

EPRD Annual Report 2024

Authors:

Alexander Grimberg, Stephan Kirschner, Jörg Lützner,
Oliver Melsheimer, Michael Morlock, Arnd Steinbrück

Registry development

Registry development (I)

What is new in the 2024 report:

- The EPRD will generally consider secondary patellar resurfacing to constitute an endpoint of primary arthroplasty.
- There is a stronger visual distinction between the hip and knee arthroplasty sections.
- Burden of revision described as an alternative measure of outcome trends.
- Additional results tables integrated and available on the EPRD website www.eprd.de/de/downloads/tabellen (in German) and by scanning this QR code:



Future developments:

- The Implant Register Germany (IRD) is due to start recording hip and knee arthroplasties in 2025. The EPRD will, however, continue its activities. To help minimise the burden of dual data entries for hospitals, the EPRD will offer a transfer interface.
- From 2025, the EPRD will start collecting surgical approach as well as computer-assisted surgery data for primary hip and knee arthroplasties respectively. An optional module for recording diagnostics and treatments for periprosthetic infections in more detail will also be added.
- A voluntary option for documenting arthroplasty surgeons will start in 2026.



Registry development (III)

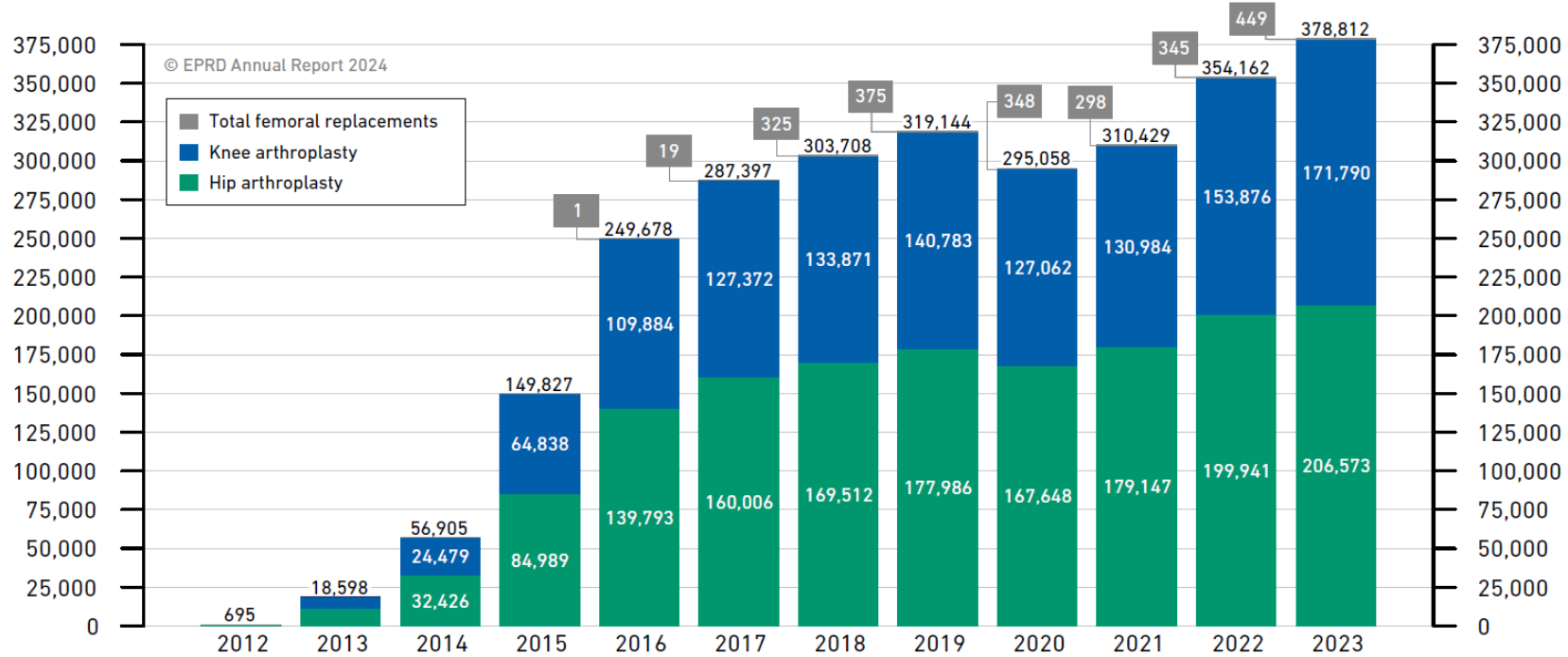


Figure 1: Annual procedure volume by operation date. The total number of documented procedures is shown in black above the respective bar.

- Up to the end of 2023 data on more than 2.6 million hip and knee arthroplasty procedures collected
- 378,812 operations added to the EPRD in 2023 → almost 7 % more than 2022

Registry development (IV)

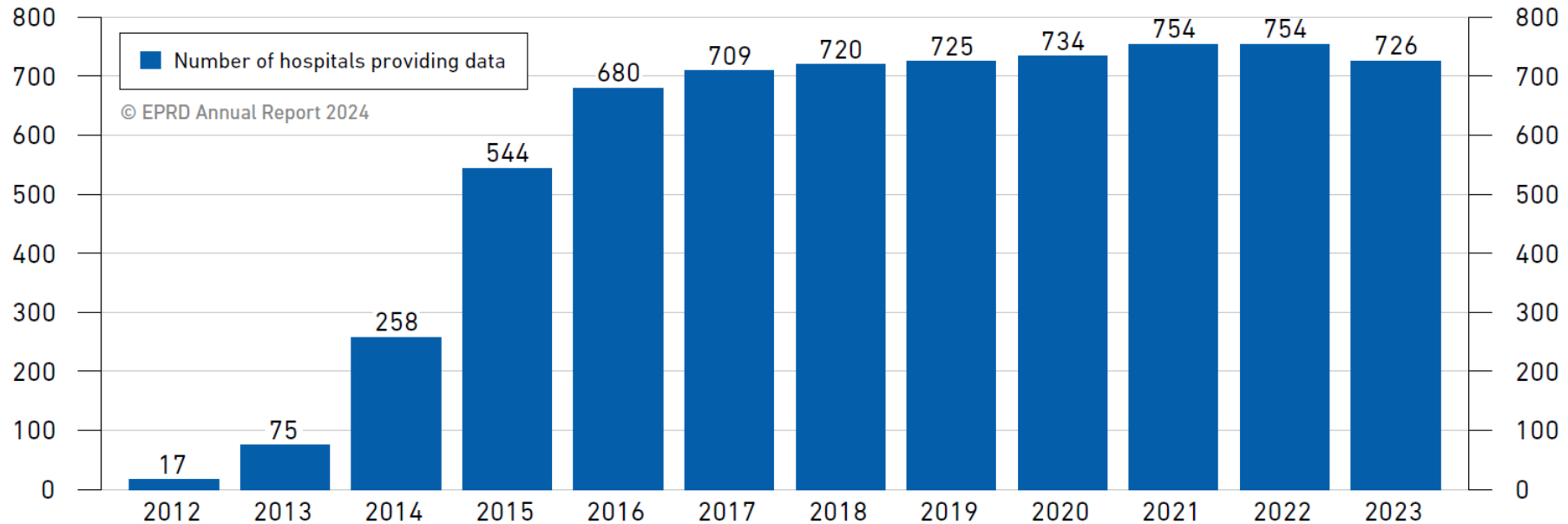
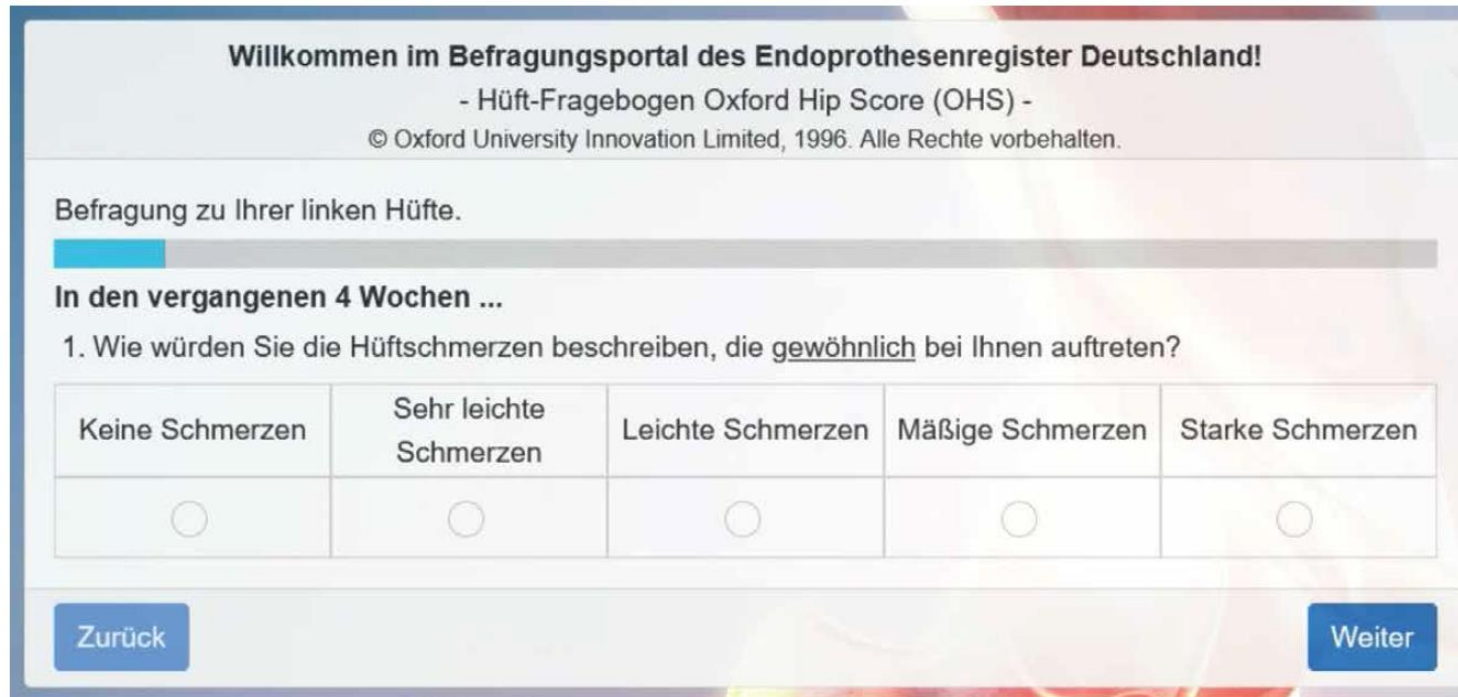


Figure 2: Number of hospitals submitting data each year. A hospital is considered a “data provider”, if it submitted at least one surgical document to the EPRD during the calendar year.

- Commitment still high: but number of hospitals providing data has markedly decreased for the first time due to mergers and facility closures

Registry development (V)



The screenshot shows a web-based questionnaire interface. At the top, it says 'Willkommen im Befragungsportal des Endoprothesenregister Deutschland!' followed by '- Hüft-Fragebogen Oxford Hip Score (OHS) -' and a copyright notice. Below this, it asks 'Befragung zu Ihrer linken Hüfte.' and shows a progress bar. The main question is '1. Wie würden Sie die Hüftschmerzen beschreiben, die gewöhnlich bei Ihnen auftreten?'. Below the question is a table with five columns representing pain levels: 'Keine Schmerzen', 'Sehr leichte Schmerzen', 'Leichte Schmerzen', 'Mäßige Schmerzen', and 'Starke Schmerzen'. Each column has a radio button below it. At the bottom of the form are two buttons: 'Zurück' (Back) and 'Weiter' (Continue).

Keine Schmerzen	Sehr leichte Schmerzen	Leichte Schmerzen	Mäßige Schmerzen	Starke Schmerzen
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Illustration 1: Extract from the online PROM questionnaire of the Oxford Hip Score. The text shown reads: Welcome to the survey portal of the German Arthroplasty Registry!; Hip Surgery Questionnaire - Oxford Hip Score; © Oxford University Innovation Limited, 1996, All rights reserved; Questions about your left hip; During the past 4 weeks... 1. How would you describe the pain you usually have from your hip? None / Very mild / Mild / Moderate / Severe; Back / Continue.

- From 2025, participation in the collection of arthroplasty PROM questionnaires will be extended to all hospitals.

The 2023 operating year

The background features a teal color gradient. On the right side, there are several overlapping circles of varying shades of teal. A partial teal arrow points from the right edge towards the center of the page.

In brief

- The proportion of highly cross-linked PE insert components continues to increase and now stands at 83.5 %. The use of antioxidant stabilised variants increased for the first time in the EPRD.
- The proportion of short-stem implants continued to increase to 15.1 %.
- 36 mm heads are increasingly favoured.



Primary hip arthroplasties (II)

- Highly cross-linked polyethylene insert components are used more and more each year



hXLPE
hXLPE + antioxidant
Ceramic
mXLPE
PE
Metal
mXLPE + antioxidant
Unknown

Proportion [%]	Age	m/f [%]	BMI	ASA
56.9	70	41 / 59	27.2	2.2
26.6	69	42 / 58	27.4	2.1
7.1	63	46 / 54	27.5	2.1
5.4	73	43 / 57	27.2	2.3
3.8	78	29 / 71	26.4	2.5
0.1	58	95 / 5	28.1	1.7
<0.1	75	43 / 57	24.5	2.4
0.1	78	28 / 72	26.1	2.4

© EPRD Annual Report 2024

Table 13: Acetabular bearing materials in primary total hip arthroplasties in 2023

Primary hip arthroplasties (III)

➤ Short stems reached a new high of 15.1 %



- Femoral stem with modular head
- Short stem
- Femoral neck prosthesis
- Revision or tumour stem
- Modular stem
- Surface replacement
- Unknown

Proportion [%]	Age	m/f [%]	BMI	ASA
82.8	71	40 / 60	27.2	2.2
15.1	64	48 / 52	27.7	2.1
1.0	61	47 / 53	27.8	2.0
0.5	76	41 / 59	25.9	2.6
0.3	76	27 / 73	26.7	2.4
0.1	58	95 / 5	28.1	1.7
0.3	72	38 / 62	27.8	2.1

© EPRD Annual Report 2024

Table 7: Stem types in primary total hip arthroplasties in 2023

Primary hip arthroplasties (IV)

➤ The trend favouring larger head components continues to increase



28 mm
32 mm
36 mm
Other diameters
Unknown

Proportion [%]	Age	m/f [%]	BMI	ASA
4.2	73	21 / 79	26.0	2.4
45.3	70	28 / 72	27.0	2.2
50.1	69	55 / 45	27.5	2.2
0.4	71	31 / 69	26.0	2.4
<0.1	76	17 / 83	32.5	2.5

© EPRD Annual Report 2024

Table 11: Head sizes in primary total hip arthroplasties in 2023

- In almost three quarters of revisions, at least one bone-anchored component was replaced

	Proportion [%]	Age	w/f [%]	BMI	ASA
Head, cup, insert	23.8	77	33 / 67	26.4	2.5
Stem, head, cup, insert	20.5	73	48 / 52	27.1	2.5
Head, insert	19.7	73	43 / 57	27.8	2.5
Stem, head	17.5	79	39 / 61	26.1	2.6
Head	8.8	79	37 / 63	26.3	2.6
Stem, head, insert	6.9	74	44 / 56	27.7	2.5
Cup, insert	1.6	76	38 / 62	26.4	2.4
Insert	0.7	75	40 / 60	26.7	2.5
Other components	0.6	72.5	49 / 51	28.7	2.3

© EPRD Annual Report 2024

Table 19: Hip components re-implanted² as part of one- or multi-stage revisions in 2023

² Only surgical documentation from one-stage revisions and re-implantation procedures of multi-stage revisions for which all the main prothesis components could be identified in the product database are considered.

- Reasons for hip revisions:
 - Loosening (22.1 %)
 - Infection (18.0 %)
 - Periprosthetic fracture (15.8 %)
 - Dislocation (14,1 %)

- Component failure is seldom mentioned as a reason for hip revision (2.0 %)

In brief

- 96 % of primary total knee arthroplasties (TKAs) and 83.4 % of unicondylar arthroplasties were fully cemented.
- The use of mobile bearings in TKAs continued to decrease.
- The use of cruciate-retaining (CR) systems also decreased, whereas the posterior-stabilised (PS) system share increased.



➤ Continuing trend towards fully cemented systems

	Proportion [%]	Age	m/f [%]	BMI	ASA
Cemented implants	96.0	70	40 / 60	29.8	2.2
Hybrid implants	2.6	69	45 / 55	30.0	2.1
Uncemented implants	1.3	66	47 / 53	30.0	2.2
Reverse hybrid implants	<0.1	65.5	46 / 54	29.7	2.2
Unknown	0.1	68	40 / 60	25.9	2.6

© EPRD Annual Report 2024

Table 24: Fixations in primary total knee arthroplasties in 2023

	Proportion [%]	Age	m/f [%]	BMI	ASA
Cemented implants	83.4	64	51 / 49	29.1	2.1
Uncemented implants	16.0	65	58 / 42	29.0	2.0
Hybrid implants	0.4	63	42 / 58	29.7	2.1
Unknown	0.1	65	39 / 61	29.6	2.0

© EPRD Annual Report 2024

Table 25: Fixations in primary unicondylar knee arthroplasties in 2023



Primary knee arthroplasties (III)

- Continued decrease in the use of mobile bearings in TKA:
Share in 2023 at 8.1 % compared to 19.2 % in 2015

Fixed bearing
Mobile bearing

Proportion [%]	Age	m/f [%]	BMI	ASA
91.9	70	40 / 60	29.8	2.2
8.1	70	40 / 60	29.8	2.3

© EPRD Annual Report 2024



Table 26: Bearing mobility in primary total knee arthroplasties in 2023

- The use of mobile bearings in unicondylar knee arthroplasty continued to decrease: Share in 2015 at 67.9 % and 53.7 % in 2023

Knee arthroplasty revisions (I)

	Proportion [%]	Age	m/f [%]	BMI	ASA
Infection	15.0	72	54 / 46	29.8	2.6
Loosening	21.6	70	41 / 59	30.4	2.4
Femoral component	4.2	71	45 / 55	30.1	2.4
Tibial component	8.5	68	38 / 62	30.5	2.3
Patellar component	0.6	68	40 / 60	30.3	2.2
Several components	8.3	71	42 / 58	30.1	2.4
Osteolysis with fixed component	1.2	71	52 / 48	29.9	2.4
Femoral component	0.4	72	54 / 46	29.1	2.3
Tibial component	0.3	72	52 / 48	29.6	2.6
Patellar component	0.1	69	36 / 64	27.9	2.3
Several components	0.5	70.5	53 / 47	30.9	2.3
Periprosthetic fracture	3.8	79	20 / 80	28.4	2.6
Ligament instability	9.1	67	32 / 68	30.1	2.3
Wear	4.9	73	40 / 60	30.0	2.3
Component failure	1.9	70	43 / 57	31.0	2.4
Prosthetic malalignment / Malrotation	1.5	68	32 / 68	29.7	2.3
Restricted mobility	5.4	66	40 / 60	30.1	2.2
Progression of osteoarthritis	7.6	68	34 / 66	30.1	2.3
Condition after removal	12.2	70	52 / 48	29.7	2.5
Other reasons	15.8	68	44 / 56	30.3	2.2

© EPRD Annual Report 2024

Table 36: Reasons for knee revisions in 2023

- All previously implanted components exchanged in approximately half of revisions – often with a switch to a more constrained system.
- Reasons for knee revisions:
 - Loosening (21.6 %)
 - Infection (15.0 %)
- Distinct trend in septic knee revisions to leave previously implanted bone-anchored components *in situ*.

Mismatch detection for more patient safety (I)

- In 2023, the EPRD identified 597 potential mismatch cases in otherwise plausibly documented primary arthroplasties.
- These included 57 total hip arthroplasties (THAs) where the documented sizes of the head component and the insert or acetabular component (Monobloc) differed. The selected head was too large for the insert or cup in 19 cases and too small in 38 cases:

		Inner diameter of insert/acetabular component			
		22 mm	28 mm	32 mm	36 mm
Head size	22 mm	/			
	28 mm				
	32 mm	1	4	20	
	36 mm	/		12	/

© EPRD Annual Report 2024

Table 38: Number of mismatches due to deviations between head size and inner diameter of insert or cup in 2023

Mismatch detection for more patient safety (II)

- Aim: Prevent mismatch cases by informing hospitals at an early stage about potential problems with component selection
- Currently, the hospitals are informed in two ways:
 - in the case queries provided with the monthly EPRD summary reports
 - since 2019, directly in the data acquisition software

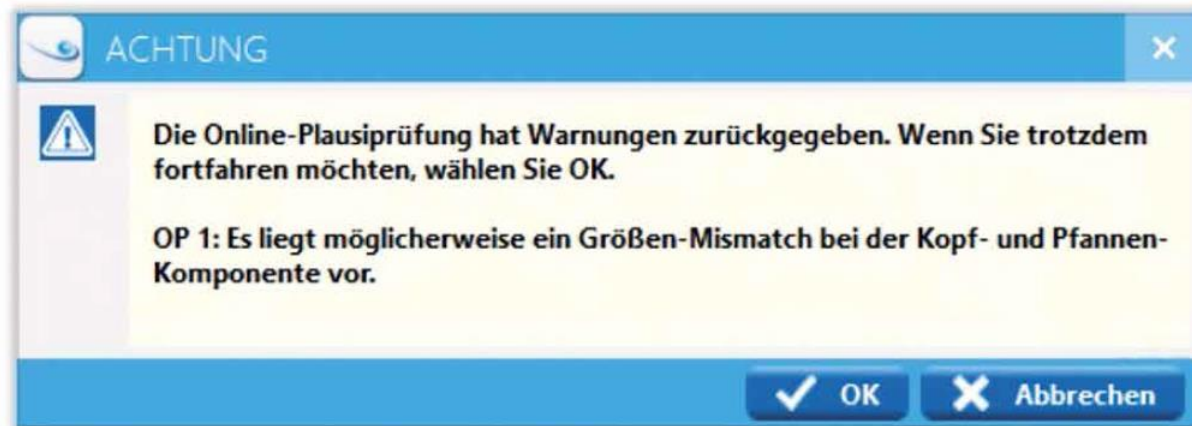


Illustration 4: An EPRD-Edit software mismatch notification during data entry. The text shown reads: The online plausibility check has returned warnings. If you still want to continue, select OK. OP 1: There may be a head and acetabular component size mismatch.

Hip and knee arthroplasty survival

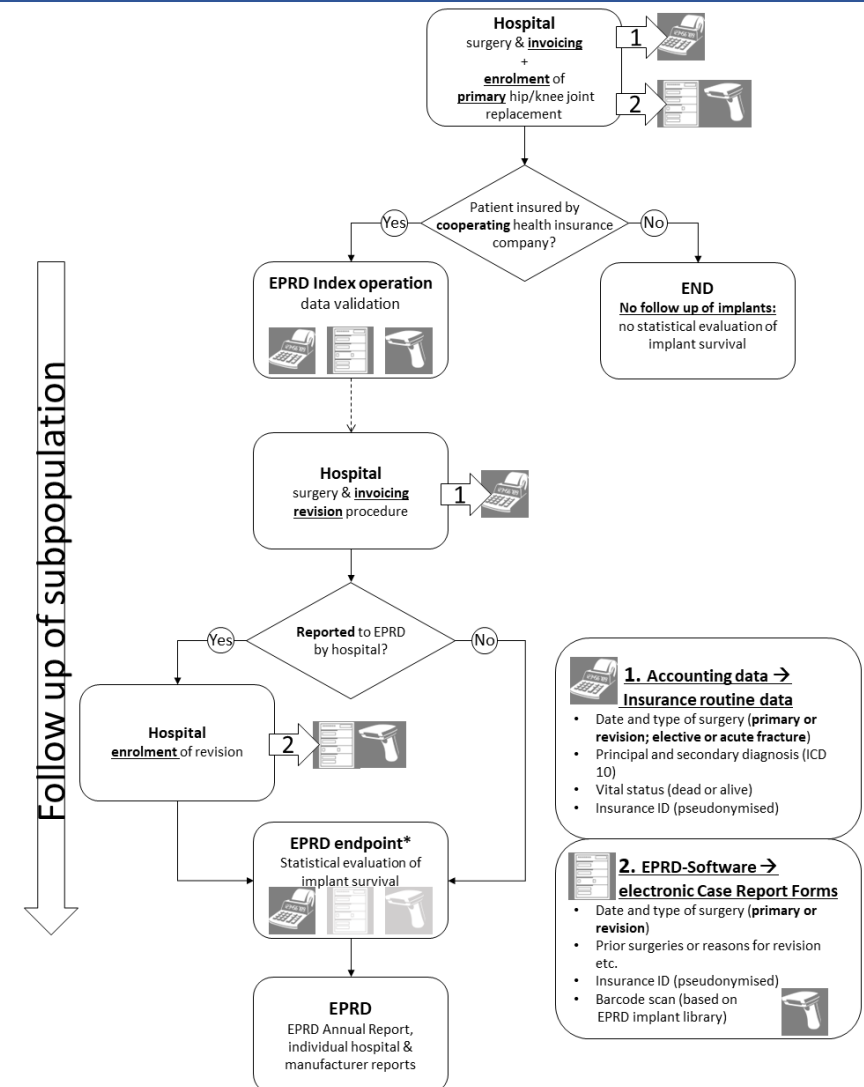
Study population follow-up (I)

Arthroplasty survival calculations:

Only data from patients insured with one of the regional health insurance providers (AOK) or one of the other statutory health insurance providers (Ersatzkassen) and with available billing data are included in the arthroplasty survival calculations.

Even though this means that only a part of the total number of data sets compiled in the EPRD is available for the arthroplasty survival analysis, an almost complete coverage of reoperations is guaranteed for this population.

This „Completeness of Revision“ is an essential quality feature of the EPRD.



*The survival analysis (revision of any component for any reason) and censoring the data of patients that died or suffered an amputation of the involved limb only requires (1) Accounting data -> insurance routine data.

Arthroplasty survival analysis:

- Based on 1,150,000 primary arthroplasties and 125,000 revisions followed up.
- In addition to cumulative revision rates (CRRs), cumulative re-revision rates (CReRRs) are also examined.

Important: Arthroplasty survival is not only dependent on the implant used!

- Patient-specific parameters such as age, sex, body mass index (BMI) and comorbidities have a significant impact on the cumulative revision rate
- Higher patient volumes per hospital tend to reduce the risk of revision arthroplasty
 - But, in individual cases, hospitals with high case volumes and poorer outcomes, as well as hospitals with lower case volumes and very good outcomes are also observed

Non-implant-related factors: Patient (I)

➤ Patient BMI substantially impacts outcomes for specific types of arthroplasties

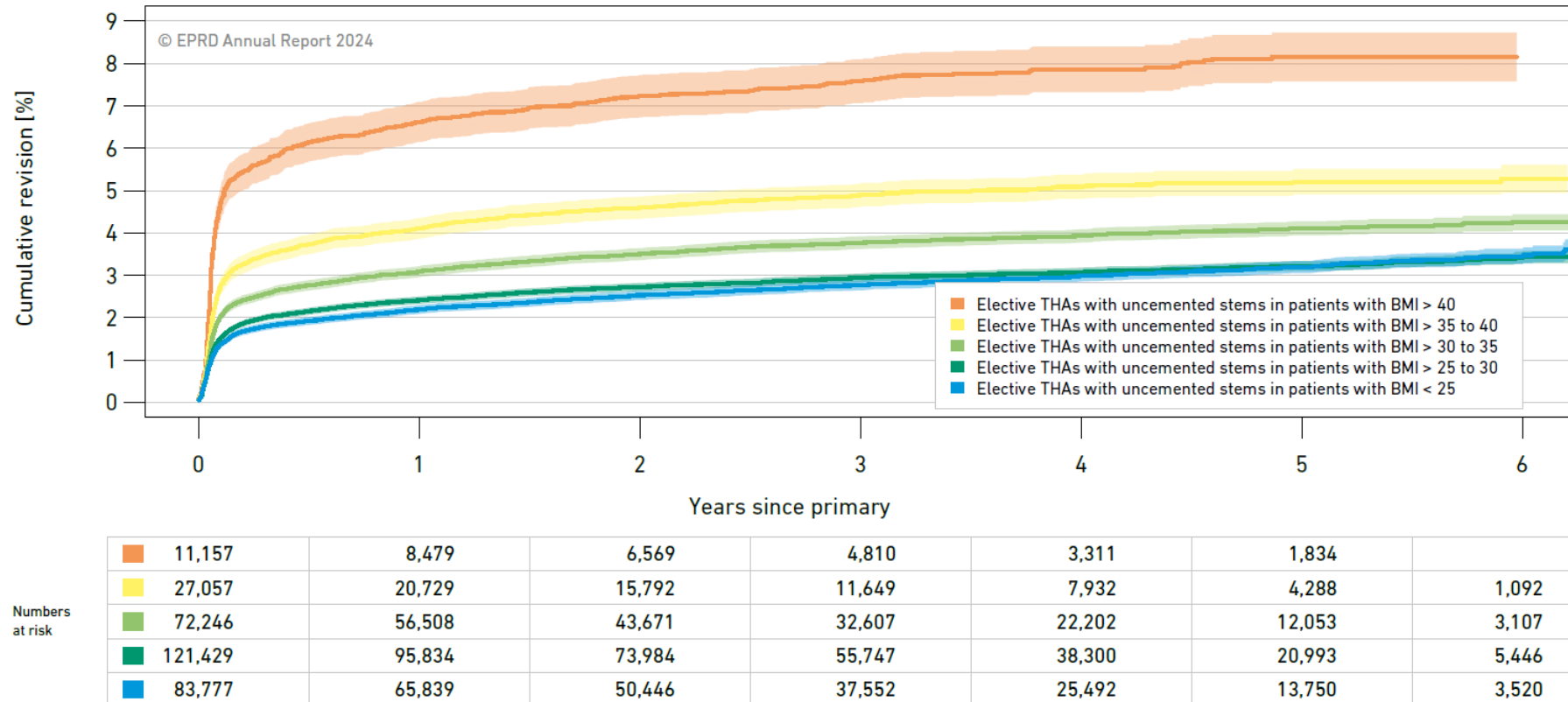


Figure 8: Cumulative revision rates for elective total hip arthroplasties with uncemented stems by patient body mass index ($p < 0.0001$)

Non-implant-related factors: Patient (II)

- In the EPRD, men have lower cumulative revision rates, from the one-year time point, after unicondylar knee arthroplasty

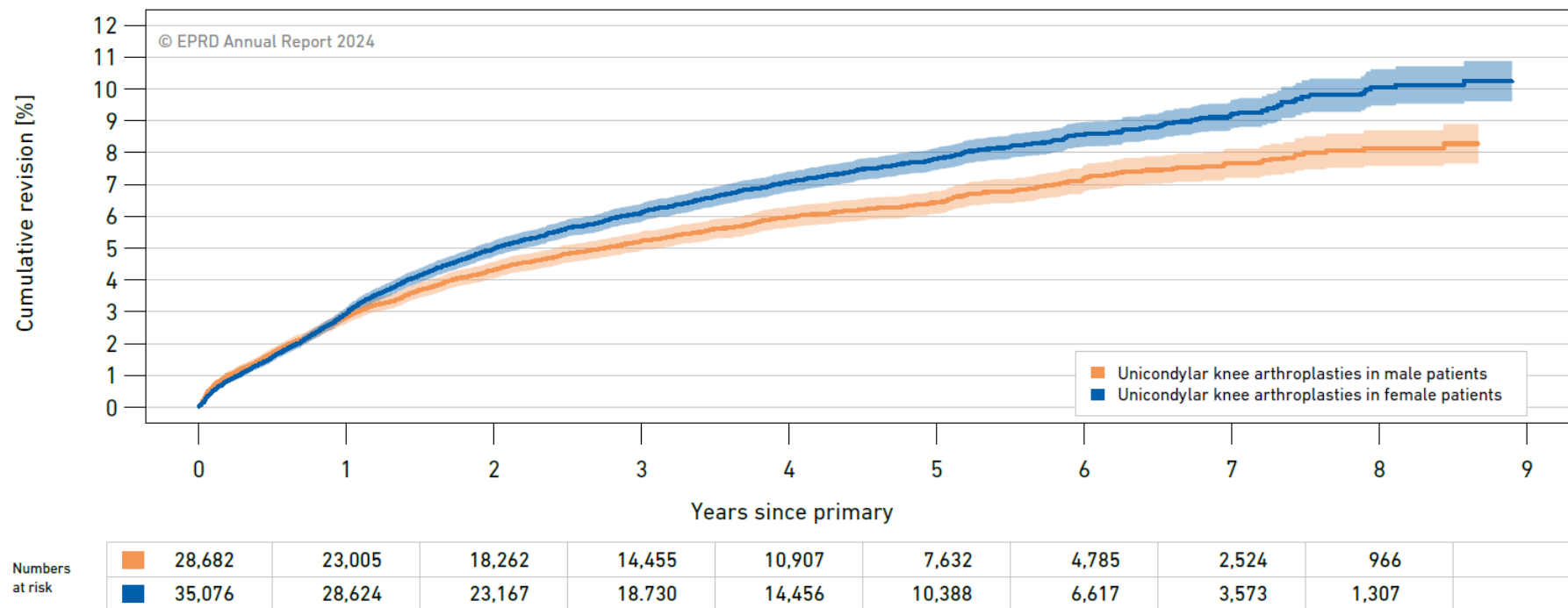


Figure 21: Cumulative revision rates for unicondylar knee arthroplasties by patient sex ($p < 0.0001$)

- Cumulative revision rates of elective THAs with uncemented stems by the hospital's annual volume of primary hip arthroplasties

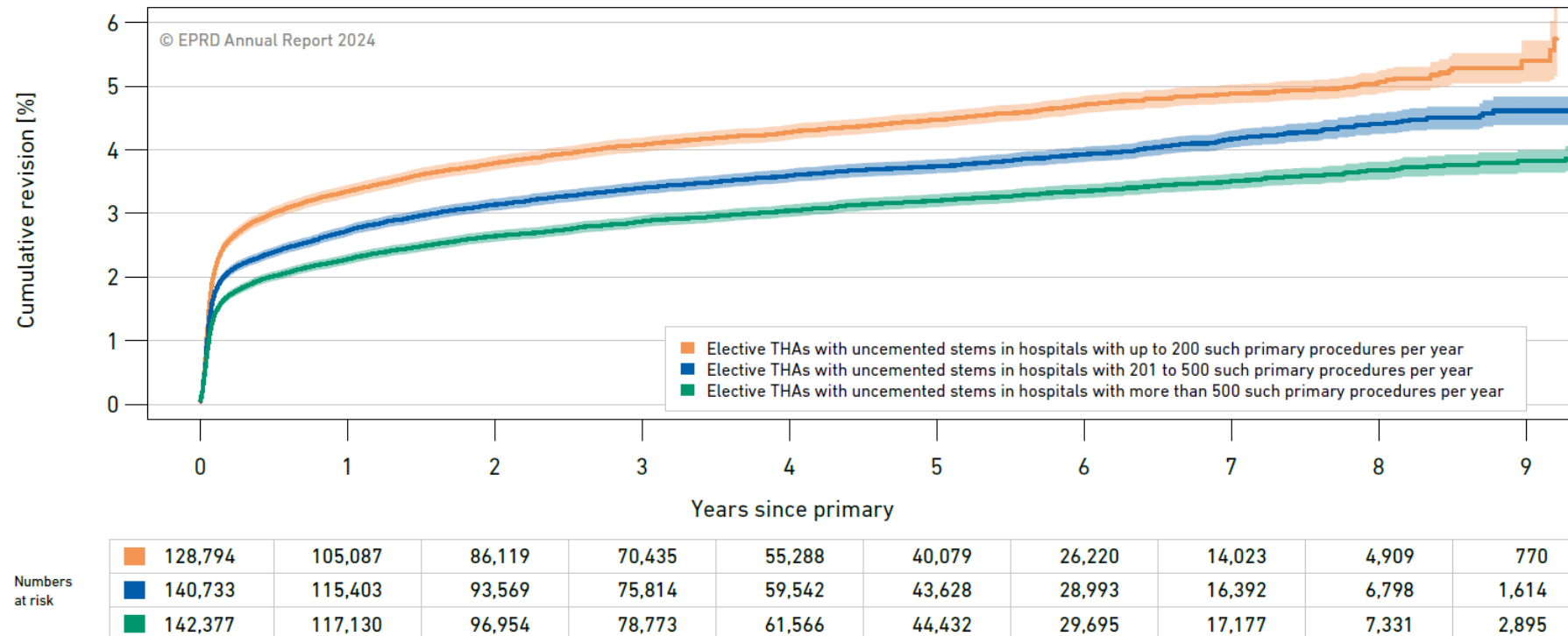


Figure 9: Cumulative revision rates for elective total hip arthroplasties by the hospital's annual volume of primary elective total hip arthroplasties ($p < 0.0001$)

- Cumulative revision rates for unicondylar knee arthroplasties by the hospital's annual volume of primary unicondylar knee arthroplasties

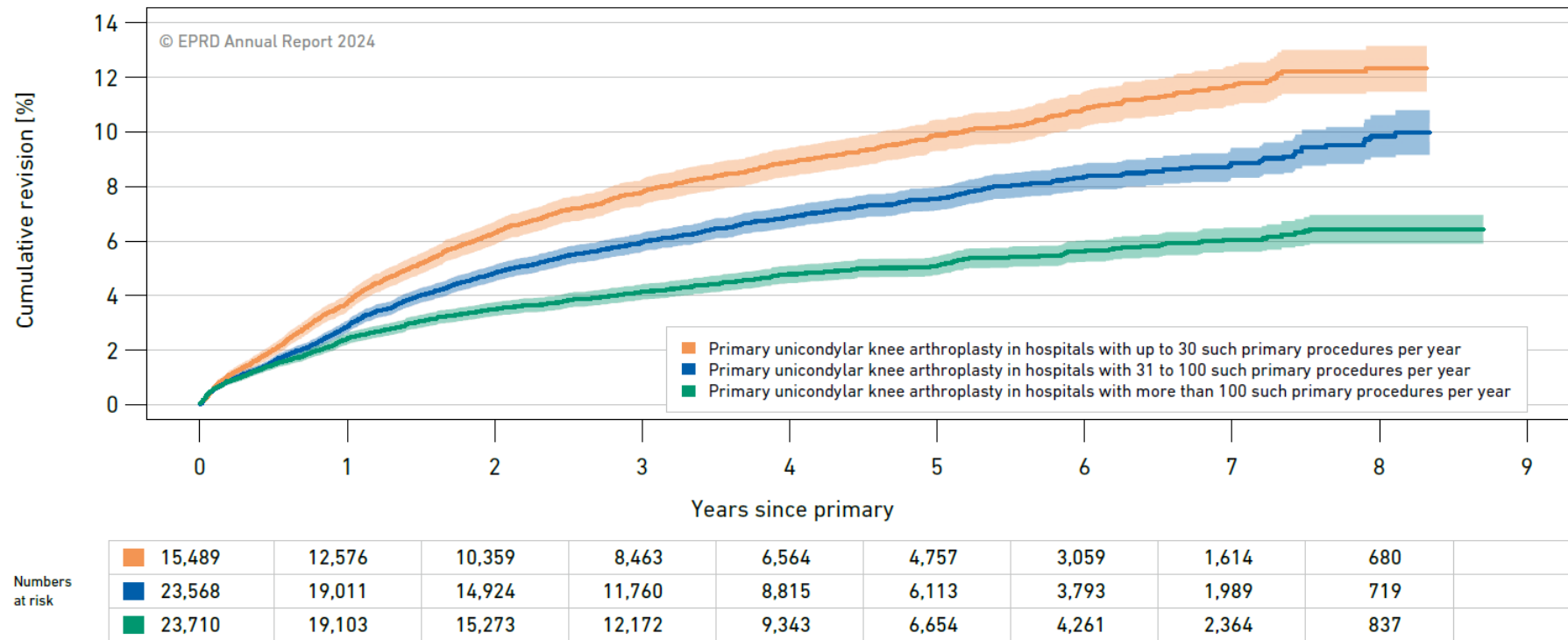


Figure 23: Cumulative revision rates for unicondylar knee arthroplasties⁶ by the hospital's annual volume of primary unicondylar knee arthroplasties ($p < 0.0001$)

⁶ The classifications in this report are based on the hospitals' quality reports for 2022 and the corresponding IQTIG quality indicators listed there.

Cumulative revision rates hip arthroplasty (I)

In brief

- Cumulative revision rates significantly higher for non-elective procedures.
- Post-traumatic osteoarthritis is associated with a higher revision risk.
- Arthroplasties with cemented femoral components have lower cumulative revision rates due to better outcomes in older patients.
- Larger heads have lower revision rates during the early post-operative phase.



Cumulative revision rates hip arthroplasty (II)

- Differences between types of hip arthroplasties become apparent at an early stage

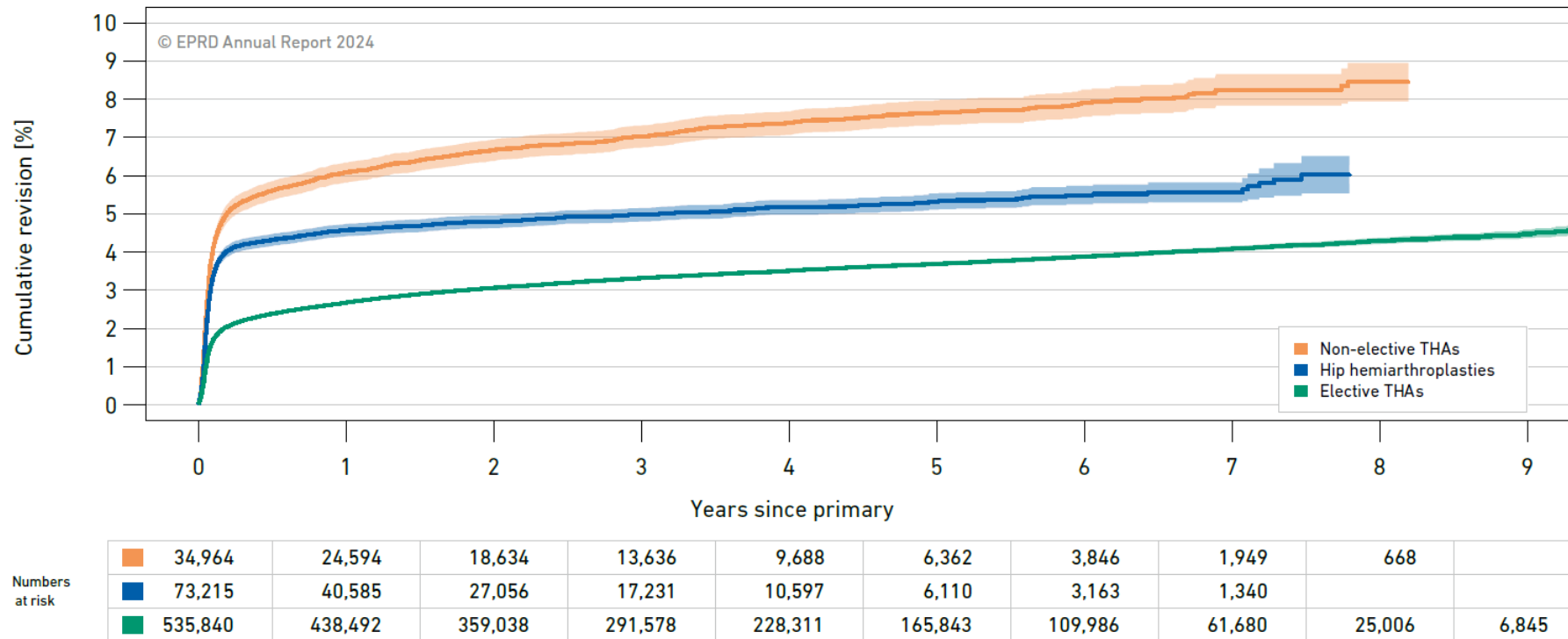
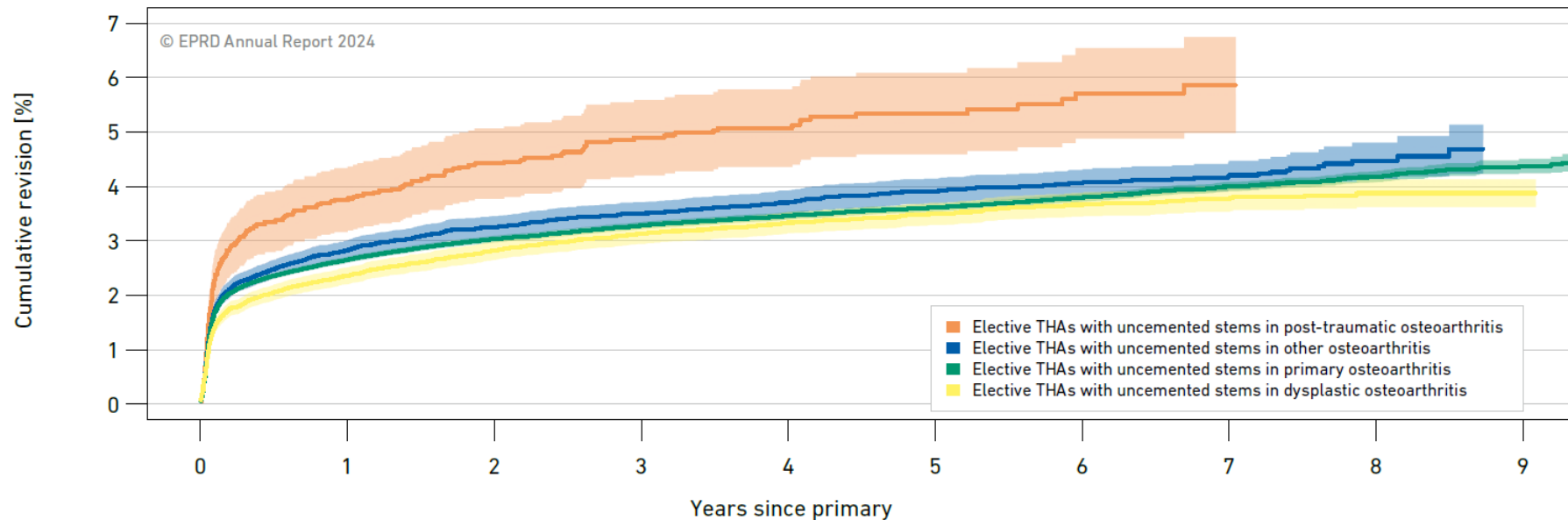


Figure 3: Cumulative revision rates for elective and non-elective hip arthroplasties ($p < 0.0001$)

Cumulative revision rates hip arthroplasty (III)

- Higher cumulative revision rates with a primary diagnosis of post-traumatic hip osteoarthritis compared to other forms of hip osteoarthritis



	0	1	2	3	4	5	6	7	8	9
Numbers at risk	4,156	3,424	2,849	2,336	1,869	1,328	863	514		
	32,633	27,161	22,741	18,876	14,809	10,937	7,198	3,890	1,371	
	330,035	271,494	222,618	181,340	142,467	103,648	68,755	38,737	15,692	4,252
	39,392	32,345	26,733	21,917	17,303	12,696	8,596	4,827	1,956	563

Figure 5: Cumulative revision rates for elective total hip arthroplasties with uncemented stems by primary diagnosis ($p < 0.0001$)

Cumulative revision rates hip arthroplasty (IV)

- In the EPRD, lower cumulative revision rates for arthroplasties with cemented femoral components

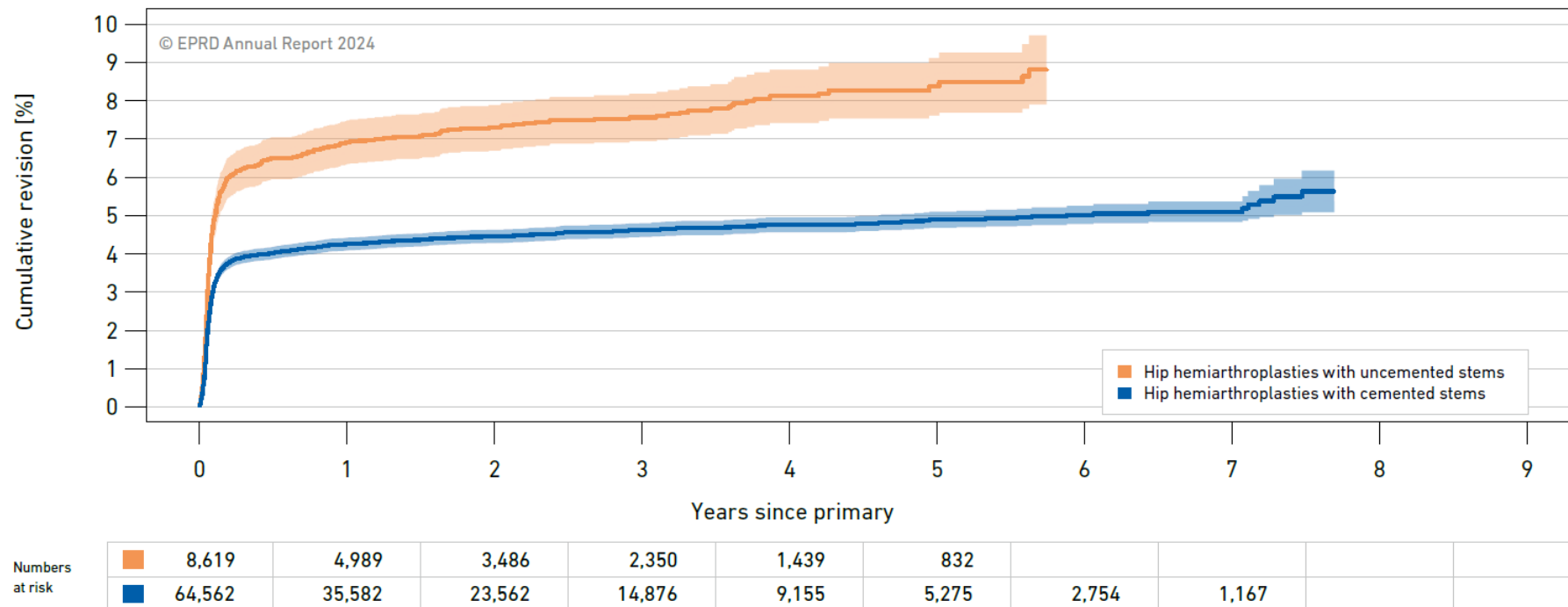


Figure 10: Cumulative revision rates for uncemented and cemented hip hemiarthroplasties ($p < 0.0001$)

Cumulative revision rates hip arthroplasty (V)

- Cumulative revision rates are higher for THAs with a small head size

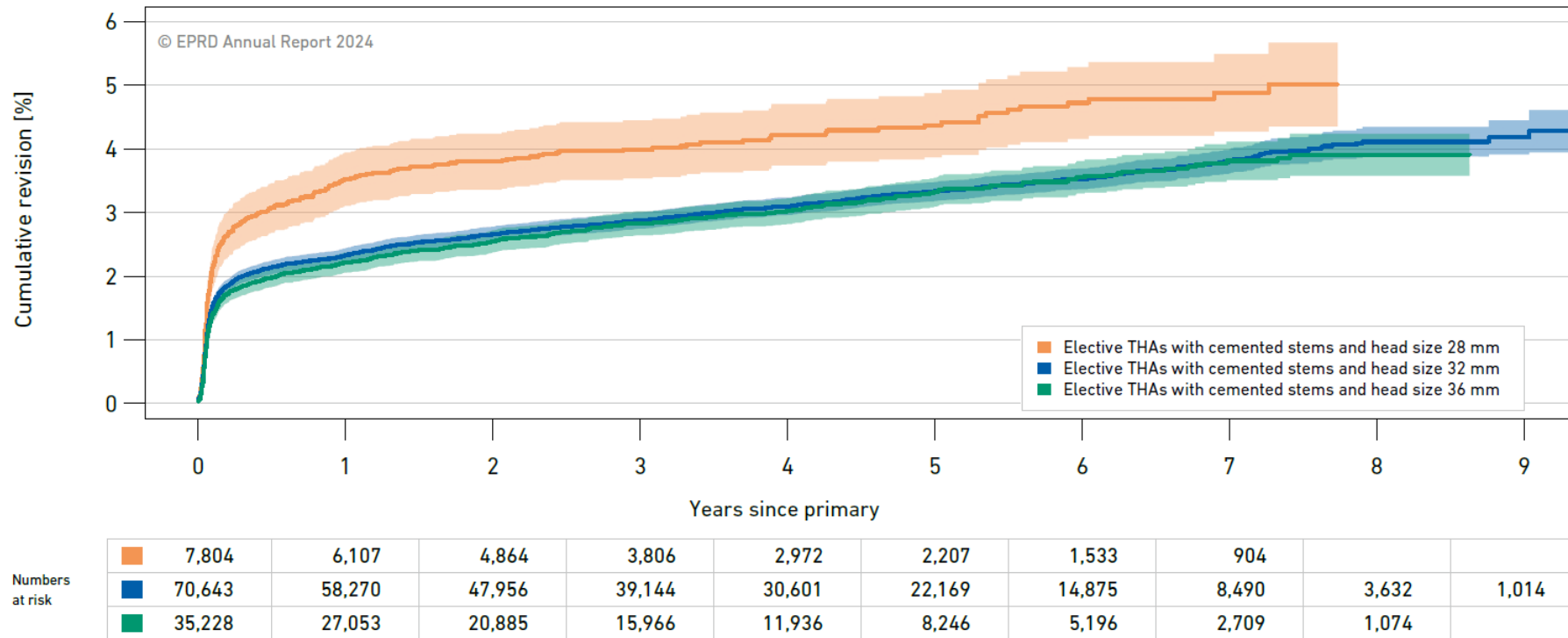


Figure 11: Cumulative revision rates for elective total hip arthroplasties with cemented stems by head size ($p < 0.0001$)

Cumulative revision rates hip arthroplasty (VI)

- Trends: The hip arthroplasty data does not yet show a clear trend towards a reduction in the cumulative revision rates

Elective THAs with uncemented stems		Cumulative revision rates after ...					
Operating year	Number	1 year	2 years	3 years	4 years	5 years	6 years
2012/13	3,003	2.6 [2.0; 3.1] (2,896)	3.3 [2.7; 3.9] (2,670)	3.5 [2.8; 4.1] (2,529)	3.8 [3.1; 4.4] (2,435)	4.0 [3.3; 4.7] (2,377)	4.2 [3.4; 4.9] (2,319)
2014	7,323	2.3 [2.0; 2.6] (7,003)	3.0 [2.6; 3.4] (6,769)	3.2 [2.8; 3.6] (6,622)	3.5 [3.0; 3.9] (6,477)	3.6 [3.2; 4.1] (6,320)	3.8 [3.4; 4.2] (6,128)
2015	22,279	2.4 [2.2; 2.6] (21,364)	2.8 [2.6; 3.0] (20,729)	3.1 [2.9; 3.3] (20,237)	3.3 [3.1; 3.6] (19,793)	3.5 [3.3; 3.8] (19,316)	3.7 [3.5; 4.0] (18,726)
2016	38,067	2.7 [2.5; 2.8] (36,238)	3.2 [3.0; 3.3] (35,394)	3.4 [3.3; 3.6] (34,668)	3.6 [3.4; 3.8] (33,916)	3.8 [3.6; 3.9] (33,074)	3.9 [3.7; 4.1] (32,146)
2017	44,828	2.8 [2.6; 2.9] (42,971)	3.1 [3.0; 3.3] (42,140)	3.4 [3.3; 3.6] (41,296)	3.6 [3.4; 3.8] (40,332)	3.8 [3.6; 3.9] (39,314)	3.9 [3.8; 4.1] (28,761)
2018	48,695	2.6 [2.5; 2.8] (46,809)	3.1 [2.9; 3.2] (45,872)	3.3 [3.1; 3.4] (44,920)	3.5 [3.3; 3.6] (43,920)	3.6 [3.5; 3.8] (32,331)	
2019	51,749	2.8 [2.6; 2.9] (49,751)	3.2 [3.0; 3.3] (48,708)	3.4 [3.2; 3.6] (47,785)	3.6 [3.4; 3.8] (35,244)		
2020	48,529	2.9 [2.8; 3.1] (46,526)	3.3 [3.1; 3.4] (45,717)	3.6 [3.4; 3.7] (33,671)			
2021	51,563	2.8 [2.7; 3.0] (49,460)	3.2 [3.0; 3.3] (36,036)				
2022	58,224	2.8 [2.7; 2.9] (42,484)					

© EPRD Annual Report 2024



Table 54: Cumulative revision rates for elective total hip arthroplasties with uncemented stems by operating year ($p = 0.2$)

Cumulative revision rates knee arthroplasty (I)

In brief

- Unicondylar arthroplasties have a cumulative revision rate that is still almost twice that of TKAs.
- The risk of revision surgery is considerably higher for post-traumatic osteoarthritis than for primary osteoarthritis.
- To date, cruciate-retaining (CR) and cruciate-sacrificing (CS) systems have the lowest cumulative revision rates.
- Whether or not primary patellar resurfacing improves outcomes is highly dependent on the implant system used.



Cumulative revision rates knee arthroplasty (II)

- Higher cumulative revision rates of unicondylar arthroplasties compared to TKAs

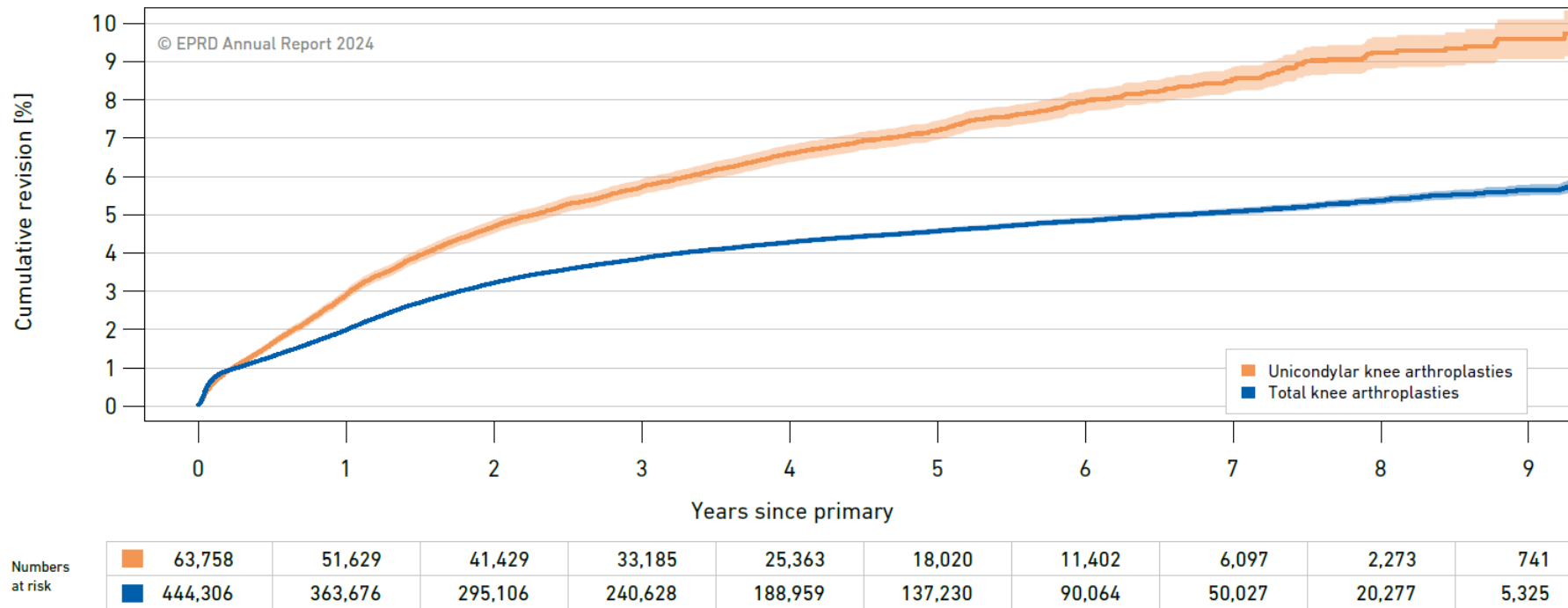


Figure 17: Cumulative revision rates for total and unicondylar knee arthroplasties ($p < 0.0001$)

Cumulative revision rates knee arthroplasty (III)

- Higher cumulative revision rates for a primary diagnosis of post-traumatic knee osteoarthritis compared to other types of knee osteoarthritis

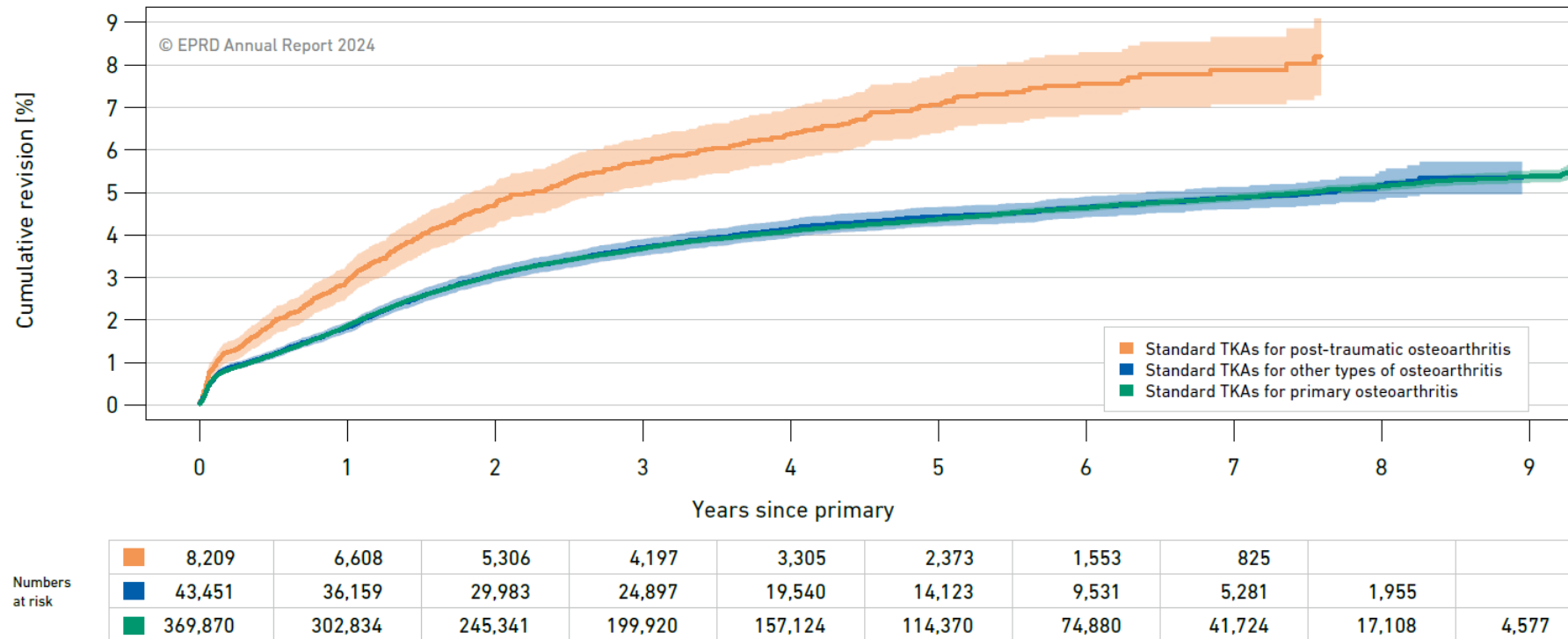


Figure 19: Cumulative revision rates for standard total knee arthroplasties by primary diagnosis (based on the documented ICD-10 codes) ($p < 0.0001$)

Cumulative revision rates knee arthroplasty (IV)

- Lower cumulative revision rates for standard TKAs with cruciate-retaining and cruciate-sacrificing systems

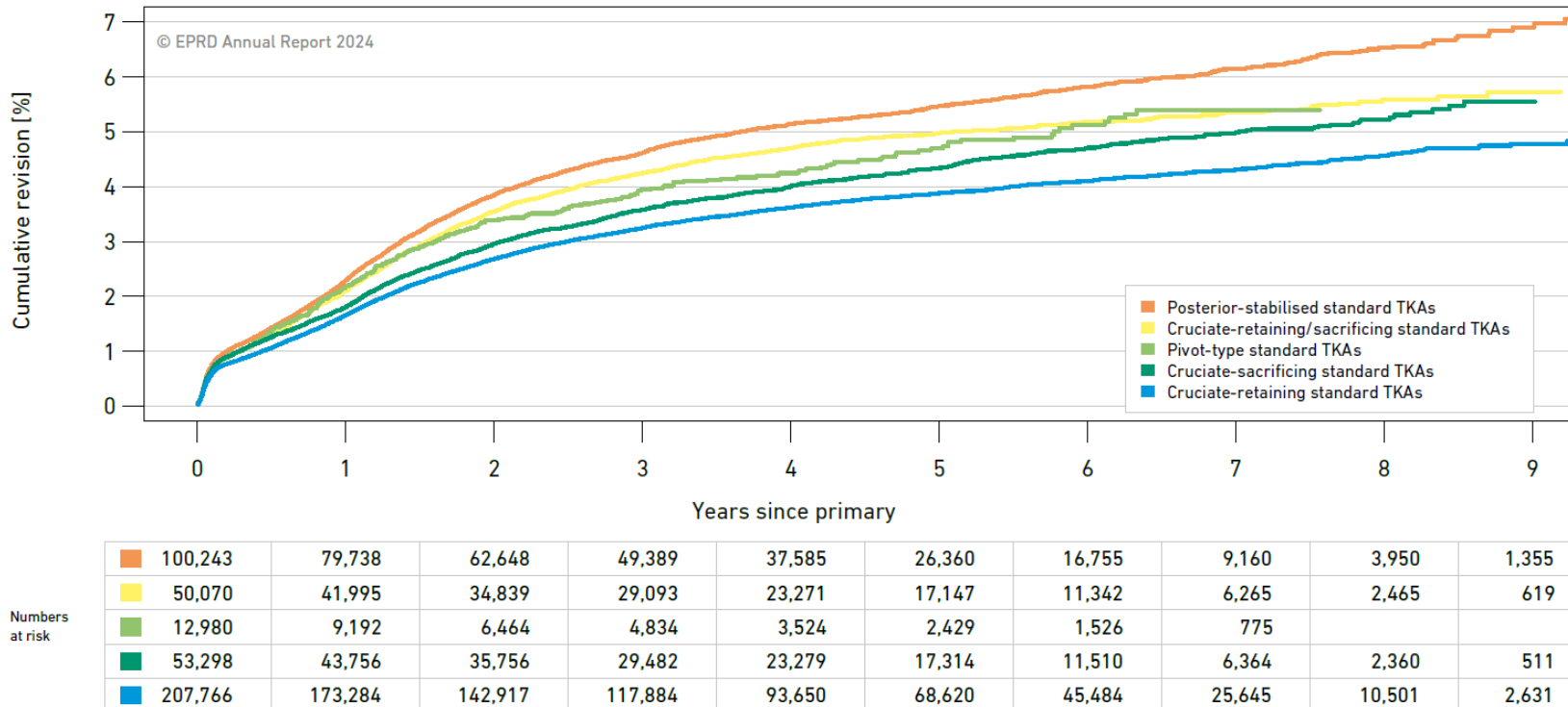


Figure 24: Cumulative revision rates for standard total knee arthroplasties by knee system ($p < 0.0001$). Confidence intervals have been omitted for clarity.

Cumulative revision rates knee arthroplasty (V)

- Lower cumulative revision rates for standard TKAs with primary patellar resurfacing, but outcome is highly dependent on the implant system used

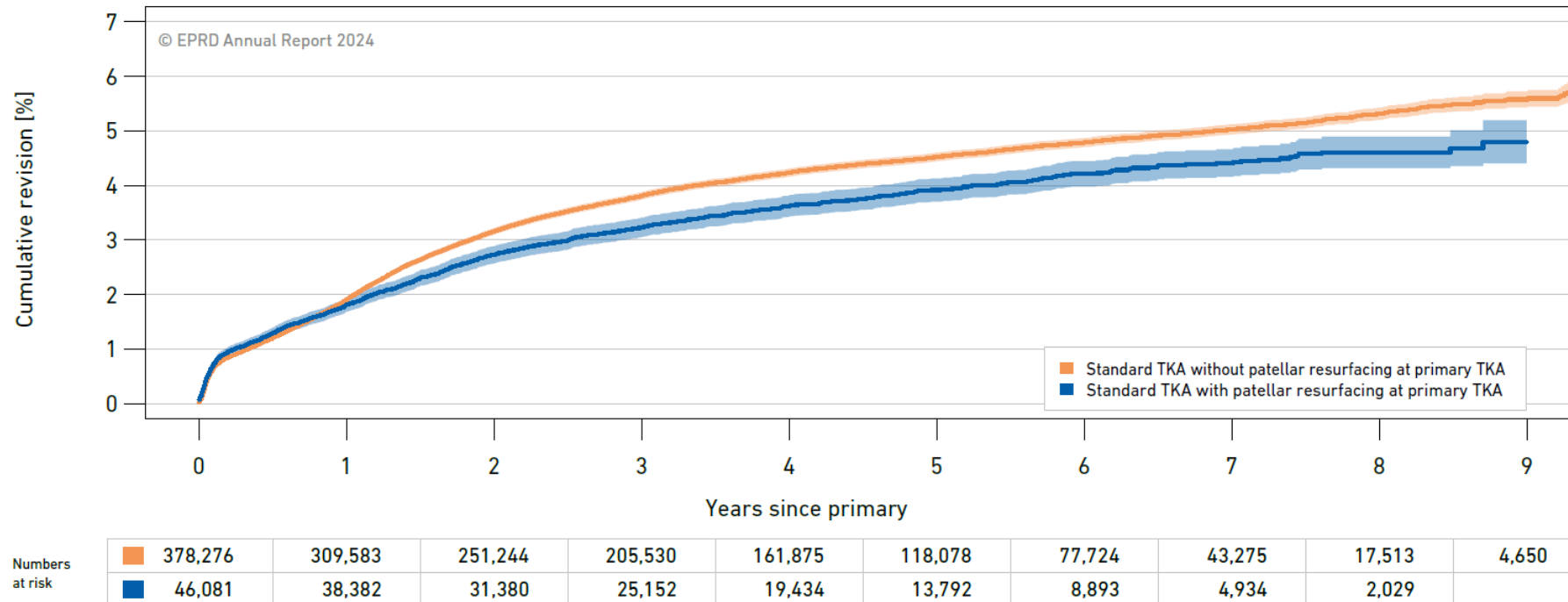


Figure 26: Cumulative revision rates for standard primary total knee arthroplasties with and without patellar resurfacing at primary TKA ($p < 0.0001$)

Cumulative revision rates knee arthroplasty (VI)

- Trends: Cumulative revision rates of standard TKAs by operating year have been decreasing

Standard TKAs		Cumulative revision rates after ...					
Operating year	Number	1 year	2 years	3 years	4 years	5 years	6 years
2012/13	3,056	2.0 [1.5; 2.5] (2,973)	3.9 [3.2; 4.6] (2,724)	4.7 [4.0; 5.5] (2,531)	5.1 [4.3; 5.9] (2,414)	5.3 [4.5; 6.1] (2,331)	5.4 [4.6; 6.3] (2,257)
2014	7,521	1.9 [1.6; 2.2] (7,204)	3.3 [2.9; 3.7] (6,843)	4.1 [3.6; 4.6] (6,634)	4.6 [4.1; 5.0] (6,463)	4.9 [4.4; 5.4] (6,258)	5.3 [4.8; 5.8] (6,055)
2015	23,138	2.2 [2.0; 2.3] (22,195)	3.5 [3.3; 3.8] (21,331)	4.3 [4.0; 4.5] (20,708)	4.6 [4.3; 4.9] (20,129)	4.9 [4.6; 5.2] (19,540)	5.1 [4.9; 5.4] (18,825)
2016	37,869	1.9 [1.8; 2.1] (36,378)	3.3 [3.1; 3.5] (35,184)	3.9 [3.7; 4.1] (34,293)	4.4 [4.2; 4.6] (33,370)	4.6 [4.4; 4.9] (32,270)	4.9 [4.7; 5.1] (31,146)
2017	45,586	1.9 [1.8; 2.1] (44,162)	3.2 [3.1; 3.4] (42,903)	3.8 [3.6; 4.0] (41,835)	4.2 [4.0; 4.3] (40,700)	4.5 [4.3; 4.6] (39,436)	4.7 [4.5; 4.9] (28,334)
2018	48,950	1.8 [1.7; 1.9] (47,509)	2.9 [2.7; 3.0] (46,252)	3.5 [3.3; 3.6] (45,006)	3.9 [3.7; 4.1] (43,704)	4.2 [4.0; 4.4] (32,035)	
2019	51,216	1.8 [1.7; 1.9] (49,783)	2.9 [2.8; 3.1] (48,403)	3.5 [3.4; 3.7] (47,197)	4.0 [3.8; 4.1] (34,529)		
2020	47,409	2.0 [1.9; 2.1] (45,896)	3.1 [3.0; 3.3] (44,722)	3.8 [3.7; 4.0] (32,478)			
2021	49,973	1.8 [1.7; 1.9] (48,536)	3.0 [2.9; 3.2] (34,262)				
2022	59,318	1.8 [1.7; 1.9] (43,329)					



© EPRD Annual Report 2024

Table 56: Cumulative revisions rates for standard total knee arthroplasties by operating year ($p < 0.0001$)

Cumulative revision rates for specific implant systems and component pairs (I)

- The EPRD annual report again presents outcomes for specific implant systems (brands) and combinations in detail

Elective total hip arthroplasties							Cumulative revision rates after ...								
Femoral stem	Cup	Number	Hosp.	Age	m/f	Yrs im- planted	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years
Uncemented fixation															
GTS (Zimmer Biomet)	G7 (Zimmer Biomet)	457	12	66 _(59 - 75)	36/64	2014-2023	4.0 [2.2; 5.7] (419)	4.9 [2.9; 6.9] (388)	4.9 [2.9; 6.9] (320)	5.5 [3.3; 7.7] (266)	5.5 [3.3; 7.7] (204)	5.5 [3.3; 7.7] (128)	5.5 [3.3; 7.7] (88)		
Konusprothese (Zimmer Biomet)	Allofit (Zimmer Biomet)	687	89	55 _(46 - 62)	19/81	2013-2023	3.4 [2.0; 4.8] (557)	3.8 [2.3; 5.2] (486)	4.0 [2.5; 5.5] (424)	4.0 [2.5; 5.5] (342)	4.3 [2.7; 5.9] (261)	4.8 [2.9; 6.6] (193)	4.8 [2.9; 6.6] (131)	4.8 [2.9; 6.6] (61)	
Konusprothese (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	428	18	68 _(57.5 - 76)	10/90	2013-2023	2.6 [1.1; 4.1] (404)	3.1 [1.4; 4.7] (375)	3.6 [1.8; 5.4] (340)	3.9 [2.0; 5.8] (298)	3.9 [2.0; 5.8] (259)	3.9 [2.0; 5.8] (219)	3.9 [2.0; 5.8] (161)	3.9 [2.0; 5.8] (113)	3.9 [2.0; 5.8] (63)
LCU Hip System, uncemented (Waldemar Link)	Allofit (Zimmer Biomet)	865	7	68 _(62 - 75)	48/52	2015-2023	1.8 [0.9; 2.6] (720)	1.9 [1.0; 2.8] (579)	2.5 [1.4; 3.7] (442)	2.5 [1.4; 3.7] (345)	3.2 [1.7; 4.6] (241)	3.2 [1.7; 4.6] (130)			
LCU Hip System, uncemented (Waldemar Link)	CombiCup (Waldemar Link)	1,928	23	66 _(59 - 73)	44/56	2014-2023	2.4 [1.7; 3.0] (1,757)	2.7 [1.9; 3.4] (1,596)	2.8 [2.0; 3.5] (1,421)	2.9 [2.1; 3.6] (1,100)	3.0 [2.2; 3.7] (747)	3.5 [2.5; 4.5] (439)	3.8 [2.6; 5.0] (132)		
LCU Hip System, uncemented (Waldemar Link)	MobileLink, Cluster Hole (Waldemar Link)	1,109	33	69 _(62 - 75)	40/60	2017-2023	4.3 [3.1; 5.6] (751)	4.9 [3.6; 6.3] (468)	5.2 [3.8; 6.6] (240)	5.2 [3.8; 6.6] (72)					
M/L Taper (Zimmer Biomet)	Allofit (Zimmer Biomet)	5,787	23	68 _(61 - 74)	42/58	2013-2023	3.4 [2.9; 3.8] (5,044)	3.8 [3.3; 4.3] (4,360)	4.2 [3.6; 4.7] (3,642)	4.4 [3.8; 4.9] (3,010)	4.4 [3.9; 5.0] (2,404)	4.6 [4.0; 5.2] (1,585)	5.0 [4.3; 5.8] (799)	5.2 [4.4; 6.0] (340)	5.2 [4.4; 6.0] (87)
M/L Taper (Zimmer Biomet)	Trilogy (Zimmer Biomet)	560	4	69 _(63 - 72)	33/67	2012-2023	2.2 [0.9; 3.4] (530)	2.5 [1.2; 3.8] (492)	2.5 [1.2; 3.8] (450)	2.5 [1.2; 3.8] (415)	2.8 [1.4; 4.2] (386)	2.8 [1.4; 4.2] (361)	2.8 [1.4; 4.2] (280)	2.8 [1.4; 4.2] (184)	2.8 [1.4; 4.2] (106)
METABLOC (Zimmer Biomet)	Allofit (Zimmer Biomet)	500	13	72.5 _(66 - 78)	38/62	2012-2020	2.0 [0.8; 3.2] (482)	2.4 [1.1; 3.8] (456)	2.6 [1.2; 4.0] (438)	3.5 [1.9; 5.2] (403)	3.8 [2.1; 5.5] (348)	3.8 [2.1; 5.5] (299)	4.2 [2.3; 6.1] (209)	4.2 [2.3; 6.1] (114)	4.2 [2.3; 6.1] (56)
Metafix (Corin)	Trinity Hole (Corin)	737	13	73 _(65 - 79)	36/64	2014-2023	1.9 [0.9; 2.9] (670)	1.9 [0.9; 2.9] (561)	2.1 [1.0; 3.2] (439)	2.1 [1.0; 3.2] (359)	2.1 [1.0; 3.2] (258)	2.1 [1.0; 3.2] (185)	2.1 [1.0; 3.2] (100)		
Metafix (Corin)	Trinity no Hole (Corin)	965	10	71 _(64 - 76)	47/53	2014-2023	1.8 [0.9; 2.6] (882)	2.2 [1.3; 3.2] (818)	2.4 [1.4; 3.3] (758)	2.5 [1.5; 3.5] (691)	3.0 [1.8; 4.1] (525)	3.0 [1.8; 4.1] (410)	3.0 [1.8; 4.1] (263)	3.0 [1.8; 4.1] (117)	
METHA (Aesculap)	PLASMACUP (Aesculap)	1,363	35	58 _(52 - 63)	44/56	2013-2023	1.5 [0.8; 2.1] (1,293)	2.3 [1.5; 3.1] (1,185)	2.4 [1.5; 3.2] (1,056)	2.6 [1.7; 3.4] (932)	2.6 [1.7; 3.4] (783)	2.6 [1.7; 3.4] (593)	2.6 [1.7; 3.4] (441)	2.6 [1.7; 3.4] (277)	2.6 [1.7; 3.4] (125)

Cumulative revision rates for specific implant systems and component pairs (II)

- Knee arthroplasties are further subdivided into those with and without primary patellar resurfacing.

Knee arthroplasties		Cumulative revision rates after ...														
Femoral component	Tibial component	Patellar resurfacing	Number	Hosp.	Age	m/f	Yrs im- planted	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years
Standard TKAs, cruciate-retaining, fixed bearing, cemented																
Triathlon CR (Stryker)	Triathlon (Stryker)	Without	11,006	91	70 ₍₆₂₋₇₇₎	37/63	2013-2023	1.7 [1.5; 2.0] (8,663)	3.0 [2.7; 3.4] (6,936)	3.8 [3.4; 4.2] (5,474)	4.3 [3.8; 4.7] (4,237)	4.5 [4.0; 4.9] (3,052)	4.7 [4.2; 5.2] (2,053)	4.9 [4.4; 5.5] (1,146)	4.9 [4.4; 5.5] (507)	4.9 [4.4; 5.5] (137)
Triathlon CR (Stryker)	Triathlon (Stryker)	With	4,374	44	68 ₍₆₂₋₇₅₎	40/60	2013-2023	1.4 [1.0; 1.7] (3,656)	1.9 [1.5; 2.4] (2,924)	2.3 [1.8; 2.8] (2,117)	2.6 [2.1; 3.2] (1,460)	3.0 [2.3; 3.6] (791)	3.1 [2.4; 3.8] (403)	3.1 [2.4; 3.8] (224)	3.1 [2.4; 3.8] (106)	
Vanguard CR (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	Without	13,663	86	71 ₍₆₄₋₇₈₎	38/62	2012-2023	1.9 [1.7; 2.1] (11,395)	2.9 [2.6; 3.2] (9,391)	3.6 [3.3; 4.0] (7,739)	4.1 [3.7; 4.5] (6,125)	4.5 [4.0; 4.9] (4,395)	4.6 [4.2; 5.0] (2,827)	4.7 [4.2; 5.1] (1,518)	5.2 [4.5; 5.9] (502)	
Vanguard CR (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	With	474	37	72 ₍₆₃₋₇₉₎	32/68	2013-2023	2.8 [1.3; 4.3] (418)	4.5 [2.6; 6.5] (366)	5.1 [3.0; 7.2] (303)	5.1 [3.0; 7.2] (231)	5.6 [3.3; 7.8] (163)	5.6 [3.3; 7.8] (90)			
Vanguard CR TiNbN (Zimmer Biomet)	Vanguard Tibia TiNbN (Zimmer Biomet)	Without	1,360	76	65 ₍₅₈₋₇₂₎	8/92	2013-2023	1.6 [0.9; 2.3] (1,148)	3.9 [2.8; 5.0] (922)	5.0 [3.7; 6.3] (730)	5.3 [3.9; 6.6] (512)	5.7 [4.2; 7.1] (323)	6.3 [4.6; 8.0] (191)	7.3 [4.8; 9.7] (99)		
Standard TKAs, cruciate-retaining, mobile bearing, hybrid																
TC-PLUS CR (Smith & Nephew)	TC-PLUS SB (Smith & Nephew)	Without	517	7	69 ₍₆₂₋₇₇₎	35/65	2015-2023	3.4 [1.8; 5.0] (457)	5.0 [3.0; 6.9] (395)	5.2 [3.2; 7.2] (341)	6.1 [3.9; 8.3] (315)	6.1 [3.9; 8.3] (281)	6.1 [3.9; 8.3] (240)	6.1 [3.9; 8.3] (134)		
Standard TKAs, cruciate-retaining, mobile bearing, cemented																
ACS cemented (Implantcast)	ACS MB cemented (Implantcast)	Without	1,010	23	70 ₍₆₂₋₇₇₎	30/70	2013-2023	2.0 [1.1; 2.9] (774)	3.7 [2.4; 5.0] (575)	4.3 [2.8; 5.7] (456)	5.4 [3.7; 7.1] (376)	5.7 [3.8; 7.5] (280)	6.1 [4.1; 8.0] (190)	6.1 [4.1; 8.0] (109)		
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	Without	2,866	25	71 ₍₆₃₋₇₇₎	36/64	2013-2023	1.8 [1.3; 2.3] (2,510)	2.5 [1.9; 3.1] (2,175)	2.9 [2.2; 3.5] (1,905)	3.1 [2.4; 3.7] (1,551)	3.1 [2.4; 3.8] (1,135)	3.1 [2.4; 3.8] (733)	3.1 [2.4; 3.8] (412)	3.1 [2.4; 3.8] (162)	
INNEX CR (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	Without	1,380	65	70 ₍₆₂₋₇₇₎	97/3	2013-2023	2.2 [1.4; 3.0] (1,244)	3.2 [2.2; 4.1] (1,086)	3.7 [2.7; 4.8] (926)	4.3 [3.1; 5.4] (767)	4.8 [3.6; 6.1] (598)	5.6 [4.1; 7.0] (407)	5.6 [4.1; 7.0] (223)	6.1 [4.3; 7.9] (84)	
INNEX CR GSF (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	Without	403	33	70 ₍₆₃₋₇₇₎	82/18	2014-2023	2.6 [1.0; 4.2] (335)	3.8 [1.8; 5.8] (284)	4.2 [2.1; 6.3] (233)	4.2 [2.1; 6.3] (176)	4.7 [2.4; 7.1] (137)	5.6 [2.7; 8.3] (92)			

Cumulative revision rates for specific implant systems and component pairs (III)

- Important: Modified approach to secondary patellar resurfacing
 - TKA outcomes provided in the 2024 annual report are therefore not directly comparable with those of previous annual reports.
 - In contrast to last year's report, the 2024 report no longer includes the cumulative rate of secondary patellar resurfacing, as it is now considered the endpoint of the primary procedure.
 - Instead, the outcomes for specific implant systems now list primary arthroplasties with and without primary patellar resurfacing.

Cumulative revision rates for specific implant systems and component pairs (IV)

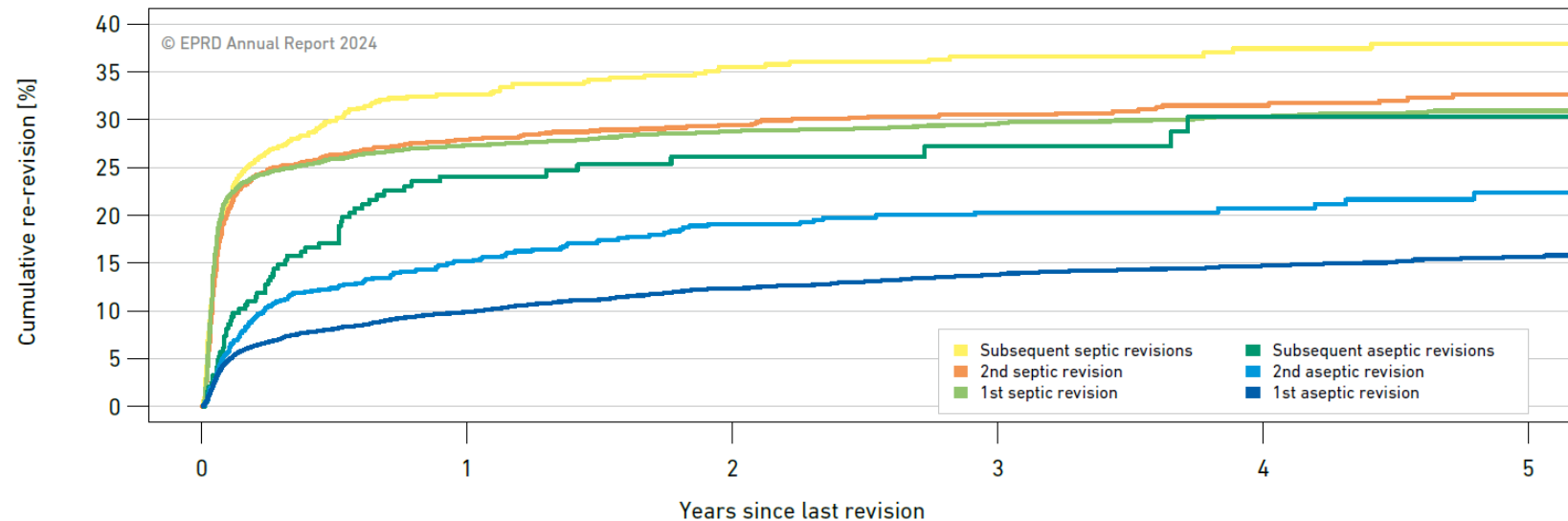
- Note that hospital-related and patient-related factors may sometimes overlap with implant effects
 - Additional information on the patient population operated (median age and proportion of male and female patients) is therefore provided.
 - We also indicate when primary arthroplasties with the corresponding components became available.
- Important: If the procedure involves revision or explantation, this is considered to be the endpoint of the analysis – regardless of whether implant components were actually left *in situ* during the surgery or replaced.

In brief

- The cumulative re-revision rate ...
 - increases with each additional subsequent procedure, although the rate of increase is lower for infection-related revisions.
 - after periprosthetic infection is more than twice that of non-infection-related revisions.

Cumulative re-revision rates (II)

➤ The cumulative re-revision rate increases with each additional subsequent procedure.



➤ Differences in results between aseptic and septic revisions become smaller with each subsequent procedure.

Subsequent septic revisions	690	366	269	205	140	87
2nd septic revision	1,431	757	560	416	293	173
1st septic revision	4,688	2,448	1,818	1,298	889	527
Subsequent aseptic revisions	251	143	89	59	43	21
2nd aseptic revision	897	564	401	276	185	106
1st aseptic revision	8,730	5,931	4,440	3,225	2,279	1,466

Figure 15: Hip arthroplasty cumulative re-revision rates after first, second and subsequent revisions ($p < 0.0001$). Confidence intervals have been omitted for clarity.

Cumulative re-revision rates (III)

- For infection-related revisions the risk of re-revision within two years is more than twice that of non-infection-related revisions

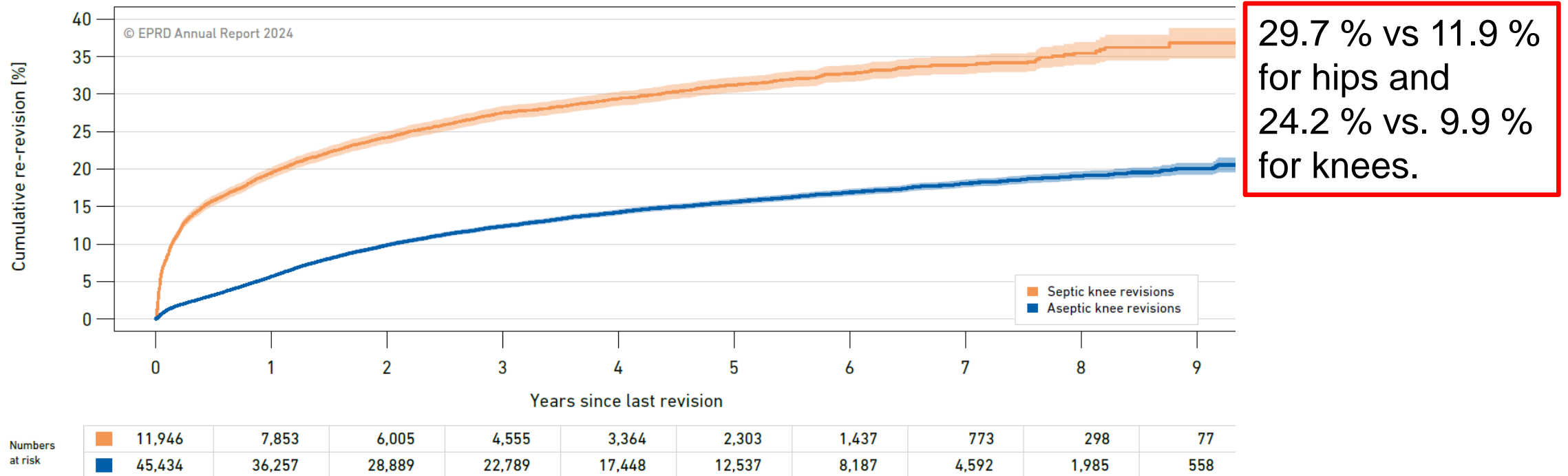


Figure 28: Knee arthroplasty cumulative re-revision rates over time ($p < 0.0001$)

Patient mortality

- Important: In patient mortality tables, the arthroplasty surgery and the death of the respective patient are not necessarily related.
- Reason: Once a year, the EPRD receives information directly from participating federal health insurance provider associations on whether the patient is still alive or has died and in which month the death occurred. The cause of death is not included in this information.

- In brief
 - In the EPRD, mortality rates after elective primary arthroplasties are often lower than the general population figure from the German Federal Statistical Office (DESTATIS).
 - Mortality rates after non-elective hip arthroplasties and after septic revisions are considerably higher.

Patient mortality (III)

- Cumulative mortality rates of arthroplasty patients at different time points, up to five years after primary or revision arthroplasty:
- Important: These summarised values only lend themselves to a direct comparison to a very limited extent, as the mean age of several of these patient groups already differs considerably at the current time point.

Type of procedure	Number	Age	m/f (%)	Mortality within ...							
				3 months	6 months	12 months	24 months	36 months	60 months		
Primary arthroplasties	Elective THAs with uncemented stems	420,224	67	41/59	0.3 (0.3; 0.3) (404,776)	0.5 (0.5; 0.4) (388,578)	1.0 (0.9; 1.0) (355,022)	2.1 (2.1; 2.2) (292,977)	3.5 (3.5; 3.4) (239,527)	7.3 (7.2; 7.4) (137,522)	
	Elective THAs with cemented stems	115,036	79	25/75	1.2 (1.1; 1.2) (109,292)	1.9 (1.8; 2.0) (106,111)	3.2 (3.1; 3.3) (94,389)	6.2 (6.1; 6.4) (74,464)	9.8 (9.6; 10.0) (61,286)	19.0 (18.7; 19.3) (52,071)	
	Non-elective THAs	34,964	76	30/70	6.2 (5.9; 6.4) (31,673)	8.6 (8.3; 8.9) (29,656)	12.2 (11.8; 12.4) (26,018)	18.5 (18.1; 18.9) (19,817)	25.3 (24.8; 25.9) (14,523)	38.4 (37.7; 39.1) (6,818)	
	Hemiarthroplasties	73,215	84	29/71	17.9 (17.6; 18.2) (58,014)	24.0 (23.7; 24.4) (51,483)	31.5 (31.2; 31.9) (42,093)	43.6 (43.2; 44.0) (28,098)	54.6 (54.2; 55.0) (17,931)	71.5 (71.0; 71.9) (6,377)	
	Standard TKAs	424,357	70	35/65	0.3 (0.3; 0.3) (408,108)	0.4 (0.4; 0.5) (390,794)	0.9 (0.8; 0.9) (354,514)	2.1 (2.1; 2.2) (291,598)	3.8 (3.7; 3.8) (239,568)	8.3 (8.2; 8.4) (138,005)	
	Constrained TKAs	19,949	74	24/76	1.2 (1.0; 1.3) (19,027)	2.0 (1.8; 2.2) (18,070)	3.4 (3.1; 3.6) (16,380)	6.5 (6.1; 6.9) (12,205)	10.2 (9.7; 10.7) (10,588)	19.4 (18.6; 20.1) (5,768)	
	Unicondylar knee arthroplasties	63,758	63	45/55	0.1 (0.1; 0.1) (61,352)	0.2 (0.2; 0.2) (58,799)	0.4 (0.4; 0.5) (55,170)	1.1 (1.0; 1.2) (43,476)	2.0 (1.9; 2.1) (35,247)	4.4 (4.2; 4.7) (19,463)	
	Patellofemoral knee arthroplasties	1,026	55	26/74	0.0 (0.0; 0.0) (987)	0.1 (0.0; 0.3) (944)	0.4 (0.0; 0.9) (857)	0.7 (0.1; 1.3) (710)	0.9 (0.2; 1.5) (558)	2.6 (1.1; 4.0) (320)	
	Revisions	Hip revisions, aseptic, with exchange of bone-anchored components	40,065	77	34/66	4.3 (4.1; 4.5) (37,067)	5.9 (5.7; 6.1) (35,277)	8.1 (7.8; 8.4) (32,157)	12.3 (11.9; 12.6) (26,278)	16.6 (16.2; 17.0) (21,045)	26.1 (25.5; 26.4) (11,788)
		Hip revisions, aseptic, without exchange of bone-anchored components	8,833	75	36/64	2.5 (2.2; 2.9) (8,328)	3.8 (3.4; 4.2) (7,944)	5.7 (5.2; 6.2) (7,295)	8.9 (8.3; 9.5) (6,925)	12.6 (11.8; 13.4) (4,827)	19.6 (18.5; 20.6) (2,713)
Hip revisions, septic, with exchange of bone-anchored components		10,175	73	47/53	4.4 (4.0; 4.8) (9,471)	6.4 (5.9; 6.8) (8,999)	8.5 (8.0; 9.1) (8,212)	12.5 (11.8; 13.2) (6,786)	17.0 (16.2; 17.8) (5,440)	26.5 (25.4; 27.5) (2,982)	
Hip revisions, septic, without exchange of bone-anchored components		5,581	75	42/58	9.8 (9.0; 10.5) (4,833)	13.5 (12.6; 14.4) (4,434)	16.6 (15.6; 17.6) (3,846)	21.3 (20.1; 22.4) (2,960)	25.5 (24.2; 26.8) (2,205)	36.2 (34.4; 37.8) (989)	
Knee revisions, aseptic, with exchange of bone-anchored components		29,783	70	32/68	1.0 (0.9; 1.1) (28,520)	1.5 (1.4; 1.7) (27,364)	2.4 (2.2; 2.6) (25,221)	4.5 (4.2; 4.7) (21,121)	6.8 (6.4; 7.1) (17,243)	12.6 (12.1; 13.1) (9,938)	
Knee revisions, aseptic, without exchange of bone-anchored components		13,182	69	35/65	0.4 (0.3; 0.5) (12,678)	0.8 (0.6; 0.9) (12,077)	1.5 (1.3; 1.7) (11,071)	3.2 (2.8; 3.5) (9,228)	5.0 (4.6; 5.4) (7,473)	9.4 (8.8; 10.1) (4,281)	
Knee revisions, septic, with exchange of bone-anchored components		7,078	71	47/53	1.8 (1.4; 2.1) (6,758)	2.7 (2.3; 3.1) (6,454)	4.5 (4.0; 5.0) (5,742)	7.8 (7.1; 8.4) (4,970)	11.7 (10.9; 12.5) (4,052)	20.6 (19.4; 21.8) (2,391)	
Knee revisions, septic, without exchange of bone-anchored components		3,893	73	49/51	5.0 (4.3; 5.7) (3,544)	6.6 (5.8; 7.4) (3,318)	9.3 (8.4; 10.3) (2,973)	13.9 (12.7; 15.1) (2,322)	18.3 (16.9; 19.7) (1,754)	27.2 (25.4; 29.0) (868)	

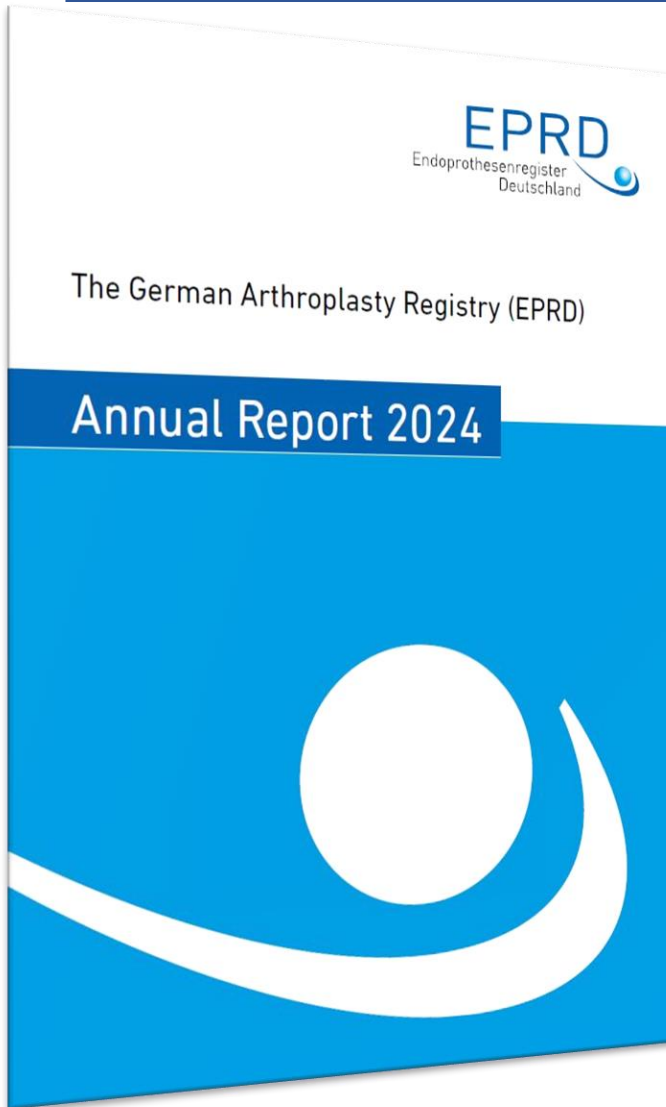
Table 60: Summary of patient mortality rates, 3, 6, 12, 24, 36 and 60 months after primary arthroplasty or revision

Patient mortality (IV)

- Separate men and women mortality rates with the corresponding figures calculated by the German Federal Statistical Office (DESTATIS)
- Example on the right: 1-year arthroplasty mortality rates for male patients by age category and type of arthroplasty

Male patients		1-year mortality expressed as a percent of the age group ...								
Type of procedure		≤ 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	≥ 85	
Primary arthroplasties	Elective THAs with uncemented stems	0.24 (0.18; 0.30) (23,705)	0.27 (0.20; 0.33) (23,196)	0.39 (0.33; 0.44) (32,743)	0.46 (0.39; 0.52) (37,966)	0.69 (0.61; 0.77) (37,269)	1.09 (0.98; 1.19) (34,374)	2.02 (1.83; 2.22) (17,889)	4.32 (3.76; 4.88) (4,375)	
	Elective THAs with cemented stems	6.80 (4.29; 9.25) (337)	6.13 (4.24; 7.98) (542)	3.65 (2.72; 4.57) (1,396)	2.43 (1.94; 2.90) (3,644)	1.57 (1.34; 1.79) (10,351)	1.87 (1.69; 2.04) (22,038)	2.47 (2.28; 2.64) (23,238)	5.31 (4.91; 5.72) (9,925)	
	Non-elective THAs	5.32 (3.22; 7.38) (93)	4.86 (3.44; 6.25) (778)	5.50 (4.41; 6.59) (1,425)	5.46 (4.61; 6.30) (2,322)	5.76 (4.99; 6.52) (3,015)	7.09 (6.39; 7.79) (4,374)	12.12 (11.17; 13.06) (3,634)	25.29 (23.91; 26.44) (2,618)	
	Hemiarthroplasties	26.28 (18.49; 33.33) (92)	26.45 (20.19; 32.23) (144)	27.38 (23.12; 31.40) (284)	22.87 (20.05; 25.58) (612)	21.87 (20.11; 23.48) (1,498)	20.26 (19.25; 21.24) (6,510)	21.55 (20.86; 22.24) (9,460)	33.54 (32.96; 34.11) (15,197)	
	Standard TKAs	0.14 (0.09; 0.20) (16,233)	0.21 (0.15; 0.27) (22,498)	0.35 (0.29; 0.41) (32,105)	0.40 (0.34; 0.44) (37,482)	0.54 (0.48; 0.61) (42,223)	0.87 (0.78; 0.95) (46,974)	1.35 (1.22; 1.47) (28,733)	2.31 (1.98; 2.65) (6,776)	
	Constrained TKAs	1.38 (0.48; 2.27) (613)	1.18 (0.45; 1.90) (734)	1.09 (0.52; 1.64) (1,118)	1.67 (1.04; 2.27) (1,543)	2.36 (1.73; 2.98) (2,044)	2.62 (2.04; 3.18) (2,709)	4.31 (3.59; 5.03) (2,641)	9.69 (8.09; 11.27) (1,061)	
	Unicondylar knee arthroplasties	0.09 (0.01; 0.18) (5,058)	0.11 (0.02; 0.20) (4,941)	0.18 (0.07; 0.29) (5,298)	0.22 (0.09; 0.34) (4,624)	0.33 (0.14; 0.50) (4,160)	0.66 (0.39; 0.92) (3,459)	0.85 (0.42; 1.27) (1,614)	0.97 (0.02; 1.92) (343)	
	Patellofemoral knee arthroplasties	0.00 (324)	0.00 (104)	0.95 (0.00; 2.79) (99)	0.00 (28)	0.00 (20)	3.33 (0.00; 9.55) (29)	7.14 (0.00; 19.70) (13)	0.00 (3)	
	Corresponding DESTATIS figures		< 0.5	0.57 – 0.87	0.96 – 1.43	1.57 – 2.17	2.32 – 3.21	3.43 – 4.98	5.58 – 8.94	> 10.0
	Revisions	Hip revisions, aseptic, with exchange of bone-anchored components	0.77 (0.29; 1.25) (1,191)	1.13 (0.54; 1.72) (1,124)	1.68 (1.08; 2.27) (1,442)	2.80 (2.13; 3.45) (2,132)	3.25 (2.43; 3.87) (2,728)	4.69 (4.10; 5.28) (4,468)	8.00 (7.28; 8.72) (4,402)	22.06 (20.87; 23.23) (3,342)
Hip revisions, aseptic, without exchange of bone-anchored components		1.36 (0.17; 2.53) (348)	1.85 (0.37; 3.30) (298)	2.63 (1.08; 4.15) (378)	2.80 (1.39; 4.20) (481)	2.15 (1.13; 3.14) (713)	2.93 (1.95; 3.89) (1,045)	7.58 (5.98; 9.14) (900)	19.43 (14.26; 22.48) (445)	
Hip revisions, septic, with exchange of bone-anchored components		0.59 (0.00; 1.40) (308)	3.87 (1.40; 4.99) (255)	2.14 (0.82; 3.45) (409)	3.45 (1.95; 4.92) (501)	5.91 (4.25; 7.54) (689)	9.40 (7.47; 11.10) (960)	14.86 (12.42; 17.05) (754)	27.17 (23.54; 30.42) (398)	
Hip revisions, septic, without exchange of bone-anchored components		2.63 (0.05; 5.14) (129)	7.20 (3.19; 11.05) (135)	4.53 (1.73; 7.25) (181)	6.83 (3.89; 9.48) (239)	10.81 (7.77; 13.75) (316)	13.04 (10.31; 15.69) (459)	22.93 (19.45; 26.08) (438)	39.09 (34.88; 43.03) (284)	
Knee revisions, aseptic, with exchange of bone-anchored components		0.24 (0.00; 0.47) (1,603)	0.25 (0.03; 0.48) (1,828)	0.35 (0.11; 0.58) (2,240)	0.67 (0.35; 0.99) (2,348)	1.49 (1.04; 1.92) (2,760)	2.08 (1.40; 2.55) (3,171)	4.88 (4.03; 5.73) (2,119)	15.69 (13.47; 17.47) (944)	
Knee revisions, aseptic, without exchange of bone-anchored components		0.75 (0.15; 1.35) (734)	0.35 (0.00; 0.74) (789)	0.39 (0.01; 0.77) (980)	0.42 (0.05; 0.78) (1,088)	0.98 (0.45; 1.51) (1,242)	1.44 (0.84; 2.04) (1,403)	3.24 (2.07; 4.40) (784)	8.64 (5.11; 12.04) (213)	
Knee revisions, septic, with exchange of bone-anchored components		1.97 (0.24; 3.64) (238)	1.31 (0.03; 2.57) (273)	0.25 (0.00; 0.73) (399)	2.05 (0.84; 3.24) (495)	2.51 (1.25; 3.74) (534)	5.88 (4.09; 7.43) (407)	7.17 (4.97; 9.31) (442)	14.55 (9.82; 19.02) (182)	
Knee revisions, septic, without exchange of bone-anchored components		2.20 (0.00; 4.44) (122)	3.10 (0.05; 4.04) (109)	3.42 (0.90; 5.87) (168)	5.48 (2.53; 8.34) (201)	3.88 (1.49; 6.21) (211)	9.53 (6.55; 12.40) (322)	14.30 (10.75; 17.11) (304)	24.62 (17.37; 31.23) (100)	

Table 61: 1-year arthroplasty mortality rates for male patients by age category and type of arthroplasty



➤ If you have any questions, please contact us at:

EPRD Deutsche Endoprothesenregister gGmbH

Straße des 17. Juni 106-108

10623 Berlin

Phone.: +49 - (0)30 - 340 60 36 40

Fax.: +49 - (0)30 - 340 60 36 41

Email: info@eprd.de

Web: <https://www.eprd.de/en>