlands in 2014-2025 (n=2,482)



© LROI 2026 | S072A

	1yr	3yr	5yr	7yr	11yr
Any type of revision	2.79 (2.13-3.45)	8.82 (7.65-10.00)	11.06 (9.72-12.40)	12.54 (11.08-14.00)	15.35 (13.35-17.35)
Major revision	1.21 (0.77-1.64)	4.92 (4.02-5.82)	6.49 (5.43-7.56)	7.76 (6.56-8.96)	9.62 (7.97-11.27)
Minor revision	1.58 (1.08-2.08)	4.14 (3.32-4.96)	4.98 (4.06-5.89)	5.17 (4.23-6.12)	6.18 (4.95-7.41)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

Any type of revision includes minor and major revisions as well as revision procedures that could not be classified as minor or major revision.

Major revision: Revision of at least the humeral stem.

Minor revision: Only humeralhead (including DAIR procedures).

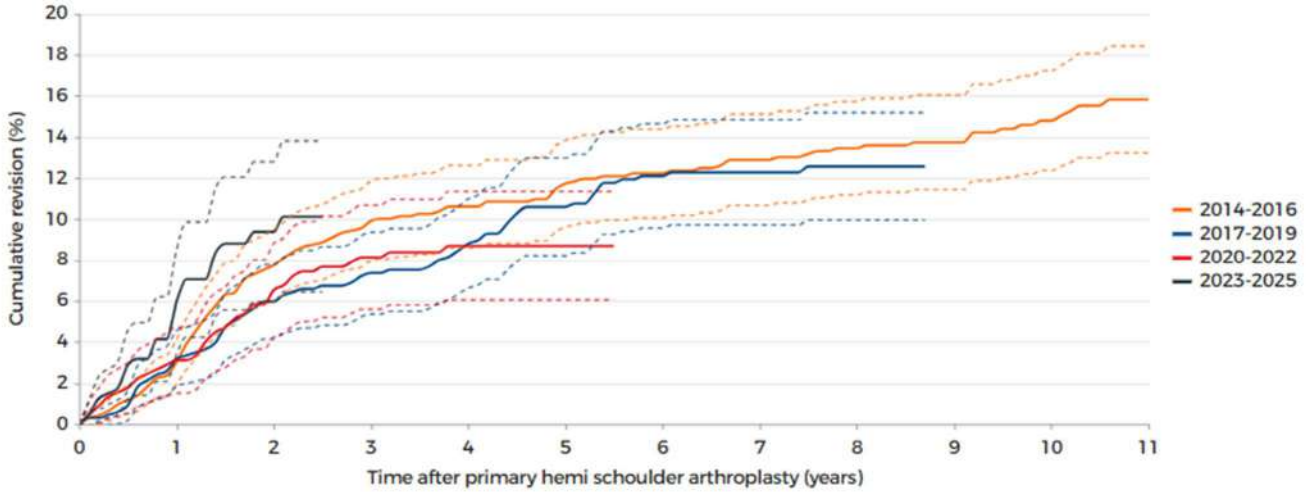
CI: confidence interval.

© LROI 2026 | S072B

In 2007-2025, 482 (18.3%) primary shoulder hemiarthroplasties were implanted in patients who died within eleven years after the primary diagnosis

By procedure year

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary shoulder hemiarthroplasties by procedure year of primary arthroplasty in the Netherlands in 2014-2025



© LROI 2026 | S073A

	Number (n)	1yr	3yr	5yr	7yr	11yr
2014-2016	943	2.36 (1.38-3.33)	9.55 (7.64-11.46)	11.46 (9.38-13.55)	12.88 (10.67-15.10)	15.81 (13.22-18.41)
2017-2019	668	2.57 (1.36-3.78)	7.20 (5.21-9.18)	10.59 (8.21-12.97)	12.27 (9.71-14.83)	n.a.
2020-2022	453	2.88 (1.34-4.43)	8.13 (5.58-10.68)	8.69 (6.04-11.34)	n.a.	n.a.
2023-2025	418	4.13 (2.07-6.19)	n.a.	n.a.	n.a.	n.a.

Please note: Dotted lines represent the upper and lower limits of the 95% confidence intervall; n.a. if <50 cases were at risk.
CI: confidence interval.

© LROI 2026 | S073B

Reasons for revision within 10 years

TABLE Reasons for revision within ten years in patients that underwent a shoulder revision arthroplasty after a primary shoulder hemiarthroplasty in the Netherlands in 2014-2025 (n=272)

Reasons for revision	Proportion (%)
Progression of osteoarthritis	31.99
Cuff rupture	25.37
Cuff arthropathy	25.37
Infection	12.87
Malalignment	12.87
Instability	11.03
Loosening of humeral component	5.88
Loosening of glenoid component	2.94
Peri-prosthetic fracture	2.21
Other	12.87

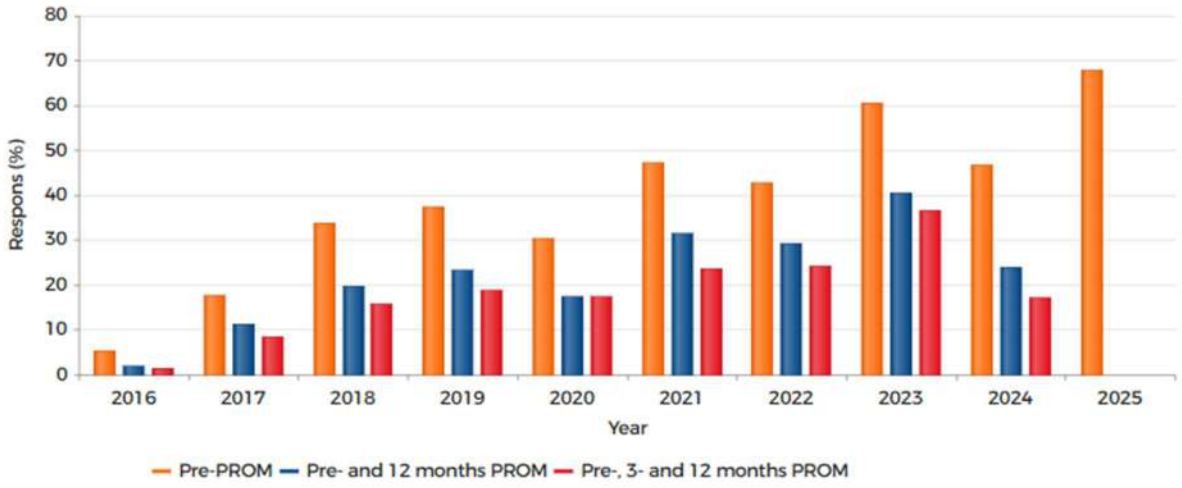
Please note: One patient may have more than one reason of revision.

© LROI 2026 | S074

PROMs

Response

FIGURE Pre-operative, 3 months and 12 months postoperative response percentage of patients who underwent a primary shoulder hemiarthroplasty for osteoarthritis in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Pre-PROM	5.23	17.61	33.83	37.50	30.43	47.37	42.72	60.42	46.59	67.71
Pre- and 12 months PROM	1.96	11.27	19.55	23.21	17.39	31.58	29.13	40.63	23.86	n.a.
Pre-, 3- and 12 months PROM	1.31	8.45	15.79	18.75	17.39	23.68	24.27	36.46	17.05	n.a.
Shoulder hemiarthroplasty (n)	**153**	**142**	**133**	**112**	**92**	**76**	**103**	**96**	**88**	96

Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.

Procedures performed for fracture diagnoses were excluded from the response analysis because preoperative PROMs are generally not collected in this patient group.

PROM: patient reported outcome measure.

© LROI 2026 | S077A
© LROI 2026 | S077B

Patient characteristics

Responders vs non-responders

TABLE Patient characteristics of PROM responders and non-responders after primary shoulder hemiarthroplasty in the Netherlands in 2020-2024

	Non-responder	Pre- and 12-month PROM respondents	Total
N(%)	**598 (81.2)**	**138 (18.8)**	**736**
Mean age (years) (SD)	62.7 (11.9)	61.2 (11.6)	62.4 (11.8)
Age (years) (%)			
<50	11	16	12
50-59	28	25	27
60-69	34	36	34
70-79	19	20	19
>80	8	4	7
Sex (%)			
Male	38	43	39
Female	62	57	61
ASA class (%)			
ASA I	10	15	11
ASA II	61	64	61
ASA III-IV	29	20	27
Type of hospital (%)			
General	83	75	81
UMC	9	3	8
Private	9	22	11
Diagnosis (%)			
Osteoarthritis	46	65	49
Cuff arthropathy	1	0	1
Fracture	27	6	23
Late post-traumatic	8	11	9
Unrecoverable cuff rupture	0	0	
Other	18	18	18
Mean BMI (kg/m2) (SD)	28.4 (5.5)	28.3 (4.7)	28.4 (5.3)
Revision within 1 yr (%)			
No revision within 1 yr	96	94	96
Revision within 1 yr	4	6	4

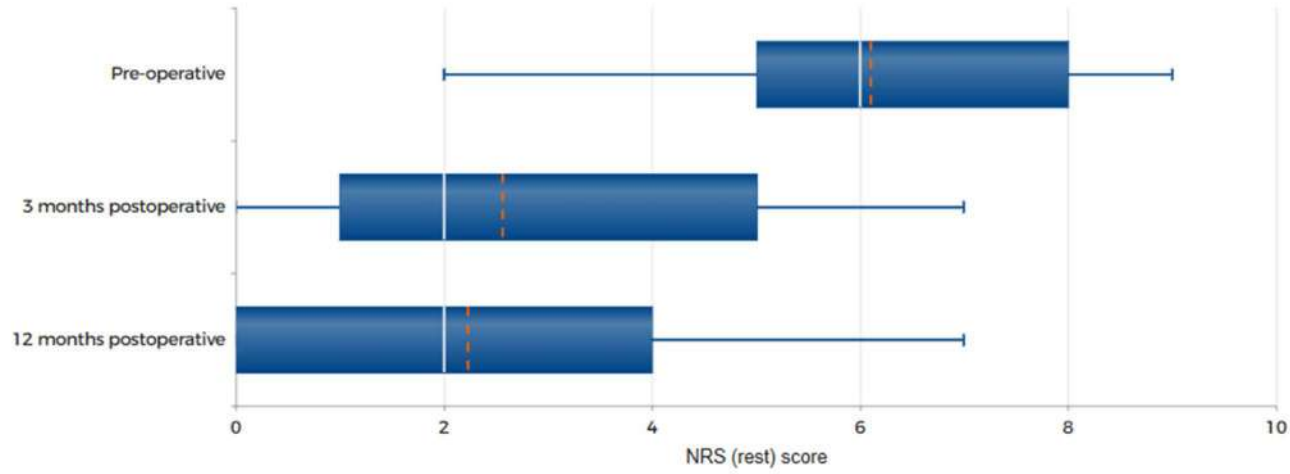
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | S078

Outcomes

NRS (rest)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (rest) scores of patients who underwent a primary shoulder hemiarthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S079A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (rest) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hemi shoulder arthroplasty	112	6.00 (5.00-8.00)	2.00 (1.00-5.00)	2.00 (0.00-4.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

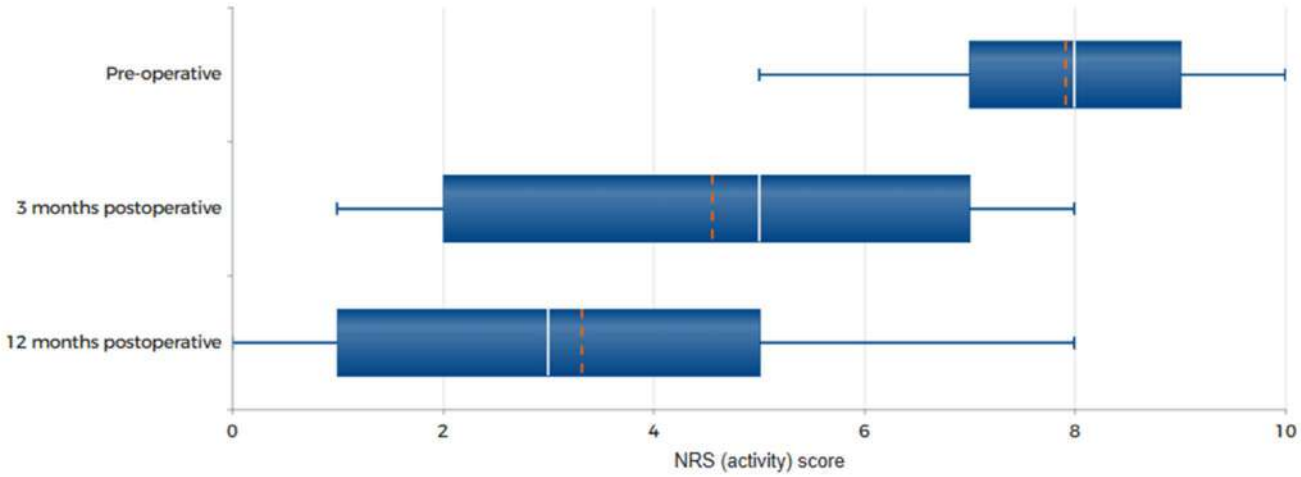
IQR: interquartile range

© LROI 2026 | S079B

The NRS (rest) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

NRS (activity)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (activity) scores of patients who underwent a primary shoulder hemiarthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S080A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (activity) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hemi shoulder arthroplasty	112	8.00 (7.00-9.00)	5.00 (2.00-7.00)	3.00 (1.00-5.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

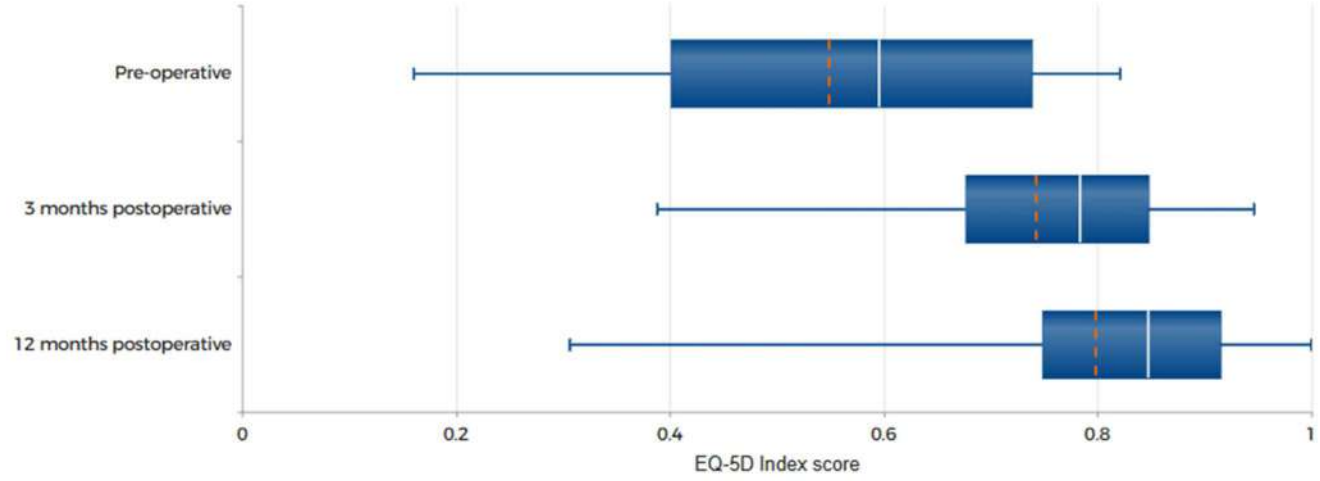
IQR: interquartile range

© LROI 2026 | S080B

The NRS (activity) score measures pain during activity. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

EQ-5D index score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D Index scores of patients who underwent a primary shoulder hemiarthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S081A

		Pre-operative	3 months postoperative	12 months postoperative
EQ-5D Index score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hemi shoulder arthroplasty	113	0.60 (0.40-0.74)	0.78 (0.68-0.85)	0.85 (0.75-0.92)

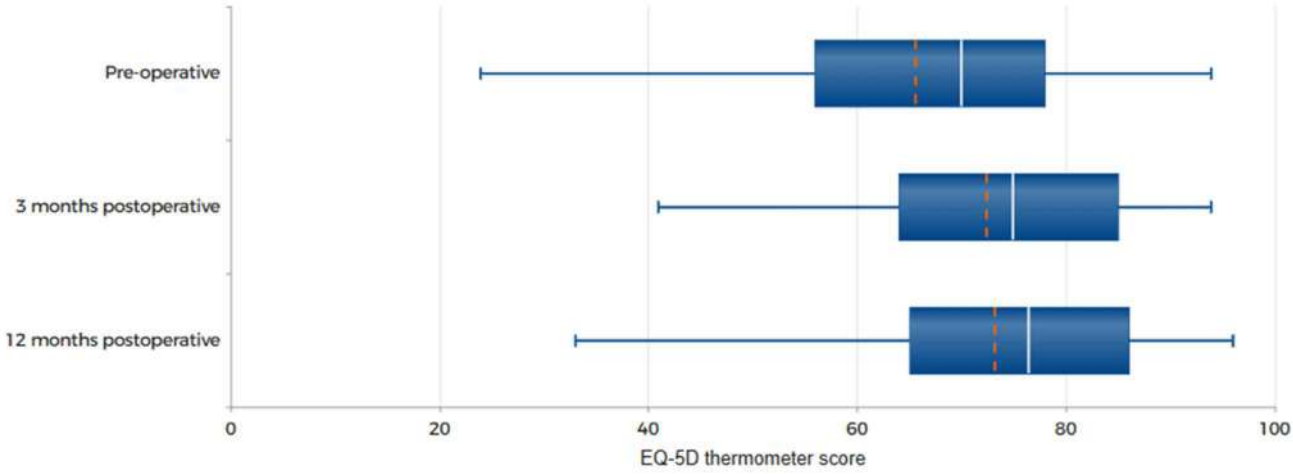
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S081B

The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.

EQ-5D thermometer

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D thermometer scores of patients who underwent a primary shoulder hemiarthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S082A

		Pre-operative	3 months postoperative	12 months postoperative
EQ-5D thermometer score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hemi shoulder arthroplasty	113	70.00 (56.00-78.00)	75.00 (64.00-85.00)	76.50 (65.00-86.00)

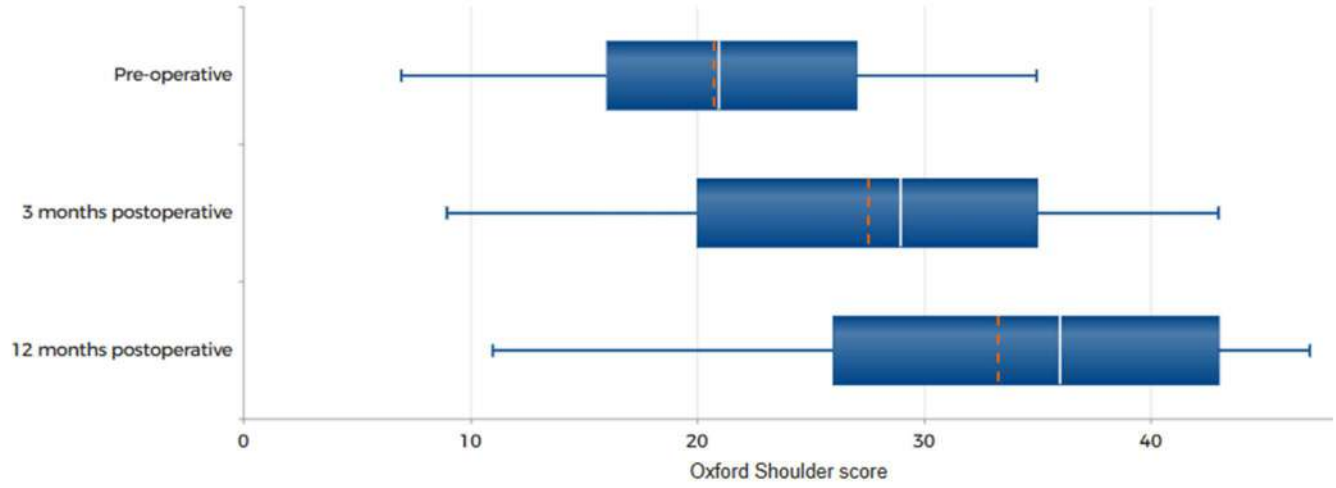
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S082B

The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation.

Oxford Shoulder score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative Oxford Shoulder scores of patients who underwent a primary shoulder hemiarthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S083A

		Pre-operative	3 months postoperative	12 months postoperative
Oxford Shoulder Score	N	Median (IQR)	Median (IQR)	Median (IQR)
Hemi shoulder arthroplasty	113	21.00 (16.00-27.00)	29.00 (20.00-35.00)	36.00 (26.00-43.00)

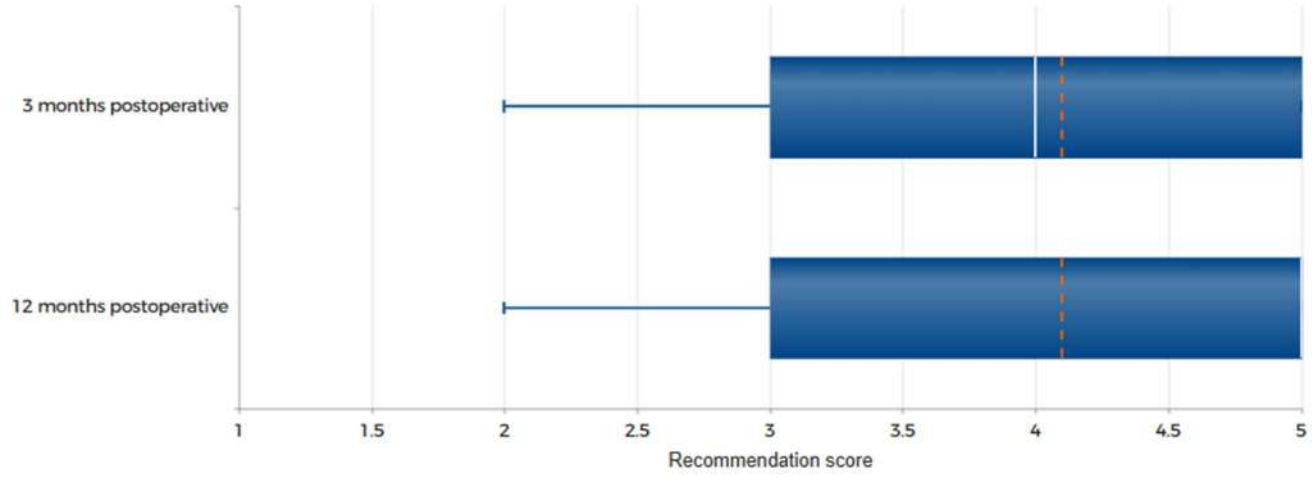
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S083B

The Oxford Shoulder score measures the physical functioning and pain of patients with osteoarthritis to the shoulder. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 the most functional ability.

Recommendation score

FIGURE Boxplots of 3 months and 12 months postoperative recommendation scores of patients who underwent a primary shoulder hemiarthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S084A

		3 months postoperative	12 months postoperative
Recommendation score	N	Median (IQR)	Median (IQR)
Hemi shoulder arthroplasty	110	4.00 (3.00-5.00)	5.00 (3.00-5.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S085B

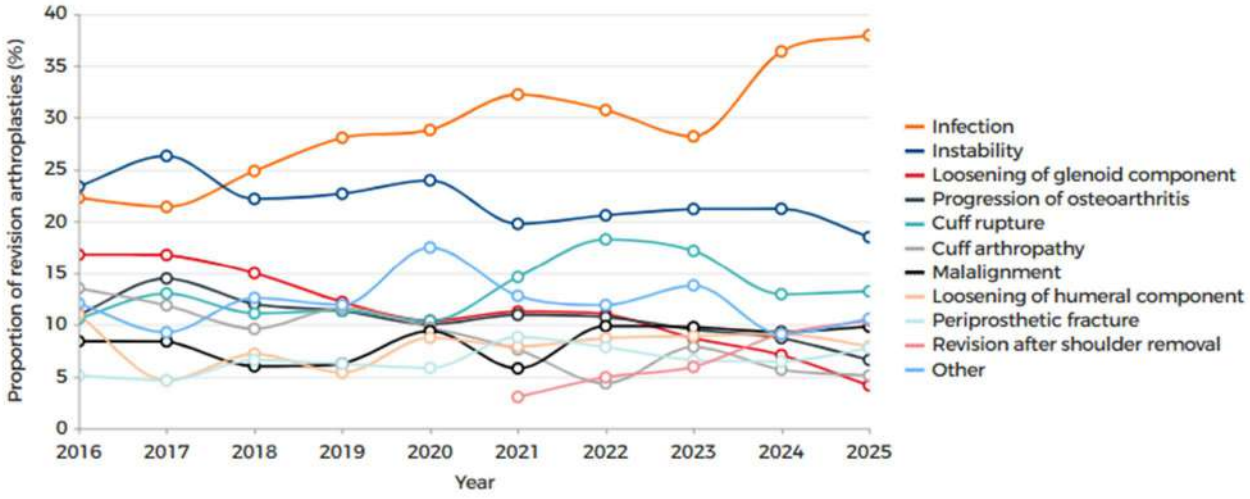
The recommendation score measures to what extend the patient would recommend joint replacement to a friend or relative. The score has a range of 1.0 to 5.0, with 1.0 representing totally disagreement and 5.0 representing totally agreement.

Shoulder revision artroplasty

Revision characteristics

Reasons for revision

FIGURE Trend (proportion [%] per year) in reasons for revision in patients who underwent a shoulder revision arthroplasty in the Netherlands in 2016-2025



© LROI 2026 | S086A

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Shoulder revision arthroplasty (n)	**274**	**346**	**334**	**353**	**309**	**329**	**345**	**472**	**495**	**530**	**3,787**
Reasons for revision; Proportion (%)											
Infection	22.26	21.39	24.85	28.05	28.80	32.22	30.72	28.18	36.36	37.92	29.89
Instability	23.36	26.30	22.16	22.66	23.95	19.76	20.58	21.19	21.21	18.49	21.71
Loosening of glenoid component	10.58	13.01	11.08	11.33	10.36	14.59	18.26	17.16	12.93	13.21	13.44
Progression of osteoarthritis	16.79	16.76	14.97	12.18	10.36	11.25	11.01	8.69	7.07	4.15	10.62
Cuff rupture	10.95	14.45	11.98	11.33	10.03	10.94	10.72	9.53	8.69	6.60	10.22
Malalignment	8.39	8.38	5.99	6.23	9.39	5.78	9.86	9.75	9.29	9.81	8.45
Cuff arthropathy	13.50	11.85	9.58	11.61	9.71	7.60	4.35	7.84	5.66	5.09	8.27
Loosening of humeral component	10.95	4.62	7.19	5.38	8.74	7.90	8.70	8.90	9.09	7.92	7.95
Peri-prosthetic fracture	5.11	4.62	6.59	6.23	5.83	8.81	7.83	6.57	6.46	7.74	6.65
Revision after shoulder removal							4.93	5.93	9.09	10.38	
Other	12.04	9.25	12.57	11.90	17.48	12.77	11.88	13.77	9.09	10.57	11.94

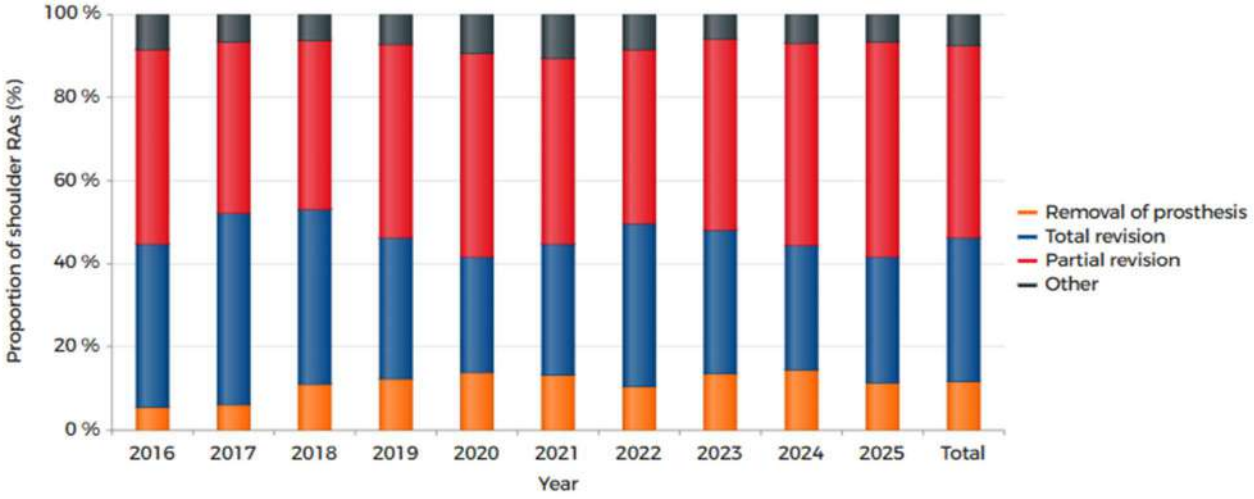
Please note: Removal after shoulder revision was not registered before 2022.

More than one reason for revision may be registered for one revision procedure. As such, the total proportion is over 100%.

© LROI 2026 | S086B

Type of revision

FIGURE Trend (proportion [%] per year) in type of revision in shoulder revision arthroplasties in the Netherlands in 2016-2025



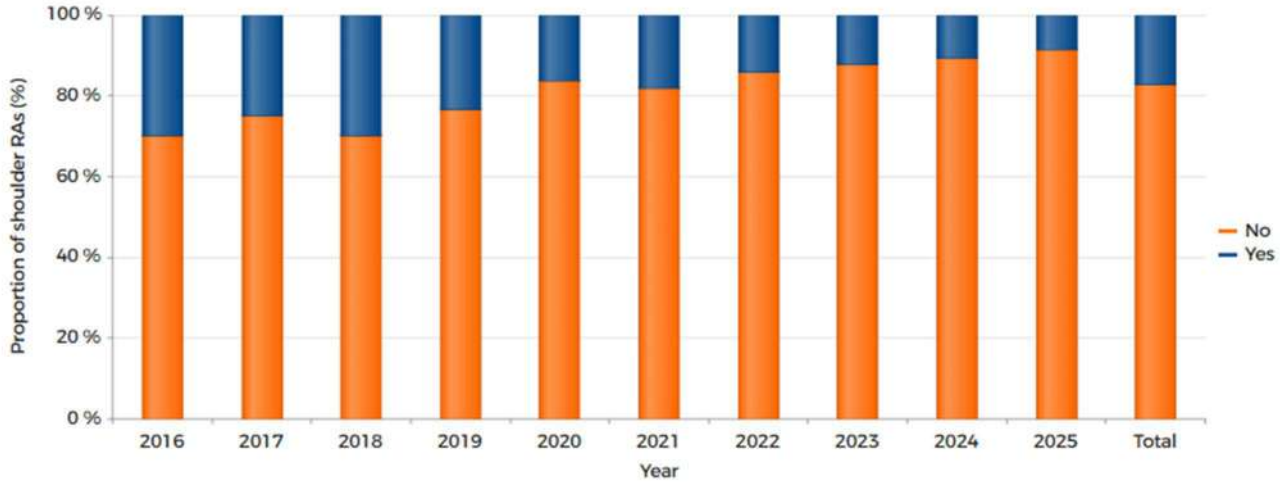
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Removal of prosthesis	5.70	6.33	11.21	12.36	13.77	13.41	10.53	13.56	14.66	11.41	11.61
Total revision	39.16	45.78	42.06	33.91	27.87	31.40	39.18	34.75	29.94	30.23	34.87
Partial revision	46.77	41.27	40.50	46.55	48.85	44.51	41.81	45.76	48.47	51.71	46.03
Other	8.37	6.63	6.23	7.18	9.51	10.67	8.48	5.93	6.92	6.65	7.48
Total (n)	**263**	**332**	**321**	**348**	**305**	**328**	**342**	**472**	**491**	**526**	**3,728**

RA: revision arthroplasty

© LROI 2026 | S087

Conversion to TSA

FIGURE Trend (proportion [%] per year) in conversion of a shoulder hemiprosthesis to a total (anatomical or reverse) shoulder arthroplasty in the Netherlands in 2016-2025



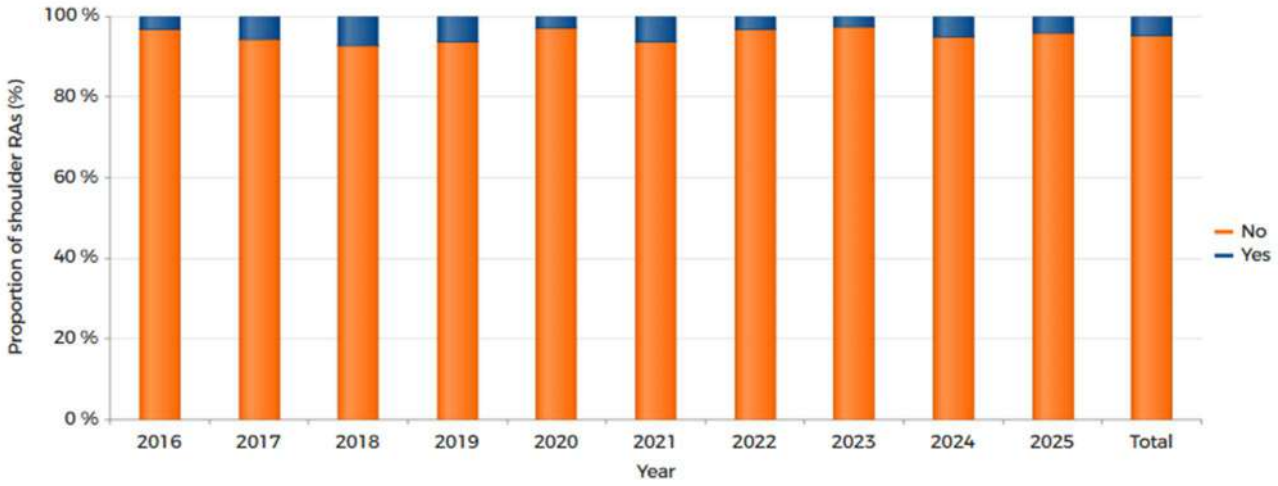
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	70.24	75.23	70.13	76.67	83.89	82.05	86.01	87.87	89.33	91.52	82.71
Yes	29.76	24.77	29.87	23.33	16.11	17.95	13.99	12.13	10.67	8.48	17.29
Total (n)	**252**	**323**	**298**	**330**	**298**	**312**	**336**	**470**	**478**	**507**	**3,604**

RA: revision arthroplasty

© LROI 2026 | S088

Conversion to hemi

FIGURE Trend (proportion [%] per year) in conversion of a total (anatomical or reverse) shoulder arthroplasty to a shoulder hemiprosthesis in the Netherlands in 2016-2025



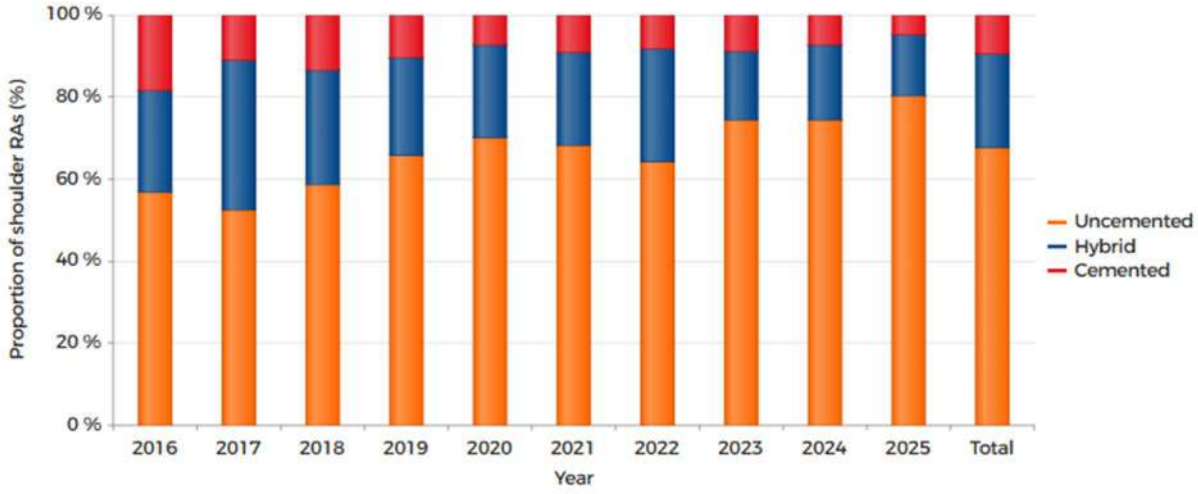
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	96.76	94.29	92.81	93.58	96.94	93.55	96.71	97.22	94.76	95.69	95.30
Yes	3.24	5.71	7.19	6.42	3.06	6.45	3.29	2.78	5.24	4.31	4.70
Total (n)	**247**	**315**	**292**	**327**	**294**	**310**	**334**	**468**	**477**	**510**	**3,574**

RA: revision arthroplasty

© LROI 2026 | S089

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in shoulder revision arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Uncemented	57.03	52.50	58.64	65.80	70.23	68.20	64.14	74.45	74.58	80.26	67.83
Hybrid	24.50	36.56	27.80	23.78	22.52	22.61	27.63	16.71	18.05	15.02	22.75
Cemented	18.47	10.94	13.56	10.42	7.25	9.19	8.22	8.85	7.36	4.72	9.41
Total (n)	**249**	**320**	**295**	**307**	**262**	**283**	**304**	**407**	**421**	**466**	**3,314**

RA: revision arthroplasty

© LROI 2026 | S090

Most frequently registered components

TABLE The most frequently registered humeral stems, humeral heads, humeral liners, glenoid baseplates, glenospheres and metaphyses in shoulder revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Humeral stem (n)	**128**	**145**	**182**	**176**	**199**
Name; Proportion (%)					
Delta X-tend	36.72	42.07	36.26	38.07	36.68
Aequalis Flex Revive	10.16	5.52	14.84	10.80	13.07
Global Unite	7.81	7.59	4.40	6.82	11.06
Aequalis Ascend Flex	7.03	13.79	10.44	7.39	8.04
Univers Revers	1.56	1.38	3.30	3.98	5.53
Comprehensive Mini	4.69	4.14	4.40	7.39	5.53
Aequalis Ascend Flex Cemented	3.91	8.97	8.24	9.09	5.53
SMR stem Cementless	4.69	0.00	4.40	0.57	5.03
Affinis Inverse	3.13	2.76	0.55	2.84	4.02
Affinis Fracture	0.78	0.69	0.00	0.00	1.51
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Humeral head (n)	**33**	**31**	**35**	**35**	**37**
Name; Proportion (%)					
Aequalis Ascend Flex	27.27	41.94	22.86	11.43	18.92
Global AP	18.18	19.35	25.71	37.14	13.51
Comprehensive	0.00	6.45	8.57	8.57	13.51
SMR head	12.12	3.23	0.00	11.43	10.81
Aequalis humerus kop	6.06	0.00	5.71	8.57	10.81
Affinis Fracture	3.03	3.23	2.86	2.86	5.41
Univers Revers	0.00	0.00	0.00	0.00	5.41
Global Icon	0.00	0.00	2.86	5.71	5.41
SMR CTA head	3.03	6.45	8.57	2.86	5.41
MUTARS	0.00	0.00	0.00	0.00	5.41
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Humeral liner (n)	**198**	**226**	**287**	**317**	**387**
Name; Proportion (%)					
Delta X-tend	51.52	53.54	43.90	46.37	50.39
Aequalis Ascend Flex	16.67	19.91	24.39	21.14	23.00
SMR reversed liner	2.53	0.88	5.57	4.10	6.98
Comprehensive	9.09	8.41	7.67	11.36	4.91
Univers Revers	2.02	0.88	2.79	4.73	3.88
Affinis Inverse	1.52	1.77	1.05	3.47	3.10
Equinoxe	3.03	3.54	3.48	2.84	2.84
Aequalis Reversed Fractuur	3.03	3.10	3.83	1.89	1.81
Anatomical Inverse Humeral Poly Inlays	3.03	2.21	1.74	1.26	1.29
Comprehensive Prolong	0.00	0.00	0.00	0.00	0.78

Year	2021	2022	2023	2024	2025
Glenosphere (n)	**163**	**180**	**262**	**286**	**340**
Name; Proportion (%)					
Delta X-tend	39.26	43.89	37.40	41.26	48.53
Perform Reversed	10.43	12.78	17.94	13.99	15.00
Aequalis Reversed II	13.50	18.89	15.27	12.59	10.29
SMR reversed head	3.68	2.78	6.11	5.94	8.24
Comprehensive	9.82	7.22	9.16	12.94	5.88
Univers Revers	3.68	2.22	3.82	4.20	3.53
Affinis Inverse Vitamys	0.61	1.11	0.38	2.45	2.35
Equinoxe	2.45	2.22	2.67	1.40	2.06
TM Reverse Glenoid Heads	5.52	1.11	2.29	2.45	0.88
Comprehensive Versa-Dial	0.00	0.00	0.00	0.00	0.88
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Metaphysis (n)	**115**	**127**	**163**	**189**	**216**
Name; Proportion (%)					
Aequalis Ascend Flex	27.83	31.50	37.42	37.57	40.74
Delta X-tend	25.22	27.56	23.93	22.22	21.76
Comprehensive	17.39	15.75	14.72	20.11	12.04
SMR reversed body	5.22	2.36	7.98	3.17	6.48
Univers Revers	1.74	1.57	4.91	5.29	6.02
Equinoxe	5.22	3.15	3.68	2.65	3.70
Anatomical inverse Humeral Cups	5.22	3.94	3.07	2.12	2.31
Global Unite Fracture	0.87	3.15	0.00	1.06	1.85
Affinis Fracture Inverse	0.87	0.79	0.00	0.00	1.39
SMR reversed body extender	0.00	0.00	1.84	3.17	0.93
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Glenoid baseplate (n)	**117**	**128**	**163**	**169**	**189**
Name; Proportion (%)					
Delta X-tend	45.30	50.78	40.49	41.42	47.62
Perform Reversed	9.40	9.38	19.63	17.16	13.23
Comprehensive	11.97	8.59	13.50	17.75	11.64
Aequalis Reversed II	13.68	17.97	14.72	8.88	6.88
SMR uncemented glenoid	5.13	1.56	1.84	2.96	5.82
Univers Revers	0.00	1.56	2.45	4.14	5.29
Affinis Inverse	4.27	3.13	0.61	1.18	4.23
SMR Axioma baseplate	0.00	0.00	1.23	1.78	2.65
Equinoxe	1.71	2.34	2.45	1.78	1.59
Universal Glenoid	2.56	0.78	1.23	1.18	1.06

© LROI 2026 | S091

Most frequently registered bone cement

TABLE The most frequently registered types of bone cement by type of mixing system used during shoulder revision arthroplasties in the Netherlands in 2021-2025

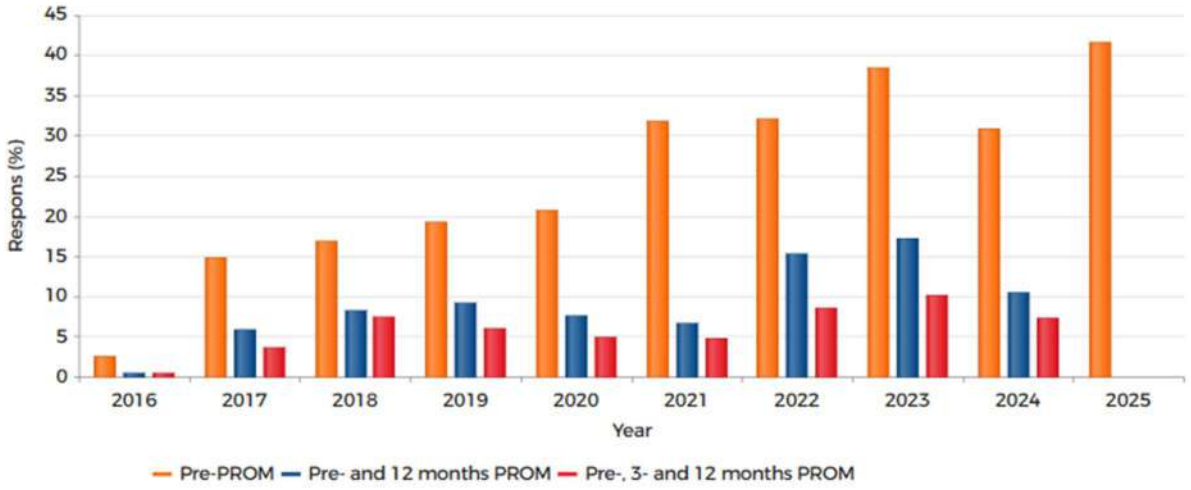
Year	2021	2022	2023	2024	2025
Bone cement used (n)	**76**	**91**	**86**	**84**	**68**
Cement name; Proportion (%)					
COPAL G+C	43.42	39.56	44.19	39.29	45.59
PALACOS R+G	32.89	27.47	31.40	33.33	27.94
Refobacin Bone Cement R	15.79	14.29	15.12	11.90	13.24
COPAL G+V	2.63	3.30	4.65	10.71	5.88
PALACOS MV+G	0.00	3.30	1.16	1.19	2.94
Refobacin Revision	3.95	4.40	2.33	2.38	2.94
Simplex ABC EC	0.00	0.00	0.00	0.00	1.47

© LROI 2026 | S092

PROMs

Response

FIGURE Pre-operative, 3 months and 12 months postoperative response percentage of patients who underwent a shoulder revision in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Pre-PROM	2.55	14.80	17.00	19.22	20.75	31.73	32.03	38.42	30.77	41.55
Pre- and 12 months PROM	0.51	5.78	8.30	9.25	7.55	6.64	15.30	17.17	10.42	n.a.
Pre-, 3- and 12 months PROM	0.51	3.61	7.51	6.05	4.91	4.80	8.54	10.08	7.20	n.a.
Shoulder revision (n)	**196**	**277**	**253**	**281**	**265**	**271**	**281**	**367**	**403**	**426**

Please note: The 12 months postoperative PROMs response percentage is not (yet) available for 2025.

PROM: patient reported outcome measure.

© LROI 2026 | S093A
© LROI 2026 | S093B

Patient characteristics

Responders vs non-responders

TABLE Patient characteristics of PROM responders and non-responders after shoulder revision arthroplasty in the Netherlands in 2020-2024

	Non-responder	Pre- and 12-month PROM respondents	Total
N(%)	**1,757 (90.4)**	**186 (9.6)**	**1,943**
Mean age (years) (SD)	69.3 (9.9)	65.4 (9.9)	69 (10)
Age (years) (%)			
<50	3	6	4
50-59	12	23	13
60-69	30	32	30
70-79	41	32	40
>80	14	8	13
Sex (%)			
Male	41	44	42
Female	59	56	58
ASA class (%)			
ASA I	4	9	5
ASA II	53	69	55
ASA III-IV	43	22	41
Type of hospital (%)			
General	93	88	93
UMC	4	1	4
Private	3	11	4
Mean BMI (kg/m2) (SD)	29 (5.9)	29.1 (5.5)	29 (5.9)

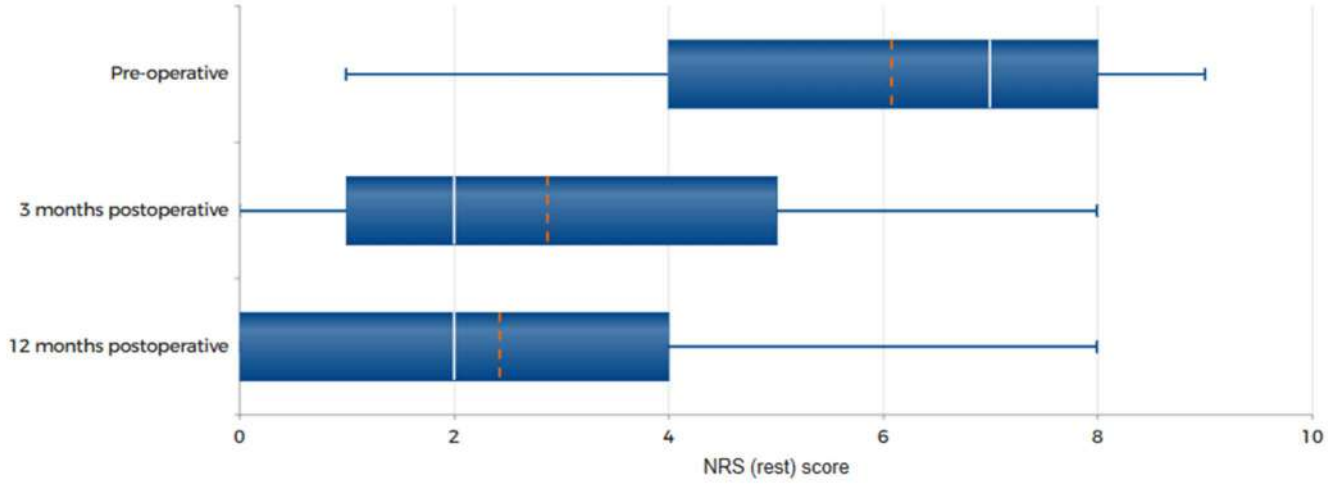
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation

© LROI 2026 | S094

Outcomes

NRS (rest)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (rest) scores of patients who underwent a shoulder revision in the Netherlands in 2020-2024



© LROI 2026 | S095A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (rest) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Shoulder revision arthroplasty	114	7.00 (4.00-8.00)	2.00 (1.00-5.00)	2.00 (0.00-4.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

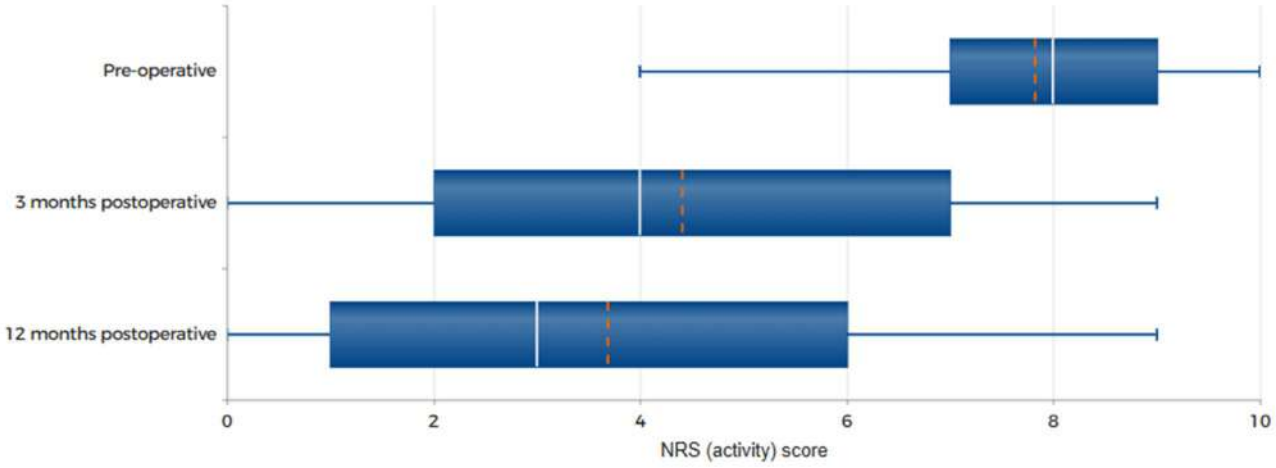
IQR: interquartile range

© LROI 2026 | S095B

The NRS (rest) score measures pain during rest. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

NRS (activity)

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative NRS (activity) scores of patients who underwent a shoulder revision in the Netherlands in 2020-2024



© LROI 2026 | S096A

		Pre-operative	3 months postoperative	12 months postoperative
NRS (activity) score	N	Median (IQR)	Median (IQR)	Median (IQR)
Shoulder revision arthroplasty	114	8.00 (7.00-9.00)	4.00 (2.00-7.00)	3.00 (1.00-6.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

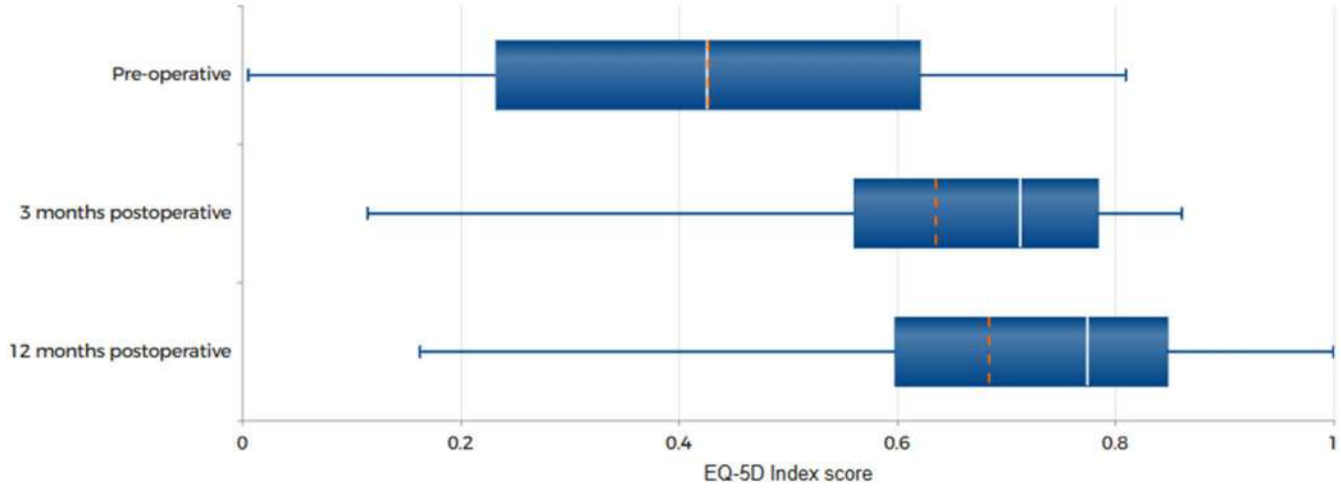
IQR: interquartile range

© LROI 2026 | S096B

The NRS (activity) score measures pain during activity. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain.

EQ-5D index score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D Index scores of patients who underwent a shoulder revision in the Netherlands in 2020-2024



© LROI 2026 | S097A

EQ-5D Index score	N	Pre-operative Median (IQR)	3 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Shoulder revision arthroplasty	114	0.43 (0.23-0.62)	0.71 (0.56-0.78)	0.78 (0.60-0.85)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

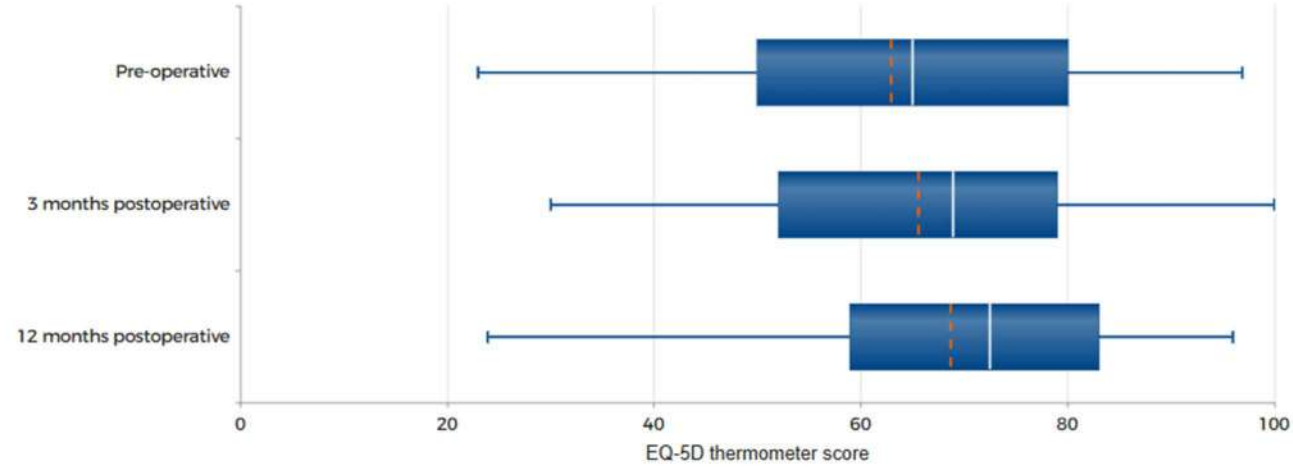
IQR: interquartile range

© LROI 2026 | S097B

The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.

EQ-5D thermometer

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative EQ-5D thermometer scores of patients who underwent a shoulder revision in the Netherlands in 2020-2024



© LROI 2026 | S098A

EQ-5D thermometer score	N	Pre-operative Median (IQR)	3 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Shoulder revision arthroplasty	113	65.00 (50.00-80.00)	69.00 (52.00-79.00)	72.50 (59.00-83.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.

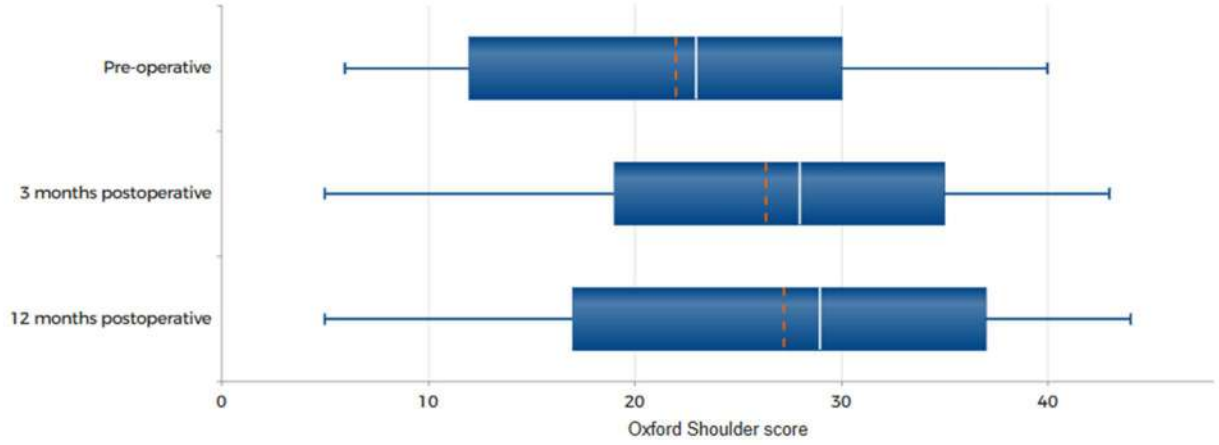
IQR: interquartile range

© LROI 2026 | S098B

The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation.

Oxford Shoulder score

FIGURE Boxplots of pre-operative, 3 months and 12 months postoperative Oxford Shoulder scores of patients who underwent a shoulder revision in the Netherlands in 2020-2024



© LROI 2026 | S099A

Oxford Shoulder Score	N	Pre-operative Median (IQR)	3 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Shoulder revision arthroplasty	112	23.00 (12.00-30.00)	28.00 (19.00-35.00)	29.00 (17.00-37.00)

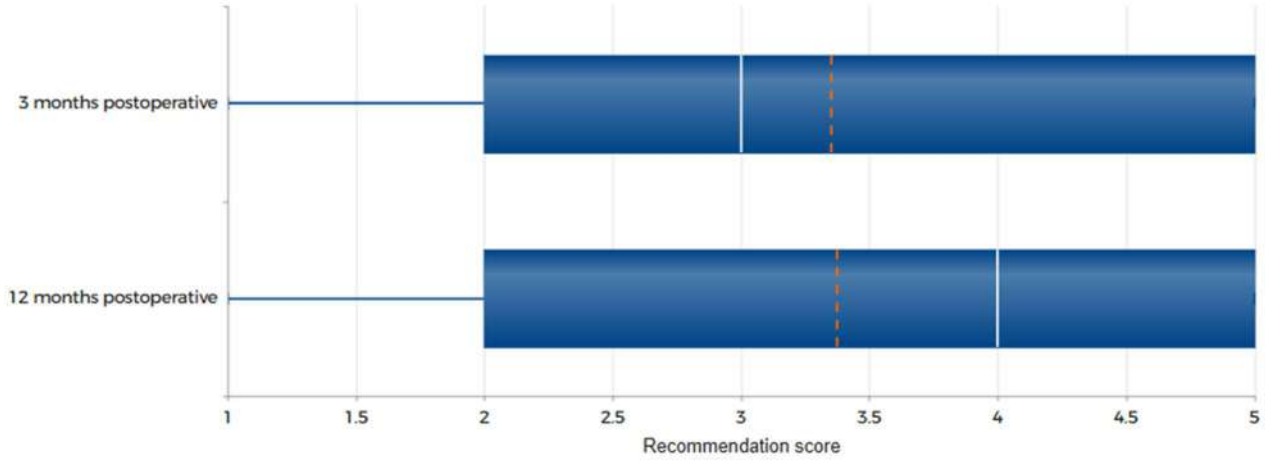
Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S099B

The Oxford Shoulder score measures the physical functioning and pain of patients with osteoarthritis to the shoulder. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 the most functional ability.

commendation score

FIGURE Boxplots of 3 months and 12 months postoperative recommendation scores of patients who underwent a shoulder revision arthroplasty in the Netherlands in 2020-2024



© LROI 2026 | S100A

Recommendation score	N	3 months postoperative Median (IQR)	12 months postoperative Median (IQR)
Shoulder revision arthroplasty	139	3.00 (2.00-5.00)	4.00 (2.00-5.00)

Please note: Boxplots show the distribution of preoperative and postoperative PROM scores. The line in the box represents the median (middle score), and the dashed line indicates the mean (average score). The IQR (interquartile range) shows the middle 50% of scores (25th-75th percentile). The whiskers represent the 5th and 95th percentiles, indicating the range in which 90% of patient scores fall.
IQR: interquartile range

© LROI 2026 | S100B

The recommendation score measures to what extend the patient would recommend joint replacement to a friend or relative. The score has a range of 1.0 to 5.0, with 1.0 representing totally disagreement and 5.0 representing totally agreement.

Elbow arthroplasty

Numbers

Registered procedures

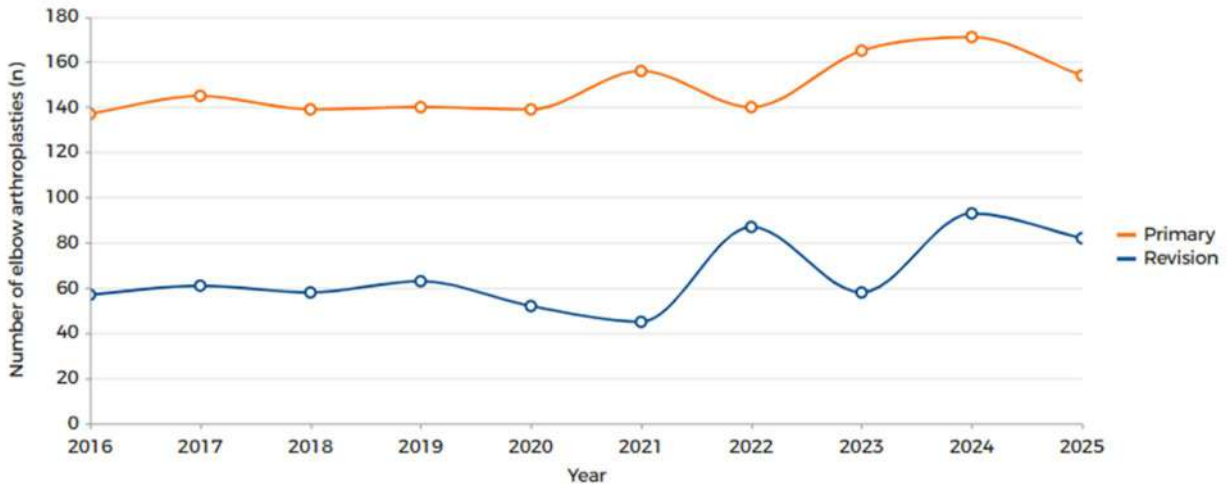
TABLE Number of registered elbow arthroplasties per year of surgery (2014-2025) in the LROI in April 2026

Year of surgery	Total elbow arthroplasty	Distal hemihumeral arthroplasty	Radial head arthroplasty	Radiocapitellar arthroplasty	Other	Unknown/ missing	Revision arthroplasty	Total
2014	72	5	23	4	0	4	38	**146**
2015	78	4	41	1	0	1	67	**192**
2016	67	2	46	12	2	8	57	**194**
2017	67	1	41	13	0	23	61	**206**
2018	73	5	54	2	2	3	58	**197**
2019	79	2	57	0	0	2	63	**203**
2020	78	3	55	0	2	1	52	**191**
2021	74	7	75	0	0	0	45	**201**
2022	74	2	63	1	0	0	87	**227**
2023	85	9	69	0	2	0	58	**223**
2024	72	4	91	0	2	2	93	**264**
2025	72	4	72	0	1	5	82	**236**
Total (n)	**891**	**48**	**687**	**33**	**11**	**49**	**761**	**2,480**

© LROI 2026 | E001

Type of procedures

FIGURE Number of primary elbow arthroplasties and elbow revision arthroplasties registered in the LROI in the Netherlands in 2016-2025

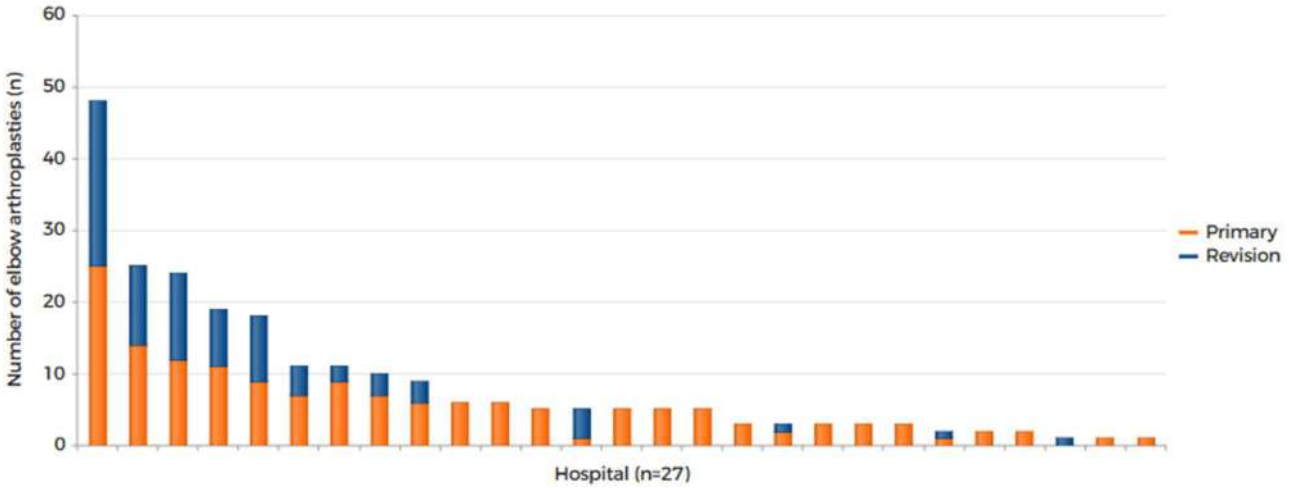


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Primary	137	145	139	140	139	156	140	165	171	154	**1,486**
Revision	57	61	58	63	52	45	87	58	93	82	**656**
Total (n)	**194**	**206**	**197**	**203**	**191**	**201**	**227**	**223**	**264**	**236**	**2,142**

© LROI 2026 | E002

Type of procedure per hospital

FIGURE Number of primary elbow arthroplasties and elbow revision arthroplasties per hospital in the Netherlands in 2025 (n=236)



Primary elbow arthroplasty

Patient characteristics

By prosthesis

TABLE Patient characteristics of all patients with a registered primary elbow arthroplasty by type of elbow arthroplasty in the Netherlands in 2025

	Total arthroplasty	Radial head arthroplasty	Total
N(%)	**76 (51.4)**	**72 (48.6)**	**154**
Mean age (years) (SD)	68.8 (12.1)	60.3 (14.5)	64.5 (13.7)
Age (years) (%)			
<50	5	17	10
50-59	16	24	20
60-69	25	36	32
70-79	34	17	25
>80	20	7	13
Sex (%)			
Male	22	38	31
Female	78	63	69
ASA class (%)			
ASA I	7	18	12
ASA II	57	57	56
ASA III-IV	37	25	32
Type of hospital (%)			
General	78	83	79
UMC	22	17	21
Private	0	0	0
Diagnosis (%)			
Fracture	17	63	39
Late posttraumatic	29	31	30
Osteoarthritis	20	7	13
Rheumatoid arthritis	25	0	13
Inflammatory arthritis	1	0	1
Osteonecrosis	0	0	0
Hemophilic arthropathy	1	0	1
Tumour	1	0	1
Other	5	0	3
Mean BMI (kg/m2) (SD)	27.6 (4.3)	28.1 (5.3)	27.7 (4.8)
Body Mass Index (kg/m2) (%)			
Underweight (<=18.5)	0	3	1
Normal weight (>18.5-25)	26	24	26
Overweight (>25-30)	46	50	49
Obesity (>30-40)	25	17	21
Morbid obesity (>40)	0	4	2
Smoking (%)			
No	87	86	87
Yes	12	13	13

Total arthroplasty includes distal hemihumeral prostheses (n=4).

One primary elbow arthroplasty had the prosthesis type registered as 'other', and five were missing..

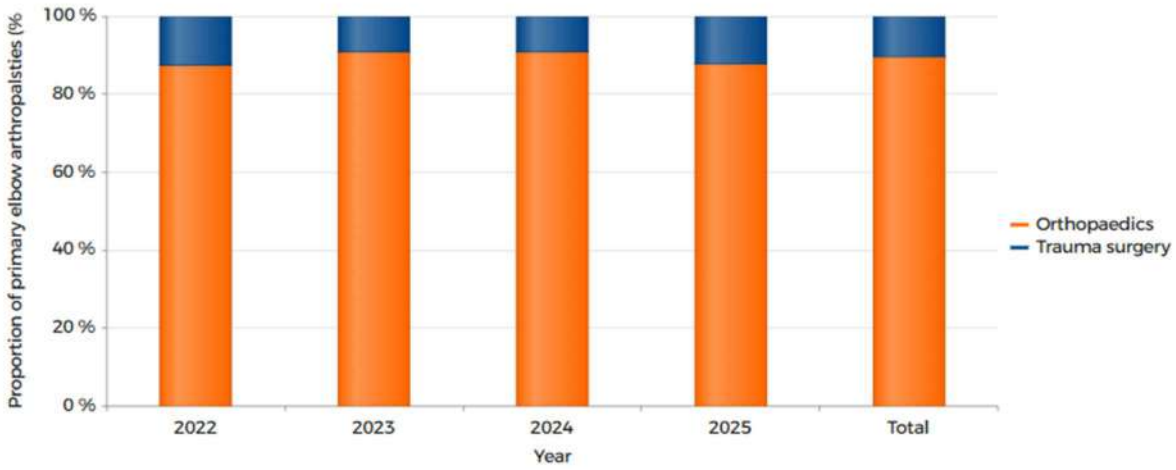
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation.

© LROI 2026 | E004

Procedure characteristics

Specialism

FIGURE Trend (proportion [%] per year) in specialism for performing a primary elbow arthroplasty in the Netherlands in 2022-2025



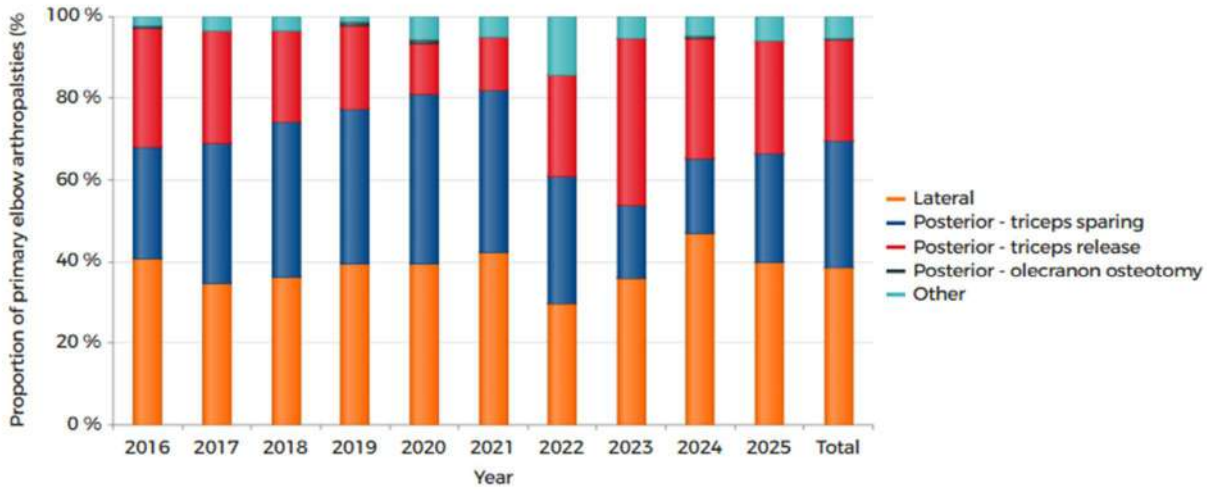
	2022	2023	2024	2025	Total
Orthopaedics	87.60	90.91	91.03	87.92	89.51
Trauma surgery	12.40	9.09	8.97	12.08	10.49
Total (n)	**121**	**165**	**156**	**149**	**591**

Please note: Specialism was not registered before 2022.

© LROI 2026 | E005

Surgical approach

FIGURE Trend (proportion [%] per year) in surgical approach for performing a primary elbow arthroplasty in the Netherlands in 2016-2025



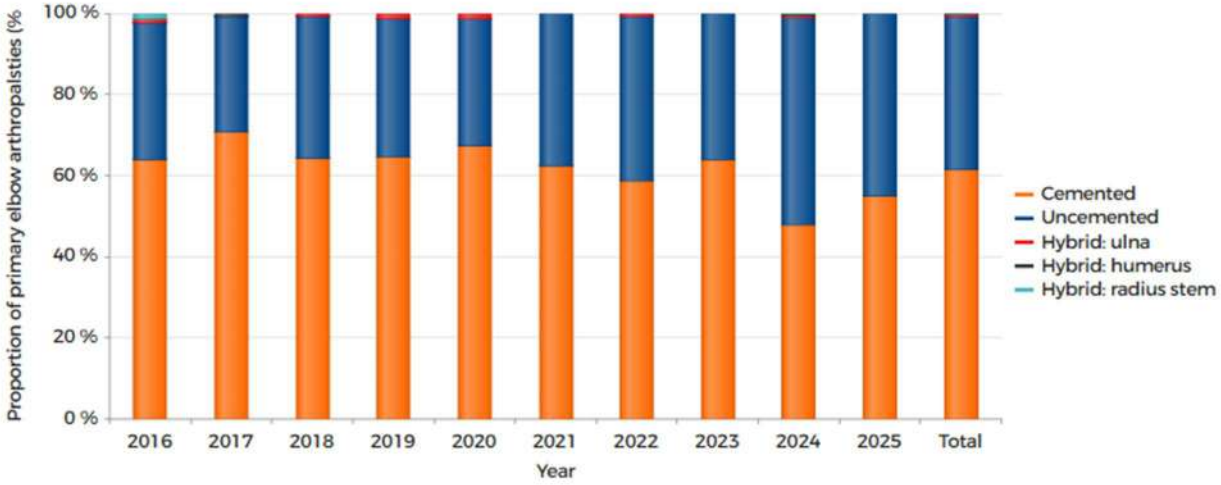
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Lateral	40.74	34.51	36.30	39.42	39.42	42.21	29.71	35.98	46.95	39.73	38.64
Posterior - triceps sparing	27.41	34.51	37.78	37.96	41.61	39.61	31.16	17.68	18.29	26.71	30.85
Posterior - triceps release	28.89	27.46	22.22	20.44	12.41	12.99	24.64	40.85	29.27	27.40	24.93
Posterior - olecranon osteotomy	0.74	0	0	0.73	0.73	0	0	0	0.61	0	0.28
Other	2.22	3.52	3.70	1.46	5.84	5.19	14.49	5.49	4.88	6.16	5.30
Total (n)	**135**	**142**	**135**	**137**	**137**	**154**	**138**	**164**	**164**	**146**	**1,452**

Please note: The registration form was changed in 2022.

© LROI 2026 | E006

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary elbow arthroplasties in the Netherlands in 2016-2025

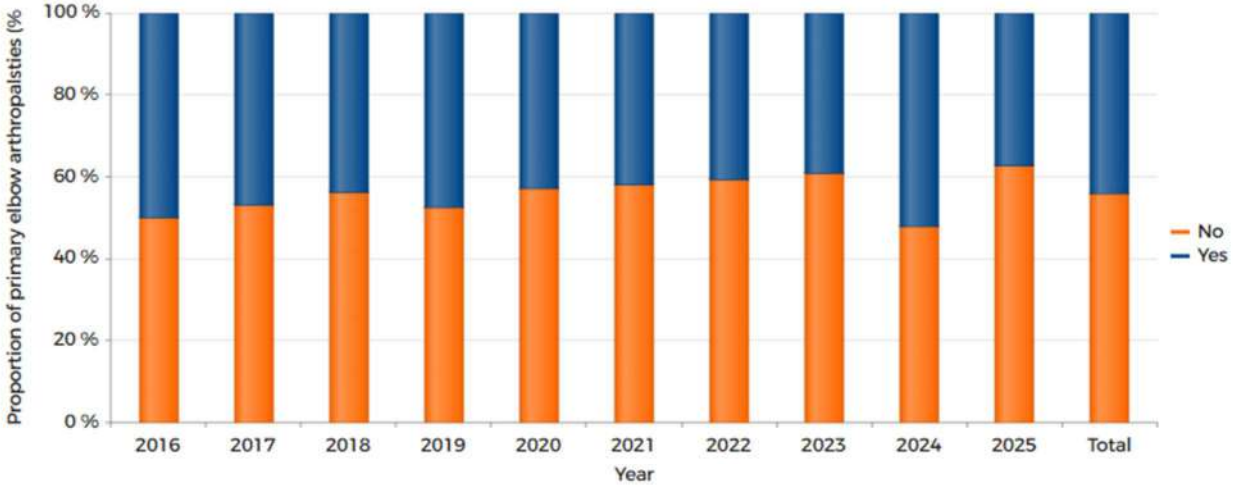


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Cemented	63.91	70.92	64.44	64.49	67.39	62.34	58.82	64.02	47.90	55.03	61.65
Uncemented	33.83	28.37	34.81	34.06	31.16	37.66	40.44	35.98	50.90	44.97	37.53
Hybrid: ulna	0.75	0	0.74	1.45	1.45	0	0.74	0	0.60	0	0.55
Hybrid: humerus	0	0.71	0	0	0	0	0	0	0.60	0	0.14
Hybrid: radius stem	1.50	0	0	0	0	0	0	0	0	0	0.14
Total (n)	**133**	**141**	**135**	**138**	**138**	**154**	**136**	**164**	**167**	**149**	**1,455**

© LROI 2026 | E007

Implantation of radial head

FIGURE Trend (proportion [%] per year) in implantation of radial head component in primary elbow arthroplasties in the Netherlands in 2016-2025

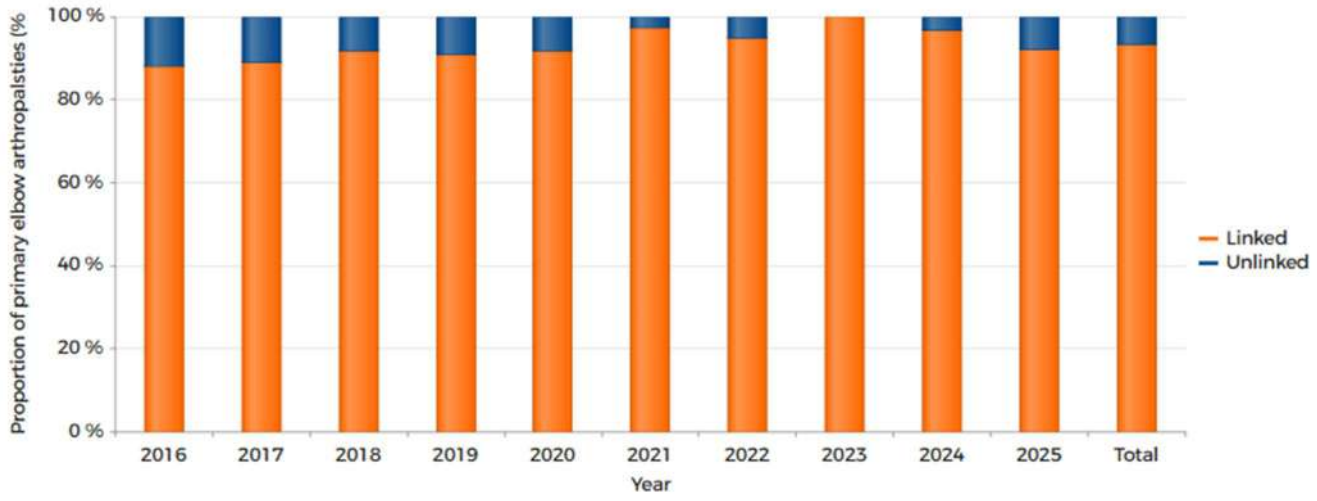


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	50	53.13	56.41	52.67	57.14	58	59.40	60.87	47.90	62.84	55.98
Yes	50	46.88	43.59	47.33	42.86	42	40.60	39.13	52.10	37.16	44.02
Total (n)	**118**	**96**	**117**	**131**	**133**	**150**	**133**	**161**	**167**	**148**	**1,354**

© LROI 2026 | E008

Linked prosthesis

FIGURE Trend (proportion [%] per year) of linked versus unlinked prostheses in primary total elbow arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Linked	88.06	89.06	91.67	91.03	91.89	97.26	95	100	96.77	92.19	93.29
Unlinked	11.94	10.94	8.33	8.97	8.11	2.74	5	0	3.23	7.81	6.71
Total (n)	**67**	**64**	**72**	**78**	**74**	**73**	**60**	**72**	**62**	**64**	**686**

© LROI 2026 | E009

Most frequently registered - total elbow

TABLE The most frequently registered total elbow arthroplasties in primary elbow arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Total elbow arthroplasty (n)	**70**	**67**	**84**	**67**	**64**
Name; Proportion (%)					
Latitude	12.86	11.94	10.71	28.36	43.75
Latitude EV	60.00	46.27	63.10	53.73	35.94
Coonrad/Morrey	17.14	23.88	21.43	13.43	17.19
Discovery	2.86	5.97	3.57	2.99	1.56
Mutars	0.00	1.49	0.00	1.49	1.56

© LROI 2026 | E010

Most frequently registered - radial head

TABLE The most frequently registered radial head arthroplasties in primary elbow arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Radial head arthroplasty (n)	**62**	**51**	**60**	**81**	**62**
Name; Proportion (%)					
RHS	62.90	39.22	41.67	62.96	51.61
Anatomic Radial Head	6.45	33.33	26.67	22.22	24.19
Evolve Radial Head	1.61	3.92	6.67	7.41	11.29
Radial Head Replacement System	3.23	1.96	8.33	2.47	9.68
Align Radial Head	0.00	0.00	0.00	0.00	1.61
ICARA	6.45	9.80	3.33	0.00	1.61

© LROI 2026 | E011

Most frequently registered - types of bone cement

TABLE The registered types of bone cement used during primary elbow arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement used (n)	**82**	**79**	**92**	**78**	**67**
Cement name; Proportion (%)					
PALACOS R+G	29.27	36.71	43.48	44.87	40.30
COPAL G+C	0.00	17.72	25.00	24.36	32.84
Simplex ABC TOBRA	24.39	10.13	5.43	12.82	10.45
PALACOS LV+G	13.41	11.39	11.96	10.26	8.96
Refobacin Bone Cement R	19.51	7.59	7.61	6.41	7.46

© LROI 2026 | E012

Survival

Short term revision

By type of revision within 1 year

TABLE Revision procedures within 1 year after primary elbow arthroplasty by year in the Netherlands in 2014-2024

Procedure year	Number of primary elbow arthroplasties	Number of revisions	Percentage revisions
2014	107	6	5.6%
2015	125	2	1.6%
2016	135	3	2.2%
2017	145	5	3.4%
2018	138	7	5.1%
2019	140	4	2.9%
2020	139	1	0.7%
2021	154	9	5.8%
2022	137	8	5.8%
2023	165	10	6.1%
2024	169	9	5.3%

© LROI 2026 | E013

In 2014-2025, 21 (1.35%) primary elbow arthroplasties were implanted in patients who died within one year after the primary procedure.

Conversion to total elbow arthroplasty

TABLE Conversions from primary non-total elbow arthroplasty to total elbow arthroplasty within 1 year in the period 2014-2024 (n=740)

Number of revision procedures	31
Number of conversions	6
Percentage conversions	19.4 %

© LROI 2026 | E014

Time after primary elbow arthroplasty

TABLE Time after primary elbow arthroplasty until short-term revision in the Netherlands in 2014-2022 (n=1,220)

Time after primary elbow	Percentage revisions (%)
Day 0-29	0.90
Day 30-182	1.39
Day 183-364	1.39
Day 365-730 (second year)	2.13
Day 731-1095 (third year)	1.56

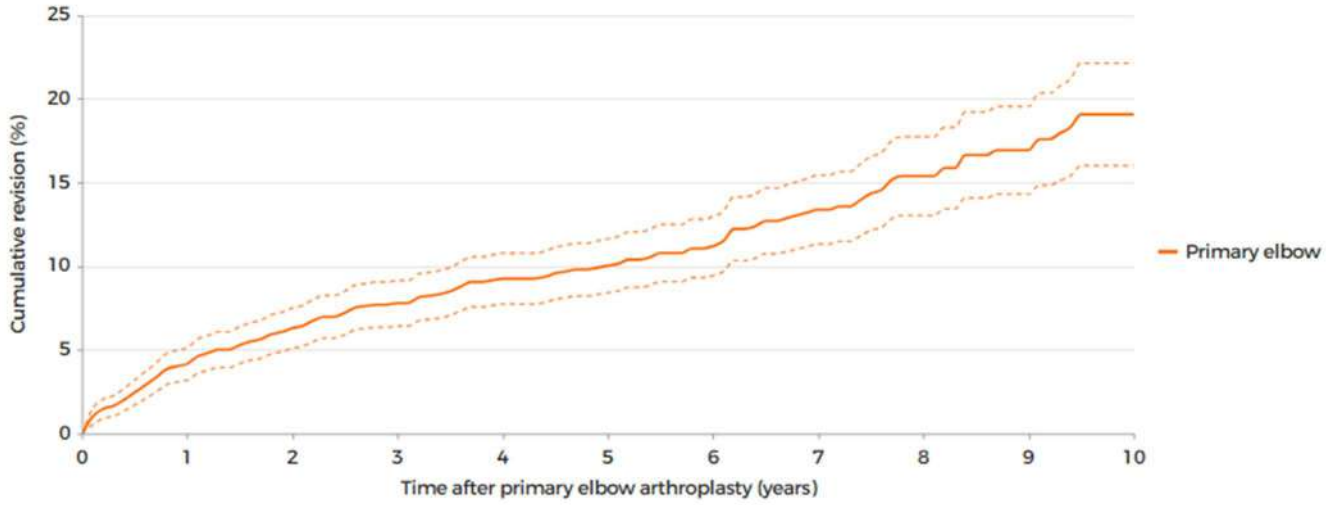
© LROI 2026 | E015

In 2014-2022, 66 (5.4%) primary elbow arthroplasties were implanted in patients who died within three years after the primary procedure.

Long term revision

Overall

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary elbow arthroplasties in the Netherlands in 2014-2025 (n=1,707)



© LROI 2026 | E016A

	1yr	3yr	5yr	7yr	10yr
Primary elbow	4.03 (3.07-4.98)	7.70 (6.35-9.05)	9.91 (8.31-11.50)	13.20 (11.17-15.23)	19.06 (16.00-22.12)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

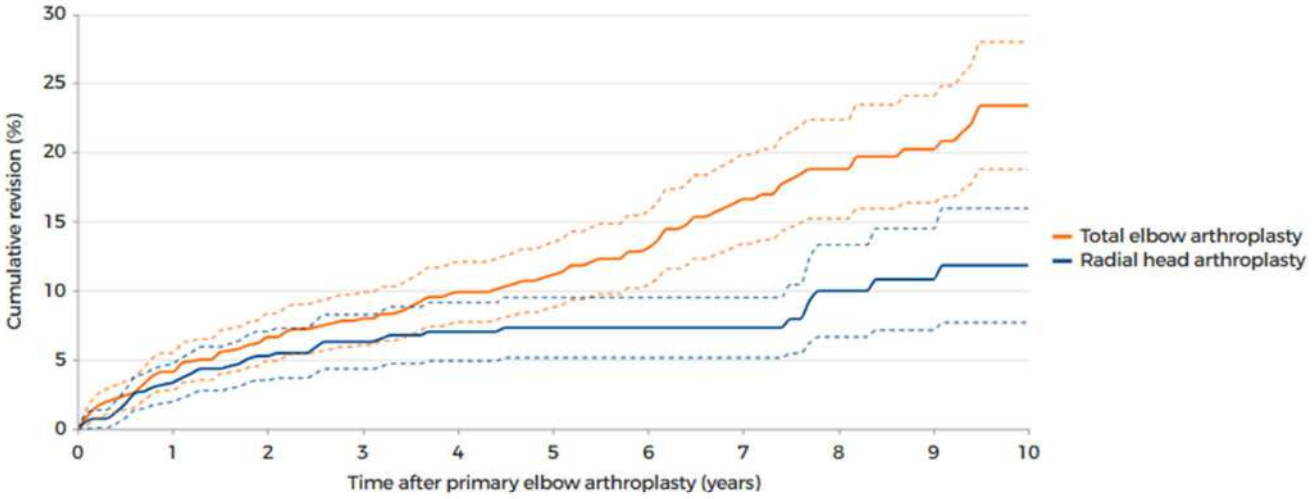
CI: confidence interval.

© LROI 2026 | E016B

In 2014-2025, 188 (11.0%) primary elbow arthroplasties were implanted in patients who died within ten years after the primary procedure.

By type of elbow arthroplasty

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary elbow arthroplasties by type of elbow arthroplasty in the Netherlands in 2014-2025



© LROI 2026 | E017A

	Number (n)	1yr	3yr	5yr	7yr	10yr
Total elbow arthroplasty	885	4.14 (2.79-5.48)	7.83 (5.95-9.71)	10.93 (8.60-13.26)	16.29 (13.12-19.46)	23.39 (18.78-27.99)
Radial head arthroplasty	683	3.20 (1.85-4.55)	6.31 (4.35-8.27)	7.33 (5.15-9.51)	7.33 (5.15-9.51)	11.82 (7.69-15.95)

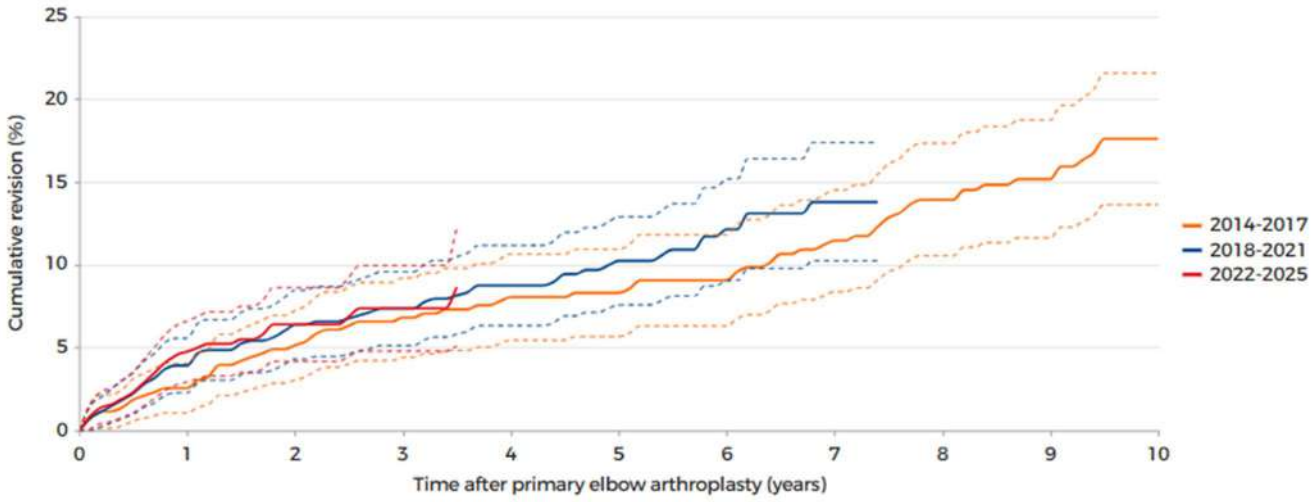
Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.

CI: confidence interval.

© LROI 2026 | E017B

By procedure year

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary elbow arthroplasties fo by procedure year of primary arthroplasty in the Netherlands in 2014-2025



© LROI 2026 | E018A

	Number (n)	1yr	3yr	5yr	7yr	10yr
2014-2017	434	2.55 (1.06-4.04)	6.56 (4.21-8.91)	8.28 (5.65-10.91)	11.17 (8.12-14.22)	17.60 (13.64-21.56)
2018-2021	542	3.91 (2.27-5.55)	7.34 (5.12-9.56)	9.93 (7.33-12.54)	13.80 (10.22-17.37)	n.a.
2022-2025	592	4.54 (2.76-6.32)	7.36 (4.78-9.93)	n.a.	n.a.	n.a.

Please note: Dotted lines represent the upper and lower limits of the 95% confidence intervall; n.a. if <50 cases were at risk.

CI: confidence interval.

© LROI 2026 | E018B

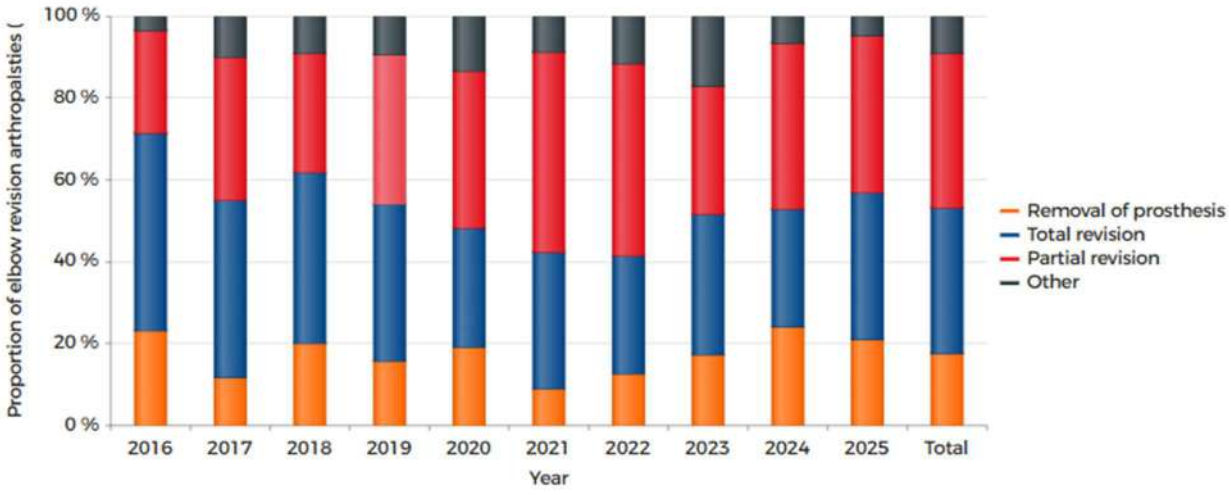
Elbow revision arthroplasty

In this section you will find all the information on elbow revision arthroplasty:

Revision characteristics

Type of revision

FIGURE Trend (proportion [%] per year) in type of revision in elbow revision arthroplasties in the Netherlands in 2016-2025

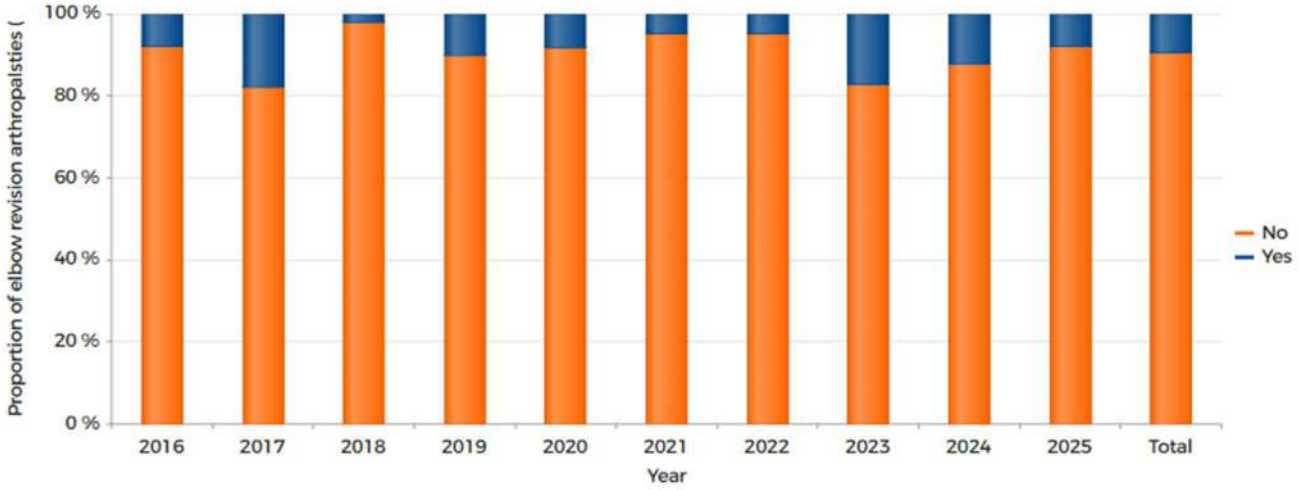


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Removal of prosthesis	23.21	11.67	20	15.87	19.23	8.89	12.64	17.24	24.18	20.99	17.75
Total revision	48.21	43.33	41.82	38.10	28.85	33.33	28.74	34.48	28.57	35.80	35.49
Partial revision	25	35	29.09	36.51	38.46	48.89	47.13	31.03	40.66	38.27	37.50
Other	3.57	10	9.09	9.52	13.46	8.89	11.49	17.24	6.59	4.94	9.26
Total (n)	**56**	**60**	**55**	**63**	**52**	**45**	**87**	**58**	**91**	**81**	**648**

© LROI 2026 | E019

Conversion to total elbow arthroplasty

FIGURE Trend (proportion [%] per year) in conversion of a radial head arthroplasty to a total elbow arthroplasy in the Netherlands in 2016-2025

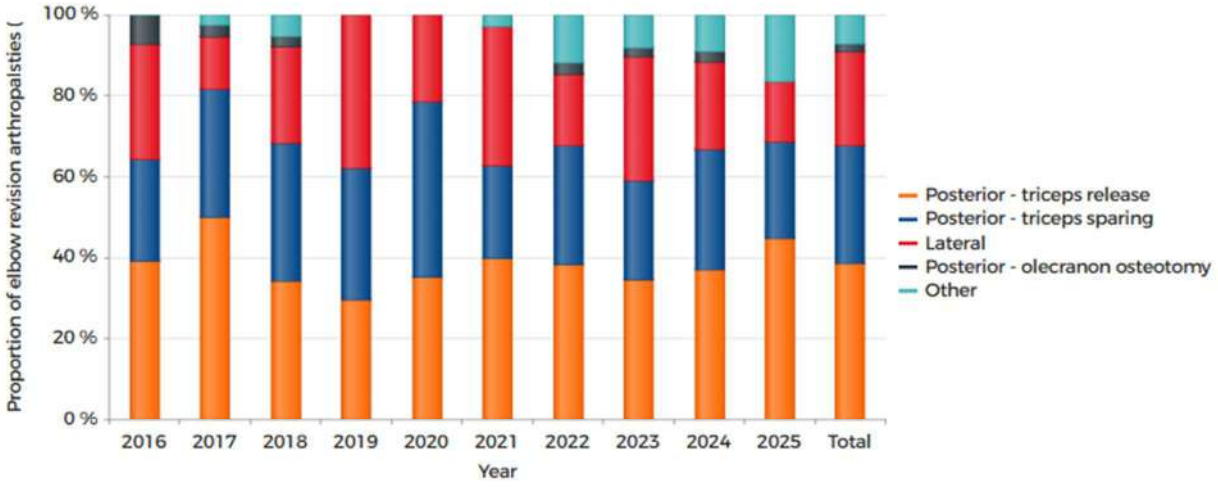


	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
No	92	82.14	97.96	90	91.84	95.35	95.18	82.76	87.78	92	90.54
Yes	8	17.86	2.04	10	8.16	4.65	4.82	17.24	12.22	8	9.46
Total (n)	**50**	**56**	**49**	**60**	**49**	**43**	**83**	**58**	**90**	**75**	**613**

© LROI 2026 | E020

Surgical approach

FIGURE Trend (proportion [%] per year) in surgical approach for performing a elbow revision arthroplasty in the Netherlands in 2022-2024



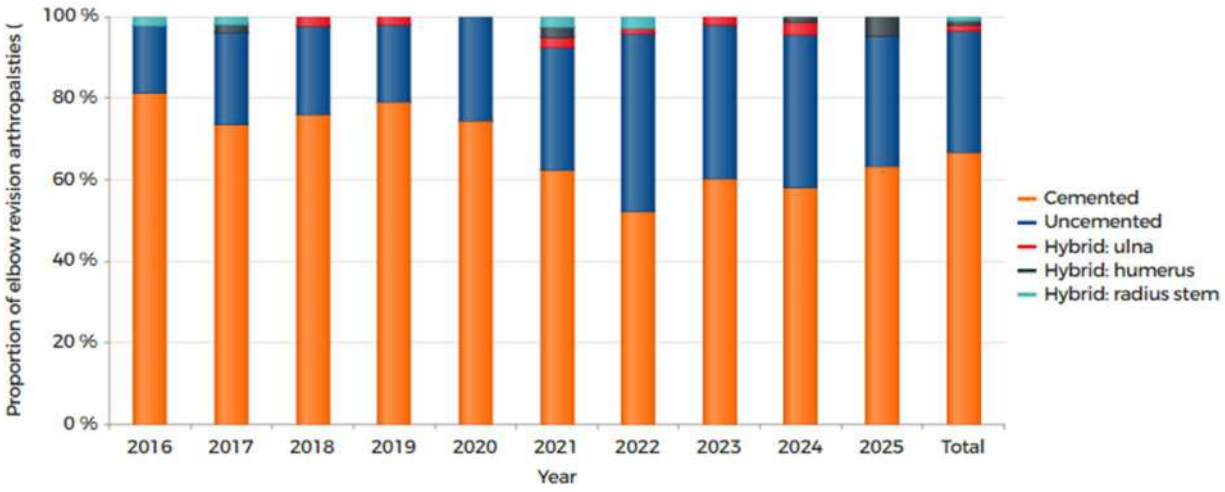
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Posterior - triceps release	39.29	50	34.21	29.73	35.14	40	38.24	34.69	37.18	44.78	38.53
Posterior - triceps sparing	25	31.58	34.21	32.43	43.24	22.86	29.41	24.49	29.49	23.88	29.26
Lateral	28.57	13.16	23.68	37.84	21.62	34.29	17.65	30.61	21.79	14.93	23.16
Posterior - olecranon osteotomy	7.14	2.63	2.63	0	0	0	2.94	2.04	2.56	0	1.89
Other	0	2.63	5.26	0	0	2.86	11.76	8.16	8.97	16.42	7.16
Total (n)	**28**	**38**	**38**	**37**	**37**	**35**	**68**	**49**	**78**	**67**	**475**

Please note: The registration form was changed in 2022. Therefore, trends are shown for the period 2022-2024 only.

© LROI 2026 | E021

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in elbow revision arthroplasties in the Netherlands in 2016-2025



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Cemented	81.40	73.58	76.09	79.25	74.36	62.50	52.11	60.42	57.97	63.49	66.86
Uncemented	16.28	22.64	21.74	18.87	25.64	30	43.66	37.50	37.68	31.75	29.71
Hybrid: ulna	0	0	2.17	1.89	0	2.50	1.41	2.08	2.90	0	1.33
Hybrid: humerus	0	1.89	0	0	0	2.50	0	0	1.45	4.76	1.14
Hybrid: radius stem	2.33	1.89	0	0	0	2.50	2.82	0	0	0	0.95
Total (n)	**43**	**53**	**46**	**53**	**39**	**40**	**71**	**48**	**69**	**63**	**525**

© LROI 2026 | E022

Most frequently registered – components

TABLE The most frequently registered humerus and ulna components in elbow revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Humerus (n)	**15**	**24**	**19**	**19**	**30**
Humerus name; Proportion (%)					
Latitude EV	40.00	33.33	26.32	51.85	36.67
Latitude	0.00	4.17	21.05	14.81	23.33
Coonrad/Morrey	26.67	25.00	36.84	18.52	13.33
NES	20.00	25.00	10.53	3.70	13.33
Mutars	13.33	4.17	5.26	3.70	13.33
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Ulna (n)	**13**	**30**	**21**	**29**	**37**
Ulna name; Proportion (%)					
Latitude EV	46.15	70.00	66.67	72.41	70.27
Coonrad/Morrey	38.46	16.67	28.57	6.90	16.22
Mutars	15.38	3.33	0.00	6.90	8.11
NES	0.00	10.00	4.76	3.45	5.41

© LROI 2026 | E023

Most frequently registered - type of bone cement

TABLE The registered types of bone cement used during elbow revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Bone cement used (n)	**23**	**24**	**25**	**36**	**30**
Cement name; Proportion (%)					
COPAL G+C	0.00	33.33	40.00	47.22	46.67
Refobacin Bone Cement R	17.39	20.83	8.00	2.78	16.67
PALACOS R+G	21.74	12.50	24.00	22.22	13.33
PALACOS LV+G	4.35	4.17	4.00	11.11	10.00
Simplex ABC TOBRA	30.43	8.33	16.00	8.33	10.00
COPAL G+V	0.00	8.33	4.00	2.78	3.33

© LROI 2026 | E024

Wrist arthroplasty

Numbers

Registered procedures

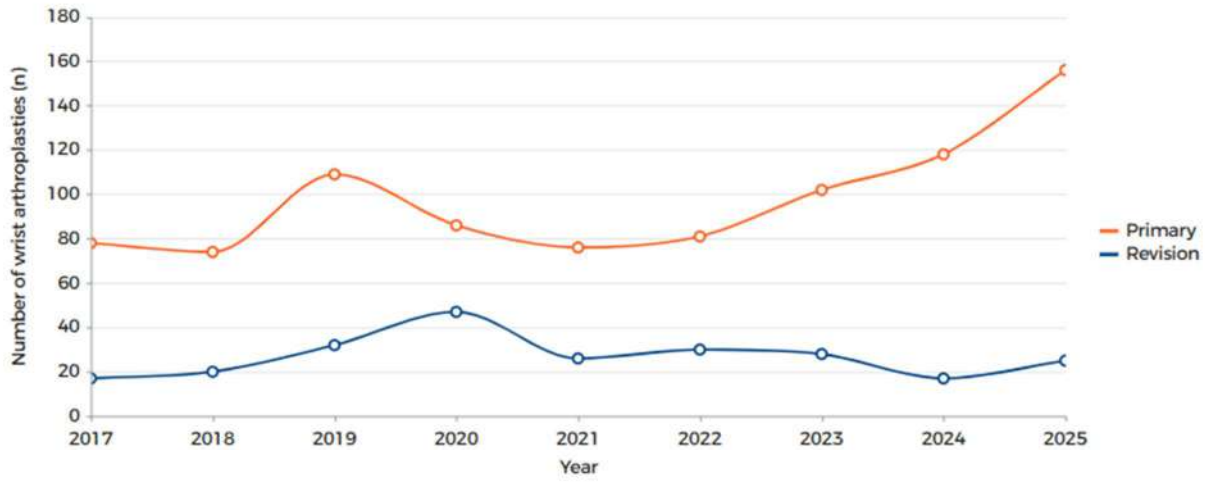
TABLE Number of registered wrist arthroplasties per year of surgery (2017-2025) in the LROI in April 2026

Year of surgery	Total wrist arthroplasty	Ulnar head arthroplasty	DRU arthroplasty	Hemi arthroplasty	Other	Unknown/ missing	Revision arthroplasty	Total
2017	40	13	11	5	4	5	17	**95**
2018	38	7	18	3	4	4	20	**94**
2019	44	7	31	7	16	4	32	**141**
2020	34	9	16	15	7	5	47	**133**
2021	28	4	16	18	5	5	26	**102**
2022	24	7	17	23	4	6	30	**111**
2023	36	2	28	25	4	7	28	**130**
2024	52	3	15	21	26	1	17	**135**
2025	63	1	10	19	62	1	25	**181**
Total (n)	**359**	**53**	**162**	**136**	**132**	**38**	**242**	**1,122**

© LROI 2026 | W001

Type of procedures

FIGURE Number of primary wrist arthroplasties and wrist revision arthroplasties registered in the LROI in the Netherlands in 2016-2025

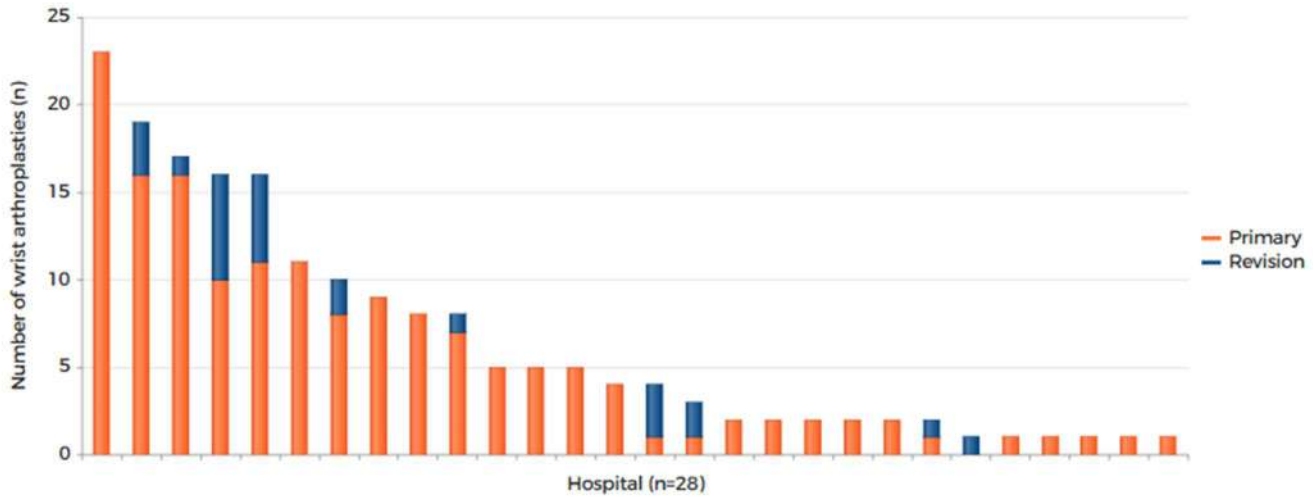


	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Primary	78	74	109	86	76	81	102	118	156	**880**
Revision	17	20	32	47	26	30	28	17	25	**242**
Total (n)	**95**	**94**	**141**	**133**	**102**	**111**	**130**	**135**	**181**	**1,122**

© LROI 2026 | W002

Type of procedure per hospital

FIGURE Number of primary wrist arthroplasties and wrist revision arthroplasties per hospital in the Netherlands in 2025 (n=181)



Primary wrist arthroplasty

Patient characteristics

Demographics

By specialism

TABLE Patient characteristics of all patients with a registered primary wrist arthroplasty in the Netherlands in 2025

	Plastic surgery	Orthopaedic surgery	Total
N(%)	**65 (42)**	**84 (54.2)**	**156**
Mean age (years) (SD)	58.7 (11.3)	61.5 (11.5)	60.3 (11.8)
Age (years) (%)			
<50	14	14	15
50-59	32	24	26
60-69	42	38	39
70-79	11	20	17
>80	2	4	3
Sex (%)			
Male	51	40	46
Female	49	60	54
ASA class (%)			
ASA I	31	15	22
ASA II	55	75	66
ASA III-IV	14	10	12
Type of hospital (%)			
General	83	83	83
UMC	0	1	1
Private	17	15	15
Diagnosis (%)			
Osteoarthritis	88	67	76
Post-traumatic	6	13	11
Rheumatoid arthritis	2	15	9
Osteonecrosis	0	0	0
Inflammatory arthritis	0	0	0
Other	3	5	4
Mean BMI (kg/m2) (SD)	26.8 (5.4)	26.4 (4.1)	26.7 (4.7)
Body Mass Index (kg/m2) (%)			
Underweight (<=18.5)	2	1	2
Normal weight (>18.5-25)	32	37	41
Overweight (>25-30)	31	33	38
Obesity (>30-40)	18	14	20
Morbid obesity (>40)	2	0	1
Smoking (%)			
No	75	81	84
Yes	12	18	16

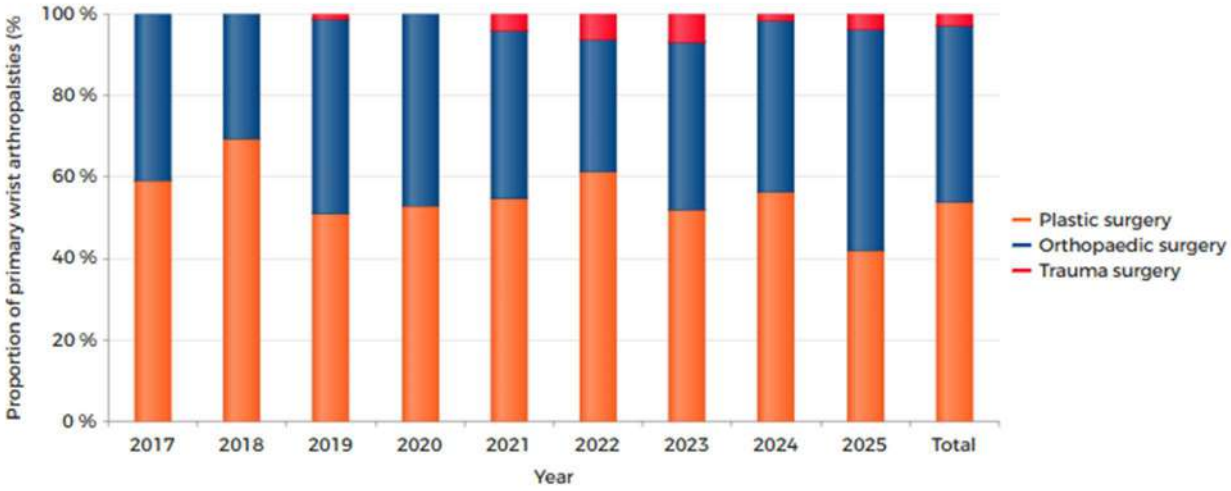
Total primary wrist arthroplasties includes six procedures performed by trauma surgeons and one procedure with missing specialism.
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation.

© LROI 2026 | W004

Procedure characteristics

Specialism

FIGURE Trend (proportion [%] per year) in specialism for performing a primary wrist arthroplasty in the Netherlands in 2017-2025



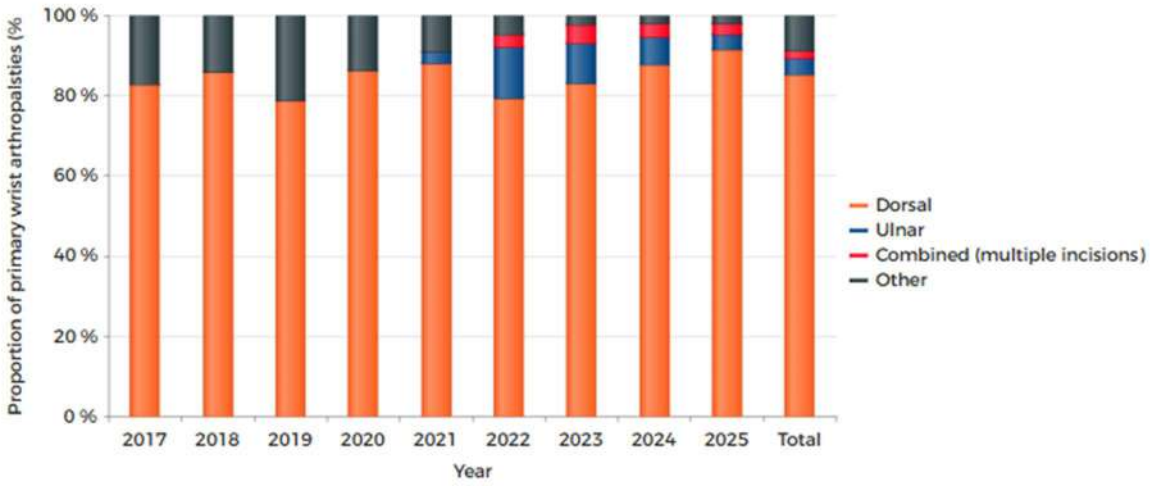
	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Plastic surgery	59.21	69.57	51.11	52.94	54.79	61.25	51.96	56.41	41.94	53.96
Orthopaedic surgery	40.79	30.43	47.78	47.06	41.10	32.50	41.18	41.88	54.19	43.21
Trauma surgery	0	0	1.11	0	4.11	6.25	6.86	1.71	3.87	2.83
Total (n)	**76**	**69**	**90**	**85**	**73**	**80**	**102**	**117**	**155**	**847**

Please note: the specialism of trauma surgery has been registered since 2022

© LROI 2026 | W005

Surgical approach

FIGURE Trend (proportion [%] per year) in surgical approach for performing a primary wrist arthroplasty in the Netherlands in 2017-2025



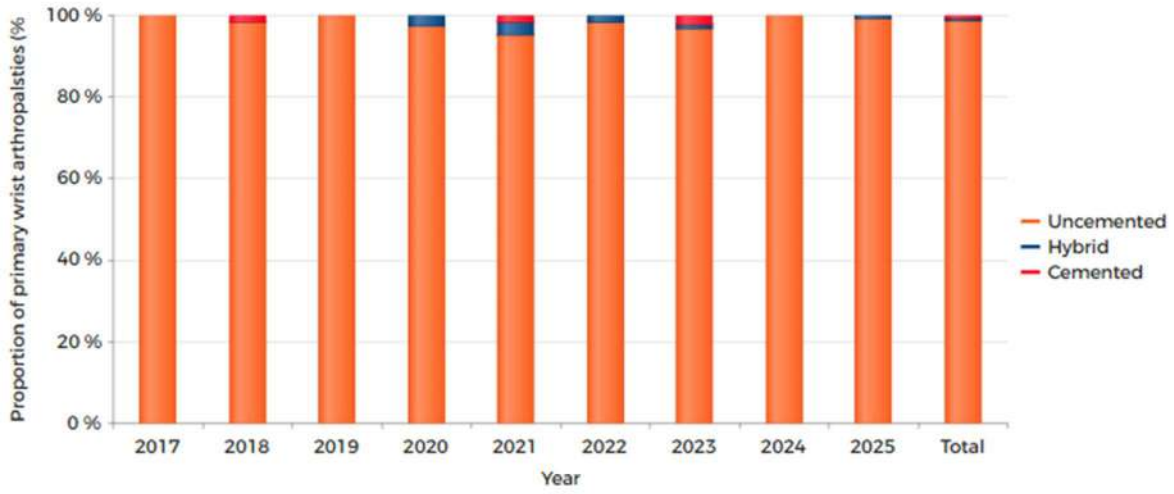
	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Dorsal	82.86	85.92	78.85	86.42	88.06	79.37	83.15	87.83	91.50	85.49
Ulnar	0	0	0	0	2.99	12.70	10.11	6.96	3.92	4.06
Combined (multiple incisions)	0	0	0	0	0	3.17	4.49	3.48	2.61	1.72
Other	17.14	14.08	21.15	13.58	8.96	4.76	2.25	1.74	1.96	8.73
Total (n)	**70**	**71**	**104**	**81**	**67**	**63**	**89**	**115**	**153**	**813**

Please note: the combined and ulnar surgical approaches have been registered since 2022

© LROI 2026 | W006

Fixation

FIGURE Trend (proportion [%] per year) in type of fixation in primary wrist arthroplasties in the Netherlands in 2017-2025

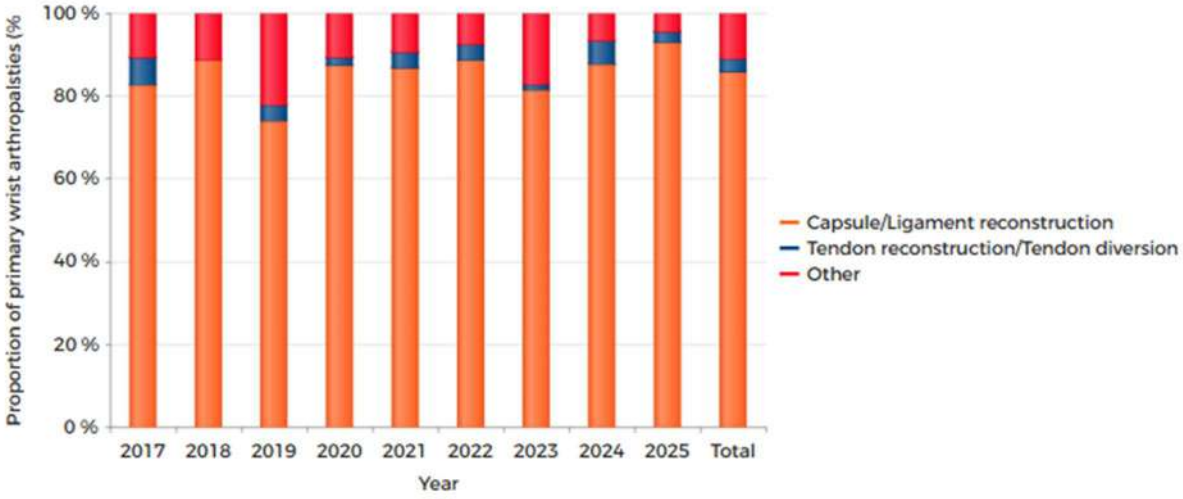


	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Uncemented	100	98.59	100	97.40	95.38	98.48	96.74	100	99.35	98.65
Hybrid	0	0	0	2.60	3.08	1.52	1.09	0	0.65	0.86
Cemented	0	1.41	0	0	1.54	0	2.17	0	0	0.49
Total (n)	**71**	**71**	**103**	**77**	**65**	**66**	**92**	**114**	**154**	**813**

© LROI 2026 | W007

Soft tissue stabilisation

FIGURE Trend (proportion [%] per year) in type of stabilisation in primary wrist arthroplasties in the Netherlands in 2017-2025



	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Capsule/Ligament reconstruction	82.98	88.71	74.07	87.50	86.79	88.89	81.58	87.91	93.04	85.98
Tendon reconstruction/Tendon diversion	6.38	0	3.70	1.79	3.77	3.70	1.32	5.49	2.61	3.15
Other	10.64	11.29	22.22	10.71	9.43	7.41	17.11	6.59	4.35	10.87
Total (n)	**47**	**62**	**81**	**56**	**53**	**54**	**76**	**91**	**115**	**635**

© LROI 2026 | W008

Most frequently registered components

TABLE The most frequently registered carpal and radial stem components in primary wrist arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Carpal (n)	**23**	**35**	**49**	**52**	**76**
Carpal name; Proportion (%)					
Motec	4.35	8.57	6.12	21.15	43.42
RCPI	26.09	57.14	48.98	46.15	31.58
Remotion	4.35	8.57	32.65	28.85	22.37
Link Custom made	0.00	0.00	2.04	3.85	2.63
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Radial stem (n)	**30**	**22**	**37**	**49**	**49**
Radial stem name; Proportion (%)					
Motec	3.33	13.64	5.41	46.94	59.18
Remotion	6.67	13.64	37.84	28.57	34.69
Distal radioulnar joint	30.00	36.36	48.65	24.49	6.12

© LROI 2026 | W009

Survival

Short term revision

Revision rates within 1 year

TABLE Revision procedures within 1 year after primary wrist arthroplasty by year in the Netherlands in 2017-2024

Procedure year	Number of primary wrist arthroplasties	Number of revisions	Percentage revisions
2017	78	3	3.8%
2018	74	3	4.1%
2019	109	3	2.8%
2020	86	3	3.5%
2021	76	0	0.0%
2022	81	1	1.2%
2023	102	3	2.9%
2024	118	1	0.8%

© LROI 2026 | W010

In 2017-2025, 4 (0.6%) primary wrist arthroplasties were implanted in patients who died within one year after the primary procedure.

Time after primary wrist

TABLE Time after primary wrist arthroplasty until short-term revision in the Netherlands in 2017-2022 (n=504)

Time after primary wrist	Percentage revisions (%)
Day 1-29	0.00
Day 30-182	0.60
Day 183-364	1.98
Day 365-730 (second year)	1.98
Day 731-1095 (third year)	1.59

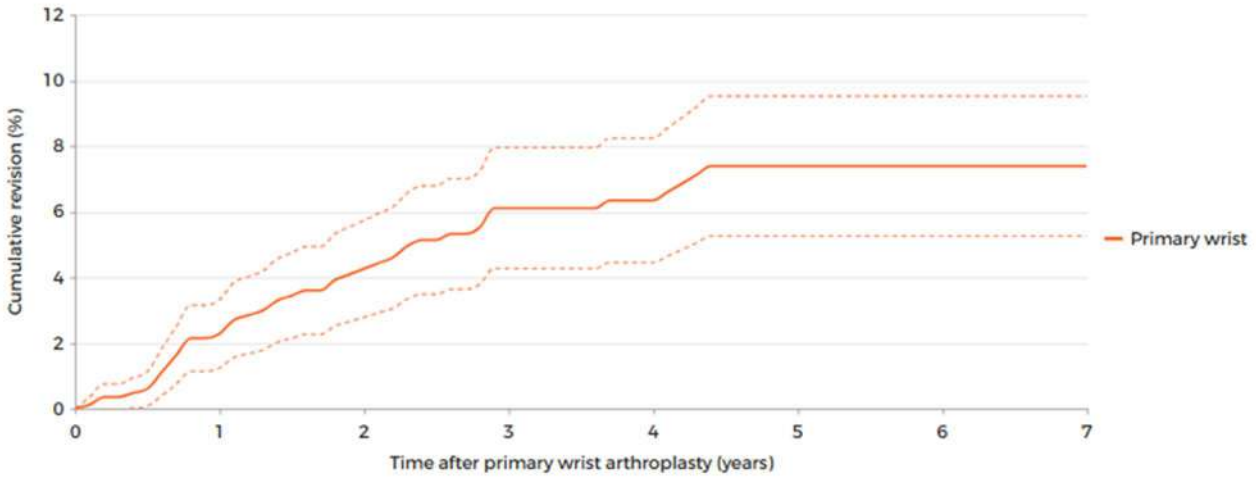
© LROI 2026 | W011

In 2017-2022, 15 (3.0%) primary wrist arthroplasties were implanted in patients who died within three years after the primary procedure.

Long term revision

Overall

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary wrist arthroplasties in the Netherlands in 2017-2025 (n=879)



© LROI 2026 | W012A

	1yr	3yr	5yr	7yr
Primary wrist	2.14 (1.13-3.15)	6.11 (4.27-7.95)	7.39 (5.26-9.52)	7.39 (5.26-9.52)

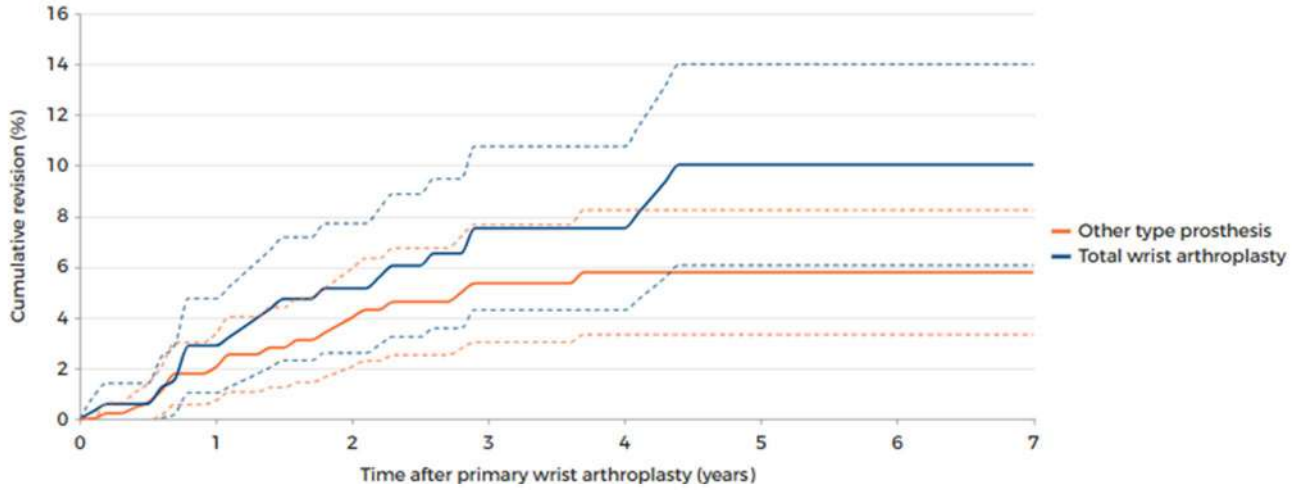
Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.
CI: confidence interval.

© LROI 2026 | W012B

In 2017-2025, 36 (4.1%) primary wrist arthroplasties were implanted in patients who died within seven years after the primary procedure.

By type of wrist arthroplasty

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary wrist arthroplasties by type of wrist arthroplasty in the Netherlands in 2017-2025



© LROI 2026 | W013A

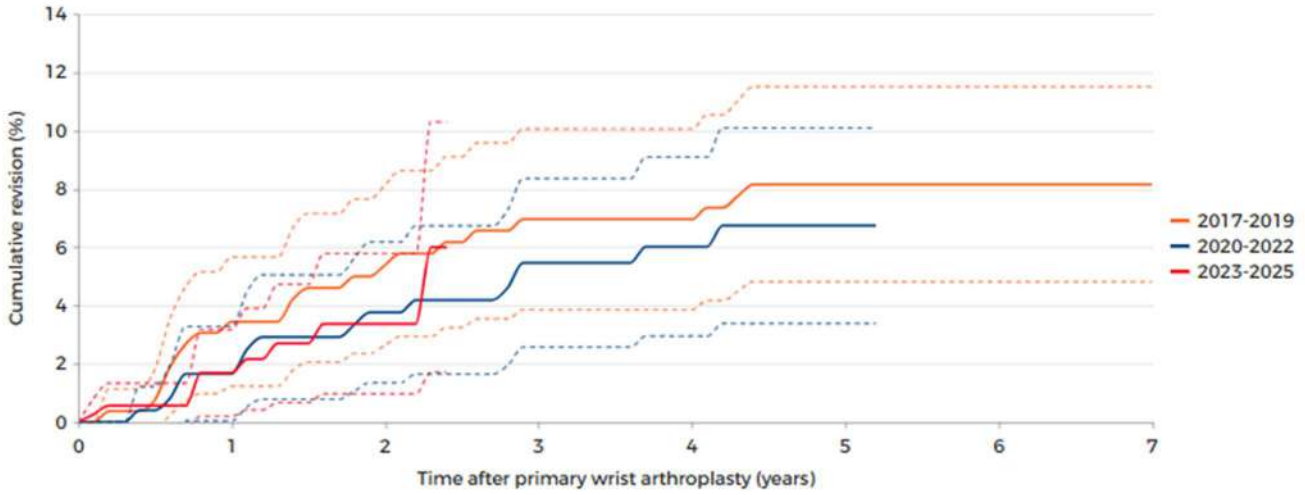
	Number (n)	1yr	3yr	5yr	7yr
Total wrist arthroplasty	348	2.88 (1.02-4.74)	7.52 (4.29-10.75)	10.03 (6.06-14.00)	10.03 (6.06-14.00)
Other type prosthesis	493	1.78 (0.56-3.01)	5.35 (3.03-7.66)	5.78 (3.32-8.24)	5.78 (3.32-8.24)

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.
CI: confidence interval.

© LROI 2026 | W013B

By procedure year

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary wrist arthroplasties by procedure year of primary arthroplasty in the Netherlands in 2017-2025



© LROI 2026 | W014A

	Number (n)	1yr	3yr	5yr	7yr
2017-2019	261	3.07 (0.97-5.16)	6.96 (3.86-10.06)	8.16 (4.81-11.51)	8.16 (4.81-11.51)
2020-2022	243	1.66 (0.05-3.28)	5.47 (2.58-8.36)	6.74 (3.39-10.10)	n.a.
2023-2025	375	1.69 (0.21-3.18)	n.a.	n.a.	n.a.

Please note: Dotted lines represent the upper and lower limits of the 95% confidence intervall; n.a. if <50 cases were at risk.
CI: confidence interval.

© LROI 2026 | W014B

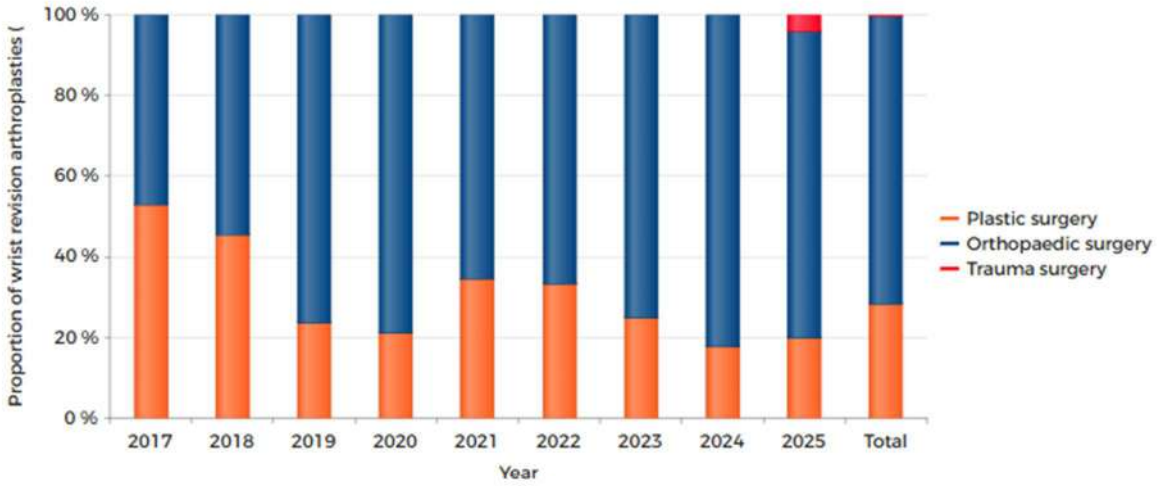
Wrist revision arthroplasty

In this section you will find all the information on revision wrist arthroplasty

Revision characteristics

Specialism

FIGURE Trend (proportion [%] per year) in specialism for performing a wrist revision arthroplasty in the Netherlands in 2017-2025

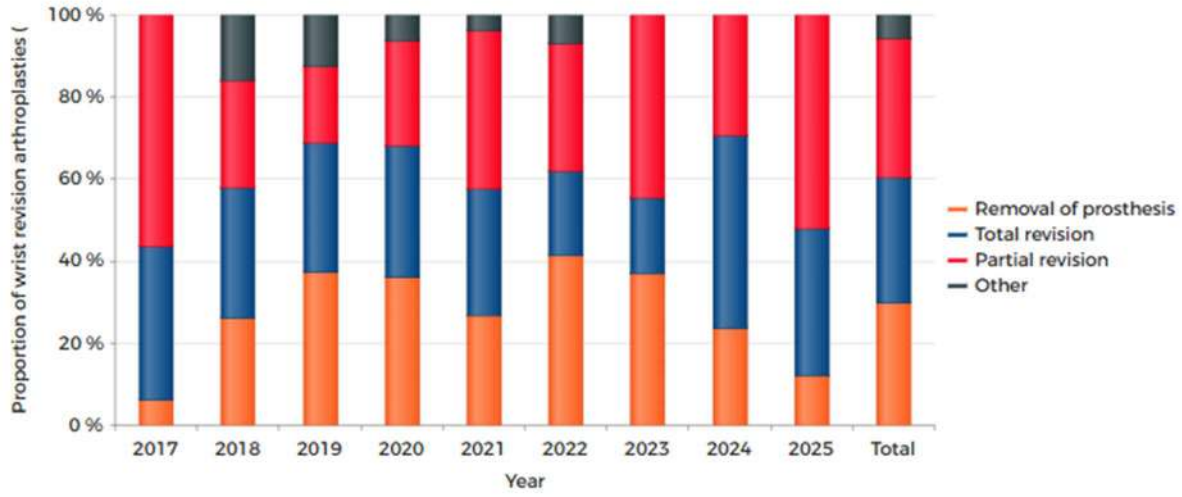


	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Plastic surgery	52.94	45.45	23.53	21.28	34.62	33.33	25	17.65	20	28.44
Orthopaedic surgery	47.06	54.55	76.47	78.72	65.38	66.67	75	82.35	76	71.10
Trauma surgery	0	0	0	0	0	0	0	0	4	0.46
Total (n)	**17**	**11**	**17**	**47**	**26**	**30**	**28**	**17**	**25**	**218**

© LROI 2026 | W015

Type of revision

FIGURE Trend (proportion [%] per year) in type of revision in wrist revision arthroplasties in the Netherlands in 2017-2025



	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Removal of prosthesis	6.25	26.32	37.50	36.17	26.92	41.38	37.04	23.53	12	29.83
Total revision	37.50	31.58	31.25	31.91	30.77	20.69	18.52	47.06	36	30.67
Partial revision	56.25	26.32	18.75	25.53	38.46	31.03	44.44	29.41	52	34.03
Other	0	15.79	12.50	6.38	3.85	6.90	0	0	0	5.46
Total (n)	**16**	**19**	**32**	**47**	**26**	**29**	**27**	**17**	**25**	**238**

© LROI 2026 | W016

Most frequently registered components

TABLE The most frequently registered carpal and radial stem components in wrist revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Carpal (n)	**11**	**7**	**9**	**5**	**15**
Carpal name; Number (n)					
Motec	2	1	2	3	9
Remotion	1	1	3	2	5
Distal radioulnar joint	0	0	0	0	1
Freedom	6	3	3	0	0
Universal2	2	2	1	0	0
Year	**2021**	**2022**	**2023**	**2024**	**2025**
Radial stem (n)	**7**	**3**	**3**	**2**	**4**
Radial stem name; Number (n)					
Motec	1	1	1	1	2
Distal radioulnar joint	3	1	1	0	2
Remotion	0	0	1	1	0
Freedom	3	1	0	0	0

© LROI 2026 | W017

Finger arthroplasty

In this section you will find all the information on finger arthroplasty:

Numbers

Registered procedures

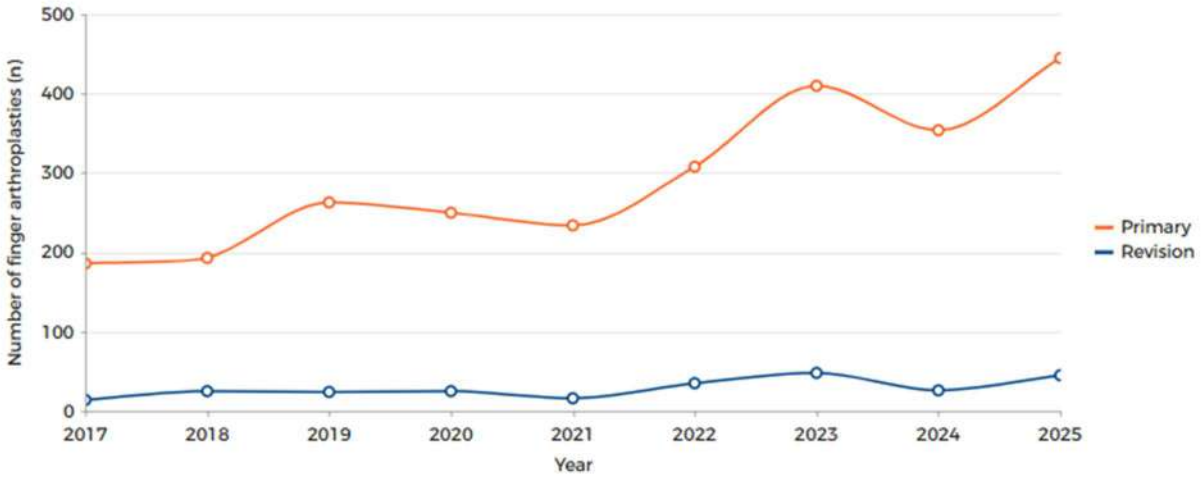
TABLE Number of registered finger arthroplasties per year of surgery (2017-2025) in the LROI in April 2026

Year of surgery	Total finger arthroplasty	Revision arthroplasty	Total
2017	186	14	**200**
2018	193	25	**218**
2019	263	24	**287**
2020	250	25	**275**
2021	234	16	**250**
2022	308	35	**343**
2023	410	48	**458**
2024	354	26	**380**
2025	445	45	**490**
Total (n)	**2,643**	**258**	**2,901**

© LROI 2026 | F001

Type of procedures

FIGURE Number of primary finger arthroplasties and finger revision arthroplasties registered in the LROI in the Netherlands in 2017-2025

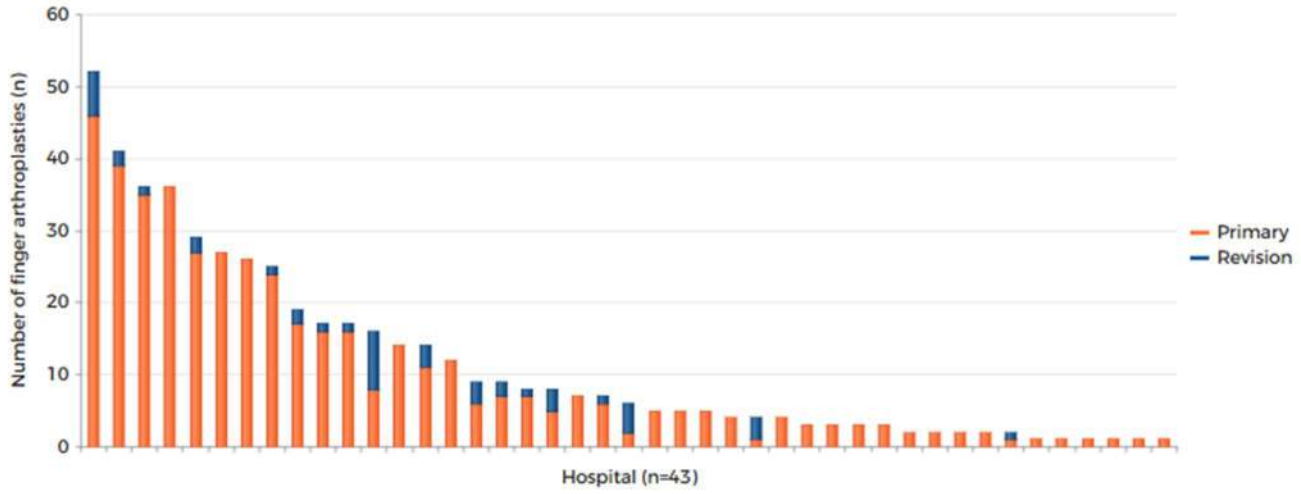


	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Primary	186	193	263	250	234	308	410	354	445	**2,643**
Revision	14	25	24	25	16	35	48	26	45	**258**
Total (n)	**200**	**218**	**287**	**275**	**250**	**343**	**458**	**380**	**490**	**2,901**

© LROI 2026 | F002

Type of procedure per hospital

FIGURE Number of primary finger arthroplasties and finger revision arthroplasties per hospital in the Netherlands in 2025 (n=490)



© LROI 2026 | F003

Type of primary finger prosthesis

TABLE Type of primary finger prosthesis in primary finger arthroplasties in the Netherlands in 2025 (n=445)

Finger joint	Thumb (n)	Index (n)	Middle (n)	Ring (n)	Small (n)	Total (n)
CMC	103	1	n.a.	n.a.	n.a.	104
MCP	3	36	33	5	8	85
PIP	n.a.	47	98	78	26	249
DIP	2	1	1	1	2	7
Total (n)	**108**	**85**	**132**	**84**	**36**	**445**

© LROI 2026 | F004

Primary finger arthroplasty

In this section you will find all the information on primary finger arthroplasty:

Patient characteristics

Demographics

Patient characteristics by specialism

TABLE Patient characteristics of all patients with a registered primary finger arthroplasty in the Netherlands in 2025

	Plastic surgery	Orthopaedic surgery	Total
N(%)	**234 (53.4)**	**195 (44.4)**	**445**
Mean age (years) (SD)	64.7 (10.8)	65 (10.7)	65 (10.7)
Age (years) (%)			
<50	8	7	7
50-59	20	22	20
60-69	35	35	34
70-79	33	29	32
>80	5	7	6
Sex (%)			
Male	31	32	31
Female	69	68	69
ASA class (%)			
ASA I	19	7	13
ASA II	59	79	69
ASA III-IV	21	14	17
Type of hospital (%)			
General	58	39	50
UMC	2	1	1
Private	41	61	49
Diagnosis (%)			
Osteoarthritis	89	91	91
Post-traumatic	3	1	2
Rheumatoid arthritis	5	7	6
Osteonecrosis	0	0	0
Inflammatory arthritis	1	0	1
Other	0	1	0
Mean BMI (kg/m2) (SD)	27.2 (4.8)	26.7 (5)	26.9 (4.8)
Body Mass Index (kg/m2) (%)			
Underweight (<=18.5)	1	1	1
Normal weight (>18.5-25)	22	19	37
Overweight (>25-30)	22	22	38
Obesity (>30-40)	15	10	22
Morbid obesity (>40)	0	1	1
Smoking (%)			
No	67	81	86
Yes	11	14	14

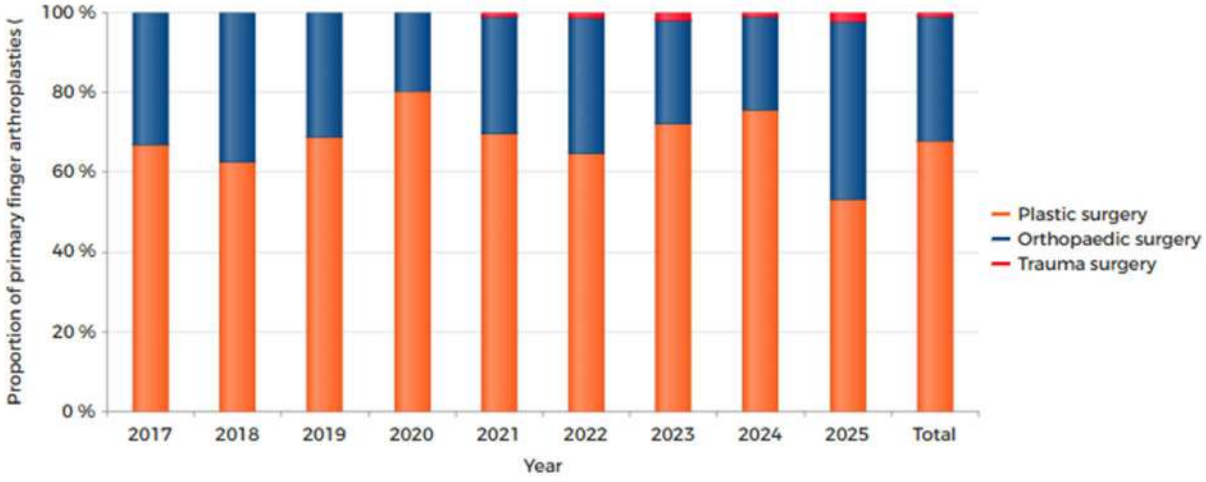
Total primary finger arthroplasties includes ten procedure performed by trauma surgeons and eight procedures with missing specialism.
General: general hospital; UMC: university medical centre; Private: private hospital; SD: standard deviation.

© LROI 2026 | F005

Procedure characteristics

Specialism

FIGURE Trend (proportion [%] per year) in specialism for performing a primary finger arthroplasty in the Netherlands in 2017-2025



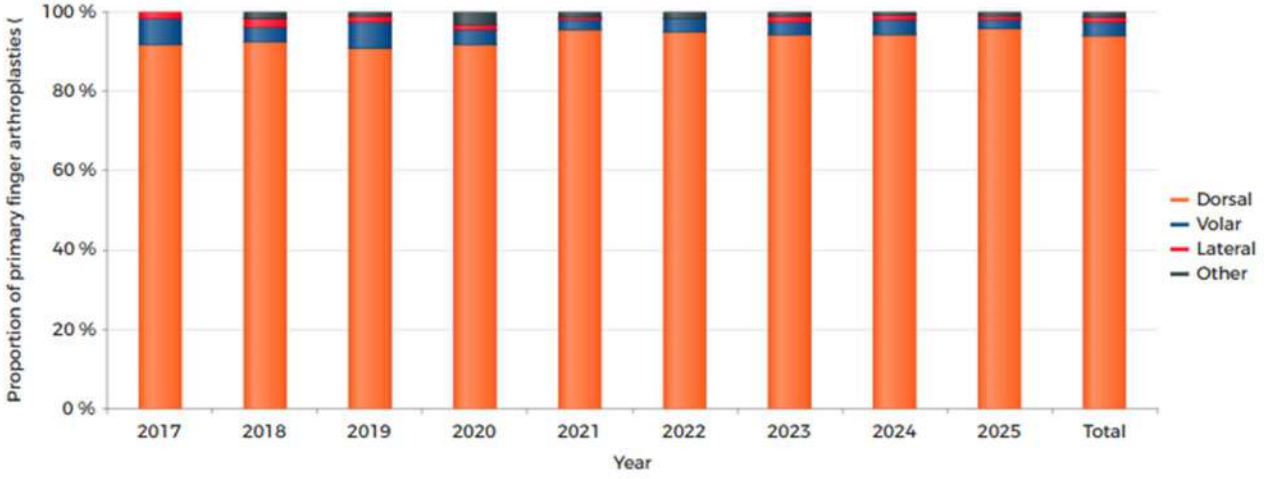
	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Plastic surgery	67.04	62.63	68.90	80.40	69.87	64.90	72.41	75.71	53.30	67.87
Orthopaedic surgery	32.96	37.37	31.10	19.60	29.26	33.77	25.86	23.43	44.42	31.13
Trauma surgery	0	0	0	0	0.87	1.32	1.72	0.86	2.28	1.00
Total (n)	**179**	**190**	**254**	**250**	**229**	**302**	**406**	**350**	**439**	**2,599**

Please note: the specialism of trauma surgery has been registered since 2022

© LROI 2026 | F006

Surgical approach

FIGURE Trend (proportion [%] per year) in surgical approach for performing a primary finger arthroplasty in the Netherlands in 2017-2025

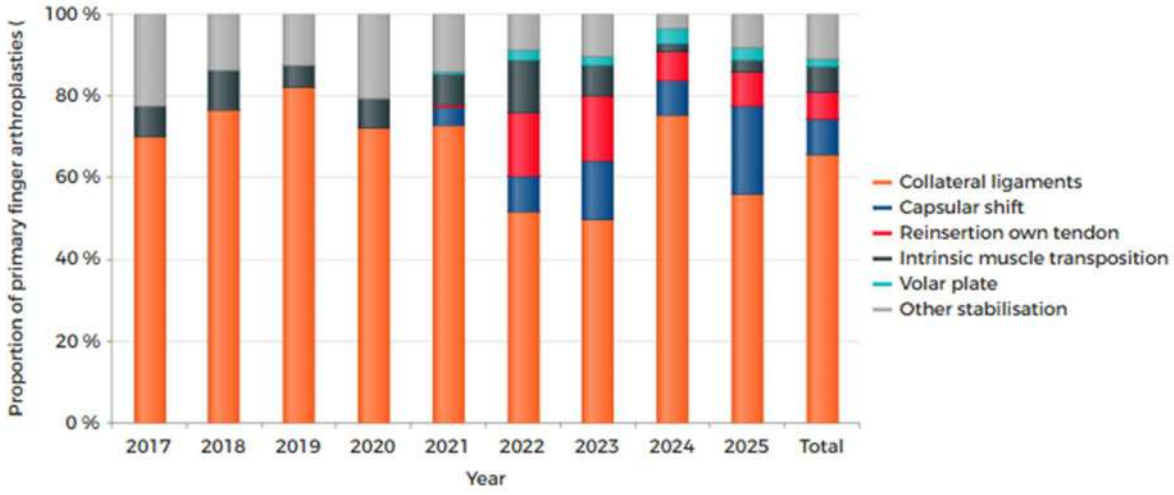


	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Dorsal	92.05	92.67	90.83	91.95	95.63	95.06	94.51	94.29	96.08	94.00
Volar	6.25	3.66	6.67	3.81	2.62	3.42	2.89	3.71	2.07	3.65
Lateral	1.70	2.09	1.67	1.27	0.44	0	1.73	1.43	0.92	1.22
Other	0	1.57	0.83	2.97	1.31	1.52	0.87	0.57	0.92	1.14
Total (n)	**176**	**191**	**240**	**236**	**229**	**263**	**346**	**350**	**434**	**2,465**

© LROI 2026 | F007

Soft tissue stabilisation

FIGURE Trend (proportion [%] per year) in type of stabilisation in primary finger arthroplasty in the Netherlands in 2017-2025



	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Collateral ligaments	70	76.61	82.16	72.19	72.88	51.72	50	75.39	56.04	65.81
Capsular shift	0	0	0	0	4.52	8.87	14.23	8.52	21.67	8.60
Reinsertion own tendon	0	0	0	0	0.56	15.27	15.77	6.94	8.36	6.56
Intrinsic muscle transposition	7.50	9.68	5.41	7.28	7.34	12.81	7.69	1.89	2.79	6.24
Volar plate	0	0	0	0	0.56	2.46	1.92	3.79	3.10	1.77
Other stabilisation	22.50	13.71	12.43	20.53	14.12	8.87	10.38	3.47	8.05	11.02
Total (n)	**120**	**124**	**185**	**151**	**177**	**203**	**260**	**317**	**323**	**1,860**

Please note: Capsular shift, reinsertion own tendon and volar plate have been resgistered since 2022

© LROI 2026 | F008

Most frequently registered components

TABLE The most frequently registered proximal components in primary finger arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Proximal component (n)	**176**	**245**	**331**	**305**	**395**
Proximal name; Proportion (%)					
SWANSON	7.95	11.43	14.80	24.59	34.43
KeriFlex PIP	0.00	1.63	17.22	18.36	24.81
KeriMedical TOUCH	0.00	1.22	4.53	7.87	14.94
KeriFlex MCP	0.00	2.86	8.16	5.57	10.89
MAIA	0.00	1.22	0.00	2.95	9.37
Silicone PIP	60.80	39.18	32.02	27.21	2.53
Cap Flex PIP prothese	2.27	1.63	3.02	5.25	2.28
MCP Implant	7.39	20.41	15.11	5.57	0.51
Pyrocardan	1.14	1.22	1.51	1.97	0.25

© LROI 2026 | F009

Survival

Short term revision

Revision rates within 1 year

TABLE Revision procedures within 1 year after primary finger arthroplasty by year in the Netherlands in 2017-2024

Procedure year	Number of primary finger arthroplasties	Number of revisions	Percentage revisions
2017	186	2	1.1%
2018	193	3	1.6%
2019	262	0	0.0%
2020	249	3	1.2%
2021	234	2	0.9%
2022	306	6	2.0%
2023	408	12	2.9%
2024	354	10	2.8%

© LROI 2026 | F010

In 2017-2024, 7 (0.3%) primary finger arthroplasties were implanted in patients who died within one year after the primary procedure.

Time after primary finger arthroplasty

TABLE Time after primary finger arthroplasty until short-term revision in the Netherlands in 2017-2022 (n=1,430)

Time after primary finger	Percentage revisions (%)
Day 0-29	0.14
Day 30-182	0.49
Day 183-364	0.49
Day 365-730 (second year)	1.33
Day 731-1095 (third year)	0.35

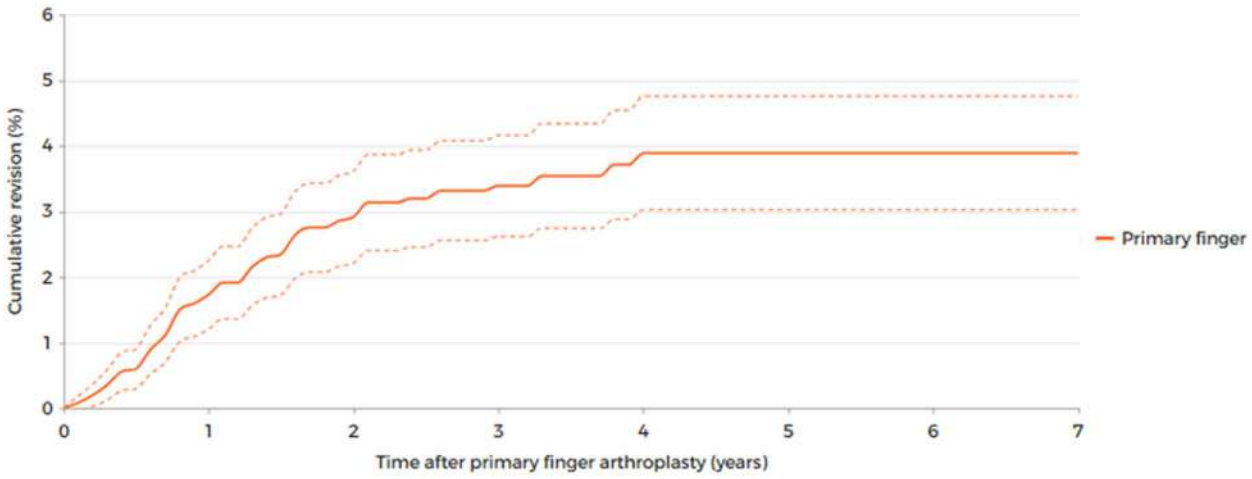
© LROI 2026 | F011

In 2017-2022, 35 (2.4%) primary finger arthroplasties were implanted in patients who died within three years after the primary procedure.

Long term revision

Overall

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary finger arthroplasties in the Netherlands in 2017-2025 (n=2,632)



© LROI 2026 | F012A

	1yr	3yr	5yr	7yr
Primary finger	1.59 (1.09-2.09)	3.32 (2.56-4.08)	3.89 (3.02-4.76)	3.89 (3.02-4.76)

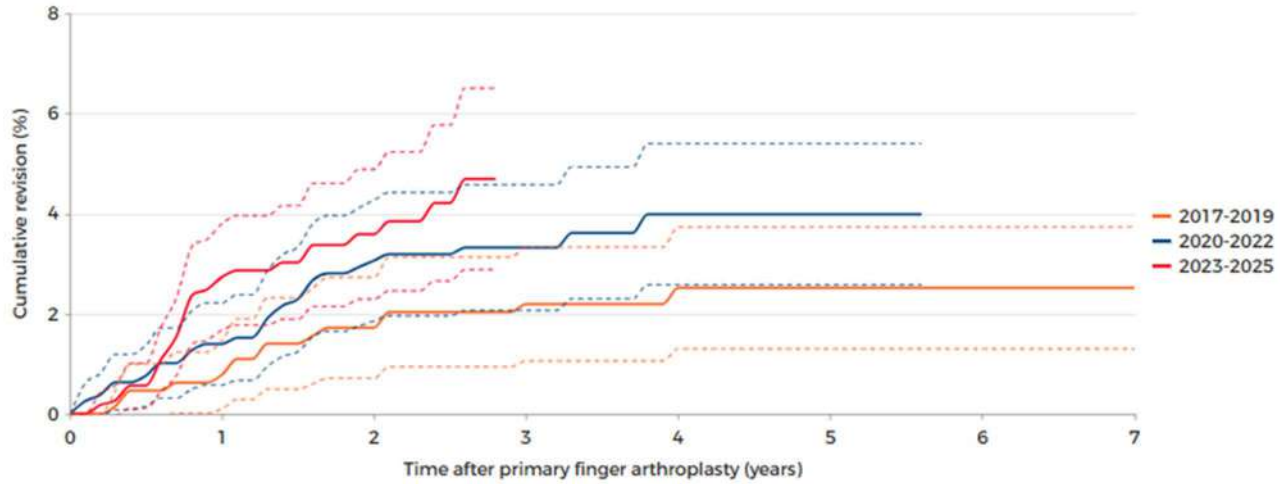
Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval.
CI: confidence interval.

© LROI 2026 | F012B

In 2017-2025, 100 (3.8%) primary finger arthroplasties were implanted in patients who died within seven years after the primary procedure.

By procedure year

FIGURE Cumulative revision percentage (Kaplan-Meier; 95% CI) of primary finger arthroplasties by procedure year of primary arthroplasty in the Netherlands in 2017-2025



© LROI 2026 | F013A

	Number (n)	1yr	3yr	5yr	7yr
2017-2019	641	0.62 (0.01-1.23)	2.04 (0.94-3.13)	2.52 (1.30-3.73)	2.52 (1.30-3.73)
2020-2022	789	1.40 (0.58-2.22)	3.32 (2.07-4.58)	3.99 (2.58-5.40)	n.a.
2023-2025	1,202	2.48 (1.47-3.48)	n.a.	n.a.	n.a.

Please note: Dotted lines represent the upper and lower limits of the 95% confidence interval; n.a. if <50 cases were at risk.
CI: confidence interval.

© LROI 2026 | F013B

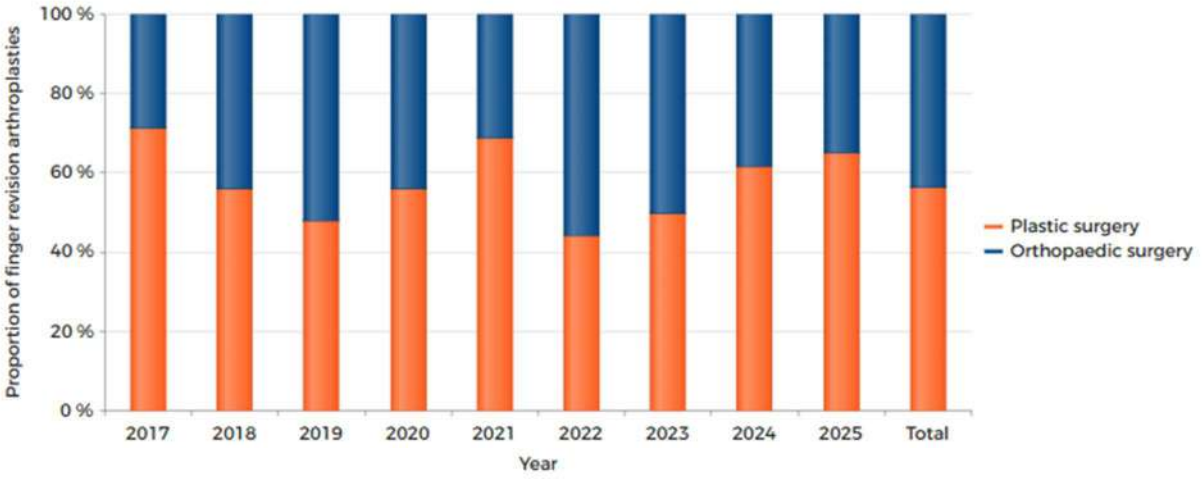
Finger revision arthroplasty

In this section you will find all the information on revision finger arthroplasty:

Revision characteristics

Specialism

FIGURE Trend (proportion [%] per year) in specialism for performing a finger revision arthroplasty in the Netherlands in 2017-2025

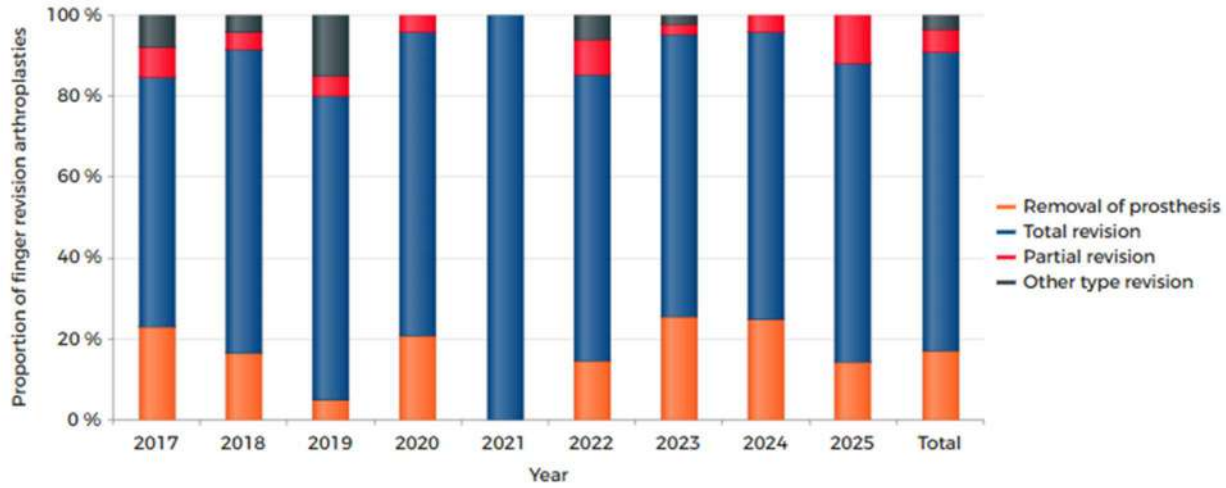


	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Plastic surgery	71.43	56	47.83	56	68.75	44.12	50	61.54	65.12	56.30
Orthopaedic surgery	28.57	44	52.17	44	31.25	55.88	50	38.46	34.88	43.70
Total (n)	**14**	**25**	**23**	**25**	**16**	**34**	**48**	**26**	**43**	**254**

© LROI 2026 | F014

Type of revision

FIGURE Type of revision arthroplasty of finger revision arthroplasties in the Netherlands in 2017-2025



	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Removal of prosthesis	23.08	16.67	5	20.83	0	14.71	25.58	25	14.29	17.08
Total revision	61.54	75	75	75	100	70.59	69.77	70.83	73.81	73.75
Partial revision	7.69	4.17	5	4.17	0	8.82	2.33	4.17	11.90	5.83
Other type revision	7.69	4.17	15	0	0	5.88	2.33	0	0	3.33
Total (n)	**13**	**24**	**20**	**24**	**16**	**34**	**43**	**24**	**42**	**240**

© LROI 2026 | F015

Most frequently registered components

TABLE The most frequently registered proximal components in finger revision arthroplasties in the Netherlands in 2021-2025

Year	2021	2022	2023	2024	2025
Proximal component (n)	**15**	**27**	**35**	**18**	**34**
Proximal name; Proportion (%)					
Swanson	0.00	3.70	5.71	44.44	58.82
KeriFlex PIP	0.00	0.00	17.14	16.67	17.65
Silicone PIP	46.67	40.74	42.86	27.78	11.76
KeriFlex MCP	0.00	0.00	14.29	5.56	5.88
KeriMedical TOUCH	0.00	0.00	0.00	5.56	2.94
MAIA	0.00	0.00	0.00	0.00	2.94

© LROI 2026 | F016

Clubfoot

In this section you will find all the information on clubfoot treatments:

Numbers

Registered treatments

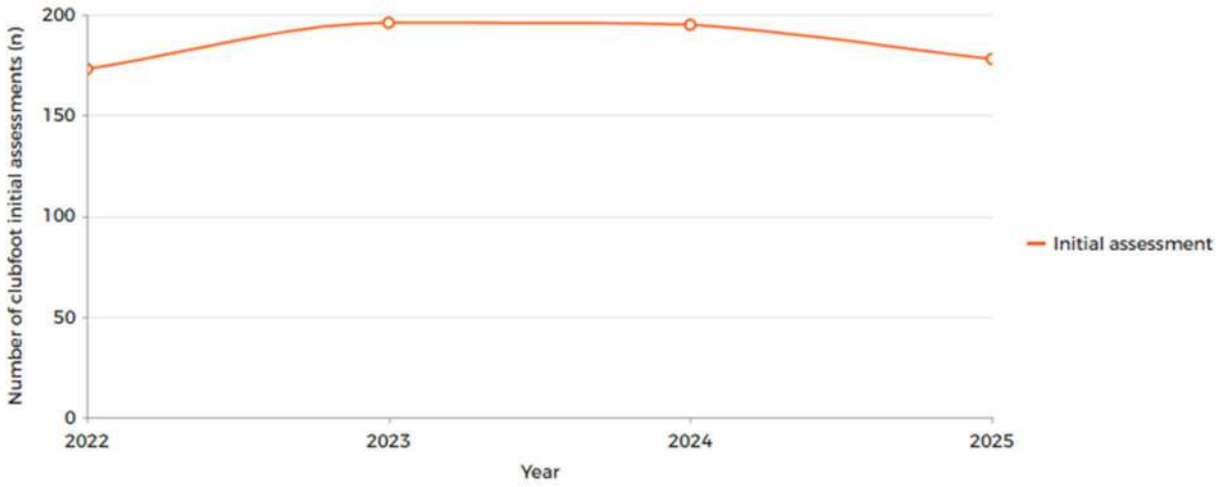
TABLE Number of registered clubfoot treatments per year (2022-2025) in the LROI in April 2026

Year of treatment	Initial assessment	Termination of cast treatment	Relapse	Follow up at 1 year
2022	173	142	4	27
2023	196	170	22	116
2024	195	169	15	115
2025	178	149	15	115
Total (n)	**742**	**630**	**56**	**373**

© LROI 2026 | C001

Initial assessments per year

FIGURE Number of patients with initial assessment clubfoot registered in the LROI in the Netherlands in 2022-2025

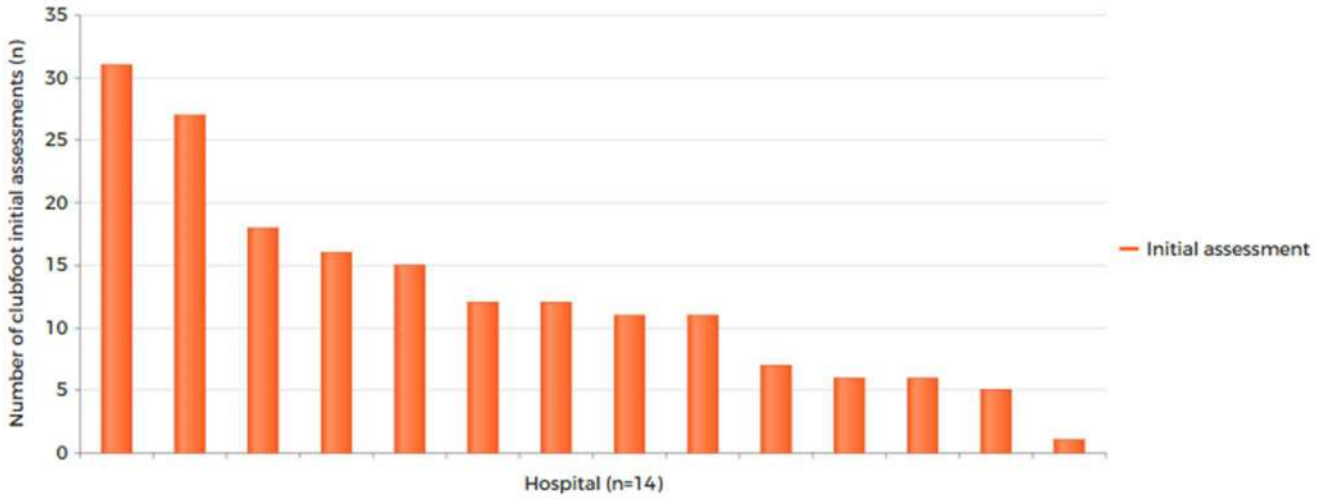


	2022	2023	2024	2025
Initial assessment	173	196	195	178
Total (n)	**173**	**196**	**195**	**178**

© LROI 2026 | C002

Initial assessments per hospital

FIGURE Number of patients with initial assessment clubfoot per hospital in the Netherlands in 2025 (n=131)



© LROI 2026 | C003

Initial assessment

Demographics

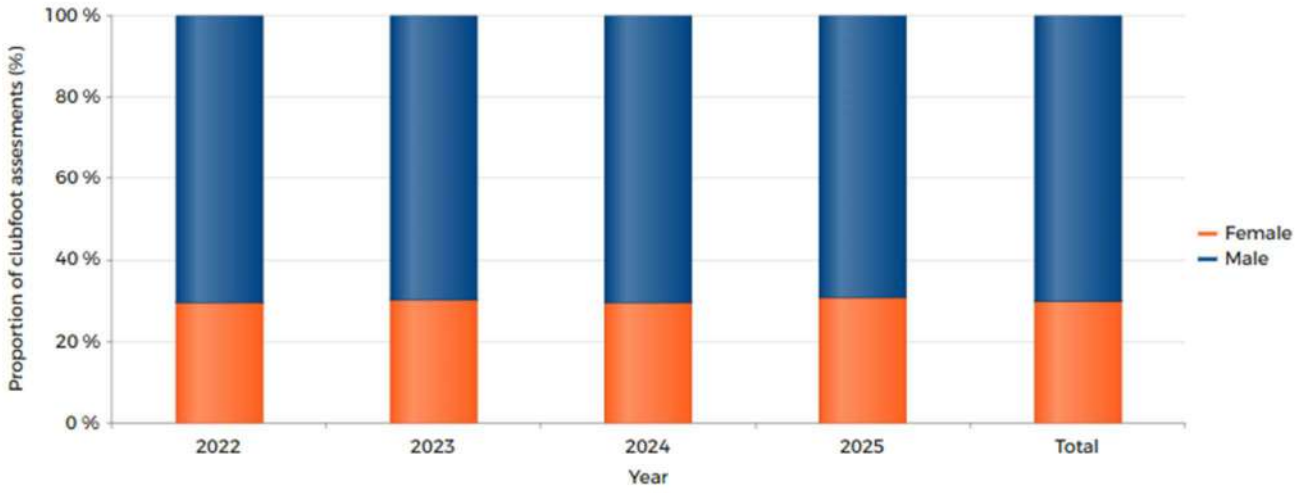
TABLE Patient and treatment characteristics of patients with a registered initial assessment clubfoot by treatment year in the Netherlands in 2022-2025

	2022	2023	2024	2025	Total
n	**173**	**196**	**195**	**178**	**742**
Sex (%)					
Male	71	70	70	69	70
Female	29	30	30	31	30
Age (days)					
Mean (SD)	13 (26)	14 (23)	17 (26)	13 (19)	14 (24)
Median (IQR)	6 (4-10)	9 (5-13)	9 (6-14)	9 (6-12)	8 (5-13)
Treatment started within 1 week (%)	61	40	36	35	43
Treatment started within 2 weeks (%)	83	81	76	83	81
Bilateral (%)	50	48	45	42	46

© LROI 2026 | C004

Gender

FIGURE Trend (proportion [%] per year) in gender of patients with a registered initial assesment clubfoot in the Netherlands in 2022-2025

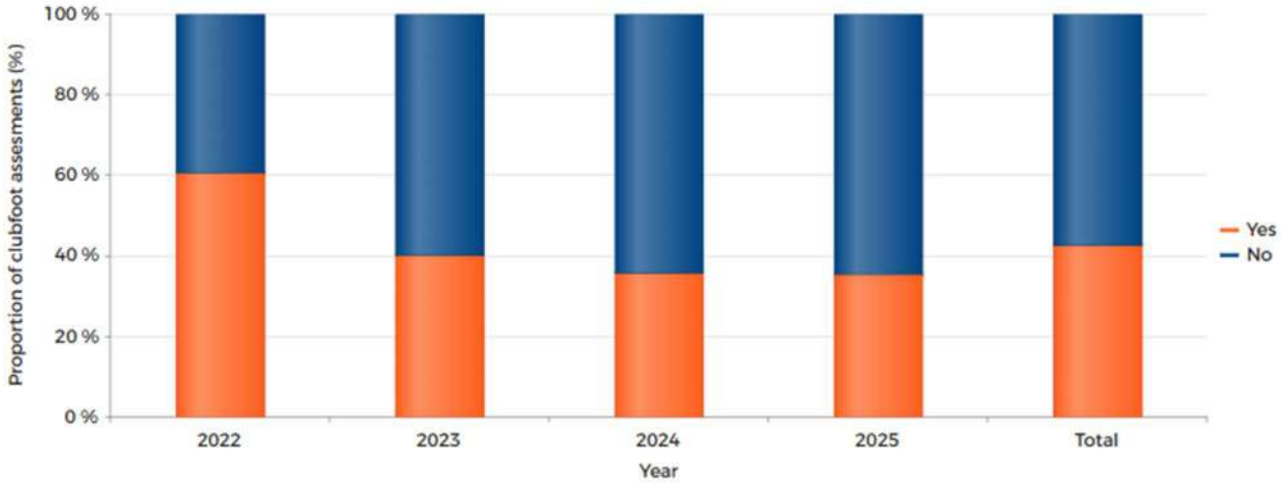


	2022	2023	2024	2025	Total
Female	29.48	30.10	29.74	30.90	30.05
Male	70.52	69.90	70.26	69.10	69.95
Total (n)	**173**	**196**	**195**	**178**	**742**

© LROI 2026 | C005

Treatment within 1 week

FIGURE Trend (proportion [%] per year) of patients with a registered initial assesment clubfoot who began treatment within one week in the Netherlands in 2022-2025

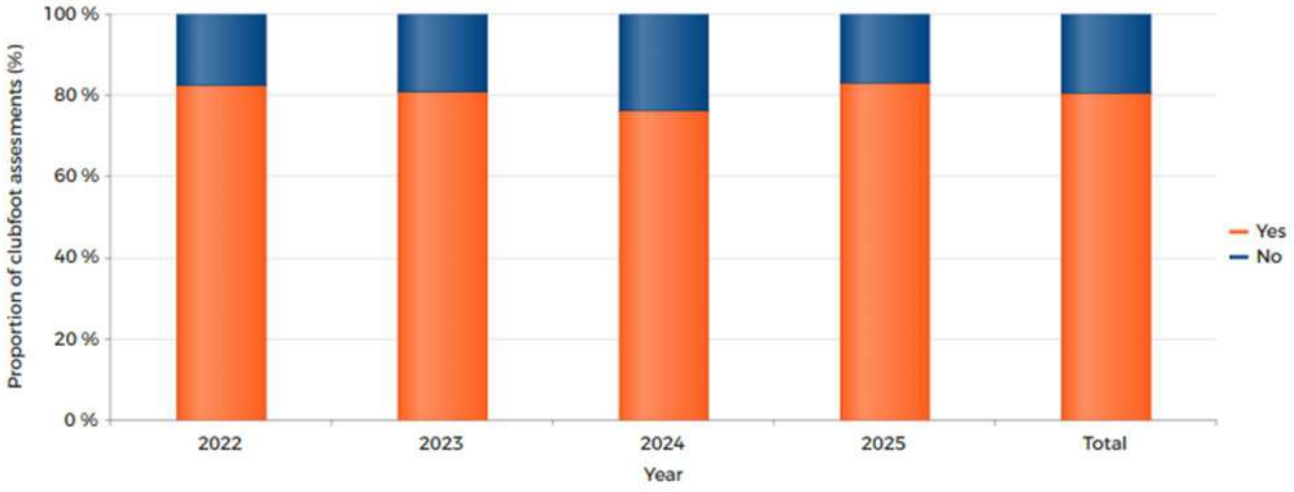


	2022	2023	2024	2025	Total
Yes	60.69	40.31	35.90	35.39	42.72
No	39.31	59.69	64.10	64.61	57.28
Total (n)	**173**	**196**	**195**	**178**	**742**

© LROI 2026 | C006

Treatment within 2 weeks

FIGURE Trend (proportion [%] per year) of patients with a registered initial assesment clubfoot who began treatment within two weeks in the Netherlands in 2022-2025

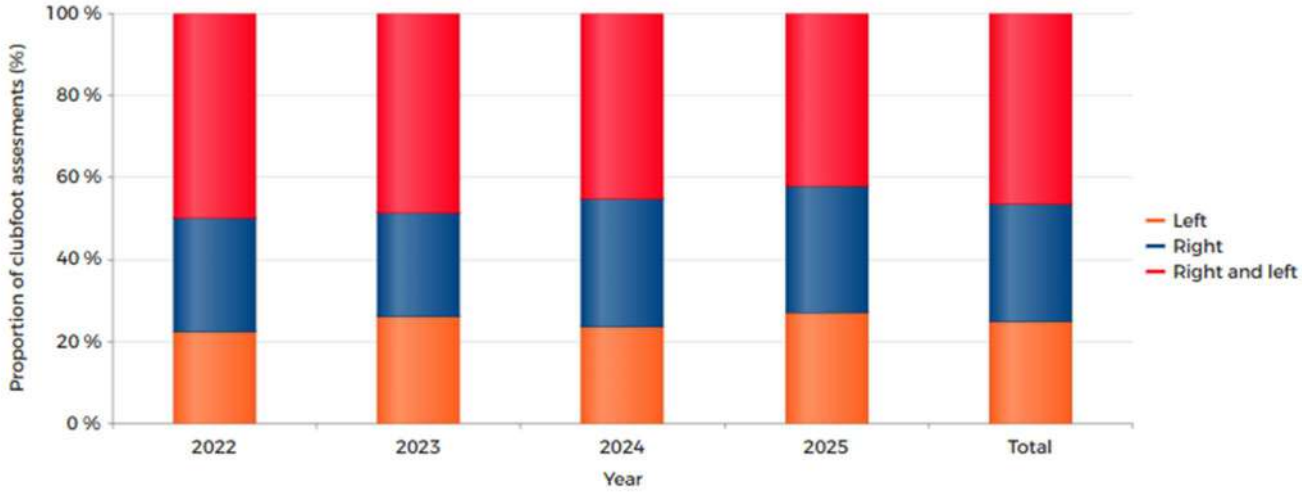


	2022	2023	2024	2025	Total
Yes	82.66	81.12	76.41	83.15	80.73
No	17.34	18.88	23.59	16.85	19.27
Total (n)	**173**	**196**	**195**	**178**	**742**

© LROI 2026 | C007

Affected side

FIGURE Trend (proportion [%] per year) in affected side of patients with a registered initial assesment clubfoot in the Netherlands in 2022-2025



	2022	2023	2024	2025	Total
Left	22.54	26.02	23.59	26.97	24.80
Right	27.75	25.51	31.28	30.90	28.84
Right and left	49.71	48.47	45.13	42.13	46.36
Total (n)	**173**	**196**	**195**	**178**	**742**

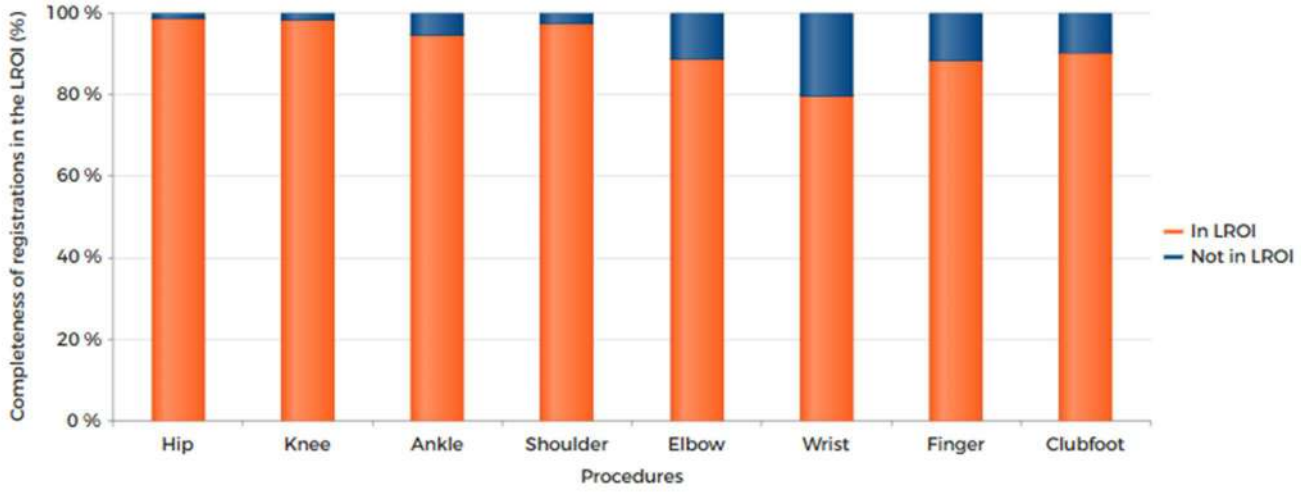
© LROI 2026 | C008

Data quality

Completeness

Overall completeness per procedure

FIGURE Completeness (proportion [%] per procedure) of the registration of procedures in the LROI in 2025



	Hip	Knee	Ankle	Shoulder	Elbow	Wrist	Finger	Clubfoot
In LROI	98.80	98.40	94.70	97.40	88.70	79.90	88.50	90.40
Not in LROI	1.20	1.60	5.30	2.60	11.30	20.10	11.50	9.60
Total (n)	**45,494**	**40,601**	**262**	**5,090**	**239**	**179**	**436**	**198**

Please note: Hip registrations include primary total hip arthroplasties, primary hip hemiarthroplasties and hip revision arthroplasties.
Please note: Completeness refers to the number of registered arthroplasties (orthopaedic, trauma and plastic surgery) in the LROI as of June 2026, compared to the total number of arhtroplasties performed in 2025 based on the hospital information system (HIS). This pertains only to hospitals that submitted data for comparison.
Please note: Nine orthopaedic departments (with 5,079 procedures in the LROI), three trauma surgery departments (149 procedures in the LROI), and six plastic surgery departments (61 procedures in the LROI) did not provide hospital information system (HIS) data for comparison. These procedures are therefore not included in determining the national completeness of the LROI.

© LROI 2026 | D001

Completeness per year

–

TABLE Completeness (proportion [%] per procedure) of the registration of procedures in the LROI in 2013-2025

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Hip arthroplasties													
Primary total hip arthroplasties	97	96	98	99	99	99	99	99	99	99	98	98	98
Primary hip hemiarthroplasties	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	92	89	96	92
Primary hip hemiarthroplasties (orthopaedic surgeon)	71	84	88	95	96	96	94	97	96	n/a	n/a	n/a	n/a
Primary hip hemiarthroplasties (trauma surgeon)	n/a	n/a	n/a	50	64	65	63	68	74	n/a	n/a	n/a	n/a
Hip revision arthroplasties	88	93	97	97	98	97	97	98	98	97	99	100	97
Knee arthroplasties													
Primary knee arthroplasties	95	96	98	99	100	99	99	99	97	99	98	99	98
Knee revision arthroplasties	90	93	98	98	98	97	97	98	97	98	98	99	97
Ankle arthroplasties													
Primary ankle arthroplasties	n/a	80	91	92	100	98	98	95	95	96	95	95	95
Ankle revision arthroplasties	n/a	55	67	94	87	83	55	95	96	95	95	83	91
Shoulder arthroplasties													
Primary shoulder arthroplasties	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	97	96	97	98
Primary shoulder arthroplasties (orthopaedic surgeon)	n/a	78	94	94	98	91	96	96	97	n/a	n/a	n/a	n/a
Primary shoulder arthroplasties (trauma surgeon)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	32	25	n/a	n/a	n/a	n/a
Shoulder revision arthroplasties	n/a	74	90	92	90	78	91	93	79	95	94	100	96
Elbow arthroplasties													
Primary elbow arthroplasties	n/a	70	85	88	91	89	85	92	89	85	88	97	83
Elbow revision arthroplasties	n/a	55	86	93	87	85	83	91	78	87	90	89	100
Wrist arthroplasties													
Primary wrist arthroplasties	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	59	85	76	79
Primary wrist arthroplasties (orthopaedic surgeon)	n/a	n/a	n/a	n/a	71	29	55	70	73	n/a	n/a	n/a	n/a
Primary wrist arthroplasties (plastic surgeon)	n/a	n/a	n/a	n/a	64	62	50	56	75	n/a	n/a	n/a	n/a
Wrist revision arthroplasties	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	85	79	60	87
Wrist revision arthroplasties (orthopaedic surgeon)	n/a	n/a	n/a	n/a	18	83	77	100	93	n/a	n/a	n/a	n/a
Wrist revision arthroplasties (plastic surgeon)	n/a	n/a	n/a	n/a	25	50	50	86	75	n/a	n/a	n/a	n/a
Finger arthroplasties													
Primary finger arthroplasties	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	60	77	73	89
Primary finger arthroplasties (orthopaedic surgeon)	n/a	n/a	n/a	n/a	53	63	66	65	81	n/a	n/a	n/a	n/a
Primary finger arthroplasties (plastic surgeon)	n/a	n/a	n/a	n/a	67	68	60	82	84	n/a	n/a	n/a	n/a
Finger revision arthroplasties	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	100	100	82
Finger revision arthroplasties (orthopaedic surgeon)	n/a	n/a	n/a	n/a	17	100	90	41	83	n/a	n/a	n/a	n/a
Finger revision arthroplasties (plastic surgeon)	n/a	n/a	n/a	n/a	24	40	57	67	100	n/a	n/a	n/a	n/a
Clubfoot													
Initial assessment	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	67	66	95	90

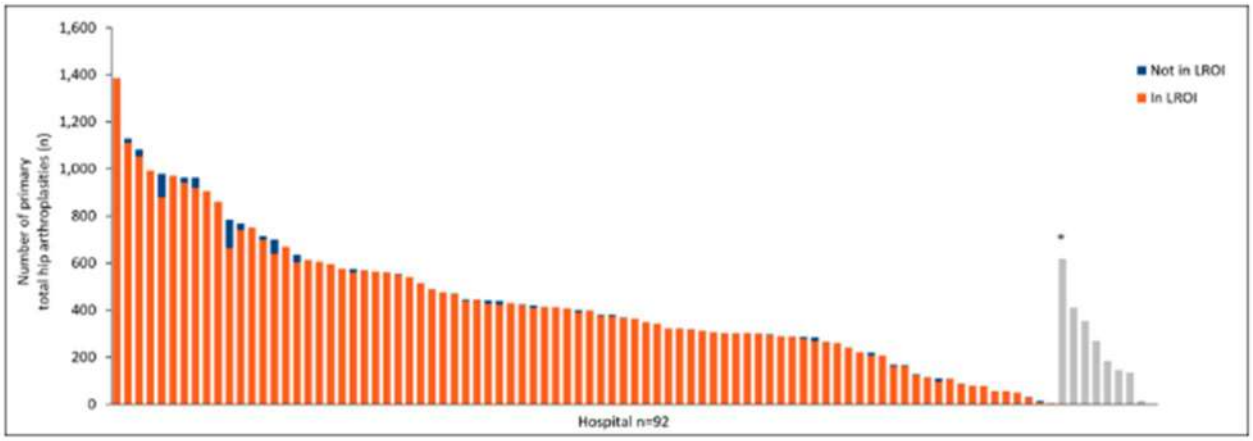
Please note: Completeness refers to the number of registered arthroplasties (orthopaedic, trauma and plastic surgery) in the LROI as of June 2026, compared to the total number of arhtroplasties performed in 2025 based on the hospital information system (HIS). This pertains only to hospitals that submitted data for comparison.
Please note: Nine orthopaedic departments (with 5,079 procedures in the LROI), three trauma surgery departments (149 procedures in the LROI), and six plastic surgery departments (61 procedures in the LROI) did not provide hospital information system (HIS) data for comparison. These procedures are therefore not included in determining the national completeness of the LROI.

© LROI 2026 | D002

The completeness of number of registered procedures in the LROI is determined every year in July-August. Improving data completeness and data quality by registering missing data is an ongoing process.

Completeness primary THA per hospital account

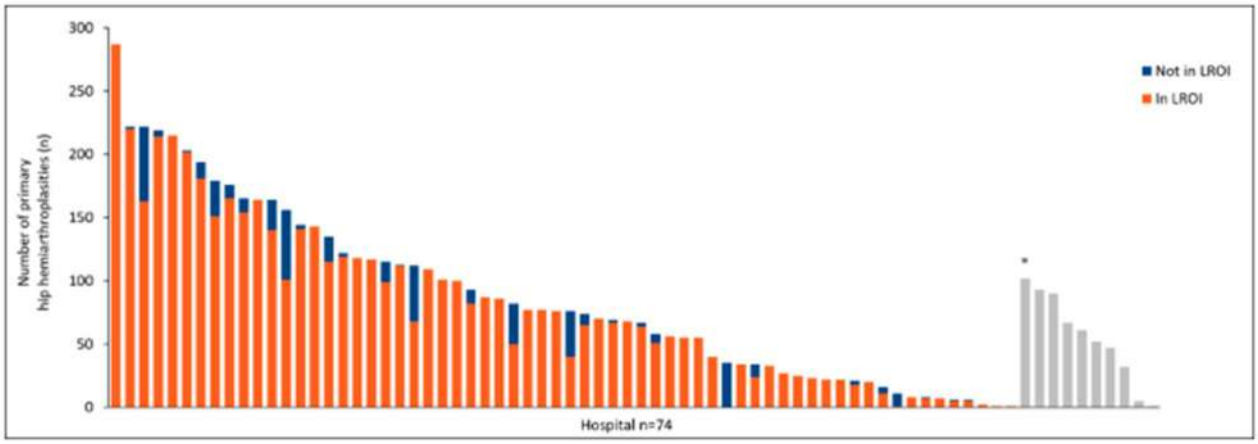
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for primary total hip arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness primary hip hemiarthroplasty per hospital account

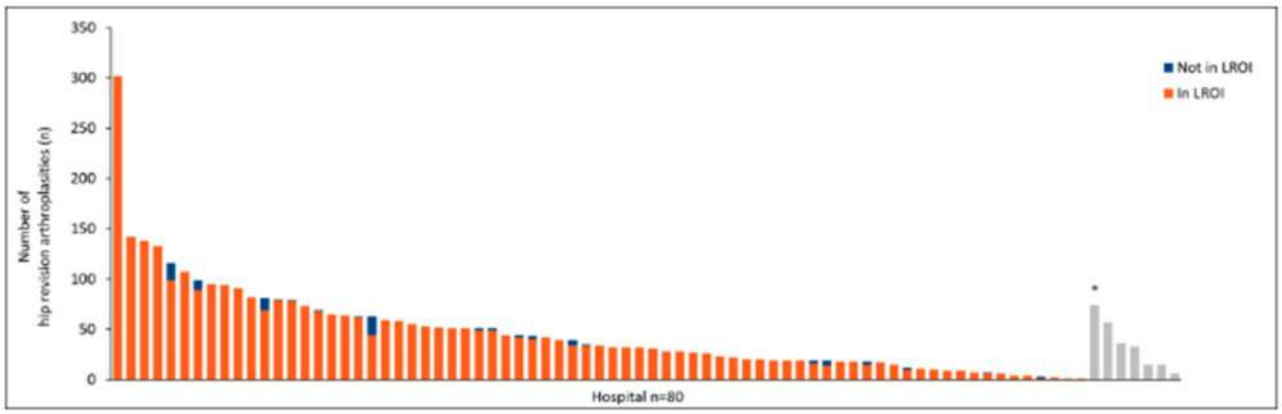
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for primary hip hemiarthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness hip revision per hospital account

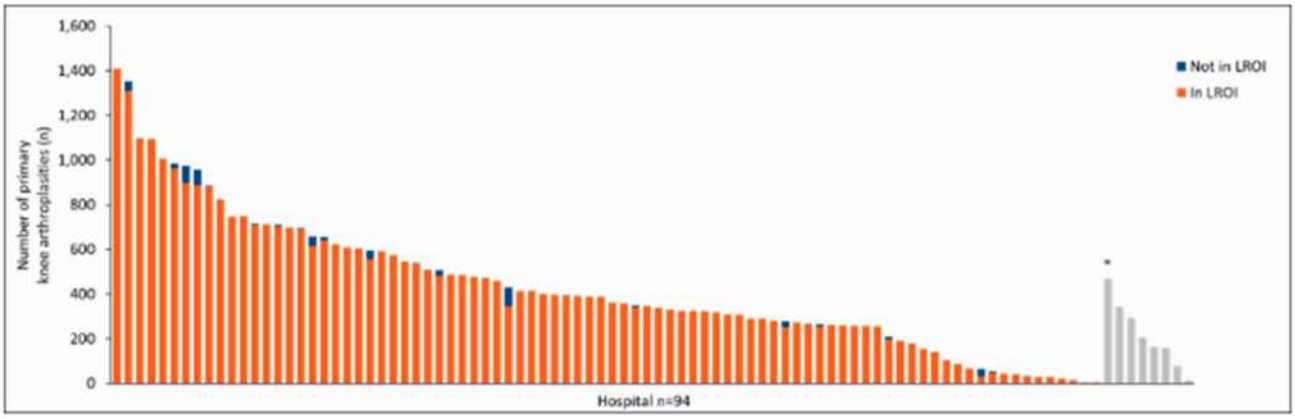
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for hip revision arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness primary knee per hospital account

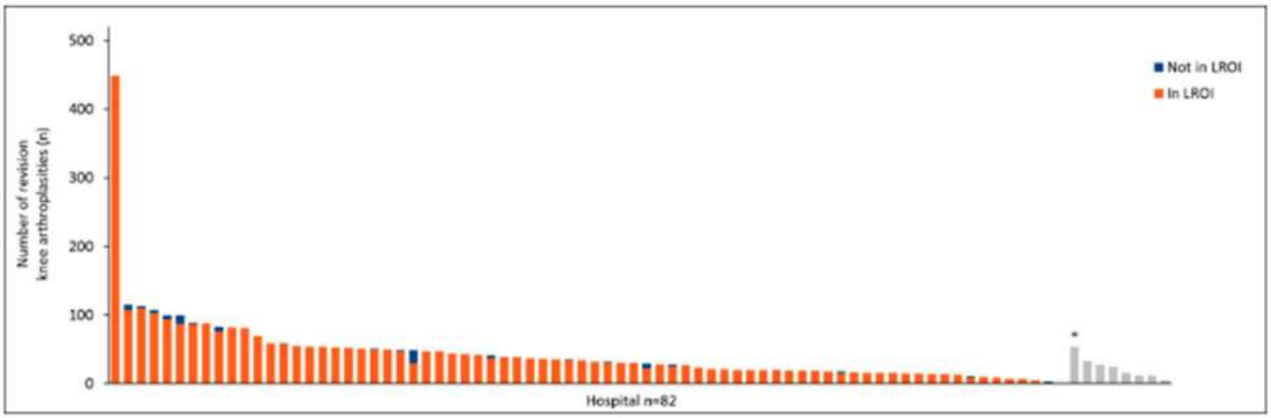
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for primary knee arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness knee revision per hospital account

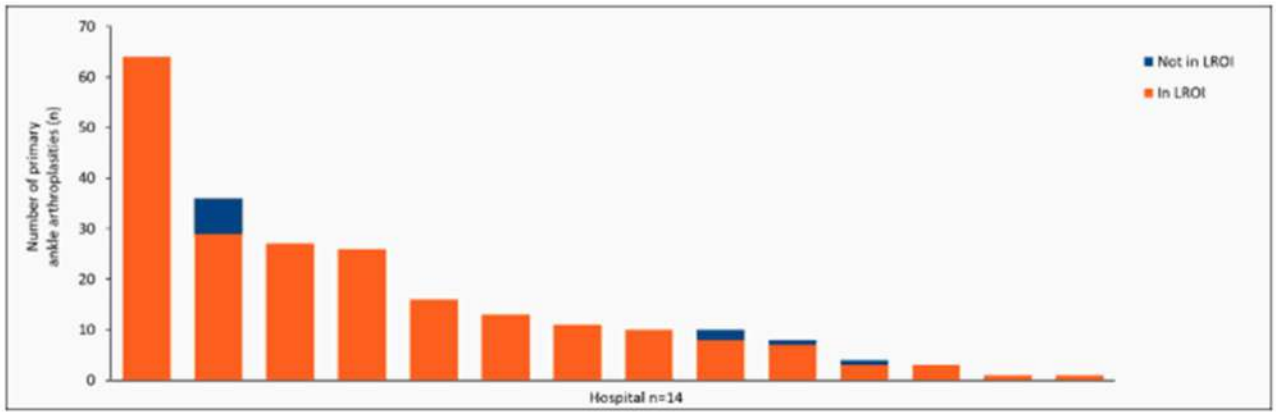
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for knee revision arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness primary ankle per hospital account

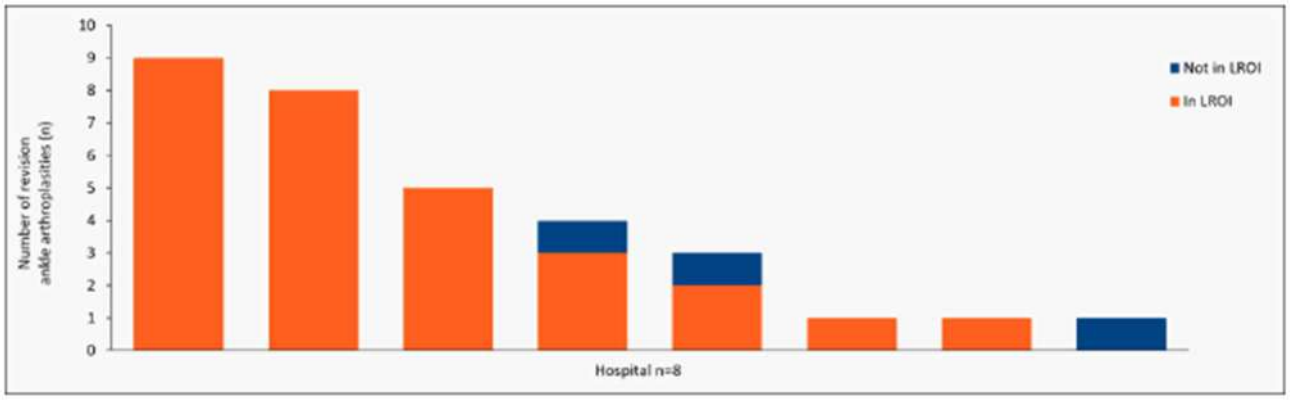
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for primary ankle arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness ankle revision per hospital account

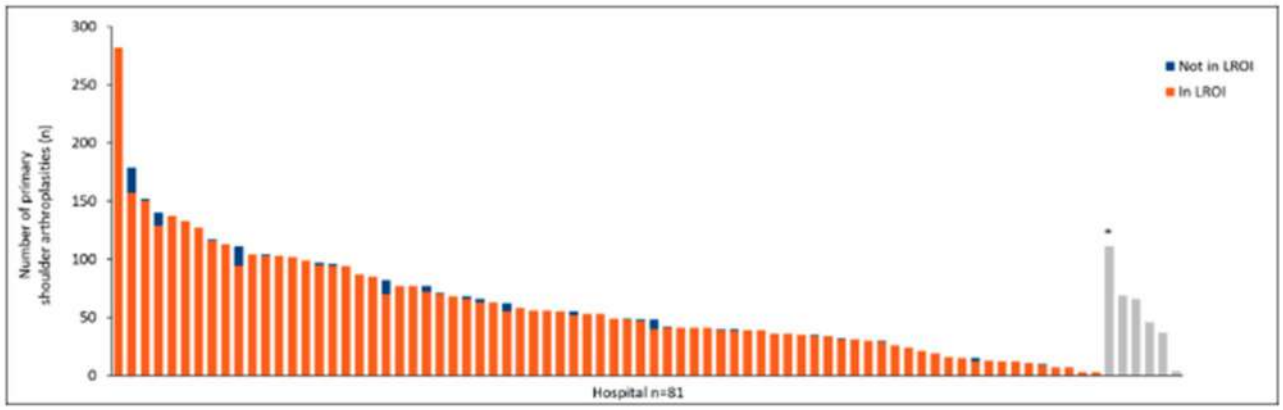
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for ankle revision arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness primary shoulder per hospital account

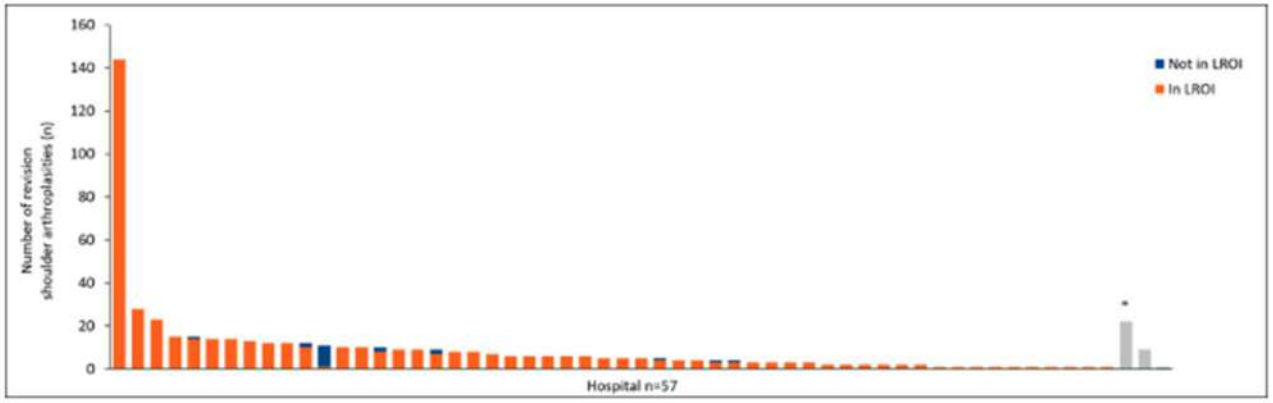
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for primary shoulder arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness shoulder revision per hospital account

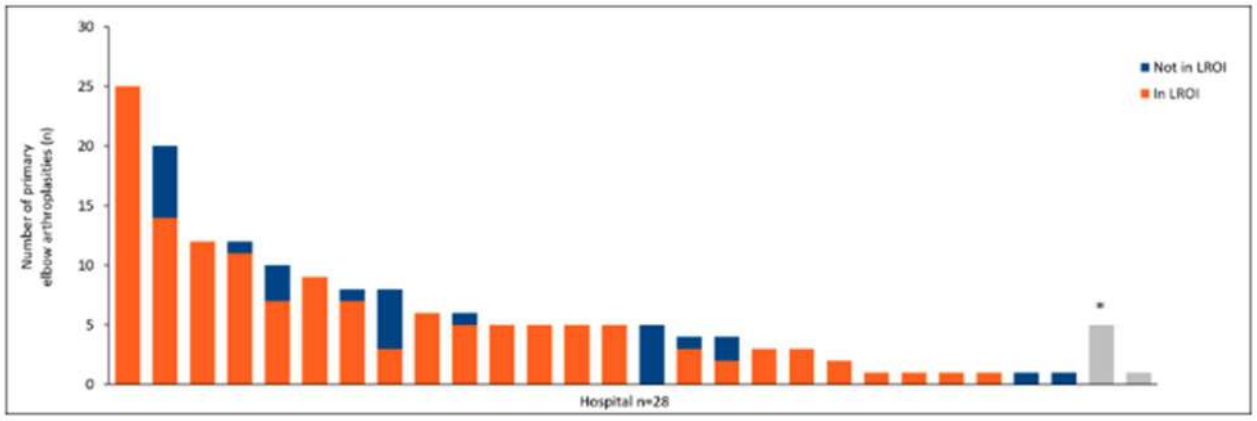
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for shoulder revision arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness primary elbow per hospital account

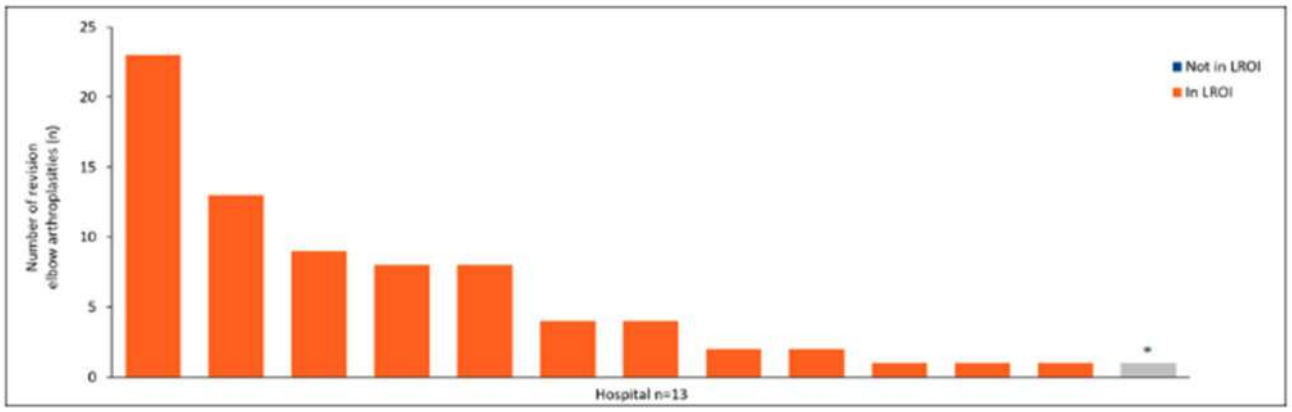
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for primary elbow arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness elbow revision per hospital account

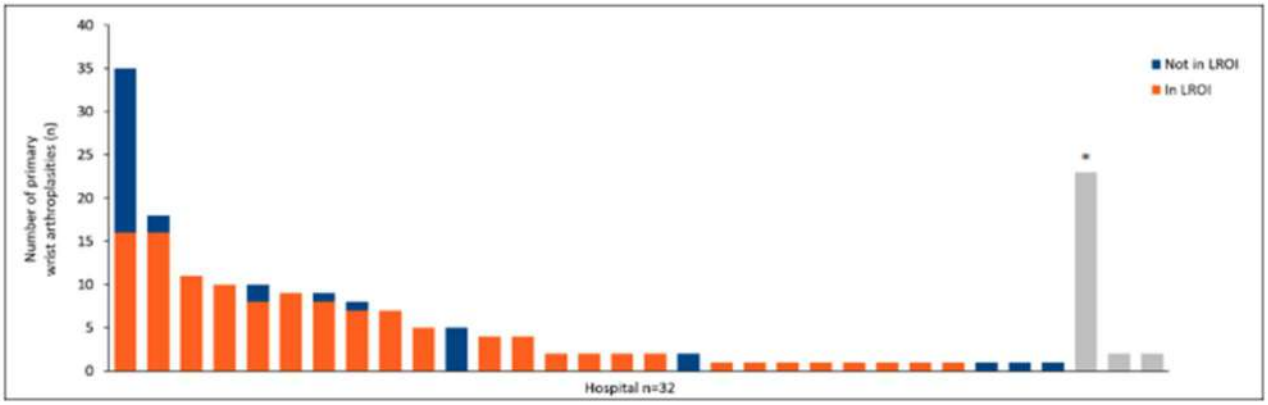
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for elbow revision arthroplasties in 2025



*No data provided for comparison by the hospital account

Completeness primary wrist per hospital account

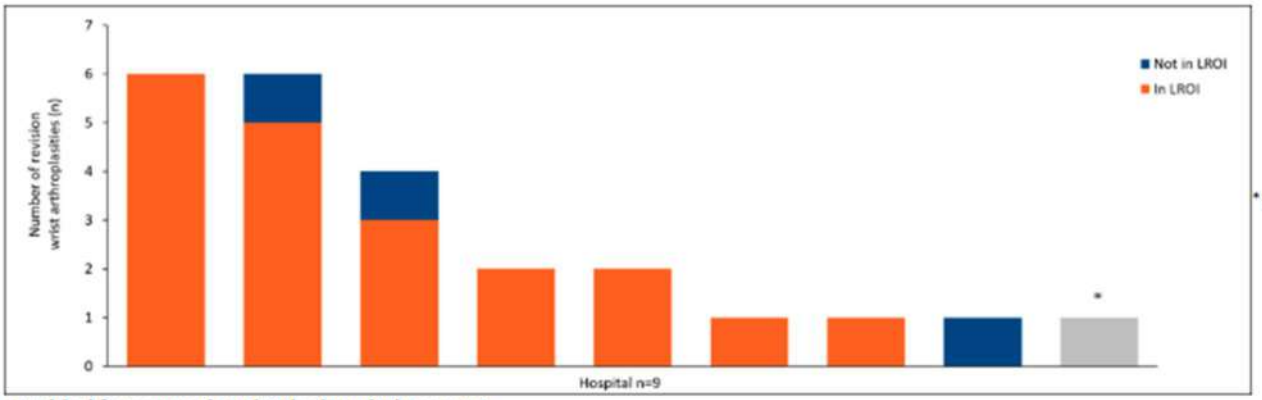
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for primary wrist arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness wrist revision per hospital account

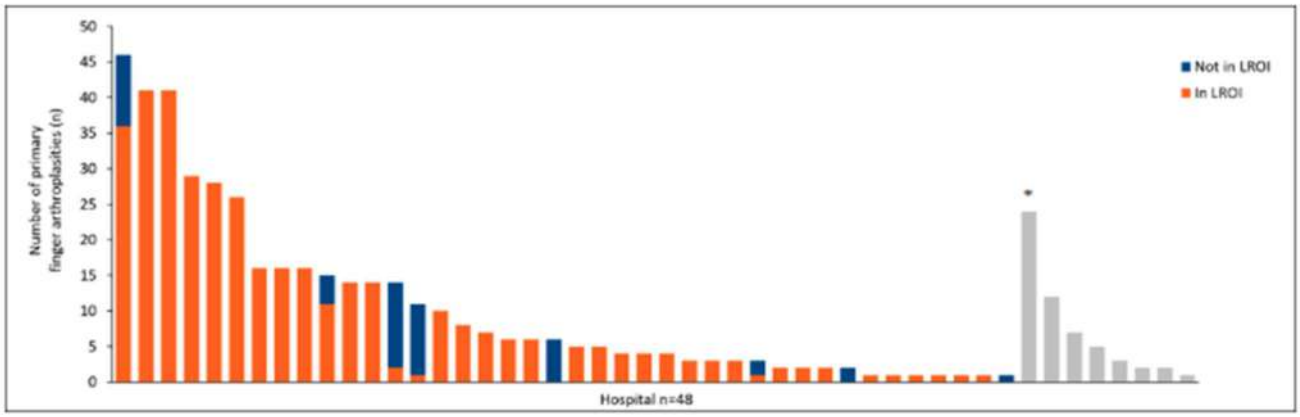
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for wrist revision arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness primary finger per hospital account

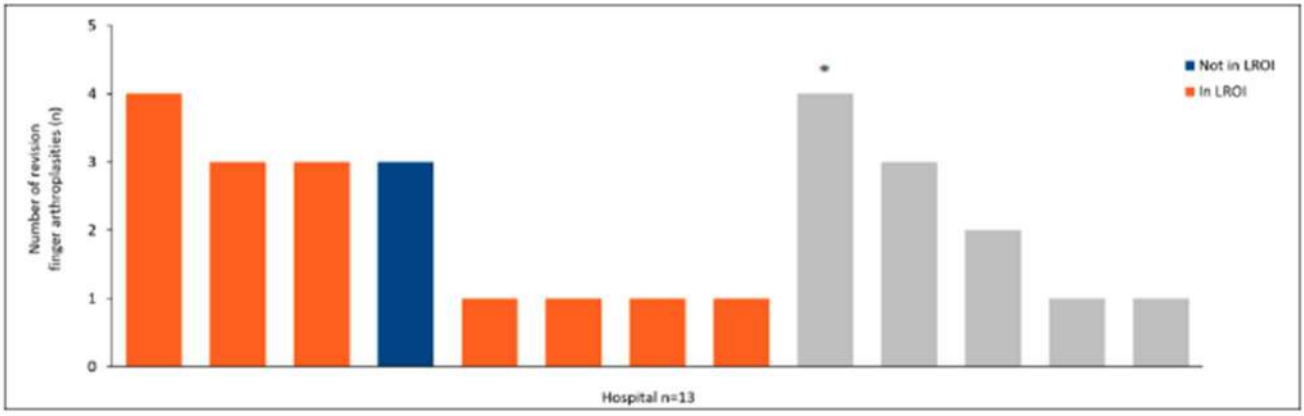
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for primary finger arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness finger revision per hospital account

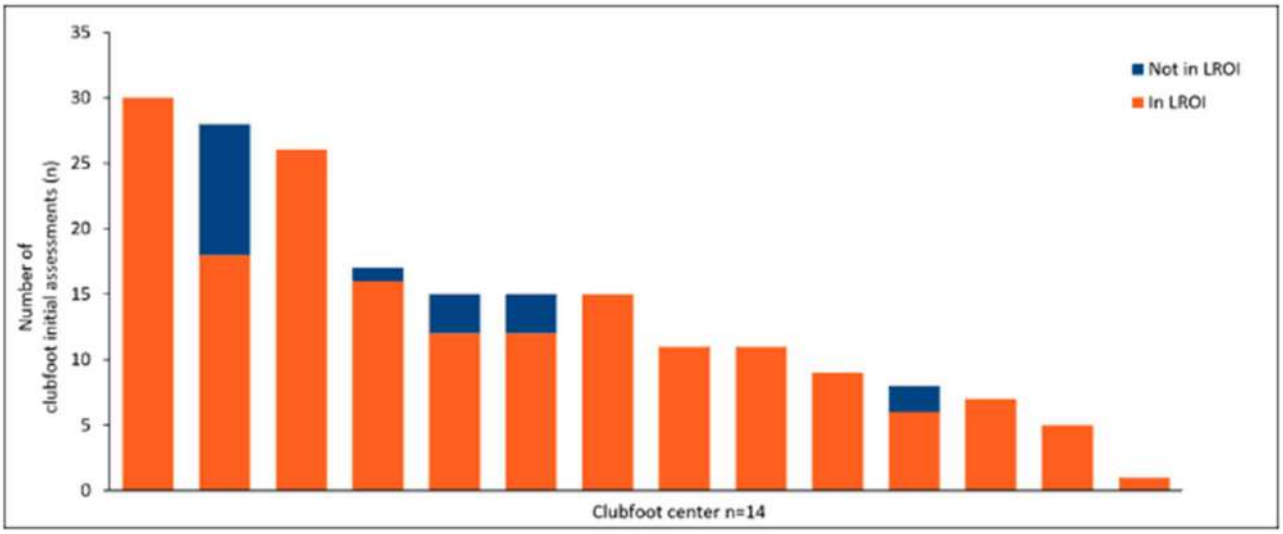
Number of procedures performed (based on the hospital information system) and the number of registered procedures in the LROI per hospital account for finger revision arthroplasties in 2025



* No data provided for comparison by the hospital account

Completeness clubfoot initial assessment per hospital account

Number of treatments performed (based on the hospital information system) and the number of registered treatments in the LROI per hospital account for clubfoot initial assessments in 2025

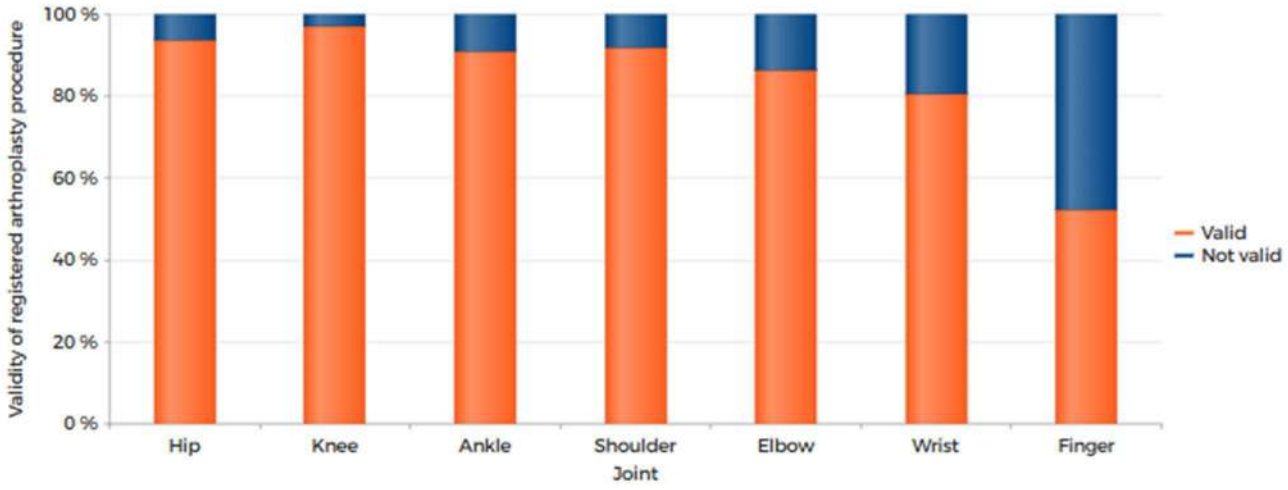


* No data provided for comparison by the hospital

Validity

Overall validity

FIGURE Validity (proportion [%] per procedure) of the registration of procedures in the LROI in 2025



	Hip	Knee	Ankle	Shoulder	Elbow	Wrist	Finger
Valid	93.97	97.12	91.20	92.03	86.44	80.66	52.45
Not valid	6.03	2.88	8.80	7.97	13.56	19.34	47.55
Total (n)	**47,899**	**41,842**	**250**	**5,294**	**234**	**181**	**490**

© LROI 2026 | D019

Validity per variable

TABLE Overview of validity by variable for each joint of hip, knee, ankle, shoulder, elbow, wrist and finger arthroplasties registered in the LROI in the Netherlands in 2025

	Hip	Knee	Ankle	Shoulder	Elbow	Wrist	Finger
Number of arthroplasties (n)	**47899**	**41842**	**250**	**5294**	**236**	**181**	**490**
Number of primary arthroplasties (n)	44310	38431	221	4764	154	156	445
Number of revision arthroplasties (n)	3589	3411	29	530	82	25	45
General characteristics	%	%	%	%	%	%	%
Sex	100.0	100.0	100.0	100.0	100.0	100.0	100.0
HIS patient number	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Date of birth	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Type of procedure	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Operating side	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Postal code	99,9	100.0	100.0	99,9	99,6	98,3	89,8
BMI	98,2	99,5	100	99,1	97	85,6	58
Smoking	98,3	98,5	91,6	98,7	97	94,5	84,7
ASA class	99,7	99,9	100.0	99,7	97,5	99,5	98
Fixation	99,8	99,8	100.0	99,7	97	98,9	98,2
Primary arthroplasty characteristics	%	%	%	%	%	%	%
Diagnosis	99,4	99,5	98,6	99,4	96,8	98,7	98,4
Charnley/Walch score	98,5	99,4	98,6	98,2	n.a.	n.a.	n.a.
Prosthesis	99,9	100	100.0	99,9	96,8	99,4	100
Surgical approach	99,3	n.a.	100	95,3	94,8	98,1	97,5
Revision arthroplasty characteristics	%	%	%	%	%	%	%
Type of revision	99,4	99,8	100.0	99,3	98,8	100	93,3
Charnley score	100.0	100.0	n.a.	n.a.	n.a.	n.a.	n.a.
Reason for revision	97,4	98	100	98,7	98,8	100	88,9

Please note: Validity by variable as determined in April 2026.
HIS: hospital information system; BMI: body mass index

© LROI 2026 | D020

Participating hospitals

General hospitals

1/2

TABLE Overview of general hospitals registering joint arthroplasties and clubfood treatments in the LROI in 2025

Participating hospitals	Hip	Knee	Ankle	Shoulder	Elbow	Wrist	Finger	Clubfoot
Admiraal de Ruyter Ziekenhuis	x	x		x				
Albert Schweitzer Ziekenhuis	x	x		x				
Amphia	x	x		x	x	x	x	x
Antonius Ziekenhuis	x	x		x				
BovenIJ Ziekenhuis	x	x						
Bravis Ziekenhuis	x	x		x	x	x	x	
Canisius Wilhelmina Ziekenhuis	x	x		x				
Centraal Militair Hospitaal	x							
Deventer Ziekenhuis	x	x		x	x			
Diakonessenhuis	x	x		x	x			
ETZ	x	x		x				
Elkerliek Ziekenhuis	x	x		x			x	
Franciscus Gasthuis & Vlietland	x	x		x		x	x	
Groene Hart Ziekenhuis	x	x		x		x	x	
Haaglanden Medisch Centrum	x	x		x	x	x	x	
HagaZiekenhuis, locatie Den Haag	x							
Het Flevoziekenhuis	x	x		x			x	
IJsselland Ziekenhuis	x	x		x				
Ikazia Ziekenhuis	x	x		x			x	
Interconfess. St. Gez. Rivierenland	x	x		x			x	
Jeroen Bosch Ziekenhuis	x	x		x		x	x	
Juliana Kinderziekenhuis								x
MC Jan van Goyen	x	x						
Maasstadziekenhuis	x	x		x	x	x	x	
Maxima Medisch Centrum	x	x		x	x	x	x	x
Meander Medisch Centrum	x	x		x		x	x	
Medisch Centrum Leeuwarden	x	x		x		x	x	
Medisch Spectrum Twente	x	x		x				x
Noordwest Ziekenhuisgroep	x	x	x	x	x	x	x	
OCON	x	x		x		x	x	
OLVG	x	x	x	x	x			x
Ommelander Ziekenhuis Groningen	x	x		x	x		x	
Reinier Haga Groep	x	x	x	x	x	x	x	
Reinier de Graaf Groep	x							
Rivas Beatrixziekenhuis	x	x		x				
Rode Kruis Ziekenhuis	x	x		x	x			
SJG Weert	x	x		x	x			
Saxenburgh groep	x	x		x				
Sint Antonius Ziekenhuis	x	x		x				
Sint Maartenskliniek, concern	x	x	x	x	x	x	x	x
Spaarne Gasthuis	x	x		x				
Spijkenisse Medisch Centrum	x	x		x				
St. Algem. Christ. Martini Zkh	x	x	x	x	x	x	x	
Stichting Alrijne Zkh	x	x	x	x		x	x	
Stichting Catharina Ziekenhuis	x	x		x				
Stichting Chr. Alg. Zkh noordwest-veluwe	x	x		x			x	
Stichting Dijklander Zkh	x	x		x	x			
Stichting GelreZiekenhuizen	x	x		x		x	x	

2/2

TABLE Overview of general hospitals registering joint arthroplasties and clubfood treatments in the LROI in 2025

Participating hospitals	Hip	Knee	Ankle	Shoulder	Elbow	Wrist	Finger	Clubfoot
Stichting Isala Klinieken	x	x		x				x
Stichting Laurentius Zkh	x	x		x	x		x	
Stichting Slingeland Zkh	x	x		x	x			
Stichting St. Anna Zorggroep	x	x		x				
Stichting het van Weel-Bethesda Zkh	x	x		x				
Streekziekenhuis Koningin Beatrix	x	x		x				
Tergooi MC	x	x		x	x		x	
Treant Zorggroep	x	x		x	x	x	x	
VieCuri Medisch Centrum	x	x		x			x	
Wilhelmina Ziekenhuis Assen	x	x		x				
Zaans Medisch Centrum	x	x		x				
Ziekenhuis Amstelland	x	x		x				
Ziekenhuis Bernhoven	x	x		x				
Ziekenhuis Gelderse Vallei	x	x		x				
Ziekenhuis Nij Smellinghe	x	x		x				
Ziekenhuis Rijnstate	x	x		x	x	x	x	
Ziekenhuis Tjongerschans	x	x						
ZiekenhuisGroep Twente	x							
ZorgSaam Ziekenhuis	x	x	x	x		x	x	
Zuyderland Medisch Centrum	x	x		x	x	x	x	

Please note: Since 2007, the LROI has been collecting data on hip and knee procedures, on ankle, shoulder and elbow procedures since 2014, on wrist and finger procedures since 2016, and on clubfoot treatments since 2022.

© LROI 2026 | 003

University Medical Centers (UMC)

TABLE Overview of university medical centers registering joint arthroplasties and clubfood treatments in the LROI in 2025

Participating hospitals	Hip	Knee	Ankle	Shoulder	Elbow	Wrist	Finger	Clubfoot
Amsterdam UMC	x	x	x	x	x			x
Erasmus MC	x	x		x	x	x		x
Leids Universitair Medisch Centrum	x	x		x	x			x
Maastricht UMC+	x	x	x	x	x	x	x	x
Radboudumc	x	x						x
UMC Groningen	x	x		x	x	x	x	x
UMC Utrecht	x	x						x

Please note: Since 2007, the LROI has been collecting data on hip and knee procedures, on ankle, shoulder and elbow procedures since 2014, on wrist and finger procedures since 2016, and on clubfoot treatments since 2022.

© LROI 2026 | 004

Private hospitals

TABLE Overview of private hospitals registering joint arthroplasties and clubfood treatments in the LROI in 2025

Participating hospitals	Hip	Knee	Ankle	Shoulder	Elbow	Wrist	Finger	Clubfoot
Acibadem International Medical Center	x	x	x	x				
Bergman Clinics, Loc. Amsterdam						x	x	
Bergman Clinics, Loc. Arnhem	x	x		x			x	
Bergman Clinics, Loc. Breda	x	x	x	x				
Bergman Clinics, Loc. Naarden	x	x	x	x				
Bergman Clinics, Loc. Rijswijk	x	x	x	x				
Bergman Clinics, Loc. Rotterdam	x	x		x				
Berne Kliniek							x	
CortoClinics	x	x						
De Schouderdokter				x				
Dr. Kuypers Kliniek							x	
Eisenhower Kliniek	x	x		x				
FlexClinics	x	x		x				
Kliniek ViaSana	x	x		x				
Medische Kliniek Velsen	x	x		x				
Ortho Care Clinics		x						
OrthoDirect		x						
Park Medisch Centrum	x	x						
Stichting Annadal Kliniek	x	x		x				
Voor de hand							x	
Xpert Clinic, Loc. Amsterdam	x	x	x	x		x	x	
Xpert Clinic, Loc. Annatommie mc Amstelveen	x	x						
Xpert Clinic, Loc. Annatommie mc Utrecht	x	x		x			x	
Xpert Clinic, Loc. Eindhoven	x	x				x	x	
Xpert Clinic, Loc. Enschede							x	
Xpert Clinic, Loc. Rotterdam	x	x				x	x	
Xpert Clinic, Loc. Rozendaal	x	x					x	
Xpert Clinic, Loc. Veenhuizen	x	x						

Please note: Since 2007, the LROI has been collecting data on hip and knee procedures, on ankle, shoulder and elbow procedures since 2014, on wrist and finger procedures since 2016, and on clubfoot treatments since 2022.

© LROI 2026 | 005

Methodology

Definitions and abbreviations

An overview of definitions and abbreviations used in this LROI annual report

Definitions

An overview of definitions used in this LROI annual report

Acetabulum component
The part of a hip prosthesis that is implanted into the acetabulum – the socket part of a ball and socket joint
Allograft
Transplant of bone tissue from a different body
Anchor question
The anchor question (daily functioning) measures change in daily functioning after joint replacement. The anchor question (pain) measures change in pain degree after joint replacement. The score has a range of 1.0 to 7.0, with 1.0 representing very deteriorated and 7.0 representing very improved
Arthrodesis
A procedure in which a natural joint is fused together
Arthrofibrosis
Rigidity of the joint as a consequence of connective tissue adhesion
Arthroscopy
Keyhole surgery to examine and treat joint disorders
Arthrotomy
Opening a joint during surgery
Articulation
The two surfaces that move together (articulate) in a total joint replacement
ASA score
The American Society of Anaesthesiologists (ASA) score is a scoring system for grading the overall physical condition of the patient, as follows: I – fit and healthy; II – mild disease, not incapacitating; III – incapacitating systemic disease; IV – life threatening disease
Autograft
Transplant of bone tissue originating from the patient's own body
Bilaterality
Replacing the same joint on both sides of the body by means of a prosthesis within a specific period
Body Mass Index
Index for weight compared to body length (kg/m2); ≤18.5: underweight; >18.5-25: normal weight; >25-30: overweight; >30-40: obesity; >40: morbid obesity
Bonegraft
Bone transplant
Bone resorption
Process by which osteoclasts break down bone tissue
Carpal component
Part of a wrist prosthesis that is implanted in the patient's carpal bones
Case mix
Term used to describe variation in the population, relating to factors such as diagnosis, patient age, gender and health condition
Cement
Material (polymethyl methacrylate) used to fixate joint replacements to bone
Charnley score
Clinical classification system; A: one joint affected; B1: both joints affected; B2: contralateral joint with a prosthesis; C: several joints affected or a chronic disease that affects quality of life
Competing risk survival analyse
Method to calculate survival taking into account various outcomes, in this case revision and death
Completeness
The completeness of the number of registered procedures in the LROI, based on a comparison with the hospital information system of every hospital that performs hip and/or knee arthroplasty in the Netherlands
Cuff arthropathy
Osteoarthritis of the shoulder joint as a consequence of the tendons around the shoulder joint being affected
Cuff rupture
Rupture of a tendon of the muscles that are around the shoulder joint

Cumulative incidence
The added up incidence over a specific period of an event (such as revision of a prosthesis or death of a patient)
Cumulative revision percentage
Added up revision percentage over a specific time period
Difference score
Difference in calculating score between pre-operative and 3, 6 or 12 months postoperative scores
Distal component
Part of a finger prosthesis that replaces the distal phalanx
Distal hemihumeral prosthesis
Elbow prosthesis in which the distal part of the humerus (upper arm bone) is replaced
Dual mobility cup
Acetabular component that consists of a dual cup and, therefore, has two independent articulation points
EQ-5D index score
The EQ-5D index score measures quality of life. The score has a range of -0.329 to 1.0, with 1.0 representing the best possible quality of life.
EQ-5D thermometer score
The EQ-5D thermometer score measures the health situation. The score has a range of 0.0 to 100.0, with 0.0 representing the worst possible health situation and 100.0 the best possible health situation
Femur component
Part of a hip or knee prosthesis that is implanted into the femur (thigh bone)
Femoral head component
Part of a hip prosthesis that is implanted on top of the femoral component of a hip prosthesis and moves inside the acetabular component or the cup of the hip joint
Flail elbow
Situation after removal of an elbow prosthesis in which no joint is present any more between the upper and lower arm
Girdlestone situation
Revision procedure to a hip in which the hip joint or hip prosthesis is removed and no new prosthesis is implanted (often because of a bacterial infection)
Glenoid baseplate
Part of a reversed shoulder prosthesis: a metal plate that is screwed into the glenoid (shoulder cup) of the shoulder blade, on which the glenosphere is fixed
Glenoid component
The part of a shoulder prosthesis that is placed in the glenoid; the cup-shaped notch of the shoulder blade
Glenoid liner
Intermediate component (inside layer) of a total anatomical shoulder prosthesis that will be placed in a glenoid component (most often a metal one)
Glenosphere
The part of a reversed shoulder prosthesis that is placed on the glenoid baseplate which is screwed into the glenoid and is spherical in shape
HOOS-PS score
The HOOS-PS score measures the physical functioning of patients with osteoarthritis to the hip. The score has a range of 0.0 to 100.0, with 0.0 representing no effort and 100.0 the most possible effort
Hybrid fixation
Fixation of a prosthesis in which (most often) one of both parts of a prosthesis is cemented and the other one uncemented
Humerus component
The part of a shoulder or elbow prosthesis that replaces the humerus (upper arm bone). The humeral component of a shoulder prosthesis may consist of two parts: the humeral head and the humeral stem component
Humeral liner
Intermediate component (inner layer) of a reversed shoulder prosthesis that will be placed in a metaphysical component
Inlay
Intermediate component (inner layer), made of polyethylene
Insert
Intermediate component (inner layer), made of polyethylene that is placed in the tibial component of a knee prosthesis
Kaplan Meier survival analysis
Method to calculate survival, in which only one end point is possible, in this case revision
KOOS-PS score
The KOOS-PS score measures the physical functioning of patients with osteoarthritis to the knee. The score has a range of 0.0 to 100.0, with 0.0 representing no effort and 100.0 the most possible effort
Lateral collateral ligament
Lateral (outer) knee ligament or elbow ligament
Lateral resurfacing arthroplasty
Elbow prosthesis in which only the lateral side of the joint is replaced

Major revision
Revision of at least the acetabular or femoral component (hip) or femoral or tibial component (knee)
Malalignment
Strain on a part of the body due to an abnormal position of a joint component with respect to other components
Medial malleolus osteotomy
Surgical approach of the ankle in which the medial malleolus (protruding part of the tibia on the inside of the ankle) is incised and later re-fixed to be able to have better access to the inside of the joint
Meniscectomy
Meniscus removal
Metallosis
Deposition of metal debris in soft tissues of the body
Metaphysis component
The part of a shoulder prosthesis that replaces the metaphysis (upper part) of the humerus (upper arm bone)
Minor revision
Revision of only inlay and/or femoral head component (hip) or only insert and/or patella exchange (knee)
NRS score
Numeric Rating Scale score. The NRS (rest) score measures pain during rest. The NRS (activity) score measures pain during activity. The score has a range of 0.0 to 10.0, with 0.0 representing no pain and 10.0 representing the most possible pain. The NRS (satisfaction) score measures patients' satisfaction with the outcome of joint replacement. The score has a range of 0.0 to 10.0, with 0.0 representing very unsatisfied and 10.0 representing very satisfied
ODEP rating
Orthopaedic Data Evaluation Panel. ODEP provides ratings for hip femoral stems, hip acetabular cups and total knee replacement implants. An ODEP rating consists of a number and a letter (A or B), and a star (optional). The number represents the number of years for which the product's performance had been evidenced. The letter represents the strength of evidence presented by the manufacturer (A represents strong evidence and B represents acceptable evidence). A Star (*) represents very strong evidence above A and B. Detailed information can be found at www.odep.org.uk
Olecranon
The most proximal part of the ulna
One-stage revision
A single revision procedure to change (insertion, replacement and/or removal) one or more components of the prosthesis (excluding patella addition)
Open Reduction and Internal Fixation surgery
Type of surgery to treat a bone fracture where the broken bone is reduced or put back into place, followed by internal fixation using devices (screws, plates, rods, or pins) to hold the broken bone together
Osteoarthritis
Disorder in which the cartilage of a joint is affected
Osteochondral bone defect
Defect of the joint surface in which both cartilage and underlying bone are affected
Osteonecrosis
Cellular death of bone tissue
Osteosynthesis
Securing broken bone parts together with plates, pins and/or screws
Osteotomy
Incise the bone in order to correct the position, to shorten or lengthen the bone
Oxford Hip score
The Oxford Hip score measures the physical functioning and pain of patients with osteoarthritis to the hip. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 representing the most functional ability
Oxford Knee score
The Oxford Knee score measures the physical functioning and pain of patients with osteoarthritis to the knee. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 representing the most functional ability.
Oxford Shoulder score
The Oxford Shoulder score measures the physical functioning and pain of patients with osteoarthritis to the shoulder. The score has a range of 0.0 to 48.0, with 0.0 representing no functional ability and 48.0 representing the most functional ability.
Patella addition
Knee revision procedure in which only a patella component was added to the primary knee prosthesis
Patella component
Part of a knee prosthesis that is implanted on the inner side of the knee cap
Patellofemoral prosthesis
Two-piece knee prosthesis that provides a prosthetic (knee) articulation surface between the patella and trochlea (furrow) of the thigh bone (femur)
Primary prosthesis
The first time (primary) a prosthesis is implanted to replace the original joint

PROMs
Patient Reported Outcome Measures
Proximal component
Part of a finger prosthesis that replaces the proximal phalanx
Radial head component
Part of an elbow prosthesis that replaces the head of the radius (spoke-bone)
Radial head prosthesis
Elbow prosthesis in which only the head of the radius (spoke-bone) is replaced
Radial stem component
Part of an elbow or wrist prosthesis that is implanted in the shaft of the patient's radius (spoke-bone)
Recommendation score
The recommendation score measures to what extend the patient would recommend joint replacement to a friend or relative. The score has a range of 1.0 to 5.0, with 1.0 representing totally disagree and 5.0 representing totally agree
Resurfacing hip arthroplasty
Hip prosthesis in which the cup (acetabulum) is replaced and a metal cap is implanted on top of the femoral head
Resurfacing shoulder arthroplasty
Shoulder prosthesis in which a metal cap is implanted on top of the humeral head
Reversed hybrid fixation hip prosthesis
Fixation of a hip prosthesis in which the acetabular component is cemented and the femoral component is uncemented
Reversed shoulder prosthesis
Adjusted type of total shoulder arthroplasty in which the parts are implanted in a reversed manner. A sphere (glenosphere) is implanted onto the glenoid and a stem with cup in the shaft of the shoulder head
Revision arthroplasty
Any change (insertion, replacement and/or removal) of one or more components of the prosthesis
Sauvé Kapandji procedure
Arthrodesis of a natural wrist joint and construction of a new wrist joint by splitting the ulna
Shoulder hemiarthroplasty
Shoulder hemiarthroplasty with humeral stem, stemless hemi shoulder prosthesis (without humeral stem) or resurfacing shoulder hemiarthroplasty
Synovectomy
Removal of inflamed mucosa in a joint
Talus component
Part of an ankle prosthesis that is inserted in the talus (ankle bone)
Tibia component
Part of a knee or ankle prosthesis that is inserted in the tibia (shin bone)
Total arthroplasty
Arthroplasty in which the entire joint of a patient is replaced
Ulnar component
Part of an elbow or wrist prosthesis that is inserted in the ulna
Ulnar nerve
One of the three nerves that runs along the elbow. This nerve largely runs along the ulna
Unicondylar knee arthroplasty
Replacement of half the knee (either inner or outer side) by a prosthesis
Validity
Level of accuracy and completeness of registered data
Vektis
Vektis is a care information centre. Vektis collects and analyses data on the costs and quality of health care in the Netherlands. Vektis data mainly originates from reimbursement files of health care insurers. Therefore, Vektis has national data on medication use and use of aiding devices, data on primary health care and data on Diagnosis Treatment Combinations (DBCs/DOT) in hospitals and any other types of insured care in the Netherlands. In addition, Vektis collects demographic data, based on surveys among insurers and results of quality studies. www.vektis.nl
Walch score
Clinical classification system for level and type of wear of a shoulder joint; A1: humeral head centred, minimal erosion of shoulder cup; A2: humeral head centred, substantial erosion of shoulder cup; B1: Posterior subluxation of humeral head, posterior joint cavity narrow, subchondral sclerosis and osteophytes; B2: posterior subluxation of humerus head, retroversion of shoulder cup with posterior erosion; C: retroversion of shoulder cup over 25 degrees, irrespective of erosion

Abbreviations

AA	Ankle arthroplasty
AO	Antioxidant
ASA	American Society of Anaesthesiologists
BMI	Body Mass Index
BSN	Citizen Service Number
CI	Confidence Interval
CMC	Carpometacarpal [finger joint]
D(IP)	Distal interphalangeal [finger joint]
DRU	Distal Radioulnar [prosthesis]
EA	Elbow arthroplasty
HIS	Hospital Information System
HA	Hip arthroplasty
IQR	Interquartile range
KA	Knee arthroplasty
LROI	Dutch Arthroplasty Register
MCP	Metacarpophalangeal [finger joint]
NOV	Netherlands Orthopaedic Association
NRS	Numeric Rating Scale
ODEP	Orthopaedic Data Evaluation Panel
ORIF	Open Reduction Internal Fixation
PE	Polyethylene
PIP	Proximal interphalangeal [finger joint]
PKA	Patellofemoral Knee Arthroplasty
PROM	Patient Reported Outcome Measure
RA	Revision arthroplasty
RHA	Resurfacing hip arthroplasty
SA	Shoulder arthroplasty
SD	Standard Deviation
TEA	Total Elbow Arthroplasty
THA	Total Hip Arthroplasty
TKA	Total Knee Arthroplasty
TSA	Total Shoulder Arthroplasty
UKA	Unicondylar Knee Arthroplasty
UMC	University Medical Centre
Zo	Oxidized Zirconium