EPRD
Endoprothesenregister Deutschland

The German Arthroplasty Registry (EPRD)

Annual Report 2023

2023 EPRD-Annual Report

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For better readability, we refrain from gender-specific wording in the text. This publication is inclusive of the male, female and diverse genders.

The German Arthroplasty Registry

An initiative of the German Society for Orthopaedics and Orthopaedic Surgery (DGOOC)

DEUTSCHE GESELLSCHAFT FÜR ORTHOPÄDIE UND ORTHOPÄDISCHE CHIRURGIE
German Society for Orthopaedics & Orthopaedic Surgery

with partners

AOK-Bundesverband Die Gesundheitskasse. · vdek Die Ersatzkassen · BVMed Die Stimme der deutschen MedTech-Branche

Annual Report 2023

Authors:
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We are very grateful to the members of the working groups for their suggestions and feedback regarding this annual report!

Message from the Scientific Advisory Board of the EPRD

For the EPRD, 2022 was a very successful year. As one of the world's largest registries for hip and knee arthroplasties, this year, we were once again able to demonstrate that the EPRD is more than simply a means of communicating implant survival.
The primary reason that the EPRD has evolved into a success story over the past 10 years is because the fundamental idea of measuring and monitoring the safety of hip and knee implants has been complemented by patient-specific risk-factors and a comparison of revision rates on hospital-level. These opportunities offered by the EPRD are both valued nationally and increasingly recognised internationally. This is not only reflected in the increasing number of top-ranked publications which include data from the EPRD, but also in the fact that Hamburg, and thus the EPRD, was picked to host next year's Congress of the *International Society of Arthroplasty Registries* (ISAR).

In recent years, we have been able to continuously monitor the correlation between arthroplasty volume and revision risk on hospital level and thereby provide policymakers with important indicators for setting quality parameters. The EPRD's current data has thus also found its way into the inevitable discussion about a necessary German hospital reform. Nevertheless, it is also necessary to focus on other factors that impact arthroplasty quality. These include, for example, important patient-specific risk factors affecting both morbidity and mortality following arthroplasty procedures, thus facilitating an individualised risk assessment - by the operating surgeon and also by the patients themselves.

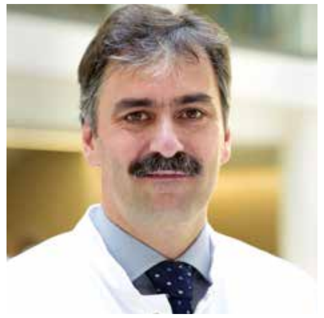
With over two million data sets, the EPRD is currently the second largest registry in Europe and the third largest registry in the world. In 2022 more data has been collected than in any other previous year. The almost 100 percent follow-up rate of patients from participating health insurance providers is unique. These high EPRD follow-up percentages, which are based on voluntary data submissions from individual hospitals, can only be achieved if all healthcare providers maintain their committment to continuously assess and improve the quality of arthroplasties performed. We would therefore like to thank all those who have contributed to the success of the EPRD by submitting data over the last years.

We will continue to develop the registry, for example, by recording individual surgeon data, which would allow surgeon-specific outcome analyses on a voluntary basis.

Moreover, the company, RSG Register Solutions gGmbH, a 100 percent subsidiary of the DGOOC, was founded to leverage the EPRD's experience in setting up a registry for other societies and clinical entities and to advance technologies for the automated acquisition of text and, in future, image data.

Why is a registry like the EPRD needed? Why are randomised clinical trials not enough? The answer to these questions is simple: only with a registry like the EPRD the quality of arthroplasty surgery will continuously be monitored and maintained in our country. This is because results obtained under controlled study conditions, from individual highly specialised hospitals, cannot be extrapolated to the "real world" in general. Unlike clinical trials, registries do not apply specific patient inclusion and exclusion criteria, as these do not exist in "normal life", because patients are treated as part of everyday clinical practice. Moreover, routine data from health care insurance providers, with all of its unique features, add value to a comprehensive assessment of outcome, which can even be superior to the design of clinical studies, which mostly focus on specific questions. For example, the EPRD reveals a significantly higher failure rate for septic hip procedures compared to clinical trials and meta-analyses.

Let us solve these and other challenges together. We hope that this report will provide you with many helpful insights for the successful management of your arthroplasty patients.

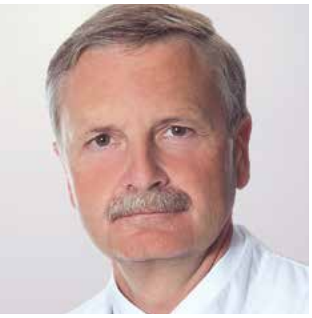


Prof. C. Perka, MD
Chair, Scientific Advisory Board

Prof. K.-P. Günther, MD
Scientific Advisory Board
(International Relations)

Prof. A. Steinbrück, MD
Scientific Advisory Board
(Study Coordination)

Message from the Chair of the Outlier Assessment Committee



Prof. H. Reichel, MD
Chair, Outlier Assessment Committee

From the outset, the EPRD not only focused on long-term arthroplasty outcomes, but also on establishing an early warning system for implants. To this end, specific implant systems and combinations have been analysed every six months since 2020 - taking into account known confounding factors - in order to identify so-called “statistical outliers” with increased revision probabilities after primary surgery.

The correct interpretation of the results based on adjusted data requires appropriate expertise. For this reason, the Outlier Assessment Committee evaluates the identified statistical outliers in terms of their medical relevance. The members of this working group include the EPRD’s medical statisticians as well as designated representatives of the medical society, manufacturers and health insurance providers. Implant outliers that cannot be explained, e.g., by biased patient selection, are reported to the manufacturers and operating hospitals with a request for comment. To date, the notified institutions have been responsible for assessing the abnormalities and deciding on possible consequences. In addition to the individual arthroplasty survival analyses that manufacturers and hospitals routinely receive, this early warning system is therefore a supplemental awareness-raising measure. Past analyses of outliers have predominantly focused on short-term implant outcomes. However, many of the statistical outliers observed during the first few postoperative years cannot be attributed to individual implant systems. Rather, the sometimes significantly different revision rates between individual hospitals implanting the same arthroplasty system indicate that the effect of the operating surgeon or the hospital on the short-term outcomes is often greater than that of the implant system itself. This is also reported to the respective hospitals and manufacturers.

As short-term implant outcomes therefore depend more on the surgeon and on patient-related factors, the early warning system has recently been expanded to include an additional level of analysis. In this additional analysis - and only in this analysis - early revisions within the first three years are disregarded. Only the implant-dependent medium and long-term performance of the implants is analysed. Atypical increases in revision probabilities can therefore be identified as implant related abnormalities, earlier than before. The EPRD is constantly refining its early warning system to ensure the valid detection and classification of these abnormalities.

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1 Introduction

The German Arthroplasty Registry (EPRD) has been collecting data on hip and knee arthroplasties for over 10 years, now. The registry, a joint initiative of the German Society for Orthopaedics and Orthopaedic Surgery (DGOOC), industry and health insurance providers, has amassed a considerable amount of data: To date, the EPRD has documented more than two million procedures from data provided on a strictly voluntary basis. More than one million of these are currently under long-term follow-up by the participating health insurance providers.

This immense amount of data not only offers the opportunity to paint a detailed picture of past and current arthroplasty practices, but also to provide increasingly reliable information on arthroplasty quality and potential for improvement. The EPRD thus makes an important contribution to enhancing quality. This year, the ten years of data acquisition, have prompted the registry to take a closer look at emerging trends - not only with regard to the type and characteristics of selected arthroplasties, but also in terms of their survival. To this end, separate panels in this report highlight various developments over the past ten years of the EPRD.

The development of the registry to date and plans for the future are discussed in detail in Chapter 2. Chapter 3 explains the organisation of the EPRD, the data sources involved, including their reconciliation, and thus provides the basis for understanding the analyses in subsequent chapters. These analyses span several chapters: Chapter 4 deals descriptively with the data submissions for the year 2022 and the changes that have become apparent in arthroplasty practice over the years.

Chapter 5 focuses on the survival of primary and revision arthroplasties across all years. Chapter 6 analyses post-arthroplasty patient mortality and compares its own outcomes with data from the German Federal Statistical Office for the corresponding age groups.

Chapter 7 focuses on so-called mismatch cases and the contribution of the EPRD to detect them at an early stage and prevent them in the long run. These are arthroplasty cases where incompatible components have been documented. The concluding section Chapter 8 summarises the most important results.

2 Registry development

2 Registry development

History to date

The EPRD started to document hip and knee arthroplasties, as part of a trial period, in November 2012. Initially, only a few pilot hospitals submitted their surgical documentation to the registry, but since the beginning of 2014 participation has been open to all interested hospitals.

The annual documentation rates rose steadily until 2019, but this was not simply due to the growing number of participating hospitals. When the COVID-19 pandemic reached Germany, in 2020, the number of arthroplasty procedures and thus also the number of documented procedures submitted to the registry declined significantly for the first time. In 2021, the numbers climbed slightly once again despite the ongoing pandemic, but only exceeded pre-pandemic levels in 2022. The 347,702 documented procedures for 2022 represent an increase of almost 9% compared to the previous record figure from 2019. Figure 1 summarises the annual procedure volume.

The documentation of primary arthroplasties in the EPRD fell at the onset of the pandemic, but rose again significantly after it subsided. The number of documented reoperations has remained fairly constant in recent years (Table 1).

The renewed increase in procedure volume cannot be attributed to an increase in the number of participating hospitals. Although the number of hospitals that submitted surgical documentation to the EPRD rose continuously from 2012 to 2021, in the 2022 operating year 751 hospitals submitted data which for the first time did not exceed the previous year's total (see Figure 2).

	2018	2019	2020	2021	2022
Primary arthroplasties	272,455	285,700	263,000	277,512	314,909
Reoperations	31,271	33,457	32,057	32,654	32,793

Table 1: Annual primary arthroplasty and reoperation volumes. The number of documented procedures includes both hip and knee arthroplasties.

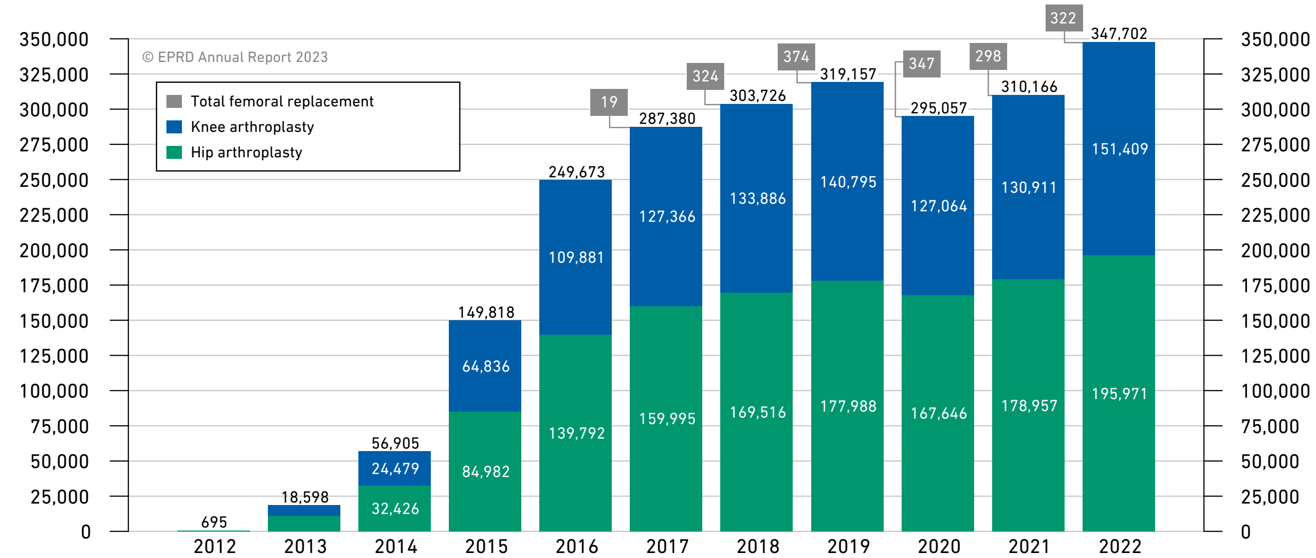


Figure 1: Annual procedure volume by operation date. The total number of documented procedures is shown in black above the respective bar.

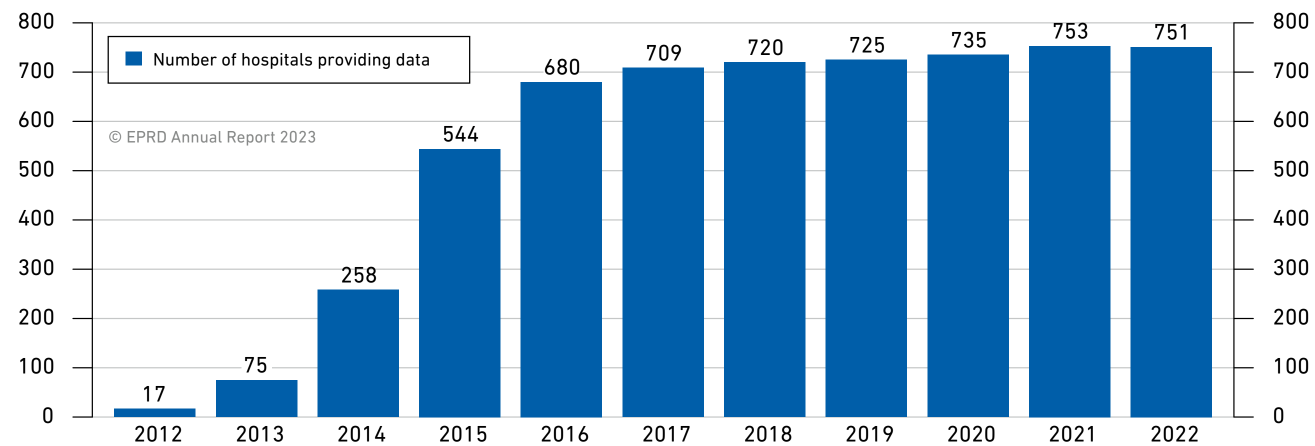


Figure 2: Number of hospitals submitting data each year. A hospital is considered a "data provider", if it submitted at least one surgical document to the EPRD during the calendar year.

Future developments

The EPRD is organised as a strictly voluntary registry where neither hospitals nor patients are required to participate. However, in 2019, the German Parliament decided to establish the German Implant Registry (Implantateregister Deutschland - IRD), a national implant registry mandatory for all parties and to which all hip and knee arthroplasty procedures will be reported. The IRD is currently scheduled to start regular operations on January 1, 2025[1]. It is not yet clear how the EPRD and the data it compiles will be incorporated into this new national registry.

The EPRD will therefore not only continue its own data collection, but also expand it in the future to include standardised and validated patient surveys. The spring of 2023 has already seen the start of trial operations to collect so-called PROMs *(Patient Reported Outcome Measures)* in pilot hospitals. These are subjective assessments of treatment outcomes by the patients themselves. To date, the EPRD has only been able to assess arthroplasty quality based on the arthroplasty survival analysis. These PROMs are therefore intended to complement another important quality criterion in the future by providing information on joint function, quality of life and patient satisfaction.

When selecting the underlying catalogue of survey questions, the EPRD opted for the Oxford Hip Score *(OHS)* and the Oxford Knee Score *(OKS)*. As both scores are also employed in other national registries,[1] they lend themselves to international comparisons. In order to measure treatment efficacy, the surveys are administered to the patient both pre- and post-operatively at defined points in time. Each questionnaire comprises 12 separate questions on pain and physical function of the affected joint, each with five possible answers (see Illustration 1).

1 See website of the German Federal Ministry of Health: https://www.bundesgesundheitsministerium.de/implantateregister-deutschland.html

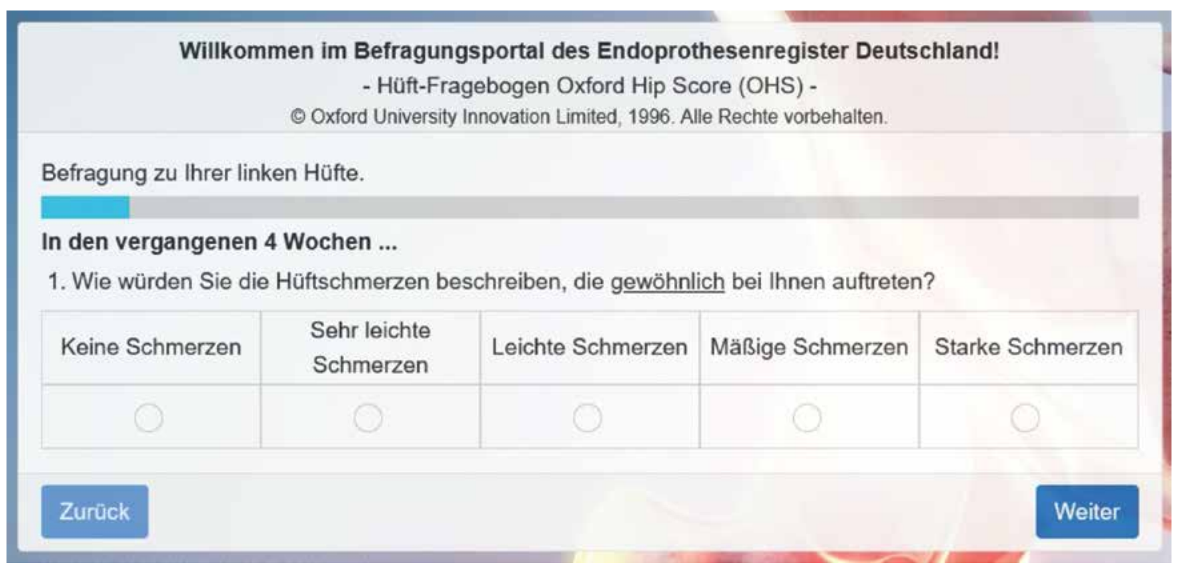


Illustration 1: Extract from the online PROM questionnaire of the Oxford Hip Score

In addition, patients are asked postoperatively about their general satisfaction with the arthroplasty treatment.

Starting in 2024, patients at all participating hospitals will be able to take part in this survey. In order to minimise the additional workload for hospitals as much as possible, the survey is conducted entirely online. The hospital merely retrieves a PDF document in advance via a portal of the registry, which it then hands out to each corresponding patient. The information provided in the pdf then allows patients to independently participate in the initial survey directly via the web portal. Patients who register with their own email address will then be invited to participate in subsequent surveys.

The EPRD also has plans for the coming years: Starting in 2026, the registry would like to offer a voluntary option for documenting the surgeon performing the hip and knee arthroplasty. In future, participating surgeons would also receive personalised outcome reports on their procedures and will be able to "take their outcomes with them" when changing hospitals. These outcomes are treated with absolute confidentiality and are only made available to the respective surgeon.

In brief

- In 2022, more than 347,000 operations were documented in the EPRD by 751 hospitals.
- In 2023, the EPRD started its PROM questionnaire trial period.

Evolution of the analysis over time

Over the years, the EPRD has developed an extensive analysis system. Part of the results of these analyses are presented in the annual report in transparent fashion for the public. In addition, participating hospitals and manufacturers receive customised reports.

Each spring, **hospitals supplying data** receive a descriptive comparison of the arthroplasty procedures they performed in the previous year and the total number of cases documented in the EPRD during this period. This allows them to see, for example, whether they differ from other participating hospitals in terms of the type of arthroplasty, type of stem etc. employed.

Twice a year since 2018, the EPRD has also been providing hospitals with analyses of their own arthroplasty procedures. These take into account in detail and across years the respective arthroplasty survival periods and compare outcomes with those of the other hospitals (see figure on Page 69).

At the end of each year, participating **implant manufacturers** receive comprehensive analyses of the hip and knee arthroplasties performed with their products. These include both descriptive summaries and analyses of the corresponding service lives. By now, the analyses are so detailed that manufacturers can see exactly how the procedures carried out with their respective prosthetic systems and subsystems fare - e.g., in certain age groups or restricted to arthroplasties with certain characteristics.

In addition, the EPRD has established an early **warning system**. The outcomes of all implants and implant combinations in the registry are monitored automatically and - in the event of a statistical discrepancy - discussed by a panel of experts. If the EPRD classifies a discrepancy as medically suspect and relevant, it contacts the manufacturer concerned and, if necessary, the hospital in question and asks them to respond.

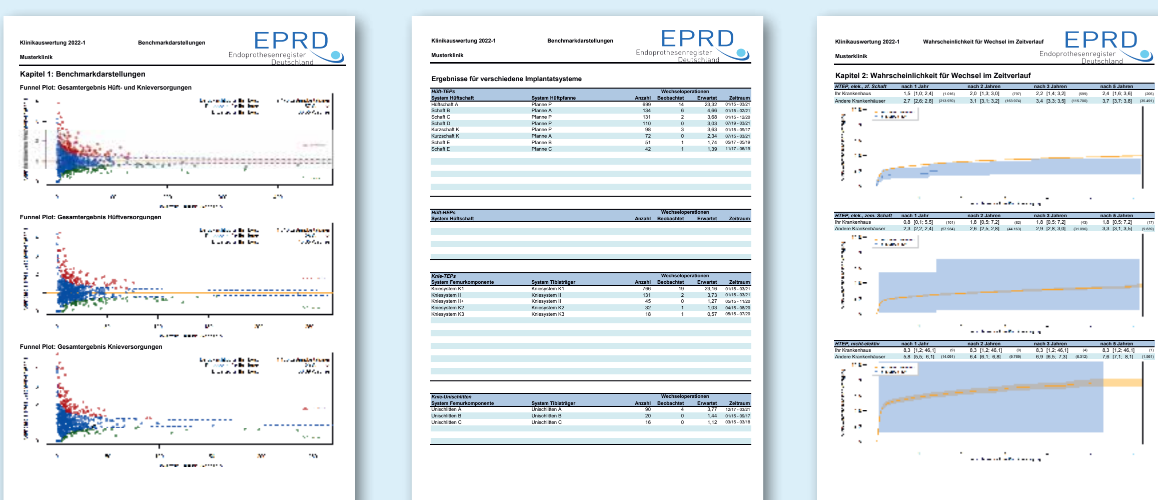


Illustration 2: Representative excerpts from a hospital evaluation

3 Summary of statistical methodology and data linkage

3 Summary of statistical methodology and data linkage

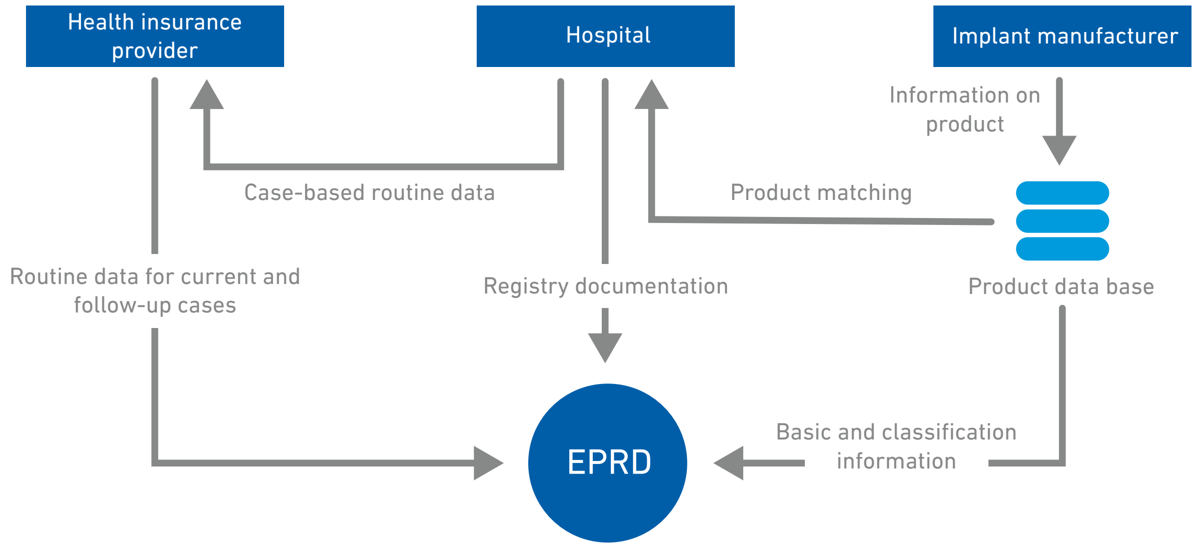


Illustration 3: The flow of data from hospitals, health insurance providers and implant manufacturers to the EPRD

The EPRD essentially obtains its data from three sources: The **registry documentation** of the participating hospitals, the **product database** provided and maintained by the participating implant manufacturers, and from the **routine data** of the participating health insurance providers. As the EPRD is a strictly voluntary registry that cannot ensure a one hundred percent coverage, the data from the health insurance companies in particular enables the EPRD to draw valid conclusions about arthroplasty survival. Illustration 3 and the following description detail the data from the three sources and their consolidation:

- With the patients' consent, the participating hospitals may document their arthroplasty procedures directly in the EPRD (Illustration 4). This **registry documentation** provides the EPRD with basic data on the procedure and the patient. This includes details of the date of the operation, the joint operated on, the type of procedure, as well as the patient's age, sex and, since 2017, height and weight, and since 2020 information on the patient's general state of health via the ASA classification. No information allowing patient identification is submitted to the registry. Moreover, the hospitals also document exactly which components were implanted during the procedure - usually by simply scanning the barcode.

- The participating implant manufacturers enter information on their products into the EPRD **product database**. The database not only contains basic product information, e.g., part number and trade name, but also more detailed classification data with specific information on material, size, condition, etc. The product database has been further refined in recent years through international exchange with the National Joint Registry (NJR) in the UK and currently contains data on over 72,000 individual products. The classification data may be linked directly to the registry documentation via the documented part numbers. This allows the reported registry documentation to be categorised and arthroplasties with the same characteristics to be grouped together for analysis purposes. The product database is continuously undergoing improvements and corrections. As these changes may impact the analysis results, documentation from previous years are also retrospectively re-evaluated for the annual report based on the current version of the product database. To some extent this limits comparisons of the results presented in this report with previous annual reports.

- A major hallmark of the EPRD is its co-operation with the federal associations of health insurance providers (AOK-Bundesverband GbR) and the Verband der Ersatzkassen e. V (vdek). By consenting to participate in the registry, the patients agree that their health insurance fund may provide the EPRD with further information — in accordance with data protection regulations — on both the documented surgery and any subsequent reoperations. From the German ICPM and ICD codes contained in this **routine data**, the EPRD can derive details of the procedure and its accompanying circumstances. Once the health insurance provider has reported the relevant patient data to the EPRD, the former will from then on independently check the system for changes to the patient's arthroplasty and status. Any reoperations and censoring events, such as the death of a patient, are then automatically reported to the EPRD by the federal health insurance association. In this way, the EPRD gets notified of reoperations even though they have not been documented directly in the registry.

The purely descriptive analysis of the current arthroplasty situation as described in Chapter 4 of this annual report only requires the registry documentation and data from the product database. However, in order to calculate and analyse arthroplasty survival as in Chapter 5, it is essential to also include the routine data from the health insurance providers. This is the only way that the EPRD, as a purely voluntary registry, can ensure that it does not miss any reoperation or censoring event.

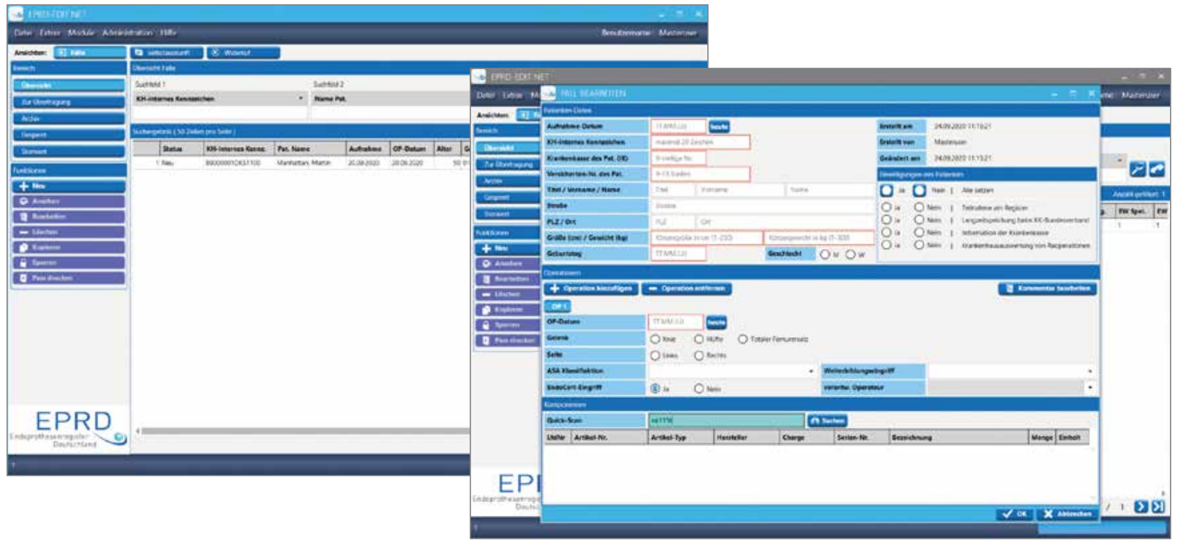


Illustration 4: For registry documentation, hospitals may enter their data via the EPRD-Edit software, among others.

Thus, the number of data sets available for the arthroplasty survival analysis will always be significantly smaller than the total number of data sets compiled in the EPRD. Since the EPRD only receives such routine data from patients insured with one of the regional health insurance providers (Allgemeine Ortskrankenkasse) or one of the other statutory health insurance providers (Ersatzkasse), the data sets of patients from other health insurance providers are not included in the survival analysis. The EPRD is currently negotiating co-operations with the other health insurance providers.

In order to ensure the highest data quality possible, the EPRD thoroughly reviews incoming data sets for plausibility and consistency and notifies the hospitals of any documentation issues. The routine data of the health insurance providers is also included in these reviews to identify any inconsistencies. The EPRD excludes all data sets with contradictory or questionable information from the analysis until the issues have been resolved. The current annual report is based on survival data from more than 960,000 primary arthroplasties and 102,000 revision procedures under follow-up.

Arthroplasty survival is evaluated based on the probability of a first revision or repeat revisions (re-revisions) as well as any complementary operations. Chapter 5 of this annual report analyses three different end points and time lines:

1. **Time span between primary arthroplasty and first revision for any reason (including explantation of components)** (sections 5.1 to 5.4 except for Table 51): Subsequent (secondary) patellar resurfacing is explicitly not counted as revision, even if during the same procedure the insert was replaced prophylactically. If the procedure involves revision or explantation, this is considered to be the end-point of the analysis – regardless of whether implant components were actually left *in situ* during the surgery or replaced. In particular, when presenting revision probabilities for specific implant systems in Section 5.4, it should thus be noted that these are arthroplasty revisions of specific implants and that the respective implant may not necessarily have been replaced in every case. Patient-specific censoring events include patient death, leg amputation and the termination of the follow-up, e.g., due to the patient changing health insurance provider.

2. **Time span between the primary arthroplasty and subsequent secondary patellar resurfacing** (Table 51 in Section 5.4): In order for a reoperation to count as secondary patellar resurfacing, no prosthetic components other than the actual patellar component and possibly an insert must be documented for the procedure. Moreover, the only arthroplasties eligible for analysis are those without patellar resurfacing during the primary surgery. For the purpose of this analysis, revision arthroplasties, as defined in number 1 above, are counted as additional censoring events.

3. **Time span between first and second revision arthroplasty including explantation** (Section 5.5): Only revisions of primary arthroplasties already documented in the registry are considered as the starting point for the calculation. As described in number 1 above, secondary patellar resurfacing does not count as a revision procedure and is therefore not considered here. If the first revision was carried out in two stages - i.e., components were explanted and re-implanted at two different dates - the second follow-up starts at re-implantation. For primary arthroplasty patients previously documented in the registry, additional analyses that differentiate between first, second and third revisions are also included.

Chapter 6 addresses patient mortality after primary arthroplasty and reoperations. When a patient dies, the respective health insurance provider only provides the EPRD with the month of death, not the day. For deceased patients, the calculations in this report are therefore based on the middle day of the month of death. Subsequent arthroplasties are not taken into account as censoring events for the calculation of cumulative mortality rates.

In brief

- Arthroplasty survival analyses: Based on 960,000 primary procedures and 102,000 revision arthroplasties followed up. The following explanatory sections provide more detailed information on the methodology employed and the the figures shown thereafter.

Presentation of descriptive data in Chapter 4

In Chapter 4, data sets submitted to the EPRD were categorised separately by type of arthroplasty, and the following descriptive parameters were determined for each category:

Parameter	Description
Proportion [%]	Percentage of procedures in each category
Age	Median age in years of patients in this category. Thus, at least 50 % of patients in this category are not older and at least 50 % are not younger than this age.
m/f [%]	Percentage of male and female patients in this category
BMI	Median BMI of patients in this category. In each case, the figure refers to the subgroup of these patients for whom valid data on weight and height had been provided.
ASA	Mean ASA classification of the patients in this category.

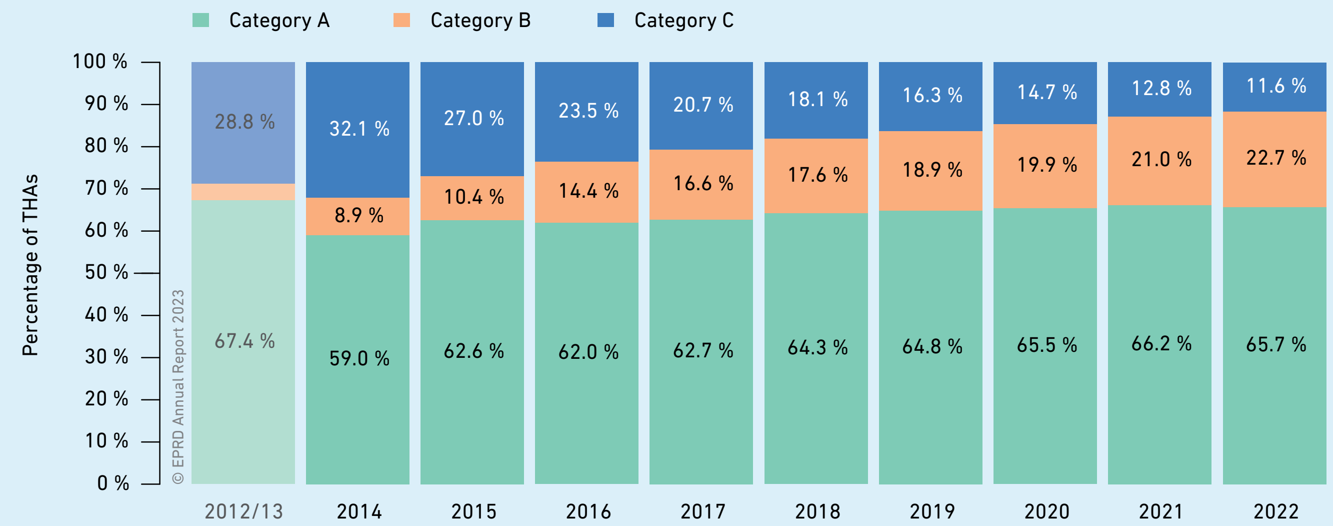
The documentation is classified into the different arthroplasty categories. This is based on the products documented for the procedure and the classification information stored in the product database. As a rule, the categories are designed so that they do not overlap. Most stated percentages add up to 100 %. They refer to the total number of data sets to which the corresponding rule could be applied. If analysis rules could not be applied to data sets because, for example, the classification was not known for all essential products, these data sets were excluded from the pertinent analysis.
As illustrated by the following example, results of the descriptive analyses are presented as a mix of tables (numerical values for the parameters) and graphs (additional visual elements). In addition to numeric percentage values, percentages are also displayed as horizontal bars relative to a left-hand baseline. The greater the percentage, the longer the bar. Median age, median BMI and mean ASA are symbolised by additional horizontal lines in the “Age”, “BMI” and “ASA” columns respectively, spanning ranges from 50 to 90 years, 20 to 35 points, and ASA I to V. The further left a line is, the younger the patients are or the lower the BMI or ASA classification of the patients in this category. The sex ratio is visualised by two complementary bars: the light blue bar on the left represents the male patients, while the pink bar on the right stands for the female patients. If the light blue bar dominates, the patients in this category are predominantly male; if the pink bar dominates, they are predominantly female.

	Proportion [%]	Age	m/f [%]	BMI	ASA
Category A	97.7	72	40 / 60	26.9	2.3
Category B	2.3	67	38 / 62	25.9	2.3
Subcategory B1	0.4	59	48 / 52	26.6	2.1
Subcategory B2	1.8	70	37 / 63	25.7	2.4
Subcategory B3	0.1	53.5	30 / 70	26.2	2.0

There are two exceptions to the above rule where percentages indicated in tables do not add up to 100 %. Firstly, indented category names that indicate subcategories of the category previously listed but not indented (also refer to tables 4, 19, 22, 24, and 37). Apart from rounding errors, the sum of the shares of the subcategories again equals the share of their parent category. Secondly, tables 3, 18, 21, and 36, which describe the patients treated in more detail, present the respective distribution by age, sex and BMI in different colours, with the percentages for each of these three categories adding up to 100 %.

Illustration of registry trends over time in Chapter 4

To analyse the evolution of the registry over time, percentages of the various arthroplasty categories were also determined for prior operating years (Chapter 4). Results are presented as stacked bar graphs, with each bar representing the outcomes of one operating year:



Example: Presentation of the percentages of specific arthroplasties over time

The only exception is the EPRD trial period from November 2012 to the end of 2013: In the illustrations, this phase is combined into a common bar with a different colour gradient, as data from this period was presumably not yet representative due to the small number of participating hospitals. The size of the bars represents the respective share of the category. If this percentage is 5 % or higher, it is also shown as a numerical value in the centre of the respective bar.

Calculation of revision and complementary arthroplasty probabilities from Chapter 5 onwards

Chapter 5 and thereafter focuses on arthroplasty survival and revision probabilities. The EPRD defines the endpoint "arthroplasty failure" as any arthroplasty subsequently requiring revision surgery. Kaplan-Meier estimators are used to calculate the probability that no such (re)operation will be required within a certain time frame after the primary arthroplasty or first revision surgery, and that the arthroplasty will therefore remain in place. It is taken into account that

- at the time of the analysis the monitoring of the arthroplasty has not yet been completed in most cases and
- censoring events such as patient death or amputation of the leg may prevent the complete follow-up of an arthroplasty.

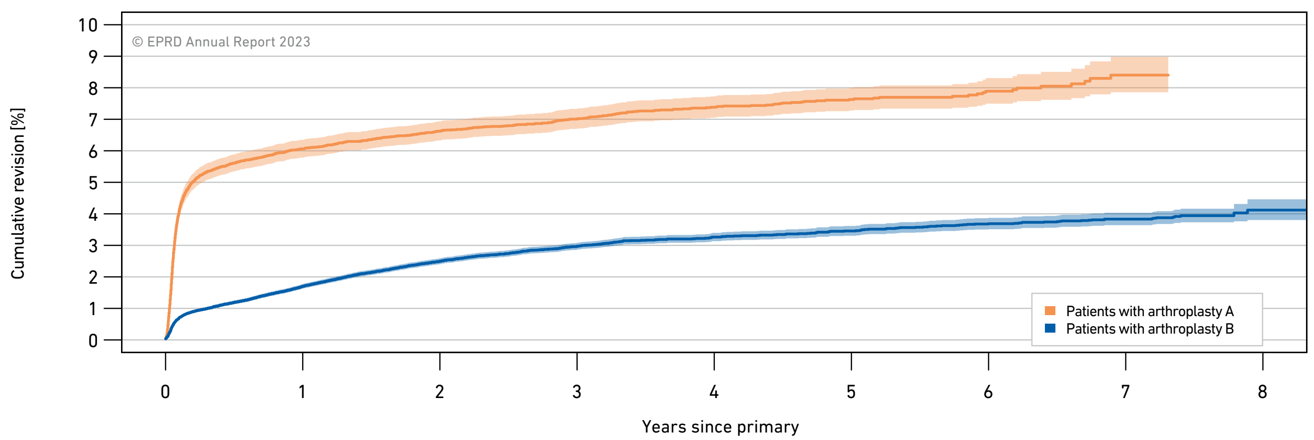
The EPRD proceeds in a similar fashion when calculating the probability of secondary patellar resurfacing. Revisions in these cases are considered as additional censoring events and taken into account accordingly.

The results of the estimates are presented as figures and tables (see the explanations below). The reciprocal probabilities of the Kaplan-Meier estimators, i.e., the cumulative probabilities of arthroplasty revision or complementary arthroplasty, are presented together with their 95 % confidence intervals. Most of the figure and table legends specify the corresponding p-value of the test for parity of revision arthroplasty probabilities over the entire course of the arthroplasty.

Revision probabilities graph

Revision probabilities are depicted as follows. The legends below the graphs show how many arthroplasties were still followed up at any given time, i.e., how many arthroplasties had already been followed up over a correspondingly long period without revision or the patients terminating the follow-up for other reasons.

The graphs in sections 5.1 and 5.2 present cumulative revision probabilities for each group but only for those periods during which at least 500 patients were still at risk post-benchmark. Section 5.4 does not present any confidence intervals.



Numbers at risk	0	1	2	3	4	5	6	7	8
Arthroplasty A	29,083	20,003	14,929	10,641	7,060	4,318	2,169	775	
Arthroplasty B	117,177	108,555	76,315	36,356	11,119	9,971	9,119	8,180	1,007

Representative example of the revision probability of two arthroplasty subgroups. Below the graph displaying revision probabilities with their corresponding 95 % confidence intervals, a table lists the actual number of arthroplasties under observation at the given time points examined.

Tables of revision and complementary arthroplasty probabilities

When presenting the outcomes by indication and type of arthroplasty in Section 5.1, by risk factors in Section 5.2, by implant characteristics in Section 5.3, and by implant-related outcomes in Section 5.4, the following parameters are presented in tables:

Parameter	Description
Number	Number of treatments under follow-up in each category. The sum total from all displayed subcategories may be smaller than the total number listed for the superordinate category. This may either occur because only subcategories for which a minimum treatment threshold has been reached are included (see below), or because a subcategory cannot be assigned due to missing information.
Age	Median age and the age quartiles of the patients who received these arthroplasties.
m/f [%]	Percentage of male and female patients in this category
BMI	Median body mass index of arthroplasty patients. The figure refers to the subgroup of patients for whom valid BMI data had been provided. The tables on the outcomes of specific arthroplasty systems do not include the BMI.
Hosp.	Number of hospitals documenting these arthroplasties.

In the **revision probability** fields, the corresponding 95 % confidence intervals (in brackets) and the number of arthroplasties still followed up at the respective time points (in parentheses) are listed as a percentage after the actual revision probability – unless the latter is zero. Results are only presented if at least 300 primary arthroplasties from at least three different hospitals are available for the analysis of this type of arthroplasty, implant system or implant combination. If the number of arthroplasties being followed up is less than 150 at any one time, both the revision probability and confidence interval are shown in italics; if the number is less than 50, the results are not reported.

4 The 2022 operating year

4 The 2022 operating year

Between January 1 and December 31, 2022, the EPRD registered a total of 347,702 hip and knee arthroplasty procedures. This chapter details the documentation of these procedures and describes emerging trends since the inception of the EPRD, 10 years ago.

Table 2 shows how the documented operations are distributed between hip and knee arthroplasties and total femoral replacement on the one hand, and primary procedures and reoperations on the other.

The following sections focus on the documentation submitted for the 2022 calendar year separately by the operated joint and the type of surgery.

4.1 Primary hip arthroplasty

In 2022, the EPRD registered 177,826 primary hip arthroplasties. A total of 40 % of patients were men. The percentage is significantly higher in the younger age groups, but continues to decline with increasing age (Table 3).

Significant operations prior to primary hip arthroplasty were reported in only 3.1 % of patients (Table 4). About half of these cases involved osteosynthesis or osteotomy in the femoral region.

Tables 5 to 17 provide a detailed view of the types of primary hip arthroplasties performed in 2022 and the corresponding patient characteristics. The percentages of the various types of arthroplasties at some hospitals may differ greatly from the overall figures presented below, as the preferences in the choice of arthroplasty sometimes vary greatly. For example, the EPRD reveals that in almost two thirds of hospitals short stems account for less than 5% of THA cases. However, there are also over 50 hospitals that use them in more than half of such procedures.

	Proportion [%]	Age	m/f [%]	BMI	ASA
All data sets submitted	100.0 (347,702)	71	41 / 59	28.0	2.3
Primary hip arthroplasties	51.1 (177,826)	72	40 / 60	26.8	2.3
Hip arthroplasty reoperations	5.2 (18,145)	76	42 / 58	26.9	2.6
Primary knee arthroplasties	39.4 (137,030)	69	41 / 59	29.7	2.2
Knee arthroplasty reoperations	4.1 (14,379)	70	43 / 57	30.1	2.4
Total femoral replacements	0.1 (322)	74	38 / 62	28.4	2.6

Table 2: Proportion of registered procedures by joint and type of intervention in 2022. Absolute number of data sets in brackets below the percentages.

	Proportion [%]	Age	m/f [%]	BMI	ASA
All arthroplasties considered	100.0	72	40 / 60	26.8	2.3
<45 years	1.7		55 / 45	27.3	1.8
45-54 years	6.3		52 / 48	28.4	1.9
55-64 years	21.1		48 / 52	28.1	2.1
65-74 years	30.1		40 / 60	27.5	2.2
75-84 years	29.9		34 / 66	26.0	2.5
>85 years	10.9		30 / 70	24.6	2.8
Male	40.0	69	100 / 0	27.5	2.3
Female	60.0	73	0 / 100	26.2	2.3
BMI ≤25	33.7	75	31 / 69		2.3
BMI >25 to ≤30	36.0	72	46 / 54		2.2
BMI >30 to ≤35	18.0	69	45 / 55		2.3
BMI >35 to ≤40	6.4	66	41 / 59		2.4
BMI >40	2.4	63	35 / 65		2.6
BMI unknown/implausible	3.5	72	38 / 62		2.2

Table 3: Primary hip arthroplasties in 2022 by patient age, sex and BMI

	Proportion [%]	Age	m/f [%]	BMI	ASA
No prior surgery	96.9	72	40 / 60	26.8	2.3
Osteosynthesis / Osteotomy	2.0	68	39 / 61	25.9	2.3
Pelvis	0.4	62	48 / 52	26.6	2.2
Femur	1.5	70	37 / 63	25.7	2.4
Pelvis and femur	0.1	55	33 / 67	27.0	2.0
Femoral head necrosis	0.2	64	50 / 50	26.7	2.3
Arthrodesis	<0.1	72	33 / 67	27.5	2.1
Other prior surgery	0.9	66	44 / 56	27.2	2.3

Table 4: Previous surgeries reported for primary hip arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Total arthroplasty	88.1	70	41 / 59	27.2	2.2
Hemiarthroplasty	11.9	84	32 / 68	24.2	2.9

Table 5: Types of primary hip replacements in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Uncemented implants	77.2	67	45 / 55	27.7	2.2
Hybrid implants	17.9	79	27 / 73	26.0	2.4
Cemented implants	3.7	81	25 / 75	25.4	2.6
Reverse hybrid implants	1.0	74	26 / 74	26.4	2.4
Unknown	0.1	73	31 / 69	27.2	2.2

Table 6: Fixations in primary total hip arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Cemented implants	88.8	85	32 / 68	24.2	2.9
Uncemented implants	11.1	83	38 / 62	24.4	2.8
Unknown	0.1	81	41 / 59	25.0	3.0

Table 7: Fixations in primary hip hemiarthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Femoral stem with modular head	84.7	71	40 / 60	27.2	2.2
Short stem	13.3	63	48 / 52	27.6	2.1
Femoral neck prosthesis	1.0	62	48 / 52	27.5	1.9
Revision or tumour stem	0.5	78	35 / 65	26.0	2.6
Modular stem	0.3	74	32 / 68	26.9	2.3
Surface replacement	0.1	59	95 / 5	28.4	1.9
Unknown	0.1	73	29 / 71	28.3	2.2

Table 8: Stem types in primary total hip arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Femoral stem with modular head	97.9	84	33 / 67	24.2	2.9
Revision or tumour stem	1.2	83	24 / 76	24.9	2.9
Short stem	0.6	85	30 / 70	23.6	2.6
Modular stem	0.4	84	37 / 63	23.9	2.9
Femoral neck prosthesis	<0.1	84	0 / 100	22.0	2.0
Unknown	<0.1	83	60 / 40	23.3	3.2

Table 9: Stem types in primary hip hemiarthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Modular cup	88.3	70	42 / 58	27.3	2.2
Monobloc cup	8.8	73	37 / 63	26.8	2.3
Dual mobility	1.9	79	33 / 67	26.0	2.6
Revision cup	0.8	72	32 / 68	26.1	2.3
Resurfacing cup	0.1	57	99 / 1	27.2	1.9
Unknown	0.1	73	35 / 65	25.9	2.2

Table 10: Acetabular components in primary total hip arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Without reconstruction shell	99.8	70	41 / 59	27.2	2.2
With reconstruction shell	0.2	78	34 / 66	24.9	2.6

Table 11: Reconstruction shells in primary total hip arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
28 mm	4.7	73	17 / 83	26.3	2.3
32 mm	47.8	70	30 / 70	27.0	2.2
36 mm	47.1	69	55 / 45	27.5	2.2
Other diameters	0.5	71	32 / 68	26.0	2.2
Unknown	<0.1	75.5	0 / 100	23.6	2.0

Table 12: Head sizes in primary total hip arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
XS	0.6	72	34 / 66	26.7	2.3
S	40.8	70	34 / 66	26.9	2.2
M	36.3	70	42 / 58	27.3	2.2
L	16.4	69	50 / 50	27.6	2.2
XL	4.2	69	58 / 42	27.8	2.2
XXL	0.3	69.5	60 / 40	27.8	2.3
XXXL	<0.1	65.5	56 / 44	24.6	2.6
Unknown	1.4	75	44 / 56	26.9	2.4

Table 13: Head-neck lengths in primary total hip arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
hXLPE	58.0	70	40 / 60	27.2	2.2
hXLPE + antioxidant	22.7	69	42 / 58	27.4	2.2
Ceramic	7.5	63	46 / 54	27.4	2.1
mXLPE	6.1	73	44 / 56	27.3	2.3
PE	5.5	78	32 / 68	26.3	2.4
Metal	0.1	59	95 / 5	28.4	1.9
mXLPE + antioxidant	<0.1	71	100 / 0	26.2	2.0
Unknown	0.1	79	26 / 74	26.7	2.3

Table 14: Acetabular bearing materials in primary total hip arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Ceramic	90.4	69	42 / 58	27.3	2.2
Metal	6.6	80	34 / 66	26.0	2.5
Ceramicised metal	3.0	70	41 / 59	27.8	2.3
Unknown	<0.1	75.5	0 / 100	23.6	2.0

Table 15: Modular head materials in primary total hip arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Ceramic / hXLPE	51.4	70	41 / 59	27.3	2.2
Ceramic / hXLPE + antioxidant	22.1	69	42 / 58	27.5	2.2
Ceramic / ceramic	7.5	63	46 / 54	27.4	2.1
Ceramic / mXLPE	5.5	72	44 / 56	27.4	2.2
Ceramic / PE	3.8	75	33 / 67	26.5	2.2
Ceramicised metal / hXLPE	2.7	70	41 / 59	27.8	2.3
Metal / hXLPE	3.8	80	35 / 65	26.2	2.5
Metal / PE	1.5	81	29 / 71	25.7	2.6
Other or unknown	1.6	79	37 / 63	26.2	2.5

Table 16: Bearing materials in primary total hip arthroplasties in 2022. Only combinations with a share of more than 1 % are listed.

	Proportion [%]	Age	m/f [%]	BMI	ASA
Metal	95.3	84	32 / 68	24.2	2.9
Ceramic	3.3	83	32 / 68	24.2	2.6
Ceramicised metal	1.3	85	33 / 67	24.5	2.8
Unknown	<0.1	85	50 / 50	29.6	3.5

Table 17: Modular head materials in primary hip hemiarthroplasties in 2022

Trends in primary hip arthroplasty

The following developments are evident in the EPRD regarding the percentages of the different primary THA characteristics:

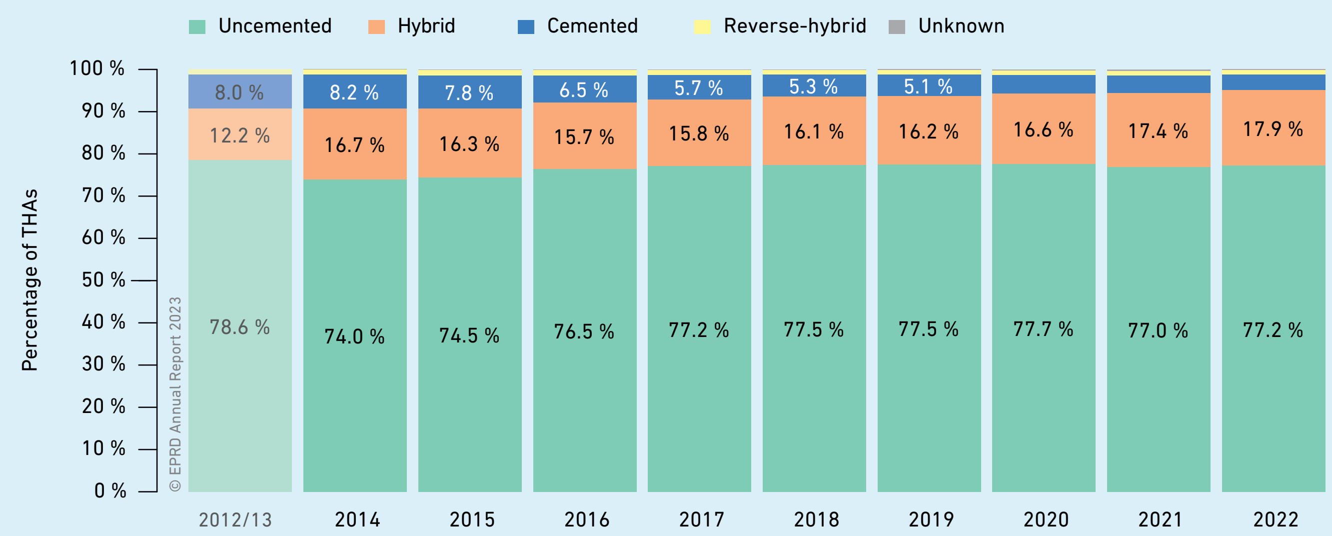


Figure 3: Trends in THA fixations over time

• Figure 3 presents changes in the percentage of THA **fixation types** in the overall analysis. On the whole, the percentage of completely uncemented THAs has remained at a consistently high level of around 77 % in recent years. Hybrid fixations have increased slightly, while fully cemented arthroplasties continued to decrease. Both developments can essentially be attributed to patients aged 75 years and older. Between 2015 and 2022, the share of hybrid fixations in this age group rose from 31.1 % to 39.1 %, while the share of fully cemented fixations declined from 17.9 % to 8.8 %. After an initial increase to 54.6 % starting in 2018, the percentage of completely uncemented fixations in the 75 years and older age group decreased to 50.6 % again in 2022.

• After a slight decline in the use of **short stems** in the early years of the EPRD, their share has risen steadily since 2015 and, at 13.3 %, is about twice as high as seven years ago (6.6 %).

• In terms of the **type of acetabular component**, modular cups have increased continuously since 2014 - by 4 percentage points up to 88.3 % now. In contrast, the share of monobloc cups fell by more than 5 percentage points from 14.4 % to 8.8 % in the same period.

• The most significant increases can be seen in **acetabular inserts** made of highly cross-linked polyethylene (hXLPE) (Figure 4). Between 2014 and 2022, their share rose from 52.0 % to 80.7 %.

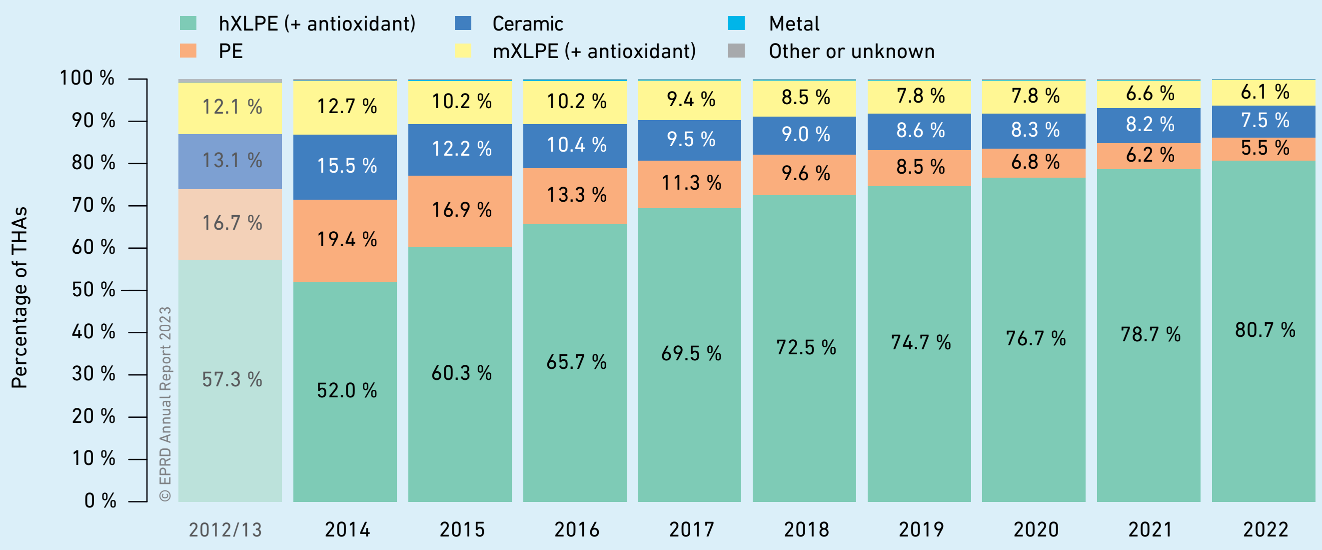


Figure 4: Trends in THA insert materials over time

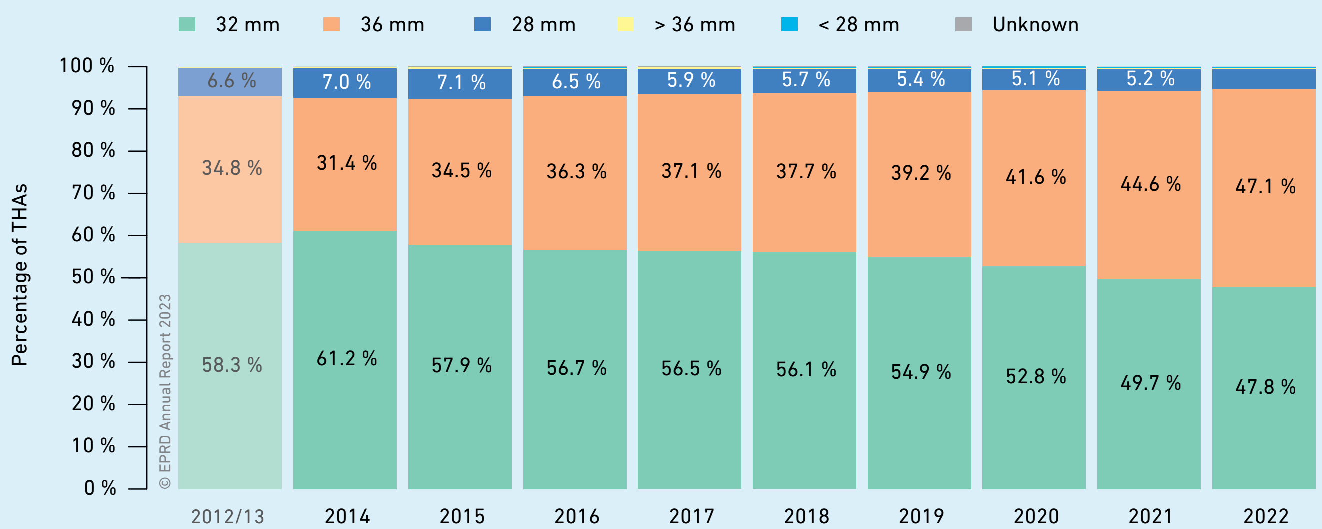


Figure 5: Trends in THA head sizes over time

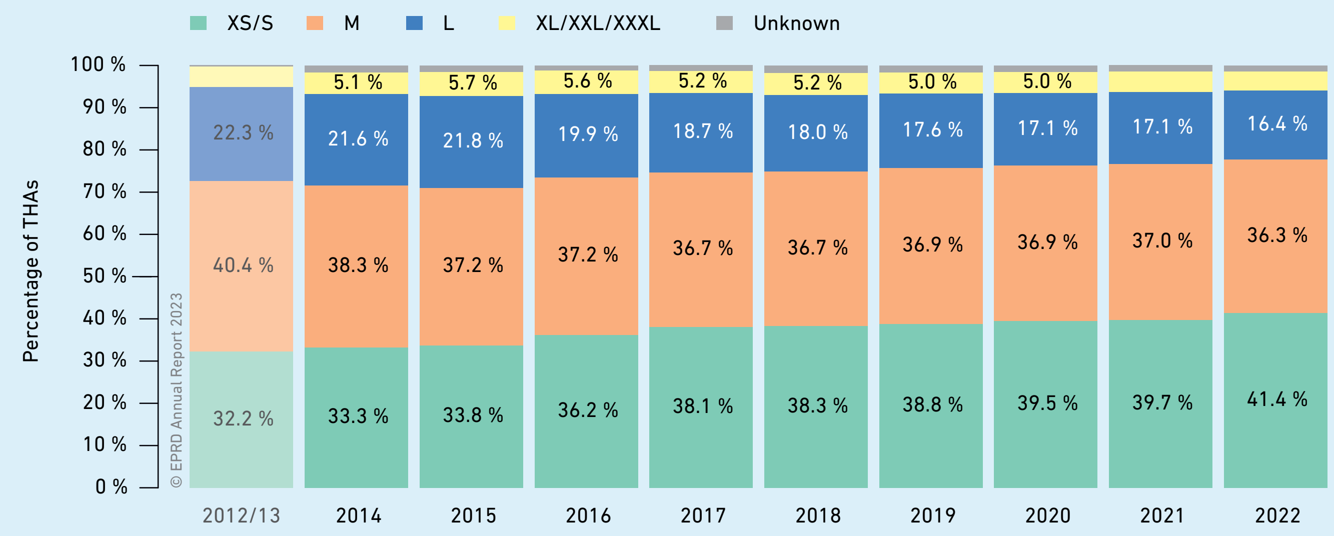


Figure 6: Trends in THA head-neck lengths over time

The use of other insert materials decreased accordingly. Ceramic inserts, for example, fell by more than half in the same period (from 15.5 % to 7.5 %).

• In terms of **head materials**, more and more ceramic heads were used between 2014 and 2022, most recently in over 90 % of THA cases. This increase was at the expense of conventional metal heads, whose share was halved from 13.2 % to 6.6 %. The use of ceramicised metal head components increased until 2018, but has since stagnated at around 3 %.

• In terms of **head components**, the EPRD reveals a clear trend favouring the use of larger heads: in 2014, the proportion of 32 mm heads was almost twice that of 36 mm heads; by 2022, they were almost the same (Figure 5). This is accompanied by a trend towards shorter head-neck lengths: From 2014 to 2022, the combined use of XS and S head-neck lengths increased by more than 8 percent (Figure 6).

In brief:

- Since 2014, the use of insert components made from highly cross-linked PE has risen by more than 28 percent.
- The percentage of short-stem femoral components has roughly doubled to 13.3 % since 2015.
- 36 mm heads and shorter head-neck lengths have become increasingly popular.

4.2 Hip arthroplasty reoperations

For the 2022 calendar year, 18,145 hip reoperations were documented in the EPRD, 14,997 of these were one-stage procedures. The EPRD also registers explantations and re-implantations as part of two-stage revisions. However, explantations are documented much less often in the registry (1,134 explantations compared to 2,014 two-stage revisions).

Tables 18 and 19 present the age, BMI and sex, patient distribution, as well as reasons given for the documented reoperations. As in previous years, the most common reasons for reoperations were loosening (22.7 %), infections (16.4 %), periprosthetic fractures (15.9 %), and dislocations (13.6 %) – although the percentages have shifted (also refer to Figure 7).

Table 20 shows which components were newly implanted and thus possibly replaced in how many of the reoperations performed in 2022. Previously implanted head components and inserts were therefore replaced in 97.4 % and 74.7 % of reoperations, respectively.

Slightly more than one in four reoperations involved a complete replacement of the entire implant system, in which both the stem and the acetabular components were re-implanted (26.2 %).

In almost three quarters of procedures (73.5 %), at least one of the bone-anchored components was re-implanted. Replacement of stems and acetabular components (50.1 % and 49.6 % respectively) was almost even. Revision-specific stem or acetabular components were re-implanted in 31.0 % of reoperations.

	Proportion [%]	Age	m/f [%]	BMI	ASA
All arthroplasties considered	100.0	76	42 / 58	26.9	2.6
<45 years	1.5		56 / 44	27.2	2.0
45-54 years	4.4		49 / 51	28.3	2.1
55-64 years	15.1		52 / 48	28.9	2.3
65-74 years	25.9		45 / 55	28.3	2.5
75-84 years	36.4		38 / 62	26.2	2.6
>85 years	16.8		30 / 70	25.2	2.8
Male	41.5	73	100 / 0	27.5	2.5
Female	58.5	77	0 / 100	26.4	2.6
BMI ≤25	33.4	79	34 / 66		2.6
BMI >25 to ≤30	35.1	77	48 / 52		2.5
BMI >30 to ≤35	17.5	72	44 / 56		2.5
BMI >35 to ≤40	6.9	69	45 / 55		2.6
BMI >40	3.4	66	30 / 70		2.7
BMI unknown/implausible	3.8	75	38 / 62		2.5

Table 18: Hip reoperations in 2022 by patient age, sex and BMI

	Proportion [%]	Age	m/f [%]	BMI	ASA
Infection	16.4	73	50 / 50	28.1	2.6
Loosening	22.7	75	42 / 58	26.9	2.5
Cup	12.0	75	35 / 65	26.7	2.4
Stem	8.7	75	51 / 49	27.4	2.4
Cup and stem	2.0	77	46 / 54	26.5	2.6
Osteolysis with fixed component	0.6	73	58 / 42	26.4	2.3
Cup	0.3	74.5	65 / 35	27.2	2.2
Stem	0.2	68.5	67 / 33	25.7	2.4
Cup and stem	0.1	75	35 / 65	26.4	2.3
Periprosthetic fracture	15.9	81	34 / 66	25.8	2.7
Dislocation	13.6	79	35 / 65	26.1	2.6
Wear	5.8	74	42 / 58	27.0	2.4
Component failure	2.1	75	38 / 62	26.4	2.5
Malalignment	1.9	73	31 / 69	26.4	2.4
Progression of arthrosis	0.5	69	33 / 67	25.7	2.3
Condition after removal	11.1	72	49 / 51	27.8	2.6
Other reasons	9.3	74	39 / 61	27.0	2.4

Table 19: Reasons for hip reoperations in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Stem, head, cup, insert	26.2	73	48 / 52	27.5	2.6
Head, cup, insert	22.0	77	33 / 67	26.2	2.5
Head, insert	17.6	73	45 / 55	27.8	2.5
Stem, head	17.1	79	39 / 61	26.2	2.6
Head	7.7	79	40 / 60	26.5	2.7
Stem, head, insert	6.7	75	48 / 52	27.4	2.5
Cup, insert	1.4	77	35 / 65	26.6	2.5
Insert	0.7	73	40 / 60	26.3	2.5
Accessory parts only (e.g., screws)	0.5	78	36 / 64	27.0	2.7

Table 20: Components replaced or complemented[2] in hip reoperations in 2022

2 Only surgical documentation identifying all items in the product database are considered here. Explantations in two-stage revision procedures are counted as total replacements. In single-stage revisions the EPRD only registers the components implanted, but not those explanted. The explanted components are inferred based on the products documented at the time of the reoperation. If, for example, a new acetabular component is documented, it may be assumed that the existing acetabular component had to be explanted.

Trends in hip reoperations

Over time, the indications for hip reoperations have seen a massive decline in the number of aseptic loosening cases (Figure 7).

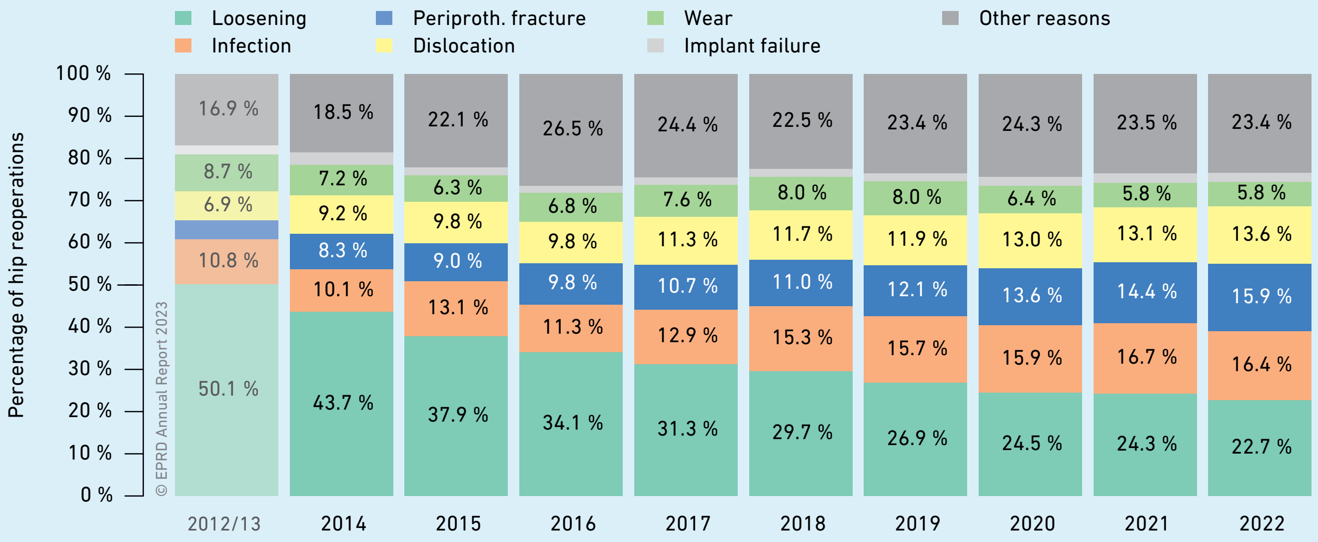


Figure 7: Trends in the reasons given for hip reoperations over time

Most recently, their share of 22.7 % was only about half that of the first years of EPRD documentation. One possible explanation for this is the increased use of more wear-resistant bearing materials. On the other hand, dislocations and periprosthetic fractures have increased, as have infections - at least until 2021.

In the EPRD, there is a continuing trend in infection-related procedures favouring implant retaining reoperations (DAIR) (Figure 8). This implant retaining procedure involves the excision of non-viable soft tissue and infected bone. It may be indicated in cases of early infection and if bone components are firmly anchored. While in 2014 at least one component with bone fixation was replaced in over two thirds of reoperations due to infection, in 2022 this was only the case in slightly less than half of patients (48.2 %).

If a new acetabular component is implanted during hip reoperation, surgeons increasingly opt for dual mobility systems rather than monobloc cups (Figure 9). Compared to 2014, the percentage of dual mobility acetabular components in reoperations has more than tripled, while the share of monoblocs has fallen by almost two thirds.

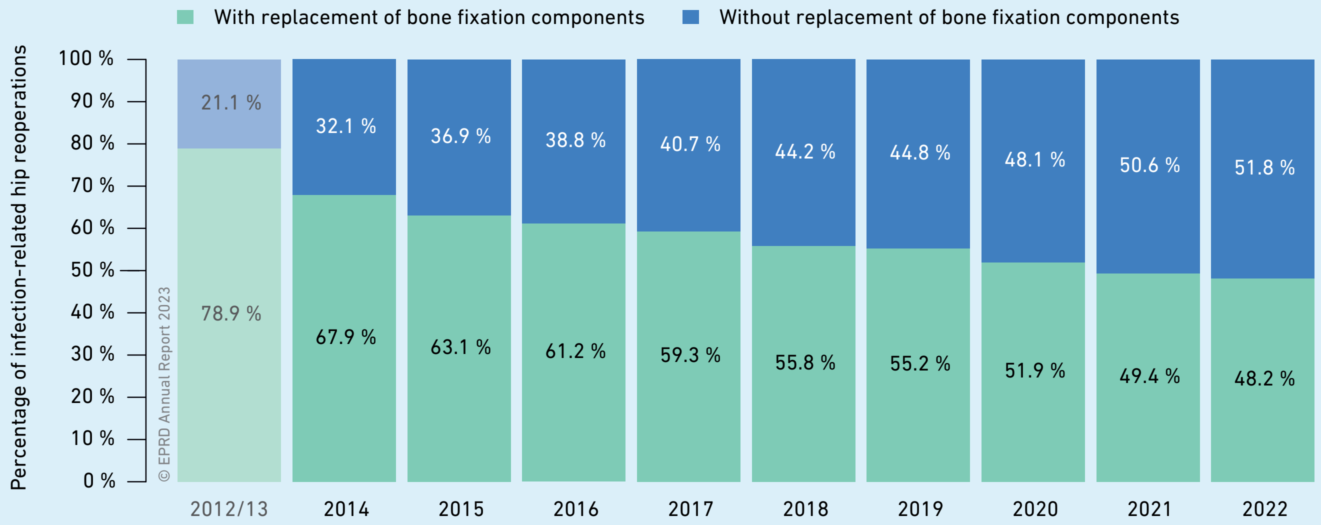


Figure 8: Trends in bone fixation component replacements in infection-related hip reoperations over time. Here, two-stage revisions are considered as single procedures.

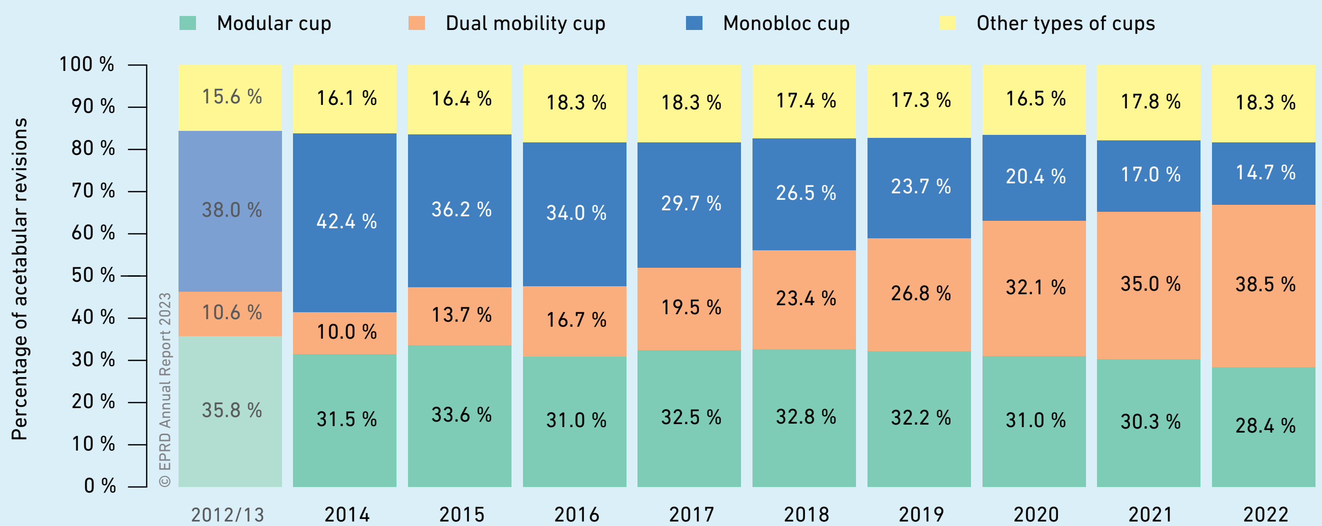


Figure 9: Trends in the types of acetabular components used for cup revisions over time

In brief:

- The most common reasons for reoperations: loosening (22.7 %), infection (16.4 %), periprosthetic fracture (15.9 %), and dislocation (13.6 %).
- Reasons given for reoperations have changed considerably over the years.
- In 73.5 % of reoperations, the femoral and/or acetabular component was replaced. In infection-related revisions, more procedures preserved the joint without replacing the components anchored in the bone.

4.3 Primary knee arthroplasty

In 2022, a total of 137,030 primary knee arthroplasties were registered in the EPRD. Data on the patients treated and any prior operations they may have had are summarised in tables 21 and 22.

Patients undergoing primary knee arthroplasty tend to be younger than hip arthroplasty patients (Section 4.1), but have a higher body mass index. In the EPRD, the median BMI of patients undergoing primary knee arthroplasty is 29.7, which, according to the definition of the World Health Organisation (WHO), is just below the morbid obesity threshold. Over 48 % of patients would therefore be categorised as morbidly obese at the time of knee arthroplasty surgery. This percentage is even higher in younger age groups (60.6 % in patients up to 64 years of age), but somewhat lower in older patients (only 31.3 % in patients 75 years and older). This suggests that severe obesity plays an important role in premature osteoarthritis of the knee.

Tables 23 to 35 present the number of primary arthroplasties documented in the EPRD for 2022, the type of arthroplasty and implant characteristics. However, the percentages may vary greatly between hospitals. This can be illustrated with the primary patellar resurfacing procedures, for example: While around 46 % of hospitals do not perform primary patellar resurfacing at all and almost 30% of hospitals perform the procedure in less than one in twenty TKAs, 5 % of hospitals resurface the patella in more than half of their primary TKAs.

	Proportion [%]	Age	m/f [%]	BMI	ASA
All arthroplasties considered	100.0	69	41 / 59	29.7	2.2
<45 years	0.6		44 / 56	31.6	2.0
45-54 years	6.4		40 / 60	32.7	2.0
55-64 years	27.6		46 / 54	31.4	2.1
65-74 years	35.3		40 / 60	30.1	2.2
75-84 years	26.9		38 / 62	27.8	2.4
>85 years	3.2		36 / 64	26.5	2.5
Male	41.0	68	100 / 0	29.4	2.2
Female	59.0	70	0 / 100	30.1	2.2
BMI ≤25	15.6	74	36 / 64		2.1
BMI >25 to ≤30	34.0	71	48 / 52		2.2
BMI >30 to ≤35	27.0	68	42 / 58		2.2
BMI >35 to ≤40	13.0	65	34 / 66		2.3
BMI >40	6.6	62	27 / 73		2.5
BMI unknown/implausible	3.7	68	43 / 57		2.0

Table 21: Primary knee arthroplasties in 2022 by patient age, sex and BMI

	Proportion [%]	Age	m/f [%]	BMI	ASA
No prior surgery	92.6	70	40 / 60	29.8	2.2
Osteosynthesis / Osteotomy	1.7	64	54 / 46	28.7	2.2
Femur	0.4	67	44 / 56	28.7	2.3
Tibia	1.0	63	56 / 44	28.7	2.2
Patella	0.1	67	55 / 45	29.4	2.2
Several locations	0.2	62	58 / 42	28.7	2.2
Capsule and ligaments	2.4	62	57 / 43	29.1	2.1
Arthrodesis	<0.1	70	56 / 44	32.5	2.4
Other prior surgery	3.3	66	47 / 53	29.5	2.2

Table 22: Prior surgeries reported for knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Total knee arthroplasty	87.1	70	40 / 60	29.8	2.3
Unicondylar knee arthroplasty	12.7	64	52 / 48	29.3	2.1
Patellofemoral knee arthroplasty	0.2	57.5	33 / 67	27.8	2.0
Other arthroplasties	<0.1	60.5	50 / 50	29.5	2.5

Table 23: Types of primary knee replacements in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Standard systems	95.0	70	40 / 60	29.9	2.2
Cruciate-retaining	44.5	70	41 / 59	30.0	2.2
Posterior-stabilised	24.3	70	40 / 60	29.8	2.2
Cruciate-sacrificing	11.4	71	37 / 63	29.9	2.3
Cruciate-retaining/sacrificing	10.2	69	41 / 59	29.7	2.2
Pivot	4.5	70	41 / 59	30.0	2.3
Constrained systems	4.8	73	29 / 71	28.5	2.4
Hinged	2.8	75	26 / 74	27.8	2.4
Varus-valgus-stabilised	2.0	71	32 / 68	29.4	2.3
Unknown	0.2	66	41 / 59	30.0	2.3

Table 24: Grade of constraint in primary total knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Cemented implants	95.6	70	39 / 61	29.8	2.3
Hybrid implants	3.0	70	47 / 53	30.0	2.1
Uncemented implants	1.3	67	44 / 56	29.8	2.2
Reverse hybrid implants	<0.1	64.5	29 / 71	34.4	2.2
Unknown	0.1	72	36 / 64	25.9	2.6

Table 25: Fixations in primary total knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Cemented implants	88.9	64	50 / 50	29.2	2.1
Uncemented implants	10.5	63	60 / 40	29.7	2.1
Hybrid implants	0.4	67	44 / 56	28.8	2.0
Unknown	0.1	60	47 / 53	30.0	1.9

Table 26: Fixations in primary unicondylar knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Fixed bearing	90.7	70	40 / 60	29.8	2.3
Mobile bearing	9.3	70	39 / 61	29.8	2.3

Table 27: Bearing mobility in primary total knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Mobile bearing	53.4	64	51 / 49	29.4	2.1
Fixed bearing	46.6	63	52 / 48	29.0	2.1

Table 28: Bearing mobility in primary unicondylar knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Without patellar resurfacing	89.5	70	40 / 60	29.8	2.3
With patellar resurfacing	10.5	70	37 / 63	29.9	2.3

Table 29: Patellar resurfacing in primary total knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Uncoated metal	90.8	70	41 / 59	29.7	2.3
Coated metal	5.3	66	18 / 82	30.9	2.2
Ceramicised metal	3.8	65	24 / 76	31.0	2.2
Ceramic	<0.1	62	7 / 93	29.5	2.5

Table 30: Femoral bearing materials in primary total knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
PE	43.9	70	39 / 61	29.7	2.2
mXLPE	30.6	70	39 / 61	29.8	2.3
hXLPE + antioxidant	12.8	69	42 / 58	29.8	2.2
hXLPE	12.2	69	38 / 62	30.0	2.2
mXLPE + antioxidant	0.5	70	43 / 57	30.4	2.4
Unknown	<0.1	69	38 / 62	29.0	2.2

Table 31: Tibial bearing materials in primary total knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Uncoated metal / PE	39.0	71	41 / 59	29.7	2.3
Uncoated metal / mXLPE	27.7	71	42 / 58	29.7	2.3
Uncoated metal / hXLPE + antioxidant	12.5	69	43 / 57	29.8	2.3
Uncoated metal / hXLPE	11.1	69	39 / 61	29.8	2.2
Coated metal / mXLPE	2.9	66	15 / 85	31.1	2.2
Ceramicised metal / PE	2.8	66	24 / 76	30.9	2.2
Coated metal / PE	2.1	67	24 / 76	30.5	2.2
Other or unknown	1.9	66	26 / 74	31.1	2.3

Table 32: Bearing materials in primary total knee arthroplasties in 2022. Only combinations with a share of more than 1 % are listed.

	Proportion [%]	Age	m/f [%]	BMI	ASA
Uncoated metal	92.2	64	54 / 46	29.2	2.1
Coated metal	4.6	60	16 / 84	30.4	2.1
Ceramicised metal	3.1	62	38 / 62	29.3	2.1

Table 33: Femoral bearing materials in primary unicondylar knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
mXLPE	55.4	64	50 / 50	29.4	2.1
PE	23.6	63	52 / 48	29.0	2.1
hXLPE + antioxidant	15.4	64	55 / 45	29.1	2.1
hXLPE	5.5	63	54 / 46	29.3	2.0
Unknown	0.1	65	31 / 69	31.2	2.4

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Table 34: Tibial bearing materials in primary unicondylar knee arthroplasties in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Uncoated metal / mXLPE	50.9	64	53 / 47	29.4	2.1
Uncoated metal / PE	20.3	63	55 / 45	29.0	2.1
Uncoated metal / hXLPE + antioxidant	15.4	64	55 / 45	29.1	2.1
Uncoated metal / hXLPE	5.5	63	54 / 46	29.3	2.0
Coated metal / mXLPE	3.8	60	11 / 89	30.6	2.1
Ceramicised metal / PE	2.4	61	36 / 64	29.4	2.0
Other or unknown	1.6	62	41 / 59	28.9	2.1

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Table 35: Bearing materials in primary unicondylar knee arthroplasties in 2022. Only combinations with a share of more than 1 % are listed.

In brief:

- More than 95 % of primary total knee arthroplasties and almost 89 % of unicondylar arthroplasties were fully cemented
- The use of mobile bearings in TKAs continued to decrease
- Since 2016, the proportion of posterior-stabilised (PS) systems has increased by 9 percent to 25.6 %

Trends in primary knee arthroplasties

In recent years, the proportion of male patients in the EPRD has increased slightly. Until 2016, it was below 37 % for TKAs, since 2020 it is 39 % and above. As of 2021, more than half of unicondylar knee arthroplasty patients registered in the EPRD are men.

Fully cemented fixations are by far the most common **type of fixation** in both TKAs and unicondylar arthroplasties. After initially declining slightly to 90.7 % by 2016, the share of TKA procedures has risen steadily since then, reaching a new high of 95.6 % in 2022. For unicondylar arthroplasties, on the other hand, the share of uncemented arthroplasties once again increased from 2021 to 2022 (from 8.8 % to 10.5 %).

The previously observed trend in favour of fixed bearings has persisted for both TKAs and unicondylar arthroplasties. The use of mobile bearings in TKAs also decreased in 2022. At just 9.3 %, the proportion of mobile bearings has been reduced by more than half from its 2016 level (Figure 10). However, mobile bearings are still much more common in unicondylar arthroplasties. After years of decline, their share of 53.4 % in 2022 was just above the previous year's figure of 53.2 % for the first time.

Cruciate-retaining systems are still the most widely used standard TKA system. However, their share has declined continuously since 2015 (from 55.4 % to 46.9 %, see Figure 11). Instead, posteri-

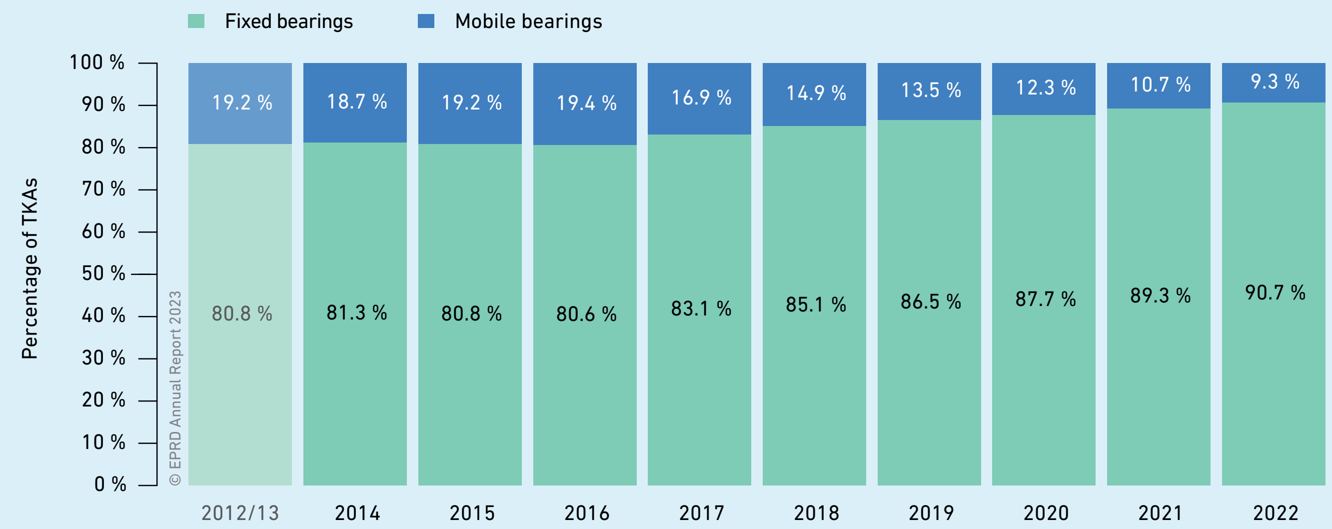


Figure 10: Trends in the types of TKA bearings over time

or-stabilised systems were used more frequently, with their share in the same period rising from 16.6 % to 25.6 %. Pivot systems were also used more often, although their share in the EPRD still accounts for less than 5 %. Highly cross-linked polyethylene inserts are also being used more and more often in TKAs (Figure 12). At 25 %, they reached a new high in the EPRD in 2022. However, they were still used markedly less in knee arthroplasties than in hip arthroplasties (see Figure 4 on page 34).

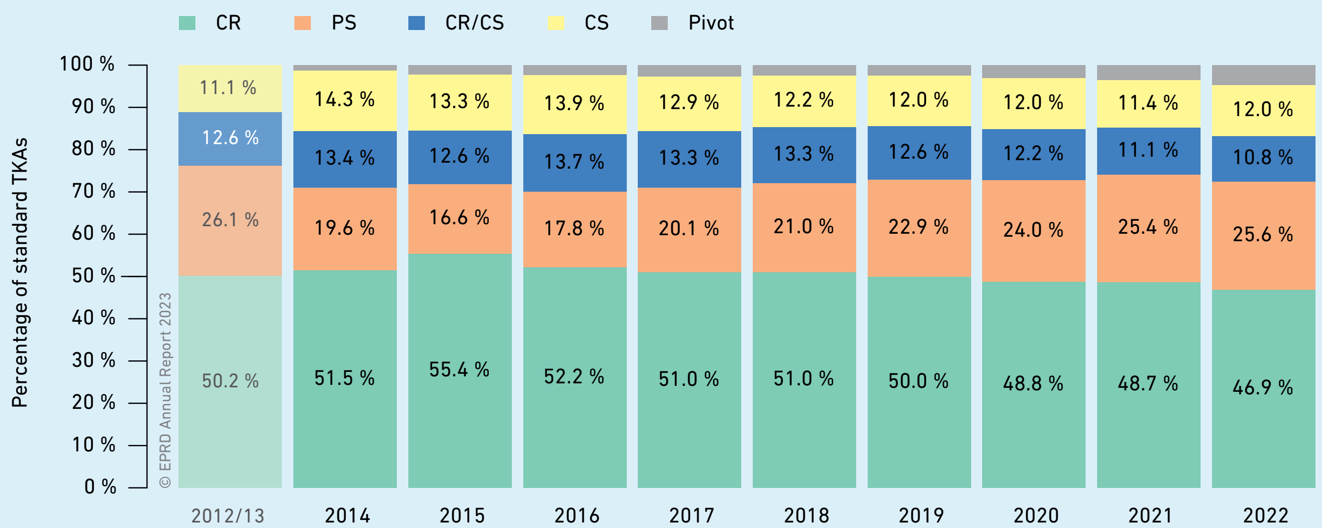


Figure 11: Trends in standard TKA knee systems over time

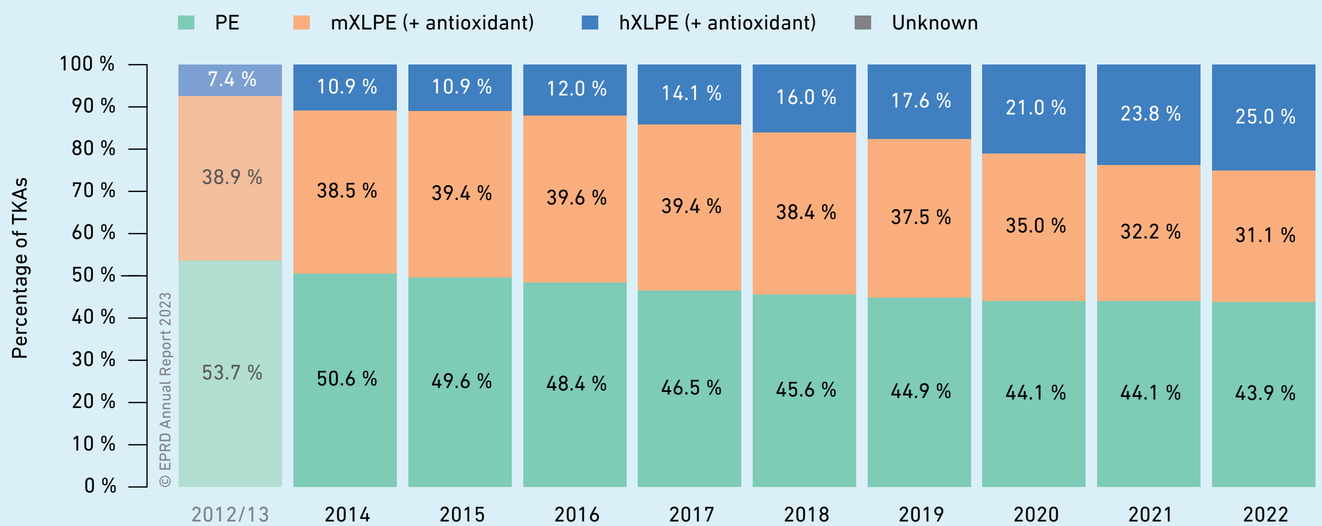


Figure 12: Trends in TKA insert materials over time

4.4 Knee arthroplasty reoperations

For the 2022 calendar year, 14,379 knee reoperations were documented in the EPRD. 918 of these were explantations and 1,917 re-implantations as part of a two-stage revision.

As with hip reoperations, knee reoperations are also documented more often than explantations. Table 36 presents an overview of the patients undergoing knee reoperations in 2022. Table 37 presents the distribution of indications given for the procedures. As with hip reoperations, loosening (22.8 %) and infections (14.5 %) were also reported as the most common causes of knee reoperations.

Table 38 summarises which components in the reoperations considered were replaced or re-implanted. 13.1 % of reoperations presumably only involved secondary patellar resurfacing of an existing arthroplasty. In the other 55.8 %, all of the prior arthroplasty components were exchanged. This percentage is more than twice as high in knee arthroplasty reoperations as in hip arthroplasty reoperations. Most knee arthroplasty revisions involved switching to a more constrained knee system: In more than 60 % of all total revision arthroplasties analysed, a hinged or varus-valgus stabilised system was chosen. In primary knee arthroplasties, this figure was only 4.8 % (Table 24).

	Proportion [%]	Age	m/f [%]	BMI	ASA
All arthroplasties considered	100.0	70	43 / 57	30.1	2.4
<45 years	1.0		46 / 54	29.9	2.0
45-54 years	6.7		41 / 59	31.8	2.2
55-64 years	26.1		46 / 54	31.6	2.3
65-74 years	31.8		45 / 55	30.8	2.4
75-84 years	28.5		41 / 59	28.4	2.6
>85 years	5.8		30 / 70	26.9	2.8
Male	42.9	69	100 / 0	29.6	2.4
Female	57.1	70	0 / 100	30.5	2.4
BMI ≤25	15.8	75	38 / 62		2.4
BMI >25 to ≤30	31.4	72	50 / 50		2.4
BMI >30 to ≤35	27.1	69	45 / 55		2.4
BMI >35 to ≤40	13.2	67	37 / 63		2.5
BMI >40	8.4	64	29 / 71		2.6
BMI unknown/implausible	4.1	69	38 / 62		2.4

Table 36: Knee reoperations in 2022 by patient age, sex and BMI

	Proportion [%]	Age	m/f [%]	BMI	ASA
Infection	14.5	71	54 / 46	30.2	2.6
Loosening	22.8	70	42 / 58	30.4	2.4
Femoral component	4.4	72	44 / 56	29.8	2.4
Tibial tray	8.1	68	38 / 62	30.9	2.3
Patellar component	0.6	68	49 / 51	31.6	2.4
Several components	9.7	71	44 / 56	30.2	2.4
Osteolysis with fixed component	1.0	71	59 / 41	30.1	2.4
Femoral component	0.2	72	54 / 46	30.1	2.4
Tibial tray	0.2	73	61 / 39	30.4	2.4
Patellar component	0.1	71.5	50 / 50	32.4	2.2
Several components	0.4	70	62 / 38	29.8	2.3
Periprosthetic fracture	4.1	79	21 / 79	28.6	2.7
Ligament instability	8.4	67	32 / 68	30.1	2.4
Wear	5.6	71	41 / 59	30.5	2.4
Component failure	2.3	69	45 / 55	30.8	2.4
Prosthetic malalignment / Malrotation	1.4	68	34 / 66	29.4	2.3
Restricted mobility	5.2	66	39 / 61	30.5	2.3
Progression of arthrosis	6.9	69	39 / 61	29.8	2.3
Condition after removal	13.3	70	52 / 48	29.5	2.6
Other reasons	14.6	68	40 / 60	29.8	2.2

Table 37: Reasons for knee reoperations in 2022

	Proportion [%]	Age	m/f [%]	BMI	ASA
Femoral component, tibial tray, insert	49.3	70	43 / 57	30.0	2.5
Insert	21.3	69	47 / 53	30.0	2.4
Patellar arthroplasty	6.7	68	40 / 60	30.5	2.3
Femoral component, tibial tray, insert, patellar arthroplasty	6.5	69	42 / 58	30.0	2.4
Insert, patellar arthroplasty	6.4	69	39 / 61	30.1	2.3
Tibial tray, insert	3.8	69	39 / 61	30.5	2.4
Femoral component, insert	3.2	71	42 / 58	29.9	2.5
Accessory parts only (e.g., screws)	1.6	71	45 / 55	30.0	2.5
Femoral component	0.5	75	38 / 62	29.7	2.4
Tibial tray, insert, patellar arthroplasty	0.4	68	31 / 69	30.7	2.4
Femoral component, insert, patellar arthroplasty	0.3	64.5	40 / 60	30.0	2.4
Femoral component, patellar arthroplasty	0.1	57	22 / 78	28.5	1.9

Table 38: Components replaced or complemented[3] during knee reoperations in 2022

In brief:

- The most common reasons for knee revisions included loosening (22.8 %) and infection (14.5 %)
- Secondary patellar resurfacing accounted for 13% of reoperations
- In almost 56 % of reoperations all of the prior arthroplasty components were exchanged. In more than 60 % of cases, this involved switching to a more constrained system

3 Only surgical documentation identifying all items in the product database are considered here. Explantations in two-stage revision procedures are counted as total replacements. In single-stage revisions the EPRD only registers the components implanted, but not those explanted. The explanted components are inferred based on the products documented at the time of the reoperation. For example, if a new femoral component is documented, it may be assumed that the existing femoral component had to be explanted.

Trends in knee reoperations

Just as with hip reoperations, loosening of knee arthroplasties as an indication for reoperation has decreased over time. Compared to hip reoperations, however, this decline of "only" 11 percentage points from 33.8 % in 2014 to 22.8 % in 2022, is less pronounced. Nevertheless, it cannot be ruled out that these changes in the reasons for revision are at least partly due to a learning effect of the participating hospitals when documenting the procedures in the registry. Infection-related knee reoperations are also increasingly being performed as implant-retaining revisions (DAIR) (Figure 13). However, in line with hip reoperations, knee reoperations involving replacement of at least one bone fixation component decreased – from over two thirds in 2014 to exactly half in 2022.

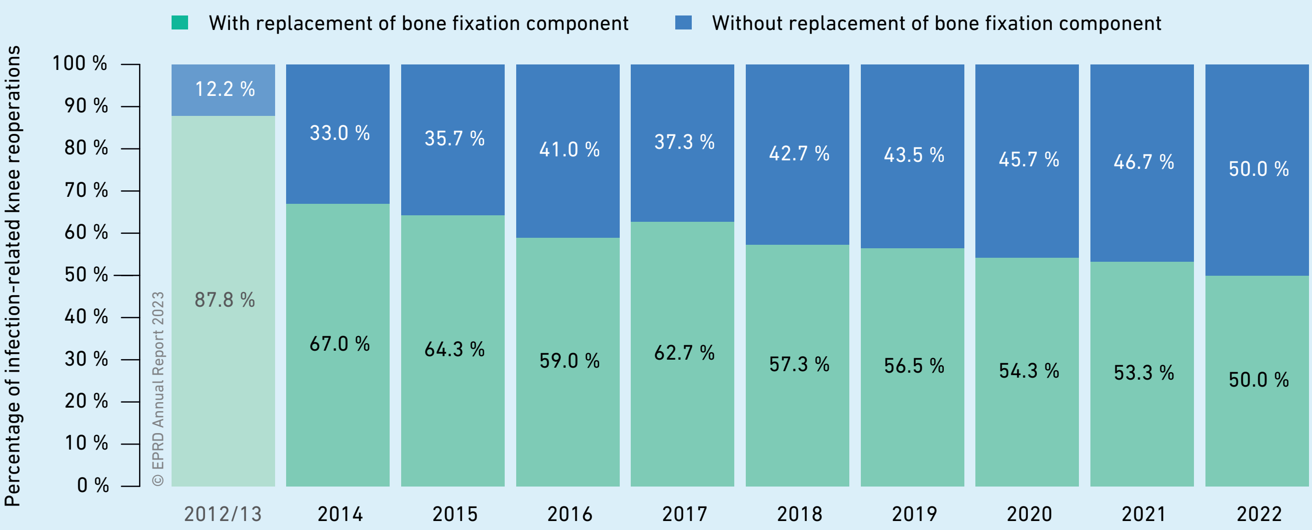


Figure 13: Trends in bone fixation component replacements for infection-related knee reoperations over time. Here, two-stage revisions are regarded as a single procedure.

5 Hip and knee arthroplasty survival

5 Hip and knee arthroplasty survival

Arthroplasty survival is the key quality criterion for arthroplasty registries. The term "arthroplasty survival" denotes the period of time an arthroplasty system remains unchanged in the patient's body until implanted components need to be removed or replaced. The EPRD considers such an event as a failure of the prior arthroplasty and all components implanted in the process. Since most cases are still being followed up, the next subsections discuss the revision probabilities of primary procedures (Section 5.1 to 5.4) and revisions (Section 5.5) over time.

Section 5.1 presents the outcomes of the basic types of primary arthroplasties and addresses the influences of the different indications for arthroplasty, on survival. Section 5.2 then looks at the impact of non-implant-related factors, such as the patients themselves and the hospitals performing the procedures. Section 5.3 addresses the effects of different implant and arthroplasty characteristics on arthroplasty survival. As some arthroplasty systems are only implanted in certain hospitals and patients, it is not always possible to unequivocally determine whether a good or poor outcome is due to the implant itself or to the circumstances associated with the surgery. This possible overlapping of various contributing factors complicates the interpretation of some outcomes in Section 5.3 and should be taken into account, particularly when assessing the outcomes of the specific arthroplasty systems presented in Section 5.4.

The tables at the end of each subchapter summarise and supplement all the outcomes, provided that certain minimum case numbers have been reached. In its annual report, the EPRD presents outcomes for a period of up to eight years after primary arthroplasty or first revision. In terms of the expected arthroplasty survival of 15 to 20 years, this time span considered is still rather short. The following statements therefore only apply to the short to mid-term phase of an arthroplasty, and arthroplasties with good short-term outcomes do not necessarily do as well in the medium to long term.

5.1 Outcome by type of arthroplasty

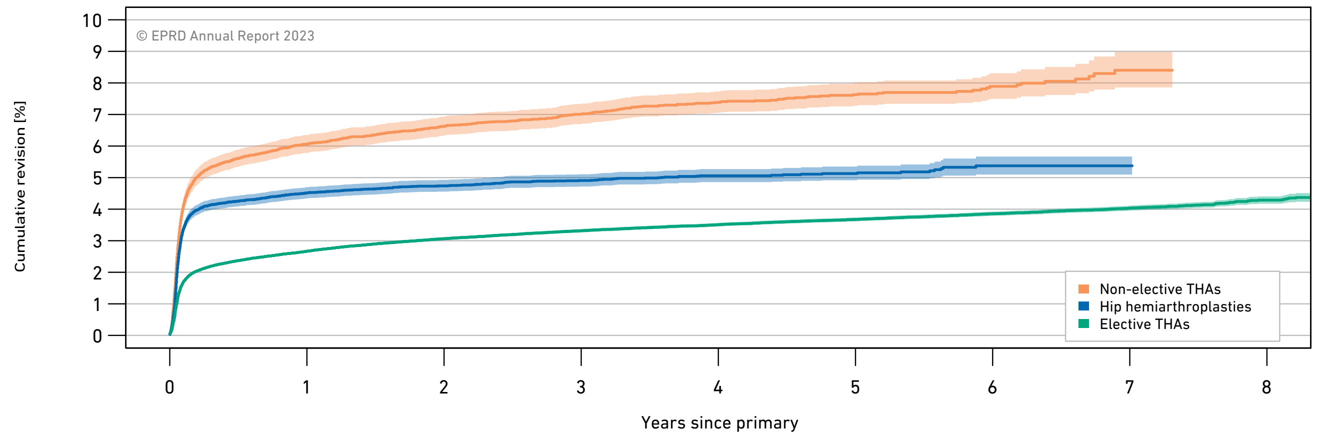
The following subsections address the revision probabilities for different types of hip (Section 5.1.1) and knee arthroplasties (Section 5.1.2) as well as the influences of the different indications for arthroplasty.

5.1.1 Comparison by type of hip arthroplasty

Apart from planned operations, the EPRD also documents emergency femoral fracture procedures close to the hip joint. Whilst total hip arthroplasties are usually planned or elective procedures, trauma surgery involving partial hip arthroplasties are more often performed on older patients with fractures. Figure 14 reveals marked differences with regard to the revision probabilities of partial hip arthroplasties.

Most EPRD analyses also differentiate between the type of femoral fixation in elective THA. In Germany, most femoral fixations are not cemented (also refer to Table 6). Unlike uncemented femoral components, cemented stems are mainly employed in older patients and in younger patients with comorbidities. The differences in the revision probabilities of arthroplasties with uncemented and cemented femoral components (Figure 15) may therefore be attributed to the marked outcome differences in elderly patients (Figure 22).

As can be seen in Figure 14, the revision probabilities strongly depend on whether the surgery was performed for a femoral fracture close to the hip joint or for other reasons. However, the diagnosis also plays an important role beyond this. Elective hip arthroplasties are at higher risk of revision when the primary diagnosis is post-traumatic hip osteoarthritis compared to other forms of hip osteoarthritis. (Figure 16). In non-elective hip arthroplasties, the revision probabilities for fractures of the femoral neck are lower than for other types of femoral fractures (Table 41).



Numbers at risk	0	1	2	3	4	5	6	7	8
Non-elective THAs	29,083	20,003	14,929	10,641	7,060	4,318	2,169	775	
Hip hemiarthroplasties	59,874	32,614	21,378	13,376	7,759	4,075	1,775	515	
Elective THAs	448,209	362,702	296,084	233,393	170,095	113,155	63,790	25,977	7.179

Figure 14: Revision probabilities of elective and non-elective hip arthroplasties *($p < 0.0001$)*

Revision probabilities of hip arthroplasties over time

The explicit objective of the EPRD is not only to present the arthroplasty reality in each hospital, but also to reduce avoidable revision procedures over the long term. However, when considering the revision probabilities by operating year (Table 39), this envisaged development is not yet reflected in the short and medium-term outcomes currently available for elective THAs.

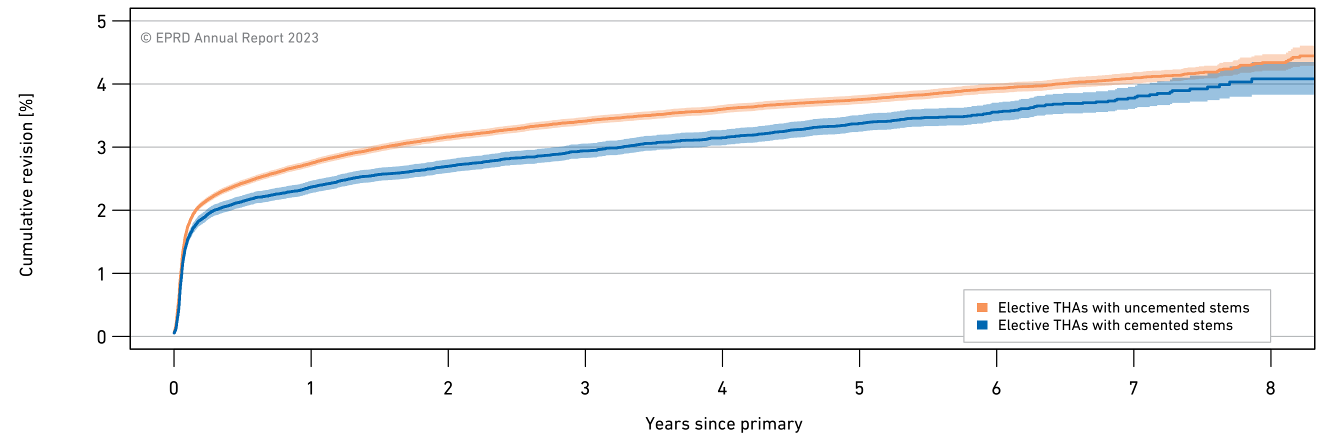
Elective THAs with uncemented stems		Revision probabilities after ...				
Operating year	Number	1 year	2 years	3 years	4 years	5 years
2012/13	2,983	2.5 [2.0; 3.1] (2,878)	3.3 [2.7; 4.0] (2,652)	3.4 [2.8; 4.2] (2,511)	3.7 [3.1; 4.5] (2,418)	4.0 [3.3; 4.7] (2,361)
2014	7,200	2.3 [2.0; 2.7] (6,880)	3.0 [2.7; 3.5] (6,646)	3.3 [2.9; 3.7] (6,504)	3.5 [3.1; 3.9] (6,363)	3.7 [3.2; 4.1] (6,208)
2015	21,936	2.4 [2.2; 2.6] (21,032)	2.8 [2.6; 3.0] (20,401)	3.1 [2.9; 3.3] (19,917)	3.3 [3.1; 3.6] (19,488)	3.5 [3.3; 3.8] (19,017)
2016	37,787	2.7 [2.5; 2.9] (35,974)	3.2 [3.0; 3.4] (35,140)	3.5 [3.3; 3.6] (34,419)	3.6 [3.4; 3.8] (33,672)	3.8 [3.6; 4.0] (32,835)
2017	44,452	2.8 [2.6; 2.9] (42,609)	3.1 [3.0; 3.3] (41,785)	3.4 [3.3; 3.6] (40,948)	3.6 [3.4; 3.8] (39,995)	3.7 [3.6; 3.9] (29,405)
2018	48,425	2.6 [2.5; 2.8] (46,546)	3.1 [2.9; 3.2] (45,617)	3.3 [3.1; 3.4] (44,672)	3.5 [3.3; 3.6] (33,088)	
2019	51,479	2.8 [2.6; 2.9] (49,490)	3.2 [3.0; 3.3] (48,452)	3.4 [3.3; 3.6] (35,958)		
2020	47,172	2.9 [2.8; 3.1] (45,228)	3.3 [3.1; 3.5] (33,433)			
2021	49,346	2.8 [2.7; 3.0] (35,229)				

Table 39: Revision probabilities of elective total hip arthroplasties with uncemented stems by operating year *(p = 0.2)*

Elective THAs with cemented stems		Revision probabilities after ...				
Operating year	Number	1 year	2 years	3 years	4 years	5 years
2012/13	949	2.2 [1.5; 3.4] (910)	2.5 [1.7; 3.8] (843)	3.0 [2.1; 4.4] (770)	3.5 [2.5; 5.0] (724)	3.8 [2.7; 5.3] (680)
2014	2,523	1.9 [1.4; 2.5] (2,369)	2.3 [1.7; 2.9] (2,232)	2.7 [2.1; 3.4] (2,128)	3.0 [2.4; 3.8] (2,033)	3.2 [2.6; 4.0] (1,925)
2015	6,906	2.1 [1.8; 2.5] (6,492)	2.5 [2.2; 2.9] (6,211)	2.7 [2.4; 3.2] (5,983)	3.1 [2.8; 3.6] (5,688)	3.4 [2.9; 3.8] (5,382)
2016	10,355	2.2 [1.9; 2.5] (9,747)	2.6 [2.3; 2.9] (9,363)	2.8 [2.5; 3.1] (8,985)	3.0 [2.7; 3.4] (8,568)	3.2 [2.9; 3.6] (8,065)
2017	11,982	2.3 [2.0; 2.6] (11,358)	2.7 [2.4; 3.0] (10,948)	2.9 [2.7; 3.3] (10,515)	3.0 [2.7; 3.3] (10,004)	3.2 [2.9; 3.6] (7,250)
2018	12,597	2.3 [2.1; 2.6] (11,934)	2.6 [2.3; 2.9] (11,505)	2.8 [2.5; 3.1] (11,036)	3.0 [2.7; 3.3] (8,015)	
2019	13,361	2.3 [2.1; 2.6] (12,639)	2.6 [2.4; 2.9] (12,165)	2.9 [2.6; 3.2] (8,982)		
2020	12,320	2.5 [2.3; 2.8] (11,573)	2.9 [2.6; 3.2] (8,531)			
2021	13,221	2.5 [2.3; 2.8] (9,456)				

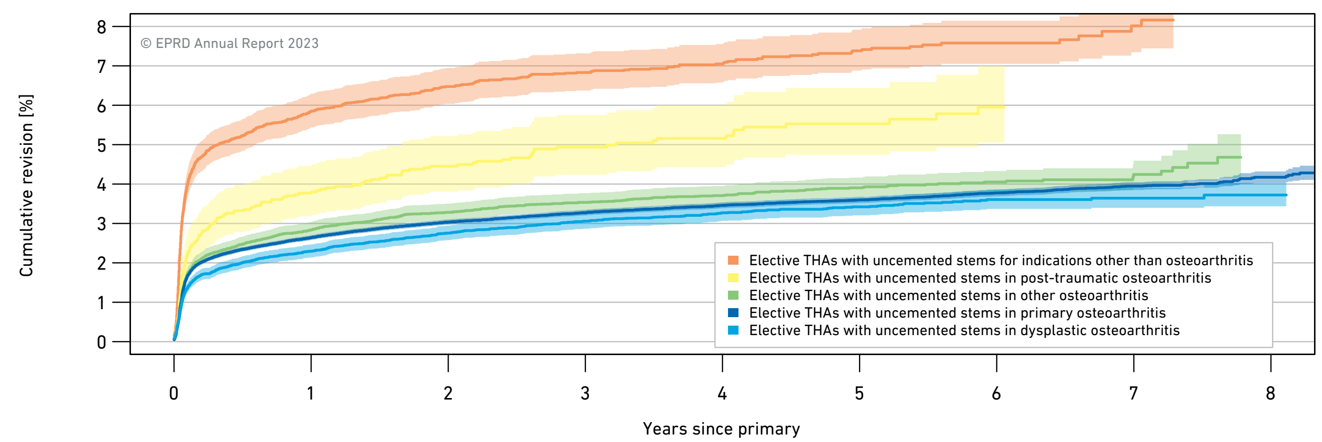
Table 40: Revision probabilities of elective total hip arthroplasties with cemented stems by operating year *(p = 0.3)*

The EPRD is nevertheless a relatively young registry with ten years of data collection and has only started within the last three years to make cautious recommendations for certain types of arthroplasties for defined patient groups, which show significantly lower revision probabilities (see pages 64 and 65). It will be several years before such recommendations are implemented on a large scale in practice and then reflected in the registry outcomes.



Numbers at risk	0	1	2	3	4	5	6	7	8
Elective THAs with uncemented stems	352,072	285,866	234,126	184,929	135,024	89,826	50,490	20,319	5,635
Elective THAs with cemented stems	95,671	76,478	61,798	48,399	35,032	23,302	13,287	5,657	1,544

Figure 15: Revision probabilities of elective total hip arthroplasties with cemented and uncemented stems *(p < 0.0001)*



Numbers at risk	0	1	2	3	4	5	6	7	8
Indications other than osteoarthritis	12,030	9,361	7,497	5,888	4,289	2,771	1,531	656	
Post-traumatic osteoarthritis	3,527	2,883	2,384	1,901	1,354	884	516		
Other osteoarthritis	28,058	23,291	19,167	15,115	11,184	7,374	3,977	1,413	
Primary osteoarthritis	275,824	223,546	182,987	144,513	105,341	70,079	39,587	16,048	4,396
Dysplastic osteoarthritis	32,633	26,785	22,091	17,512	12,856	8,718	4,879	1,989	583

Figure 16: Revision probabilities of elective total hip arthroplasties with uncemented stems by primary diagnosis *(p < 0.0001)*

Table 41 lists the revision probabilities for various types of hip arthroplasties by indication.

In brief:

- Revision probabilities markedly higher in non-elective procedures.
- To date, there has been no noticeable decline in revision probabilities.

Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	Revision probabilities after … 1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Elective THAs with uncemented stems		352,072	67 (59 - 74)	41/59	27.8	732	2.7 [2.7; 2.8] (285,866)	3.2 [3.1; 3.2] (234,126)	3.4 [3.3; 3.5] (184,929)	3.6 [3.5; 3.7] (135,024)	3.8 [3.7; 3.8] (89,826)	3.9 [3.9; 4.0] (50,490)	4.1 [4.0; 4.2] (20,319)	4.3 [4.2; 4.5] (5,635)
Primary diagnosis	Primary osteoarthritis	275,824	68 (61 - 75)	41/59	28.0	728	2.6 [2.6; 2.7] (223,546)	3.0 [3.0; 3.1] (182,987)	3.3 [3.2; 3.3] (144,513)	3.5 [3.4; 3.5] (105,341)	3.6 [3.5; 3.7] (70,079)	3.8 [3.7; 3.9] (39,587)	3.9 [3.8; 4.0] (16,048)	4.2 [4.0; 4.3] (4,396)
	Dysplastic osteoarthritis	32,633	58 (51 - 66)	31/69	27.1	685	2.3 [2.1; 2.5] (26,785)	2.8 [2.6; 2.9] (22,091)	3.1 [2.9; 3.3] (17,512)	3.3 [3.1; 3.5] (12,856)	3.4 [3.2; 3.7] (8,718)	3.6 [3.4; 3.9] (4,879)	3.6 [3.4; 3.9] (1,989)	3.7 [3.4; 4.0] (583)
	Secondary osteoarthritis or not otherwise specified	28,058	65 (57 - 73)	43/57	27.7	644	2.8 [2.6; 3.0] (23,291)	3.3 [3.1; 3.5] (19,167)	3.5 [3.3; 3.8] (15,115)	3.7 [3.5; 3.9] (11,184)	3.9 [3.7; 4.2] (7,374)	4.1 [3.8; 4.3] (3,977)	4.2 [3.9; 4.6] (1,413)	4.7 [4.2; 5.3] (380)
	Other diagnosis	12,030	62 (52 - 73)	51/49	27.0	684	5.9 [5.4; 6.3] (9,361)	6.5 [6.0; 6.9] (7,497)	6.8 [6.4; 7.3] (5,888)	7.0 [6.6; 7.6] (4,289)	7.4 [6.9; 7.9] (2,771)	7.6 [7.1; 8.1] (1,531)	8.0 [7.3; 8.7] (656)	8.6 [7.5; 9.8] (200)
	Post-traumatic osteoarthritis	3,527	62 (54 - 71)	55/45	26.6	548	3.8 [3.2; 4.5] (2,883)	4.5 [3.8; 5.2] (2,384)	4.9 [4.2; 5.8] (1,901)	5.2 [4.4; 6.0] (1,354)	5.5 [4.7; 6.4] (884)	6.0 [5.1; 7.0] (516)	6.0 [5.1; 7.0] (213)	*6.5 [5.2; 8.0]* (76)
Prior operations	No relevant prior operations	339,119	67 (60 - 75)	40/60	27.9	731	2.7 [2.6; 2.8] (275,236)	3.1 [3.0; 3.2] (225,281)	3.4 [3.3; 3.4] (177,689)	3.5 [3.5; 3.6] (129,472)	3.7 [3.6; 3.8] (85,824)	3.9 [3.8; 4.0] (48,023)	4.0 [3.9; 4.1] (19,318)	4.3 [4.1; 4.4] (5,370)
	Osteosynthesis / Osteotomy	7,363	59 (51 - 69)	39/61	26.6	613	4.1 [3.7; 4.6] (5,935)	4.8 [4.3; 5.4] (4,833)	5.1 [4.6; 5.7] (3,886)	5.4 [4.9; 6.0] (2,884)	5.6 [5.0; 6.2] (1,947)	5.6 [5.1; 6.3] (1,149)	5.9 [5.3; 6.7] (501)	6.4 [5.5; 7.4] (153)
	Other prior operations	4,527	62 (52 - 71)	43/57	27.6	472	2.9 [2.5; 3.5] (3,847)	3.7 [3.2; 4.3] (3,321)	4.0 [3.4; 4.6] (2,803)	4.1 [3.5; 4.8] (2,254)	4.3 [3.7; 5.0] (1,760)	4.5 [3.9; 5.2] (1,133)	5.3 [4.3; 6.4] (421)	*6.0 [4.7; 7.7]* (90)
	Femoral head necrosis	1,019	57 (46 - 67)	59/41	27.8	313	5.4 [4.1; 7.0] (813)	5.8 [4.5; 7.4] (663)	6.2 [4.9; 8.0] (531)	6.2 [4.9; 8.0] (396)	7.0 [5.4; 9.0] (283)	7.0 [5.4; 9.0] (179)	*7.0 [5.4; 9.0]* (77)	
Elective THAs with cemented stems		95,671	79 (75 - 82)	25/75	26.6	707	2.4 [2.3; 2.5] (76,478)	2.7 [2.6; 2.8] (61,798)	2.9 [2.8; 3.1] (48,399)	3.1 [3.0; 3.3] (35,032)	3.4 [3.2; 3.5] (23,302)	3.6 [3.4; 3.7] (13,287)	3.8 [3.6; 4.0] (5,657)	4.1 [3.8; 4.3] (1,544)
Primary diagnosis	Primary osteoarthritis	76,701	79 (75 - 82)	25/75	26.7	687	2.0 [1.9; 2.1] (62,022)	2.3 [2.2; 2.4] (50,401)	2.5 [2.4; 2.7] (39,809)	2.7 [2.6; 2.8] (28,896)	2.9 [2.8; 3.0] (19,463)	3.1 [2.9; 3.2] (11,304)	3.3 [3.1; 3.5] (4,842)	3.4 [3.2; 3.6] (1,324)
	Secondary osteoarthritis or not otherwise specified	8,198	78 (74 - 82)	24/76	26.4	500	2.4 [2.1; 2.8] (6,589)	2.7 [2.4; 3.1] (5,348)	3.1 [2.7; 3.5] (4,086)	3.3 [2.9; 3.7] (2,961)	3.6 [3.2; 4.1] (1,829)	4.0 [3.5; 4.6] (923)	4.2 [3.6; 5.0] (398)	*5.8 [4.1; 8.0]* (108)
	Other diagnosis	6,162	79 (72 - 84)	29/71	25.4	606	6.6 [6.0; 7.3] (4,181)	7.4 [6.7; 8.1] (3,102)	8.0 [7.3; 8.8] (2,228)	8.8 [8.0; 9.7] (1,508)	9.4 [8.5; 10.4] (915)	9.8 [8.8; 10.8] (483)	9.8 [8.8; 10.8] (185)	*10.7 [8.8; 12.8]* (51)
	Dysplastic osteoarthritis	3,350	76 (70 - 81)	20/80	26.3	440	2.2 [1.7; 2.8] (2,675)	2.5 [2.0; 3.1] (2,144)	2.7 [2.2; 3.3] (1,650)	2.8 [2.2; 3.4] (1,236)	3.2 [2.5; 4.0] (816)	3.2 [2.5; 4.0] (433)	3.7 [2.8; 5.0] (174)	
	Post-traumatic osteoarthritis	1,260	78 (72 - 82)	29/71	25.2	372	3.4 [2.5; 4.6] (1,011)	3.9 [2.9; 5.2] (803)	4.2 [3.2; 5.5] (626)	4.7 [3.6; 6.3] (431)	4.7 [3.6; 6.3] (279)	*5.1 [3.8; 6.8]* (144)	*5.1 [3.8; 6.8]* (58)	
Prior operations	No relevant prior operations	91,641	79 (75 - 82)	25/75	26.6	704	2.3 [2.2; 2.4] (73,314)	2.6 [2.5; 2.7] (59,278)	2.8 [2.7; 2.9] (46,434)	3.0 [2.9; 3.1] (33,586)	3.2 [3.1; 3.4] (22,318)	3.4 [3.3; 3.6] (12,723)	3.6 [3.5; 3.8] (5,469)	3.9 [3.7; 4.2] (1,517)
	Osteosynthesis / Osteotomy	2,432	79 (73 - 83)	23/77	25.0	480	4.7 [3.9; 5.6] (1,816)	5.3 [4.5; 6.3] (1,401)	5.9 [4.9; 7.0] (1,050)	6.4 [5.4; 7.6] (715)	6.9 [5.7; 8.2] (458)	7.3 [6.1; 8.8] (230)	*7.3 [6.1; 8.8]* (83)	
	Other prior operations	1,292	78 (73 - 82)	30/70	26.7	261	3.9 [3.0; 5.1] (1,111)	4.3 [3.3; 5.5] (943)	4.9 [3.8; 6.3] (782)	5.3 [4.2; 6.8] (633)	5.7 [4.5; 7.3] (465)	6.1 [4.8; 7.8] (308)	*6.1 [4.8; 7.8]* (96)	
Non-elective THAs		29,083	76 (68 - 82)	30/70	24.7	677	6.1 [5.8; 6.3] (20,003)	6.6 [6.3; 6.9] (14,929)	7.0 [6.7; 7.3] (10,641)	7.4 [7.0; 7.7] (7,060)	7.6 [7.3; 8.0] (4,318)	7.9 [7.5; 8.3] (2,169)	8.4 [7.9; 9.0] (775)	*8.8 [7.9; 9.8]* (144)
Primary diagnosis	Femoral neck fracture	27,002	76 (68 - 82)	30/70	24.6	667	5.8 [5.6; 6.1] (18,712)	6.4 [6.1; 6.7] (13,995)	6.8 [6.5; 7.1] (9,970)	7.2 [6.8; 7.5] (6,627)	7.4 [7.1; 7.8] (4,041)	7.7 [7.3; 8.2] (2,022)	8.3 [7.7; 8.9] (712)	*8.7 [7.7; 9.9]* (127)
	Other femoral fracture	1,413	81 (74 - 86)	24/76	24.8	419	9.3 [7.9; 11.1] (850)	10.0 [8.4; 11.8] (600)	10.3 [8.7; 12.2] (432)	10.5 [8.9; 12.5] (268)	10.5 [8.9; 12.5] (170)	*10.5 [8.9; 12.5]* (83)		
	Pathologic fracture	668	75 (67 - 82)	24/76	25.5	312	7.9 [6.1; 10.4] (441)	8.2 [6.3; 10.7] (334)	9.4 [7.3; 12.3] (239)	9.4 [7.3; 12.3] (165)	*9.4 [7.3; 12.3]* (107)	*9.4 [7.3; 12.3]* (64)		
Prior operations	No relevant prior operations	27,871	76 (68 - 82)	30/70	24.6	673	5.9 [5.7; 6.2] (19,154)	6.5 [6.2; 6.8] (14,256)	6.9 [6.6; 7.2] (10,134)	7.3 [6.9; 7.6] (6,715)	7.5 [7.1; 7.9] (4,084)	7.7 [7.3; 8.2] (2,040)	8.3 [7.7; 8.9] (727)	*8.7 [7.8; 9.8]* (132)
	Osteosynthesis / Osteotomy	774	77 (67 - 84)	28/72	25.0	344	9.0 [7.1; 11.3] (531)	10.1 [8.1; 12.6] (416)	10.4 [8.3; 12.9] (307)	10.4 [8.3; 12.9] (202)	*11.0 [8.7; 13.9]* (129)	*11.7 [9.1; 14.9]* (60)		
	Other prior operations	415	77 (68 - 82)	30/70	24.5	145	8.9 [6.4; 12.1] (306)	9.2 [6.7; 12.5] (248)	9.6 [7.0; 13.1] (193)	*10.1 [7.4; 13.8]* (139)	*10.1 [7.4; 13.8]* (103)	*10.1 [7.4; 13.8]* (68)		

Table 41: Revision probabilities for different types of hip arthroplasties and diagnoses

Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	Revision probabilities after … 1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Hip hemiarthroplasties		59,874	84 (80 - 89)	29/71	24.2	596	4.5 [4.3; 4.7] (32,614)	4.7 [4.6; 4.9] (21,378)	4.9 [4.7; 5.1] (13,376)	5.1 [4.9; 5.3] (7,759)	5.1 [4.9; 5.3] (4,075)	5.4 [5.1; 5.7] (1,775)	5.4 [5.1; 5.7] (515)	*5.4 [5.1; 5.7]* (69)
Primary diagnosis	Femoral neck fracture	54,760	84 (80 - 89)	28/72	24.2	579	4.3 [4.1; 4.5] (30,249)	4.5 [4.3; 4.7] (19,874)	4.6 [4.4; 4.8] (12,425)	4.8 [4.6; 5.0] (7,206)	4.9 [4.6; 5.1] (3,782)	5.0 [4.7; 5.3] (1,644)	5.0 [4.7; 5.3] (483)	*5.0 [4.7; 5.3]* (66)
	Other diagnosis	3,243	82 (76 - 87)	36/64	24.5	486	7.1 [6.2; 8.2] (1,397)	7.5 [6.6; 8.6] (884)	7.8 [6.8; 9.0] (557)	8.2 [7.1; 9.5] (328)	8.2 [7.1; 9.5] (177)	*9.5 [7.5; 12.0]* (78)		
	Other femoral fracture	1,211	85 (80 - 90)	22/78	24.5	325	7.7 [6.3; 9.5] (594)	8.3 [6.8; 10.3] (354)	8.7 [7.0; 10.9] (221)	*8.7 [7.0; 10.9]* (129)	*8.7 [7.0; 10.9]* (67)			
	Pathologic fracture	502	83 (77 - 88)	21/79	24.1	227	4.6 [3.0; 7.1] (259)	4.6 [3.0; 7.1] (175)	*5.3 [3.4; 8.2]* (107)	*5.3 [3.4; 8.2]* (58)				
Prior operations	No relevant prior operations	58,140	84 (80 - 89)	29/71	24.2	593	4.4 [4.3; 4.6] (31,610)	4.6 [4.5; 4.8] (20,678)	4.8 [4.6; 5.0] (12,906)	5.0 [4.8; 5.2] (7,464)	5.0 [4.8; 5.3] (3,889)	5.3 [5.0; 5.6] (1,679)	5.3 [5.0; 5.6] (492)	*5.3 [5.0; 5.6]* (67)
	Osteosynthesis / Osteotomy	909	85 (80 - 89)	23/77	24.8	313	10.0 [8.1; 12.2] (523)	10.2 [8.3; 12.5] (366)	10.2 [8.3; 12.5] (248)	10.2 [8.3; 12.5] (160)	*10.2 [8.3; 12.5]* (94)			
	Other prior operations	798	83 (79 - 88)	31/69	24.5	171	4.6 [3.3; 6.4] (467)	5.0 [3.6; 6.9] (323)	5.4 [3.9; 7.6] (215)	*5.9 [4.2; 8.3]* (130)	*5.9 [4.2; 8.3]* (89)	*5.9 [4.2; 8.3]* (53)		

Table 41 (continued)

5.1.2 Comparison by type of knee arthroplasty

The EPRD documents three principal types of knee arthroplasties. The most common type of knee replacement is a total knee arthroplasty, where both the medial and lateral parts of the joint are replaced. In contrast, unicondylar arthroplasties only replace the affected medial or lateral part of the joint - the objective being to preserve intact articulating surfaces and ligaments as much as possible in order to ensure the best possible natural kinematics and starting point for any subsequent reoperations that may become necessary. However, as is evident from Figure 17, unicondylar arthroplasties have a revision probability that is almost twice that of total knee arthroplasties. Patellofemoral resurfacing procedures are much less common than TKAs and unicondylar replacements. Their revision probabilities are markedly higher than those of other types of arthroplasties (see Table 44 at the end of this section).

Total knee arthroplasties can be further differentiated according to their degree of stabilisation. The most common type of system employed are standard systems without additional lateral stabilisation. However, in patients with joint deformity or severe ligament instability, varus-valgus stabilised or hinged systems are also implanted. These guide the movement, but also restrict it. In the EPRD, the revision probabilities of these systems increase, as the degree of stabilisation increases (Figure 18).

For the following analyses, hinged and varus-valgus stabilised systems are combined

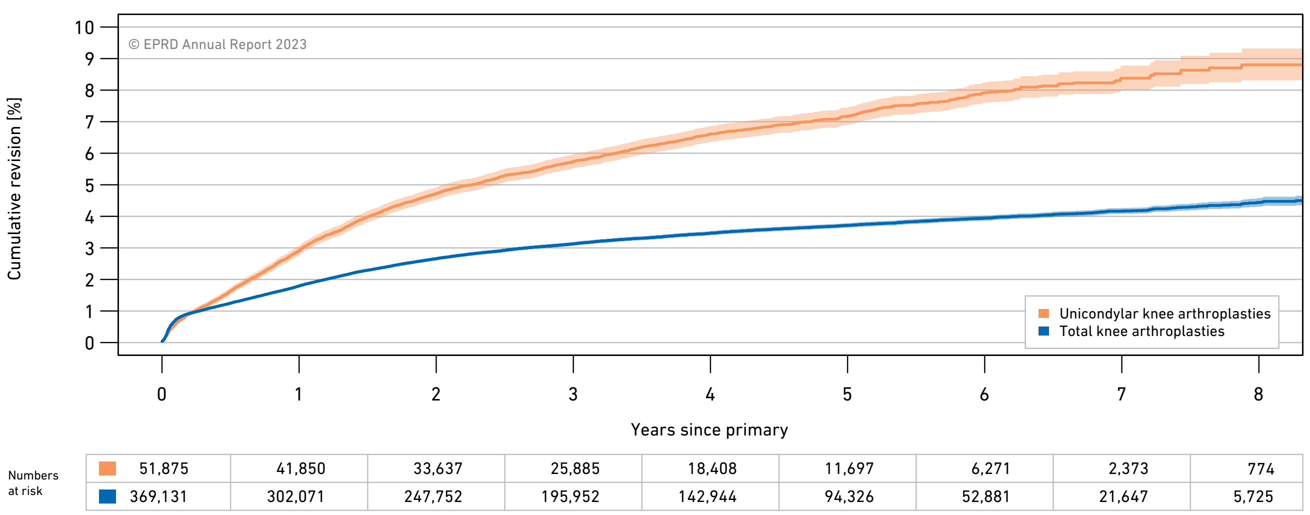


Figure 17: Revision probabilities of total and unicondylar knee arthroplasties *(p < 0.0001)*

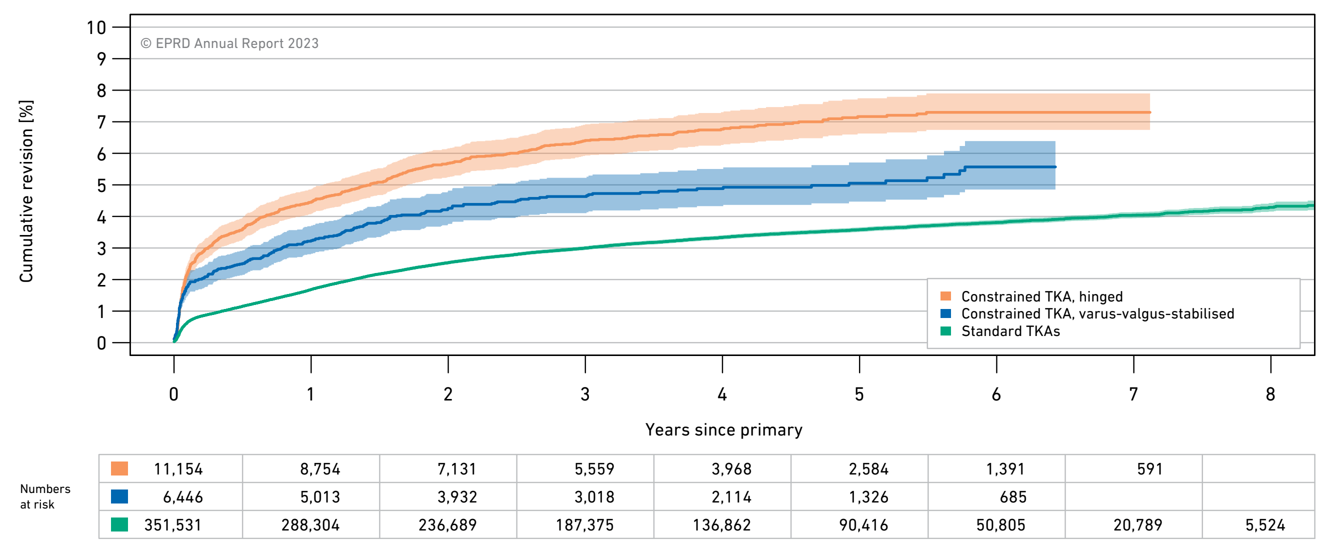


Figure 18: Revision probabilities of total knee arthroplasties by degree of constraint *(p < 0.0001)*

Revision probabilities of knee arthroplasties over time

Unlike with THAs (Page 54), TKAs reveal a decrease in the revision probability by the three-year outcomes (Table 42).

Standard TKAs		Revision probabilities after ...				
Operating year	Number	1 year	2 years	3 years	4 years	5 years
2012/13	3,056	1.6 [1.2; 2.2] (2,985)	2.9 [2.4; 3.6] (2,751)	3.4 [2.8; 4.1] (2,568)	3.7 [3.1; 4.5] (2,448)	3.9 [3.2; 4.6] (2,366)
2014	7,513	1.7 [1.5; 2.1] (7,206)	2.8 [2.4; 3.2] (6,871)	3.3 [2.9; 3.8] (6,678)	3.7 [3.3; 4.2] (6,511)	4.0 [3.6; 4.5] (6,309)
2015	23,119	1.9 [1.7; 2.1] (22,236)	2.9 [2.7; 3.1] (21,458)	3.5 [3.3; 3.7] (20,865)	3.8 [3.6; 4.1] (20,289)	4.1 [3.8; 4.4] (19,699)
2016	37,740	1.7 [1.6; 1.9] (36,337)	2.7 [2.5; 2.9] (35,272)	3.2 [3.0; 3.3] (34,439)	3.6 [3.4; 3.8] (33,533)	3.8 [3.6; 4.0] (32,447)
2017	45,314	1.7 [1.6; 1.9] (43,991)	2.6 [2.5; 2.8] (42,908)	3.1 [2.9; 3.2] (41,899)	3.4 [3.2; 3.5] (40,791)	3.6 [3.4; 3.8] (29,595)
2018	48,772	1.6 [1.5; 1.7] (47,424)	2.4 [2.3; 2.6] (46,306)	2.9 [2.7; 3.0] (45,135)	3.2 [3.1; 3.4] (33,290)	
2019	51,062	1.6 [1.5; 1.7] (49,739)	2.3 [2.2; 2.5] (48,549)	2.8 [2.6; 2.9] (35,791)		
2020	45,986	1.8 [1.7; 1.9] (44,643)	2.5 [2.4; 2.7] (32,574)			
2021	47,540	1.6 [1.5; 1.8] (33,743)				

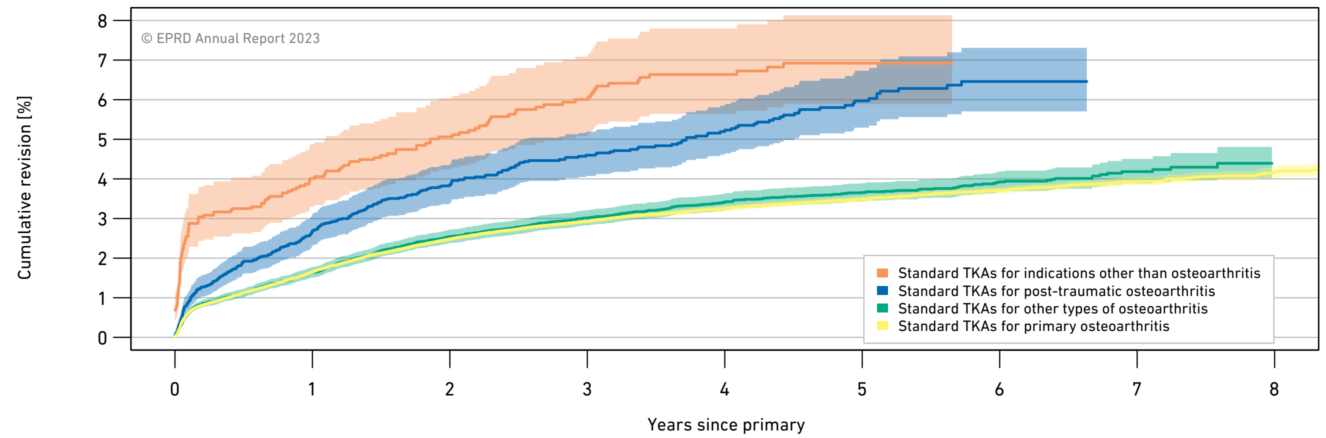
Table 42: Outcomes for standard total knee arthroplasties by operating year *($p < 0.0001$)*

It is unlikely that this decline can be attributed to the presence and findings of the EPRD (as already mentioned in the trends in hip reoperations section on Page 38). Incidentally, it is somewhat more pronounced for systems with mobile bearings than for those with a fixed bearing.

The outcomes for unicondylar arthroplasties have also improved, but only since 2015 (see Table 43).

Unicondylar knee arthroplasties		Revision probabilities after ...				
Operating year	Number	1 year	2 years	3 years	4 years	5 years
2012/13	410	2.9 [1.7; 5.1] (397)	5.2 [3.4; 7.8] (371)	6.0 [4.0; 8.8] (352)	7.0 [4.9; 10.0] (343)	8.4 [6.1; 11.6] (330)
2014	962	2.8 [1.9; 4.1] (909)	4.6 [3.4; 6.1] (880)	5.1 [3.9; 6.7] (857)	6.4 [5.0; 8.2] (827)	6.8 [5.3; 8.6] (810)
2015	2,465	3.2 [2.6; 4.0] (2,349)	5.3 [4.5; 6.2] (2,244)	6.5 [5.6; 7.6] (2,182)	7.8 [6.8; 9.0] (2,125)	8.4 [7.3; 9.5] (2,073)
2016	5,114	3.5 [3.0; 4.0] (4,844)	5.4 [4.8; 6.1] (4,670)	6.2 [5.6; 6.9] (4,569)	7.1 [6.4; 7.9] (4,457)	7.6 [6.9; 8.4] (4,329)
2017	6,476	3.0 [2.6; 3.5] (6,219)	5.0 [4.5; 5.5] (6,024)	6.1 [5.5; 6.7] (5,867)	6.7 [6.2; 7.4] (5,736)	7.3 [6.7; 8.0] (4,155)
2018	7,292	2.9 [2.5; 3.3] (7,001)	4.6 [4.1; 5.1] (6,808)	5.6 [5.1; 6.2] (6,648)	6.5 [5.9; 7.1] (4,920)	
2019	8,001	2.7 [2.4; 3.1] (7,720)	4.4 [4.0; 4.9] (7,495)	5.5 [5.1; 6.1] (5,410)		
2020	7,333	2.8 [2.5; 3.3] (7,077)	4.9 [4.4; 5.4] (5,145)			
2021	7,453	2.5 [2.2; 2.9] (5,334)				

Table 43: Outcomes for unicondylar knee arthroplasties by operating year *($p = 0.03$)*



Numbers at risk

	0	1	2	3	4	5	6	7	8
Standard TKAs for indications other than osteoarthritis	2,479	2,074	1,744	1,398	1,064	694			
Standard TKAs for post-traumatic osteoarthritis	6,702	5,382	4,305	3,408	2,448	1,610	852		
Standard TKAs for other types of osteoarthritis	37,102	31,135	25,645	20,223	14,656	9,942	5,542	2,072	
Standard TKAs for primary osteoarthritis	305,248	249,713	204,995	162,346	118,694	78,170	44,012	18,212	4,913

Figure 19: Revision probabilities of standard total knee arthroplasties by primary diagnosis (based on the documented ICD-10 codes) *($p < 0.0001$)*

into a single group of constrained TKAs due to the relatively low number of cases. No further distinction is therefore made between them.

In knee arthroplasties, the risk of revision surgery also depends greatly on the primary diagnosis documented. The highest probability of revision is seen in post-traumatic osteoarthritis (Figure 19).

Table 44 details the revision probabilities of different types of knee arthroplasties for different indications.

In brief:

- Unicondylar arthroplasties have a revision probability that is still almost twice that of TKAs.
- Over the last ten years, the revision probability of standard TKAs has been on the decline.

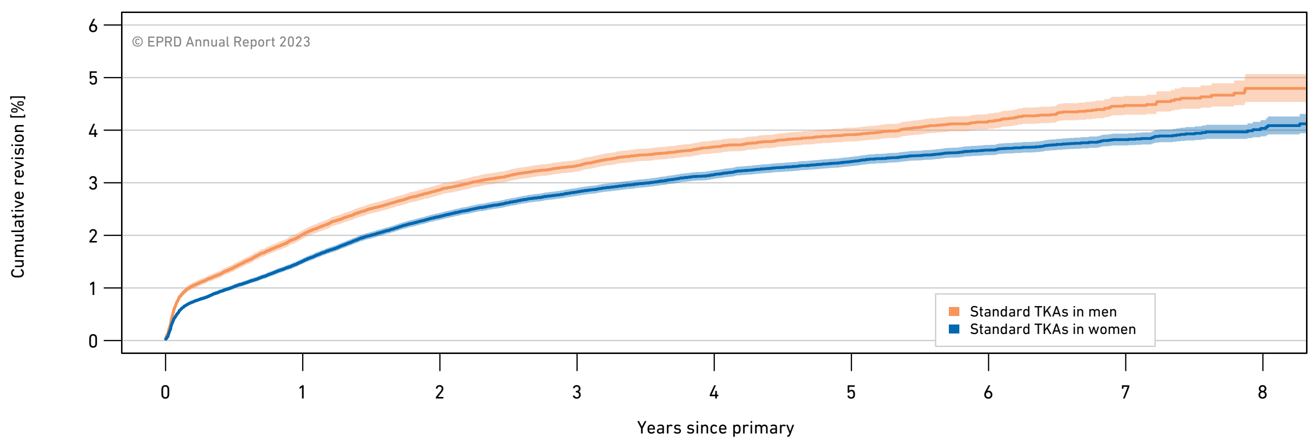
Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	Revision probabilities after ... 1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKAs		351,531	70 (62 - 77)	34/66	30.1	722	1.7 [1.6; 1.7] (288,304)	2.5 [2.5; 2.6] (236,689)	3.0 [2.9; 3.1] (187,375)	3.3 [3.3; 3.4] (136,862)	3.6 [3.5; 3.7] (90,416)	3.8 [3.7; 3.9] (50,805)	4.0 [3.9; 4.1] (20,789)	4.3 [4.2; 4.4] (5,524)
Primary diagnosis	Primary osteoarthritis	305,248	70 (63 - 77)	34/66	30.2	719	1.6 [1.6; 1.7] (249,713)	2.5 [2.4; 2.5] (204,995)	2.9 [2.9; 3.0] (162,346)	3.3 [3.2; 3.3] (118,694)	3.5 [3.4; 3.6] (78,170)	3.7 [3.6; 3.8] (44,012)	3.9 [3.8; 4.0] (18,212)	4.2 [4.0; 4.3] (4,913)
	Secondary osteoarthritis or not otherwise specified	37,102	69 (61 - 76)	35/65	29.8	637	1.6 [1.5; 1.8] (31,135)	2.5 [2.4; 2.7] (25,645)	3.0 [2.8; 3.2] (20,223)	3.4 [3.2; 3.6] (14,656)	3.7 [3.4; 3.9] (9,942)	3.9 [3.7; 4.2] (5,542)	4.2 [3.9; 4.5] (2,072)	4.4 [4.0; 4.8] (489)
	Post-traumatic osteoarthritis	6,702	61 (55 - 70)	56/44	28.7	608	2.7 [2.3; 3.1] (5,382)	3.8 [3.4; 4.4] (4,305)	4.6 [4.1; 5.2] (3,408)	5.2 [4.6; 5.9] (2,448)	6.0 [5.3; 6.7] (1,610)	6.5 [5.7; 7.3] (852)	6.7 [5.8; 7.6] (344)	*8.2 [6.4; 10.4]* (95)
	Other diagnosis	2,479	70 (60 - 77)	30/70	28.7	496	4.0 [3.3; 4.9] (2,074)	5.1 [4.2; 6.0] (1,744)	6.0 [5.1; 7.1] (1,398)	6.6 [5.6; 7.8] (1,064)	6.9 [5.9; 8.1] (694)	7.1 [6.0; 8.4] (399)	7.6 [6.2; 9.3] (161)	
Prior operations	No relevant prior operations	325,012	70 (63 - 77)	34/66	30.1	721	1.7 [1.6; 1.7] (266,075)	2.5 [2.4; 2.5] (218,234)	2.9 [2.9; 3.0] (172,483)	3.3 [3.2; 3.3] (125,574)	3.5 [3.4; 3.6] (82,382)	3.7 [3.6; 3.8] (45,954)	4.0 [3.9; 4.1] (18,917)	4.2 [4.1; 4.3] (5,124)
	Other prior operations	14,289	67 (59 - 74)	40/60	30.0	549	2.0 [1.8; 2.2] (12,285)	3.0 [2.7; 3.3] (10,568)	3.6 [3.3; 3.9] (8,755)	4.0 [3.7; 4.4] (6,809)	4.2 [3.9; 4.6] (4,983)	4.5 [4.1; 4.9] (3,122)	4.6 [4.2; 5.0] (1,209)	5.2 [4.6; 6.0] (242)
	Osteosynthesis / Osteotomy	6,163	64 (57 - 73)	47/53	29.5	572	2.3 [2.0; 2.8] (5,127)	3.4 [3.0; 3.9] (4,154)	4.2 [3.7; 4.8] (3,270)	4.7 [4.2; 5.4] (2,430)	5.2 [4.6; 5.9] (1,656)	5.3 [4.7; 6.1] (959)	5.3 [4.7; 6.1] (399)	*5.7 [4.8; 6.7]* (84)
	Capsule/ligaments	5,990	62 (55 - 70)	52/48	29.4	516	1.7 [1.4; 2.1] (4,749)	2.8 [2.4; 3.3] (3,674)	3.4 [2.9; 4.0] (2,815)	4.1 [3.5; 4.7] (2,011)	4.7 [4.1; 5.5] (1,369)	5.2 [4.4; 6.1] (756)	5.2 [4.4; 6.1] (257)	*5.2 [4.4; 6.1]* (74)
Constrained TKAs		17,600	75 (66 - 80)	24/76	28.8	663	4.0 [3.7; 4.3] (13,767)	5.2 [4.8; 5.5] (11,063)	5.8 [5.4; 6.2] (8,577)	6.1 [5.7; 6.5] (6,082)	6.4 [6.0; 6.8] (3,910)	6.7 [6.2; 7.1] (2,076)	6.8 [6.3; 7.3] (858)	7.7 [6.7; 8.8] (201)
Primary diagnosis	Primary osteoarthritis	12,524	75 (67 - 81)	22/78	29.4	626	3.5 [3.1; 3.8] (9,918)	4.4 [4.1; 4.8] (8,056)	4.9 [4.5; 5.4] (6,303)	5.2 [4.8; 5.7] (4,508)	5.4 [5.0; 5.9] (2,916)	5.7 [5.2; 6.2] (1,575)	5.7 [5.2; 6.2] (659)	6.9 [5.7; 8.2] (155)
	Secondary osteoarthritis or not otherwise specified	2,441	73 (65 - 80)	25/75	28.4	413	3.9 [3.2; 4.8] (1,936)	5.2 [4.4; 6.2] (1,542)	5.9 [5.0; 7.1] (1,196)	6.3 [5.3; 7.5] (817)	6.6 [5.5; 7.9] (511)	6.6 [5.5; 7.9] (261)	*7.3 [5.7; 9.4]* (103)	
	Other diagnosis	1,436	76 (66 - 82)	24/76	26.4	393	8.5 [7.1; 10.2] (951)	10.8 [9.2; 12.8] (694)	12.2 [10.4; 14.3] (491)	13.1 [11.2; 15.5] (337)	13.7 [11.6; 16.1] (193)	*13.7 [11.6; 16.1]* (101)		
	Post-traumatic osteoarthritis	1,199	67 (58 - 76)	41/59	28.0	383	4.7 [3.7; 6.1] (962)	6.4 [5.1; 8.0] (771)	6.9 [5.5; 8.7] (587)	7.1 [5.7; 8.9] (420)	8.4 [6.6; 10.5] (290)	*9.2 [7.2; 11.7]* (139)	*9.2 [7.2; 11.7]* (56)	
Prior operations	No relevant prior operations	15,665	75 (67 - 81)	22/78	29.0	652	3.8 [3.5; 4.1] (12,264)	4.8 [4.5; 5.2] (9,872)	5.5 [5.1; 5.9] (7,627)	5.7 [5.3; 6.2] (5,381)	6.0 [5.6; 6.5] (3,423)	6.2 [5.8; 6.7] (1,810)	6.3 [5.9; 6.9] (753)	7.4 [6.3; 8.6] (172)
	Osteosynthesis / Osteotomy	959	69 (60 - 77)	34/66	27.9	346	5.9 [4.5; 7.6] (731)	8.5 [6.8; 10.6] (580)	8.7 [7.0; 10.9] (460)	9.2 [7.4; 11.5] (328)	9.6 [7.6; 12.0] (225)	*10.7 [8.4; 13.7]* (114)	*10.7 [8.4; 13.7]* (51)	
	Other prior operations	655	71 (61 - 78)	35/65	28.7	234	4.6 [3.2; 6.6] (526)	7.2 [5.4; 9.7] (419)	8.0 [6.0; 10.6] (342)	8.6 [6.5; 11.3] (262)	9.7 [7.3; 12.7] (189)	*9.7 [7.3; 12.7]* (112)		
	Capsule/ligaments	304	65 (57 - 75)	42/58	28.9	162	5.3 [3.2; 8.6] (234)	6.1 [3.8; 9.7] (182)	*6.7 [4.2; 10.4]* (141)	*8.2 [5.2; 12.7]* (104)	*8.2 [5.2; 12.7]* (69)			
Unicondylar knee arthroplasties		51,875	63 (57 - 72)	44/56	29.5	645	2.9 [2.8; 3.1] (41,850)	4.7 [4.5; 4.9] (33,637)	5.7 [5.5; 6.0] (25,885)	6.6 [6.4; 6.9] (18,408)	7.2 [6.9; 7.5] (11,697)	7.9 [7.6; 8.2] (6,271)	8.4 [8.0; 8.8] (2,373)	8.8 [8.3; 9.3] (774)
Primary diagnosis	Primary osteoarthritis	44,058	64 (57 - 72)	44/56	29.7	628	2.9 [2.8; 3.1] (35,679)	4.7 [4.5; 4.9] (28,745)	5.7 [5.5; 5.9] (22,246)	6.6 [6.3; 6.9] (15,819)	7.1 [6.9; 7.4] (10,016)	7.9 [7.5; 8.2] (5,363)	8.4 [8.0; 8.8] (2,013)	8.8 [8.2; 9.3] (620)
	Secondary osteoarthritis or not otherwise specified	6,830	62 (56 - 70)	46/54	29.3	429	2.8 [2.4; 3.2] (5,343)	4.6 [4.1; 5.2] (4,188)	5.9 [5.3; 6.6] (3,095)	6.6 [5.9; 7.4] (2,193)	7.4 [6.6; 8.2] (1,422)	8.3 [7.3; 9.3] (776)	8.3 [7.3; 9.3] (308)	*9.0 [7.7; 10.5]* (142)
	Other diagnosis	778	66 (58 - 75)	44/56	29.0	216	4.1 [2.9; 5.9] (658)	6.0 [4.5; 8.0] (561)	6.7 [5.1; 8.9] (438)	8.0 [6.1; 10.5] (311)	8.0 [6.1; 10.5] (203)	*8.5 [6.5; 11.3]* (110)		
Prior operations	No relevant prior operations	48,253	64 (57 - 72)	44/56	29.6	641	2.9 [2.8; 3.1] (38,934)	4.7 [4.5; 4.9] (31,344)	5.7 [5.4; 5.9] (24,042)	6.5 [6.3; 6.8] (17,051)	7.1 [6.8; 7.4] (10,725)	7.8 [7.5; 8.2] (5,690)	8.3 [7.9; 8.7] (2,190)	8.7 [8.2; 9.2] (735)
	Other prior operations	2,532	61 (55 - 68)	46/54	29.4	297	3.0 [2.4; 3.7] (2,084)	5.3 [4.4; 6.3] (1,667)	6.6 [5.6; 7.8] (1,347)	7.7 [6.6; 9.0] (997)	8.1 [6.9; 9.5] (713)	8.5 [7.2; 9.9] (441)	*9.1 [7.6; 10.9]* (142)	
	Capsule/ligaments	727	59 (53 - 66)	52/48	28.7	157	2.3 [1.4; 3.8] (537)	6.1 [4.3; 8.5] (391)	7.5 [5.4; 10.2] (301)	8.2 [6.0; 11.2] (214)	9.2 [6.7; 12.5] (159)	*9.8 [7.2; 13.4]* (89)		
	Osteosynthesis / Osteotomy	355	58 (52 - 65)	57/43	29.0	151	2.9 [1.6; 5.4] (288)	5.1 [3.1; 8.2] (230)	6.9 [4.5; 10.6] (190)	*8.5 [5.7; 12.7]* (142)	*10.1 [6.7; 14.9]* (98)	*11.0 [7.4; 16.3]* (51)		
Patellofemoral arthroplasties		849	54 (48 - 61)	27/73	28.4	200	4.6 [3.3; 6.4] (677)	7.6 [5.8; 9.8] (521)	9.7 [7.6; 12.2] (394)	12.8 [10.3; 15.9] (279)	15.2 [12.2; 18.9] (177)	*15.8 [12.6; 19.6]* (89)		
Primary diagnosis	Primary osteoarthritis	432	56 (49 - 62)	29/71	28.7	144	3.4 [2.0; 5.8] (348)	5.9 [3.9; 8.9] (266)	8.6 [6.0; 12.4] (187)	*9.8 [6.8; 13.9]* (124)	*14.8 [10.2; 21.2]* (74)			
Prior operations	No relevant prior operations	685	56 (49 - 62)	27/73	28.8	182	4.4 [3.0; 6.3] (546)	7.3 [5.5; 9.8] (417)	9.2 [7.0; 12.0] (311)	12.5 [9.7; 16.0] (216)	*14.5 [11.3; 18.5]* (134)	*15.3 [11.8; 19.6]* (66)		

Table 44: Revision probabilities for different types of knee arthroplasties and diagnoses

5.2 Non-implant-related factors

Individual characteristics of the patients and the hospitals performing the procedure may also impact the risk of revision surgery. Patient sex is indeed a significant established risk factor in the early post-operative phase: For most types of knee arthroplasties, men are more likely to suffer from higher revision probabilities than women (see example Figure 20). This is largely due to the higher risk of infection in men and is also evident in other registries.

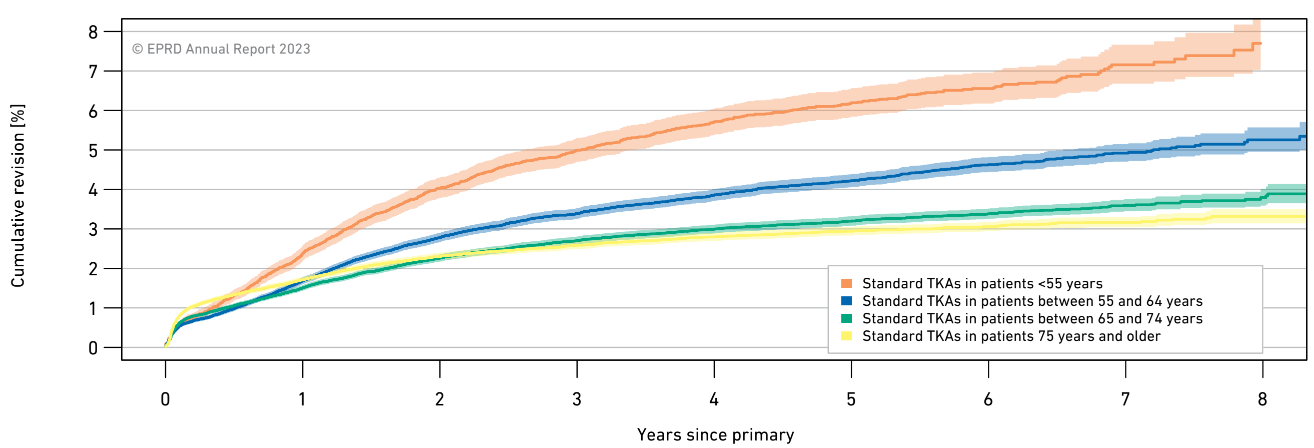
Another significant factor is patient age, although this appears to impact hip and knee arthroplasties differently. For knee arthroplasties, the probability of revision surgery decreases with increasing patient age (see example Figure 21). In the case of hip replacements, this tendency is masked by the fact that older patients with uncemented femoral components have a significantly



Numbers at risk

	0	1	2	3	4	5	6	7	8
Standard TKAs in men	120,833	97,819	79,436	61,855	44,314	28,592	15,680	6,304	1,696
Standard TKAs in women	230,698	190,485	157,253	125,520	92,548	61,824	35,125	14,485	3,828

Figure 20: Revision probabilities of standard total knee arthroplasties by patient sex *(p < 0.0001)*



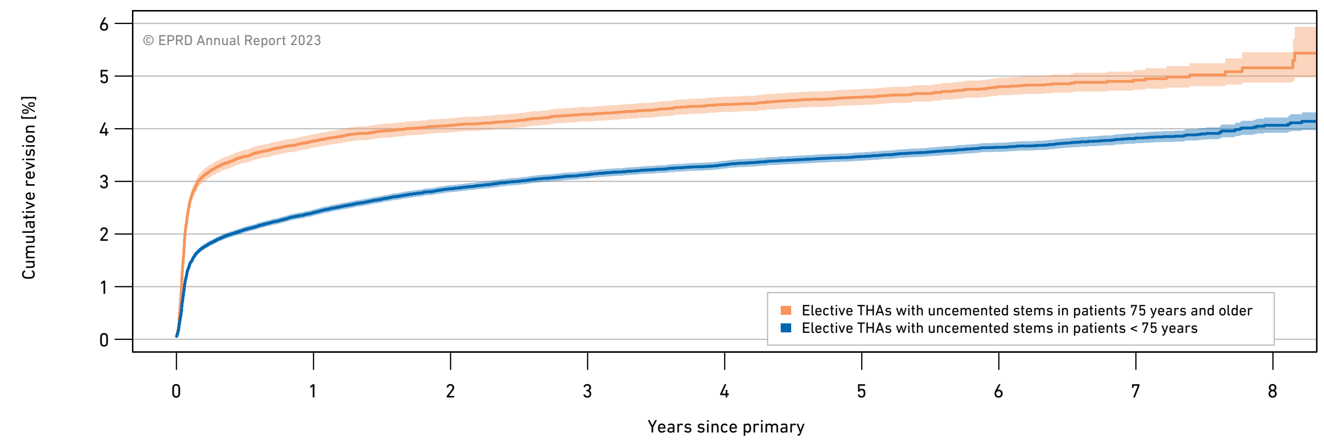
Numbers at risk

	0	1	2	3	4	5	6	7	8
<55 years	25,101	21,009	17,134	13,681	10,063	6,739	3,781	1,595	
55–64 years	87,380	71,174	57,270	44,782	32,511	21,507	12,136	5,091	1,423
65–74 years	118,762	97,146	79,965	63,690	47,140	31,634	18,229	7,703	2,153
75 years and older	120,288	98,975	82,320	65,222	47,148	30,536	16,659	6,400	1,455

Figure 21: Revision probabilities of standard total knee arthroplasties by age group *(p < 0.0001)*

higher revision probability (Figure 22). As the risk of periprosthetic fractures in particular greatly increases in older patients with uncemented femoral components, the EPRD recommends the use of cemented stems for this group of patients.[2] Patient body weight also affects the probability of revision. The body mass index is a measure of whether a person is underweight, normal weight or overweight. According to the classification of the World Health Organisation (WHO), people with a BMI of 30 or more are considered obese (Figure 23).

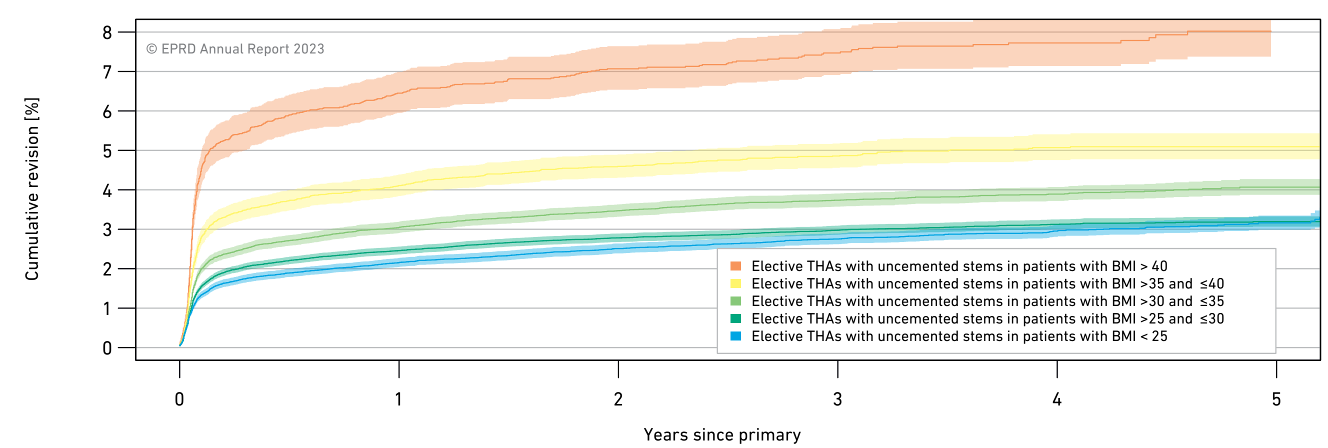
The observed revision probabilities are also associated with patient health status. In order to measure this, the EPRD analysed the clinical conditions listed in the Elixhauser



Numbers at risk

	0	1	2	3	4	5	6	7	8
75 years and older	87,764	70,951	58,289	45,732	32,685	20,836	10,940	3,906	892
< 75 years	264,308	214,915	175,837	139,197	102,339	68,990	39,550	16,413	4,743

Figure 22: Revision probabilities of elective total hip arthroplasties with uncemented stems by age group *(p < 0.0001)*

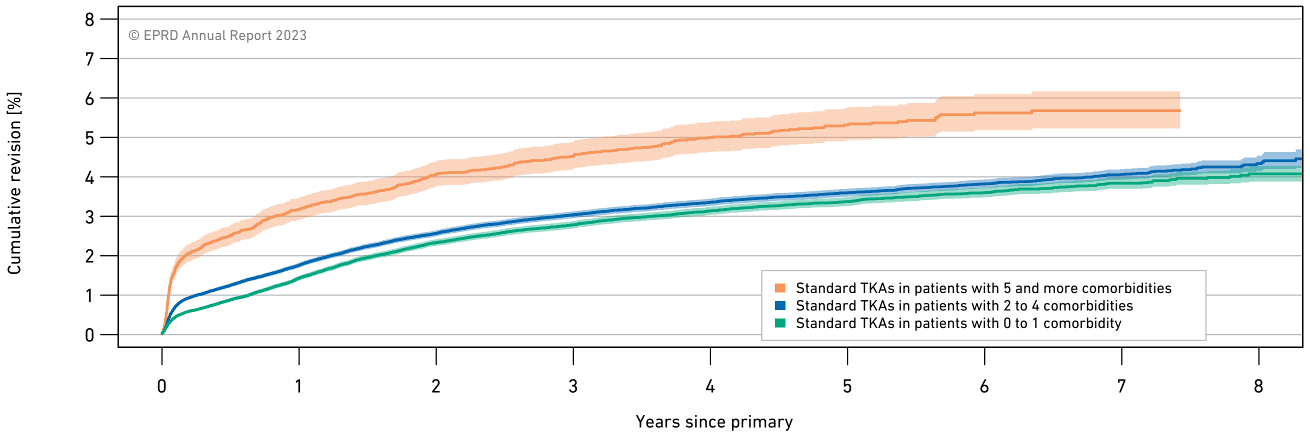


Numbers at risk

	0	1	2	3	4	5
BMI > 40	8,951	6,596	4,860	3,362	1,867	
BMI >35 and ≤40	21,295	15,845	11,748	8,062	4,350	1,107
BMI >30 and ≤35	57,406	43,742	32,892	22,538	12,278	3,184
BMI >25 and ≤30	96,735	74,174	56,317	38,968	21,441	5,564
BMI < 25	66,379	50,578	37,972	26,047	14,119	3,619

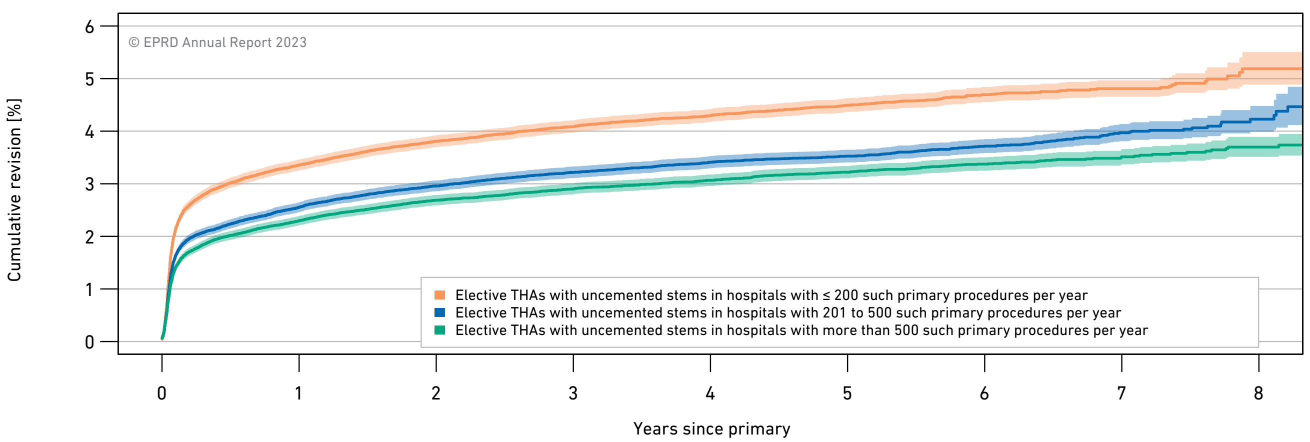
Figure 23: Revision probabilities of elective total hip arthroplasties with uncemented stems by patient body mass index *(p < 0.0001)*. As patient height and weight have only been documented in the EPRD since 2017, the figure only includes the first five years after primary surgery.

Comorbidity Index. This comorbidity index was designed as a predictor for the probability of short-term patient mortality and includes a number of concomitant physical and mental conditions, such as diabetes, depression, high blood pressure, and heart failure. Using the billing data provided by health insurance providers, the EPRD can check the ICD codes associated with diseases represented in the index and thus determine the number of comorbidities present for each patient at the time of the primary arthroplasty.[3] Although patients tend to have more comorbidities with increasing age and older age tends to reduce the risk for many arthroplasties (Figure 21), the revision probability for patients with many diagnosed comorbidities increases markedly (Figure 24). These differences already become apparent in the first few weeks after arthroplasty.



Numbers at risk	0	1	2	3	4	5	6	7	8
■ (5 and more)	15,925	12,917	10,558	8,219	5,857	3,731	2,089	817	
■ (2 to 4)	186,303	153,508	126,526	100,224	72,926	47,958	26,851	10,859	2,831
■ (0 to 1)	149,303	121,879	99,605	78,932	58,079	38,727	21,865	9,113	2,472

Figure 24: Revision probabilities of standard total knee arthroplasties by concomitant disease diagnoses included in the Elixhauser Comorbidity Score *(p < 0.0001)*



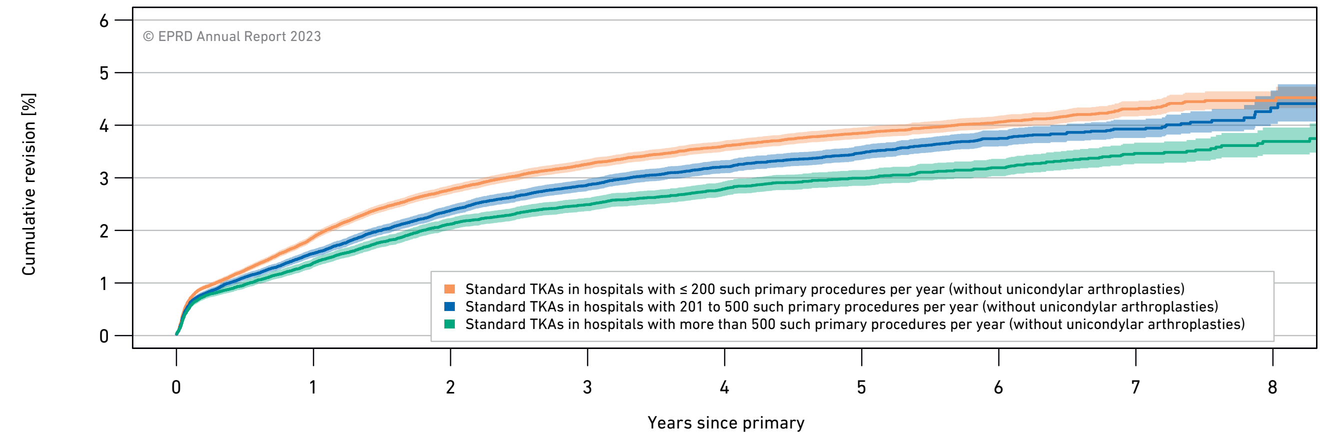
Numbers at risk	0	1	2	3	4	5	6	7	8
■ (≤ 200)	120,889	96,565	78,921	62,053	45,006	29,328	15,622	5,551	996
■ (201 to 500)	112,882	91,302	74,491	58,893	43,356	29,271	16,932	7,117	1,583
■ (more than 500)	111,576	91,749	74,906	58,900	42,503	28,277	16,221	6,864	2,859

Figure 25: Revision probabilities of elective total hip arthroplasties with uncemented stems by the hospital´s annual volume of primary elective hip arthroplasties *(p < 0.0001)*

The hospitals performing the surgery, and in particular their experience with the corresponding arthroplasty procedures, may also considerably impact outcome. The EPRD tends to find lower revision probabilities for hospitals that, according to their quality reports, perform such procedures more often[4] - at least for elective arthroplasties (Figures 25 to 27). This is especially true for unicondylar arthroplasties.

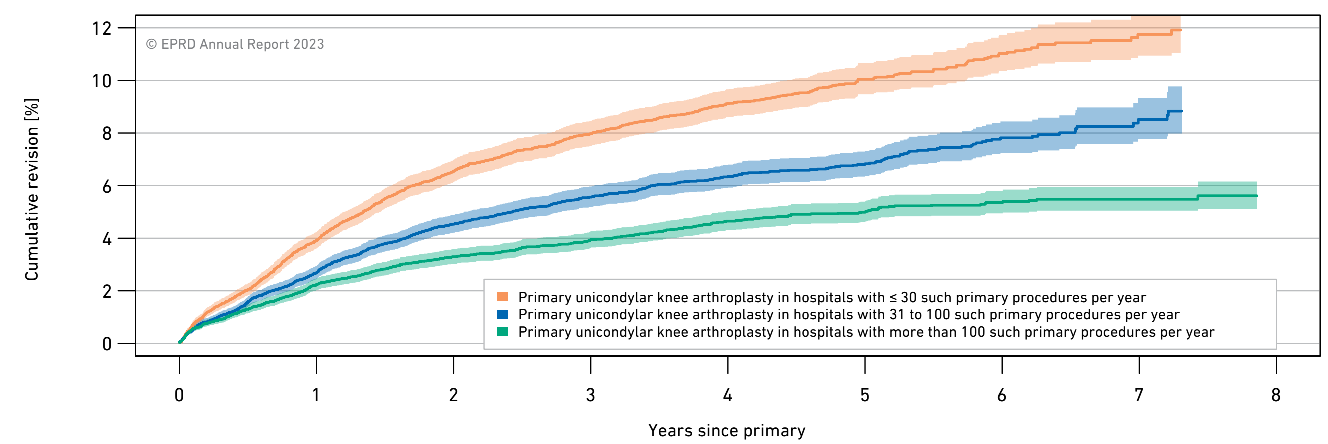
However, the correlation between hospitals' annual case volume and arthroplasty outcomes only reflects a general trend. The EPRD

4 The classifications in this report are based on the hospitals' quality reports for 2021 and the corresponding IQTIG quality indicators listed there.



Numbers at risk	0	1	2	3	4	5	6	7	8
■ (≤ 200)	169,261	138,216	114,301	90,735	65,725	42,508	23,079	8,676	1,817
■ (201 to 500)	103,705	84,678	68,734	54,037	39,426	25,882	14,354	5,731	1,285
■ (more than 500)	71,994	59,211	47,822	37,407	27,404	18,980	11,566	5,548	2,192

Figure 26: Revision probabilities of standard total knee arthroplasties by the hospital´s annual volume of primary total knee arthroplasties not including unicondylar arthroplasties *(p < 0.0001)*



Numbers at risk	0	1	2	3	4	5	6	7	8
■ (≤ 30)	15,656	12,489	10,050	7,763	5,574	3,513	1,789	710	
■ (31 to 100)	17,259	13,734	10,801	8,021	5,484	3,405	1,802	675	
■ (more than 100)	18,138	14,874	12,089	9,514	6,916	4,513	2,545	942	

Figure 27: Revision probabilities of unicondylar knee arthroplasties by the hospital's annual volume of primary unicondylar knee arthroplasties *(p < 0.0001)*

includes exceptions in both directions: There are hospitals that achieve good results despite low case numbers and hospitals with high case numbers that achieve poorer outcomes. Figure 28 is based on the presentations provided by the EPRD to participating hospitals twice a year as part of the individual analyses (also refer to Page 16). These analyses detail how their arthroplasty performance compares to other hospitals in the EPRD. Each dot in the graph represents the outcome of one hospital. Unlike in the hospital analyses of the EPRD, however, the colour of the dots in Figure 28 corresponds to the annual number of specific arthroplasties performed.

The extensive or limited experience of surgeons can affect both the hospital outcomes and the outcomes of individual implants. Even though the EPRD cannot incorporate surgeon experience into the surveys and analyses of this annual report, it is an important factor. It may explain why there are hospitals in the EPRD with significantly poorer outcomes despite higher patient volumes and hospitals with good outcomes despite low case loads. In this context, the revision probability for a particular arthroplasty (see Section 5.4) is the result of what the surgeons were able to achieve with the implant. Starting in 2025, the EPRD will offer a voluntary option for documenting the surgeons involved in the procedures. Surgeons will then be confidentially provided with the personal outcomes of the procedures they performed.

Table 45 presents the impact of non-implant-related factors for different types of arthroplasties in a table.

In brief:

- Patient-specific parameters such as age, sex, BMI, and comorbidities have a significant impact on the probability of revision surgery
- Higher elective arthroplasty volumes per hospital tend to reduce the risk of revision arthroplasty.

Funnel plots for inter-hospital comparisons

Funnel plots show the outcomes from different hospitals. In these graphs, each hospital is represented by a dot. The location of each dot in the graph depends on how many of the primary arthroplasties performed by the hospital actually required revision surgery later on (observed number of revisions) and how many revisions would have been expected if the risk of revision over time had been the same for all hospitals.

The number of revision arthroplasties of a hospital is expected to increase as the number of its documented arthroplasties, and their follow-up times, increase. The calculation is stratified for the different types of arthroplasties, but does not include any further risk adjustment.

In the graph, the x-coordinate of each point corresponds to the number of expected revisions, while the y-coordinate represents the ratio of the number of observed revisions over the expected number of revisions. Thus, if more revisions than expected were observed for a given hospital, the dot on the y-axis is above 1; if observation and expectation coincide, the dot is exactly at 1; otherwise it is below 1.

The graph contains a horizontal dark grey expectation line at the level of 1 as well as upper and lower 95 % confidence intervals represented as dashed light grey lines.

In hospitals with dots above the upper light grey line, significantly more revisions were performed and for dots below the lower line that number was significantly less. The light grey lines converge into a funnel from left to right and give the funnel plot its name.

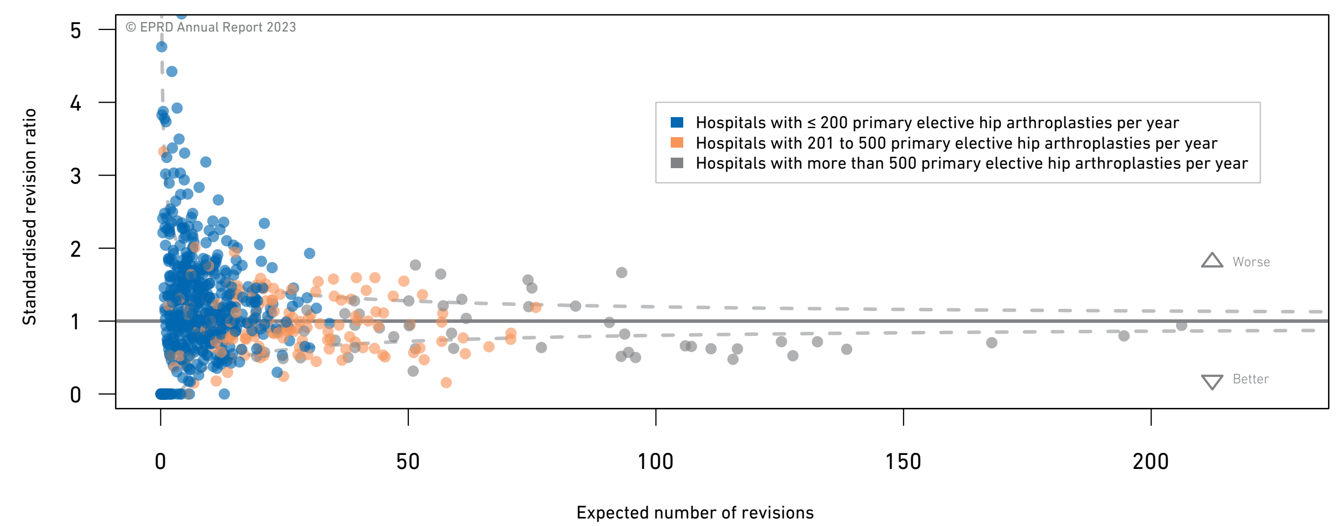


Figure 28: Funnel plot comparing outcomes of elective primary hip arthroplasties with uncemented stems between hospitals

							Revision probabilities after ...							
Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Elective THAs with uncemented stems		352,072	67 (59 - 74)	41/59	27.8	732	2.7 [2.7; 2.8] (285,866)	3.2 [3.1; 3.2] (234,126)	3.4 [3.3; 3.5] (184,929)	3.6 [3.5; 3.7] (135,024)	3.8 [3.7; 3.8] (89,826)	3.9 [3.9; 4.0] (50,490)	4.1 [4.0; 4.2] (20,319)	4.3 [4.2; 4.5] (5,635)
Age group	≤ 54 years	46,369	50 (46 - 53)	50/50	28.4	715	2.3 [2.1; 2.4] (38,621)	2.9 [2.7; 3.1] (31,825)	3.3 [3.1; 3.4] (25,584)	3.5 [3.3; 3.7] (18,995)	3.7 [3.5; 3.9] (12,809)	3.9 [3.7; 4.1] (7,467)	4.1 [3.9; 4.4] (3,146)	4.3 [4.0; 4.6] (957)
	55–64 years	98,969	60 (58 - 62)	44/56	28.5	723	2.3 [2.2; 2.4] (80,190)	2.8 [2.7; 2.9] (65,273)	3.1 [3.0; 3.2] (51,163)	3.3 [3.1; 3.4] (37,491)	3.4 [3.3; 3.5] (25,134)	3.6 [3.5; 3.7] (14,213)	3.7 [3.6; 3.9] (5,879)	4.0 [3.7; 4.2] (1,675)
	65–74 years	118,970	69 (67 - 72)	38/62	28.1	725	2.5 [2.4; 2.6] (96,104)	2.9 [2.8; 3.0] (78,739)	3.1 [3.0; 3.2] (62,450)	3.3 [3.2; 3.4] (45,853)	3.4 [3.3; 3.5] (31,047)	3.6 [3.5; 3.7] (17,870)	3.8 [3.6; 3.9] (7,388)	4.0 [3.8; 4.3] (2,111)
	75–84 years	80,937	78 (76 - 80)	36/64	26.9	718	3.7 [3.6; 3.8] (65,873)	4.0 [3.9; 4.1] (54,437)	4.2 [4.1; 4.3] (42,913)	4.4 [4.2; 4.5] (30,833)	4.5 [4.4; 4.7] (19,767)	4.7 [4.5; 4.9] (10,444)	4.8 [4.6; 5.0] (3,758)	5.0 [4.8; 5.3] (871)
	85 years and older	6,827	86 (85 - 88)	34/66	25.8	587	4.7 [4.2; 5.3] (5,078)	4.9 [4.4; 5.5] (3,852)	5.1 [4.6; 5.7] (2,819)	5.2 [4.7; 5.8] (1,852)	5.6 [5.0; 6.3] (1,069)	6.0 [5.3; 6.8] (496)	*6.2 [5.4; 7.2]* (148)	
Sex	Male	142,890	65 (58 - 73)	100/0	28.4	726	2.8 [2.7; 2.9] (115,458)	3.3 [3.2; 3.4] (94,141)	3.6 [3.5; 3.7] (73,665)	3.7 [3.6; 3.9] (53,452)	3.9 [3.8; 4.0] (35,214)	4.1 [4.0; 4.2] (19,511)	4.3 [4.1; 4.4] (7,747)	4.6 [4.4; 4.8] (2,158)
	Female	209,182	68 (61 - 75)	0/100	27.5	728	2.7 [2.6; 2.8] (170,408)	3.1 [3.0; 3.2] (139,985)	3.3 [3.2; 3.4] (111,264)	3.5 [3.4; 3.6] (81,572)	3.6 [3.6; 3.7] (54,612)	3.8 [3.7; 3.9] (30,979)	4.0 [3.9; 4.1] (12,572)	4.2 [4.0; 4.3] (3,477)
Body Mass Index	less or equal to 25	66,379	68 (60 - 76)	30/70	23.2	702	2.2 [2.0; 2.3] (50,578)	2.5 [2.4; 2.6] (37,972)	2.8 [2.6; 2.9] (26,047)	3.0 [2.8; 3.1] (14,119)	3.2 [3.0; 3.3] (3,619)			
	>25 to ≤30	96,735	68 (60 - 75)	47/53	27.4	710	2.5 [2.4; 2.6] (74,174)	2.8 [2.7; 2.9] (56,317)	3.0 [2.9; 3.1] (38,968)	3.1 [3.0; 3.2] (21,441)	3.2 [3.1; 3.3] (5,564)			
	>30 to ≤35	57,406	66 (59 - 73)	45/55	32.0	703	3.0 [2.9; 3.2] (43,742)	3.5 [3.3; 3.6] (32,892)	3.7 [3.6; 3.9] (22,538)	3.9 [3.7; 4.1] (12,278)	4.1 [3.9; 4.3] (3,184)			
	>35 to ≤40	21,295	64 (57 - 70)	40/60	36.8	676	4.1 [3.8; 4.4] (15,845)	4.6 [4.3; 4.9] (11,748)	4.9 [4.6; 5.2] (8,062)	5.1 [4.8; 5.4] (4,350)	5.1 [4.8; 5.4] (1,107)			
	above 40	8,951	62 (56 - 68)	34/66	42.5	660	6.5 [6.0; 7.0] (6,596)	7.1 [6.5; 7.6] (4,860)	7.5 [6.9; 8.1] (3,362)	7.7 [7.1; 8.4] (1,867)	8.0 [7.4; 8.7] (475)			
Comorbidities	no or one comorbidity	84,193	62 (55 - 70)	43/57	25.9	722	1.8 [1.7; 1.9] (68,824)	2.2 [2.1; 2.3] (56,435)	2.4 [2.3; 2.5] (44,680)	2.6 [2.5; 2.7] (32,914)	2.8 [2.6; 2.9] (22,211)	2.9 [2.8; 3.1] (12,515)	3.1 [2.9; 3.3] (5,069)	3.3 [3.1; 3.6] (1,515)
	two to four comorbidities	193,213	68 (60 - 75)	40/60	28.0	729	2.5 [2.4; 2.5] (157,467)	2.9 [2.8; 3.0] (129,164)	3.1 [3.1; 3.2] (102,188)	3.3 [3.2; 3.4] (74,876)	3.5 [3.4; 3.6] (49,901)	3.7 [3.6; 3.8] (28,142)	3.8 [3.7; 3.9] (11,468)	4.0 [3.9; 4.2] (3,125)
	More than 4 comorbidities	74,666	71 (64 - 77)	38/62	30.9	722	4.5 [4.4; 4.7] (59,575)	5.0 [4.8; 5.2] (48,527)	5.2 [5.1; 5.4] (38,061)	5.4 [5.3; 5.6] (27,234)	5.6 [5.4; 5.8] (17,714)	5.8 [5.6; 6.0] (9,833)	6.0 [5.8; 6.2] (3,782)	6.3 [6.0; 6.7] (995)
Hospital size*	Hospitals with low annual case volumes	120,889	68 (61 - 76)	41/59	28.1	496	3.4 [3.3; 3.5] (96,565)	3.8 [3.7; 3.9] (78,921)	4.1 [4.0; 4.2] (62,053)	4.3 [4.2; 4.4] (45,006)	4.5 [4.4; 4.6] (29,328)	4.7 [4.6; 4.8] (15,622)	4.8 [4.7; 5.0] (5,551)	5.2 [4.9; 5.5] (996)
	Hospitals with average annual case volumes	112,882	67 (60 - 74)	41/59	27.9	147	2.6 [2.5; 2.6] (91,302)	3.0 [2.9; 3.1] (74,491)	3.2 [3.1; 3.3] (58,893)	3.4 [3.3; 3.5] (43,356)	3.5 [3.4; 3.6] (29,271)	3.7 [3.6; 3.9] (16,932)	4.0 [3.8; 4.1] (7,117)	4.2 [4.0; 4.5] (1,583)
	Hospitals with high annual case volumes	111,576	66 (58 - 73)	40/60	27.5	54	2.3 [2.2; 2.4] (91,749)	2.7 [2.6; 2.8] (74,906)	2.9 [2.8; 3.0] (58,900)	3.1 [3.0; 3.2] (42,503)	3.2 [3.1; 3.3] (28,277)	3.4 [3.2; 3.5] (16,221)	3.5 [3.4; 3.7] (6,864)	3.7 [3.5; 3.9] (2,859)
Elective THAs with cemented stems		95,671	79 (75 - 82)	25/75	26.6	707	2.4 [2.3; 2.5] (76,478)	2.7 [2.6; 2.8] (61,798)	2.9 [2.8; 3.1] (48,399)	3.1 [3.0; 3.3] (35,032)	3.4 [3.2; 3.5] (23,302)	3.6 [3.4; 3.7] (13,287)	3.8 [3.6; 4.0] (5,657)	4.1 [3.8; 4.3] (1,544)
Age group	≤ 54 years	911	51 (47 - 53)	60/40	27.6	258	3.0 [2.1; 4.4] (758)	3.9 [2.8; 5.4] (633)	4.7 [3.5; 6.5] (502)	5.1 [3.8; 7.0] (376)	5.1 [3.8; 7.0] (229)	*5.9 [4.1; 8.5]* (123)		
	55–64 years	3,213	61 (58 - 63)	38/62	27.8	502	2.9 [2.3; 3.5] (2,528)	3.6 [3.0; 4.3] (2,028)	3.9 [3.2; 4.7] (1,650)	4.1 [3.4; 4.9] (1,215)	4.5 [3.7; 5.4] (811)	4.8 [4.0; 5.9] (462)	5.6 [4.3; 7.2] (194)	*7.1 [4.9; 10.1]* (58)
	65–74 years	18,335	71 (69 - 73)	24/76	27.7	634	2.3 [2.1; 2.6] (14,772)	2.7 [2.5; 3.0] (12,139)	3.0 [2.8; 3.3] (9,857)	3.3 [3.1; 3.6] (7,511)	3.6 [3.3; 3.9] (5,314)	3.9 [3.5; 4.2] (3,287)	4.1 [3.7; 4.5] (1,549)	4.1 [3.7; 4.6] (498)
	75–84 years	59,804	80 (77 - 82)	24/76	26.5	692	2.3 [2.1; 2.4] (48,437)	2.6 [2.4; 2.7] (39,454)	2.8 [2.7; 2.9] (30,947)	3.0 [2.8; 3.1] (22,284)	3.2 [3.0; 3.4] (14,742)	3.4 [3.2; 3.5] (8,328)	3.6 [3.4; 3.8] (3,504)	4.0 [3.6; 4.3] (911)
	85 years and older	13,408	87 (85 - 88)	24/76	25.4	656	2.7 [2.5; 3.0] (9,983)	2.9 [2.6; 3.2] (7,544)	3.1 [2.8; 3.4] (5,443)	3.2 [2.9; 3.5] (3,646)	3.3 [3.0; 3.7] (2,206)	3.3 [3.0; 3.7] (1,087)	3.3 [3.0; 3.7] (369)	*3.3 [3.0; 3.7]* (70)
Sex	Male	23,755	79 (74 - 82)	100/0	27.0	659	2.8 [2.6; 3.0] (18,890)	3.2 [3.0; 3.4] (15,192)	3.5 [3.3; 3.7] (11,855)	3.7 [3.5; 4.0] (8,503)	4.0 [3.7; 4.3] (5,579)	4.1 [3.8; 4.5] (3,141)	4.4 [4.0; 4.8] (1,319)	4.6 [4.2; 5.1] (342)
	Female	71,916	79 (75 - 82)	0/100	26.4	702	2.2 [2.1; 2.3] (57,588)	2.5 [2.4; 2.7] (46,606)	2.8 [2.6; 2.9] (36,544)	3.0 [2.8; 3.1] (26,529)	3.2 [3.0; 3.3] (17,723)	3.4 [3.2; 3.5] (10,146)	3.6 [3.4; 3.8] (4,338)	3.9 [3.6; 4.2] (1,202)

Table 45: Revision probabilities for different types of arthroplasties by non-implant-related factors

							Revision probabilities after ...							
Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Body Mass Index	less or equal to 25	25,012	80 (76 - 83)	20/80	23.0	657	2.0 [1.8; 2.2] (18,400)	2.3 [2.1; 2.5] (13,337)	2.4 [2.2; 2.7] (8,850)	2.6 [2.4; 2.9] (4,716)	3.0 [2.7; 3.3] (1,305)			
	>25 to ≤30	26,303	80 (76 - 83)	29/71	27.3	655	2.2 [2.0; 2.3] (19,850)	2.4 [2.2; 2.6] (14,776)	2.7 [2.5; 2.9] (10,210)	2.8 [2.6; 3.0] (5,590)	3.0 [2.8; 3.3] (1,590)			
	>30 to ≤35	12,167	79 (74 - 82)	25/75	31.6	619	2.9 [2.7; 3.3] (9,159)	3.3 [3.0; 3.6] (6,855)	3.6 [3.3; 4.0] (4,738)	3.7 [3.3; 4.1] (2,612)	3.9 [3.5; 4.4] (743)			
	>35 to ≤40	3,573	77 (71 - 80)	22/78	36.7	519	4.8 [4.1; 5.6] (2,633)	5.2 [4.5; 6.0] (2,000)	5.3 [4.6; 6.1] (1,399)	5.7 [4.9; 6.7] (792)	6.3 [5.3; 7.5] (242)			
	above 40	1,307	73 (67 - 78)	20/80	42.2	384	6.2 [5.0; 7.7] (967)	6.5 [5.3; 8.0] (726)	6.8 [5.5; 8.4] (502)	6.8 [5.5; 8.4] (284)	*7.2 [5.7; 9.1]* (83)			
Comorbidities	no or one comorbidity	11,761	77 (73 - 81)	25/75	24.8	612	1.3 [1.1; 1.5] (9,550)	1.5 [1.3; 1.8] (7,767)	1.8 [1.5; 2.0] (6,167)	2.0 [1.7; 2.3] (4,617)	2.3 [2.0; 2.7] (3,149)	2.6 [2.2; 3.0] (1,784)	2.8 [2.4; 3.3] (764)	3.3 [2.6; 4.1] (196)
	two to four comorbidities	50,910	79 (75 - 82)	24/76	26.2	689	1.8 [1.7; 1.9] (41,263)	2.1 [2.0; 2.2] (33,583)	2.4 [2.2; 2.5] (26,480)	2.6 [2.4; 2.7] (19,318)	2.7 [2.6; 2.9] (13,084)	3.0 [2.8; 3.1] (7,575)	3.1 [2.9; 3.3] (3,261)	3.4 [3.1; 3.8] (894)
	More than 4 comorbidities	33,000	80 (76 - 83)	26/74	28.0	684	3.7 [3.5; 3.9] (25,665)	4.0 [3.8; 4.3] (20,448)	4.3 [4.1; 4.5] (15,752)	4.5 [4.2; 4.7] (11,097)	4.7 [4.5; 5.0] (7,069)	4.8 [4.6; 5.1] (3,928)	5.2 [4.8; 5.5] (1,632)	5.4 [5.0; 5.9] (454)
Hospital size*	Hospitals with low annual case volumes	35,274	79 (75 - 83)	26/74	26.7	480	2.9 [2.7; 3.1] (28,141)	3.2 [3.0; 3.4] (23,027)	3.5 [3.3; 3.8] (18,237)	3.8 [3.6; 4.0] (13,225)	4.1 [3.9; 4.3] (8,825)	4.2 [4.0; 4.5] (5,004)	4.4 [4.1; 4.7] (1,956)	5.0 [4.4; 5.6] (335)
	Hospitals with average annual case volumes	30,845	79 (75 - 82)	25/75	26.7	145	2.1 [2.0; 2.3] (24,727)	2.5 [2.3; 2.7] (20,001)	2.7 [2.5; 2.9] (15,802)	2.9 [2.7; 3.1] (11,722)	3.0 [2.8; 3.3] (7,799)	3.3 [3.0; 3.5] (4,432)	3.5 [3.2; 3.8] (1,841)	3.7 [3.3; 4.1] (438)
	Hospitals with high annual case volumes	28,430	79 (75 - 82)	23/77	26.2	54	2.0 [1.8; 2.1] (22,565)	2.2 [2.1; 2.4] (17,781)	2.5 [2.3; 2.7] (13,448)	2.6 [2.4; 2.8] (9,294)	2.8 [2.6; 3.1] (6,096)	3.0 [2.8; 3.3] (3,476)	3.3 [3.0; 3.7] (1,660)	3.6 [3.1; 4.0] (693)
Non-elective THAs		29,083	76 (68 - 82)	30/70	24.7	677	6.1 [5.8; 6.3] (20,003)	6.6 [6.3; 6.9] (14,929)	7.0 [6.7; 7.3] (10,641)	7.4 [7.0; 7.7] (7,060)	7.6 [7.3; 8.0] (4,318)	7.9 [7.5; 8.3] (2,169)	8.4 [7.9; 9.0] (775)	*8.8 [7.9; 9.8]* (144)
Age group	≤ 54 years	852	51 (48 - 53)	53/47	24.2	403	7.8 [6.2; 9.9] (623)	8.3 [6.6; 10.5] (494)	8.5 [6.8; 10.7] (396)	9.1 [7.2; 11.5] (269)	9.5 [7.5; 12.0] (167)	*9.5 [7.5; 12.0]* (77)		
	55–64 years	3,790	61 (58 - 63)	40/60	24.2	573	7.2 [6.4; 8.1] (2,641)	7.9 [7.1; 8.9] (1,966)	8.5 [7.6; 9.5] (1,381)	8.9 [7.9; 9.9] (907)	9.3 [8.3; 10.5] (581)	9.6 [8.5; 10.9] (325)	*10.3 [8.6; 12.3]* (117)	
	65–74 years	8,046	70 (67 - 72)	31/69	24.9	623	5.6 [5.1; 6.1] (5,767)	6.2 [5.7; 6.8] (4,348)	6.7 [6.1; 7.3] (3,196)	7.0 [6.4; 7.7] (2,218)	7.2 [6.6; 7.9] (1,408)	7.2 [6.6; 7.9] (735)	7.6 [6.8; 8.5] (285)	*8.7 [6.7; 11.3]* (58)
	75–84 years	11,801	79 (77 - 82)	26/74	24.7	622	6.0 [5.6; 6.5] (8,355)	6.5 [6.1; 7.0] (6,321)	6.8 [6.4; 7.3] (4,555)	7.2 [6.7; 7.7] (3,017)	7.4 [6.9; 8.0] (1,818)	7.9 [7.3; 8.7] (891)	8.5 [7.6; 9.5] (309)	*8.5 [7.6; 9.5]* (53)
	85 years and older	4,594	88 (86 - 90)	26/74	24.2	502	5.7 [5.0; 6.5] (2,617)	6.2 [5.5; 7.0] (1,800)	6.6 [5.8; 7.4] (1,113)	6.9 [6.0; 7.8] (649)	7.0 [6.1; 8.0] (344)	*7.0 [6.1; 8.0]* (141)		
Sex	Male	8,748	74 (66 - 81)	100/0	25.1	618	7.4 [6.9; 8.0] (5,594)	8.2 [7.6; 8.8] (4,022)	8.8 [8.1; 9.4] (2,778)	9.2 [8.5; 9.9] (1,813)	9.5 [8.7; 10.2] (1,081)	9.6 [8.8; 10.5] (531)	10.5 [9.3; 11.8] (196)	
	Female	20,335	77 (70 - 82)	0/100	24.3	664	5.5 [5.2; 5.8] (14,409)	6.0 [5.7; 6.3] (10,907)	6.3 [5.9; 6.7] (7,863)	6.6 [6.3; 7.0] (5,247)	6.9 [6.5; 7.3] (3,237)	7.2 [6.7; 7.7] (1,638)	7.6 [7.0; 8.2] (579)	*7.6 [7.0; 8.2]* (111)
Body Mass Index	less or equal to 25	11,841	76 (68 - 82)	27/73	22.5	618	5.4 [5.0; 5.9] (7,583)	5.9 [5.5; 6.4] (5,172)	6.2 [5.8; 6.7] (3,151)	6.8 [6.3; 7.4] (1,523)	6.9 [6.3; 7.5] (416)			
	>25 to ≤30	7,330	77 (69 - 82)	35/65	26.9	592	6.2 [5.7; 6.8] (4,870)	6.8 [6.2; 7.5] (3,335)	7.2 [6.5; 7.8] (2,167)	7.3 [6.7; 8.1] (1,149)	7.6 [6.9; 8.5] (323)			
	>30 to ≤35	2,064	75 (68 - 81)	31/69	31.6	472	7.8 [6.7; 9.0] (1,369)	8.3 [7.2; 9.7] (974)	8.9 [7.7; 10.3] (617)	9.1 [7.8; 10.6] (307)	*9.1 [7.8; 10.6]* (67)			
	>35 to ≤40	414	73 (65 - 79)	27/73	36.5	234	10.4 [7.7; 13.8] (269)	10.4 [7.7; 13.8] (179)	*10.4 [7.7; 13.8]* (121)	*10.4 [7.7; 13.8]* (64)				
Comorbidities	no or one comorbidity	3,935	71 (64 - 78)	31/69	23.9	566	3.6 [3.1; 4.3] (2,989)	4.2 [3.6; 4.9] (2,302)	4.5 [3.9; 5.3] (1,686)	4.8 [4.1; 5.6] (1,169)	5.0 [4.2; 5.8] (760)	5.0 [4.2; 5.8] (385)	5.3 [4.4; 6.3] (144)	
	two to four comorbidities	13,128	75 (67 - 81)	28/72	24.5	650	5.1 [4.8; 5.5] (9,499)	5.6 [5.2; 6.0] (7,210)	5.9 [5.5; 6.4] (5,233)	6.3 [5.9; 6.8] (3,540)	6.5 [6.0; 7.0] (2,163)	6.9 [6.3; 7.5] (1,113)	7.5 [6.7; 8.4] (406)	*7.5 [6.7; 8.4]* (72)
	More than 4 comorbidities	12,020	78 (71 - 84)	32/68	25.2	626	7.9 [7.5; 8.5] (7,515)	8.6 [8.1; 9.2] (5,417)	9.1 [8.6; 9.7] (3,722)	9.5 [8.9; 10.2] (2,351)	9.9 [9.2; 10.6] (1,395)	10.1 [9.4; 10.8] (671)	10.6 [9.6; 11.6] (225)	
Hospital size*	Hospitals with low annual case volumes	6,237	76 (68 - 82)	29/71	24.7	267	5.9 [5.4; 6.6] (4,462)	6.5 [5.9; 7.2] (3,380)	7.0 [6.3; 7.7] (2,418)	7.2 [6.5; 7.9] (1,607)	7.6 [6.9; 8.4] (991)	7.8 [7.0; 8.7] (490)	8.5 [7.3; 9.9] (176)	
	Hospitals with average annual case volumes	13,847	76 (68 - 82)	31/69	24.7	294	6.3 [5.9; 6.8] (9,372)	6.9 [6.4; 7.3] (6,939)	7.3 [6.8; 7.8] (4,920)	7.7 [7.2; 8.3] (3,249)	8.0 [7.5; 8.5] (1,929)	8.2 [7.7; 8.9] (998)	9.0 [8.1; 10.0] (358)	*9.0 [8.1; 10.0]* (56)

Table 45 (continued)

							Revision probabilities after ...							
Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Hospital size	Hospitals with high annual case volumes	8,704	76 (69 - 82)	30/70	24.5	92	5.7 [5.2; 6.2] (5,931)	6.3 [5.8; 6.9] (4,396)	6.6 [6.1; 7.2] (3,118)	7.0 [6.4; 7.7] (2,055)	7.1 [6.5; 7.8] (1,289)	7.4 [6.7; 8.1] (630)	7.4 [6.7; 8.1] (226)	
Hip hemiarthroplasties		59,874	84 (80 - 89)	29/71	24.2	596	4.5 [4.3; 4.7] (32,614)	4.7 [4.6; 4.9] (21,378)	4.9 [4.7; 5.1] (13,376)	5.1 [4.9; 5.3] (7,759)	5.1 [4.9; 5.3] (4,075)	5.4 [5.1; 5.7] (1,775)	5.4 [5.1; 5.7] (515)	*5.4 [5.1; 5.7]* (69)
Age group	55–64 years	1,109	61 (59 - 63)	49/51	24.2	333	6.7 [5.3; 8.5] (599)	6.9 [5.4; 8.7] (406)	7.5 [5.9; 9.5] (263)	7.9 [6.1; 10.1] (170)	*7.9 [6.1; 10.1]* (105)	*7.9 [6.1; 10.1]* (55)		
	65–74 years	4,550	71 (69 - 73)	42/58	24.6	495	5.3 [4.7; 6.0] (2,605)	5.9 [5.2; 6.7] (1,784)	6.2 [5.5; 7.1] (1,201)	6.5 [5.7; 7.4] (759)	6.5 [5.7; 7.4] (445)	7.0 [6.0; 8.2] (231)	*7.0 [6.0; 8.2]* (73)	
	75–84 years	24,512	81 (79 - 83)	30/70	24.6	573	4.8 [4.5; 5.0] (14,516)	5.0 [4.7; 5.3] (9,913)	5.2 [4.9; 5.5] (6,469)	5.4 [5.0; 5.7] (3,871)	5.5 [5.1; 5.8] (2,034)	5.8 [5.3; 6.3] (913)	5.8 [5.3; 6.3] (265)	
	85 years and older	29,448	89 (87 - 92)	25/75	24.0	565	4.1 [3.8; 4.3] (14,739)	4.2 [3.9; 4.4] (9,157)	4.3 [4.0; 4.5] (5,358)	4.3 [4.1; 4.6] (2,894)	4.4 [4.1; 4.6] (1,451)	4.4 [4.1; 4.6] (553)	4.4 [4.1; 4.6] (152)	
Sex	Male	17,145	83 (78 - 88)	100/0	24.7	563	4.9 [4.6; 5.3] (7,979)	5.3 [4.9; 5.7] (4,809)	5.6 [5.2; 6.0] (2,846)	5.8 [5.4; 6.3] (1,521)	5.9 [5.4; 6.4] (757)	6.2 [5.6; 6.8] (332)	*6.2 [5.6; 6.8]* (92)	
	Female	42,729	85 (80 - 89)	0/100	24.0	587	4.4 [4.2; 4.6] (24,635)	4.6 [4.3; 4.8] (16,569)	4.7 [4.5; 4.9] (10,530)	4.8 [4.6; 5.0] (6,238)	4.9 [4.6; 5.1] (3,318)	5.1 [4.8; 5.4] (1,443)	5.1 [4.8; 5.4] (423)	*5.1 [4.8; 5.4]* (59)
Body Mass Index	less or equal to 25	26,355	85 (80 - 90)	27/73	22.3	560	4.2 [4.0; 4.5] (13,127)	4.4 [4.1; 4.7] (7,729)	4.5 [4.3; 4.8] (4,094)	4.6 [4.3; 4.9] (1,790)	4.6 [4.3; 4.9] (387)			
	>25 to ≤30	14,088	84 (80 - 88)	33/67	26.9	535	4.6 [4.3; 5.0] (7,579)	4.8 [4.4; 5.2] (4,671)	4.9 [4.5; 5.3] (2,637)	5.1 [4.7; 5.6] (1,196)	5.2 [4.8; 5.8] (261)			
	>30 to ≤35	3,573	83 (79 - 87)	26/74	31.2	492	6.5 [5.7; 7.4] (1,974)	6.9 [6.0; 7.8] (1,260)	7.1 [6.3; 8.1] (721)	7.4 [6.5; 8.5] (351)	*7.4 [6.5; 8.5]* (78)			
	>35 to ≤40	693	81 (77 - 86)	23/77	36.4	323	9.3 [7.2; 11.9] (363)	9.9 [7.7; 12.6] (226)	*10.4 [8.0; 13.3]* (129)	*12.0 [9.0; 16.0]* (54)				
Comorbidities	no or one comorbidity	3,247	83 (78 - 88)	27/73	23.5	462	3.1 [2.5; 3.7] (2,100)	3.3 [2.7; 4.0] (1,449)	3.8 [3.1; 4.7] (991)	4.1 [3.3; 5.0] (624)	4.1 [3.3; 5.0] (352)	4.1 [3.3; 5.0] (168)	*4.1 [3.3; 5.0]* (61)	
	two to four comorbidities	20,992	84 (80 - 89)	26/74	24.0	556	3.5 [3.3; 3.8] (12,642)	3.7 [3.5; 4.0] (8,550)	3.9 [3.6; 4.2] (5,463)	4.0 [3.7; 4.3] (3,290)	4.0 [3.7; 4.3] (1,795)	4.2 [3.8; 4.6] (789)	4.2 [3.8; 4.6] (216)	
	More than 4 comorbidities	35,635	85 (80 - 89)	30/70	24.5	580	5.3 [5.0; 5.5] (17,872)	5.5 [5.2; 5.8] (11,379)	5.6 [5.4; 5.9] (6,922)	5.8 [5.5; 6.1] (3,845)	5.9 [5.6; 6.3] (1,928)	6.3 [5.8; 6.7] (818)	6.3 [5.8; 6.7] (238)	
Hospital size*	Hospitals with low annual case volumes	12,523	84 (80 - 89)	28/72	24.5	217	4.3 [3.9; 4.7] (7,063)	4.5 [4.1; 4.9] (4,718)	4.7 [4.3; 5.1] (3,042)	4.9 [4.5; 5.4] (1,749)	5.1 [4.6; 5.7] (926)	5.3 [4.7; 6.0] (410)	*5.3 [4.7; 6.0]* (112)	
	Hospitals with average annual case volumes	30,377	84 (80 - 89)	29/71	24.3	274	4.7 [4.4; 4.9] (16,358)	4.9 [4.6; 5.2] (10,650)	5.1 [4.8; 5.4] (6,583)	5.3 [5.0; 5.6] (3,813)	5.3 [5.0; 5.6] (1,947)	5.5 [5.1; 5.9] (868)	5.5 [5.1; 5.9] (266)	
	Hospitals with high annual case volumes	16,367	85 (80 - 89)	28/72	24.0	87	4.4 [4.1; 4.8] (8,836)	4.6 [4.3; 5.0] (5,731)	4.8 [4.5; 5.2] (3,545)	4.8 [4.5; 5.2] (2,060)	4.9 [4.5; 5.3] (1,118)	5.0 [4.6; 5.5] (469)	*5.0 [4.6; 5.5]* (132)	
Standard TKAs		351,531	70 (62 - 77)	34/66	30.1	722	1.7 [1.6; 1.7] (288,304)	2.5 [2.5; 2.6] (236,689)	3.0 [2.9; 3.1] (187,375)	3.3 [3.3; 3.4] (136,862)	3.6 [3.5; 3.7] (90,416)	3.8 [3.7; 3.9] (50,805)	4.0 [3.9; 4.1] (20,789)	4.3 [4.2; 4.4] (5,524)
Age group	≤ 54 years	25,101	52 (49 - 53)	36/64	33.2	687	2.4 [2.2; 2.6] (21,009)	4.0 [3.8; 4.3] (17,134)	5.0 [4.7; 5.3] (13,681)	5.7 [5.4; 6.1] (10,063)	6.2 [5.8; 6.6] (6,739)	6.6 [6.2; 7.0] (3,781)	7.2 [6.7; 7.7] (1,595)	7.7 [7.0; 8.4] (493)
	55–64 years	87,380	60 (58 - 62)	38/62	32.0	714	1.7 [1.6; 1.8] (71,174)	2.8 [2.7; 2.9] (57,270)	3.4 [3.3; 3.5] (44,782)	3.9 [3.7; 4.0] (32,511)	4.2 [4.1; 4.4] (21,507)	4.6 [4.4; 4.8] (12,136)	4.9 [4.7; 5.1] (5,091)	5.3 [5.0; 5.6] (1,423)
	65–74 years	118,762	70 (67 - 72)	34/66	30.7	713	1.5 [1.4; 1.6] (97,146)	2.3 [2.2; 2.4] (79,965)	2.7 [2.6; 2.8] (63,690)	3.0 [2.9; 3.1] (47,140)	3.2 [3.1; 3.3] (31,634)	3.4 [3.3; 3.5] (18,229)	3.6 [3.4; 3.8] (7,703)	3.8 [3.6; 4.0] (2,153)
	75–84 years	110,462	78 (76 - 81)	32/68	28.3	713	1.7 [1.6; 1.8] (91,330)	2.3 [2.2; 2.4] (76,320)	2.6 [2.5; 2.7] (60,696)	2.8 [2.7; 2.9] (44,082)	3.0 [2.8; 3.1] (28,707)	3.1 [2.9; 3.2] (15,728)	3.2 [3.0; 3.3] (6,076)	3.3 [3.2; 3.5] (1,389)
	85 years and older	9,826	86 (85 - 87)	31/69	26.8	666	2.0 [1.7; 2.3] (7,645)	2.3 [2.0; 2.7] (6,000)	2.7 [2.3; 3.0] (4,526)	2.8 [2.4; 3.2] (3,066)	2.8 [2.4; 3.2] (1,829)	2.9 [2.5; 3.4] (931)	2.9 [2.5; 3.4] (324)	*2.9 [2.5; 3.4]* (66)
Sex	Male	120,833	69 (61 - 76)	100/0	29.6	713	2.0 [1.9; 2.1] (97,819)	2.9 [2.8; 3.0] (79,436)	3.3 [3.2; 3.4] (61,855)	3.7 [3.6; 3.8] (44,314)	3.9 [3.8; 4.0] (28,592)	4.2 [4.0; 4.3] (15,680)	4.5 [4.3; 4.7] (6,304)	4.8 [4.5; 5.1] (1,696)
	Female	230,698	71 (63 - 77)	0/100	30.5	718	1.5 [1.5; 1.6] (190,485)	2.4 [2.3; 2.4] (157,253)	2.8 [2.8; 2.9] (125,520)	3.2 [3.1; 3.2] (92,548)	3.4 [3.3; 3.5] (61,824)	3.6 [3.5; 3.7] (35,125)	3.8 [3.7; 3.9] (14,485)	4.0 [3.9; 4.2] (3,828)
Body Mass Index	less or equal to 25	35,752	75 (67 - 80)	31/69	23.6	681	1.4 [1.3; 1.5] (27,178)	2.2 [2.0; 2.4] (20,506)	2.6 [2.5; 2.8] (14,062)	3.0 [2.8; 3.2] (7,748)	3.2 [2.9; 3.5] (1,943)			
	>25 to ≤30	85,750	72 (65 - 78)	41/59	27.7	691	1.5 [1.4; 1.6] (66,232)	2.2 [2.1; 2.3] (50,210)	2.6 [2.5; 2.7] (34,877)	2.9 [2.8; 3.1] (19,010)	3.1 [3.0; 3.3] (4,862)			

Table 45 (continued)

							Revision probabilities after ...							
Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Body Mass Index	>30 to ≤35	72,530	69 (62 - 76)	36/64	32.0	686	1.6 [1.5; 1.7] (55,761)	2.4 [2.2; 2.5] (42,319)	2.8 [2.7; 3.0] (29,272)	3.1 [3.0; 3.3] (16,086)	3.3 [3.1; 3.4] (4,066)			
	>35 to ≤40	36,345	66 (60 - 72)	29/71	37.0	680	1.9 [1.7; 2.0] (27,868)	2.8 [2.6; 3.0] (21,003)	3.2 [3.0; 3.4] (14,553)	3.5 [3.3; 3.8] (7,927)	3.8 [3.6; 4.1] (2,022)			
	above 40	20,108	62 (57 - 68)	23/77	42.9	676	2.5 [2.3; 2.7] (15,501)	3.3 [3.0; 3.6] (11,716)	3.9 [3.6; 4.3] (8,095)	4.3 [4.0; 4.7] (4,440)	4.7 [4.3; 5.1] (1,108)			
Comorbidities	no or one comorbidity	52,227	67 (59 - 75)	40/60	27.5	709	1.4 [1.3; 1.5] (42,481)	2.4 [2.3; 2.5] (34,655)	2.9 [2.7; 3.0] (27,334)	3.2 [3.1; 3.4] (20,138)	3.5 [3.3; 3.7] (13,544)	3.7 [3.5; 3.9] (7,542)	3.9 [3.7; 4.2] (3,202)	4.2 [3.8; 4.5] (946)
	two to four comorbidities	195,247	70 (62 - 77)	35/65	29.7	717	1.5 [1.4; 1.5] (160,142)	2.3 [2.2; 2.4] (131,421)	2.8 [2.7; 2.8] (104,086)	3.1 [3.0; 3.2] (76,246)	3.3 [3.2; 3.4] (50,463)	3.6 [3.4; 3.7] (28,519)	3.8 [3.7; 3.9] (11,697)	4.1 [3.9; 4.3] (3,024)
	More than 4 comorbidities	104,057	72 (64 - 78)	30/70	32.6	712	2.2 [2.1; 2.3] (85,681)	3.0 [2.9; 3.1] (70,613)	3.5 [3.4; 3.6] (55,955)	3.8 [3.7; 4.0] (40,478)	4.1 [4.0; 4.2] (26,409)	4.3 [4.2; 4.5] (14,744)	4.5 [4.4; 4.7] (5,890)	4.7 [4.5; 4.9] (1,554)
Hospital size*	Hospitals with low annual case volumes	169,261	70 (62 - 77)	34/66	30.4	553	1.9 [1.8; 1.9] (138,216)	2.8 [2.7; 2.9] (114,301)	3.3 [3.2; 3.4] (90,735)	3.6 [3.5; 3.7] (65,725)	3.9 [3.7; 4.0] (42,508)	4.1 [3.9; 4.2] (23,079)	4.3 [4.2; 4.5] (8,676)	4.5 [4.3; 4.6] (1,817)
	Hospitals with average annual case volumes	103,705	70 (62 - 77)	35/65	30.1	104	1.6 [1.5; 1.6] (84,678)	2.4 [2.3; 2.5] (68,734)	2.9 [2.8; 3.0] (54,037)	3.2 [3.1; 3.3] (39,426)	3.5 [3.3; 3.6] (25,882)	3.8 [3.6; 3.9] (14,354)	3.9 [3.8; 4.1] (5,731)	4.3 [4.0; 4.7] (1,285)
	Hospitals with high annual case volumes	71,994	69 (62 - 76)	34/66	30.0	30	1.4 [1.3; 1.5] (59,211)	2.1 [2.0; 2.2] (47,822)	2.5 [2.4; 2.6] (37,407)	2.8 [2.7; 2.9] (27,404)	3.0 [2.8; 3.1] (18,980)	3.2 [3.0; 3.4] (11,566)	3.5 [3.3; 3.7] (5,548)	3.7 [3.4; 4.0] (2,192)
Constrained TKAs		17,600	75 (66 - 80)	24/76	28.8	663	4.0 [3.7; 4.3] (13,767)	5.2 [4.8; 5.5] (11,063)	5.8 [5.4; 6.2] (8,577)	6.1 [5.7; 6.5] (6,082)	6.4 [6.0; 6.8] (3,910)	6.7 [6.2; 7.1] (2,076)	6.8 [6.3; 7.3] (858)	7.7 [6.7; 8.8] (201)
Age group	≤ 54 years	1,003	51 (47 - 53)	36/64	32.8	314	4.4 [3.3; 5.9] (809)	6.1 [4.8; 7.9] (643)	7.6 [6.0; 9.6] (513)	8.0 [6.3; 10.1] (376)	8.6 [6.8; 10.9] (250)	*9.0 [7.1; 11.5]* (137)	*9.0 [7.1; 11.5]* (59)	
	55–64 years	2,810	60 (58 - 63)	32/68	32.0	506	4.6 [3.9; 5.5] (2,200)	6.3 [5.4; 7.4] (1,742)	7.2 [6.2; 8.4] (1,361)	7.8 [6.7; 9.0] (986)	8.1 [7.0; 9.4] (645)	8.3 [7.1; 9.6] (349)	*8.3 [7.1; 9.6]* (145)	
	65–74 years	4,973	70 (68 - 72)	24/76	30.5	576	4.1 [3.6; 4.7] (3,894)	5.4 [4.8; 6.1] (3,162)	6.2 [5.5; 6.9] (2,508)	6.5 [5.8; 7.4] (1,819)	6.9 [6.1; 7.8] (1,216)	7.1 [6.3; 8.0] (673)	7.3 [6.4; 8.4] (310)	*8.8 [7.0; 11.0]* (68)
	75–84 years	7,269	79 (77 - 82)	20/80	27.5	604	3.6 [3.2; 4.1] (5,769)	4.5 [4.0; 5.0] (4,679)	4.8 [4.3; 5.4] (3,602)	5.0 [4.5; 5.6] (2,499)	5.3 [4.8; 6.0] (1,571)	5.7 [5.0; 6.4] (819)	5.7 [5.0; 6.4] (315)	*6.5 [5.0; 8.6]* (75)
	85 years and older	1,545	87 (85 - 88)	18/82	25.8	465	4.0 [3.1; 5.2] (1,095)	4.7 [3.7; 5.9] (837)	4.9 [3.9; 6.3] (593)	4.9 [3.9; 6.3] (402)	4.9 [3.9; 6.3] (228)	*4.9 [3.9; 6.3]* (98)		
Sex	Male	4,208	72 (63 - 79)	100/0	28.4	548	5.2 [4.5; 5.9] (3,237)	6.5 [5.7; 7.3] (2,579)	7.3 [6.5; 8.2] (1,979)	7.7 [6.8; 8.7] (1,396)	8.1 [7.2; 9.1] (890)	8.2 [7.3; 9.3] (454)	8.2 [7.3; 9.3] (180)	
	Female	13,392	75 (67 - 81)	0/100	29.0	653	3.6 [3.3; 4.0] (10,530)	4.8 [4.4; 5.1] (8,484)	5.3 [4.9; 5.7] (6,598)	5.6 [5.2; 6.0] (4,686)	5.9 [5.4; 6.4] (3,020)	6.2 [5.7; 6.7] (1,622)	6.3 [5.8; 6.9] (678)	7.2 [6.1; 8.5] (157)
Body Mass Index	less or equal to 25	3,040	79 (71 - 83)	20/80	23.1	520	3.5 [2.9; 4.3] (2,207)	4.7 [4.0; 5.6] (1,595)	5.2 [4.4; 6.2] (1,026)	5.6 [4.7; 6.7] (548)	*5.8 [4.8; 6.9]* (144)			
	>25 to ≤30	4,253	77 (69 - 81)	30/70	27.5	559	3.7 [3.2; 4.4] (3,126)	4.9 [4.3; 5.7] (2,333)	5.6 [4.9; 6.4] (1,585)	5.7 [5.0; 6.6] (858)	6.2 [5.2; 7.3] (254)			
	>30 to ≤35	2,963	73 (66 - 79)	25/75	32.0	495	3.5 [2.9; 4.3] (2,224)	4.5 [3.7; 5.3] (1,655)	4.8 [4.0; 5.7] (1,154)	5.3 [4.4; 6.3] (617)	5.6 [4.6; 6.8] (178)			
	>35 to ≤40	1,481	69 (61 - 76)	20/80	37.0	391	4.9 [3.9; 6.2] (1,101)	6.3 [5.1; 7.8] (831)	7.1 [5.8; 8.7] (588)	7.1 [5.8; 8.7] (315)	*7.6 [6.0; 9.5]* (97)			
	above 40	1,008	64 (58 - 70)	17/83	43.7	340	5.2 [4.0; 6.8] (749)	6.3 [4.9; 8.1] (562)	7.7 [6.0; 9.8] (399)	8.0 [6.2; 10.1] (230)	*8.0 [6.2; 10.1]* (57)			
Comorbidities	no or one comorbidity	1,923	71 (62 - 79)	30/70	26.6	451	2.2 [1.6; 3.0] (1,538)	3.5 [2.7; 4.5] (1,228)	3.8 [3.0; 4.9] (965)	4.0 [3.1; 5.1] (731)	4.3 [3.4; 5.6] (458)	4.6 [3.5; 5.9] (245)	*4.6 [3.5; 5.9]* (116)	
	two to four comorbidities	8,895	74 (66 - 80)	25/75	28.3	618	3.4 [3.1; 3.8] (7,056)	4.6 [4.2; 5.1] (5,687)	5.3 [4.8; 5.8] (4,439)	5.6 [5.1; 6.2] (3,178)	5.9 [5.3; 6.4] (2,088)	6.2 [5.6; 6.8] (1,120)	6.3 [5.7; 7.1] (493)	*6.7 [5.8; 7.7]* (123)
	More than 4 comorbidities	6,782	76 (68 - 81)	21/79	30.5	605	5.3 [4.8; 5.9] (5,173)	6.4 [5.8; 7.0] (4,148)	6.9 [6.3; 7.6] (3,173)	7.3 [6.7; 8.0] (2,173)	7.8 [7.0; 8.5] (1,364)	7.9 [7.2; 8.8] (711)	7.9 [7.2; 8.8] (249)	
Hospital size*	Hospitals with low annual case volumes	10,494	75 (67 - 81)	24/76	28.9	503	4.0 [3.6; 4.4] (8,174)	5.2 [4.8; 5.7] (6,603)	5.9 [5.4; 6.4] (5,116)	6.2 [5.7; 6.8] (3,603)	6.6 [6.1; 7.2] (2,292)	6.8 [6.3; 7.5] (1,220)	7.0 [6.4; 7.7] (453)	*9.0 [7.1; 11.5]* (66)
	Hospitals with average annual case volumes	4,488	74 (66 - 80)	24/76	28.7	103	4.4 [3.8; 5.0] (3,484)	5.7 [5.0; 6.4] (2,741)	6.0 [5.3; 6.8] (2,068)	6.3 [5.6; 7.1] (1,435)	6.8 [6.0; 7.7] (878)	7.1 [6.2; 8.2] (424)	7.1 [6.2; 8.2] (155)	
	Hospitals with high annual case volumes	2,270	73 (64 - 79)	26/74	28.7	30	3.4 [2.7; 4.2] (1,805)	4.1 [3.3; 5.0] (1,446)	4.5 [3.7; 5.5] (1,151)	4.8 [3.9; 5.9] (852)	4.8 [3.9; 5.9] (606)	5.0 [4.1; 6.2] (350)	5.0 [4.1; 6.2] (201)	*5.0 [4.1; 6.2]* (71)

Table 45 (continued)

Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	Revision probabilities after ... 1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Unicondylar knee arthroplasties		51,875	63 (57 - 72)	44/56	29.5	645	2.9 [2.8; 3.1] (41,850)	4.7 [4.5; 4.9] (33,637)	5.7 [5.5; 6.0] (25,885)	6.6 [6.4; 6.9] (18,408)	7.2 [6.9; 7.5] (11,697)	7.9 [7.6; 8.2] (6,271)	8.4 [8.0; 8.8] (2,373)	8.8 [8.3; 9.3] (774)
Age group	≤ 54 years	8,405	51 (49 - 53)	41/59	31.4	565	3.5 [3.1; 4.0] (6,923)	6.2 [5.6; 6.7] (5,507)	7.6 [7.0; 8.2] (4,262)	8.9 [8.2; 9.6] (3,076)	9.9 [9.2; 10.8] (1,971)	11.1 [10.2; 12.1] (1,081)	11.8 [10.8; 13.0] (462)	12.1 [10.9; 13.3] (168)
	55–64 years	19,297	60 (57 - 62)	48/52	30.3	608	2.8 [2.6; 3.0] (15,330)	4.9 [4.6; 5.3] (11,982)	6.1 [5.7; 6.5] (9,049)	7.1 [6.7; 7.5] (6,402)	7.7 [7.3; 8.2] (4,067)	8.6 [8.0; 9.2] (2,159)	9.1 [8.4; 9.8] (804)	9.7 [8.8; 10.7] (258)
	65–74 years	14,828	69 (67 - 72)	42/58	29.3	560	2.7 [2.4; 3.0] (11,918)	4.1 [3.8; 4.5] (9,723)	5.0 [4.6; 5.4] (7,588)	5.8 [5.3; 6.2] (5,418)	6.1 [5.7; 6.6] (3,504)	6.5 [6.0; 7.1] (1,931)	6.8 [6.2; 7.4] (704)	7.0 [6.3; 7.7] (232)
	75–84 years	8,758	78 (76 - 80)	43/57	27.7	465	3.0 [2.6; 3.4] (7,244)	4.0 [3.6; 4.5] (6,078)	4.6 [4.1; 5.1] (4,732)	5.0 [4.6; 5.6] (3,340)	5.3 [4.8; 5.9] (2,050)	6.0 [5.3; 6.7] (1,040)	6.5 [5.7; 7.4] (376)	*7.2 [5.7; 8.9]* (106)
	85 years and older	587	86 (85 - 88)	42/58	26.4	184	2.2 [1.3; 3.9] (435)	3.0 [1.8; 4.9] (347)	3.3 [2.0; 5.3] (254)	3.7 [2.3; 6.1] (172)	*3.7 [2.3; 6.1]* (105)	*5.0 [2.7; 9.0]* (60)		
Sex	Male	23,013	63 (57 - 71)	100/0	29.4	612	2.8 [2.6; 3.1] (18,371)	4.4 [4.1; 4.7] (14,671)	5.2 [4.9; 5.6] (11,166)	6.0 [5.7; 6.4] (7,835)	6.4 [6.1; 6.8] (4,928)	7.2 [6.7; 7.7] (2,601)	7.6 [7.0; 8.1] (1,018)	8.0 [7.3; 8.7] (339)
	Female	28,862	64 (57 - 72)	0/100	29.7	621	3.0 [2.8; 3.2] (23,479)	5.0 [4.7; 5.3] (18,966)	6.1 [5.8; 6.4] (14,719)	7.1 [6.7; 7.4] (10,573)	7.7 [7.4; 8.1] (6,769)	8.5 [8.0; 8.9] (3,670)	9.0 [8.5; 9.6] (1,355)	9.4 [8.8; 10.2] (435)
Body Mass Index	less or equal to 25	5,476	67 (59 - 75)	38/62	23.7	512	2.6 [2.1; 3.0] (4,071)	4.5 [3.9; 5.2] (2,970)	5.4 [4.7; 6.2] (1,954)	6.6 [5.7; 7.5] (1,050)	7.3 [6.2; 8.4] (296)			
	>25 to ≤30	13,782	65 (59 - 73)	51/49	27.7	573	2.4 [2.1; 2.6] (10,549)	4.1 [3.7; 4.4] (7,807)	5.1 [4.7; 5.6] (5,154)	5.7 [5.2; 6.2] (2,801)	6.1 [5.6; 6.7] (737)			
	>30 to ≤35	10,653	62 (57 - 70)	47/53	32.0	558	3.1 [2.8; 3.5] (8,070)	4.9 [4.5; 5.4] (5,984)	6.1 [5.6; 6.7] (4,015)	7.0 [6.4; 7.6] (2,181)	7.8 [7.0; 8.6] (563)			
	>35 to ≤40	4,639	60 (55 - 67)	40/60	36.9	473	3.2 [2.7; 3.8] (3,505)	5.2 [4.6; 6.0] (2,563)	6.4 [5.6; 7.2] (1,674)	7.1 [6.2; 8.0] (899)	7.5 [6.5; 8.7] (219)			
	above 40	1,836	58 (53 - 63)	31/69	42.4	347	4.6 [3.7; 5.8] (1,369)	6.6 [5.5; 8.0] (1,013)	7.0 [5.8; 8.5] (697)	8.0 [6.6; 9.7] (401)	*11.1 [8.7; 14.0]* (92)			
Comorbidities	no or one comorbidity	11,835	61 (55 - 68)	49/51	27.5	580	2.5 [2.3; 2.9] (9,610)	4.4 [4.0; 4.8] (7,777)	5.5 [5.0; 5.9] (5,999)	6.2 [5.7; 6.8] (4,373)	6.7 [6.2; 7.3] (2,919)	7.5 [6.9; 8.2] (1,643)	7.9 [7.2; 8.7] (789)	8.5 [7.6; 9.6] (325)
	two to four comorbidities	29,856	64 (57 - 72)	44/56	29.7	619	2.9 [2.7; 3.1] (23,981)	4.6 [4.4; 4.9] (19,175)	5.7 [5.4; 6.0] (14,655)	6.6 [6.3; 7.0] (10,345)	7.3 [6.9; 7.7] (6,477)	8.0 [7.6; 8.5] (3,418)	8.3 [7.8; 8.8] (1,177)	8.6 [8.0; 9.2] (345)
	More than 4 comorbidities	10,184	67 (59 - 74)	39/61	32.5	524	3.4 [3.1; 3.8] (8,259)	5.4 [4.9; 5.8] (6,685)	6.3 [5.8; 6.8] (5,231)	7.0 [6.5; 7.6] (3,690)	7.5 [6.9; 8.1] (2,301)	8.1 [7.4; 8.8] (1,210)	9.1 [8.1; 10.2] (407)	*9.4 [8.3; 10.7]* (104)
Hospital size*	Hospitals with low annual case volumes	15,656	62 (56 - 70)	46/54	29.7	473	3.9 [3.6; 4.2] (12,489)	6.6 [6.1; 7.0] (10,050)	8.0 [7.5; 8.5] (7,763)	9.1 [8.6; 9.7] (5,574)	10.0 [9.5; 10.7] (3,513)	11.0 [10.4; 11.7] (1,789)	11.8 [10.9; 12.6] (710)	11.9 [11.1; 12.8] (160)
	Hospitals with average annual case volumes	17,259	64 (57 - 72)	45/55	29.4	124	2.7 [2.4; 3.0] (13,734)	4.5 [4.2; 4.9] (10,801)	5.6 [5.2; 6.0] (8,021)	6.3 [5.9; 6.8] (5,484)	6.8 [6.4; 7.3] (3,405)	7.8 [7.2; 8.4] (1,802)	8.5 [7.8; 9.3] (675)	9.3 [8.3; 10.5] (178)
	Hospitals with high annual case volumes	18,138	65 (58 - 73)	43/57	29.5	25	2.2 [2.0; 2.5] (14,874)	3.3 [3.0; 3.6] (12,089)	3.9 [3.6; 4.3] (9,514)	4.7 [4.3; 5.0] (6,916)	5.0 [4.6; 5.4] (4,513)	5.4 [4.9; 5.8] (2,545)	5.5 [5.0; 6.0] (942)	5.6 [5.1; 6.2] (427)
Patellofemoral arthroplasties		849	54 (48 - 61)	27/73	28.4	200	4.6 [3.3; 6.4] (677)	7.6 [5.8; 9.8] (521)	9.7 [7.6; 12.2] (394)	12.8 [10.3; 15.9] (279)	15.2 [12.2; 18.9] (177)	*15.8 [12.6; 19.6]* (89)		
Age group	≤ 54 years	429	48 (43 - 51)	25/75	28.7	151	5.1 [3.3; 7.9] (338)	8.9 [6.3; 12.3] (251)	10.5 [7.6; 14.3] (194)	*15.6 [11.7; 20.6]* (138)	*18.0 [13.5; 23.7]* (90)	*19.1 [14.3; 25.2]* (51)		
Sex	Female	616	54 (48 - 61)	0/100	28.3	169	5.1 [3.5; 7.3] (486)	7.9 [5.8; 10.5] (380)	9.2 [6.9; 12.1] (292)	12.4 [9.5; 16.0] (207)	*15.2 [11.7; 19.7]* (127)	*15.2 [11.7; 19.7]* (64)		
Comorbidities	two to four comorbidities	431	56 (49 - 63)	27/73	29.1	145	3.4 [2.0; 5.8] (350)	6.2 [4.1; 9.3] (266)	9.0 [6.3; 12.7] (198)	*13.9 [10.1; 18.9]* (135)	*16.4 [12.0; 22.2]* (84)			
Hospital size	Hospitals with low annual case volumes	356	53 (47 - 60)	33/67	27.9	129	5.4 [3.4; 8.5] (273)	7.7 [5.2; 11.4] (210)	10.1 [7.0; 14.4] (155)	*13.4 [9.5; 18.6]* (108)	*16.5 [11.7; 23.0]* (62)			

* The ratings are based on the hospitals' quality reports for 2021 and the corresponding IQTIG quality indicators listed there. For elective THAs and TKAs, the case number limits for classification as low case volume are up to 200, as medium volume 201 to 500 and for the high volume category as more than 500 corresponding procedures per year. For non-elective hip arthroplasties, the limits are specified as up to 50, 51 to 100, and more than 100; for unicondylar knee arthroplasties, the limits range up to 30, 31 to 100, and over 100 corresponding procedures per year.

Table 45 (continued)

5.3 Correlation between implant characteristics and arthroplasty outcome

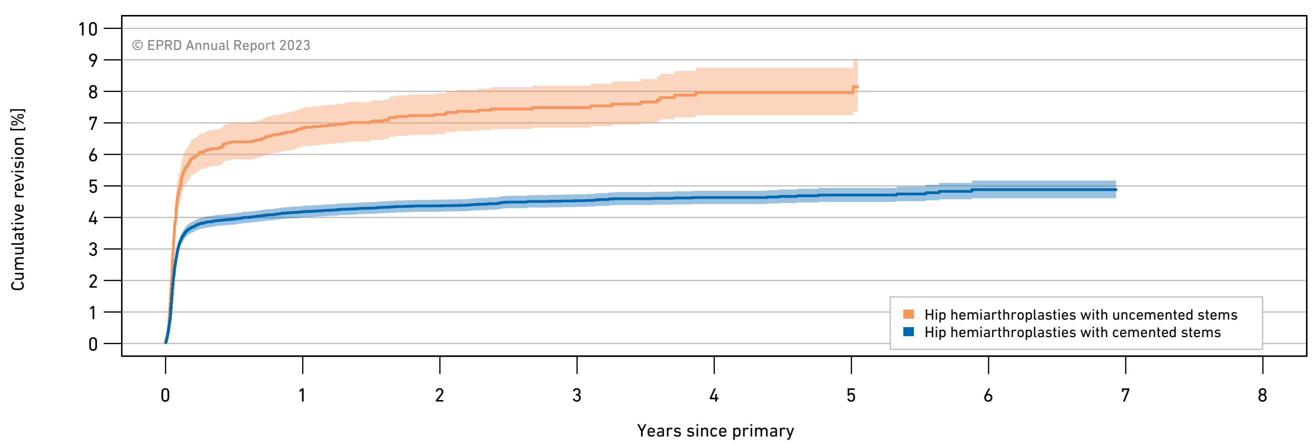
The following two subsections - divided into hip (Section 5.3.1) and knee (Section 5.3.2) arthroplasties - provide examples of some of the correlations between certain arthroplasty characteristics and short to medium-term outcomes. The tables at the end of each section detail the outcomes by implant characteristics.

5.3.1 Impact of implant characteristics in hip arthroplasties

For certain patient groups, the choice of femoral component fixation may decisively affect the arthroplasty outcome. While it makes practically no difference to the revision probability in younger patients whether the femoral component is cemented or not, this decision has a clear impact in older patients (compare with Figure 22 in Section 5.2). The overall revision probabilities observed across all age groups are lower for both elective and non-elective hip arthroplasties involving cemented femoral components (Figure 29).

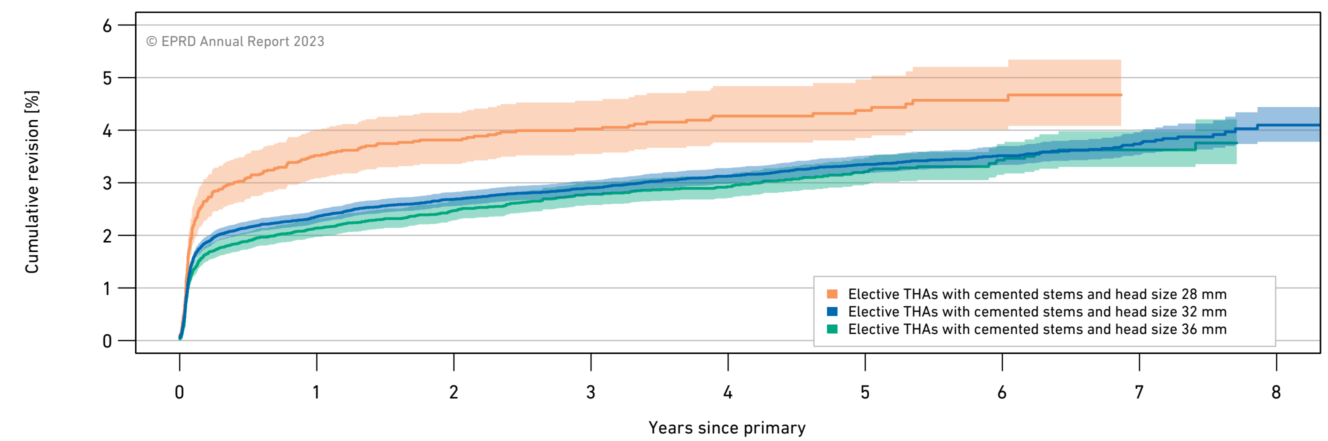
In the EPRD total hip arthroplasty still mainly relies on three different head sizes: 28 mm, 32 mm and 36 mm. For the period analysed, the revision probabilities are higher in both elective and non-elective operations with smaller head components (Figure 30 and Table 46 respectively). This is probably due to a lower risk of dislocation with larger heads.

The larger the head diameter, the lower the probability of revision. However, this risk increases with longer head-neck lengths (Figure 31). However, it should be noted that cases with longer head-neck lengths - e.g., to compensate for a shorter leg length with a more cranial centre of rotation - may have fundamentally worse initial conditions than other arthroplasties. For the period analysed for uncemented femoral components, the EPRD finds better overall outcomes for for short stems when compared to standard stems (Figure 32). It should be noted that short stems are mainly favoured in younger and healthier patients. Nevertheless, the probability of infection for short stems is significantly lower, which cannot be explained solely by differences between patient groups. [4] In terms of the overall outcome, however, there are major differences between the various short and standard stem systems and there are certainly standard stem components whose outcomes approach those of the best short-stems (also refer to Table 61 in the appendix).



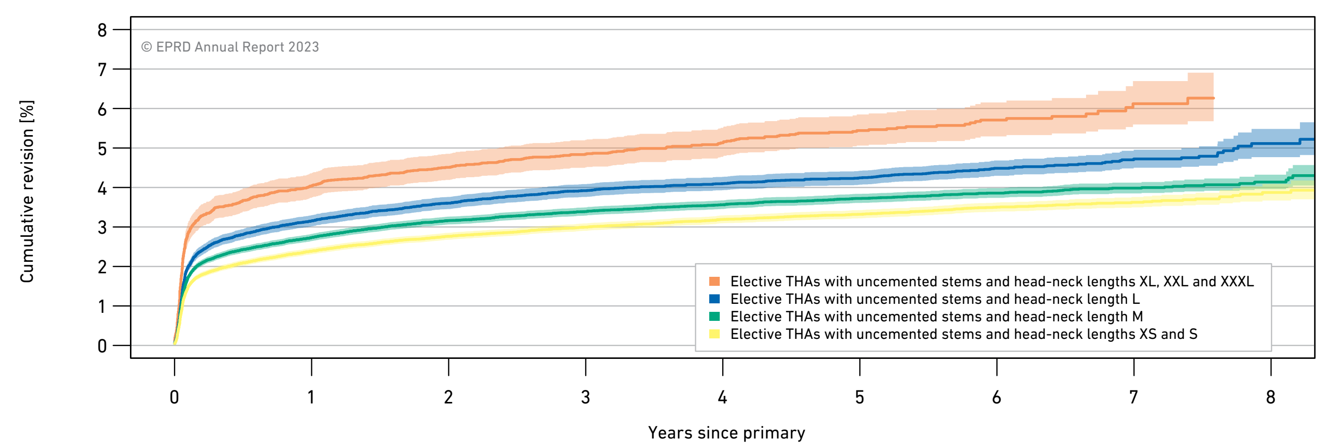
Numbers at risk	0	1	2	3	4	5	6	7	8
Uncemented	7,411	4,137	2,828	1,796	1,026	512			
Cemented	52,432	28,469	18,544	11,577	6,730	3,561	1,563		

Figure 29: Revision probabilities of uncemented and cemented partial hip arthroplasties *($p < 0.0001$)*



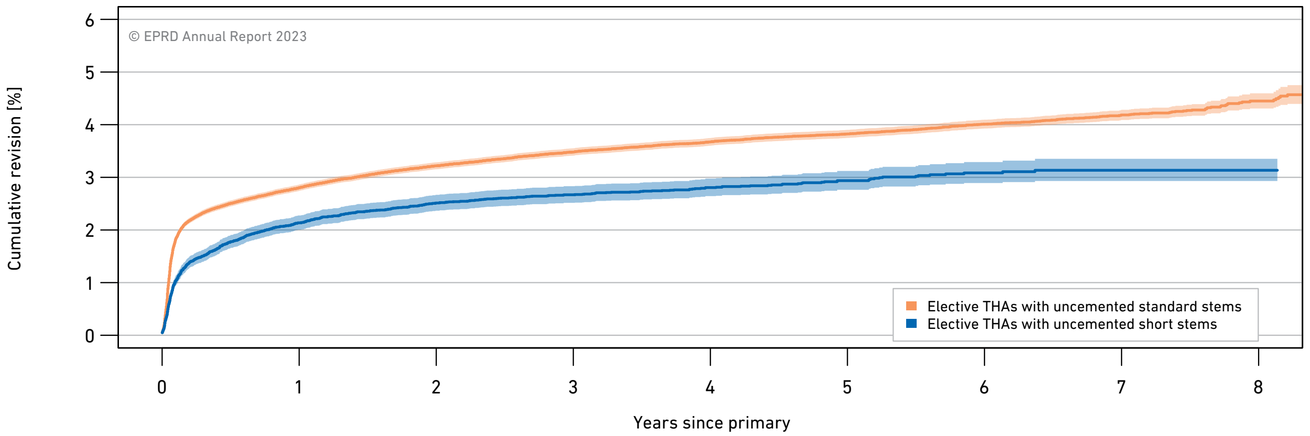
Numbers at risk	0	1	2	3	4	5	6	7	8
28 mm	6,417	4,983	3,983	3,155	2,348	1,648	968		
32 mm	60,287	49,150	40,461	32,059	23,452	15,861	9,227	4,006	1,103
36 mm	27,785	21,383	16,562	12,536	8,767	5,514	2,952	1,179	

Figure 30: Revision probabilities of elective total hip arthroplasties with cemented stems by head size *($p < 0.0001$)*



Numbers at risk	0	1	2	3	4	5	6	7	8
XL, XXL and XXXL	15,980	12,906	10,635	8,390	6,244	4,189	2,454	982	
L	60,366	49,462	40,997	32,955	24,835	17,070	10,066	4,249	1,159
M	128,725	105,045	86,098	68,003	49,680	33,206	18,885	7,609	2,143
XS and S	144,743	116,709	94,974	74,513	53,552	34,931	18,853	7,385	2,044

Figure 31: Revision probabilities of elective total hip arthroplasties with uncemented stems by head-neck lengths *($p < 0.0001$)*



Numbers at risk	0	1	2	3	4	5	6	7	8
Elective THAs with uncemented standard stems	297,366	243,128	200,416	158,779	116,210	77,660	43,868	17,912	4,987
Elective THAs with uncemented short stems	46,147	35,727	27,840	21,194	14,795	9,218	4,731	1,852	585

Figure 32: Revision probabilities of elective total hip arthroplasties with uncemented stems by stem type *(p < 0.0001)*

In brief:

- Arthroplasties with cemented femoral components have a lower revision probability. The reason for this is the better outcome in older patients.

Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	Revision probabilities after ... 1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Elective THAs with uncemented stems		352,072	67 (59 - 74)	41/59	27.8	732	2.7 [2.7; 2.8] (285,866)	3.2 [3.1; 3.2] (234,126)	3.4 [3.3; 3.5] (184,929)	3.6 [3.5; 3.7] (135,024)	3.8 [3.7; 3.8] (89,826)	3.9 [3.9; 4.0] (50,490)	4.1 [4.0; 4.2] (20,319)	4.3 [4.2; 4.5] (5,635)
Bearing	Ceramic / hXLPE	176,576	67 (59 - 74)	40/60	27.9	643	2.7 [2.6; 2.8] (142,721)	3.1 [3.1; 3.2] (116,369)	3.4 [3.3; 3.5] (91,387)	3.6 [3.5; 3.7] (66,459)	3.7 [3.6; 3.8] (44,156)	3.9 [3.8; 4.0] (24,852)	4.0 [3.9; 4.1] (9,788)	4.1 [4.0; 4.3] (2,638)
	Ceramic / hXLPE+antioxidant	66,907	67 (60 - 75)	41/59	28.0	400	2.7 [2.5; 2.8] (51,931)	3.0 [2.9; 3.1] (40,776)	3.1 [3.0; 3.3] (30,730)	3.2 [3.1; 3.4] (20,745)	3.3 [3.2; 3.5] (12,168)	3.4 [3.2; 3.6] (5,671)	3.4 [3.2; 3.6] (1,674)	3.4 [3.2; 3.6] (311)
	Ceramic / ceramic	37,919	62 (55 - 69)	43/57	27.7	383	2.1 [2.0; 2.3] (31,812)	2.5 [2.4; 2.7] (26,545)	2.7 [2.6; 2.9] (21,642)	2.9 [2.7; 3.1] (16,529)	3.0 [2.9; 3.2] (11,704)	3.2 [3.0; 3.4] (7,133)	3.3 [3.1; 3.6] (3,208)	3.5 [3.2; 3.8] (1,002)
	Ceramic / mXLPE	28,135	70 (63 - 77)	41/59	27.8	266	2.6 [2.5; 2.8] (23,696)	3.1 [2.9; 3.3] (20,091)	3.5 [3.3; 3.7] (16,102)	3.7 [3.5; 4.0] (12,210)	3.9 [3.7; 4.2] (8,568)	4.1 [3.9; 4.4] (4,911)	4.4 [4.1; 4.7] (2,053)	5.3 [4.7; 6.0] (612)
	Ceramic / PE	18,773	72 (63 - 78)	34/66	27.8	477	3.4 [3.1; 3.6] (16,313)	4.0 [3.8; 4.3] (14,349)	4.5 [4.2; 4.8] (12,282)	4.9 [4.6; 5.2] (9,838)	5.2 [4.8; 5.5] (7,323)	5.4 [5.1; 5.8] (4,663)	5.8 [5.4; 6.2] (2,236)	6.2 [5.7; 6.7] (738)
	Ceramicised metal / hXLPE	9,573	67 (59 - 74)	42/58	28.1	119	2.7 [2.4; 3.1] (7,691)	3.0 [2.7; 3.4] (6,053)	3.2 [2.9; 3.6] (4,589)	3.4 [3.0; 3.8] (3,003)	3.6 [3.2; 4.1] (1,598)	3.7 [3.2; 4.2] (634)	*5.7 [3.9; 8.3]* (120)	
	Metal / hXLPE	7,621	74 (65 - 79)	42/58	27.8	358	4.0 [3.6; 4.5] (6,265)	4.2 [3.8; 4.7] (5,230)	4.6 [4.1; 5.1] (4,200)	4.8 [4.3; 5.4] (3,170)	5.0 [4.5; 5.5] (2,186)	5.1 [4.6; 5.7] (1,271)	5.4 [4.8; 6.1] (541)	*5.4 [4.8; 6.1]* (120)
	Metal / mXLPE	2,503	75 (68 - 80)	36/64	27.6	149	4.7 [3.9; 5.6] (2,136)	5.4 [4.5; 6.3] (1,895)	5.6 [4.7; 6.6] (1,634)	5.8 [4.9; 6.8] (1,303)	5.8 [4.9; 6.8] (962)	5.9 [5.0; 7.0] (639)	6.1 [5.2; 7.3] (371)	*6.1 [5.2; 7.3]* (98)
	Metal / PE	1,627	77 (70 - 82)	31/69	27.0	312	6.3 [5.2; 7.6] (1,297)	6.5 [5.3; 7.8] (1,127)	6.7 [5.6; 8.1] (976)	6.9 [5.8; 8.3] (780)	7.5 [6.2; 9.0] (540)	7.7 [6.3; 9.2] (337)	8.1 [6.6; 9.9] (163)	
	Metal / hXLPE + antiox.	1,077	77 (70 - 81)	37/63	27.7	150	5.7 [4.5; 7.3] (856)	6.2 [4.9; 7.9] (723)	6.3 [5.0; 8.0] (588)	6.3 [5.0; 8.0] (436)	6.3 [5.0; 8.0] (266)	6.8 [5.3; 8.8] (156)	*6.8 [5.3; 8.8]* (66)	
	Ceramicised metal / PE	931	74 (66 - 79)	33/67	27.9	56	4.0 [2.9; 5.5] (770)	4.8 [3.6; 6.5] (662)	5.1 [3.9; 6.8] (563)	5.5 [4.1; 7.3] (395)	5.5 [4.1; 7.3] (219)	*5.5 [4.1; 7.3]* (101)		
Acetabular articulating surface	hXLPE	193,776	67 (59 - 74)	40/60	27.9	654	2.8 [2.7; 2.8] (156,681)	3.2 [3.1; 3.3] (127,655)	3.4 [3.3; 3.5] (100,179)	3.6 [3.5; 3.7] (72,635)	3.8 [3.7; 3.9] (47,943)	3.9 [3.8; 4.1] (26,760)	4.1 [4.0; 4.2] (10,449)	4.2 [4.1; 4.3] (2,773)
	hXLPE + antiox.	68,030	68 (60 - 75)	41/59	28.0	415	2.7 [2.6; 2.8] (52,825)	3.0 [2.9; 3.2] (41,535)	3.2 [3.0; 3.3] (31,349)	3.3 [3.2; 3.4] (21,202)	3.4 [3.2; 3.5] (12,448)	3.5 [3.3; 3.6] (5,831)	3.5 [3.3; 3.6] (1,741)	3.5 [3.3; 3.6] (324)
	Ceramic	37,923	62 (55 - 69)	43/57	27.7	384	2.1 [2.0; 2.3] (31,815)	2.5 [2.4; 2.7] (26,548)	2.8 [2.6; 2.9] (21,645)	2.9 [2.7; 3.1] (16,531)	3.0 [2.9; 3.2] (11,705)	3.2 [3.0; 3.4] (7,134)	3.3 [3.1; 3.6] (3,208)	3.5 [3.2; 3.8] (1,002)
	mXLPE	30,660	71 (63 - 77)	41/59	27.8	284	2.8 [2.6; 3.0] (25,853)	3.3 [3.1; 3.5] (22,003)	3.7 [3.4; 3.9] (17,748)	3.9 [3.7; 4.2] (13,515)	4.0 [3.8; 4.3] (9,530)	4.3 [4.0; 4.5] (5,550)	4.5 [4.2; 4.8] (2,424)	5.3 [4.8; 6.0] (710)
	PE	21,332	72 (64 - 78)	34/66	27.7	534	3.6 [3.4; 3.9] (18,381)	4.3 [4.0; 4.5] (16,139)	4.7 [4.4; 5.0] (13,822)	5.1 [4.8; 5.4] (11,014)	5.4 [5.0; 5.7] (8,083)	5.6 [5.3; 6.0] (5,102)	6.0 [5.6; 6.4] (2,412)	6.4 [5.9; 6.9] (784)

Table 46: Revision probabilities for different types and characteristics of hip arthroplasties

							Revision probabilities after ...							
Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Head component	Ceramic	328,639	67 (59 - 74)	41/59	27.8	727	2.7 [2.6; 2.7] (266,768)	3.1 [3.0; 3.2] (218,368)	3.3 [3.3; 3.4] (172,323)	3.5 [3.5; 3.6] (125,904)	3.7 [3.6; 3.8] (84,033)	3.9 [3.8; 3.9] (47,340)	4.0 [3.9; 4.1] (19,044)	4.3 [4.1; 4.4] (5,343)
	Metal	12,851	75 (66 - 80)	39/61	27.7	548	4.6 [4.2; 4.9] (10,571)	4.9 [4.5; 5.3] (8,984)	5.2 [4.8; 5.6] (7,405)	5.4 [5.0; 5.8] (5,694)	5.6 [5.2; 6.0] (3,957)	5.7 [5.3; 6.2] (2,406)	6.0 [5.5; 6.6] (1,141)	6.1 [5.6; 6.7] (277)
	Ceramicised metal	10,575	67 (60 - 75)	41/59	28.1	122	2.9 [2.5; 3.2] (8,522)	3.2 [2.8; 3.5] (6,770)	3.4 [3.0; 3.8] (5,197)	3.6 [3.2; 4.0] (3,422)	3.8 [3.4; 4.2] (1,832)	3.8 [3.4; 4.3] (740)	*5.7 [4.1; 8.1]* (134)	
Head size	28 mm	18,103	67 (58 - 75)	11/89	27.3	622	3.3 [3.1; 3.6] (15,236)	3.7 [3.4; 4.0] (12,998)	4.0 [3.7; 4.3] (10,727)	4.2 [3.9; 4.5] (8,273)	4.3 [4.0; 4.6] (5,892)	4.4 [4.1; 4.7] (3,554)	4.6 [4.2; 4.9] (1,541)	4.8 [4.3; 5.4] (409)
	32 mm	188,791	67 (60 - 75)	32/68	27.7	729	2.8 [2.7; 2.8] (156,310)	3.2 [3.1; 3.3] (130,168)	3.4 [3.3; 3.5] (104,006)	3.6 [3.5; 3.7] (76,569)	3.8 [3.7; 3.9] (51,183)	4.0 [3.9; 4.1] (28,739)	4.1 [4.0; 4.3] (11,783)	4.4 [4.2; 4.6] (3,321)
	36 mm	144,529	67 (59 - 74)	56/44	28.1	654	2.6 [2.6; 2.7] (113,830)	3.1 [3.0; 3.2] (90,571)	3.3 [3.2; 3.4] (69,880)	3.5 [3.4; 3.6] (49,953)	3.7 [3.6; 3.8] (32,583)	3.8 [3.7; 4.0] (18,112)	4.0 [3.8; 4.1] (6,966)	4.2 [4.0; 4.4] (1,900)
Head-neck length	XS	2,671	70 (62 - 76)	31/69	27.3	79	2.7 [2.1; 3.4] (2,180)	3.2 [2.5; 3.9] (1,770)	3.5 [2.8; 4.3] (1,342)	3.7 [3.0; 4.5] (902)	3.8 [3.1; 4.7] (560)	4.0 [3.2; 4.9] (334)	*4.0 [3.2; 4.9]* (139)	
	S	142,072	68 (60 - 75)	33/67	27.5	717	2.4 [2.3; 2.5] (114,529)	2.8 [2.7; 2.8] (93,204)	3.0 [2.9; 3.1] (73,171)	3.2 [3.1; 3.3] (52,650)	3.3 [3.2; 3.4] (34,371)	3.5 [3.4; 3.6] (18,519)	3.6 [3.5; 3.8] (7,246)	3.9 [3.7; 4.1] (2,019)
	M	128,725	67 (59 - 74)	42/58	28.0	726	2.7 [2.6; 2.8] (105,045)	3.2 [3.1; 3.3] (86,098)	3.4 [3.3; 3.5] (68,003)	3.6 [3.5; 3.7] (49,680)	3.7 [3.6; 3.8] (33,206)	3.9 [3.7; 4.0] (18,885)	4.0 [3.8; 4.1] (7,609)	4.1 [4.0; 4.3] (2,143)
	L	60,366	66 (59 - 74)	50/50	28.4	720	3.2 [3.0; 3.3] (49,462)	3.6 [3.5; 3.8] (40,997)	3.9 [3.8; 4.1] (32,955)	4.1 [3.9; 4.3] (24,835)	4.2 [4.1; 4.4] (17,070)	4.5 [4.3; 4.7] (10,066)	4.7 [4.5; 5.0] (4,249)	5.1 [4.8; 5.5] (1,159)
	XL	14,508	66 (58 - 73)	57/43	28.7	639	3.9 [3.6; 4.3] (11,702)	4.4 [4.1; 4.7] (9,604)	4.7 [4.4; 5.1] (7,552)	5.0 [4.7; 5.4] (5,589)	5.4 [5.0; 5.8] (3,718)	5.6 [5.2; 6.1] (2,172)	6.1 [5.5; 6.7] (851)	6.1 [5.5; 6.7] (241)
	XXL	1,429	67 (59 - 74)	62/38	28.7	239	5.2 [4.2; 6.5] (1,166)	5.8 [4.7; 7.2] (993)	6.0 [4.9; 7.5] (802)	6.2 [5.0; 7.6] (622)	6.5 [5.3; 8.0] (440)	6.5 [5.3; 8.0] (258)	*6.9 [5.5; 8.6]* (118)	
Cup type	Modular cup	324,758	67 (59 - 74)	41/59	27.8	727	2.7 [2.7; 2.8] (264,408)	3.1 [3.1; 3.2] (217,068)	3.4 [3.3; 3.5] (171,878)	3.6 [3.5; 3.7] (125,758)	3.7 [3.7; 3.8] (83,839)	3.9 [3.8; 4.0] (47,264)	4.1 [4.0; 4.2] (19,024)	4.3 [4.2; 4.5] (5,252)
	Monobloc cup	22,700	68 (60 - 76)	39/61	27.8	498	2.3 [2.1; 2.5] (18,078)	2.6 [2.4; 2.9] (14,463)	2.8 [2.6; 3.1] (11,106)	3.0 [2.7; 3.2] (7,890)	3.2 [2.9; 3.4] (5,107)	3.3 [3.0; 3.6] (2,745)	3.4 [3.1; 3.7] (1,099)	3.5 [3.1; 4.0] (320)
	Revision cup	2,652	64 (55 - 73)	32/68	27.3	316	6.6 [5.7; 7.6] (2,090)	7.8 [6.8; 8.9] (1,729)	8.0 [7.0; 9.2] (1,360)	8.2 [7.2; 9.4] (1,018)	8.5 [7.4; 9.7] (675)	8.8 [7.7; 10.1] (375)	8.8 [7.7; 10.1] (156)	
	Dual mobility	1,881	73 (63 - 80)	38/62	27.6	270	5.8 [4.8; 7.0] (1,244)	6.6 [5.5; 7.9] (846)	6.9 [5.7; 8.2] (578)	7.0 [5.9; 8.5] (358)	7.0 [5.9; 8.5] (205)	*7.0 [5.9; 8.5]* (106)		
Acetabular component fixation	Uncemented	347,108	67 (59 - 74)	41/59	27.8	732	2.7 [2.7; 2.8] (282,004)	3.1 [3.1; 3.2] (230,973)	3.4 [3.3; 3.4] (182,465)	3.6 [3.5; 3.6] (133,209)	3.7 [3.6; 3.8] (88,617)	3.9 [3.8; 4.0] (49,846)	4.0 [4.0; 4.1] (20,072)	4.3 [4.2; 4.4] (5,573)
	Cemented	4,849	74 (66 - 80)	24/76	27.1	528	5.3 [4.7; 6.0] (3,772)	5.9 [5.3; 6.7] (3,092)	6.5 [5.8; 7.3] (2,427)	6.7 [6.0; 7.5] (1,791)	7.2 [6.4; 8.1] (1,194)	7.4 [6.6; 8.3] (637)	7.6 [6.7; 8.6] (246)	*8.4 [6.8; 10.4]* (62)
Stem type	Femoral stem with modular head	297,366	68 (60 - 75)	40/60	27.9	730	2.8 [2.7; 2.9] (243,128)	3.2 [3.2; 3.3] (200,416)	3.5 [3.4; 3.6] (158,779)	3.7 [3.6; 3.7] (116,210)	3.8 [3.7; 3.9] (77,660)	4.0 [3.9; 4.1] (43,868)	4.2 [4.1; 4.3] (17,912)	4.4 [4.3; 4.6] (4,987)
	Short stem	46,147	62 (56 - 69)	44/56	27.8	391	2.1 [2.0; 2.3] (35,727)	2.5 [2.4; 2.7] (27,840)	2.7 [2.5; 2.8] (21,194)	2.8 [2.6; 3.0] (14,795)	2.9 [2.8; 3.1] (9,218)	3.1 [2.9; 3.3] (4,731)	3.1 [2.9; 3.4] (1,852)	3.1 [2.9; 3.4] (585)
	Femoral neck prosthesis	5,469	60 (53 - 67)	46/54	27.5	120	2.2 [1.8; 2.6] (4,591)	2.6 [2.2; 3.0] (3,838)	2.9 [2.4; 3.4] (3,244)	3.1 [2.7; 3.7] (2,627)	3.3 [2.8; 3.9] (1,911)	3.3 [2.8; 3.9] (1,263)	3.6 [3.0; 4.4] (385)	
	Modular stem	1,734	69 (61 - 76)	38/62	27.7	109	4.3 [3.5; 5.4] (1,467)	4.9 [4.0; 6.1] (1,290)	5.3 [4.3; 6.5] (1,136)	5.7 [4.6; 6.9] (981)	5.9 [4.8; 7.2] (807)	6.3 [5.1; 7.6] (501)	*6.5 [5.3; 8.1]* (119)	
	Revision or tumour stem	1,295	74 (63 - 80)	38/62	26.4	374	11.7 [10.0; 13.6] (917)	13.2 [11.3; 15.2] (709)	13.4 [11.6; 15.5] (543)	13.6 [11.7; 15.7] (382)	14.8 [12.7; 17.2] (213)	*14.8 [12.7; 17.2]* (120)	*14.8 [12.7; 17.2]* (51)	
Reconstruction shell	Without reconstruction shell	351,626	67 (59 - 74)	41/59	27.8	732	2.7 [2.7; 2.8] (285,528)	3.1 [3.1; 3.2] (233,837)	3.4 [3.3; 3.5] (184,697)	3.6 [3.5; 3.7] (134,852)	3.7 [3.7; 3.8] (89,716)	3.9 [3.8; 4.0] (50,431)	4.1 [4.0; 4.2] (20,299)	4.3 [4.2; 4.5] (5,628)
	With reconstruction shell	446	69 (59 - 78)	36/64	26.1	192	10.0 [7.5; 13.2] (338)	11.4 [8.7; 14.8] (289)	12.7 [9.8; 16.3] (232)	13.1 [10.1; 16.8] (172)	*14.1 [10.9; 18.2]* (110)	*14.1 [10.9; 18.2]* (59)		
Fixation	Uncemented	347,108	67 (59 - 74)	41/59	27.8	732	2.7 [2.7; 2.8] (282,004)	3.1 [3.1; 3.2] (230,973)	3.4 [3.3; 3.4] (182,465)	3.6 [3.5; 3.6] (133,209)	3.7 [3.6; 3.8] (88,617)	3.9 [3.8; 4.0] (49,846)	4.0 [4.0; 4.1] (20,072)	4.3 [4.2; 4.4] (5,573)
	Reverse-hybrid	4,849	74 (66 - 80)	24/76	27.1	528	5.3 [4.7; 6.0] (3,772)	5.9 [5.3; 6.7] (3,092)	6.5 [5.8; 7.3] (2,427)	6.7 [6.0; 7.5] (1,791)	7.2 [6.4; 8.1] (1,194)	7.4 [6.6; 8.3] (637)	7.6 [6.7; 8.6] (246)	*8.4 [6.8; 10.4]* (62)

Table 46 (continued)

Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	Revision probabilities after ... 1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Elective THAs with cemented stems		95,671	79 (75 - 82)	25/75	26.6	707	2.4 [2.3; 2.5] (76,478)	2.7 [2.6; 2.8] (61,798)	2.9 [2.8; 3.1] (48,399)	3.1 [3.0; 3.3] (35,032)	3.4 [3.2; 3.5] (23,302)	3.6 [3.4; 3.7] (13,287)	3.8 [3.6; 4.0] (5,657)	4.1 [3.8; 4.3] (1,544)
Bearing	Ceramic / hXLPE	45,192	78 (74 - 82)	25/75	26.6	542	2.1 [1.9; 2.2] (35,431)	2.4 [2.2; 2.5] (27,945)	2.6 [2.5; 2.8] (21,334)	2.8 [2.6; 3.0] (14,975)	3.0 [2.8; 3.2] (9,685)	3.2 [3.0; 3.4] (5,293)	3.4 [3.1; 3.7] (2,231)	3.7 [3.3; 4.1] (700)
	Ceramic / PE	12,164	79 (75 - 82)	23/77	26.6	461	2.3 [2.1; 2.6] (10,469)	2.7 [2.5; 3.1] (9,068)	3.0 [2.7; 3.3] (7,653)	3.1 [2.8; 3.5] (6,086)	3.2 [2.9; 3.6] (4,507)	3.5 [3.2; 3.9] (2,861)	3.6 [3.2; 4.0] (1,335)	3.9 [3.4; 4.5] (391)
	Metal / hXLPE	10,376	80 (77 - 83)	27/73	26.6	362	2.8 [2.5; 3.2] (8,405)	3.1 [2.8; 3.4] (6,855)	3.2 [2.9; 3.6] (5,351)	3.4 [3.0; 3.8] (3,874)	3.6 [3.2; 4.1] (2,444)	4.0 [3.5; 4.5] (1,318)	4.1 [3.6; 4.7] (543)	*4.1 [3.6; 4.7]* (110)
	Ceramic / hXLPE+antioxidant	8,350	79 (74 - 83)	21/79	26.6	270	2.2 [1.9; 2.5] (6,357)	2.4 [2.1; 2.8] (4,956)	2.8 [2.4; 3.2] (3,696)	2.9 [2.6; 3.4] (2,342)	3.3 [2.8; 3.8] (1,340)	3.4 [2.9; 4.0] (627)	3.6 [3.0; 4.3] (234)	
	Metal / PE	7,420	81 (77 - 84)	25/75	26.2	424	3.4 [3.0; 3.9] (6,013)	3.8 [3.4; 4.3] (5,020)	4.1 [3.6; 4.6] (4,082)	4.3 [3.9; 4.9] (3,072)	4.5 [4.0; 5.1] (2,130)	4.6 [4.1; 5.2] (1,282)	4.9 [4.3; 5.6] (575)	*6.1 [4.8; 7.9]* (115)
	Ceramic / mXLPE	5,189	79 (74 - 82)	22/78	26.3	188	2.6 [2.2; 3.1] (4,129)	3.1 [2.6; 3.6] (3,277)	3.3 [2.8; 3.9] (2,487)	3.7 [3.1; 4.3] (1,817)	4.1 [3.5; 4.8] (1,258)	4.1 [3.5; 4.9] (808)	4.3 [3.6; 5.0] (348)	*4.3 [3.6; 5.0]* (92)
	Metal / mXLPE	2,155	81 (78 - 85)	24/76	26.0	162	3.8 [3.1; 4.7] (1,786)	4.1 [3.3; 5.1] (1,487)	4.5 [3.7; 5.6] (1,166)	5.1 [4.2; 6.2] (886)	5.8 [4.7; 7.0] (613)	5.8 [4.7; 7.0] (374)	6.6 [5.1; 8.4] (156)	
	Ceramic / ceramic	1,560	76 (70 - 80)	24/76	26.9	123	1.4 [0.9; 2.1] (1,326)	1.6 [1.1; 2.4] (1,171)	1.7 [1.2; 2.5] (1,024)	2.1 [1.5; 3.1] (824)	2.7 [1.9; 3.8] (629)	3.1 [2.2; 4.4] (399)	*3.4 [2.3; 4.9]* (145)	
	Metal / hXLPE+antioxidant	1,106	80 (77 - 84)	27/73	26.3	145	3.3 [2.4; 4.6] (826)	3.8 [2.8; 5.2] (636)	4.0 [3.0; 5.5] (479)	4.3 [3.1; 5.8] (343)	4.3 [3.1; 5.8] (214)	*4.3 [3.1; 5.8]* (113)		
	Metal / Metal	763	56 (51 - 61)	93/7	28.0	31	0.9 [0.4; 1.9] (683)	1.5 [0.9; 2.8] (606)	2.3 [1.4; 3.7] (518)	2.7 [1.6; 4.3] (391)	2.7 [1.6; 4.3] (244)	*2.7 [1.6; 4.3]* (129)		
	Ceramicised metal / hXLPE	737	79 (75 - 83)	24/76	26.7	54	2.3 [1.4; 3.7] (519)	2.5 [1.5; 4.0] (361)	2.5 [1.5; 4.0] (285)	3.3 [2.0; 5.4] (198)	*3.3 [2.0; 5.4]* (93)			
	Ceramicised metal / PE	375	80 (77 - 83)	20/80	26.4	34	2.5 [1.3; 4.7] (310)	3.2 [1.8; 5.7] (238)	3.2 [1.8; 5.7] (195)	*3.2 [1.8; 5.7]* (145)	*3.2 [1.8; 5.7]* (104)			
Acetabular articulating surface	hXLPE	56,305	79 (75 - 82)	25/75	26.6	578	2.2 [2.1; 2.3] (44,355)	2.5 [2.4; 2.7] (35,161)	2.7 [2.6; 2.9] (26,970)	2.9 [2.8; 3.1] (19,047)	3.1 [3.0; 3.3] (12,222)	3.3 [3.1; 3.5] (6,634)	3.5 [3.3; 3.8] (2,781)	3.8 [3.5; 4.1] (813)
	PE	19,960	80 (76 - 83)	24/76	26.4	551	2.7 [2.5; 3.0] (16,793)	3.1 [2.9; 3.4] (14,327)	3.4 [3.1; 3.7] (11,931)	3.6 [3.3; 3.9] (9,304)	3.7 [3.4; 4.0] (6,742)	3.9 [3.6; 4.2] (4,183)	4.0 [3.7; 4.4] (1,918)	4.6 [4.1; 5.2] (506)
	hXLPE + antiox.	9,466	79 (75 - 83)	22/78	26.6	306	2.3 [2.1; 2.7] (7,189)	2.6 [2.3; 2.9] (5,596)	2.9 [2.6; 3.3] (4,178)	3.1 [2.7; 3.5] (2,687)	3.4 [3.0; 3.9] (1,554)	3.5 [3.0; 4.1] (740)	3.8 [3.2; 4.6] (268)	*3.8 [3.2; 4.6]* (55)
	mXLPE	7,345	79 (75 - 83)	23/77	26.2	236	3.0 [2.6; 3.4] (5,916)	3.4 [3.0; 3.8] (4,765)	3.7 [3.3; 4.2] (3,653)	4.1 [3.6; 4.6] (2,703)	4.6 [4.0; 5.2] (1,871)	4.6 [4.1; 5.3] (1,182)	5.0 [4.3; 5.7] (504)	*5.0 [4.3; 5.7]* (141)
	Ceramic	1,560	76 (70 - 80)	24/76	26.9	123	1.4 [0.9; 2.1] (1,326)	1.6 [1.1; 2.4] (1,171)	1.7 [1.2; 2.5] (1,024)	2.1 [1.5; 3.1] (824)	2.7 [1.9; 3.8] (629)	3.1 [2.2; 4.4] (399)	*3.4 [2.3; 4.9]* (145)	
	Metal	763	56 (51 - 61)	93/7	28.0	31	0.9 [0.4; 1.9] (683)	1.5 [0.9; 2.8] (606)	2.3 [1.4; 3.7] (518)	2.7 [1.6; 4.3] (391)	2.7 [1.6; 4.3] (244)	*2.7 [1.6; 4.3]* (129)		
Head component	Ceramic	72,513	78 (74 - 82)	24/76	26.6	682	2.2 [2.0; 2.3] (57,756)	2.5 [2.4; 2.6] (46,452)	2.7 [2.6; 2.9] (36,220)	2.9 [2.8; 3.1] (26,059)	3.1 [3.0; 3.3] (17,424)	3.3 [3.2; 3.5] (9,990)	3.5 [3.3; 3.7] (4,293)	3.7 [3.5; 4.0] (1,252)
	Metal	22,034	80 (77 - 84)	28/72	26.5	584	3.1 [2.8; 3.3] (17,885)	3.4 [3.1; 3.6] (14,741)	3.6 [3.4; 3.9] (11,695)	3.9 [3.6; 4.2] (8,627)	4.1 [3.9; 4.4] (5,680)	4.3 [4.0; 4.6] (3,234)	4.7 [4.3; 5.1] (1,349)	5.2 [4.5; 6.0] (289)
	Ceramicised metal	1,123	80 (76 - 83)	23/77	26.6	63	2.5 [1.7; 3.6] (836)	2.9 [2.0; 4.2] (604)	2.9 [2.0; 4.2] (483)	3.4 [2.4; 4.9] (345)	3.4 [2.4; 4.9] (197)	*3.4 [2.4; 4.9]* (62)		
Head size	28 mm	6,417	79 (75 - 83)	14/86	26.1	490	3.5 [3.1; 4.0] (4,983)	3.8 [3.4; 4.3] (3,983)	4.0 [3.5; 4.6] (3,155)	4.3 [3.8; 4.8] (2,348)	4.4 [3.9; 5.0] (1,648)	4.6 [4.0; 5.2] (968)	4.7 [4.1; 5.3] (428)	*5.0 [4.2; 5.9]* (96)
	32 mm	60,287	79 (75 - 82)	20/80	26.5	686	2.4 [2.2; 2.5] (49,150)	2.7 [2.6; 2.8] (40,461)	2.9 [2.8; 3.0] (32,059)	3.1 [3.0; 3.3] (23,452)	3.3 [3.2; 3.5] (15,861)	3.5 [3.3; 3.7] (9,227)	3.7 [3.5; 4.0] (4,006)	4.1 [3.8; 4.4] (1,103)
	36 mm	27,785	79 (75 - 82)	36/64	26.8	555	2.1 [2.0; 2.3] (21,383)	2.5 [2.3; 2.7] (16,562)	2.8 [2.6; 3.0] (12,536)	2.9 [2.7; 3.2] (8,767)	3.2 [3.0; 3.5] (5,514)	3.4 [3.2; 3.7] (2,952)	3.6 [3.3; 4.0] (1,179)	3.8 [3.4; 4.2] (339)
Head-neck length	XS	457	80 (76 - 83)	19/81	26.0	50	1.3 [0.6; 2.9] (395)	1.8 [0.9; 3.6] (334)	1.8 [0.9; 3.6] (265)	1.8 [0.9; 3.6] (192)	*2.5 [1.2; 5.2]* (113)	*2.5 [1.2; 5.2]* (56)		
	S	32,434	79 (75 - 83)	17/83	26.2	657	2.0 [1.8; 2.1] (25,468)	2.3 [2.1; 2.4] (20,140)	2.5 [2.3; 2.6] (15,380)	2.7 [2.5; 2.9] (10,736)	2.9 [2.6; 3.1] (7,042)	3.0 [2.8; 3.3] (3,876)	3.3 [3.0; 3.6] (1,623)	3.3 [3.0; 3.6] (456)
	M	37,186	79 (75 - 82)	24/76	26.6	679	2.2 [2.0; 2.3] (29,933)	2.5 [2.3; 2.7] (24,203)	2.8 [2.6; 2.9] (19,031)	2.9 [2.8; 3.1] (13,980)	3.1 [2.9; 3.3] (9,429)	3.3 [3.1; 3.5] (5,488)	3.5 [3.2; 3.8] (2,333)	3.8 [3.4; 4.3] (687)

Table 46 (continued)

Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	Revision probabilities after ... 1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Head-neck length	L	17,938	79 (75 - 82)	32/68	27.0	635	2.9 [2.7; 3.2] (14,581)	3.3 [3.0; 3.6] (12,109)	3.5 [3.3; 3.8] (9,762)	3.8 [3.5; 4.1] (7,275)	4.0 [3.7; 4.3] (4,916)	4.2 [3.8; 4.5] (2,837)	4.3 [4.0; 4.7] (1,208)	4.8 [4.2; 5.6] (303)
	XL	3,514	79 (74 - 82)	41/59	27.2	459	3.8 [3.2; 4.5] (2,809)	4.4 [3.7; 5.1] (2,279)	4.8 [4.1; 5.6] (1,801)	5.2 [4.5; 6.1] (1,312)	6.2 [5.2; 7.2] (834)	6.2 [5.2; 7.2] (458)	6.4 [5.4; 7.6] (184)	
	XXL	392	79 (74 - 82)	43/57	27.2	149	5.6 [3.7; 8.4] (319)	5.9 [3.9; 8.8] (283)	6.6 [4.4; 9.7] (240)	6.6 [4.4; 9.7] (197)	*6.6 [4.4; 9.7]* (148)	*6.6 [4.4; 9.7]* (87)		
Cup type	Modular cup	69,362	79 (75 - 82)	25/75	26.6	685	2.2 [2.1; 2.3] (54,890)	2.5 [2.4; 2.6] (43,825)	2.7 [2.6; 2.9] (33,869)	3.0 [2.8; 3.1] (24,146)	3.2 [3.0; 3.3] (15,813)	3.3 [3.2; 3.5] (8,763)	3.6 [3.4; 3.8] (3,627)	3.9 [3.6; 4.2] (953)
	Monobloc cup	22,181	80 (76 - 84)	24/76	26.5	569	2.3 [2.1; 2.5] (18,787)	2.7 [2.5; 2.9] (15,990)	3.0 [2.8; 3.2] (13,137)	3.2 [2.9; 3.4] (9,972)	3.4 [3.2; 3.7] (6,965)	3.6 [3.3; 3.9] (4,251)	3.8 [3.5; 4.1] (1,921)	4.1 [3.6; 4.6] (567)
	Dual mobility	2,315	80 (75 - 84)	26/74	25.9	284	4.0 [3.2; 4.9] (1,503)	4.2 [3.4; 5.1] (977)	4.4 [3.6; 5.5] (627)	5.2 [4.1; 6.6] (369)	5.2 [4.1; 6.6] (198)	*5.7 [4.4; 7.5]* (85)		
	Revision cup	1,417	78 (73 - 83)	31/69	25.8	294	8.3 [7.0; 10.0] (969)	9.0 [7.6; 10.7] (733)	9.5 [8.0; 11.3] (541)	9.9 [8.3; 11.8] (379)	10.2 [8.5; 12.1] (216)	*10.2 [8.5; 12.1]* (126)	*10.2 [8.5; 12.1]* (59)	
	Resurfacing cup	377	55 (51 - 59)	99/1	27.5	23	1.1 [0.4; 2.8] (320)	1.8 [0.8; 4.0] (270)	2.2 [1.0; 4.5] (225)	2.2 [1.0; 4.5] (166)	*2.2 [1.0; 4.5]* (110)	*2.2 [1.0; 4.5]* (62)		
Acetabular component fixation	Uncemented	73,807	79 (74 - 82)	25/75	26.6	694	2.2 [2.1; 2.3] (58,516)	2.5 [2.4; 2.7] (46,851)	2.8 [2.6; 2.9] (36,304)	3.0 [2.9; 3.1] (25,917)	3.2 [3.1; 3.4] (16,969)	3.4 [3.2; 3.6] (9,421)	3.7 [3.5; 3.9] (3,907)	3.9 [3.7; 4.3] (1,005)
	Cemented	21,811	80 (77 - 84)	23/77	26.3	601	2.8 [2.6; 3.0] (17,932)	3.2 [3.0; 3.4] (14,933)	3.5 [3.2; 3.7] (12,087)	3.7 [3.4; 4.0] (9,113)	3.9 [3.6; 4.2] (6,332)	4.1 [3.8; 4.4] (3,866)	4.2 [3.9; 4.6] (1,750)	4.5 [4.1; 5.1] (539)
Stem type	Femoral stem with modular head	93,758	79 (75 - 82)	24/76	26.6	703	2.3 [2.2; 2.4] (75,143)	2.7 [2.6; 2.8] (60,713)	2.9 [2.8; 3.0] (47,527)	3.1 [3.0; 3.2] (34,415)	3.3 [3.2; 3.5] (22,935)	3.5 [3.4; 3.7] (13,105)	3.7 [3.5; 3.9] (5,607)	4.0 [3.8; 4.3] (1,537)
	Surface replacement	763	56 (51 - 61)	93/7	28.0	31	0.9 [0.4; 1.9] (683)	1.5 [0.9; 2.8] (606)	2.3 [1.4; 3.7] (518)	2.7 [1.6; 4.3] (391)	2.7 [1.6; 4.3] (244)	*2.7 [1.6; 4.3]* (129)		
	Revision or tumour stem	505	78 (70 - 83)	29/71	25.6	185	11.2 [8.7; 14.4] (291)	11.9 [9.2; 15.2] (219)	11.9 [9.2; 15.2] (163)	*13.7 [10.5; 17.8]* (104)	*14.8 [11.2; 19.5]* (62)			
	Modular stem	448	80 (77 - 83)	26/74	27.4	6	1.4 [0.6; 3.1] (328)	2.0 [1.0; 4.0] (260)	2.8 [1.5; 5.3] (191)	*2.8 [1.5; 5.3]* (122)	*2.8 [1.5; 5.3]* (61)			
Reconstruction shell	Without reconstruction shell	95,030	79 (75 - 82)	25/75	26.6	707	2.3 [2.2; 2.4] (76,069)	2.6 [2.5; 2.7] (61,498)	2.9 [2.8; 3.0] (48,184)	3.1 [3.0; 3.2] (34,879)	3.3 [3.2; 3.4] (23,214)	3.5 [3.4; 3.6] (13,234)	3.7 [3.5; 3.9] (5,632)	4.0 [3.8; 4.3] (1,536)
	With reconstruction shell	641	79 (74 - 84)	34/66	25.2	229	10.5 [8.3; 13.3] (409)	11.7 [9.3; 14.7] (300)	12.7 [10.1; 15.8] (215)	13.2 [10.5; 16.5] (153)	*13.2 [10.5; 16.5]* (88)	*13.2 [10.5; 16.5]* (53)		
Fixation	Hybrid	73,807	79 (74 - 82)	25/75	26.6	694	2.2 [2.1; 2.3] (58,516)	2.5 [2.4; 2.7] (46,851)	2.8 [2.6; 2.9] (36,304)	3.0 [2.9; 3.1] (25,917)	3.2 [3.1; 3.4] (16,969)	3.4 [3.2; 3.6] (9,421)	3.7 [3.5; 3.9] (3,907)	3.9 [3.7; 4.3] (1,005)
	Cemented	21,811	80 (77 - 84)	23/77	26.3	601	2.8 [2.6; 3.0] (17,932)	3.2 [3.0; 3.4] (14,933)	3.5 [3.2; 3.7] (12,087)	3.7 [3.4; 4.0] (9,113)	3.9 [3.6; 4.2] (6,332)	4.1 [3.8; 4.4] (3,866)	4.2 [3.9; 4.6] (1,750)	4.5 [4.1; 5.1] (539)
Non-elective THAs		29,083	76 (68 - 82)	30/70	24.7	677	6.1 [5.8; 6.3] (20,003)	6.6 [6.3; 6.9] (14,929)	7.0 [6.7; 7.3] (10,641)	7.4 [7.0; 7.7] (7,060)	7.6 [7.3; 8.0] (4,318)	7.9 [7.5; 8.3] (2,169)	8.4 [7.9; 9.0] (775)	*8.8 [7.9; 9.8]* (144)
Bearing	Ceramic / hXLPE	10,666	74 (66 - 80)	31/69	24.7	493	6.2 [5.7; 6.6] (7,356)	6.7 [6.2; 7.2] (5,374)	7.1 [6.6; 7.6] (3,731)	7.5 [6.9; 8.1] (2,387)	7.6 [7.0; 8.2] (1,402)	7.7 [7.1; 8.4] (721)	7.9 [7.2; 8.6] (242)	
	Ceramic / hXLPE+antioxidant	4,190	74 (67 - 80)	34/66	24.7	242	6.4 [5.7; 7.2] (2,787)	6.7 [6.0; 7.6] (1,977)	7.0 [6.2; 7.9] (1,333)	7.3 [6.4; 8.2] (824)	7.3 [6.4; 8.2] (444)	7.3 [6.4; 8.2] (211)	*8.2 [6.4; 10.4]* (76)	
	Metal / PE	3,238	81 (76 - 86)	26/74	24.3	323	6.2 [5.4; 7.1] (2,099)	7.0 [6.1; 8.0] (1,600)	7.4 [6.4; 8.4] (1,166)	7.8 [6.8; 9.0] (776)	8.1 [7.0; 9.3] (481)	8.4 [7.2; 9.8] (243)	*8.9 [7.4; 10.6]* (102)	
	Metal / hXLPE	3,171	79 (74 - 84)	26/74	24.5	280	5.1 [4.4; 6.0] (2,157)	5.7 [4.9; 6.6] (1,627)	6.2 [5.3; 7.2] (1,126)	6.4 [5.5; 7.4] (749)	6.7 [5.7; 7.8] (453)	7.3 [6.0; 8.9] (196)	*8.6 [6.2; 11.9]* (58)	
	Ceramic / PE	3,091	77 (71 - 83)	27/73	24.5	345	5.5 [4.7; 6.3] (2,245)	6.3 [5.4; 7.2] (1,748)	6.5 [5.7; 7.5] (1,338)	6.9 [5.9; 7.9] (972)	7.2 [6.2; 8.3] (655)	7.7 [6.5; 9.1] (349)	*8.6 [7.0; 10.6]* (136)	
	Ceramic / mXLPE	1,771	74 (66 - 79)	34/66	25.0	169	5.7 [4.7; 6.9] (1,338)	6.1 [5.0; 7.4] (1,076)	6.8 [5.7; 8.2] (818)	7.5 [6.2; 9.0] (580)	8.1 [6.7; 9.9] (364)	8.1 [6.7; 9.9] (181)	*8.1 [6.7; 9.9]* (73)	
	Ceramic / ceramic	1,037	69 (62 - 77)	32/68	24.8	143	5.4 [4.2; 7.0] (776)	5.8 [4.5; 7.5] (640)	6.2 [4.8; 8.0] (508)	6.2 [4.8; 8.0] (370)	7.1 [5.5; 9.2] (268)	7.1 [5.5; 9.2] (150)	*7.1 [5.5; 9.2]* (55)	
	Metal / mXLPE	938	80 (75 - 85)	29/71	24.8	120	9.0 [7.3; 11.1] (624)	9.3 [7.6; 11.5] (482)	10.0 [8.1; 12.3] (377)	10.8 [8.8; 13.3] (260)	10.8 [8.8; 13.3] (175)	*11.7 [9.2; 14.9]* (92)		
	Metal / hXLPE+antioxidant	445	79 (72 - 85)	32/68	24.7	97	6.5 [4.5; 9.4] (277)	6.5 [4.5; 9.4] (187)	*7.1 [4.9; 10.3]* (104)	*7.1 [4.9; 10.3]* (63)				

Table 46 (continued)

							Revision probabilities after ...							
Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Bearing	Ceramicised metal / hXLPE	373	72 (64 - 79)	35/65	25.0	43	6.5 [4.3; 9.6] (230)	*7.9 [5.4; 11.5]* (137)	*7.9 [5.4; 11.5]* (95)	*7.9 [5.4; 11.5]* (54)				
Acetabular articulating surface	hXLPE	14,210	75 (67 - 81)	30/70	24.6	525	5.9 [5.6; 6.4] (9,743)	6.5 [6.1; 7.0] (7,138)	6.9 [6.5; 7.4] (4,952)	7.3 [6.8; 7.8] (3,190)	7.4 [6.9; 7.9] (1,884)	7.7 [7.1; 8.2] (925)	8.0 [7.3; 8.9] (301)	*8.0 [7.3; 8.9]* (60)
	PE	6,418	79 (73 - 85)	26/74	24.4	451	5.8 [5.2; 6.4] (4,405)	6.6 [6.0; 7.3] (3,394)	6.9 [6.3; 7.6] (2,534)	7.3 [6.6; 8.1] (1,765)	7.6 [6.9; 8.4] (1,145)	8.0 [7.2; 9.0] (594)	8.8 [7.6; 10.1] (238)	
	hXLPE+antioxidant	4,640	75 (67 - 81)	33/67	24.7	265	6.4 [5.8; 7.2] (3,066)	6.8 [6.0; 7.6] (2,165)	7.0 [6.3; 7.9] (1,438)	7.3 [6.5; 8.2] (888)	7.3 [6.5; 8.2] (479)	7.3 [6.5; 8.2] (225)	*8.6 [6.8; 10.9]* (80)	
	mXLPE	2,710	76 (69 - 81)	32/68	25.0	202	6.8 [5.9; 7.9] (1,963)	7.2 [6.3; 8.3] (1,559)	7.9 [6.9; 9.1] (1,195)	8.6 [7.5; 9.9] (840)	9.1 [7.8; 10.4] (539)	9.4 [8.0; 10.9] (273)	*9.4 [8.0; 10.9]* (100)	
	Ceramic	1,039	69 (62 - 77)	32/68	24.8	144	5.4 [4.2; 7.0] (777)	5.8 [4.5; 7.5] (641)	6.2 [4.8; 7.9] (508)	6.2 [4.8; 7.9] (370)	7.1 [5.5; 9.2] (268)	7.1 [5.5; 9.2] (150)	*7.1 [5.5; 9.2]* (55)	
Head component	Ceramic	20,794	74 (67 - 80)	31/69	24.7	657	6.0 [5.7; 6.4] (14,533)	6.6 [6.2; 6.9] (10,835)	6.9 [6.6; 7.3] (7,736)	7.3 [6.9; 7.7] (5,136)	7.5 [7.1; 8.0] (3,135)	7.7 [7.3; 8.2] (1,613)	8.1 [7.5; 8.8] (583)	*8.1 [7.5; 8.8]* (108)
	Metal	7,821	80 (75 - 85)	27/73	24.5	474	6.1 [5.6; 6.7] (5,176)	6.7 [6.2; 7.3] (3,909)	7.2 [6.6; 7.9] (2,779)	7.6 [7.0; 8.3] (1,852)	7.8 [7.2; 8.6] (1,144)	8.4 [7.5; 9.3] (546)	9.2 [8.0; 10.6] (191)	
	Ceramicised metal	467	73 (64 - 80)	34/66	24.8	54	6.7 [4.8; 9.5] (293)	7.8 [5.6; 10.9] (184)	*7.8 [5.6; 10.9]* (125)	*7.8 [5.6; 10.9]* (71)				
Head size	28 mm	3,368	78 (70 - 84)	19/81	24.1	450	6.9 [6.0; 7.8] (2,155)	7.4 [6.5; 8.4] (1,599)	7.9 [7.0; 9.0] (1,133)	8.5 [7.4; 9.6] (729)	8.6 [7.5; 9.8] (455)	8.8 [7.7; 10.1] (241)	*9.5 [7.9; 11.4]* (113)	
	32 mm	15,945	76 (68 - 82)	25/75	24.5	638	6.0 [5.6; 6.4] (11,462)	6.5 [6.2; 7.0] (8,822)	6.9 [6.5; 7.3] (6,495)	7.2 [6.7; 7.6] (4,414)	7.4 [7.0; 7.9] (2,789)	7.8 [7.2; 8.3] (1,432)	8.2 [7.5; 8.9] (496)	*8.8 [7.5; 10.3]* (92)
	36 mm	9,437	75 (67 - 81)	44/56	24.9	489	6.0 [5.5; 6.5] (6,187)	6.5 [6.0; 7.1] (4,392)	7.0 [6.4; 7.6] (2,948)	7.5 [6.9; 8.1] (1,885)	7.7 [7.1; 8.4] (1,060)	7.8 [7.2; 8.6] (490)	8.5 [7.4; 9.7] (165)	
Head-neck length	S	7,777	76 (68 - 82)	24/76	24.3	585	5.3 [4.8; 5.8] (5,387)	5.7 [5.2; 6.2] (3,973)	6.0 [5.5; 6.6] (2,779)	6.4 [5.8; 7.0] (1,810)	6.6 [6.0; 7.3] (1,081)	6.7 [6.1; 7.5] (540)	6.9 [6.2; 7.8] (200)	
	M	11,006	76 (68 - 82)	28/72	24.6	632	5.6 [5.2; 6.1] (7,591)	6.1 [5.7; 6.6] (5,664)	6.6 [6.1; 7.1] (4,033)	7.2 [6.6; 7.7] (2,656)	7.2 [6.6; 7.7] (1,638)	7.5 [6.8; 8.2] (862)	8.1 [7.2; 9.1] (288)	*8.1 [7.2; 9.1]* (51)
	L	6,642	76 (68 - 81)	36/64	24.9	586	6.8 [6.2; 7.5] (4,627)	7.6 [6.9; 8.3] (3,533)	7.9 [7.2; 8.6] (2,601)	8.1 [7.4; 8.8] (1,791)	8.5 [7.7; 9.3] (1,147)	8.6 [7.8; 9.4] (571)	9.0 [8.0; 10.0] (209)	
	XL	2,007	75 (67 - 81)	46/54	25.1	434	7.7 [6.6; 9.0] (1,358)	8.3 [7.1; 9.6] (1,000)	8.9 [7.6; 10.3] (724)	9.0 [7.7; 10.5] (494)	9.5 [8.1; 11.2] (295)	*9.9 [8.3; 11.7]* (139)	*11.2 [8.5; 14.7]* (57)	
Cup type	Modular cup	20,750	74 (67 - 80)	32/68	24.8	655	6.4 [6.0; 6.7] (14,554)	6.9 [6.5; 7.2] (10,952)	7.2 [6.9; 7.6] (7,848)	7.6 [7.2; 8.0] (5,216)	7.9 [7.5; 8.4] (3,171)	8.1 [7.6; 8.5] (1,615)	8.6 [7.9; 9.2] (594)	*9.1 [8.0; 10.3]* (117)
	Monobloc cup	6,163	80 (74 - 85)	25/75	24.4	429	4.9 [4.4; 5.5] (4,210)	5.7 [5.1; 6.3] (3,164)	6.0 [5.4; 6.7] (2,284)	6.3 [5.6; 7.0] (1,564)	6.4 [5.7; 7.2] (1,012)	6.9 [6.0; 7.8] (508)	7.5 [6.4; 8.9] (166)	
	Dual mobility	1,814	81 (74 - 86)	32/68	24.3	229	6.0 [4.9; 7.2] (1,010)	6.5 [5.4; 7.8] (637)	6.9 [5.7; 8.4] (382)	7.6 [6.1; 9.4] (196)	*7.6 [6.1; 9.4]* (85)			
	Revision cup	353	79 (70 - 84)	29/71	24.7	122	8.4 [5.8; 12.0] (226)	9.8 [6.9; 13.9] (176)	*11.0 [7.8; 15.4]* (127)	*11.0 [7.8; 15.4]* (84)	*11.0 [7.8; 15.4]* (50)			
Acetabular component fixation	Uncemented	22,537	75 (67 - 80)	32/68	24.7	667	6.3 [6.0; 6.6] (15,735)	6.8 [6.5; 7.2] (11,789)	7.3 [6.9; 7.6] (8,451)	7.7 [7.3; 8.1] (5,628)	7.9 [7.5; 8.4] (3,430)	8.1 [7.7; 8.5] (1,738)	8.6 [8.0; 9.3] (631)	*9.1 [8.1; 10.3]* (123)
	Cemented	6,541	81 (75 - 86)	25/75	24.4	481	5.2 [4.6; 5.7] (4,265)	5.8 [5.3; 6.5] (3,139)	6.1 [5.5; 6.8] (2,189)	6.3 [5.7; 7.0] (1,431)	6.5 [5.8; 7.2] (887)	7.3 [6.3; 8.4] (431)	*7.6 [6.5; 8.8]* (144)	
Stem type	Femoral stem with modular head	27,909	76 (68 - 82)	30/70	24.7	674	6.0 [5.7; 6.3] (19,239)	6.5 [6.2; 6.8] (14,383)	6.9 [6.6; 7.2] (10,249)	7.3 [7.0; 7.7] (6,801)	7.6 [7.2; 7.9] (4,166)	7.8 [7.4; 8.3] (2,093)	8.4 [7.8; 9.0] (747)	*8.8 [7.8; 9.8]* (137)
	Revision or tumour stem	579	80 (72 - 86)	28/72	25.2	254	10.8 [8.4; 13.8] (331)	12.0 [9.4; 15.2] (240)	12.4 [9.7; 15.7] (183)	*12.4 [9.7; 15.7]* (124)	*12.4 [9.7; 15.7]* (72)			
	Short stem	396	67 (61 - 77)	36/64	24.2	76	5.9 [3.9; 8.8] (284)	5.9 [3.9; 8.8] (199)	*6.4 [4.3; 9.6]* (138)	*6.4 [4.3; 9.6]* (90)	*6.4 [4.3; 9.6]* (50)			
Reconstruction shell	Without reconstruction shell	28,986	76 (68 - 82)	30/70	24.7	677	6.0 [5.8; 6.3] (19,939)	6.6 [6.3; 6.9] (14,884)	7.0 [6.7; 7.3] (10,614)	7.3 [7.0; 7.7] (7,041)	7.6 [7.2; 8.0] (4,306)	7.8 [7.4; 8.2] (2,163)	8.3 [7.8; 8.9] (772)	*8.7 [7.8; 9.8]* (143)
Fixation	Uncemented	13,167	71 (64 - 78)	35/65	24.8	634	7.2 [6.7; 7.6] (9,304)	7.7 [7.2; 8.2] (7,087)	8.0 [7.6; 8.5] (5,196)	8.5 [7.9; 9.0] (3,520)	8.7 [8.2; 9.3] (2,169)	8.9 [8.3; 9.5] (1,117)	9.5 [8.7; 10.4] (408)	*9.5 [8.7; 10.4]* (74)
	Hybrid	9,361	78 (72 - 82)	28/72	24.6	573	5.1 [4.7; 5.6] (6,426)	5.6 [5.1; 6.1] (4,698)	6.2 [5.6; 6.7] (3,253)	6.6 [6.0; 7.2] (2,106)	6.8 [6.2; 7.5] (1,259)	7.0 [6.3; 7.7] (620)	7.4 [6.5; 8.4] (223)	

Table 46 (continued)

Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	Revision probabilities after … 1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Fixation	Cemented	5,791	81 (76 - 86)	24/76	24.3	445	4.6 [4.0; 5.2] (3,796)	5.2 [4.6; 5.9] (2,792)	5.5 [4.9; 6.2] (1,954)	5.7 [5.0; 6.4] (1,270)	5.8 [5.1; 6.5] (782)	6.7 [5.6; 7.9] (382)	*7.0 [5.8; 8.4]* (122)	
	Reverse-hybrid	745	77 (67 - 83)	28/72	24.7	256	9.7 [7.7; 12.1] (465)	10.6 [8.5; 13.2] (344)	11.3 [9.0; 14.1] (234)	11.3 [9.0; 14.1] (160)	*11.9 [9.4; 14.9]* (104)			
Hip hemiarthroplasties		59,874	84 (80 - 89)	29/71	24.2	596	4.5 [4.3; 4.7] (32,614)	4.7 [4.6; 4.9] (21,378)	4.9 [4.7; 5.1] (13,376)	5.1 [4.9; 5.3] (7,759)	5.1 [4.9; 5.3] (4,075)	5.4 [5.1; 5.7] (1,775)	5.4 [5.1; 5.7] (515)	*5.4 [5.1; 5.7]* (69)
Head component	Metal	56,985	84 (80 - 89)	29/71	24.2	586	4.5 [4.3; 4.7] (31,003)	4.7 [4.5; 4.9] (20,271)	4.8 [4.7; 5.1] (12,634)	5.0 [4.8; 5.2] (7,310)	5.1 [4.8; 5.3] (3,827)	5.3 [5.0; 5.6] (1,678)	5.3 [5.0; 5.6] (502)	*5.3 [5.0; 5.6]* (67)
	Ceramic	2,057	84 (79 - 89)	29/71	24.5	258	5.5 [4.6; 6.7] (1,181)	5.9 [4.9; 7.1] (823)	6.2 [5.1; 7.5] (528)	6.9 [5.6; 8.4] (312)	6.9 [5.6; 8.4] (166)	*7.8 [5.8; 10.5]* (64)		
	Ceramicised metal	384	84 (80 - 89)	30/70	24.5	30	4.6 [2.8; 7.5] (160)	*4.6 [2.8; 7.5]* (68)						
Head size	28 mm	56,119	84 (80 - 89)	28/72	24.2	589	4.5 [4.3; 4.7] (30,483)	4.7 [4.5; 4.9] (19,849)	4.9 [4.7; 5.1] (12,414)	5.0 [4.8; 5.2] (7,206)	5.1 [4.8; 5.3] (3,762)	5.3 [5.0; 5.6] (1,640)	5.3 [5.0; 5.6] (473)	*5.3 [5.0; 5.6]* (62)
	32 mm	2,379	83 (79 - 88)	51/49	24.7	98	5.3 [4.4; 6.3] (1,438)	5.7 [4.8; 6.8] (1,096)	5.9 [4.9; 7.0] (718)	6.2 [5.2; 7.4] (423)	6.5 [5.3; 7.8] (238)	*6.5 [5.3; 7.8]* (110)		
Head-neck length	XS	419	84 (80 - 90)	32/68	24.0	28	3.1 [1.8; 5.4] (276)	3.1 [1.8; 5.4] (203)	*3.1 [1.8; 5.4]* (118)	*3.1 [1.8; 5.4]* (75)				
	S	20,354	84 (80 - 89)	25/75	24.2	519	4.3 [4.0; 4.6] (10,951)	4.5 [4.2; 4.8] (6,949)	4.6 [4.3; 5.0] (4,175)	4.7 [4.4; 5.1] (2,332)	4.9 [4.5; 5.3] (1,173)	5.1 [4.6; 5.6] (499)	*5.1 [4.6; 5.6]* (139)	
	M	26,077	84 (80 - 89)	30/70	24.2	545	4.3 [4.0; 4.6] (14,338)	4.5 [4.2; 4.8] (9,450)	4.6 [4.3; 4.9] (6,014)	4.7 [4.4; 5.0] (3,532)	4.7 [4.4; 5.0] (1,938)	4.9 [4.6; 5.3] (873)	4.9 [4.6; 5.3] (253)	
	L	5,576	84 (80 - 89)	35/65	24.5	478	5.2 [4.6; 5.8] (2,940)	5.5 [4.9; 6.2] (1,989)	5.7 [5.0; 6.4] (1,355)	5.8 [5.2; 6.6] (884)	6.0 [5.2; 6.8] (525)	6.3 [5.4; 7.3] (223)	*6.3 [5.4; 7.3]* (73)	
	XL	880	84 (79 - 89)	35/65	24.8	256	6.7 [5.1; 8.7] (492)	7.6 [5.8; 9.8] (330)	8.3 [6.3; 10.7] (223)	*9.1 [7.0; 11.9]* (137)	*9.1 [7.0; 11.9]* (92)			
Stem type	Femoral stem with modular head	58,827	84 (80 - 89)	29/71	24.2	590	4.4 [4.3; 4.6] (32,121)	4.7 [4.5; 4.8] (21,062)	4.8 [4.6; 5.0] (13,184)	5.0 [4.8; 5.2] (7,647)	5.0 [4.8; 5.3] (4,024)	5.3 [5.0; 5.6] (1,751)	5.3 [5.0; 5.6] (507)	*5.3 [5.0; 5.6]* (68)
	Revision or tumour stem	780	83 (75 - 88)	29/71	25.3	229	9.9 [7.9; 12.4] (378)	10.5 [8.4; 13.2] (252)	10.5 [8.4; 13.2] (156)	*10.5 [8.4; 13.2]* (94)				
Reconstruction shell	Without reconstruction shell	59,874	84 (80 - 89)	29/71	24.2	596	4.5 [4.3; 4.7] (32,614)	4.7 [4.6; 4.9] (21,378)	4.9 [4.7; 5.1] (13,376)	5.1 [4.9; 5.3] (7,759)	5.1 [4.9; 5.3] (4,075)	5.4 [5.1; 5.7] (1,775)	5.4 [5.1; 5.7] (515)	*5.4 [5.1; 5.7]* (69)
Fixation	Cemented	52,432	85 (80 - 89)	28/72	24.2	580	4.2 [4.0; 4.4] (28,469)	4.4 [4.2; 4.6] (18,544)	4.5 [4.3; 4.7] (11,577)	4.6 [4.4; 4.8] (6,730)	4.7 [4.5; 4.9] (3,561)	4.9 [4.6; 5.2] (1,563)	4.9 [4.6; 5.2] (456)	*4.9 [4.6; 5.2]* (62)
	Uncemented	7,411	83 (78 - 88)	34/66	24.6	392	6.8 [6.3; 7.5] (4,137)	7.3 [6.6; 7.9] (2,828)	7.5 [6.8; 8.2] (1,796)	8.0 [7.2; 8.8] (1,026)	8.0 [7.2; 8.8] (512)	8.7 [7.6; 9.9] (211)	*8.7 [7.6; 9.9]* (58)	

Table 46 (continued)

5.3.2 Impact of implant characteristics in knee arthroplasties

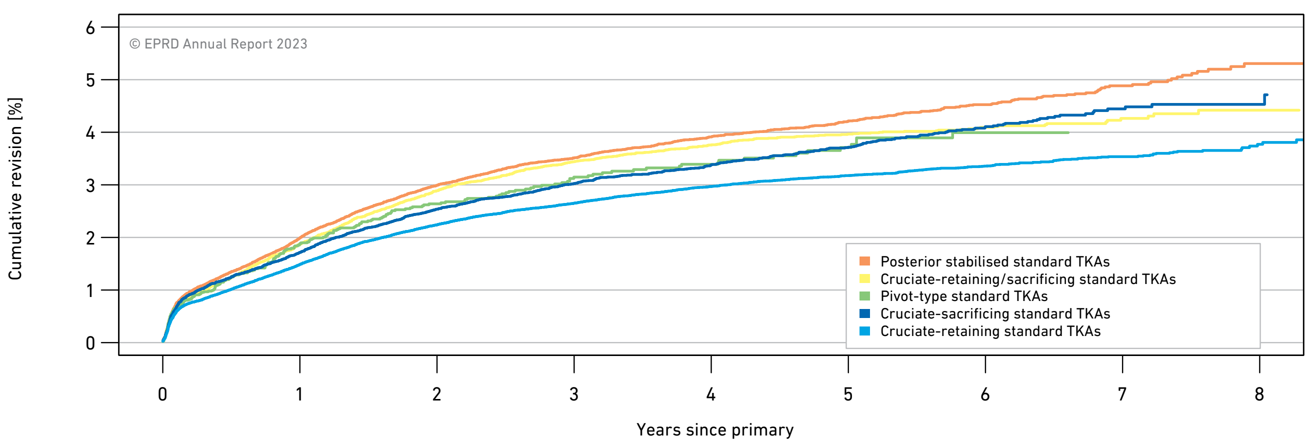
There are differences in the outcomes of the various knee systems in standard TKA.

Cruciate-retaining systems have significantly lower revision probabilities than all other knee systems (Figure 33). However, it should be noted that in some hospitals, pure cruciate-retaining systems are probably only used in patients with good ligament conditions and stable joints, while other systems are more likely to be preferred in cases with poorer baseline conditions. When the analysis focuses on hospitals specialising in a knee system that is used in at least 80 % of the standard TKAs considered, the differences between the systems are generally smaller and practically non-existent for cruciate-retaining and cruciate sacrificing systems.

At least during the first few years, total knee arthroplasties with fixed bearings have significantly lower revision probabilities than systems with mobile bearings (Figure 34). This is true even if the comparison is limited to data from hospitals that have specialised in one type of bearing almost exclusively. However, the outcomes for various specific implant systems differ significantly not only within the groups of arthroplasties with mobile bearings. There are even systems with mobile bearings that have better outcomes than fixed bearing systems (in particular see Table 49).

A comparison of TKAs with and without primary patellar resurfacing reveals significantly lower revision probabilities for the latter (Figure 35). However, it should be noted that in the EPRD secondary patellar resurfacing has not yet been categorised as a revision of the primary arthroplasty (also refer to pages 20 and 21). However, if - as is customary in other arthroplasty registries - secondary patellar resurfacing were also categorised as a revision, this finding would be reversed: The outcomes for patellar resurfacing at primary TKA would be better overall. As some publications recommend primary patellar resurfacing across the board on the basis of such findings, [5] the EPRD has analysed this topic in detail in its last annual report. [6] The EPRD therefore believes that a blanket recommendation favouring patellar resurfacing at primary TKA is just as unjustified as its blanket rejection. Moreover, as various knee systems also differ, the decision should also depend on the system actually implanted. In order to provide an appropriate basis for decision-making, this annual report presents the implant-specific outcomes in Section 5.4 separately for systems with and without patellar resurfacing at the primary TKA (tables 49 and 50).

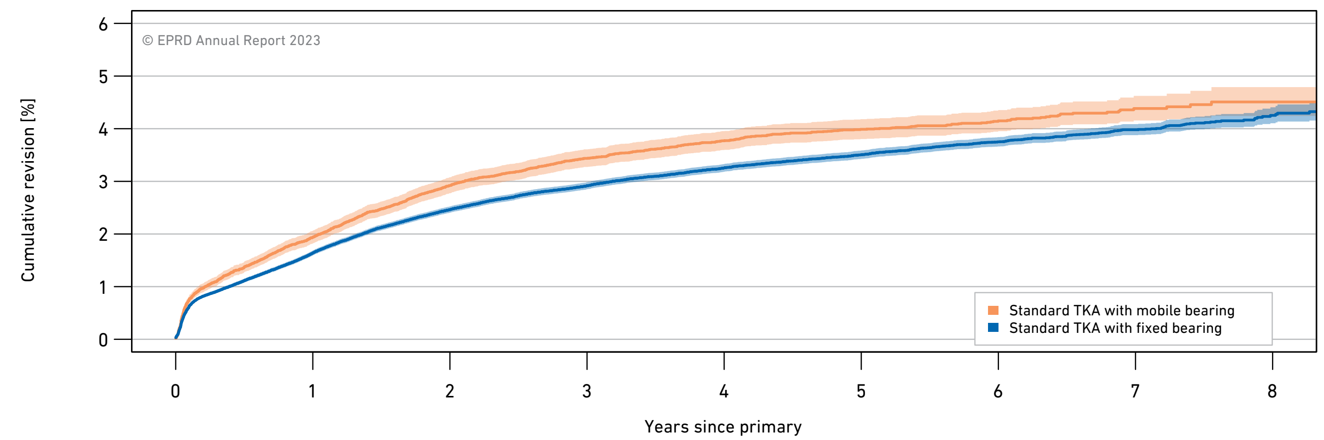
In addition, Table 51 also lists the probabilities of secondary patellar resurfacing for primary arthroplasties that did not include patellar resurfacing.



Numbers at risk

■	79,205	63,157	50,248	38,644	27,198	17,389	9,611	4,218	1,454
■	42,377	35,529	29,904	24,071	17,832	11,883	6,636	2,617	662
■	9,363	6,608	4,964	3,657	2,563	1,620	814		
■	44,778	36,677	30,314	24,064	18,007	12,092	6,695	2,519	552
■	175,808	146,333	121,259	96,939	71,262	47,432	27,049	11,149	2,822

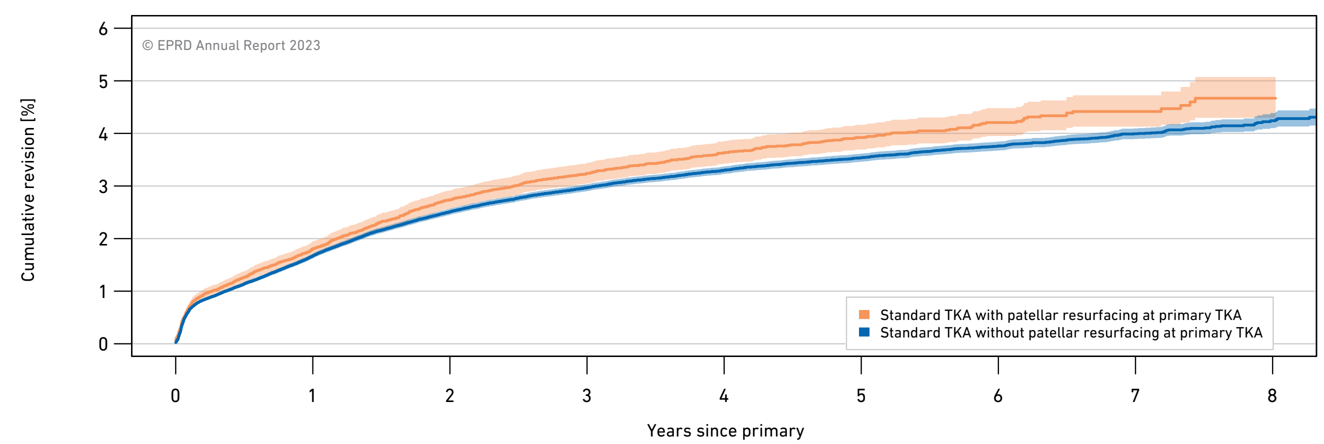
Figure 33: Revision probabilities of standard total knee arthroplasties by knee system *($p < 0.0001$)*. Confidence intervals have been omitted for clarity.



Numbers at risk

■	52,224	45,207	38,912	32,286	24,902	17,318	9,871	3,662	812
■	299,307	243,097	197,777	155,089	111,960	73,098	40,934	17,127	4,712

Figure 34: Revision probabilities of standard total knee arthroplasties by bearing mobility *($p < 0.0001$)*



Numbers at risk

■	38,984	31,957	25,753	19,953	14,275	9,223	5,164	2,133	528
■	312,547	256,347	210,936	167,422	122,587	81,193	45,641	18,656	4,996

Figure 35: Revision probabilities of standard primary total knee arthroplasties with and without patellar resurfacing at primary TKA *($p = 0.001$)*

In brief:

- During the first few years, standard TKAs with fixed bearings have significantly lower revision probabilities.
- Whether or not surgery with patellar resurfacing at the primary TKA yields better outcomes strongly depends on the definition of the endpoint of arthroplasty survival and the knee system implanted.

								Revision probabilities after ...							
Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.		1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKAs		351,531	70 (62 - 77)	34/66	30.1	722		1.7 [1.6; 1.7] (288,304)	2.5 [2.5; 2.6] (236,689)	3.0 [2.9; 3.1] (187,375)	3.3 [3.3; 3.4] (136,862)	3.6 [3.5; 3.7] (90,416)	3.8 [3.7; 3.9] (50,805)	4.0 [3.9; 4.1] (20,789)	4.3 [4.2; 4.4] (5,524)
Bearing mobility	Fixed bearing	299,307	70 (62 - 77)	34/66	30.1	708		1.6 [1.6; 1.7] (243,097)	2.5 [2.4; 2.5] (197,777)	2.9 [2.8; 3.0] (155,089)	3.3 [3.2; 3.3] (111,960)	3.5 [3.4; 3.6] (73,098)	3.8 [3.7; 3.8] (40,934)	4.0 [3.9; 4.1] (17,127)	4.3 [4.1; 4.4] (4,712)
	Mobile bearing	52,224	71 (63 - 77)	34/66	30.0	336		1.9 [1.8; 2.1] (45,207)	2.9 [2.8; 3.1] (38,912)	3.4 [3.3; 3.6] (32,286)	3.8 [3.6; 4.0] (24,902)	4.0 [3.8; 4.2] (17,318)	4.1 [4.0; 4.4] (9,871)	4.4 [4.2; 4.6] (3,662)	4.5 [4.2; 4.8] (812)
Bearing	Uncoated metal / PE	144,481	71 (63 - 77)	36/64	30.1	527		1.6 [1.5; 1.6] (119,661)	2.3 [2.2; 2.4] (99,247)	2.7 [2.6; 2.8] (79,415)	3.0 [2.9; 3.1] (59,212)	3.3 [3.1; 3.4] (39,736)	3.5 [3.4; 3.6] (23,014)	3.7 [3.6; 3.9] (9,723)	4.0 [3.8; 4.2] (2,751)
	Uncoated metal / mXLPE	121,586	71 (63 - 77)	36/64	30.0	456		1.7 [1.7; 1.8] (102,848)	2.7 [2.6; 2.8] (86,702)	3.2 [3.1; 3.3] (69,796)	3.5 [3.4; 3.6] (51,007)	3.7 [3.6; 3.8] (33,878)	3.9 [3.8; 4.0] (18,988)	4.1 [4.0; 4.3] (7,583)	4.4 [4.2; 4.6] (1,892)
	Uncoated metal / hXLPE	30,785	68 (61 - 76)	32/68	30.4	389		1.7 [1.5; 1.8] (24,465)	2.5 [2.3; 2.7] (19,046)	2.9 [2.7; 3.1] (14,616)	3.2 [2.9; 3.4] (10,224)	3.4 [3.2; 3.7] (6,393)	3.7 [3.4; 4.0] (3,462)	3.9 [3.6; 4.2] (1,513)	4.0 [3.6; 4.4] (341)
	Uncoated Metal / hXLPE+antioxidant	26,066	69 (61 - 76)	38/62	30.2	267		1.7 [1.5; 1.9] (18,458)	2.5 [2.3; 2.7] (13,324)	2.9 [2.7; 3.2] (9,329)	3.3 [3.0; 3.6] (6,230)	3.6 [3.3; 3.9] (3,967)	3.8 [3.5; 4.2] (2,061)	3.9 [3.5; 4.3] (760)	3.9 [3.5; 4.3] (181)
	Coated metal / mXLPE	10,501	66 (58 - 74)	14/86	31.2	364		2.0 [1.8; 2.3] (8,650)	3.5 [3.2; 3.9] (7,167)	4.3 [3.9; 4.7] (5,520)	4.7 [4.2; 5.2] (3,924)	5.1 [4.7; 5.7] (2,433)	5.6 [5.0; 6.2] (1,202)	5.8 [5.2; 6.4] (453)	*6.0 [5.3; 6.9]* (92)
	Ceramicised metal / PE	8,088	65 (58 - 73)	18/82	31.2	241		1.6 [1.4; 2.0] (6,377)	2.7 [2.4; 3.1] (4,893)	3.2 [2.8; 3.7] (3,733)	3.5 [3.1; 4.0] (2,694)	3.7 [3.2; 4.2] (1,765)	3.7 [3.3; 4.3] (1,016)	4.4 [3.7; 5.2] (491)	4.8 [3.8; 5.9] (238)
	Coated metal / PE	4,913	67 (60 - 75)	19/81	31.0	225		2.5 [2.1; 3.0] (3,717)	4.3 [3.7; 5.0] (2,913)	5.1 [4.4; 5.8] (2,301)	5.8 [5.1; 6.7] (1,700)	6.2 [5.4; 7.1] (1,201)	6.6 [5.7; 7.5] (688)	6.6 [5.7; 7.5] (218)	
	Ceramicised metal / hXLPE	4,138	65 (58 - 73)	29/71	30.8	127		2.5 [2.1; 3.1] (3,479)	3.7 [3.2; 4.4] (2,951)	4.4 [3.8; 5.1] (2,389)	5.0 [4.3; 5.8] (1,723)	5.4 [4.6; 6.3] (963)	5.8 [4.9; 6.8] (334)		
	Coated metal / hXLPE+antioxidant	762	65 (59 - 72)	10/90	31.4	49		1.1 [0.6; 2.2] (529)	2.2 [1.3; 3.9] (353)	3.0 [1.7; 5.1] (195)	*3.0 [1.7; 5.1]* (85)				
Femoral articulating surface	Uncoated metal	322,991	70 (63 - 77)	36/64	30.1	717		1.7 [1.6; 1.7] (265,441)	2.5 [2.4; 2.5] (218,319)	2.9 [2.8; 3.0] (173,156)	3.2 [3.2; 3.3] (126,673)	3.5 [3.4; 3.5] (83,974)	3.7 [3.6; 3.8] (47,525)	3.9 [3.8; 4.0] (19,579)	4.2 [4.0; 4.3] (5,165)
	Coated metal	16,192	66 (59 - 74)	15/85	31.2	496		2.1 [1.9; 2.4] (12,901)	3.7 [3.4; 4.0] (10,433)	4.4 [4.1; 4.8] (8,016)	5.0 [4.6; 5.4] (5,709)	5.4 [5.0; 5.8] (3,677)	5.8 [5.3; 6.3] (1,914)	5.9 [5.4; 6.4] (675)	*6.1 [5.5; 6.7]* (120)
	Ceramicised metal	12,226	65 (58 - 73)	22/78	31.1	267		1.9 [1.7; 2.2] (9,856)	3.1 [2.8; 3.4] (7,844)	3.6 [3.3; 4.0] (6,122)	4.0 [3.7; 4.5] (4,417)	4.3 [3.9; 4.8] (2,728)	4.4 [4.0; 4.9] (1,350)	5.0 [4.3; 5.7] (531)	5.4 [4.4; 6.4] (239)
Tibial articulating surface	PE	157,604	70 (62 - 77)	35/65	30.1	593		1.6 [1.5; 1.7] (129,861)	2.4 [2.3; 2.4] (107,146)	2.8 [2.7; 2.9] (85,530)	3.1 [3.0; 3.2] (63,669)	3.4 [3.3; 3.5] (42,739)	3.6 [3.5; 3.7] (24,734)	3.8 [3.7; 4.0] (10,436)	4.1 [3.9; 4.3] (3,017)
	mXLPE	132,087	71 (63 - 77)	34/66	30.1	487		1.8 [1.7; 1.8] (111,498)	2.7 [2.6; 2.8] (93,869)	3.3 [3.1; 3.4] (75,316)	3.6 [3.5; 3.7] (54,931)	3.8 [3.7; 3.9] (36,311)	4.0 [3.9; 4.2] (20,190)	4.3 [4.1; 4.4] (8,036)	4.5 [4.3; 4.8] (1,984)
	hXLPE	34,923	68 (60 - 75)	32/68	30.5	407		1.8 [1.6; 1.9] (27,944)	2.7 [2.5; 2.8] (21,997)	3.1 [2.9; 3.3] (17,005)	3.4 [3.2; 3.6] (11,947)	3.7 [3.4; 3.9] (7,356)	4.0 [3.7; 4.2] (3,796)	4.1 [3.8; 4.5] (1,553)	4.2 [3.9; 4.6] (342)

Table 47: Revision probabilities for different types and characteristics of knee arthroplasties

							Revision probabilities after ...							
Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Tibial articulating surface	hXLPE+antioxidant	26,828	69 (61 - 76)	37/63	30.3	272	1.7 [1.5; 1.9] (18,987)	2.5 [2.3; 2.7] (13,677)	2.9 [2.7; 3.2] (9,524)	3.3 [3.0; 3.6] (6,315)	3.5 [3.3; 3.9] (4,010)	3.8 [3.5; 4.2] (2,085)	3.8 [3.5; 4.2] (764)	3.8 [3.5; 4.2] (181)
Knee system	CR	175,808	70 (62 - 77)	36/64	30.1	648	1.5 [1.4; 1.5] (146,333)	2.2 [2.2; 2.3] (121,259)	2.7 [2.6; 2.7] (96,939)	3.0 [2.9; 3.1] (71,262)	3.2 [3.1; 3.3] (47,432)	3.4 [3.3; 3.5] (27,049)	3.5 [3.4; 3.7] (11,149)	3.8 [3.6; 4.0] (2,822)
	PS	79,205	70 (62 - 77)	33/67	30.1	591	2.0 [1.9; 2.1] (63,157)	3.0 [2.9; 3.1] (50,248)	3.5 [3.4; 3.7] (38,644)	3.9 [3.8; 4.1] (27,198)	4.2 [4.0; 4.4] (17,389)	4.5 [4.3; 4.7] (9,611)	4.9 [4.6; 5.1] (4,218)	5.3 [5.0; 5.7] (1,454)
	CS	44,778	71 (63 - 77)	31/69	30.1	385	1.7 [1.6; 1.8] (36,677)	2.5 [2.4; 2.7] (30,314)	3.0 [2.9; 3.2] (24,064)	3.4 [3.2; 3.6] (18,007)	3.7 [3.5; 3.9] (12,092)	4.1 [3.9; 4.4] (6,695)	4.4 [4.2; 4.8] (2,519)	4.5 [4.2; 4.9] (552)
	CR/CS	42,377	69 (62 - 76)	35/65	30.0	313	1.9 [1.7; 2.0] (35,529)	2.9 [2.7; 3.1] (29,904)	3.4 [3.3; 3.6] (24,071)	3.8 [3.6; 4.0] (17,832)	4.0 [3.8; 4.2] (11,883)	4.1 [3.9; 4.3] (6,636)	4.3 [4.0; 4.5] (2,617)	4.4 [4.1; 4.7] (662)
	Pivot	9,363	69 (62 - 77)	37/63	30.1	118	1.9 [1.6; 2.2] (6,608)	2.6 [2.3; 3.0] (4,964)	3.1 [2.8; 3.6] (3,657)	3.4 [3.0; 3.9] (2,563)	3.7 [3.2; 4.3] (1,620)	4.0 [3.4; 4.6] (814)	4.0 [3.4; 4.6] (286)	
Patella	Without patellar resurfacing	312,547	70 (62 - 77)	35/65	30.1	720	1.7 [1.6; 1.7] (256,347)	2.5 [2.4; 2.6] (210,936)	3.0 [2.9; 3.0] (167,422)	3.3 [3.2; 3.4] (122,587)	3.5 [3.5; 3.6] (81,193)	3.8 [3.7; 3.8] (45,641)	4.0 [3.9; 4.1] (18,656)	4.2 [4.1; 4.4] (4,996)
	With patellar resurfacing	38,984	70 (62 - 77)	31/69	30.4	484	1.8 [1.7; 1.9] (31,957)	2.7 [2.6; 2.9] (25,753)	3.2 [3.1; 3.4] (19,953)	3.6 [3.4; 3.9] (14,275)	3.9 [3.7; 4.2] (9,223)	4.2 [4.0; 4.5] (5,164)	4.4 [4.1; 4.7] (2,133)	4.7 [4.3; 5.1] (528)
Fixation	Cemented	328,297	70 (62 - 77)	34/66	30.1	720	1.7 [1.6; 1.7] (267,960)	2.5 [2.5; 2.6] (218,994)	3.0 [2.9; 3.0] (172,371)	3.3 [3.3; 3.4] (124,964)	3.6 [3.5; 3.7] (82,060)	3.8 [3.7; 3.9] (45,882)	4.0 [3.9; 4.1] (18,749)	4.3 [4.2; 4.4] (4,929)
	Hybrid	18,346	69 (62 - 76)	39/61	30.2	199	1.8 [1.6; 2.0] (16,257)	2.7 [2.5; 2.9] (14,293)	3.1 [2.9; 3.4] (12,270)	3.4 [3.1; 3.7] (9,805)	3.6 [3.3; 3.9] (6,964)	3.9 [3.6; 4.2] (4,163)	4.1 [3.8; 4.5] (1,767)	4.2 [3.8; 4.7] (514)
	Uncemented	4,585	68 (60 - 75)	33/67	30.2	200	1.9 [1.5; 2.3] (3,809)	3.0 [2.5; 3.6] (3,151)	3.8 [3.2; 4.4] (2,536)	4.0 [3.4; 4.7] (1,965)	4.1 [3.5; 4.8] (1,335)	4.3 [3.6; 5.1] (744)	4.3 [3.6; 5.1] (271)	*4.3 [3.6; 5.1]* (81)
Constrained TKAs		17,600	75 (66 - 80)	24/76	28.8	663	4.0 [3.7; 4.3] (13,767)	5.2 [4.8; 5.5] (11,063)	5.8 [5.4; 6.2] (8,577)	6.1 [5.7; 6.5] (6,082)	6.4 [6.0; 6.8] (3,910)	6.7 [6.2; 7.1] (2,076)	6.8 [6.3; 7.3] (858)	7.7 [6.7; 8.8] (201)
Bearing mobility	Fixed bearing	17,600	75 (66 - 80)	24/76	28.8	663	4.0 [3.7; 4.3] (13,767)	5.2 [4.8; 5.5] (11,063)	5.8 [5.4; 6.2] (8,577)	6.1 [5.7; 6.5] (6,082)	6.4 [6.0; 6.8] (3,910)	6.7 [6.2; 7.1] (2,076)	6.8 [6.3; 7.3] (858)	7.7 [6.7; 8.8] (201)
Bearing	Uncoated metal / PE	12,095	75 (67 - 81)	24/76	28.5	569	4.0 [3.6; 4.3] (9,493)	5.0 [4.6; 5.5] (7,685)	5.6 [5.2; 6.1] (6,018)	5.9 [5.5; 6.4] (4,303)	6.3 [5.8; 6.8] (2,794)	6.6 [6.0; 7.1] (1,465)	6.7 [6.1; 7.3] (608)	*8.0 [6.7; 9.6]* (141)
	Uncoated metal / mXLPE	3,125	74 (66 - 80)	25/75	29.0	277	3.9 [3.3; 4.7] (2,502)	5.1 [4.3; 5.9] (2,064)	5.6 [4.8; 6.6] (1,636)	5.8 [5.0; 6.8] (1,183)	5.9 [5.1; 6.9] (775)	6.2 [5.3; 7.3] (475)	6.2 [5.3; 7.3] (194)	*6.2 [5.3; 7.3]* (50)
	Coated metal / PE	830	72 (63 - 79)	20/80	29.5	152	5.4 [4.0; 7.3] (615)	8.2 [6.4; 10.6] (463)	9.4 [7.4; 12.0] (330)	10.1 [7.9; 12.8] (220)	*11.1 [8.6; 14.2]* (119)			
	Uncoated metal / hXLPE	765	72 (63 - 79)	28/72	30.0	58	3.1 [2.1; 4.7] (599)	4.7 [3.3; 6.6] (441)	5.4 [3.9; 7.6] (307)	6.6 [4.7; 9.1] (191)	*6.6 [4.7; 9.1]* (105)			
	Ceramicised metal / PE	338	66 (59 - 74)	19/81	31.3	98	4.1 [2.4; 7.0] (255)	4.1 [2.4; 7.0] (201)	*4.7 [2.8; 7.8]* (144)	*4.7 [2.8; 7.8]* (91)	*4.7 [2.8; 7.8]* (52)			
	Coated metal / mXLPE	313	70 (62 - 78)	10/90	30.1	111	4.5 [2.6; 7.6] (236)	5.9 [3.7; 9.6] (177)	*6.5 [4.1; 10.4]* (132)	*6.5 [4.1; 10.4]* (93)	*6.5 [4.1; 10.4]* (64)			
Femoral articulating surface	Uncoated metal	16,118	75 (66 - 81)	24/76	28.7	658	3.9 [3.6; 4.2] (12,660)	5.0 [4.7; 5.4] (10,221)	5.6 [5.2; 6.0] (7,970)	5.9 [5.5; 6.3] (5,677)	6.2 [5.8; 6.7] (3,674)	6.5 [6.0; 7.0] (1,982)	6.6 [6.1; 7.1] (818)	7.5 [6.5; 8.7] (198)
	Coated metal	1,143	71 (63 - 79)	18/82	29.6	241	5.2 [4.0; 6.7] (851)	7.6 [6.1; 9.5] (640)	8.6 [6.9; 10.7] (462)	9.1 [7.3; 11.3] (313)	9.8 [7.8; 12.2] (183)	*9.8 [7.8; 12.2]* (66)		
	Ceramicised metal	338	66 (59 - 74)	19/81	31.3	98	4.1 [2.4; 7.0] (255)	4.1 [2.4; 7.0] (201)	*4.7 [2.8; 7.8]* (144)	*4.7 [2.8; 7.8]* (91)	*4.7 [2.8; 7.8]* (52)			
Tibial articulating surface	PE	13,264	75 (66 - 81)	24/76	28.7	580	4.1 [3.7; 4.4] (10,364)	5.2 [4.8; 5.6] (8,350)	5.8 [5.4; 6.2] (6,493)	6.1 [5.7; 6.6] (4,615)	6.5 [6.0; 7.0] (2,966)	6.8 [6.3; 7.3] (1,529)	6.9 [6.3; 7.5] (635)	*8.2 [6.9; 9.7]* (143)
	mXLPE	3,438	74 (66 - 80)	24/76	29.1	298	3.9 [3.3; 4.7] (2,738)	5.1 [4.4; 6.0] (2,241)	5.7 [4.9; 6.6] (1,768)	5.9 [5.1; 6.8] (1,276)	6.0 [5.2; 6.9] (839)	6.2 [5.4; 7.3] (505)	6.2 [5.4; 7.3] (207)	*6.2 [5.4; 7.3]* (51)
	hXLPE	765	72 (63 - 79)	28/72	30.0	58	3.1 [2.1; 4.7] (599)	4.7 [3.3; 6.6] (441)	5.4 [3.9; 7.6] (307)	6.6 [4.7; 9.1] (191)	*6.6 [4.7; 9.1]* (105)			
Knee system	Hinged	11,154	76 (68 - 81)	22/78	28.1	624	4.4 [4.1; 4.9] (8,754)	5.7 [5.2; 6.2] (7,131)	6.4 [5.9; 6.9] (5,559)	6.8 [6.3; 7.3] (3,968)	7.2 [6.6; 7.7] (2,584)	7.3 [6.7; 7.9] (1,391)	7.3 [6.7; 7.9] (591)	*7.8 [6.9; 8.8]* (107)
	Varus-valgus-stabilised	6,446	72 (63 - 79)	28/72	29.7	408	3.2 [2.8; 3.7] (5,013)	4.3 [3.8; 4.8] (3,932)	4.6 [4.1; 5.2] (3,018)	4.9 [4.3; 5.5] (2,114)	5.1 [4.5; 5.7] (1,326)	5.6 [4.9; 6.4] (685)	5.8 [5.0; 6.8] (267)	*7.2 [5.4; 9.7]* (94)
Patella	Without patellar resurfacing	15,167	75 (66 - 81)	24/76	28.7	654	3.9 [3.6; 4.2] (11,865)	5.1 [4.8; 5.5] (9,531)	5.7 [5.3; 6.1] (7,386)	6.1 [5.6; 6.5] (5,233)	6.4 [5.9; 6.8] (3,391)	6.7 [6.2; 7.2] (1,795)	6.8 [6.2; 7.3] (743)	7.1 [6.4; 7.9] (176)

Table 47 (continued)

Type of arthroplasty / category	Type	Number	Age	m/f	BMI	Hosp.	Revision probabilities after … 1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Patella	With patellar resurfacing	2,433	73 (65 - 79)	25/75	29.6	241	4.5 [3.8; 5.5] (1,902)	5.4 [4.5; 6.4] (1,532)	6.1 [5.1; 7.2] (1,191)	6.3 [5.3; 7.4] (849)	6.7 [5.6; 8.0] (519)	6.7 [5.6; 8.0] (281)	*6.7 [5.6; 8.0]* (115)	
Fixation	Cemented	17,257	75 (66 - 80)	24/76	28.9	661	3.9 [3.6; 4.2] (13,569)	5.0 [4.7; 5.4] (10,934)	5.5 [5.2; 5.9] (8,500)	5.9 [5.5; 6.3] (6,027)	6.2 [5.8; 6.6] (3,881)	6.4 [6.0; 6.9] (2,062)	6.5 [6.1; 7.0] (854)	7.4 [6.5; 8.5] (201)
Unicondylar knee arthroplasties		51,875	63 (57 - 72)	44/56	29.5	645	2.9 [2.8; 3.1] (41,850)	4.7 [4.5; 4.9] (33,637)	5.7 [5.5; 6.0] (25,885)	6.6 [6.4; 6.9] (18,408)	7.2 [6.9; 7.5] (11,697)	7.9 [7.6; 8.2] (6,271)	8.4 [8.0; 8.8] (2,373)	8.8 [8.3; 9.3] (774)
Bearing mobility	Mobile bearing	30,846	64 (57 - 72)	44/56	29.7	454	3.1 [2.9; 3.3] (25,235)	4.8 [4.6; 5.1] (20,736)	5.8 [5.5; 6.0] (16,241)	6.6 [6.3; 6.9] (11,797)	7.1 [6.8; 7.5] (7,616)	8.0 [7.6; 8.4] (4,191)	8.3 [7.8; 8.7] (1,694)	8.6 [8.0; 9.1] (592)
	Fixed bearing	21,029	63 (57 - 71)	45/55	29.4	446	2.6 [2.4; 2.8] (16,615)	4.6 [4.3; 4.9] (12,901)	5.7 [5.4; 6.1] (9,644)	6.7 [6.3; 7.1] (6,611)	7.3 [6.8; 7.8] (4,081)	7.8 [7.3; 8.3] (2,080)	8.6 [8.0; 9.4] (679)	9.4 [8.3; 10.7] (182)
Bearing	Uncoated metal / mXLPE	29,402	64 (58 - 73)	46/54	29.6	423	2.9 [2.7; 3.1] (24,091)	4.5 [4.3; 4.8] (19,895)	5.4 [5.1; 5.7] (15,515)	6.2 [5.8; 6.5] (11,179)	6.7 [6.3; 7.0] (7,109)	7.4 [7.0; 7.8] (3,838)	7.7 [7.3; 8.2] (1,492)	8.0 [7.5; 8.6] (509)
	Uncoated metal / PE	9,001	63 (57 - 72)	48/52	29.4	271	2.3 [2.0; 2.7] (7,084)	4.1 [3.7; 4.6] (5,473)	5.2 [4.7; 5.8] (4,321)	6.0 [5.5; 6.7] (3,226)	6.7 [6.0; 7.3] (2,153)	7.2 [6.5; 8.0] (1,164)	8.5 [7.4; 9.7] (386)	*9.7 [8.0; 11.8]* (120)
	Uncoated metal / hXLPE	4,524	63 (56 - 71)	46/54	29.3	127	2.2 [1.8; 2.7] (3,905)	4.1 [3.6; 4.8] (3,264)	5.2 [4.5; 5.9] (2,574)	6.2 [5.4; 7.0] (1,934)	6.6 [5.8; 7.5] (1,301)	7.2 [6.3; 8.2] (720)	7.5 [6.5; 8.7] (277)	*7.5 [6.5; 8.7]* (67)
	Uncoated Metal / hXLPE+antioxidant	3,691	63 (57 - 71)	48/52	29.5	118	2.6 [2.1; 3.2] (2,428)	4.1 [3.4; 4.9] (1,445)	5.1 [4.2; 6.1] (790)	5.9 [4.7; 7.3] (257)				
	Coated metal / mXLPE	3,659	61 (55 - 68)	24/76	30.1	320	3.8 [3.2; 4.5] (3,166)	7.0 [6.1; 7.9] (2,695)	8.7 [7.7; 9.7] (1,998)	10.1 [9.0; 11.2] (1,335)	10.8 [9.7; 12.1] (795)	11.8 [10.5; 13.3] (411)	11.8 [10.5; 13.3] (176)	*12.5 [10.7; 14.5]* (67)
	Ceramicised metal / PE	1,066	60 (54 - 66)	32/68	30.0	140	4.7 [3.5; 6.2] (818)	7.3 [5.8; 9.3] (614)	8.9 [7.1; 11.0] (482)	9.5 [7.6; 11.8] (322)	11.0 [8.7; 13.7] (192)	*11.5 [9.1; 14.5]* (88)		
	Coated metal / PE	458	60 (54 - 67)	25/75	30.1	80	9.3 [6.9; 12.5] (346)	14.7 [11.5; 18.7] (248)	15.8 [12.4; 19.9] (205)	19.4 [15.4; 24.1] (155)	*21.9 [17.5; 27.2]* (111)	*25.2 [19.8; 31.7]* (50)		
Femoral articulating surface	Uncoated metal	46,629	64 (57 - 72)	46/54	29.4	622	2.7 [2.6; 2.9] (37,508)	4.4 [4.2; 4.6] (30,077)	5.3 [5.1; 5.5] (23,200)	6.1 [5.9; 6.4] (16,596)	6.6 [6.4; 6.9] (10,599)	7.3 [7.0; 7.7] (5,722)	7.8 [7.4; 8.2] (2,155)	8.3 [7.7; 8.8] (696)
	Coated metal	4,118	61 (55 - 68)	24/76	30.1	369	4.4 [3.8; 5.1] (3,512)	7.8 [6.9; 8.7] (2,943)	9.4 [8.5; 10.4] (2,203)	11.0 [10.0; 12.2] (1,490)	12.0 [10.9; 13.3] (906)	13.3 [11.9; 14.9] (461)	13.3 [11.9; 14.9] (192)	*13.9 [12.2; 15.9]* (72)
	Ceramicised metal	1,128	60 (54 - 66)	33/67	29.8	142	4.5 [3.4; 6.0] (830)	7.2 [5.7; 9.1] (617)	8.7 [7.0; 10.8] (482)	9.3 [7.5; 11.6] (322)	10.8 [8.6; 13.6] (192)	*11.3 [8.9; 14.3]* (88)		
Tibial articulating surface	mXLPE	33,123	64 (57 - 72)	44/56	29.7	460	3.0 [2.9; 3.2] (27,269)	4.8 [4.6; 5.0] (22,593)	5.8 [5.5; 6.1] (17,513)	6.6 [6.3; 6.9] (12,514)	7.1 [6.8; 7.5] (7,904)	7.9 [7.5; 8.3] (4,249)	8.2 [7.8; 8.7] (1,668)	8.5 [8.0; 9.1] (576)
	PE	10,525	63 (57 - 71)	45/55	29.4	329	2.9 [2.6; 3.2] (8,248)	4.9 [4.5; 5.4] (6,335)	6.0 [5.5; 6.6] (5,008)	7.0 [6.4; 7.6] (3,703)	7.8 [7.1; 8.5] (2,456)	8.5 [7.8; 9.3] (1,302)	9.6 [8.6; 10.7] (428)	*10.7 [9.1; 12.6]* (131)
	hXLPE	4,524	63 (56 - 71)	46/54	29.3	127	2.2 [1.8; 2.7] (3,905)	4.1 [3.6; 4.8] (3,264)	5.2 [4.5; 5.9] (2,574)	6.2 [5.4; 7.0] (1,934)	6.6 [5.8; 7.5] (1,301)	7.2 [6.3; 8.2] (720)	7.5 [6.5; 8.7] (277)	*7.5 [6.5; 8.7]* (67)
	hXLPE+antioxidant	3,692	63 (57 - 71)	48/52	29.5	118	2.6 [2.1; 3.2] (2,428)	4.1 [3.4; 4.9] (1,445)	5.1 [4.2; 6.1] (790)	5.9 [4.7; 7.3] (257)				
Fixation	Cemented	45,650	63 (57 - 72)	43/57	29.5	641	2.8 [2.6; 2.9] (36,782)	4.7 [4.5; 4.9] (29,321)	5.7 [5.5; 5.9] (22,363)	6.6 [6.4; 6.9] (15,819)	7.2 [6.9; 7.5] (10,006)	8.0 [7.7; 8.4] (5,300)	8.6 [8.1; 9.0] (1,928)	9.0 [8.5; 9.6] (585)
	Uncemented	5,686	63 (57 - 71)	55/45	29.7	101	3.7 [3.2; 4.2] (4,605)	5.0 [4.4; 5.6] (3,910)	5.9 [5.3; 6.6] (3,161)	6.4 [5.7; 7.2] (2,295)	6.8 [6.0; 7.6] (1,484)	7.3 [6.5; 8.2] (862)	7.3 [6.5; 8.2] (398)	7.6 [6.7; 8.8] (163)
	Hybrid	476	66 (59 - 74.5)	37/63	28.6	46	4.3 [2.8; 6.6] (417)	5.5 [3.8; 8.1] (367)	6.3 [4.4; 9.1] (332)	6.3 [4.4; 9.1] (275)	7.2 [5.0; 10.2] (194)	*7.2 [5.0; 10.2]* (99)		
Patellofemoral arthroplasties		849	54 (48 - 61)	27/73	28.4	200	4.6 [3.3; 6.4] (677)	7.6 [5.8; 9.8] (521)	9.7 [7.6; 12.2] (394)	12.8 [10.3; 15.9] (279)	15.2 [12.2; 18.9] (177)	*15.8 [12.6; 19.6]* (89)		
Femoral articulating surface	Uncoated metal	482	55 (48 - 62)	28/72	28.4	122	3.5 [2.1; 5.8] (388)	5.8 [3.9; 8.6] (303)	7.8 [5.5; 11.1] (228)	11.0 [7.9; 15.1] (174)	*14.2 [10.4; 19.3]* (113)	*14.2 [10.4; 19.3]* (57)		
	Ceramicised metal	348	54 (48 - 60)	28/72	28.7	100	6.4 [4.2; 9.7] (270)	10.1 [7.2; 14.2] (201)	12.1 [8.7; 16.6] (154)	*15.4 [11.3; 20.8]* (98)	*16.3 [12.0; 22.0]* (61)			
Patella	With patellar resurfacing	693	54 (48 - 61)	27/73	28.7	168	4.3 [3.0; 6.2] (555)	7.2 [5.3; 9.6] (432)	9.3 [7.1; 12.1] (329)	11.5 [8.9; 14.8] (225)	*14.0 [10.8; 18.0]* (140)	*14.8 [11.4; 19.1]* (60)		

Table 47 (continued)

5.4 Outcomes of specific implant systems (brands) and combinations

The following tables present the revision probabilities for primary arthroplasties with specific implant systems and components. The probabilities that arthroplasties with the corresponding components subsequently required changes are listed. However, these changes do not necessarily affect the listed components themselves (also refer to the explanations on the analyses in Chapter 3). Hip arthroplasty outcomes are presented as femoral stem and acetabular component pairs (Table 48) and knee arthroplasties as femoral and tibial component pairs. Separate outcomes for TKAs with (Table 50) and without (Table 49) primary patellar resurfacing are also given. In addition, Table 51 also lists the probabilities of secondary patellar resurfacing for various total knee arthroplasty systems.

The outcomes for the stem and acetabular component in hip arthroplasties, obtained by considering each component in isolation across all combinations, are also listed separately in the appendix (tables 61 and 62). For the following presentations, groups of comparable systems were created, since the baseline conditions for various implant systems may differ. In the case of hip arthroplasties, grouping into comparable systems is based on the specified type of fixation, and in knee arthroplasties on the type of arthroplasty, the type of fixation, knee system, and bearing mobility. Within each group, the implants are listed alphabetically by name.

For hip arthroplasty outcomes, only elective procedures are analysed. The calculation does not include hemiarthroplasties and total hip arthroplasties implanted because of a femoral fracture close to the hip joint. To ensure that the final results obtained were robust, only outcomes for implant combinations or implants based on a minimum of 300 primary arthroplasties in follow-up and sourced from at least three different hospitals were considered below. If the follow-up figures fall below the limit of 150 arthroplasties over time, this is highlighted in italics in the tables to indicate the resulting higher uncertainty of the numbers. If the number of arthroplasties followed up decreases to less than 50, no further numbers are given.

The tables also indicate the period from which documentation for primary arthroplasties with the corresponding components was available.

Elective total hip arthroplasties							Revision probabilities after ...							
Femoral stem	Cup	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Hybrid fixation														
ABG II Stem (Stryker)	Trident Cup (Stryker)	444	9	79 (76 - 82)	22/78	2014-2022	2.5 [1.4; 4.4] (423)	3.0 [1.7; 5.0] (400)	3.0 [1.7; 5.0] (333)	3.0 [1.7; 5.0] (234)	*3.7 [2.1; 6.5]* (92)			
Avenir (Zimmer Biomet)	Allofit (Zimmer Biomet)	3,425	122	80 (76 - 83)	23/77	2014-2022	2.0 [1.6; 2.6] (2,298)	2.2 [1.8; 2.8] (1,522)	2.5 [2.0; 3.2] (926)	2.5 [2.0; 3.2] (572)	2.9 [2.2; 3.8] (366)	2.9 [2.2; 3.8] (183)	*2.9 [2.2; 3.8]* (78)	
Avenir (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	419	17	78 (75 - 82)	19/81	2014-2022	3.6 [2.2; 6.1] (296)	3.6 [2.2; 6.1] (181)	*3.6 [2.2; 6.1]* (101)					
BHR (Smith & Nephew)	BHR (Smith & Nephew)	375	23	55 (51 - 59)	99/1	2014-2022	1.1 [0.4; 2.9] (318)	1.8 [0.8; 4.0] (268)	2.2 [1.0; 4.6] (223)	2.2 [1.0; 4.6] (164)	*2.2 [1.0; 4.6]* (108)	*2.2 [1.0; 4.6]* (61)		
BICONTACT (Aesculap)	PLASMACUP (Aesculap)	334	21	78 (76 - 82)	30/70	2013-2022	2.1 [1.0; 4.4] (303)	2.5 [1.2; 4.9] (276)	2.5 [1.2; 4.9] (260)	2.8 [1.5; 5.4] (217)	2.8 [1.5; 5.4] (177)	*2.8 [1.5; 5.4]* (124)	*2.8 [1.5; 5.4]* (56)	
BICONTACT (Aesculap)	PLASMAFIT (Aesculap)	1,702	80	79 (74 - 82)	22/78	2013-2022	2.1 [1.5; 2.9] (1,424)	2.3 [1.7; 3.2] (1,206)	2.8 [2.1; 3.8] (996)	3.0 [2.2; 4.0] (752)	3.2 [2.4; 4.2] (543)	3.2 [2.4; 4.2] (319)	*3.2 [2.4; 4.2]* (148)	
C-STEM™ AMT-Hüftschaft (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	492	9	80 (76 - 84)	17/83	2014-2022	1.7 [0.9; 3.4] (387)	1.7 [0.9; 3.4] (306)	2.0 [1.1; 3.9] (257)	2.5 [1.3; 4.7] (218)	*3.0 [1.6; 5.6]* (140)	*3.0 [1.6; 5.6]* (75)		
CCA (Mathys)	Allofit (Zimmer Biomet)	433	4	76 (73 - 80)	32/68	2013-2022	2.3 [1.3; 4.3] (403)	3.3 [2.0; 5.5] (383)	3.8 [2.4; 6.2] (368)	4.4 [2.8; 6.8] (344)	4.7 [3.0; 7.2] (318)	5.3 [3.5; 8.0] (276)	5.8 [3.8; 8.8] (189)	*7.0 [4.6; 10.5]* (128)
CCA (Mathys)	RM Pressfit vitamys (Mathys)	320	12	79 (76 - 82)	25/75	2013-2022	0.6 [0.2; 2.5] (278)	0.6 [0.2; 2.5] (245)	0.6 [0.2; 2.5] (206)	0.6 [0.2; 2.5] (159)	*1.3 [0.4; 4.4]* (123)	*1.3 [0.4; 4.4]* (89)	*1.3 [0.4; 4.4]* (62)	
CORAIL™ AMT-Hüftschaft ohne Kragen (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	5,415	142	79 (75 - 83)	21/79	2012-2022	2.8 [2.3; 3.2] (3,976)	3.2 [2.8; 3.7] (2,911)	3.4 [2.9; 4.0] (2,011)	3.9 [3.4; 4.6] (1,279)	4.5 [3.7; 5.3] (758)	4.7 [3.9; 5.7] (392)	*4.7 [3.9; 5.7]* (133)	
COREHIP (Aesculap)	PLASMAFIT (Aesculap)	368	29	81 (77 - 84)	15/85	2018-2022	3.3 [1.8; 5.8] (157)							
EXCEPTION (Zimmer Biomet)	Allofit (Zimmer Biomet)	633	11	78 (74 - 82)	19/81	2016-2022	2.4 [1.4; 3.9] (580)	2.6 [1.6; 4.1] (484)	2.8 [1.7; 4.4] (349)	2.8 [1.7; 4.4] (179)	*3.3 [2.0; 5.5]* (67)			
EXCIA (Aesculap)	PLASMAFIT (Aesculap)	2,941	92	79 (74 - 82)	22/78	2014-2022	2.1 [1.6; 2.7] (2,253)	2.3 [1.8; 2.9] (1,756)	2.8 [2.2; 3.5] (1,297)	3.1 [2.5; 3.9] (793)	3.1 [2.5; 3.9] (462)	3.1 [2.5; 3.9] (260)	*3.5 [2.6; 4.8]* (81)	
ICON (IO-International Orthopaedics)	ICON (IO-International Orthopaedics)	304	13	56 (51 - 62)	87/13	2013-2022	1.0 [0.3; 3.0] (295)	1.3 [0.5; 3.5] (286)	2.0 [0.9; 4.5] (275)	2.8 [1.4; 5.5] (221)	*2.8 [1.4; 5.5]* (133)	*2.8 [1.4; 5.5]* (67)		

Table 48: Implant outcomes for stem/cup combinations in elective total hip arthroplasties. For each type of fixation, the combinations are listed alphabetically by the stem component.

Elective total hip arthroplasties							Revision probabilities after ...							
Femoral stem	Cup	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Hybrid fixation														
LCU Hip System, cemented, CoCrMo (Waldemar Link)	MobileLink, Cluster Hole (Waldemar Link)	318	7	78 (74 - 81)	28/72	2019-2022	3.7 [2.1; 6.6] (205)	*3.7 [2.1; 6.6]* (86)						
M.E.M. Geradschaft (Zimmer Biomet)	Allofit (Zimmer Biomet)	19,279	162	79 (75 - 82)	26/74	2012-2022	2.0 [1.8; 2.3] (15,032)	2.3 [2.1; 2.5] (11,750)	2.5 [2.2; 2.7] (8,905)	2.6 [2.3; 2.8] (6,132)	2.8 [2.6; 3.1] (3,818)	3.0 [2.7; 3.3] (1,944)	3.1 [2.8; 3.5] (758)	3.3 [2.8; 3.8] (159)
M.E.M. Geradschaft (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	431	17	79 (75 - 83)	22/78	2013-2022	2.4 [1.3; 4.4] (351)	2.7 [1.5; 4.9] (274)	2.7 [1.5; 4.9] (209)	*4.0 [2.2; 7.1]* (133)	*4.0 [2.2; 7.1]* (82)			
M.E.M. Geradschaft (Zimmer Biomet)	Trilogy (Zimmer Biomet)	1,452	12	78 (74 - 81)	28/72	2012-2022	1.6 [1.0; 2.3] (1,261)	1.7 [1.2; 2.6] (1,111)	1.8 [1.2; 2.7] (980)	1.8 [1.2; 2.7] (799)	1.9 [1.3; 2.9] (613)	1.9 [1.3; 2.9] (411)	2.2 [1.5; 3.4] (216)	*2.2 [1.5; 3.4]* (97)
M.E.M. Geradschaft (Zimmer Biomet)	Trilogy IT (Zimmer Biomet)	330	3	81 (78 - 83)	25/75	2015-2022	1.9 [0.8; 4.1] (261)	1.9 [0.8; 4.1] (219)	1.9 [0.8; 4.1] (157)	*1.9 [0.8; 4.1]* (114)	*3.1 [1.2; 7.6]* (68)			
METABLOC (Zimmer Biomet)	Allofit (Zimmer Biomet)	1,508	24	78 (75 - 82)	28/72	2013-2022	2.3 [1.7; 3.2] (1,434)	2.7 [2.0; 3.6] (1,331)	2.9 [2.2; 3.9] (1,128)	2.9 [2.2; 3.9] (881)	3.1 [2.3; 4.1] (601)	3.2 [2.4; 4.4] (370)	3.2 [2.4; 4.4] (159)	
MS-30 (Zimmer Biomet)	Allofit (Zimmer Biomet)	3,514	31	78 (73 - 81)	26/74	2014-2022	1.6 [1.3; 2.1] (3,057)	1.8 [1.4; 2.3] (2,655)	2.0 [1.5; 2.5] (2,206)	2.2 [1.7; 2.8] (1,745)	2.3 [1.8; 2.9] (1,287)	2.4 [1.9; 3.0] (766)	2.4 [1.9; 3.0] (287)	
Müller Geradschaft (OHST Medizintechnik)	R3 (Smith & Nephew)	922	14	78 (75 - 81)	31/69	2015-2022	2.9 [2.0; 4.2] (794)	3.1 [2.2; 4.5] (659)	3.1 [2.2; 4.5] (515)	3.1 [2.2; 4.5] (273)	*3.1 [2.2; 4.5]* (136)			
Polarschaft Cemented (Smith & Nephew)	R3 (Smith & Nephew)	1,359	59	79 (75 - 82)	23/77	2013-2022	2.8 [2.0; 3.8] (1,002)	2.9 [2.1; 3.9] (809)	3.1 [2.3; 4.3] (634)	3.5 [2.5; 4.8] (425)	3.5 [2.5; 4.8] (221)	*3.5 [2.5; 4.8]* (73)		
QUADRA-C (Medacta)	VERSAFITCUP CC TRIO (Medacta)	1,713	42	80 (77 - 83)	22/78	2015-2022	2.4 [1.7; 3.2] (1,329)	2.6 [1.9; 3.5] (1,023)	2.6 [1.9; 3.5] (722)	2.6 [1.9; 3.5] (416)	2.6 [1.9; 3.5] (181)	*2.6 [1.9; 3.5]* (64)		
SPECTRON (Smith & Nephew)	R3 (Smith & Nephew)	348	7	79 (75 - 83)	27/73	2013-2022	0.9 [0.3; 2.7] (293)	0.9 [0.3; 2.7] (224)	0.9 [0.3; 2.7] (175)	*0.9 [0.3; 2.7]* (141)	*0.9 [0.3; 2.7]* (88)	*0.9 [0.3; 2.7]* (51)		
SPII Model Lubinus Hip Stem (Waldemar Link)	Allofit (Zimmer Biomet)	5,493	55	78 (74 - 81)	28/72	2013-2022	2.2 [1.9; 2.7] (4,346)	2.8 [2.3; 3.3] (3,489)	3.0 [2.6; 3.6] (2,637)	3.2 [2.7; 3.8] (1,927)	3.3 [2.8; 3.9] (1,298)	3.8 [3.2; 4.6] (724)	4.7 [3.7; 5.9] (360)	*4.7 [3.7; 5.9]* (133)
SPII Model Lubinus Hip Stem (Waldemar Link)	CombiCup (Waldemar Link)	1,328	32	78 (74 - 81)	28/72	2014-2022	1.0 [0.6; 1.7] (1,191)	1.8 [1.2; 2.7] (1,072)	2.0 [1.3; 2.9] (898)	2.8 [2.0; 4.0] (664)	3.2 [2.3; 4.6] (412)	3.2 [2.3; 4.6] (239)	*3.8 [2.5; 5.8]* (84)	
SPII Model Lubinus Hip Stem (Waldemar Link)	HI Lubricer Schale (Smith & Nephew)	331	4	77 (73 - 81)	27/73	2014-2022	0.9 [0.3; 2.8] (295)	0.9 [0.3; 2.8] (250)	1.4 [0.5; 3.7] (206)	1.4 [0.5; 3.7] (154)	*2.0 [0.8; 5.1]* (86)			
SPII Model Lubinus Hip Stem (Waldemar Link)	MobileLink, Cluster Hole (Waldemar Link)	737	24	78 (72 - 82)	26/74	2017-2022	2.5 [1.5; 4.0] (375)	*3.4 [2.2; 5.4]* (144)						
Standard C, cemented (Waldemar Link)	CombiCup (Waldemar Link)	369	4	77 (73 - 80)	32/68	2014-2022	1.1 [0.4; 2.9] (352)	2.0 [0.9; 4.0] (340)	2.5 [1.3; 4.8] (330)	3.2 [1.8; 5.6] (273)	3.2 [1.8; 5.6] (188)	*3.2 [1.8; 5.6]* (107)		
Taperloc Cemented (Zimmer Biomet)	Allofit (Zimmer Biomet)	422	24	79 (75 - 82)	20/80	2015-2022	2.9 [1.6; 5.2] (267)	3.5 [1.9; 6.2] (151)	*3.5 [1.9; 6.2]* (80)					
Taperloc Cemented (Zimmer Biomet)	G7 (Zimmer Biomet)	434	11	80 (75 - 83)	25/75	2015-2022	1.7 [0.8; 3.4] (355)	2.5 [1.4; 4.7] (292)	2.5 [1.4; 4.7] (228)	2.5 [1.4; 4.7] (169)	*2.5 [1.4; 4.7]* (102)	*2.5 [1.4; 4.7]* (52)		
TRENDHIP (Aesculap)	PLASMAFIT (Aesculap)	496	31	80 (75 - 83)	25/75	2016-2022	2.5 [1.4; 4.4] (392)	2.5 [1.4; 4.4] (302)	2.5 [1.4; 4.4] (222)	*2.5 [1.4; 4.4]* (128)	*2.5 [1.4; 4.4]* (54)			
twinSys cem. (Mathys)	RM Pressfit vitamys (Mathys)	921	25	78 (72 - 82)	23/77	2014-2022	2.5 [1.6; 3.7] (772)	2.6 [1.7; 3.9] (648)	2.6 [1.7; 3.9] (490)	2.8 [1.9; 4.2] (330)	*3.5 [2.3; 5.4]* (147)			
Reverse-hybrid fixation														
Avenir (Zimmer Biomet)	Flachprofil (Zimmer Biomet)	358	61	73 (66 - 79)	17/83	2013-2022	4.3 [2.6; 7.0] (264)	5.1 [3.2; 8.2] (209)	5.6 [3.5; 8.8] (161)	*5.6 [3.5; 8.8]* (108)	*5.6 [3.5; 8.8]* (73)			
BICONTACT (Aesculap)	All POLY CUP (Aesculap)	385	60	76 (70 - 80)	23/77	2013-2022	3.4 [2.0; 5.8] (324)	3.7 [2.2; 6.2] (289)	4.0 [2.5; 6.6] (245)	4.0 [2.5; 6.6] (201)	*4.5 [2.8; 7.4]* (141)	*4.5 [2.8; 7.4]* (79)		
Uncemented fixation														
A2 Kurzschaft (ARTIQO)	ANA.NOVA® Alpha Pfanne (ARTIQO)	3,866	46	64 (58 - 71)	43/57	2016-2022	2.1 [1.7; 2.7] (2,685)	2.3 [1.9; 2.9] (1,873)	2.5 [2.0; 3.1] (1,282)	2.8 [2.2; 3.6] (785)	2.8 [2.2; 3.6] (338)	*3.2 [2.4; 4.3]* (75)		
A2 Kurzschaft (ARTIQO)	ANA.NOVA® Hybrid Pfanne (ARTIQO)	5,015	38	63 (57 - 70)	37/63	2016-2022	1.8 [1.5; 2.2] (3,893)	2.1 [1.7; 2.5] (2,979)	2.2 [1.8; 2.7] (2,137)	2.3 [1.9; 2.8] (1,343)	2.3 [1.9; 2.8] (619)	*2.6 [1.9; 3.4]* (125)		
ABG II Stem (Stryker)	Trident Cup (Stryker)	414	12	66 (59 - 71)	42/58	2014-2022	3.1 [1.8; 5.4] (373)	5.1 [3.3; 7.7] (346)	5.6 [3.7; 8.4] (305)	5.9 [4.0; 8.8] (238)	5.9 [4.0; 8.8] (180)	*6.5 [4.4; 9.7]* (139)	*6.5 [4.4; 9.7]* (57)	

Table 48 (continued)

Elective total hip arthroplasties							Revision probabilities after ...							
Femoral stem	Cup	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented fixation														
Accolade II Stem (Stryker)	Trident Cup (Stryker)	6,778	45	67 (60 - 75)	42/58	2014-2022	2.5 [2.1; 2.9] (5,508)	2.8 [2.4; 3.2] (4,244)	2.9 [2.5; 3.3] (2,998)	3.0 [2.6; 3.5] (1,719)	3.1 [2.7; 3.6] (830)	3.3 [2.7; 3.9] (393)	*3.3 [2.7; 3.9]* (133)	
Accolade II Stem (Stryker)	Trident TC Cup (Stryker)	482	10	69 (62 - 75)	36/64	2015-2021	1.7 [0.8; 3.3] (463)	2.1 [1.1; 3.9] (454)	2.3 [1.3; 4.2] (439)	2.8 [1.6; 4.7] (419)	3.5 [2.1; 5.6] (379)	3.5 [2.1; 5.6] (271)		
Accolade II Stem (Stryker)	Tritanium Cup (Stryker)	2,489	23	69 (62 - 76)	40/60	2014-2022	2.8 [2.2; 3.5] (2,188)	3.3 [2.6; 4.1] (1,717)	3.6 [2.9; 4.5] (1,272)	4.0 [3.3; 5.0] (837)	4.2 [3.4; 5.1] (563)	4.2 [3.4; 5.1] (299)	*4.7 [3.5; 6.2]* (113)	
Actinia cementless (Implantcast)	EcoFit cpTi (Implantcast)	623	13	70 (62 - 76)	41/59	2015-2022	2.8 [1.7; 4.4] (573)	3.6 [2.4; 5.4] (548)	3.6 [2.4; 5.4] (493)	4.0 [2.7; 6.0] (320)	*4.4 [3.0; 6.5]* (143)			
Actinia cementless (Implantcast)	EcoFit NH cpTi (Implantcast)	1,383	7	72 (65 - 78)	30/70	2015-2022	2.9 [2.2; 4.0] (1,246)	3.0 [2.2; 4.1] (1,127)	3.1 [2.3; 4.2] (882)	3.1 [2.3; 4.2] (283)	*3.1 [2.3; 4.2]* (95)			
ACTIS™-Hüftschaft (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	1,574	35	62 (55 - 69)	43/57	2018-2022	1.5 [1.0; 2.3] (825)	1.9 [1.2; 2.9] (444)	*1.9 [1.2; 2.9]* (128)					
Alloclassic (Zimmer Biomet)	Alloclassic (Zimmer Biomet)	396	8	67 (59 - 75)	32/68	2014-2022	3.8 [2.3; 6.3] (366)	4.4 [2.7; 6.9] (354)	4.9 [3.2; 7.6] (340)	5.5 [3.6; 8.3] (304)	5.5 [3.6; 8.3] (244)	5.9 [3.9; 8.9] (176)	*5.9 [3.9; 8.9]* (83)	
Alloclassic (Zimmer Biomet)	Allofit (Zimmer Biomet)	8,874	67	70 (62 - 77)	35/65	2012-2022	2.7 [2.4; 3.1] (7,706)	3.2 [2.8; 3.6] (6,783)	3.5 [3.1; 3.9] (5,726)	3.8 [3.4; 4.3] (4,614)	4.1 [3.7; 4.6] (3,418)	4.4 [3.9; 4.9] (2,281)	4.5 [4.0; 5.1] (1,061)	4.9 [4.3; 5.7] (253)
Alloclassic (Zimmer Biomet)	Trilogy (Zimmer Biomet)	535	5	67 (64 - 70)	34/66	2015-2022	3.3 [2.0; 5.2] (455)	3.9 [2.5; 6.0] (403)	3.9 [2.5; 6.0] (340)	4.5 [3.0; 6.8] (269)	4.5 [3.0; 6.8] (202)	*4.5 [3.0; 6.8]* (112)		
Alpha-Fit (Corin)	Trinity no Hole (Corin)	451	3	75 (69 - 78)	33/67	2014-2022	1.6 [0.7; 3.2] (434)	1.8 [0.9; 3.5] (427)	2.3 [1.2; 4.1] (408)	2.3 [1.2; 4.1] (341)	2.7 [1.5; 4.8] (240)	2.7 [1.5; 4.8] (172)	*3.9 [2.2; 7.1]* (102)	
AMISTEM-H (Medacta)	VERSAFITCUP CC TRIO (Medacta)	962	26	67 (58 - 74)	42/58	2015-2020	3.2 [2.3; 4.6] (920)	3.6 [2.6; 4.9] (889)	3.8 [2.8; 5.2] (741)	4.3 [3.1; 5.8] (517)	4.7 [3.5; 6.5] (319)	*6.0 [4.3; 8.5]* (136)		
AMISTEM-H ProxCoat (Medacta)	VERSAFITCUP CC TRIO (Medacta)	347	3	60 (52 - 66)	48/52	2016-2022	1.8 [0.8; 3.9] (274)	2.1 [1.0; 4.5] (220)	2.6 [1.3; 5.2] (169)	*3.3 [1.7; 6.5]* (87)				
AMISTEM-P (Medacta)	VERSAFITCUP CC TRIO (Medacta)	735	21	66 (59 - 73)	41/59	2019-2022	2.5 [1.6; 4.0] (425)	*2.5 [1.6; 4.0]* (133)						
ANA.NOVA® Alpha Schaft (ARTIQO)	ANA.NOVA® Alpha Pfanne (ARTIQO)	969	7	70 (63 - 76)	44/56	2015-2022	3.2 [2.2; 4.5] (839)	3.5 [2.5; 4.9] (755)	3.8 [2.7; 5.3] (640)	4.3 [3.1; 5.9] (505)	4.8 [3.5; 6.6] (336)	4.8 [3.5; 6.6] (221)		
ANA.NOVA® Alpha Schaft (ARTIQO)	ANA.NOVA® Hybrid Pfanne (ARTIQO)	1,144	11	69 (63 - 76)	37/63	2015-2022	1.4 [0.9; 2.3] (904)	2.0 [1.3; 3.0] (731)	2.1 [1.4; 3.2] (568)	2.1 [1.4; 3.2] (396)	2.1 [1.4; 3.2] (238)	*2.6 [1.6; 4.2]* (132)		
ANA.NOVA® SL-complete® Schaft (ARTIQO)	ANA.NOVA® Alpha Pfanne (ARTIQO)	308	5	73 (64 - 78)	39/61	2015-2022	3.1 [1.6; 5.8] (256)	3.1 [1.6; 5.8] (210)	3.1 [1.6; 5.8] (183)	*3.6 [1.9; 6.6]* (119)	*3.6 [1.9; 6.6]* (53)			
ANA.NOVA® Solitär Schaft (ARTIQO)	ANA.NOVA® Hybrid Pfanne (ARTIQO)	491	7	74 (65 - 80)	35/65	2015-2022	3.9 [2.5; 6.1] (434)	4.2 [2.7; 6.4] (386)	4.7 [3.1; 7.0] (292)	5.2 [3.4; 7.9] (167)	*6.1 [3.9; 9.7]* (79)			
Anato Stem (Stryker)	Trident Cup (Stryker)	392	9	68 (60 - 75)	45/55	2016-2022	2.9 [1.6; 5.1] (342)	3.5 [2.0; 5.9] (280)	3.5 [2.0; 5.9] (210)	3.5 [2.0; 5.9] (156)	*3.5 [2.0; 5.9]* (79)			
Avenir (Zimmer Biomet)	Allofit (Zimmer Biomet)	23,874	180	69 (62 - 76)	40/60	2013-2022	2.9 [2.7; 3.2] (18,329)	3.2 [3.0; 3.4] (13,975)	3.4 [3.1; 3.6] (9,892)	3.4 [3.2; 3.7] (6,157)	3.5 [3.3; 3.8] (3,696)	3.5 [3.3; 3.8] (1,794)	3.6 [3.3; 3.9] (511)	*3.6 [3.3; 3.9]* (57)
Avenir (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	2,845	49	67 (59 - 75)	40/60	2014-2022	3.4 [2.8; 4.2] (2,290)	3.9 [3.3; 4.8] (1,810)	4.2 [3.5; 5.1] (1,288)	4.2 [3.5; 5.1] (839)	4.8 [3.9; 5.8] (449)	4.8 [3.9; 5.8] (167)		
Avenir Complete (Zimmer Biomet)	Allofit (Zimmer Biomet)	1,208	38	67 (59 - 73)	39/61	2020-2022	2.8 [2.0; 4.0] (467)	*2.8 [2.0; 4.0]* (73)						
BICONTACT (Aesculap)	PLASMACUP (Aesculap)	4,841	31	70 (63 - 76)	40/60	2013-2022	2.3 [1.9; 2.8] (4,318)	2.6 [2.2; 3.1] (3,862)	2.7 [2.3; 3.3] (3,382)	2.9 [2.4; 3.4] (2,888)	2.9 [2.5; 3.4] (2,229)	2.9 [2.5; 3.4] (1,544)	2.9 [2.5; 3.4] (806)	2.9 [2.5; 3.4] (241)
BICONTACT (Aesculap)	PLASMAFIT (Aesculap)	12,300	106	71 (64 - 77)	40/60	2013-2022	3.5 [3.2; 3.9] (10,731)	3.8 [3.5; 4.2] (9,477)	4.0 [3.7; 4.4] (7,934)	4.1 [3.7; 4.4] (5,994)	4.1 [3.8; 4.5] (4,087)	4.1 [3.8; 4.5] (2,392)	4.1 [3.8; 4.5] (1,103)	4.3 [3.8; 4.7] (321)
BICONTACT (Aesculap)	SCREWCUP SC (Aesculap)	695	31	72 (64 - 77)	35/65	2013-2022	3.4 [2.3; 5.1] (592)	4.8 [3.4; 6.7] (506)	5.2 [3.7; 7.2] (416)	5.7 [4.1; 7.8] (311)	7.1 [5.0; 9.9] (171)	*7.7 [5.4; 10.9]* (83)		
Brexis (Zimmer Biomet)	Allofit (Zimmer Biomet)	753	29	61 (55 - 67)	45/55	2016-2022	2.6 [1.6; 4.0] (514)	3.0 [2.0; 4.6] (371)	3.0 [2.0; 4.6] (234)	*3.0 [2.0; 4.6]* (80)				
CLS Spotorno (Zimmer Biomet)	Allofit (Zimmer Biomet)	22,372	178	65 (58 - 72)	43/57	2012-2022	2.8 [2.6; 3.1] (18,995)	3.2 [3.0; 3.5] (16,323)	3.5 [3.3; 3.8] (13,711)	3.7 [3.4; 4.0] (11,000)	3.8 [3.5; 4.1] (8,100)	4.0 [3.7; 4.3] (5,106)	4.1 [3.8; 4.4] (2,425)	4.2 [3.9; 4.6] (755)

Table 48 (continued)

Elective total hip arthroplasties							Revision probabilities after ...							
Femoral stem	Cup	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented fixation														
CLS Spotorno (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	1,636	33	66 (59 - 74)	41/59	2013-2022	1.5 [1.0; 2.3] (1,543)	2.3 [1.6; 3.1] (1,367)	2.3 [1.6; 3.1] (1,196)	2.4 [1.7; 3.2] (950)	2.5 [1.8; 3.4] (750)	2.6 [1.9; 3.6] (585)	2.6 [1.9; 3.6] (355)	2.6 [1.9; 3.6] (196)
CLS Spotorno (Zimmer Biomet)	Trilogy (Zimmer Biomet)	345	7	65 (57 - 71)	40/60	2014-2022	3.8 [2.2; 6.4] (298)	4.8 [3.0; 7.7] (278)	4.8 [3.0; 7.7] (268)	4.8 [3.0; 7.7] (240)	5.2 [3.3; 8.3] (204)	5.2 [3.3; 8.3] (170)	*5.2 [3.3; 8.3]* (91)	
CLS Spotorno (Zimmer Biomet)	Trilogy IT (Zimmer Biomet)	1,046	3	68 (61 - 74)	42/58	2014-2022	3.5 [2.6; 4.8] (888)	3.7 [2.7; 5.1] (785)	4.3 [3.2; 5.8] (678)	4.3 [3.2; 5.8] (536)	4.5 [3.3; 6.0] (387)	5.0 [3.7; 6.8] (249)	*5.0 [3.7; 6.8]* (101)	
CORAIL™ AMT-Hüftschaft mit Kragen (DePuy)	Allofit (Zimmer Biomet)	303	8	60 (54 - 70)	18/82	2015-2022	1.7 [0.7; 4.1] (262)	2.1 [0.9; 4.6] (225)	2.1 [0.9; 4.6] (188)	2.1 [0.9; 4.6] (157)	*2.1 [0.9; 4.6]* (136)	*2.1 [0.9; 4.6]* (93)		
CORAIL™ AMT-Hüftschaft mit Kragen (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	11,330	97	69 (61 - 76)	37/63	2012-2022	1.6 [1.4; 1.9] (8,866)	2.1 [1.8; 2.3] (7,043)	2.3 [2.0; 2.6] (5,079)	2.4 [2.1; 2.8] (3,280)	2.5 [2.2; 2.9] (1,951)	2.9 [2.5; 3.4] (866)	2.9 [2.5; 3.4] (207)	*2.9 [2.5; 3.4]* (59)
CORAIL™ AMT-Hüftschaft ohne Kragen (DePuy)	Allofit (Zimmer Biomet)	1,475	17	70 (62 - 77)	38/62	2015-2022	2.8 [2.1; 3.8] (1,271)	3.0 [2.2; 4.0] (1,140)	3.4 [2.5; 4.4] (1,011)	3.4 [2.5; 4.4] (815)	3.5 [2.6; 4.7] (429)	3.5 [2.6; 4.7] (161)		
CORAIL™ AMT-Hüftschaft ohne Kragen (DePuy)	Allofit IT (Zimmer Biomet)	382	4	72 (66 - 77)	39/61	2015-2022	3.2 [1.8; 5.5] (360)	4.0 [2.4; 6.5] (345)	4.3 [2.6; 6.9] (336)	4.3 [2.6; 6.9] (323)	4.6 [2.9; 7.2] (302)	4.9 [3.1; 7.7] (234)		
CORAIL™ AMT-Hüftschaft ohne Kragen (DePuy)	DURALOC™ OPTION™ Press Fit-Hüftpfanne (DePuy)	569	8	67 (60 - 74)	42/58	2013-2022	3.9 [2.6; 5.9] (497)	4.3 [2.9; 6.3] (445)	4.3 [2.9; 6.3] (372)	4.6 [3.1; 6.7] (306)	4.6 [3.1; 6.7] (238)	4.6 [3.1; 6.7] (161)	*4.6 [3.1; 6.7]* (61)	
CORAIL™ AMT-Hüftschaft ohne Kragen (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	31,019	165	70 (62 - 76)	38/62	2012-2022	2.8 [2.6; 3.0] (25,474)	3.3 [3.1; 3.5] (20,711)	3.6 [3.4; 3.8] (16,144)	3.9 [3.6; 4.1] (11,914)	4.0 [3.7; 4.2] (7,892)	4.2 [4.0; 4.5] (4,319)	4.5 [4.2; 4.9] (1,702)	5.4 [4.7; 6.2] (476)
COREHIP (Aesculap)	PLASMACUP (Aesculap)	925	4	70 (66 - 75)	33/67	2017-2022	1.7 [1.0; 2.8] (599)	1.9 [1.1; 3.2] (398)	2.2 [1.3; 3.6] (242)					
COREHIP (Aesculap)	PLASMAFIT (Aesculap)	3,325	54	68 (60 - 75)	39/61	2017-2022	2.0 [1.6; 2.6] (1,682)	2.6 [2.0; 3.4] (576)	*3.4 [2.2; 5.4]* (139)					
EcoFit 133° cpTi (Implantcast)	EcoFit EPORE (Implantcast)	418	5	73 (67 - 79)	28/72	2019-2022	4.7 [3.0; 7.4] (270)	*5.5 [3.5; 8.4]* (111)						
EcoFit cpTi (Implantcast)	EcoFit cpTi (Implantcast)	333	8	72 (64 - 76)	35/65	2014-2022	5.8 [3.7; 8.9] (292)	6.1 [4.0; 9.3] (270)	6.1 [4.0; 9.3] (241)	6.5 [4.3; 9.8] (217)	6.5 [4.3; 9.8] (183)	6.5 [4.3; 9.8] (152)		
EcoFit cpTi (Implantcast)	EcoFit EPORE (Implantcast)	548	4	75 (68.5 - 79)	25/75	2016-2022	4.4 [3.0; 6.5] (513)	5.3 [3.7; 7.6] (489)	6.1 [4.4; 8.5] (446)	6.7 [4.8; 9.2] (302)	7.1 [5.1; 9.8] (151)			
EcoFit Short cpTi (Implantcast)	EcoFit EPORE (Implantcast)	314	5	70 (63 - 77)	38/62	2019-2022	5.6 [3.5; 8.8] (208)	*5.6 [3.5; 8.8]* (123)						
EXCEPTION (Zimmer Biomet)	Allofit (Zimmer Biomet)	1,459	12	69 (61 - 75)	49/51	2015-2022	4.4 [3.5; 5.6] (1,328)	4.9 [3.9; 6.1] (1,207)	5.4 [4.3; 6.7] (886)	5.4 [4.3; 6.7] (562)	6.2 [4.8; 7.8] (273)			
EXCIA (Aesculap)	PLASMAFIT (Aesculap)	11,070	113	70 (62 - 76)	40/60	2014-2022	3.3 [3.0; 3.6] (8,783)	3.7 [3.3; 4.1] (7,126)	3.8 [3.4; 4.2] (5,406)	3.9 [3.5; 4.3] (3,649)	3.9 [3.6; 4.3] (2,138)	4.0 [3.6; 4.4] (828)	*4.0 [3.6; 4.4]* (148)	
Fitmore (Zimmer Biomet)	Allofit (Zimmer Biomet)	21,713	202	63 (56 - 70)	46/54	2012-2022	2.3 [2.1; 2.5] (17,754)	2.6 [2.4; 2.9] (14,611)	2.9 [2.6; 3.1] (11,474)	3.0 [2.8; 3.3] (8,457)	3.1 [2.8; 3.3] (5,640)	3.2 [2.9; 3.4] (3,332)	3.2 [2.9; 3.5] (1,414)	3.2 [2.9; 3.5] (308)
Fitmore (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	2,760	61	58 (52 - 64)	47/53	2012-2022	3.0 [2.5; 3.8] (2,291)	3.8 [3.1; 4.6] (1,792)	4.2 [3.5; 5.1] (1,398)	4.3 [3.5; 5.2] (1,054)	4.6 [3.8; 5.5] (743)	4.9 [4.0; 5.9] (422)	4.9 [4.0; 5.9] (181)	*5.6 [4.1; 7.7]* (59)
Fitmore (Zimmer Biomet)	Trilogy (Zimmer Biomet)	2,508	14	62 (56 - 68)	44/56	2012-2022	1.6 [1.2; 2.2] (2,153)	2.1 [1.6; 2.7] (1,854)	2.3 [1.7; 3.0] (1,513)	2.4 [1.9; 3.2] (1,159)	2.6 [2.0; 3.4] (847)	2.7 [2.1; 3.6] (549)	2.7 [2.1; 3.6] (293)	2.7 [2.1; 3.6] (154)
GTS (Zimmer Biomet)	Allofit (Zimmer Biomet)	812	19	65 (57 - 71)	46/54	2014-2022	3.2 [2.2; 4.7] (691)	3.9 [2.7; 5.5] (627)	4.4 [3.1; 6.2] (530)	4.4 [3.1; 6.2] (377)	4.4 [3.1; 6.2] (190)	*4.4 [3.1; 6.2]* (105)		
GTS (Zimmer Biomet)	G7 (Zimmer Biomet)	445	10	66 (58 - 75)	36/64	2014-2022	4.1 [2.6; 6.4] (390)	5.2 [3.4; 7.7] (322)	5.2 [3.4; 7.7] (263)	6.0 [4.0; 8.8] (205)	*6.0 [4.0; 8.8]* (126)	*6.0 [4.0; 8.8]* (90)		
Konusprothese (Zimmer Biomet)	Allofit (Zimmer Biomet)	577	81	54 (46 - 61)	19/81	2013-2022	3.2 [2.0; 5.0] (494)	3.6 [2.3; 5.6] (427)	3.9 [2.5; 5.9] (345)	3.9 [2.5; 5.9] (267)	4.3 [2.8; 6.5] (198)	*4.9 [3.1; 7.7]* (132)	*4.9 [3.1; 7.7]* (62)	
Konusprothese (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	419	17	68 (58 - 76)	10/90	2013-2022	2.4 [1.3; 4.4] (383)	3.0 [1.7; 5.2] (343)	3.6 [2.1; 6.0] (303)	3.9 [2.4; 6.5] (264)	3.9 [2.4; 6.5] (222)	3.9 [2.4; 6.5] (166)	*3.9 [2.4; 6.5]* (120)	*3.9 [2.4; 6.5]* (66)
LCU Hip System, cementless (Waldemar Link)	Allofit (Zimmer Biomet)	721	6	68 (62 - 75)	48/52	2015-2022	1.8 [1.1; 3.2] (584)	2.0 [1.2; 3.4] (461)	2.5 [1.5; 4.1] (357)	2.5 [1.5; 4.1] (251)	*3.1 [1.8; 5.2]* (133)			
LCU Hip System, cementless (Waldemar Link)	CombiCup (Waldemar Link)	1,624	23	67 (59 - 74)	45/55	2014-2022	2.3 [1.7; 3.2] (1,506)	2.6 [2.0; 3.6] (1,379)	2.8 [2.1; 3.8] (1,126)	2.9 [2.2; 3.9] (765)	3.0 [2.3; 4.1] (447)	*4.0 [2.7; 5.8]* (139)		
LCU Hip System, cementless (Waldemar Link)	MobileLink, Cluster Hole (Waldemar Link)	732	23	68 (61 - 74)	40/60	2017-2022	4.3 [3.0; 6.0] (476)	4.8 [3.4; 6.8] (242)	*4.8 [3.4; 6.8]* (77)					

Table 48 (continued)

Elective total hip arthroplasties							Revision probabilities after ...							
Femoral stem	Cup	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented fixation														
M/L Taper (Zimmer Biomet)	Allofit (Zimmer Biomet)	5,255	23	69 (61 - 75)	42/58	2013-2022	3.2 [2.7; 3.7] (4,448)	3.6 [3.1; 4.2] (3,727)	4.0 [3.4; 4.5] (3,077)	4.2 [3.6; 4.8] (2,478)	4.3 [3.7; 4.9] (1,630)	4.5 [3.9; 5.1] (839)	4.8 [4.1; 5.8] (356)	*5.2 [4.2; 6.5]* (93)
M/L Taper (Zimmer Biomet)	Trilogy (Zimmer Biomet)	546	3	69 (63 - 72)	33/67	2012-2022	2.0 [1.1; 3.7] (507)	2.4 [1.4; 4.2] (464)	2.4 [1.4; 4.2] (425)	2.4 [1.4; 4.2] (395)	2.7 [1.6; 4.5] (364)	2.7 [1.6; 4.5] (288)	2.7 [1.6; 4.5] (189)	*2.7 [1.6; 4.5]* (108)
METABLOC (Zimmer Biomet)	Allofit (Zimmer Biomet)	500	13	72.5 (66 - 78)	38/62	2012-2020	2.0 [1.1; 3.7] (482)	2.4 [1.4; 4.2] (454)	2.6 [1.5; 4.5] (419)	3.6 [2.3; 5.7] (363)	3.6 [2.3; 5.7] (308)	3.6 [2.3; 5.7] (220)	*3.6 [2.3; 5.7]* (123)	*3.6 [2.3; 5.7]* (58)
Metafix (Corin)	Trinity Hole (Corin)	701	13	73 (65 - 79)	36/64	2014-2022	1.7 [0.9; 3.0] (575)	1.7 [0.9; 3.0] (451)	1.9 [1.1; 3.3] (371)	1.9 [1.1; 3.3] (267)	1.9 [1.1; 3.3] (193)	*1.9 [1.1; 3.3]* (105)		
Metafix (Corin)	Trinity no Hole (Corin)	899	10	71 (64 - 76)	47/53	2014-2022	1.7 [1.0; 2.8] (831)	2.2 [1.4; 3.4] (774)	2.3 [1.5; 3.5] (700)	2.5 [1.6; 3.8] (536)	2.8 [1.9; 4.3] (427)	2.8 [1.9; 4.3] (278)	*2.8 [1.9; 4.3]* (123)	
METHA (Aesculap)	PLASMACUP (Aesculap)	1,322	34	58 (52 - 63)	44/56	2013-2022	1.5 [1.0; 2.4] (1,208)	2.3 [1.6; 3.3] (1,064)	2.3 [1.6; 3.3] (951)	2.4 [1.7; 3.4] (794)	2.4 [1.7; 3.4] (603)	2.4 [1.7; 3.4] (446)	2.4 [1.7; 3.4] (279)	*2.4 [1.7; 3.4]* (128)
METHA (Aesculap)	PLASMAFIT (Aesculap)	5,913	138	57 (52 - 62)	48/52	2013-2022	3.0 [2.5; 3.4] (5,029)	3.6 [3.1; 4.1] (4,246)	3.8 [3.3; 4.4] (3,470)	3.9 [3.5; 4.5] (2,575)	4.0 [3.5; 4.6] (1,734)	4.3 [3.7; 4.9] (1,015)	4.3 [3.7; 4.9] (505)	*4.3 [3.7; 4.9]* (127)
MiniHip (Corin)	Trinity Hole (Corin)	1,320	35	61.5 (55 - 68)	50/50	2013-2022	2.3 [1.6; 3.3] (1,074)	2.6 [1.9; 3.6] (886)	2.7 [2.0; 3.8] (759)	2.9 [2.1; 4.0] (622)	3.1 [2.2; 4.3] (451)	3.1 [2.2; 4.3] (272)	*3.1 [2.2; 4.3]* (110)	
MiniHip (Corin)	Trinity no Hole (Corin)	903	23	60 (54 - 66)	46/54	2014-2022	3.4 [2.4; 4.8] (768)	4.2 [3.0; 5.7] (680)	4.6 [3.4; 6.3] (584)	4.6 [3.4; 6.3] (447)	5.3 [3.8; 7.2] (269)	*6.0 [4.3; 8.3]* (146)		
Nanos Schenkelhalsprothese (OHST/Smith & Nephew)	Allofit (Zimmer Biomet)	885	19	63 (56 - 70)	48/52	2014-2022	2.2 [1.4; 3.4] (774)	2.7 [1.8; 4.1] (716)	2.9 [1.9; 4.3] (649)	2.9 [1.9; 4.3] (557)	2.9 [1.9; 4.3] (445)	2.9 [1.9; 4.3] (288)	*2.9 [1.9; 4.3]* (111)	
Nanos Schenkelhalsprothese (OHST/Smith & Nephew)	EP-FIT PLUS (Smith & Nephew)	481	28	57 (52 - 63)	55/45	2013-2022	3.1 [1.8; 5.2] (379)	3.1 [1.8; 5.2] (313)	3.1 [1.8; 5.2] (284)	3.5 [2.1; 5.8] (248)	3.5 [2.1; 5.8] (212)	3.5 [2.1; 5.8] (150)	*3.5 [2.1; 5.8]* (66)	
Nanos Schenkelhalsprothese (OHST/Smith & Nephew)	HI Lubricer Schale (Smith & Nephew)	492	12	60.5 (54 - 68)	48/52	2013-2022	1.2 [0.6; 2.7] (469)	2.1 [1.1; 3.9] (435)	3.7 [2.3; 5.9] (397)	4.5 [2.9; 6.9] (347)	5.1 [3.4; 7.7] (255)	5.1 [3.4; 7.7] (173)		
Nanos Schenkelhalsprothese (OHST/Smith & Nephew)	R3 (Smith & Nephew)	1,731	69	59 (52 - 65)	46/54	2013-2022	2.5 [1.9; 3.4] (1,336)	2.6 [1.9; 3.5] (984)	2.7 [2.0; 3.7] (747)	3.0 [2.2; 4.1] (528)	3.2 [2.4; 4.4] (322)	3.2 [2.4; 4.4] (161)		
Nanos Schenkelhalsprothese (OHST/Smith & Nephew)	REFLECTION (Smith & Nephew)	479	4	68 (59 - 76)	34/66	2013-2022	1.5 [0.7; 3.1] (399)	1.8 [0.9; 3.5] (319)	2.1 [1.1; 4.0] (268)	2.1 [1.1; 4.0] (238)	2.1 [1.1; 4.0] (154)	*2.1 [1.1; 4.0]* (123)		
optimys (Mathys)	Allofit (Zimmer Biomet)	3,813	31	63 (56 - 69)	46/54	2013-2022	1.9 [1.5; 2.4] (2,951)	2.0 [1.6; 2.5] (2,236)	2.2 [1.8; 2.8] (1,765)	2.3 [1.8; 2.9] (1,323)	2.3 [1.8; 2.9] (865)	2.3 [1.8; 2.9] (456)	2.5 [1.9; 3.3] (155)	
optimys (Mathys)	aneXys Flex (Mathys)	3,111	58	61 (55 - 66)	47/53	2016-2022	1.7 [1.2; 2.2] (2,059)	2.1 [1.6; 2.8] (1,369)	2.2 [1.7; 2.9] (897)	2.2 [1.7; 2.9] (486)	2.2 [1.7; 2.9] (250)			
optimys (Mathys)	aneXys Uno (Mathys)	315	12	54 (48 - 63)	42/58	2019-2022	2.1 [0.9; 4.7] (215)	3.2 [1.6; 6.5] (150)						
optimys (Mathys)	RM Pressfit (Mathys)	657	8	72 (63 - 78)	43/57	2013-2022	2.6 [1.6; 4.2] (588)	3.1 [2.0; 4.8] (513)	3.1 [2.0; 4.8] (444)	3.6 [2.4; 5.5] (304)	4.0 [2.6; 6.0] (186)	*4.0 [2.6; 6.0]* (80)		
optimys (Mathys)	RM Pressfit vitamys (Mathys)	13,099	84	66 (59 - 73)	44/56	2013-2022	1.7 [1.5; 1.9] (10,029)	1.9 [1.7; 2.2] (7,621)	2.0 [1.7; 2.3] (5,567)	2.1 [1.8; 2.3] (3,717)	2.2 [1.9; 2.5] (2,187)	2.2 [1.9; 2.5] (999)	2.2 [1.9; 2.5] (268)	*2.2 [1.9; 2.5]* (63)
Polarschaft (Smith & Nephew)	EP-FIT PLUS (Smith & Nephew)	1,297	33	69 (61 - 75)	45/55	2013-2022	2.4 [1.7; 3.4] (1,161)	2.7 [2.0; 3.8] (1,027)	2.7 [2.0; 3.8] (909)	2.7 [2.0; 3.8] (779)	2.9 [2.1; 4.0] (553)	2.9 [2.1; 4.0] (267)		
Polarschaft (Smith & Nephew)	HI Lubricer Schale (Smith & Nephew)	2,857	17	70 (62 - 76)	35/65	2013-2022	2.3 [1.8; 2.9] (2,450)	2.7 [2.1; 3.3] (2,080)	2.7 [2.1; 3.3] (1,761)	2.9 [2.3; 3.6] (1,319)	3.1 [2.5; 3.9] (874)	3.5 [2.7; 4.5] (467)	4.0 [3.0; 5.4] (181)	*4.0 [3.0; 5.4]* (67)
Polarschaft (Smith & Nephew)	R3 (Smith & Nephew)	8,472	96	69 (61 - 75)	43/57	2013-2022	2.9 [2.6; 3.3] (6,688)	3.1 [2.8; 3.6] (5,322)	3.4 [3.0; 3.8] (4,124)	3.5 [3.1; 4.0] (2,774)	3.5 [3.1; 4.0] (1,611)	3.5 [3.1; 4.0] (693)	3.5 [3.1; 4.0] (198)	
Polarschaft (Smith & Nephew)	REFLECTION (Smith & Nephew)	331	4	73 (64 - 79)	39/61	2013-2022	0.0 (292)	0.3 [0.0; 2.4] (269)	0.3 [0.0; 2.4] (245)	0.3 [0.0; 2.4] (190)	*0.3 [0.0; 2.4]* (139)	*0.3 [0.0; 2.4]* (91)		
PROFEMUR® GLADIATOR CLASSIC (MicroPort)	PROCOTYL® L BEADED (MicroPort)	341	12	69 (64 - 75)	39/61	2014-2021	2.9 [1.6; 5.4] (329)	3.8 [2.2; 6.5] (315)	4.2 [2.5; 6.9] (215)	*4.2 [2.5; 6.9]* (142)	*4.2 [2.5; 6.9]* (90)	*4.2 [2.5; 6.9]* (56)		
PROFEMUR® GLADIATOR CLASSIC (MicroPort)	PROCOTYL® P (MicroPort)	404	10	70 (63 - 77)	35/65	2020-2022	3.1 [1.7; 5.7] (177)							
PROFEMUR®Preserve (MicroPort)	PROCOTYL® P (MicroPort)	331	14	64 (56 - 70)	45/55	2020-2022	*2.6 [1.3; 5.1]* (129)							
Proxy PLUS Schaft (Smith & Nephew)	EP-FIT PLUS (Smith & Nephew)	342	13	70 (62 - 75)	46/54	2013-2020	3.8 [2.2; 6.5] (324)	4.7 [2.9; 7.6] (306)	5.0 [3.2; 8.0] (296)	5.4 [3.4; 8.4] (271)	5.4 [3.4; 8.4] (230)	5.4 [3.4; 8.4] (160)	*5.4 [3.4; 8.4]* (79)	

Table 48 (continued)

Elective total hip arthroplasties							Revision probabilities after …							
Femoral stem	Cup	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented fixation														
Pyramid (Atesos)	Pyramid (Atesos)	2,823	24	71 (64 - 77)	36/64	2014-2022	3.0 [2.4; 3.7] (2,517)	3.3 [2.7; 4.0] (2,220)	3.6 [3.0; 4.4] (1,845)	3.7 [3.0; 4.5] (1,489)	3.8 [3.1; 4.6] (1,049)	3.9 [3.2; 4.7] (577)	3.9 [3.2; 4.7] (172)	
QUADRA-H (Medacta)	VERSAFITCUP CC TRIO (Medacta)	9,076	62	68 (61 - 75)	39/61	2015-2022	2.5 [2.2; 2.9] (7,001)	3.0 [2.7; 3.4] (5,527)	3.4 [3.0; 3.8] (4,249)	3.8 [3.3; 4.2] (3,012)	4.1 [3.6; 4.6] (1,585)	4.4 [3.8; 5.1] (567)	*4.7 [3.9; 5.6]* (69)	
S-ROM™-Hüftschaft (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	319	19	59 (51 - 68)	30/70	2014-2022	4.1 [2.3; 7.1] (234)	4.1 [2.3; 7.1] (155)	*4.1 [2.3; 7.1]* (97)					
SL-PLUS Schaft (Smith & Nephew)	Allofit (Zimmer Biomet)	590	13	64.5 (58 - 71)	36/64	2012-2022	3.6 [2.3; 5.4] (554)	4.5 [3.1; 6.5] (527)	4.8 [3.4; 6.9] (504)	5.0 [3.5; 7.2] (482)	5.6 [4.0; 7.9] (455)	6.1 [4.4; 8.4] (393)	6.9 [5.0; 9.4] (339)	7.2 [5.2; 9.8] (250)
SL-PLUS Schaft (Smith & Nephew)	BICON-PLUS (Smith & Nephew)	1,346	26	72 (65 - 78)	36/64	2013-2022	2.3 [1.6; 3.2] (1,236)	3.3 [2.5; 4.5] (1,088)	4.2 [3.2; 5.5] (938)	5.1 [4.0; 6.6] (789)	5.5 [4.3; 7.0] (651)	6.4 [5.0; 8.1] (469)	7.2 [5.7; 9.2] (278)	*7.2 [5.7; 9.2]* (70)
SL-PLUS Schaft (Smith & Nephew)	EP-FIT PLUS (Smith & Nephew)	409	12	66 (62 - 72)	44/56	2014-2022	2.5 [1.3; 4.6] (376)	2.7 [1.5; 4.9] (340)	2.7 [1.5; 4.9] (304)	3.1 [1.8; 5.4] (266)	3.1 [1.8; 5.4] (226)	3.5 [2.0; 6.0] (167)	*3.5 [2.0; 6.0]* (72)	
SL-PLUS Schaft (Smith & Nephew)	HI Lubricer Schale (Smith & Nephew)	320	8	71 (62 - 77)	36/64	2014-2022	1.0 [0.3; 2.9] (287)	1.0 [0.3; 2.9] (270)	1.0 [0.3; 2.9] (236)	1.4 [0.5; 3.7] (204)	*1.4 [0.5; 3.7]* (137)	*1.4 [0.5; 3.7]* (80)		
SL-PLUS Schaft (Smith & Nephew)	R3 (Smith & Nephew)	2,069	26	69 (63 - 76)	35/65	2013-2022	3.7 [3.0; 4.7] (1,741)	4.6 [3.7; 5.6] (1,510)	4.9 [4.0; 6.0] (1,251)	5.0 [4.1; 6.1] (947)	5.4 [4.4; 6.6] (633)	5.6 [4.6; 6.9] (311)	*6.2 [4.8; 7.9]* (105)	
SL MIA HA Schaft (Smith & Nephew)	Allofit (Zimmer Biomet)	2,127	15	70 (60 - 78)	32/68	2014-2022	2.7 [2.1; 3.6] (1,606)	3.2 [2.5; 4.1] (1,231)	3.5 [2.7; 4.4] (870)	3.6 [2.8; 4.7] (474)	3.6 [2.8; 4.7] (282)	*3.6 [2.8; 4.7]* (100)		
SL MIA HA Schaft (Smith & Nephew)	BICON-PLUS (Smith & Nephew)	768	16	71 (63.5 - 77)	35/65	2013-2022	2.4 [1.5; 3.7] (703)	3.1 [2.1; 4.6] (661)	3.7 [2.5; 5.3] (604)	4.5 [3.2; 6.4] (544)	4.7 [3.4; 6.6] (495)	5.7 [4.2; 7.8] (411)	6.8 [5.0; 9.2] (292)	*6.8 [5.0; 9.2]* (140)
SL MIA HA Schaft (Smith & Nephew)	EP-FIT PLUS (Smith & Nephew)	676	10	72 (64 - 78)	40/60	2014-2022	2.8 [1.8; 4.4] (599)	3.7 [2.5; 5.4] (552)	3.8 [2.6; 5.6] (497)	3.8 [2.6; 5.6] (464)	3.8 [2.6; 5.6] (385)	3.8 [2.6; 5.6] (241)	*3.8 [2.6; 5.6]* (97)	
SL MIA HA Schaft (Smith & Nephew)	HI Lubricer Schale (Smith & Nephew)	337	7	69 (61 - 75)	35/65	2015-2022	1.2 [0.5; 3.2] (296)	1.6 [0.7; 3.7] (243)	2.0 [0.9; 4.5] (185)	*2.0 [0.9; 4.5]* (118)	*2.0 [0.9; 4.5]* (71)			
SL MIA HA Schaft (Smith & Nephew)	R3 (Smith & Nephew)	1,745	29	69 (61 - 76)	39/61	2015-2022	3.1 [2.4; 4.0] (1,498)	3.4 [2.6; 4.3] (1,251)	3.4 [2.7; 4.4] (995)	3.5 [2.7; 4.6] (681)	3.9 [3.0; 5.0] (335)	*3.9 [3.0; 5.0]* (91)		
SP-CL Hip Stem, uncemented (Waldemar Link)	Allofit (Zimmer Biomet)	1,904	13	63 (56 - 69)	40/60	2015-2022	3.1 [2.4; 4.0] (1,544)	3.6 [2.8; 4.6] (1,310)	4.0 [3.2; 5.0] (1,037)	4.0 [3.2; 5.0] (768)	4.5 [3.5; 5.7] (490)	4.7 [3.7; 6.0] (181)		
SP-CL Hip Stem, uncemented (Waldemar Link)	CombiCup (Waldemar Link)	706	23	66 (58 - 72)	40/60	2014-2022	3.6 [2.4; 5.2] (635)	4.0 [2.8; 5.8] (596)	4.4 [3.1; 6.2] (542)	4.4 [3.1; 6.2] (417)	4.4 [3.1; 6.2] (286)	*4.4 [3.1; 6.2]* (136)		
SP-CL Hip Stem, uncemented (Waldemar Link)	MobileLink, Cluster Hole (Waldemar Link)	635	21	65 (57 - 72)	37/63	2017-2022	3.9 [2.7; 5.8] (451)	5.2 [3.6; 7.5] (263)	*5.2 [3.6; 7.5]* (101)					
SPS Evolution (Symbios)	APRIL Poly (Symbios)	359	4	61 (55 - 67)	46/54	2015-2022	1.1 [0.4; 2.9] (318)	1.7 [0.8; 3.9] (288)	1.7 [0.8; 3.9] (240)	2.2 [1.0; 4.5] (171)	*2.2 [1.0; 4.5]* (86)			
Stemcup (IO-International Orthopaedics)	Stemcup (IO-International Orthopaedics)	359	5	68 (60 - 74)	42/58	2018-2022	1.4 [0.6; 3.4] (218)	*1.4 [0.6; 3.4]* (120)	*1.4 [0.6; 3.4]* (64)					
Taperloc (Zimmer Biomet)	Allofit (Zimmer Biomet)	2,077	30	68 (61 - 75)	40/60	2015-2022	2.9 [2.2; 3.7] (1,375)	3.1 [2.4; 3.9] (901)	3.2 [2.5; 4.1] (584)	3.2 [2.5; 4.1] (321)	3.2 [2.5; 4.1] (158)			
Taperloc (Zimmer Biomet)	G7 (Zimmer Biomet)	2,099	11	70 (62 - 76)	36/64	2014-2022	2.6 [2.0; 3.4] (1,856)	3.3 [2.6; 4.2] (1,620)	4.1 [3.3; 5.1] (1,399)	4.7 [3.9; 5.8] (1,137)	5.5 [4.5; 6.7] (742)	5.8 [4.7; 7.1] (291)		
TAPERLOC COMPLETE (Zimmer Biomet)	Allofit (Zimmer Biomet)	1,009	23	64 (58 - 70)	52/48	2017-2022	2.9 [2.0; 4.2] (638)	3.3 [2.3; 4.7] (426)	3.3 [2.3; 4.7] (189)	*3.3 [2.3; 4.7]* (64)				
TAPERLOC COMPLETE (Zimmer Biomet)	G7 (Zimmer Biomet)	917	8	68 (60 - 75)	37/63	2015-2022	3.7 [2.7; 5.2] (674)	4.5 [3.3; 6.2] (522)	5.3 [3.9; 7.2] (325)	*5.7 [4.2; 7.8]* (60)				
TAPERLOC COMPLETE (Zimmer Biomet)	PLASMAFIT (Aesculap)	2,440	3	66 (59 - 73)	43/57	2015-2022	1.4 [1.0; 1.9] (2,339)	1.5 [1.1; 2.1] (2,234)	1.5 [1.1; 2.1] (1,821)	1.6 [1.2; 2.2] (1,378)	1.6 [1.2; 2.2] (901)	1.6 [1.2; 2.2] (443)		
TRENDHIP (Aesculap)	PLASMAFIT (Aesculap)	5,404	55	69 (62 - 76)	41/59	2014-2022	2.5 [2.1; 2.9] (4,444)	2.7 [2.3; 3.2] (3,787)	2.7 [2.3; 3.2] (3,070)	2.9 [2.4; 3.4] (2,048)	2.9 [2.4; 3.4] (1,085)	3.0 [2.5; 3.6] (591)	3.0 [2.5; 3.6] (223)	
TRENDHIP (Aesculap)	SCREWCUP SC (Aesculap)	465	10	71 (63 - 78)	35/65	2015-2022	2.8 [1.6; 4.8] (411)	3.3 [2.0; 5.4] (371)	4.2 [2.6; 6.6] (264)	4.6 [2.9; 7.2] (169)	*6.8 [4.2; 10.8]* (86)			
TRILOCK™-Hüftschaft (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	4,084	49	60 (55 - 67)	49/51	2013-2022	1.8 [1.4; 2.3] (3,382)	2.4 [2.0; 3.0] (2,759)	2.7 [2.2; 3.3] (2,130)	3.0 [2.5; 3.6] (1,450)	3.0 [2.5; 3.6] (1,013)	3.1 [2.5; 3.8] (622)	3.4 [2.7; 4.4] (289)	*4.2 [2.8; 6.3]* (74)
TRJ (Aesculap)	PLASMACUP (Aesculap)	434	7	72 (65 - 77)	31/69	2014-2022	2.3 [1.3; 4.3] (391)	2.6 [1.4; 4.6] (370)	2.6 [1.4; 4.6] (330)	3.0 [1.7; 5.2] (238)	3.0 [1.7; 5.2] (180)	*3.0 [1.7; 5.2]* (129)	*3.0 [1.7; 5.2]* (56)	

Table 48 (continued)

Elective total hip arthroplasties							Revision probabilities after ...							
Femoral stem	Cup	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented fixation														
TRJ (Aesculap)	PLASMAFIT (Aesculap)	482	21	70 (63 - 77)	33/67	2013-2022	3.4 [2.1; 5.6] (350)	5.1 [3.3; 7.8] (250)	5.5 [3.6; 8.4] (180)	*5.5 [3.6; 8.4]* (116)	*5.5 [3.6; 8.4]* (63)			
twinSys uncem. (Mathys)	aneXys Flex (Mathys)	1,207	28	71 (65 - 77)	42/58	2016-2022	3.8 [2.9; 5.1] (927)	4.0 [3.0; 5.3] (658)	4.0 [3.0; 5.3] (445)	4.3 [3.2; 5.7] (226)	*4.3 [3.2; 5.7]* (99)			
twinSys uncem. (Mathys)	RM Classic (Mathys)	816	10	76 (71 - 81)	30/70	2013-2022	1.3 [0.7; 2.3] (713)	1.7 [1.0; 2.9] (612)	2.1 [1.3; 3.5] (473)	2.3 [1.4; 3.8] (363)	2.6 [1.6; 4.2] (283)	3.0 [1.8; 4.8] (232)	3.0 [1.8; 4.8] (182)	3.0 [1.8; 4.8] (152)
twinSys uncem. (Mathys)	RM Pressfit (Mathys)	469	9	75 (69 - 79)	40/60	2013-2022	2.8 [1.6; 4.7] (447)	3.4 [2.1; 5.6] (417)	3.7 [2.3; 5.8] (392)	3.9 [2.5; 6.2] (329)	3.9 [2.5; 6.2] (279)	3.9 [2.5; 6.2] (194)	*3.9 [2.5; 6.2]* (106)	
twinSys uncem. (Mathys)	RM Pressfit vitamys (Mathys)	2,590	35	72 (64 - 78)	36/64	2013-2022	2.2 [1.7; 2.8] (2,131)	2.4 [1.9; 3.1] (1,756)	2.5 [2.0; 3.2] (1,318)	2.7 [2.1; 3.5] (924)	2.7 [2.1; 3.5] (545)	3.3 [2.4; 4.5] (253)	*3.3 [2.4; 4.5]* (130)	
Cemented fixation														
Avenir (Zimmer Biomet)	Flachprofil (Zimmer Biomet)	947	74	81 (77 - 84)	22/78	2014-2022	3.2 [2.2; 4.6] (672)	3.4 [2.4; 4.9] (443)	3.4 [2.4; 4.9] (306)	3.4 [2.4; 4.9] (196)	*3.4 [2.4; 4.9]* (103)			
BICONTACT (Aesculap)	All POLY CUP (Aesculap)	1,529	66	81 (77 - 84)	22/78	2013-2022	2.4 [1.7; 3.3] (1,366)	2.4 [1.7; 3.3] (1,249)	2.7 [2.0; 3.7] (1,090)	2.9 [2.2; 3.9] (860)	3.0 [2.2; 4.1] (610)	3.2 [2.4; 4.3] (390)	3.5 [2.5; 4.7] (212)	*3.9 [2.7; 5.6]* (80)
CORAIL™ AMT-Hüftschaft ohne Kragen (DePuy)	TRILOC® II-PE-Hüftpfanne (DePuy)	911	74	80 (76 - 84)	18/82	2013-2022	2.8 [1.9; 4.1] (767)	3.0 [2.0; 4.3] (651)	3.1 [2.1; 4.5] (534)	3.3 [2.3; 4.8] (410)	3.9 [2.7; 5.6] (291)	4.3 [2.9; 6.2] (162)		
CS PLUS Schaft (Smith & Nephew)	Müller II Pfanne (OHST Medizintechnik)	485	21	79 (77 - 82)	26/74	2014-2019	1.0 [0.4; 2.5] (455)	1.7 [0.9; 3.4] (433)	2.2 [1.2; 4.0] (415)	2.2 [1.2; 4.0] (374)	2.2 [1.2; 4.0] (289)	2.2 [1.2; 4.0] (184)	*2.2 [1.2; 4.0]* (56)	
EXCIA (Aesculap)	All POLY CUP (Aesculap)	1,108	66	80 (75 - 83)	24/76	2014-2022	2.3 [1.5; 3.3] (905)	2.8 [2.0; 4.1] (736)	3.0 [2.1; 4.3] (571)	3.0 [2.1; 4.3] (453)	3.2 [2.2; 4.6] (316)	3.2 [2.2; 4.6] (205)	*3.2 [2.2; 4.6]* (79)	
M.E.M. Geradschaft (Zimmer Biomet)	Flachprofil (Zimmer Biomet)	4,661	136	80 (77 - 84)	24/76	2012-2022	2.4 [2.0; 2.9] (3,875)	2.8 [2.4; 3.4] (3,251)	3.0 [2.6; 3.6] (2,642)	3.2 [2.7; 3.8] (2,016)	3.3 [2.8; 3.9] (1,392)	3.4 [2.8; 4.0] (859)	3.5 [2.9; 4.2] (408)	*3.5 [2.9; 4.2]* (125)
METABLOC (Zimmer Biomet)	Flachprofil (Zimmer Biomet)	420	17	79 (76 - 83)	26/74	2013-2022	2.7 [1.5; 4.7] (389)	2.9 [1.7; 5.1] (359)	3.2 [1.9; 5.5] (293)	3.2 [1.9; 5.5] (225)	3.8 [2.2; 6.4] (151)	*4.4 [2.6; 7.6]* (76)		
MS-30 (Zimmer Biomet)	Flachprofil (Zimmer Biomet)	491	28	79 (76 - 83)	23/77	2013-2022	1.7 [0.8; 3.3] (454)	1.9 [1.0; 3.6] (430)	2.1 [1.1; 3.9] (383)	2.1 [1.1; 3.9] (285)	2.1 [1.1; 3.9] (193)	*2.1 [1.1; 3.9]* (132)	*2.1 [1.1; 3.9]* (59)	
Polarschaft Cemented (Smith & Nephew)	Müller II Pfanne (OHST Medizintechnik)	633	31	80 (76 - 84)	23/77	2014-2022	3.5 [2.4; 5.3] (538)	3.9 [2.6; 5.8] (479)	3.9 [2.6; 5.8] (408)	3.9 [2.6; 5.8] (293)	4.7 [3.2; 7.0] (175)	*4.7 [3.2; 7.0]* (75)		
SPII Model Lubinus Hip Stem (Waldemar Link)	Cemented Acetabular Cup System, Endo-Model Cup, UHMWPE (Waldemar Link)	493	6	77 (73 - 81)	18/82	2012-2022	2.1 [1.1; 3.8] (456)	2.7 [1.6; 4.7] (424)	2.7 [1.6; 4.7] (382)	3.0 [1.8; 5.0] (344)	3.0 [1.8; 5.0] (301)	3.0 [1.8; 5.0] (263)	3.0 [1.8; 5.0] (220)	*3.4 [2.0; 5.7]* (147)
SPII Model Lubinus Hip Stem (Waldemar Link)	Cemented Acetabular Cup System, IP Cup, UHMWPE (Waldemar Link)	406	15	80 (77 - 83)	26/74	2013-2022	2.0 [1.0; 4.0] (365)	2.6 [1.4; 4.7] (345)	2.9 [1.6; 5.1] (295)	2.9 [1.6; 5.1] (226)	2.9 [1.6; 5.1] (167)	*2.9 [1.6; 5.1]* (127)	*2.9 [1.6; 5.1]* (56)	
SPII Model Lubinus Hip Stem (Waldemar Link)	Cemented Acetabular Cup System, IP Cup, X-Linked (Waldemar Link)	831	23	81 (78 - 84)	26/74	2014-2022	2.5 [1.6; 3.8] (734)	2.7 [1.8; 4.1] (660)	3.2 [2.2; 4.7] (567)	3.8 [2.6; 5.6] (427)	3.8 [2.6; 5.6] (305)	4.2 [2.9; 6.1] (187)	*4.2 [2.9; 6.1]* (71)	
SPII Model Lubinus Hip Stem (Waldemar Link)	Cemented Acetabular Cup System, Lubinus, UHMWPE (Waldemar Link)	429	16	81 (76 - 84)	18/82	2013-2022	1.4 [0.7; 3.2] (374)	1.4 [0.7; 3.2] (312)	2.1 [1.1; 4.3] (246)	2.6 [1.3; 5.0] (212)	3.1 [1.6; 5.8] (167)	*3.1 [1.6; 5.8]* (107)	*3.1 [1.6; 5.8]* (66)	
SPII Model Lubinus Hip Stem (Waldemar Link)	Cemented Acetabular Cup System, Lubinus, X-Linked (Waldemar Link)	501	13	79 (75 - 83)	28/72	2014-2022	1.4 [0.7; 3.0] (441)	1.9 [1.0; 3.6] (363)	2.2 [1.2; 4.1] (289)	2.2 [1.2; 4.1] (189)	*2.2 [1.2; 4.1]* (130)	*2.2 [1.2; 4.1]* (63)		
twinSys cem. (Mathys)	CCB (Mathys)	517	21	80 (76 - 83)	23/77	2014-2022	1.4 [0.7; 2.9] (402)	2.2 [1.2; 4.0] (331)	2.2 [1.2; 4.0] (253)	2.6 [1.4; 4.9] (182)	*3.3 [1.8; 6.1]* (133)	*3.3 [1.8; 6.1]* (76)		

Table 48 (continued)

Knee arthroplasties without primary patellar resurfacing							Revision probabilities after ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Constrained TKA, hinged, fixed bearing, cemented														
Endo-Model - M, Rotating Hinge (Waldemar Link)	Endo-Model - M, Rotating Hinge, cemented (Waldemar Link)	1,057	119	77 (68 - 82)	23/77	2013-2022	5.6 [4.3; 7.2] (807)	7.0 [5.5; 8.8] (654)	7.1 [5.6; 9.0] (498)	7.9 [6.2; 9.9] (332)	7.9 [6.2; 9.9] (193)	*7.9 [6.2; 9.9]* (80)		
Endo-Model SL, Femoral Component, cemented (Waldemar Link)	Endo-Model SL, Tibial Component, Monoblock, cemented (Waldemar Link)	490	50	75.5 (68 - 82)	22/78	2013-2022	7.5 [5.4; 10.3] (386)	8.5 [6.3; 11.5] (302)	9.2 [6.8; 12.3] (230)	9.7 [7.2; 13.0] (171)	*11.0 [8.1; 14.8]* (117)	*11.0 [8.1; 14.8]* (64)		
Endo-Model, Rotating Hinge, cemented (Waldemar Link)	Endo-Model, Rotational Hinge, cemented (Waldemar Link)	1,330	164	77 (69 - 82)	18/82	2013-2022	3.7 [2.8; 4.9] (1,030)	4.8 [3.8; 6.2] (835)	5.7 [4.5; 7.2] (662)	6.0 [4.7; 7.6] (471)	6.5 [5.1; 8.2] (315)	6.5 [5.1; 8.2] (179)	*6.5 [5.1; 8.2]* (84)	
ENDURO (Aesculap)	ENDURO (Aesculap)	1,635	160	76 (68 - 81)	21/79	2013-2022	3.5 [2.7; 4.5] (1,304)	4.5 [3.5; 5.7] (1,061)	5.3 [4.2; 6.6] (823)	5.4 [4.3; 6.8] (588)	5.4 [4.3; 6.8] (386)	5.7 [4.5; 7.2] (227)	*5.7 [4.5; 7.2]* (97)	
MUTARS GenuX MK cemented (Implantcast)	MUTARS GenuX MK cemented (Implantcast)	332	73	77 (67 - 82)	27/73	2015-2022	2.4 [1.1; 4.9] (243)	5.1 [3.0; 8.7] (182)	*5.1 [3.0; 8.7]* (118)	*6.2 [3.5; 10.8]* (70)				
NexGen RHK (Zimmer Biomet)	NexGen RHK (Zimmer Biomet)	1,043	140	76 (68 - 81)	23/77	2012-2022	2.7 [1.9; 3.9] (856)	3.7 [2.7; 5.1] (708)	4.2 [3.0; 5.7] (560)	4.6 [3.4; 6.3] (405)	4.9 [3.6; 6.8] (249)	*4.9 [3.6; 6.8]* (142)	*4.9 [3.6; 6.8]* (72)	
RT-Plus (Smith & Nephew)	RT-Plus (Smith & Nephew)	2,033	136	77 (71 - 81)	21/79	2013-2022	3.8 [3.0; 4.8] (1,710)	4.7 [3.8; 5.7] (1,458)	5.2 [4.2; 6.3] (1,177)	5.5 [4.5; 6.7] (862)	5.7 [4.7; 6.9] (577)	5.7 [4.7; 6.9] (321)	*5.7 [4.7; 6.9]* (119)	
RT-Plus Modular (Smith & Nephew)	RT-Plus Modular (Smith & Nephew)	560	106	75 (66 - 80.5)	28/72	2013-2022	4.6 [3.1; 6.7] (456)	5.5 [3.8; 7.8] (382)	6.3 [4.5; 8.8] (312)	6.3 [4.5; 8.8] (232)	6.7 [4.8; 9.4] (165)	*7.4 [5.2; 10.6]* (80)		
Constrained TKA, varus-valgus stabilised, fixed bearing, cemented														
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	763	71	71 (63 - 78)	29/71	2015-2022	2.5 [1.6; 3.9] (545)	4.0 [2.7; 5.9] (354)	4.3 [2.9; 6.3] (235)	*4.3 [2.9; 6.3]* (101)				
LEGION Revision COCR (Smith & Nephew)	LEGION Revision (Smith & Nephew)	447	64	71 (65 - 79)	29/71	2014-2022	4.5 [2.9; 7.0] (355)	5.0 [3.3; 7.6] (291)	5.4 [3.6; 8.1] (247)	5.4 [3.6; 8.1] (187)	*5.9 [3.9; 8.8]* (129)	*5.9 [3.9; 8.8]* (50)		
NexGen LCCK (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	1,473	106	72 (64 - 79)	29/71	2012-2022	2.7 [2.0; 3.7] (1,164)	2.9 [2.1; 3.9] (950)	3.2 [2.4; 4.4] (759)	3.5 [2.6; 4.8] (580)	3.5 [2.6; 4.8] (396)	3.9 [2.8; 5.3] (220)	*4.8 [3.0; 7.4]* (80)	
Triathlon PS (Stryker)	Triathlon TS (Stryker)	380	37	73 (63 - 79)	26/74	2013-2022	2.0 [0.9; 4.1] (279)	3.9 [2.2; 6.9] (199)	*4.5 [2.6; 7.9]* (127)	*5.3 [3.1; 9.1]* (77)				
Standard TKA, cruciate-retaining, fixed bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	341	5	71 (64 - 77)	46/54	2016-2022	0.6 [0.2; 2.4] (272)	1.1 [0.3; 3.3] (199)	*1.6 [0.6; 4.2]* (139)	*2.5 [1.0; 6.5]* (92)				
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	729	5	69 (62 - 77)	38/62	2014-2022	3.3 [2.2; 4.9] (680)	3.9 [2.7; 5.6] (649)	4.4 [3.1; 6.2] (560)	4.6 [3.3; 6.4] (420)	4.6 [3.3; 6.4] (276)	*5.0 [3.5; 7.0]* (134)		
EFK Femur zementfrei (OHST Medizintechnik)	EFK Tibia zementiert (OHST Medizintechnik)	1,271	14	70 (63 - 76)	42/58	2014-2022	1.2 [0.7; 2.0] (1,178)	1.6 [1.0; 2.4] (1,076)	1.8 [1.2; 2.8] (972)	2.1 [1.5; 3.2] (879)	2.5 [1.7; 3.6] (779)	3.3 [2.4; 4.7] (584)	4.0 [2.9; 5.7] (277)	
GENESIS II CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	445	6	68 (62 - 75)	44/56	2012-2022	1.0 [0.4; 2.5] (412)	1.5 [0.7; 3.2] (372)	1.7 [0.8; 3.6] (327)	1.7 [0.8; 3.6] (286)	1.7 [0.8; 3.6] (231)	2.2 [1.1; 4.4] (169)	*2.2 [1.1; 4.4]* (114)	*2.2 [1.1; 4.4]* (55)
LEGION CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	533	8	69 (62 - 77)	50/50	2017-2022	2.4 [1.3; 4.1] (386)	3.7 [2.3; 6.1] (254)	3.7 [2.3; 6.1] (150)	*4.4 [2.6; 7.3]* (79)				
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	581	18	69 (61 - 75)	52/48	2014-2022	0.5 [0.2; 1.6] (541)	1.9 [1.0; 3.4] (493)	2.1 [1.1; 3.7] (456)	2.3 [1.3; 4.0] (371)	2.6 [1.5; 4.4] (233)	*2.6 [1.5; 4.4]* (130)	*2.6 [1.5; 4.4]* (77)	
NexGen CR (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	522	7	69 (62 - 75)	49/51	2014-2022	0.6 [0.2; 1.8] (496)	1.0 [0.4; 2.4] (472)	1.0 [0.4; 2.4] (440)	1.0 [0.4; 2.4] (401)	1.3 [0.6; 2.8] (334)	1.6 [0.7; 3.3] (205)	*1.6 [0.7; 3.3]* (84)	
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	915	22	68 (61 - 76)	41/59	2014-2022	1.1 [0.6; 2.1] (816)	1.5 [0.9; 2.6] (711)	1.8 [1.1; 3.0] (608)	2.0 [1.2; 3.3] (464)	2.5 [1.6; 4.1] (306)	2.5 [1.6; 4.1] (173)	*2.5 [1.6; 4.1]* (69)	
TC-PLUS CR (Smith & Nephew)	TC-PLUS (Smith & Nephew)	543	12	71 (63 - 76)	40/60	2014-2022	2.5 [1.4; 4.2] (464)	2.9 [1.8; 4.9] (378)	2.9 [1.8; 4.9] (299)	2.9 [1.8; 4.9] (243)	*2.9 [1.8; 4.9]* (120)			
Triathlon CR (Stryker)	Triathlon (Stryker)	437	17	70 (63 - 75)	40/60	2014-2022	1.0 [0.4; 2.6] (356)	1.6 [0.7; 3.5] (304)	1.6 [0.7; 3.5] (259)	2.0 [0.9; 4.3] (193)	*2.0 [0.9; 4.3]* (148)	*2.0 [0.9; 4.3]* (64)		
Vanguard CR (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	1,057	13	68 (61 - 75)	42/58	2015-2022	2.0 [1.3; 3.1] (829)	3.1 [2.2; 4.5] (649)	4.0 [2.8; 5.6] (490)	4.2 [3.0; 5.9] (354)	4.5 [3.2; 6.3] (221)	*4.5 [3.2; 6.3]* (118)		

Table 49: Implant outcomes for femoro-tibial combinations in primary knee arthroplasties without patellar resurfacing at primary TKA. Within the groups comprising type of arthroplasty, type of fixation, knee system, and degree of constraint, the combinations are listed alphabetically by the femoral component.

Knee arthroplasties without primary patellar resurfacing							Revision probabilities after ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKA, cruciate-retaining, fixed bearing, cemented														
ACS cemented (Implantcast)	ACS FB cemented (Implantcast)	800	43	66.5 (59 - 74)	21/79	2014-2022	2.4 [1.5; 3.7] (758)	3.9 [2.8; 5.6] (609)	5.5 [4.0; 7.5] (470)	6.9 [5.1; 9.2] (312)	7.2 [5.4; 9.7] (183)	*7.9 [5.8; 10.7]* (77)		
ACS LD cemented (Implantcast)	ACS LD FB cemented (Implantcast)	362	10	70 (63 - 76)	48/52	2015-2021	2.8 [1.5; 5.1] (347)	3.6 [2.1; 6.2] (297)	3.6 [2.1; 6.2] (222)	*3.6 [2.1; 6.2]* (145)	*3.6 [2.1; 6.2]* (73)			
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	2,465	24	71 (64 - 78)	37/63	2014-2022	2.1 [1.6; 2.7] (2,047)	2.7 [2.1; 3.4] (1,648)	3.2 [2.5; 4.1] (1,271)	3.4 [2.7; 4.3] (882)	3.7 [2.9; 4.7] (581)	3.9 [3.0; 5.0] (265)	*3.9 [3.0; 5.0]* (73)	
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	17,681	142	70 (62 - 77)	34/66	2013-2022	1.3 [1.1; 1.5] (14,586)	2.0 [1.8; 2.2] (12,053)	2.4 [2.2; 2.7] (9,454)	2.6 [2.4; 2.9] (6,684)	2.8 [2.6; 3.2] (4,270)	3.0 [2.7; 3.4] (2,306)	3.3 [2.9; 3.8] (946)	3.6 [3.1; 4.2] (263)
EFK Femur zementiert (OHST Medizintechnik)	EFK Tibia zementiert (OHST Medizintechnik)	3,050	39	72 (64 - 77)	38/62	2014-2022	1.3 [0.9; 1.7] (2,856)	1.8 [1.3; 2.3] (2,699)	2.0 [1.5; 2.6] (2,542)	2.4 [1.9; 3.0] (2,330)	2.8 [2.2; 3.5] (2,076)	3.3 [2.7; 4.1] (1,396)	3.9 [3.2; 4.9] (485)	
EFK Femur zementiert TiNbN (OHST Medizintechnik)	EFK Tibia zementiert TiNbN (OHST Medizintechnik)	472	44	66 (59 - 73)	7/93	2014-2022	2.0 [1.0; 3.7] (429)	2.7 [1.5; 4.6] (387)	3.7 [2.3; 6.0] (351)	4.2 [2.7; 6.7] (316)	4.9 [3.2; 7.5] (285)	4.9 [3.2; 7.5] (231)	*4.9 [3.2; 7.5]* (87)	
GEMINI SL Total Knee System, Femoral Component, Mobile Bearing/Fixed Bearing CR, cemented (Waldemar Link)	GEMINI SL Total Knee System, Tibial Component, Fixed Bearing, cemented (Waldemar Link)	316	23	73 (65 - 78)	38/62	2014-2022	3.3 [1.8; 6.0] (282)	4.7 [2.8; 7.7] (263)	6.2 [3.9; 9.6] (227)	7.2 [4.7; 11.0] (156)	*7.8 [5.1; 11.8]* (85)			
GENESIS II CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	9,088	91	70 (62 - 76)	35/65	2013-2022	1.6 [1.4; 1.9] (7,669)	2.5 [2.2; 2.8] (6,298)	2.8 [2.5; 3.2] (5,010)	3.3 [2.9; 3.7] (3,702)	3.5 [3.0; 3.9] (2,620)	3.5 [3.1; 4.0] (1,564)	3.6 [3.2; 4.1] (676)	3.6 [3.2; 4.1] (152)
GENESIS II CR OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	2,528	115	65 (58 - 73)	20/80	2012-2022	1.7 [1.2; 2.3] (2,203)	2.5 [2.0; 3.3] (1,879)	2.8 [2.2; 3.5] (1,579)	3.0 [2.4; 3.8] (1,264)	3.3 [2.6; 4.2] (907)	3.3 [2.6; 4.2] (576)	3.7 [2.9; 4.9] (297)	*3.7 [2.9; 4.9]* (145)
GENESIS II LDK COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	1,703	16	70 (62 - 76)	38/62	2013-2022	2.3 [1.7; 3.1] (1,635)	3.1 [2.4; 4.0] (1,586)	3.7 [2.9; 4.7] (1,517)	3.8 [3.0; 4.9] (1,372)	4.1 [3.2; 5.2] (1,015)	4.1 [3.2; 5.2] (725)	4.1 [3.2; 5.2] (336)	*4.1 [3.2; 5.2]* (95)
INNEX CR (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	1,271	27	73 (65 - 78)	41/59	2013-2022	2.0 [1.3; 2.9] (1,134)	2.5 [1.8; 3.6] (1,000)	2.7 [1.9; 3.9] (835)	3.0 [2.1; 4.2] (664)	3.2 [2.3; 4.4] (467)	3.2 [2.3; 4.4] (267)	*3.2 [2.3; 4.4]* (130)	
INNEX CR GSF (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	360	18	73 (65 - 78)	18/82	2013-2022	1.7 [0.8; 3.7] (328)	2.3 [1.2; 4.5] (294)	3.0 [1.6; 5.5] (247)	3.0 [1.6; 5.5] (201)	*3.0 [1.6; 5.5]* (143)	*3.8 [2.0; 7.0]* (86)		
JOURNEY II CR COCR (Smith & Nephew)	JOURNEY (Smith & Nephew)	368	14	71 (62 - 77)	37/63	2018-2022	2.0 [1.0; 4.2] (284)	3.3 [1.8; 6.1] (202)	*4.6 [2.5; 8.3]* (96)					
JOURNEY II CR OXINIUM (Smith & Nephew)	JOURNEY (Smith & Nephew)	1,029	28	64 (58 - 72)	36/64	2015-2022	3.0 [2.1; 4.2] (944)	4.1 [3.1; 5.6] (859)	5.1 [3.9; 6.7] (720)	6.2 [4.8; 8.0] (536)	6.4 [4.9; 8.2] (253)	*7.3 [5.2; 10.1]* (91)		
LEGION CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	11,776	136	71 (63 - 77)	38/62	2014-2022	1.6 [1.4; 1.9] (9,150)	2.4 [2.1; 2.7] (6,787)	2.8 [2.5; 3.2] (4,783)	3.1 [2.8; 3.5] (2,750)	3.3 [2.9; 3.8] (1,185)	3.3 [2.9; 3.8] (431)		
LEGION CR OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	2,991	144	64 (58 - 72)	16/84	2012-2022	1.6 [1.2; 2.1] (2,187)	2.9 [2.3; 3.7] (1,501)	3.5 [2.8; 4.4] (1,012)	3.7 [2.9; 4.6] (607)	3.7 [2.9; 4.6] (285)	*3.7 [2.9; 4.6]* (90)		
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	890	49	72 (63 - 79)	25/75	2015-2022	1.1 [0.6; 2.3] (530)	2.1 [1.2; 3.8] (261)	*3.1 [1.7; 5.7]* (142)	*3.1 [1.7; 5.7]* (70)				
NexGen CR-Flex-Gender (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	4,944	103	70 (62 - 76)	10/90	2012-2022	0.9 [0.7; 1.2] (4,242)	1.6 [1.3; 2.0] (3,550)	1.8 [1.5; 2.3] (2,934)	2.0 [1.6; 2.5] (2,270)	2.3 [1.9; 2.8] (1,524)	2.4 [1.9; 3.0] (946)	2.5 [2.0; 3.2] (456)	2.5 [2.0; 3.2] (186)
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	17,062	124	72 (64 - 78)	42/58	2012-2022	1.4 [1.2; 1.6] (14,191)	1.9 [1.7; 2.1] (11,976)	2.1 [1.9; 2.4] (9,664)	2.4 [2.1; 2.7] (7,257)	2.5 [2.2; 2.8] (4,826)	2.6 [2.3; 2.9] (2,851)	2.7 [2.4; 3.0] (1,353)	2.8 [2.4; 3.2] (506)
NexGen CR (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	3,685	57	70 (63 - 76)	42/58	2013-2022	1.1 [0.8; 1.5] (3,113)	1.8 [1.4; 2.3] (2,759)	2.3 [1.8; 2.9] (2,416)	2.9 [2.3; 3.5] (2,009)	3.0 [2.4; 3.7] (1,422)	3.3 [2.6; 4.0] (960)	3.6 [2.9; 4.5] (551)	3.9 [3.0; 4.9] (157)
Persona CR (Zimmer Biomet)	Persona Tibia (Zimmer Biomet)	6,103	103	69 (62 - 77)	40/60	2013-2022	1.0 [0.8; 1.3] (4,179)	1.4 [1.1; 1.8] (2,986)	1.5 [1.2; 2.0] (2,011)	1.9 [1.5; 2.4] (1,149)	2.0 [1.5; 2.5] (661)	2.2 [1.6; 2.9] (299)	*2.2 [1.6; 2.9]* (85)	
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	23,480	135	71 (63 - 77)	36/64	2012-2022	1.3 [1.2; 1.4] (19,941)	2.1 [1.9; 2.3] (16,932)	2.5 [2.3; 2.8] (13,622)	2.8 [2.6; 3.1] (9,958)	3.0 [2.8; 3.3] (6,901)	3.2 [2.9; 3.5] (3,838)	3.3 [3.0; 3.7] (1,585)	3.6 [3.1; 4.1] (471)
TC-PLUS CR (Smith & Nephew)	TC-PLUS (Smith & Nephew)	3,949	42	71 (64 - 78)	36/64	2014-2022	1.0 [0.7; 1.3] (3,608)	1.4 [1.1; 1.8] (3,164)	1.6 [1.2; 2.0] (2,608)	1.9 [1.5; 2.4] (1,873)	1.9 [1.5; 2.4] (932)	1.9 [1.5; 2.4] (391)	*1.9 [1.5; 2.4]* (95)	
Triathlon CR (Stryker)	Triathlon (Stryker)	8,322	80	70 (63 - 77)	37/63	2013-2022	1.6 [1.3; 1.9] (6,910)	2.6 [2.2; 3.0] (5,514)	3.1 [2.7; 3.5] (4,376)	3.4 [3.0; 3.9] (3,152)	3.6 [3.1; 4.1] (2,121)	3.7 [3.3; 4.3] (1,219)	3.9 [3.4; 4.5] (549)	3.9 [3.4; 4.5] (151)
Vanguard CR (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	11,741	79	72 (64 - 77)	37/63	2012-2022	1.8 [1.5; 2.0] (9,651)	2.5 [2.2; 2.8] (8,001)	3.0 [2.6; 3.3] (6,348)	3.3 [3.0; 3.7] (4,586)	3.6 [3.2; 4.0] (2,963)	3.7 [3.3; 4.1] (1,605)	3.8 [3.4; 4.3] (539)	

Table 49 (continued)

Knee arthroplasties without primary patellar resurfacing							Revision probabilities after ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKA, cruciate-retaining, fixed bearing, cemented														
Vanguard CR TiNbN (Zimmer Biomet)	Vanguard Tibia TiNbN (Zimmer Biomet)	1,151	68	65 (58 - 72)	8/92	2013-2022	1.4 [0.8; 2.2] (955)	3.1 [2.2; 4.4] (754)	4.1 [3.0; 5.6] (523)	4.5 [3.3; 6.1] (334)	4.8 [3.5; 6.5] (197)	*4.8 [3.5; 6.5]* (103)		
Standard TKA, cruciate-retaining, mobile bearing, hybrid														
TC-PLUS CR (Smith & Nephew)	TC-PLUS SB (Smith & Nephew)	477	7	69 (61 - 76)	35/65	2015-2022	2.9 [1.7; 4.9] (406)	4.4 [2.8; 6.7] (346)	4.6 [3.0; 7.1] (322)	5.3 [3.5; 7.9] (288)	5.3 [3.5; 7.9] (246)	*5.3 [3.5; 7.9]* (138)		
Standard TKA, cruciate-retaining, mobile bearing, cemented														
ACS cemented (Implantcast)	ACS MB cemented (Implantcast)	796	22	70 (62 - 77)	30/70	2013-2022	1.8 [1.1; 3.1] (600)	3.5 [2.3; 5.3] (469)	3.7 [2.5; 5.6] (397)	4.8 [3.3; 7.1] (296)	4.8 [3.3; 7.1] (204)	*5.4 [3.6; 7.9]* (116)		
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	2,525	25	71 (63 - 77)	36/64	2013-2022	1.6 [1.2; 2.2] (2,211)	2.1 [1.6; 2.8] (1,939)	2.4 [1.9; 3.2] (1,605)	2.6 [2.0; 3.3] (1,166)	2.7 [2.1; 3.4] (767)	2.7 [2.1; 3.4] (426)	2.7 [2.1; 3.4] (171)	
INNEX CR (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	1,288	65	70 (62 - 77)	97/3	2013-2022	1.8 [1.2; 2.7] (1,125)	2.6 [1.9; 3.7] (960)	3.0 [2.1; 4.1] (793)	3.5 [2.5; 4.8] (623)	3.8 [2.8; 5.2] (435)	4.3 [3.1; 6.0] (236)	*4.3 [3.1; 6.0]* (69)	
INNEX CR GSF (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	348	33	70 (63 - 76)	82/18	2014-2022	2.1 [1.0; 4.3] (290)	3.1 [1.7; 5.8] (239)	3.6 [2.0; 6.5] (184)	*3.6 [2.0; 6.5]* (141)	*4.3 [2.4; 7.7]* (98)			
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	596	9	71 (64 - 76)	42/58	2013-2022	0.5 [0.2; 1.6] (528)	0.9 [0.4; 2.2] (456)	1.8 [1.0; 3.5] (388)	2.9 [1.7; 5.0] (321)	2.9 [1.7; 5.0] (238)	2.9 [1.7; 5.0] (178)	*2.9 [1.7; 5.0]* (75)	
TC-PLUS CR (Smith & Nephew)	TC-PLUS SB (Smith & Nephew)	405	11	71 (63 - 77)	30/70	2015-2022	3.0 [1.7; 5.2] (385)	3.2 [1.9; 5.5] (343)	4.4 [2.8; 7.0] (283)	4.8 [3.0; 7.5] (229)	4.8 [3.0; 7.5] (187)	*4.8 [3.0; 7.5]* (97)		
ZEN Femur STD zementiert (OHST Medizintechnik)	ZEN Tibia STD zementiert (OHST Medizintechnik)	858	6	71 (65 - 78)	35/65	2015-2022	1.0 [0.5; 2.0] (692)	1.2 [0.6; 2.3] (540)	1.8 [1.0; 3.2] (384)	2.1 [1.2; 3.8] (214)	*2.1 [1.2; 3.8]* (101)			
Standard TKA, cruciate-retaining/sacrificing, fixed bearing, hybrid														
BPK-S INTEGRATION (Peter Brehm)	BPK-S INTEGRATION (Peter Brehm)	380	3	69 (62 - 76)	36/64	2016-2022	1.5 [0.6; 3.5] (316)	2.5 [1.2; 4.9] (267)	4.0 [2.3; 7.0] (216)	*4.6 [2.7; 8.0]* (134)	*4.6 [2.7; 8.0]* (55)			
Standard TKA, cruciate-retaining/sacrificing, fixed bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	7,186	119	67 (60 - 75)	39/61	2013-2022	1.4 [1.1; 1.7] (5,617)	2.5 [2.1; 3.0] (4,466)	3.0 [2.6; 3.5] (3,438)	3.3 [2.9; 3.9] (2,432)	3.5 [3.0; 4.1] (1,598)	3.6 [3.1; 4.2] (841)	3.6 [3.1; 4.2] (387)	*3.6 [3.1; 4.2]* (119)
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	2,066	23	69 (61 - 76)	35/65	2015-2022	1.4 [1.0; 2.0] (1,729)	2.0 [1.5; 2.8] (1,500)	2.5 [1.8; 3.3] (1,052)	2.5 [1.8; 3.3] (679)	2.6 [1.9; 3.6] (357)	*3.2 [2.2; 4.5]* (111)		
Unity CR cmtd (Corin)	Unity cmtd (Corin)	587	15	73 (65 - 78)	29/71	2014-2022	1.2 [0.5; 2.6] (413)	2.2 [1.2; 4.2] (345)	3.4 [2.0; 5.8] (303)	3.4 [2.0; 5.8] (249)	3.8 [2.3; 6.3] (171)	*3.8 [2.3; 6.3]* (107)	*3.8 [2.3; 6.3]* (52)	
Standard TKA, cruciate-retaining/sacrificing, mobile bearing, hybrid														
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	2,967	35	70 (62 - 77)	35/65	2012-2022	2.5 [2.0; 3.1] (2,784)	3.4 [2.8; 4.1] (2,569)	4.1 [3.4; 4.9] (2,260)	4.4 [3.7; 5.3] (1,803)	4.6 [3.8; 5.4] (1,195)	4.7 [3.9; 5.5] (637)	5.0 [4.1; 6.2] (234)	*5.0 [4.1; 6.2]* (92)
Standard TKA, cruciate-retaining/sacrificing, mobile bearing, uncemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia RP zementfrei (DePuy)	575	12	66 (59 - 73)	39/61	2017-2022	0.9 [0.4; 2.3] (274)	*1.4 [0.6; 3.2]* (91)						
LCS™ COMPLETE™ Femur (DePuy)	LCS™ COMPLETE™ Tibia (DePuy)	653	76	64 (58 - 73)	7/93	2014-2022	2.3 [1.3; 3.8] (547)	4.1 [2.8; 6.1] (460)	5.3 [3.7; 7.5] (370)	5.5 [3.9; 7.8] (273)	5.5 [3.9; 7.8] (171)	*5.5 [3.9; 7.8]* (75)		
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	1,224	23	70 (61 - 76)	36/64	2012-2022	1.5 [0.9; 2.3] (1,183)	2.7 [1.9; 3.7] (1,111)	3.4 [2.5; 4.6] (952)	3.7 [2.8; 5.0] (765)	3.7 [2.8; 5.0] (533)	3.7 [2.8; 5.0] (322)	*3.7 [2.8; 5.0]* (131)	*3.7 [2.8; 5.0]* (60)
SCORE (Amplitude)	SCORE (Amplitude)	554	5	69 (62 - 77)	32/68	2015-2022	1.2 [0.5; 2.6] (440)	1.9 [1.0; 3.6] (346)	2.6 [1.4; 4.7] (243)	2.6 [1.4; 4.7] (158)	*2.6 [1.4; 4.7]* (96)			
Standard TKA, cruciate-retaining/sacrificing, mobile bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	2,022	29	69 (62 - 75)	37/63	2015-2022	1.8 [1.3; 2.5] (1,512)	2.4 [1.7; 3.2] (1,164)	2.8 [2.1; 3.8] (928)	3.2 [2.4; 4.3] (685)	3.2 [2.4; 4.3] (459)	3.2 [2.4; 4.3] (260)	*3.2 [2.4; 4.3]* (72)	
E.MOTION (Aesculap)	E.MOTION (Aesculap)	10,626	87	70 (62 - 77)	34/66	2012-2022	1.9 [1.7; 2.2] (8,958)	3.2 [2.8; 3.6] (7,497)	3.7 [3.3; 4.1] (6,001)	4.1 [3.7; 4.5] (4,314)	4.4 [3.9; 4.9] (2,709)	4.5 [4.0; 5.0] (1,418)	4.7 [4.1; 5.2] (556)	*5.2 [4.3; 6.2]* (132)

Table 49 (continued)

Knee arthroplasties without primary patellar resurfacing							Revision probabilities after ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKA, cruciate-retaining/sacrificing, mobile bearing, cemented														
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	5,188	58	72 (64 - 77)	36/64	2013-2022	2.1 [1.8; 2.5] (4,932)	3.1 [2.7; 3.6] (4,525)	3.6 [3.1; 4.1] (4,029)	3.9 [3.4; 4.5] (3,360)	4.1 [3.6; 4.8] (2,623)	4.3 [3.7; 4.9] (1,750)	4.6 [4.0; 5.4] (797)	*4.6 [4.0; 5.4]* (142)
SCORE (Amplitude)	SCORE (Amplitude)	322	7	72 (62 - 77)	30/70	2014-2022	1.9 [0.8; 4.1] (306)	3.2 [1.8; 5.9] (273)	4.0 [2.3; 7.0] (203)	5.1 [3.0; 8.5] (160)	*5.1 [3.0; 8.5]* (102)	*6.5 [3.6; 11.7]* (62)		
SIGMA™ Femur (DePuy)	MBT Tibia (DePuy)	2,081	29	72 (64 - 78)	37/63	2013-2022	2.6 [1.9; 3.3] (1,826)	3.2 [2.5; 4.1] (1,594)	4.0 [3.2; 5.0] (1,237)	4.3 [3.4; 5.3] (846)	4.3 [3.4; 5.3] (541)	4.3 [3.4; 5.3] (290)	*4.3 [3.4; 5.3]* (57)	
Standard TKA cruciate-sacrificing, fixed bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	1,078	9	70 (63 - 77)	44/56	2013-2022	2.4 [1.7; 3.6] (1,013)	3.5 [2.6; 4.8] (907)	3.9 [2.9; 5.2] (729)	4.0 [3.0; 5.5] (488)	4.3 [3.1; 5.8] (317)	4.3 [3.1; 5.8] (157)	*4.3 [3.1; 5.8]* (81)	
INNEX CR (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	313	4	71 (64 - 76)	48/52	2014-2022	2.0 [0.9; 4.3] (279)	2.7 [1.4; 5.3] (252)	3.5 [1.9; 6.4] (213)	3.5 [1.9; 6.4] (172)	*4.1 [2.3; 7.3]* (92)	*4.1 [2.3; 7.3]* (53)		
Standard TKA, cruciate-sacrificing, fixed bearing, cemented														
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	2,181	28	70 (62 - 77)	29/71	2013-2022	2.1 [1.6; 2.9] (1,613)	2.9 [2.2; 3.7] (1,182)	3.6 [2.7; 4.6] (839)	4.1 [3.1; 5.3] (574)	4.8 [3.6; 6.3] (311)	4.8 [3.6; 6.3] (160)	*4.8 [3.6; 6.3]* (85)	
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	3,687	92	70 (62 - 77)	27/73	2013-2022	2.2 [1.8; 2.8] (2,936)	3.2 [2.6; 3.8] (2,370)	3.6 [3.0; 4.3] (1,849)	3.9 [3.3; 4.7] (1,382)	4.1 [3.5; 5.0] (880)	4.6 [3.8; 5.6] (454)	*5.2 [3.9; 6.9]* (134)	
INNEX CR (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	1,276	45	72 (64 - 78)	40/60	2013-2022	1.0 [0.5; 1.7] (1,137)	1.2 [0.8; 2.1] (1,018)	1.9 [1.2; 2.8] (860)	2.2 [1.5; 3.3] (660)	2.7 [1.8; 4.0] (415)	3.2 [2.2; 4.7] (206)	*3.2 [2.2; 4.7]* (61)	
INNEX CR GSF (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	719	34	72 (65 - 78)	20/80	2013-2022	2.6 [1.6; 4.1] (648)	3.1 [2.0; 4.7] (566)	3.2 [2.1; 4.9] (495)	3.7 [2.5; 5.4] (391)	4.2 [2.9; 6.2] (242)	*4.2 [2.9; 6.2]* (149)	*4.2 [2.9; 6.2]* (51)	
Natural Knee NK II (Zimmer Biomet)	Natural Knee NK II (Zimmer Biomet)	335	8	73 (67 - 77)	28/72	2013-2017	2.1 [1.0; 4.4] (321)	3.0 [1.6; 5.6] (312)	3.0 [1.6; 5.6] (303)	3.0 [1.6; 5.6] (297)	3.7 [2.1; 6.4] (285)	4.1 [2.4; 7.0] (212)	4.1 [2.4; 7.0] (156)	*4.1 [2.4; 7.0]* (61)
Persona CR (Zimmer Biomet)	Persona Tibia (Zimmer Biomet)	4,726	90	69 (61 - 76)	37/63	2013-2022	1.3 [1.0; 1.7] (2,915)	2.0 [1.6; 2.5] (1,970)	2.5 [2.0; 3.2] (1,251)	2.9 [2.2; 3.7] (757)	3.0 [2.3; 3.9] (461)	3.3 [2.5; 4.3] (215)	*3.3 [2.5; 4.3]* (61)	
Triathlon CR (Stryker)	Triathlon (Stryker)	1,870	26	69 (61 - 77)	37/63	2014-2022	1.7 [1.2; 2.4] (1,654)	2.8 [2.1; 3.7] (1,327)	3.4 [2.6; 4.4] (918)	3.5 [2.7; 4.5] (554)	3.9 [3.0; 5.2] (270)	4.3 [3.2; 5.9] (166)	*5.2 [3.4; 7.8]* (79)	
Vanguard CR (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	7,266	72	72 (64 - 78)	33/67	2013-2022	1.5 [1.2; 1.8] (5,771)	2.2 [1.9; 2.6] (4,657)	2.7 [2.3; 3.2] (3,616)	3.1 [2.7; 3.6] (2,547)	3.2 [2.8; 3.8] (1,567)	3.3 [2.9; 3.9] (848)	3.5 [2.9; 4.1] (311)	
Vanguard CR TiNbN (Zimmer Biomet)	Vanguard Tibia TiNbN (Zimmer Biomet)	551	59	67 (59 - 75)	6/94	2014-2022	1.1 [0.5; 2.5] (429)	2.4 [1.3; 4.4] (337)	3.0 [1.7; 5.2] (253)	3.9 [2.3; 6.6] (160)	*3.9 [2.3; 6.6]* (102)	*4.9 [2.8; 8.6]* (51)		
Standard TKA, cruciate-sacrificing, mobile bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR RP (Mathys)	705	6	70 (62 - 77)	40/60	2013-2022	1.0 [0.5; 2.1] (631)	2.6 [1.6; 4.2] (579)	2.8 [1.8; 4.4] (507)	3.0 [1.9; 4.7] (425)	3.0 [1.9; 4.7] (334)	3.4 [2.2; 5.4] (222)	*3.4 [2.2; 5.4]* (130)	*3.4 [2.2; 5.4]* (87)
Standard TKA, cruciate-sacrificing, mobile bearing, cemented														
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	1,164	5	69 (62 - 76)	41/59	2014-2022	1.0 [0.5; 1.7] (999)	1.6 [1.0; 2.6] (896)	1.9 [1.3; 3.0] (795)	2.2 [1.4; 3.3] (692)	2.3 [1.6; 3.5] (565)	2.6 [1.7; 3.9] (384)	2.9 [1.9; 4.4] (186)	
INNEX CR (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	5,006	67	73 (65 - 78)	32/68	2012-2022	2.3 [1.9; 2.8] (4,368)	3.1 [2.7; 3.7] (3,803)	3.8 [3.3; 4.4] (3,181)	4.0 [3.5; 4.7] (2,449)	4.3 [3.7; 5.0] (1,669)	4.5 [3.9; 5.3] (884)	4.6 [4.0; 5.4] (283)	
INNEX CR GSF (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	4,092	62	72 (64 - 78)	19/81	2013-2022	1.4 [1.1; 1.8] (3,603)	2.0 [1.6; 2.5] (3,073)	2.3 [1.9; 2.9] (2,445)	2.5 [2.0; 3.1] (1,815)	2.7 [2.2; 3.3] (1,215)	3.0 [2.4; 3.7] (602)	*4.1 [2.9; 5.6]* (149)	
Standard TKA, pivot, fixed bearing, cemented														
ADVANCE® (MicroPort)	ADVANCE® II (MicroPort)	455	8	72 (64 - 78)	51/49	2014-2022	4.2 [2.7; 6.5] (411)	5.4 [3.7; 8.0] (353)	5.7 [3.9; 8.4] (295)	5.7 [3.9; 8.4] (223)	*6.8 [4.6; 10.0]* (144)	*6.8 [4.6; 10.0]* (94)		
EVOLUTION® (MicroPort)	EVOLUTION® (MicroPort)	1,908	24	69 (61 - 76)	36/64	2016-2022	1.0 [0.6; 1.6] (1,321)	1.7 [1.1; 2.5] (1,007)	2.2 [1.5; 3.2] (708)	2.4 [1.6; 3.5] (397)	2.4 [1.6; 3.5] (181)			
GMK SPHERE (Medacta)	GMK (Medacta)	1,707	35	69 (61 - 76)	42/58	2014-2022	2.0 [1.4; 2.9] (1,114)	2.5 [1.8; 3.5] (738)	2.8 [2.0; 4.0] (431)	2.8 [2.0; 4.0] (251)	*3.4 [2.2; 5.3]* (107)			

Table 49 (continued)

Knee arthroplasties without primary patellar resurfacing							Revision probabilities after ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKA, pivot, fixed bearing, cemented														
GMK SPHERE (Medacta)	GMK SPHERE (Medacta)	310	27	68 (62 - 76)	7/93	2015-2022	4.2 [2.3; 7.6] (197)	*6.4 [3.9; 10.5]* (119)						
Legacy 3D Knee (Mathys)	Legacy 3D Knee (Mathys)	1,566	21	71 (63 - 77)	36/64	2014-2022	2.2 [1.6; 3.1] (1,399)	2.9 [2.2; 3.9] (1,272)	3.5 [2.7; 4.6] (1,102)	4.0 [3.0; 5.1] (998)	4.4 [3.4; 5.6] (757)	4.7 [3.6; 6.0] (448)	4.7 [3.6; 6.0] (173)	
Persona CR (Zimmer Biomet)	Persona Tibia (Zimmer Biomet)	1,660	20	70 (62 - 77)	40/60	2016-2022	1.3 [0.8; 2.1] (900)	1.9 [1.2; 2.9] (499)	2.1 [1.3; 3.2] (281)	*2.1 [1.3; 3.2]* (117)				
PHYSICA KR FEMUR. CEMENTED (Lima)	PHYSICA SYSTEM TIBIA. CEMENTED (Lima)	307	14	69 (61 - 76)	39/61	2015-2022	2.7 [1.4; 5.4] (274)	3.5 [1.9; 6.4] (229)	3.5 [1.9; 6.4] (189)	*4.1 [2.2; 7.3]* (147)	*4.1 [2.2; 7.3]* (108)	*4.1 [2.2; 7.3]* (50)		
Standard TKA, posterior-stabilised, fixed bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	3,079	91	71 (62 - 78)	38/62	2013-2022	2.1 [1.6; 2.7] (2,097)	3.1 [2.5; 3.9] (1,453)	3.4 [2.7; 4.2] (1,022)	4.2 [3.3; 5.2] (751)	4.7 [3.7; 5.9] (533)	4.9 [3.9; 6.3] (299)	*5.3 [4.1; 6.9]* (136)	
balanSys BICONDYLAR PS cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	1,371	26	71 (64 - 78)	40/60	2013-2022	2.0 [1.4; 3.0] (1,099)	3.6 [2.7; 4.9] (913)	4.8 [3.7; 6.3] (663)	5.5 [4.2; 7.2] (410)	5.8 [4.5; 7.6] (212)	*5.8 [4.5; 7.6]* (101)		
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	572	40	69 (62 - 76)	35/65	2013-2022	3.6 [2.4; 5.6] (472)	5.5 [3.9; 7.9] (417)	6.0 [4.3; 8.5] (335)	7.0 [5.0; 9.7] (252)	7.4 [5.3; 10.2] (181)	*7.4 [5.3; 10.2]* (111)	*8.6 [5.8; 12.8]* (62)	
E.MOTION (Aesculap)	E.MOTION (Aesculap)	2,597	39	69 (62 - 76)	36/64	2012-2022	2.3 [1.8; 3.0] (2,158)	3.8 [3.1; 4.7] (1,713)	4.5 [3.7; 5.4] (1,329)	5.1 [4.2; 6.2] (948)	5.2 [4.3; 6.3] (648)	5.8 [4.8; 7.2] (378)	5.8 [4.8; 7.2] (181)	
E.MOTION PS PRO (Aesculap)	E.MOTION (Aesculap)	428	26	64 (57 - 73)	19/81	2015-2022	1.0 [0.4; 2.7] (350)	3.5 [2.0; 6.1] (280)	3.5 [2.0; 6.1] (215)	*3.5 [2.0; 6.1]* (139)	*3.5 [2.0; 6.1]* (75)			
GEMINI SL Total Knee System, Femoral Component, Fixed Bearing PS, cemented (Waldemar Link)	GEMINI SL Total Knee System, Tibial Component, Fixed Bearing, cemented (Waldemar Link)	1,203	22	71 (64 - 78)	36/64	2014-2022	2.0 [1.4; 3.1] (965)	2.9 [2.0; 4.1] (771)	3.2 [2.3; 4.5] (505)	3.7 [2.6; 5.3] (260)	*4.8 [3.2; 7.2]* (129)	*4.8 [3.2; 7.2]* (55)		
GENESIS II PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	3,075	65	71 (63 - 77)	36/64	2013-2022	2.6 [2.1; 3.3] (2,665)	3.4 [2.8; 4.2] (2,336)	3.8 [3.2; 4.6] (1,963)	4.2 [3.5; 5.0] (1,539)	4.7 [3.9; 5.6] (1,004)	5.1 [4.2; 6.1] (485)	5.1 [4.2; 6.1] (178)	
GENESIS II PS OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	616	54	64 (58 - 72)	23/77	2013-2022	1.4 [0.7; 2.9] (475)	2.1 [1.2; 3.9] (388)	2.7 [1.5; 4.6] (318)	3.0 [1.8; 5.1] (244)	3.0 [1.8; 5.1] (184)	*3.6 [2.1; 6.1]* (91)		
JOURNEY II BCS COCR (Smith & Nephew)	JOURNEY (Smith & Nephew)	873	32	70 (62 - 77)	42/58	2017-2022	2.4 [1.5; 3.7] (624)	3.4 [2.3; 5.1] (391)	3.9 [2.7; 5.8] (244)	*4.6 [3.0; 7.1]* (106)				
JOURNEY II BCS OXINIUM (Smith & Nephew)	JOURNEY (Smith & Nephew)	1,441	36	68 (61 - 75)	32/68	2014-2022	3.5 [2.7; 4.7] (1,295)	4.8 [3.8; 6.0] (1,178)	5.2 [4.1; 6.5] (990)	5.5 [4.4; 6.9] (718)	6.0 [4.8; 7.6] (427)	*6.4 [5.0; 8.0]* (99)		
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	6,767	113	70 (62 - 77)	40/60	2014-2022	2.0 [1.7; 2.4] (5,058)	2.8 [2.4; 3.2] (3,476)	3.3 [2.8; 3.8] (2,400)	3.5 [3.0; 4.1] (1,404)	3.7 [3.2; 4.4] (630)	4.2 [3.4; 5.2] (239)	*4.2 [3.4; 5.2]* (59)	
LEGION PS OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	1,913	112	66 (59 - 74)	22/78	2012-2022	1.1 [0.7; 1.8] (1,407)	2.4 [1.8; 3.4] (1,014)	2.9 [2.1; 4.0] (727)	3.0 [2.2; 4.1] (479)	3.5 [2.5; 4.8] (300)	3.5 [2.5; 4.8] (182)	*5.6 [3.4; 9.1]* (81)	
NexGen LPS-Flex-Gender (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	3,537	82	69 (61 - 76)	9/91	2012-2022	1.3 [1.0; 1.8] (3,094)	2.0 [1.6; 2.5] (2,615)	2.5 [2.0; 3.1] (2,100)	2.6 [2.1; 3.2] (1,463)	2.7 [2.2; 3.4] (1,023)	2.9 [2.3; 3.6] (597)	3.0 [2.4; 3.9] (334)	4.5 [3.0; 6.8] (151)
NexGen LPS-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	12,640	220	69 (61 - 76)	30/70	2012-2022	1.7 [1.5; 2.0] (10,338)	2.7 [2.4; 3.0] (8,440)	3.1 [2.8; 3.5] (6,763)	3.5 [3.2; 3.9] (4,818)	3.8 [3.4; 4.2] (3,114)	4.0 [3.5; 4.4] (1,702)	4.4 [3.8; 5.0] (714)	4.7 [4.0; 5.6] (236)
NexGen LPS (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	9,566	36	69 (62 - 76)	41/59	2012-2022	1.2 [1.0; 1.5] (8,090)	1.7 [1.5; 2.0] (6,871)	2.1 [1.8; 2.4] (5,508)	2.3 [2.0; 2.6] (4,272)	2.4 [2.1; 2.8] (3,094)	2.7 [2.3; 3.1] (2,032)	3.0 [2.5; 3.5] (1,079)	3.0 [2.5; 3.5] (514)
Persona PS (Zimmer Biomet)	Persona Tibia (Zimmer Biomet)	2,985	70	71 (62 - 78)	37/63	2013-2022	2.3 [1.8; 2.9] (1,763)	3.0 [2.4; 3.9] (1,119)	3.8 [3.0; 4.8] (665)	3.8 [3.0; 4.8] (407)	3.8 [3.0; 4.8] (213)	*3.8 [3.0; 4.8]* (95)		
SIGMA™ Femur (DePuy)	MBT Tibia (DePuy)	657	40	73 (66 - 79)	30/70	2014-2022	2.2 [1.3; 3.7] (559)	3.2 [2.0; 4.9] (473)	3.8 [2.5; 5.8] (370)	4.1 [2.7; 6.2] (252)	4.5 [3.0; 6.8] (162)	*4.5 [3.0; 6.8]* (75)		
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	3,343	107	71 (64 - 78)	33/67	2013-2022	2.4 [1.9; 3.0] (2,811)	3.5 [2.9; 4.2] (2,375)	3.9 [3.2; 4.6] (1,941)	4.8 [4.0; 5.6] (1,454)	5.0 [4.2; 6.0] (1,011)	5.4 [4.5; 6.4] (580)	5.6 [4.7; 6.7] (208)	
Triathlon PS (Stryker)	Triathlon (Stryker)	3,552	65	71 (64 - 78)	36/64	2013-2022	2.5 [2.1; 3.1] (2,859)	3.6 [3.0; 4.3] (2,255)	3.9 [3.3; 4.7] (1,666)	4.1 [3.5; 5.0] (1,121)	4.1 [3.5; 5.0] (576)	4.7 [3.7; 5.8] (235)	*4.7 [3.7; 5.8]* (80)	
Triathlon PS (Stryker)	Triathlon TS (Stryker)	369	35	69 (61 - 77)	36/64	2013-2022	2.9 [1.6; 5.3] (287)	3.3 [1.8; 5.9] (204)	*3.3 [1.8; 5.9]* (132)	*4.2 [2.3; 7.7]* (75)				
Vanguard PS (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	2,680	47	72 (64 - 78)	35/65	2014-2022	2.7 [2.1; 3.4] (2,057)	4.0 [3.3; 4.9] (1,487)	4.3 [3.5; 5.3] (1,048)	5.0 [4.1; 6.1] (670)	5.3 [4.3; 6.5] (421)	5.3 [4.3; 6.5] (240)	*5.3 [4.3; 6.5]* (69)	

Table 49 (continued)

Knee arthroplasties without primary patellar resurfacing							Revision probabilities after ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKA, posterior-stabilised, fixed bearing, cemented														
VEGA (Aesculap)	VEGA (Aesculap)	1,659	49	70 (61 - 77)	31/69	2013-2022	1.5 [1.0; 2.2] (1,266)	2.1 [1.4; 3.0] (1,006)	3.7 [2.8; 5.0] (742)	4.5 [3.4; 6.0] (507)	5.7 [4.3; 7.7] (311)	7.3 [5.3; 9.9] (187)	*10.5 [7.4; 14.8]* (76)	
Unicondylar knee arthroplasties, fixed bearing, cemented														
balanSys UNI (Mathys)	balanSys UNI fix (Mathys)	595	27	62 (56 - 71)	50/50	2013-2022	3.1 [2.0; 5.0] (474)	5.1 [3.5; 7.5] (377)	6.8 [4.8; 9.5] (292)	7.1 [5.1; 9.9] (229)	7.5 [5.4; 10.4] (157)	*8.2 [5.8; 11.5]* (86)		
JOURNEY UNI COCR (Smith & Nephew)	JOURNEY UNI (Smith & Nephew)	1,266	81	63 (57 - 70)	48/52	2014-2022	2.3 [1.6; 3.4] (1,012)	4.2 [3.2; 5.6] (747)	5.2 [3.9; 6.8] (522)	5.6 [4.3; 7.4] (325)	7.7 [5.6; 10.4] (181)	*7.7 [5.6; 10.4]* (81)		
JOURNEY UNI OXINIUM (Smith & Nephew)	JOURNEY UNI (Smith & Nephew)	1,044	138	60 (54 - 66)	32/68	2013-2022	4.8 [3.6; 6.3] (799)	7.5 [5.9; 9.5] (602)	9.0 [7.2; 11.3] (472)	9.7 [7.8; 12.0] (315)	11.2 [8.9; 14.0] (186)	*11.7 [9.3; 14.8]* (85)		
LINK SLED (Waldemar Link)	Link SLED, All-Poly (Waldemar Link)	725	32	64 (56 - 73)	50/50	2013-2022	2.8 [1.8; 4.3] (633)	6.2 [4.5; 8.3] (525)	7.8 [5.9; 10.2] (403)	9.8 [7.6; 12.7] (292)	10.9 [8.4; 14.0] (203)	*11.6 [8.9; 15.0]* (132)	*12.5 [9.4; 16.5]* (61)	
LINK SLED (Waldemar Link)	Link SLED, metal-backed (Waldemar Link)	966	63	62 (56 - 71)	43/57	2013-2022	2.9 [2.0; 4.3] (770)	6.6 [5.1; 8.6] (568)	8.6 [6.8; 11.0] (428)	10.3 [8.1; 13.0] (298)	10.9 [8.6; 13.8] (209)	*13.0 [10.1; 16.6]* (92)		
Mako MCK (Stryker)	Mako MCK (Stryker)	707	15	62 (57 - 69)	53/47	2017-2022	0.8 [0.3; 1.9] (455)	1.4 [0.6; 3.0] (265)	*3.0 [1.5; 6.0]* (139)					
Oxford (Zimmer Biomet)	Oxford Fixed Lateral Tibia (Zimmer Biomet)	952	52	71 (61 - 78)	18/82	2015-2022	1.3 [0.8; 2.4] (789)	2.4 [1.6; 3.7] (667)	2.7 [1.8; 4.1] (478)	3.9 [2.6; 5.7] (310)	4.3 [2.9; 6.4] (154)	*4.3 [2.9; 6.4]* (56)		
Persona Partial Knee (Zimmer Biomet)	Persona Partial Knee (Zimmer Biomet)	3,406	102	63 (57 - 71)	48/52	2017-2022	2.6 [2.0; 3.2] (2,247)	3.9 [3.2; 4.7] (1,355)	4.9 [4.0; 6.0] (765)	5.8 [4.6; 7.2] (255)				
SIGMA™ HP Partial-Kniesystem (DePuy)	SIGMA™ HP Partial-Kniesystem (DePuy)	3,966	96	63 (56 - 71)	46/54	2012-2022	1.8 [1.4; 2.3] (3,441)	3.7 [3.1; 4.3] (2,879)	4.7 [4.0; 5.5] (2,246)	5.6 [4.8; 6.5] (1,672)	5.9 [5.1; 6.8] (1,112)	6.4 [5.5; 7.5] (618)	6.8 [5.8; 8.0] (223)	*6.8 [5.8; 8.0]* (57)
Triathlon PKR (Stryker)	Triathlon PKR (Stryker)	558	33	62 (56 - 70)	46/54	2014-2022	5.1 [3.5; 7.4] (464)	7.7 [5.7; 10.4] (385)	8.7 [6.5; 11.6] (328)	10.2 [7.8; 13.4] (262)	11.0 [8.4; 14.4] (189)	*12.3 [9.3; 16.1]* (102)	*12.3 [9.3; 16.1]* (54)	
UNIVATION (Aesculap)	UNIVATION (Aesculap)	1,601	72	62 (56 - 70)	44/56	2014-2020	4.8 [3.9; 6.0] (1,510)	8.3 [7.1; 9.8] (1,408)	10.7 [9.2; 12.3] (1,009)	12.0 [10.5; 13.9] (598)	12.8 [11.1; 14.8] (275)	*13.2 [11.4; 15.4]* (80)		
ZUK (Lima)	ZUK (Lima)	4,419	112	64 (58 - 73)	45/55	2012-2022	2.0 [1.6; 2.5] (3,463)	2.9 [2.4; 3.5] (2,723)	3.5 [2.9; 4.2] (2,292)	4.4 [3.7; 5.2] (1,863)	4.7 [4.0; 5.5] (1,262)	4.9 [4.2; 5.8] (678)	5.5 [4.5; 6.7] (195)	
Unicondylar knee arthroplasties, mobile bearing, uncemented														
Oxford (Zimmer Biomet)	Oxford Tibia (Zimmer Biomet)	5,646	91	63 (57 - 71)	55/45	2012-2022	3.5 [3.0; 4.0] (4,580)	4.7 [4.2; 5.4] (3,889)	5.7 [5.0; 6.4] (3,140)	6.1 [5.5; 6.9] (2,279)	6.5 [5.8; 7.3] (1,473)	7.1 [6.3; 8.0] (860)	7.1 [6.3; 8.0] (398)	7.4 [6.4; 8.5] (163)
Unicondylar knee arthroplasties, mobile bearing, cemented														
Oxford (Zimmer Biomet)	Oxford Tibia (Zimmer Biomet)	21,748	398	65 (58 - 73)	45/55	2012-2022	2.8 [2.6; 3.0] (17,787)	4.4 [4.1; 4.7] (14,502)	5.3 [5.0; 5.6] (11,192)	6.2 [5.8; 6.5] (8,075)	6.6 [6.2; 7.1] (5,152)	7.5 [7.0; 8.0] (2,742)	8.0 [7.4; 8.6] (1,024)	8.2 [7.6; 9.0] (312)
Oxford TiNbN (Zimmer Biomet)	Oxford Tibia TiNbN (Zimmer Biomet)	2,180	279	60 (55 - 67)	12/88	2012-2022	3.0 [2.4; 3.9] (1,779)	5.8 [4.8; 7.0] (1,410)	6.7 [5.6; 8.0] (1,079)	7.4 [6.2; 8.8] (764)	8.3 [7.0; 9.9] (497)	9.0 [7.5; 10.7] (307)	*9.0 [7.5; 10.7]* (144)	*9.8 [7.7; 12.3]* (59)

Table 49 (continued)

Knee arthroplasties with primary patellar resurfacing							Revision probabilities after ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Constrained TKA, hinged, fixed bearing, cemented														
ENDURO (Aesculap)	ENDURO (Aesculap)	464	38	73 (65 - 79)	27/73	2014-2022	4.4 [2.8; 6.8] (328)	5.4 [3.6; 8.1] (240)	6.3 [4.2; 9.4] (187)	*6.8 [4.6; 10.2]* (130)	*6.8 [4.6; 10.2]* (85)	*6.8 [4.6; 10.2]* (60)		
Constrained TKA, varus-valgus-stabilised, fixed bearing, cemented														
NexGen LCCK (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	362	25	73 (62 - 79)	28/72	2013-2022	2.5 [1.3; 4.8] (307)	2.9 [1.6; 5.3] (258)	2.9 [1.6; 5.3] (209)	2.9 [1.6; 5.3] (159)	*2.9 [1.6; 5.3]* (100)	*2.9 [1.6; 5.3]* (53)		
Standard TKA, cruciate-retaining, fixed bearing, cemented														
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	700	52	68 (61 - 76)	24/76	2014-2022	1.3 [0.7; 2.6] (603)	4.3 [2.9; 6.2] (527)	4.6 [3.2; 6.7] (429)	5.1 [3.6; 7.3] (324)	5.5 [3.8; 7.7] (217)	*5.9 [4.1; 8.4]* (109)		
GENESIS II CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	933	40	69 (61 - 76)	32/68	2013-2022	2.2 [1.4; 3.4] (751)	2.3 [1.5; 3.6] (576)	3.1 [2.1; 4.6] (447)	3.3 [2.2; 4.9] (339)	3.6 [2.4; 5.4] (232)	3.6 [2.4; 5.4] (161)	*3.6 [2.4; 5.4]* (98)	
LEGION CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	475	44	71 (63 - 78)	29/71	2015-2022	2.0 [1.0; 3.8] (351)	2.7 [1.5; 5.0] (249)	2.7 [1.5; 5.0] (186)	3.3 [1.8; 6.0] (151)	*3.3 [1.8; 6.0]* (77)			
LEGION CR OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	361	44	65 (58 - 72)	7/93	2016-2022	1.2 [0.5; 3.2] (289)	2.8 [1.4; 5.5] (209)	*4.0 [2.1; 7.4]* (146)	*4.0 [2.1; 7.4]* (106)				
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	2,600	47	72 (64 - 78)	34/66	2013-2022	1.7 [1.3; 2.3] (2,190)	2.2 [1.7; 2.8] (1,909)	2.3 [1.8; 3.0] (1,563)	2.5 [1.9; 3.2] (1,252)	2.7 [2.1; 3.5] (869)	2.7 [2.1; 3.5] (538)	3.0 [2.2; 3.9] (281)	
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	4,534	74	71 (63 - 78)	33/67	2012-2022	1.4 [1.1; 1.8] (3,841)	2.0 [1.6; 2.5] (3,247)	2.4 [2.0; 3.0] (2,512)	2.6 [2.1; 3.2] (1,712)	2.9 [2.4; 3.6] (1,137)	3.4 [2.7; 4.3] (587)	3.4 [2.7; 4.3] (240)	
Triathlon CR (Stryker)	Triathlon (Stryker)	3,703	39	68 (62 - 75)	40/60	2013-2022	1.4 [1.1; 1.8] (2,980)	1.9 [1.5; 2.4] (2,164)	2.3 [1.8; 3.0] (1,498)	2.7 [2.1; 3.5] (820)	3.0 [2.3; 3.9] (417)	3.0 [2.3; 3.9] (232)	*3.0 [2.3; 3.9]* (110)	
Vanguard CR (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	434	34	72 (64 - 78)	31/69	2013-2022	2.8 [1.6; 4.9] (383)	4.8 [3.1; 7.4] (315)	5.4 [3.5; 8.2] (240)	5.4 [3.5; 8.2] (165)	*6.1 [4.0; 9.4]* (97)			
Standard TKA, cruciate-retaining/sacrificing, fixed bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	1,813	51	68 (61 - 75)	36/64	2013-2022	1.8 [1.3; 2.5] (1,436)	2.1 [1.5; 2.9] (1,098)	2.6 [1.9; 3.5] (787)	2.6 [1.9; 3.5] (508)	2.6 [1.9; 3.5] (288)	3.4 [2.2; 5.3] (165)	*3.4 [2.2; 5.3]* (74)	
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	815	12	70 (63 - 76)	33/67	2015-2022	1.0 [0.5; 2.0] (641)	1.8 [1.1; 3.2] (456)	1.8 [1.1; 3.2] (274)	*2.3 [1.3; 4.1]* (105)				
Standard TKA, cruciate-retaining/sacrificing, mobile bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	315	7	73 (65 - 78)	24/76	2015-2022	1.0 [0.3; 3.1] (281)	1.4 [0.5; 3.7] (237)	1.8 [0.8; 4.3] (206)	1.8 [0.8; 4.3] (173)	*2.4 [1.1; 5.4]* (129)	*2.4 [1.1; 5.4]* (74)		
E.MOTION (Aesculap)	E.MOTION (Aesculap)	492	37	67 (60 - 74)	17/83	2013-2022	5.3 [3.6; 7.8] (397)	7.1 [5.1; 10.0] (319)	7.8 [5.6; 10.7] (261)	8.6 [6.2; 11.8] (171)	*8.6 [6.2; 11.8]* (111)	*8.6 [6.2; 11.8]* (58)		
Standard TKA, cruciate-sacrificing, fixed bearing, cemented														
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	401	14	70 (61 - 77)	26/74	2013-2022	2.7 [1.4; 4.9] (322)	4.3 [2.6; 7.1] (253)	4.3 [2.6; 7.1] (185)	*5.5 [3.4; 9.0]* (107)	*5.5 [3.4; 9.0]* (54)			
INNEX CR (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	306	16	72 (65 - 77)	40/60	2015-2022	2.3 [1.1; 4.8] (287)	3.4 [1.9; 6.3] (239)	4.8 [2.8; 8.1] (156)	*5.4 [3.2; 9.1]* (74)				
Persona CR (Zimmer Biomet)	Persona Tibia (Zimmer Biomet)	1,874	22	70 (61 - 77)	32/68	2013-2022	1.0 [0.6; 1.6] (1,367)	1.5 [1.0; 2.3] (993)	1.6 [1.1; 2.5] (720)	2.3 [1.5; 3.4] (597)	2.4 [1.6; 3.6] (437)	*2.4 [1.6; 3.6]* (130)		
Triathlon CR (Stryker)	Triathlon (Stryker)	331	13	72 (65 - 78)	31/69	2014-2022	2.5 [1.2; 4.8] (308)	3.1 [1.7; 5.7] (273)	3.9 [2.2; 6.7] (234)	3.9 [2.2; 6.7] (185)	*5.3 [3.0; 9.1]* (110)	*5.3 [3.0; 9.1]* (75)	*5.3 [3.0; 9.1]* (50)	
Vanguard CR (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	599	29	71 (63 - 77)	21/79	2014-2022	1.6 [0.8; 3.0] (523)	2.2 [1.2; 3.8] (442)	2.4 [1.4; 4.2] (349)	2.8 [1.6; 4.8] (264)	2.8 [1.6; 4.8] (175)	*3.5 [2.0; 6.3]* (106)		
Standard TKA, cruciate-sacrificing, mobile bearing, cemented														
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR RP (Mathys)	521	5	74 (65 - 79)	27/73	2013-2022	0.4 [0.1; 1.7] (439)	0.4 [0.1; 1.7] (379)	1.1 [0.4; 2.9] (290)	1.1 [0.4; 2.9] (217)	*1.1 [0.4; 2.9]* (145)	*1.1 [0.4; 2.9]* (79)		

Table 50: Implant outcomes for femoro-tibial combinations in primary knee arthroplasties with patellar resurfacing at primary TKA. Within the groups comprising type of arthroplasty, type of fixation, knee system, and degree of constraint, the combinations are listed alphabetically by the femoral component.

Knee arthroplasties with primary patellar resurfacing							Revision probabilities after ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKA, cruciate-sacrificing, mobile bearing, cemented														
INNEX CR (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	736	27	73 (66 - 79)	22/78	2013-2022	2.1 [1.3; 3.5] (638)	3.4 [2.3; 5.1] (533)	4.0 [2.7; 5.9] (460)	4.5 [3.1; 6.5] (403)	4.5 [3.1; 6.5] (314)	4.8 [3.3; 6.9] (215)	*5.3 [3.6; 7.7]* (86)	
INNEX CR GSF (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	503	24	72 (63 - 77)	13/87	2013-2022	2.5 [1.4; 4.3] (447)	3.9 [2.5; 6.2] (382)	3.9 [2.5; 6.2] (322)	4.2 [2.7; 6.6] (278)	4.7 [3.0; 7.3] (198)	*5.2 [3.3; 8.1]* (119)		
Standard TKA, posterior-stabilised, fixed bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	489	45	69 (59 - 77)	36/64	2014-2022	1.6 [0.8; 3.3] (342)	1.9 [1.0; 3.8] (236)	2.4 [1.2; 4.7] (165)	*4.5 [2.4; 8.4]* (123)	*4.5 [2.4; 8.4]* (90)	*6.0 [3.0; 11.7]* (52)		
balanSys BICONDYLAR PS cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	1,641	9	70 (63 - 76)	38/62	2014-2022	1.5 [1.0; 2.3] (1,256)	2.9 [2.1; 4.0] (886)	3.4 [2.5; 4.6] (546)	3.8 [2.8; 5.2] (267)	*4.3 [3.0; 6.0]* (94)	*4.3 [3.0; 6.0]* (68)		
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	996	44	70 (63 - 78)	34/66	2015-2022	1.9 [1.2; 3.0] (716)	3.0 [2.0; 4.5] (482)	3.5 [2.4; 5.2] (307)	*3.5 [2.4; 5.2]* (134)				
NexGen LPS-Flex-Gender (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	603	27	68 (61 - 76)	2/98	2012-2022	1.9 [1.1; 3.4] (519)	3.5 [2.2; 5.4] (438)	3.8 [2.4; 5.8] (365)	3.8 [2.4; 5.8] (298)	4.6 [3.0; 7.2] (202)	*5.8 [3.7; 9.0]* (127)	*6.8 [4.2; 10.9]* (57)	
NexGen LPS-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	2,416	87	69 (62 - 76)	35/65	2012-2022	2.0 [1.5; 2.7] (2,044)	3.0 [2.4; 3.8] (1,737)	3.6 [2.9; 4.5] (1,436)	4.1 [3.3; 5.1] (1,091)	4.1 [3.3; 5.1] (751)	4.1 [3.3; 5.1] (475)	4.6 [3.6; 5.8] (218)	*5.1 [3.8; 6.9]* (74)
NexGen LPS (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	378	14	70 (62 - 77)	30/70	2013-2022	1.1 [0.4; 2.9] (340)	2.0 [1.0; 4.2] (293)	2.7 [1.4; 5.2] (242)	3.2 [1.7; 5.9] (176)	*3.9 [2.1; 7.1]* (122)	*5.1 [2.6; 9.6]* (75)		
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	1,568	49	70 (62 - 77)	32/68	2012-2022	2.1 [1.5; 2.9] (1,401)	3.2 [2.4; 4.2] (1,277)	4.2 [3.3; 5.4] (1,105)	4.9 [3.8; 6.2] (883)	5.4 [4.3; 6.8] (631)	5.9 [4.6; 7.5] (317)	*6.2 [4.8; 8.0]* (126)	*7.2 [5.1; 10.2]* (52)
Triathlon PS (Stryker)	Triathlon (Stryker)	1,082	28	71 (63 - 78)	35/65	2013-2022	1.5 [0.9; 2.5] (846)	3.1 [2.1; 4.5] (625)	3.6 [2.5; 5.1] (474)	3.6 [2.5; 5.1] (311)	*3.6 [2.5; 5.1]* (109)	*3.6 [2.5; 5.1]* (54)		
Patellofemoral arthroplasties														
JOURNEY PFJ OXINIUM (Smith & Nephew)		302	90	54 (48 - 60)	26/74	2013-2022	5.2 [3.1; 8.6] (232)	8.8 [5.8; 13.1] (171)	*11.1 [7.6; 16.0]* (129)	*13.6 [9.4; 19.4]* (79)				

Table 50 (continued)

Knee arthroplasties without primary patellar resurfacing							Probability of secondary patellar resurfacing ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Constrained TKA, hinged, fixed bearing, cemented														
Endo-Model - M, Rotating Hinge (Waldemar Link)	Endo-Model - M, Rotating Hinge, cemented (Waldemar Link)	1,057	119	77 (68 - 82)	23/77	2013-2022	0.1 [0.0; 0.8] (806)	0.8 [0.4; 1.8] (648)	0.9 [0.5; 2.0] (491)	1.2 [0.6; 2.5] (328)	1.2 [0.6; 2.5] (191)	*1.2 [0.6; 2.5]* (79)		
Endo-Model SL, Femoral Component, cemented (Waldemar Link)	Endo-Model SL, Tibial Component, Monoblock, cemented (Waldemar Link)	490	50	75.5 (68 - 82)	22/78	2013-2022	0.7 [0.2; 2.3] (384)	0.7 [0.2; 2.3] (300)	1.1 [0.4; 2.9] (228)	1.1 [0.4; 2.9] (169)	*1.1 [0.4; 2.9]* (115)	*1.1 [0.4; 2.9]* (63)		
Endo-Model, Rotating Hinge, cemented (Waldemar Link)	Endo-Model, Rotational Hinge, cemented (Waldemar Link)	1,330	164	77 (69 - 82)	18/82	2013-2022	0.4 [0.1; 1.0] (1,027)	0.9 [0.5; 1.7] (829)	0.9 [0.5; 1.7] (658)	0.9 [0.5; 1.7] (467)	0.9 [0.5; 1.7] (311)	0.9 [0.5; 1.7] (177)	*0.9 [0.5; 1.7]* (83)	
ENDURO (Aesculap)	ENDURO (Aesculap)	1,635	160	76 (68 - 81)	21/79	2013-2022	0.5 [0.2; 1.0] (1,297)	1.2 [0.7; 2.0] (1,050)	1.9 [1.2; 2.8] (809)	2.2 [1.4; 3.3] (579)	2.2 [1.4; 3.3] (382)	2.6 [1.6; 4.0] (223)	*2.6 [1.6; 4.0]* (95)	
MUTARS GenuX MK cemented (Implantcast)	MUTARS GenuX MK cemented (Implantcast)	332	73	77 (67 - 82)	27/73	2015-2022	0.3 [0.0; 2.3] (242)	0.9 [0.2; 3.5] (180)	*2.0 [0.7; 5.3]* (115)	*2.0 [0.7; 5.3]* (68)				
NexGen RHK (Zimmer Biomet)	NexGen RHK (Zimmer Biomet)	1,043	140	76 (68 - 81)	23/77	2012-2022	0.3 [0.1; 1.0] (853)	0.7 [0.3; 1.6] (704)	1.2 [0.6; 2.4] (554)	1.2 [0.6; 2.4] (400)	1.2 [0.6; 2.4] (246)	*1.2 [0.6; 2.4]* (141)	*2.2 [0.9; 5.4]* (70)	
RT-Plus (Smith & Nephew)	RT-Plus (Smith & Nephew)	2,033	136	77 (71 - 81)	21/79	2013-2022	0.4 [0.2; 0.8] (1,704)	0.6 [0.4; 1.1] (1,450)	0.9 [0.6; 1.6] (1,167)	1.1 [0.7; 1.8] (851)	1.1 [0.7; 1.8] (568)	1.3 [0.8; 2.2] (316)	*1.3 [0.8; 2.2]* (115)	
RT-Plus Modular (Smith & Nephew)	RT-Plus Modular (Smith & Nephew)	560	106	75 (66 - 80.5)	28/72	2013-2022	0.6 [0.2; 1.9] (453)	0.8 [0.3; 2.2] (378)	0.8 [0.3; 2.2] (309)	0.8 [0.3; 2.2] (229)	0.8 [0.3; 2.2] (164)	*0.8 [0.3; 2.2]* (79)		
Constrained TKA, varus-valgus-stabilised, fixed bearing, cemented														
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	763	71	71 (63 - 78)	29/71	2015-2022	0.3 [0.1; 1.2] (543)	0.3 [0.1; 1.2] (354)	0.3 [0.1; 1.2] (235)	*0.3 [0.1; 1.2]* (101)				
LEGION Revision COCR (Smith & Nephew)	LEGION Revision (Smith & Nephew)	447	64	71 (65 - 79)	29/71	2014-2022	0.3 [0.0; 1.9] (354)	0.6 [0.1; 2.4] (289)	0.6 [0.1; 2.4] (245)	0.6 [0.1; 2.4] (185)	*2.1 [0.7; 6.1]* (126)			
NexGen LCCK (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	1,473	106	72 (64 - 79)	29/71	2012-2022	0.2 [0.0; 0.6] (1,162)	0.6 [0.3; 1.3] (943)	0.6 [0.3; 1.3] (754)	0.6 [0.3; 1.3] (576)	0.6 [0.3; 1.3] (394)	0.6 [0.3; 1.3] (219)	*0.6 [0.3; 1.3]* (79)	
Triathlon PS (Stryker)	Triathlon TS (Stryker)	380	37	73 (63 - 79)	26/74	2013-2022	0.0 (279)	0.8 [0.2; 3.3] (198)	*0.8 [0.2; 3.3]* (126)	*2.8 [1.0; 7.8]* (74)				
Standard TKA, cruciate-retaining, fixed bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	341	5	71 (64 - 77)	46/54	2016-2022	0.0 (272)	0.0 (199)	*0.0* (139)	*0.0* (92)				
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	729	5	69 (62 - 77)	38/62	2014-2022	0.0 (680)	0.0 (649)	0.0 (560)	0.0 (420)	0.0 (276)	*0.0* (134)		
EFK Femur zementfrei (OHST Medizintechnik)	EFK Tibia zementiert (OHST Medizintechnik)	1,271	14	70 (63 - 76)	42/58	2014-2022	0.2 [0.1; 0.8] (1,175)	0.6 [0.3; 1.3] (1,069)	0.6 [0.3; 1.3] (967)	0.6 [0.3; 1.3] (874)	0.7 [0.4; 1.5] (773)	0.7 [0.4; 1.5] (582)	0.9 [0.5; 1.8] (275)	
GENESIS II CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	445	6	68 (62 - 75)	44/56	2012-2022	0.2 [0.0; 1.7] (411)	0.2 [0.0; 1.7] (371)	0.8 [0.3; 2.6] (324)	0.8 [0.3; 2.6] (284)	0.8 [0.3; 2.6] (229)	0.8 [0.3; 2.6] (168)	*0.8 [0.3; 2.6]* (113)	*0.8 [0.3; 2.6]* (54)
LEGION CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	533	8	69 (62 - 77)	50/50	2017-2022	0.6 [0.2; 2.0] (384)	1.0 [0.4; 2.7] (254)	*1.4 [0.6; 3.5]* (149)	*1.4 [0.6; 3.5]* (78)				
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	581	18	69 (61 - 75)	52/48	2014-2022	0.5 [0.2; 1.7] (538)	0.9 [0.4; 2.2] (490)	0.9 [0.4; 2.2] (453)	0.9 [0.4; 2.2] (369)	0.9 [0.4; 2.2] (231)	*0.9 [0.4; 2.2]* (130)	*0.9 [0.4; 2.2]* (77)	
NexGen CR (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	522	7	69 (62 - 75)	49/51	2014-2022	0.0 (496)	0.0 (472)	0.0 (440)	0.0 (401)	0.0 (334)	0.0 (205)	*0.0* (84)	
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	915	22	68 (61 - 76)	41/59	2014-2022	0.1 [0.0; 0.8] (815)	0.4 [0.1; 1.2] (708)	0.8 [0.4; 1.9] (603)	0.8 [0.4; 1.9] (460)	0.8 [0.4; 1.9] (304)	0.8 [0.4; 1.9] (172)	*0.8 [0.4; 1.9]* (69)	
TC-PLUS CR (Smith & Nephew)	TC-PLUS (Smith & Nephew)	543	12	71 (63 - 76)	40/60	2014-2022	0.2 [0.0; 1.5] (463)	0.2 [0.0; 1.5] (377)	0.2 [0.0; 1.5] (298)	0.2 [0.0; 1.5] (242)	*0.2 [0.0; 1.5]* (119)			
Triathlon CR (Stryker)	Triathlon (Stryker)	437	17	70 (63 - 75)	40/60	2014-2022	0.0 (356)	0.6 [0.2; 2.4] (302)	1.0 [0.3; 3.1] (256)	1.0 [0.3; 3.1] (190)	*1.0 [0.3; 3.1]* (146)	*1.0 [0.3; 3.1]* (64)		
Vanguard CR (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	1,057	13	68 (61 - 75)	42/58	2015-2022	0.0 (829)	0.4 [0.1; 1.3] (646)	0.9 [0.4; 2.1] (485)	1.2 [0.6; 2.6] (348)	1.2 [0.6; 2.6] (218)	*1.2 [0.6; 2.6]* (116)		

Table 51: Implant outcomes for secondary patellar resurfacing

Knee arthroplasties without primary patellar resurfacing							Probability of secondary patellar resurfacing ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKA, cruciate-retaining, fixed bearing, cemented														
ACS cemented (Implantcast)	ACS FB cemented (Implantcast)	800	43	66.5 (59 - 74)	21/79	2014-2022	0.1 [0.0; 0.9] (757)	0.8 [0.4; 1.9] (605)	1.6 [0.8; 2.9] (466)	1.6 [0.8; 2.9] (311)	1.6 [0.8; 2.9] (182)	*1.6 [0.8; 2.9]* (76)		
ACS LD cemented (Implantcast)	ACS LD FB cemented (Implantcast)	362	10	70 (63 - 76)	48/52	2015-2021	0.3 [0.0; 2.0] (346)	1.2 [0.4; 3.1] (293)	1.2 [0.4; 3.1] (218)	*1.2 [0.4; 3.1]* (143)	*1.2 [0.4; 3.1]* (71)			
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	2,465	24	71 (64 - 78)	37/63	2014-2022	0.0 [0.0; 0.3] (2,046)	0.1 [0.0; 0.4] (1,647)	0.2 [0.1; 0.6] (1,269)	0.2 [0.1; 0.6] (880)	0.2 [0.1; 0.6] (580)	0.2 [0.1; 0.6] (264)	*0.2 [0.1; 0.6]* (72)	
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	17,681	142	70 (62 - 77)	34/66	2013-2022	0.2 [0.1; 0.3] (14,558)	0.6 [0.5; 0.7] (11,978)	0.7 [0.6; 0.9] (9,382)	0.8 [0.6; 1.0] (6,630)	0.9 [0.8; 1.1] (4,224)	0.9 [0.8; 1.2] (2,273)	0.9 [0.8; 1.2] (937)	0.9 [0.8; 1.2] (261)
EFK Femur zementiert (OHST Medizintechnik)	EFK Tibia zementiert (OHST Medizintechnik)	3,050	39	72 (64 - 77)	38/62	2014-2022	0.1 [0.0; 0.3] (2,854)	0.3 [0.1; 0.6] (2,693)	0.4 [0.2; 0.7] (2,533)	0.4 [0.2; 0.7] (2,322)	0.5 [0.3; 0.8] (2,068)	0.5 [0.3; 0.9] (1,390)	0.5 [0.3; 0.9] (485)	
EFK Femur zementiert TiNbN (OHST Medizintechnik)	EFK Tibia zementiert TiNbN (OHST Medizintechnik)	472	44	66 (59 - 73)	7/93	2014-2022	0.2 [0.0; 1.6] (428)	0.2 [0.0; 1.6] (386)	0.5 [0.1; 2.0] (349)	0.5 [0.1; 2.0] (314)	0.8 [0.3; 2.6] (283)	0.8 [0.3; 2.6] (230)	*0.8 [0.3; 2.6]* (86)	
GEMINI SL Total Knee System, Femoral Component, Mobile Bearing/Fixed Bearing CR, cemented (Waldemar Link)	GEMINI SL Total Knee System, Tibial Component, Fixed Bearing, cemented (Waldemar Link)	316	23	73 (65 - 78)	38/62	2014-2022	0.3 [0.0; 2.4] (281)	0.3 [0.0; 2.4] (262)	0.3 [0.0; 2.4] (226)	0.3 [0.0; 2.4] (155)	*0.3 [0.0; 2.4]* (84)			
GENESIS II CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	9,088	91	70 (62 - 76)	35/65	2013-2022	0.5 [0.4; 0.7] (7,633)	1.3 [1.1; 1.6] (6,220)	1.6 [1.3; 1.9] (4,931)	1.7 [1.4; 2.0] (3,642)	1.8 [1.5; 2.2] (2,575)	1.8 [1.5; 2.2] (1,540)	1.9 [1.5; 2.3] (665)	2.2 [1.6; 3.0] (150)
GENESIS II CR OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	2,528	115	65 (58 - 73)	20/80	2012-2022	0.5 [0.3; 0.9] (2,193)	1.2 [0.8; 1.8] (1,857)	1.6 [1.1; 2.3] (1,554)	1.8 [1.3; 2.5] (1,244)	2.0 [1.4; 2.7] (890)	2.0 [1.4; 2.7] (567)	2.0 [1.4; 2.7] (290)	*2.0 [1.4; 2.7]* (143)
GENESIS II LDK COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	1,703	16	70 (62 - 76)	38/62	2013-2022	0.3 [0.1; 0.7] (1,630)	1.1 [0.7; 1.8] (1,568)	1.5 [1.0; 2.2] (1,495)	1.8 [1.3; 2.6] (1,346)	1.8 [1.3; 2.6] (997)	1.9 [1.4; 2.8] (714)	2.1 [1.5; 3.0] (331)	*2.1 [1.5; 3.0]* (93)
INNEX CR (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	1,271	27	73 (65 - 78)	41/59	2013-2022	0.2 [0.0; 0.7] (1,132)	0.4 [0.1; 1.0] (997)	0.7 [0.3; 1.5] (829)	0.7 [0.3; 1.5] (659)	0.7 [0.3; 1.5] (464)	0.7 [0.3; 1.5] (265)	*0.7 [0.3; 1.5]* (129)	
INNEX CR GSF (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	360	18	73 (65 - 78)	18/82	2013-2022	0.3 [0.0; 2.1] (327)	0.9 [0.3; 2.9] (291)	0.9 [0.3; 2.9] (245)	0.9 [0.3; 2.9] (200)	*0.9 [0.3; 2.9]* (142)	*0.9 [0.3; 2.9]* (85)		
JOURNEY II CR COCR (Smith & Nephew)	JOURNEY (Smith & Nephew)	368	14	71 (62 - 77)	37/63	2018-2022	0.0 (284)	0.4 [0.1; 2.7] (202)	*0.4 [0.1; 2.7]* (96)					
JOURNEY II CR OXINIUM (Smith & Nephew)	JOURNEY (Smith & Nephew)	1,029	28	64 (58 - 72)	36/64	2015-2022	0.4 [0.2; 1.1] (940)	1.1 [0.6; 2.0] (850)	1.3 [0.8; 2.3] (713)	2.1 [1.3; 3.4] (526)	2.1 [1.3; 3.4] (248)	*2.1 [1.3; 3.4]* (90)		
LEGION CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	11,776	136	71 (63 - 77)	38/62	2014-2022	0.2 [0.2; 0.4] (9,126)	0.7 [0.6; 0.9] (6,739)	0.9 [0.7; 1.1] (4,741)	1.1 [0.8; 1.3] (2,723)	1.2 [0.9; 1.5] (1,171)	1.2 [0.9; 1.5] (427)		
LEGION CR OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	2,991	144	64 (58 - 72)	16/84	2012-2022	0.3 [0.2; 0.7] (2,180)	1.0 [0.7; 1.6] (1,487)	1.5 [1.0; 2.2] (996)	1.5 [1.0; 2.2] (601)	1.5 [1.0; 2.2] (282)	*2.0 [1.2; 3.5]* (89)		
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	890	49	72 (63 - 79)	25/75	2015-2022	0.2 [0.0; 1.2] (529)	1.1 [0.4; 2.9] (260)	*1.1 [0.4; 2.9]* (141)	*1.1 [0.4; 2.9]* (69)				
NexGen CR-Flex-Gender (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	4,944	103	70 (62 - 76)	10/90	2012-2022	0.1 [0.0; 0.2] (4,239)	0.4 [0.2; 0.7] (3,536)	0.6 [0.4; 0.9] (2,916)	0.6 [0.4; 0.9] (2,256)	0.7 [0.4; 1.0] (1,516)	0.7 [0.4; 1.0] (940)	0.7 [0.4; 1.0] (453)	0.7 [0.4; 1.0] (184)
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	17,062	124	72 (64 - 78)	42/58	2012-2022	0.1 [0.0; 0.1] (14,182)	0.2 [0.2; 0.3] (11,946)	0.3 [0.2; 0.5] (9,631)	0.4 [0.3; 0.5] (7,230)	0.4 [0.3; 0.5] (4,806)	0.4 [0.3; 0.5] (2,838)	0.4 [0.3; 0.6] (1,346)	0.4 [0.3; 0.6] (502)
NexGen CR (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	3,685	57	70 (63 - 76)	42/58	2013-2022	0.1 [0.0; 0.3] (3,109)	0.4 [0.2; 0.7] (2,747)	0.7 [0.4; 1.0] (2,401)	0.8 [0.5; 1.2] (1,992)	0.8 [0.6; 1.3] (1,411)	0.9 [0.6; 1.4] (952)	0.9 [0.6; 1.4] (547)	0.9 [0.6; 1.4] (156)
Persona CR (Zimmer Biomet)	Persona Tibia (Zimmer Biomet)	6,103	103	69 (62 - 77)	40/60	2013-2022	0.1 [0.0; 0.2] (4,176)	0.3 [0.2; 0.5] (2,980)	0.4 [0.2; 0.7] (2,006)	0.5 [0.3; 0.8] (1,146)	0.5 [0.3; 0.8] (659)	0.5 [0.3; 0.8] (298)	*0.5 [0.3; 0.8]* (85)	
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	23,480	135	71 (63 - 77)	36/64	2012-2022	0.2 [0.2; 0.3] (19,900)	0.5 [0.4; 0.6] (16,852)	0.6 [0.5; 0.7] (13,544)	0.6 [0.5; 0.8] (9,899)	0.7 [0.6; 0.8] (6,857)	0.8 [0.6; 0.9] (3,810)	0.8 [0.6; 0.9] (1,573)	0.8 [0.6; 0.9] (465)
TC-PLUS CR (Smith & Nephew)	TC-PLUS (Smith & Nephew)	3,949	42	71 (64 - 78)	36/64	2014-2022	0.1 [0.1; 0.3] (3,603)	0.2 [0.1; 0.5] (3,157)	0.3 [0.2; 0.5] (2,599)	0.3 [0.2; 0.6] (1,867)	0.4 [0.2; 0.7] (929)	0.4 [0.2; 0.7] (389)	*0.4 [0.2; 0.7]* (95)	
Triathlon CR (Stryker)	Triathlon (Stryker)	8,322	80	70 (63 - 77)	37/63	2013-2022	0.3 [0.2; 0.4] (6,893)	0.8 [0.6; 1.0] (5,473)	1.1 [0.9; 1.4] (4,327)	1.3 [1.0; 1.7] (3,107)	1.4 [1.1; 1.7] (2,088)	1.5 [1.2; 1.9] (1,197)	1.5 [1.2; 1.9] (539)	*1.5 [1.2; 1.9]* (147)
Vanguard CR (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	11,741	79	72 (64 - 77)	37/63	2012-2022	0.1 [0.1; 0.2] (9,637)	0.4 [0.3; 0.5] (7,973)	0.6 [0.5; 0.8] (6,312)	0.7 [0.5; 0.9] (4,555)	0.8 [0.6; 1.0] (2,937)	0.8 [0.6; 1.0] (1,588)	0.8 [0.6; 1.0] (535)	
Vanguard CR TiNbN (Zimmer Biomet)	Vanguard Tibia TiNbN (Zimmer Biomet)	1,151	68	65 (58 - 72)	8/92	2013-2022	0.1 [0.0; 0.7] (954)	0.8 [0.4; 1.7] (749)	1.1 [0.6; 2.1] (519)	1.1 [0.6; 2.1] (331)	1.1 [0.6; 2.1] (194)	*1.1 [0.6; 2.1]* (101)		

Table 51 (continued)

Knee arthroplasties without primary patellar resurfacing							Probability of secondary patellar resurfacing ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKA, cruciate-retaining, mobile bearing, hybrid														
TC-PLUS CR (Smith & Nephew)	TC-PLUS SB (Smith & Nephew)	477	7	69 (61 - 76)	35/65	2015-2022	0.2 [0.0; 1.6] (405)	0.2 [0.0; 1.6] (345)	0.2 [0.0; 1.6] (322)	0.6 [0.1; 2.3] (287)	0.6 [0.1; 2.3] (245)	*0.6 [0.1; 2.3]* (137)		
Standard TKA, cruciate-retaining, mobile bearing, cemented														
ACS cemented (Implantcast)	ACS MB cemented (Implantcast)	796	22	70 (62 - 77)	30/70	2013-2022	0.2 [0.0; 1.1] (599)	0.5 [0.2; 1.5] (468)	1.0 [0.4; 2.3] (394)	1.0 [0.4; 2.3] (293)	1.0 [0.4; 2.3] (202)	*1.0 [0.4; 2.3]* (115)		
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	2,525	25	71 (63 - 77)	36/64	2013-2022	0.2 [0.1; 0.5] (2,207)	0.3 [0.1; 0.7] (1,933)	0.4 [0.2; 0.7] (1,599)	0.5 [0.2; 0.9] (1,162)	0.5 [0.2; 0.9] (765)	0.5 [0.2; 0.9] (425)	0.5 [0.2; 0.9] (170)	
INNEX CR (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	1,288	65	70 (62 - 77)	97/3	2013-2022	0.3 [0.1; 0.8] (1,122)	0.3 [0.1; 0.9] (956)	0.5 [0.2; 1.1] (791)	0.6 [0.3; 1.3] (620)	0.8 [0.4; 1.6] (431)	1.0 [0.5; 2.3] (232)	*1.0 [0.5; 2.3]* (66)	
INNEX CR GSF (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	348	33	70 (63 - 76)	82/18	2014-2022	0.0 (290)	0.4 [0.1; 2.6] (238)	0.4 [0.1; 2.6] (183)	*0.4 [0.1; 2.6]* (140)	*0.4 [0.1; 2.6]* (98)			
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	596	9	71 (64 - 76)	42/58	2013-2022	0.4 [0.1; 1.4] (526)	0.8 [0.3; 2.0] (453)	0.8 [0.3; 2.0] (385)	0.8 [0.3; 2.0] (318)	0.8 [0.3; 2.0] (235)	0.8 [0.3; 2.0] (175)	*0.8 [0.3; 2.0]* (75)	
TC-PLUS CR (Smith & Nephew)	TC-PLUS SB (Smith & Nephew)	405	11	71 (63 - 77)	30/70	2015-2022	0.5 [0.1; 2.0] (383)	1.0 [0.4; 2.7] (339)	1.3 [0.6; 3.2] (279)	1.3 [0.6; 3.2] (225)	1.3 [0.6; 3.2] (183)	*1.3 [0.6; 3.2]* (94)		
ZEN Femur STD zementiert (OHST Medizintechnik)	ZEN Tibia STD zementiert (OHST Medizintechnik)	858	6	71 (65 - 78)	35/65	2015-2022	0.0 (692)	0.2 [0.0; 1.3] (539)	0.4 [0.1; 1.5] (382)	0.8 [0.2; 2.5] (212)	*0.8 [0.2; 2.5]* (100)			
Standard TKA, cruciate-retaining/sacrificing, fixed bearing, hybrid														
BPK-S INTEGRATION (Peter Brehm)	BPK-S INTEGRATION (Peter Brehm)	380	3	69 (62 - 76)	36/64	2016-2022	0.0 (316)	0.0 (267)	0.0 (216)	*0.5 [0.1; 3.3]* (133)	*0.5 [0.1; 3.3]* (55)			
Standard TKA, cruciate-retaining/sacrificing, fixed bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	7,186	119	67 (60 - 75)	39/61	2013-2022	0.2 [0.1; 0.4] (5,604)	0.6 [0.4; 0.9] (4,443)	0.8 [0.6; 1.0] (3,419)	0.9 [0.6; 1.2] (2,417)	1.0 [0.7; 1.3] (1,583)	1.0 [0.7; 1.4] (832)	1.0 [0.7; 1.4] (383)	*1.0 [0.7; 1.4]* (117)
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	2,066	23	69 (61 - 76)	35/65	2015-2022	0.1 [0.0; 0.4] (1,728)	0.4 [0.2; 0.9] (1,495)	0.8 [0.5; 1.5] (1,044)	0.8 [0.5; 1.5] (671)	0.8 [0.5; 1.5] (352)	*0.8 [0.5; 1.5]* (110)		
Unity CR cmtd (Corin)	Unity cmtd (Corin)	587	15	73 (65 - 78)	29/71	2014-2022	0.4 [0.1; 1.5] (412)	0.9 [0.3; 2.5] (342)	0.9 [0.3; 2.5] (300)	1.2 [0.5; 3.0] (245)	1.2 [0.5; 3.0] (169)	*1.2 [0.5; 3.0]* (106)	*1.2 [0.5; 3.0]* (52)	
Standard TKA, cruciate-retaining/sacrificing, mobile bearing, hybrid														
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	2,967	35	70 (62 - 77)	35/65	2012-2022	0.1 [0.1; 0.4] (2,780)	0.5 [0.3; 0.9] (2,556)	0.6 [0.3; 0.9] (2,248)	0.6 [0.4; 1.0] (1,794)	0.6 [0.4; 1.0] (1,188)	0.6 [0.4; 1.0] (634)	0.6 [0.4; 1.0] (233)	*0.6 [0.4; 1.0]* (91)
Standard TKA, cruciate-retaining/sacrificing, mobile bearing, uncemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia RP zementfrei (DePuy)	575	12	66 (59 - 73)	39/61	2017-2022	0.6 [0.1; 2.4] (272)	*1.5 [0.5; 3.9]* (88)						
LCS™ COMPLETE™ Femur (DePuy)	LCS™ COMPLETE™ Tibia (DePuy)	653	76	64 (58 - 73)	7/93	2014-2022	0.2 [0.0; 1.3] (546)	0.6 [0.2; 1.9] (457)	1.3 [0.6; 2.9] (369)	1.6 [0.8; 3.5] (271)	1.6 [0.8; 3.5] (171)	*1.6 [0.8; 3.5]* (75)		
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	1,224	23	70 (61 - 76)	36/64	2012-2022	0.4 [0.2; 1.0] (1,178)	0.7 [0.3; 1.3] (1,103)	0.7 [0.3; 1.3] (946)	0.7 [0.3; 1.3] (760)	0.8 [0.4; 1.6] (528)	0.8 [0.4; 1.6] (318)	*0.8 [0.4; 1.6]* (130)	*0.8 [0.4; 1.6]* (59)
SCORE (Amplitude)	SCORE (Amplitude)	554	5	69 (62 - 77)	32/68	2015-2022	0.0 (440)	0.2 [0.0; 1.6] (345)	0.2 [0.0; 1.6] (242)	0.2 [0.0; 1.6] (157)	*0.2 [0.0; 1.6]* (95)			
Standard TKA, cruciate-retaining/sacrificing, mobile bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	2,022	29	69 (62 - 75)	37/63	2015-2022	0.2 [0.1; 0.5] (1,509)	0.5 [0.2; 1.1] (1,158)	0.7 [0.4; 1.3] (921)	0.8 [0.4; 1.5] (678)	0.8 [0.4; 1.5] (455)	0.8 [0.4; 1.5] (258)	*0.8 [0.4; 1.5]* (71)	
E.MOTION (Aesculap)	E.MOTION (Aesculap)	10,626	87	70 (62 - 77)	34/66	2012-2022	0.6 [0.5; 0.8] (8,904)	1.5 [1.3; 1.8] (7,396)	1.8 [1.5; 2.1] (5,904)	2.0 [1.8; 2.4] (4,225)	2.1 [1.8; 2.4] (2,650)	2.1 [1.8; 2.5] (1,385)	2.1 [1.8; 2.5] (543)	*2.1 [1.8; 2.5]* (127)
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	5,188	58	72 (64 - 77)	36/64	2013-2022	0.3 [0.2; 0.5] (4,919)	0.8 [0.6; 1.1] (4,487)	1.1 [0.8; 1.4] (3,985)	1.1 [0.8; 1.4] (3,323)	1.2 [0.9; 1.5] (2,594)	1.2 [0.9; 1.5] (1,730)	1.2 [0.9; 1.6] (783)	*1.2 [0.9; 1.6]* (138)
SCORE (Amplitude)	SCORE (Amplitude)	322	7	72 (62 - 77)	30/70	2014-2022	0.3 [0.0; 2.3] (305)	0.7 [0.2; 2.6] (272)	1.1 [0.3; 3.4] (202)	1.1 [0.3; 3.4] (159)	*1.1 [0.3; 3.4]* (102)	*1.1 [0.3; 3.4]* (62)		

Table 51 (continued)

Knee arthroplasties without primary patellar resurfacing							Probability of secondary patellar resurfacing ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKA, cruciate-retaining/sacrificing, mobile bearing, cemented														
SIGMA™ Femur (DePuy)	MBT Tibia (DePuy)	2,081	29	72 (64 - 78)	37/63	2013-2022	0.3 [0.1; 0.6] (1,821)	0.8 [0.5; 1.3] (1,581)	1.1 [0.7; 1.7] (1,221)	1.2 [0.7; 1.8] (831)	1.2 [0.7; 1.8] (531)	1.2 [0.7; 1.8] (286)	*1.2 [0.7; 1.8]* (57)	
Standard TKA, cruciate-sacrificing, fixed bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	1,078	9	70 (63 - 77)	44/56	2013-2022	0.2 [0.0; 0.8] (1,011)	0.8 [0.4; 1.6] (899)	0.8 [0.4; 1.6] (723)	1.0 [0.5; 1.8] (482)	1.0 [0.5; 1.8] (312)	1.3 [0.6; 2.6] (154)	*1.3 [0.6; 2.6]* (79)	
INNEX CR (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	313	4	71 (64 - 76)	48/52	2014-2022	0.0 (279)	0.0 (252)	0.0 (213)	0.0 (172)	*0.0* (92)	*0.0* (53)		
Standard TKA, cruciate-sacrificing, fixed bearing, cemented														
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	2,181	28	70 (62 - 77)	29/71	2013-2022	0.1 [0.0; 0.4] (1,612)	0.7 [0.4; 1.3] (1,174)	1.1 [0.7; 1.8] (828)	1.1 [0.7; 1.8] (565)	1.1 [0.7; 1.8] (303)	1.1 [0.7; 1.8] (156)	*1.1 [0.7; 1.8]* (81)	
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	3,687	92	70 (62 - 77)	27/73	2013-2022	0.0 (2,936)	0.2 [0.1; 0.4] (2,365)	0.3 [0.1; 0.6] (1,844)	0.3 [0.1; 0.6] (1,379)	0.3 [0.1; 0.6] (879)	0.3 [0.1; 0.6] (453)	*0.8 [0.2; 2.9]* (133)	
INNEX CR (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	1,276	45	72 (64 - 78)	40/60	2013-2022	0.3 [0.1; 0.8] (1,134)	0.5 [0.2; 1.2] (1,012)	0.5 [0.2; 1.2] (854)	0.8 [0.4; 1.6] (654)	0.8 [0.4; 1.6] (410)	0.8 [0.4; 1.6] (201)	*0.8 [0.4; 1.6]* (58)	
INNEX CR GSF (Zimmer Biomet)	Innex Fix (Zimmer Biomet)	719	34	72 (65 - 78)	20/80	2013-2022	0.1 [0.0; 1.0] (647)	0.5 [0.2; 1.5] (563)	0.5 [0.2; 1.5] (492)	0.5 [0.2; 1.5] (390)	0.5 [0.2; 1.5] (241)	*0.5 [0.2; 1.5]* (149)	*0.5 [0.2; 1.5]* (51)	
Natural Knee NK II (Zimmer Biomet)	Natural Knee NK II (Zimmer Biomet)	335	8	73 (67 - 77)	28/72	2013-2017	0.3 [0.0; 2.2] (320)	0.3 [0.0; 2.2] (312)	0.3 [0.0; 2.2] (303)	0.3 [0.0; 2.2] (297)	0.3 [0.0; 2.2] (285)	0.3 [0.0; 2.2] (212)	0.3 [0.0; 2.2] (156)	*0.3 [0.0; 2.2]* (61)
Persona CR (Zimmer Biomet)	Persona Tibia (Zimmer Biomet)	4,726	90	69 (61 - 76)	37/63	2013-2022	0.1 [0.1; 0.3] (2,912)	0.4 [0.2; 0.7] (1,964)	0.4 [0.2; 0.7] (1,247)	0.4 [0.2; 0.7] (756)	0.6 [0.3; 1.2] (459)	1.2 [0.5; 2.5] (215)	*1.2 [0.5; 2.5]* (61)	
Triathlon CR (Stryker)	Triathlon (Stryker)	1,870	26	69 (61 - 77)	37/63	2014-2022	0.1 [0.0; 0.4] (1,653)	0.4 [0.2; 0.9] (1,321)	0.9 [0.5; 1.6] (909)	1.1 [0.6; 1.8] (549)	1.1 [0.6; 1.8] (268)	1.1 [0.6; 1.8] (166)	*1.1 [0.6; 1.8]* (79)	
Vanguard CR (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	7,266	72	72 (64 - 78)	33/67	2013-2022	0.2 [0.1; 0.4] (5,757)	0.6 [0.4; 0.8] (4,631)	0.8 [0.6; 1.1] (3,586)	0.9 [0.7; 1.3] (2,529)	0.9 [0.7; 1.3] (1,558)	0.9 [0.7; 1.3] (844)	1.1 [0.8; 1.6] (309)	
Vanguard CR TiNbN (Zimmer Biomet)	Vanguard Tibia TiNbN (Zimmer Biomet)	551	59	67 (59 - 75)	6/94	2014-2022	0.2 [0.0; 1.6] (428)	1.3 [0.5; 3.1] (334)	1.6 [0.7; 3.6] (250)	1.6 [0.7; 3.6] (160)	*1.6 [0.7; 3.6]* (102)	*1.6 [0.7; 3.6]* (51)		
Standard TKA, cruciate-sacrificing, mobile bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR RP (Mathys)	705	6	70 (62 - 77)	40/60	2013-2022	0.6 [0.2; 1.6] (627)	0.9 [0.4; 2.1] (574)	1.1 [0.5; 2.3] (501)	1.3 [0.7; 2.6] (419)	1.6 [0.8; 3.0] (327)	1.6 [0.8; 3.0] (216)	*2.2 [1.1; 4.6]* (124)	*2.2 [1.1; 4.6]* (83)
Standard TKA, cruciate-sacrificing, mobile bearing, cemented														
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	1,164	5	69 (62 - 76)	41/59	2014-2022	0.2 [0.0; 0.7] (997)	0.6 [0.3; 1.3] (890)	0.6 [0.3; 1.3] (790)	0.7 [0.3; 1.5] (686)	0.7 [0.3; 1.5] (560)	0.9 [0.4; 1.9] (380)	0.9 [0.4; 1.9] (185)	
INNEX CR (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	5,006	67	73 (65 - 78)	32/68	2012-2022	0.1 [0.1; 0.3] (4,363)	0.6 [0.4; 0.9] (3,782)	0.8 [0.6; 1.1] (3,155)	0.9 [0.7; 1.3] (2,424)	1.0 [0.7; 1.3] (1,649)	1.0 [0.7; 1.3] (873)	1.0 [0.7; 1.3] (277)	
INNEX CR GSF (Zimmer Biomet)	Innex Mobile (Zimmer Biomet)	4,092	62	72 (64 - 78)	19/81	2013-2022	0.3 [0.2; 0.5] (3,593)	0.9 [0.6; 1.3] (3,045)	1.1 [0.8; 1.5] (2,416)	1.2 [0.9; 1.7] (1,789)	1.3 [0.9; 1.7] (1,196)	1.3 [0.9; 1.7] (591)	*1.3 [0.9; 1.7]* (146)	
Standard TKA, pivot, fixed bearing, cemented														
ADVANCE® (MicroPort)	ADVANCE® II (MicroPort)	455	8	72 (64 - 78)	51/49	2014-2022	0.0 (411)	1.3 [0.5; 3.0] (348)	1.3 [0.5; 3.0] (291)	1.6 [0.7; 3.6] (219)	*2.1 [1.0; 4.5]* (142)	*2.1 [1.0; 4.5]* (92)		
EVOLUTION® (MicroPort)	EVOLUTION® (MicroPort)	1,908	24	69 (61 - 76)	36/64	2016-2022	0.4 [0.2; 0.9] (1,316)	0.7 [0.4; 1.3] (999)	0.8 [0.5; 1.5] (702)	1.2 [0.7; 2.2] (393)	1.2 [0.7; 2.2] (180)			
GMK SPHERE (Medacta)	GMK (Medacta)	1,707	35	69 (61 - 76)	42/58	2014-2022	0.4 [0.2; 1.0] (1,109)	1.2 [0.7; 2.0] (730)	1.2 [0.7; 2.0] (424)	1.5 [0.8; 2.7] (247)	*1.5 [0.8; 2.7]* (103)			
GMK SPHERE (Medacta)	GMK SPHERE (Medacta)	310	27	68 (62 - 76)	7/93	2015-2022	0.8 [0.2; 3.3] (195)	*0.8 [0.2; 3.3]* (117)						
Legacy 3D Knee (Mathys)	Legacy 3D Knee (Mathys)	1,566	21	71 (63 - 77)	36/64	2014-2022	0.2 [0.1; 0.6] (1,397)	0.9 [0.5; 1.5] (1,262)	1.0 [0.6; 1.6] (1,092)	1.0 [0.6; 1.6] (990)	1.1 [0.6; 1.8] (748)	1.2 [0.7; 2.0] (442)	1.2 [0.7; 2.0] (169)	
Persona CR (Zimmer Biomet)	Persona Tibia (Zimmer Biomet)	1,660	20	70 (62 - 77)	40/60	2016-2022	0.2 [0.0; 0.8] (898)	0.2 [0.0; 0.8] (497)	0.2 [0.0; 0.8] (280)	*0.2 [0.0; 0.8]* (116)				

Table 51 (continued)

Knee arthroplasties without primary patellar resurfacing							Probability of secondary patellar resurfacing ...							
Femoral component	Tibial component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Standard TKA, pivot, fixed bearing, cemented														
PHYSICA KR FEMUR. CEMENTED (Lima)	PHYSICA SYSTEM TIBIA. CEMENTED (Lima)	307	14	69 (61 - 76)	39/61	2015-2022	0.4 [0.1; 2.5] (273)	0.4 [0.1; 2.5] (228)	0.4 [0.1; 2.5] (188)	*0.9 [0.2; 3.7]* (146)	*0.9 [0.2; 3.7]* (107)	*0.9 [0.2; 3.7]* (50)		
Standard TKA, posterior-stabilised, fixed bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	3,079	91	71 (62 - 78)	38/62	2013-2022	0.3 [0.2; 0.7] (2,090)	1.0 [0.7; 1.6] (1,435)	1.3 [0.9; 1.9] (1,006)	1.4 [0.9; 2.1] (738)	1.6 [1.0; 2.3] (526)	1.6 [1.0; 2.3] (293)	*2.0 [1.2; 3.3]* (132)	
balanSys BICONDYLAR PS cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	1,371	26	71 (64 - 78)	40/60	2013-2022	0.2 [0.0; 0.6] (1,097)	0.7 [0.3; 1.4] (907)	0.8 [0.4; 1.6] (659)	0.8 [0.4; 1.6] (407)	0.8 [0.4; 1.6] (210)	*0.8 [0.4; 1.6]* (99)		
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	572	40	69 (62 - 76)	35/65	2013-2022	0.4 [0.1; 1.6] (470)	0.4 [0.1; 1.6] (415)	0.7 [0.2; 2.1] (333)	0.7 [0.2; 2.1] (250)	0.7 [0.2; 2.1] (180)	*0.7 [0.2; 2.1]* (111)	*0.7 [0.2; 2.1]* (62)	
E.MOTION (Aesculap)	E.MOTION (Aesculap)	2,597	39	69 (62 - 76)	36/64	2012-2022	0.4 [0.2; 0.8] (2,148)	1.7 [1.2; 2.3] (1,682)	2.4 [1.8; 3.2] (1,296)	2.6 [2.0; 3.5] (923)	2.8 [2.1; 3.7] (628)	2.9 [2.2; 4.0] (365)	3.2 [2.3; 4.5] (175)	
E.MOTION PS PRO (Aesculap)	E.MOTION (Aesculap)	428	26	64 (57 - 73)	19/81	2015-2022	1.6 [0.7; 3.6] (344)	3.8 [2.2; 6.5] (271)	5.0 [3.0; 8.0] (206)	*5.9 [3.7; 9.4]* (133)	*5.9 [3.7; 9.4]* (71)			
GEMINI SL Total Knee System, Femoral Component, Fixed Bearing PS, cemented (Waldemar Link)	GEMINI SL Total Knee System, Tibial Component, Fixed Bearing, cemented (Waldemar Link)	1,203	22	71 (64 - 78)	36/64	2014-2022	0.2 [0.0; 0.7] (964)	0.9 [0.5; 1.8] (763)	1.1 [0.6; 2.0] (498)	1.1 [0.6; 2.0] (258)	*1.8 [0.8; 4.4]* (128)	*1.8 [0.8; 4.4]* (55)		
GENESIS II PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	3,075	65	71 (63 - 77)	36/64	2013-2022	0.4 [0.2; 0.7] (2,655)	1.6 [1.2; 2.2] (2,299)	2.0 [1.5; 2.7] (1,924)	2.2 [1.7; 2.9] (1,505)	2.4 [1.8; 3.1] (976)	2.7 [2.0; 3.5] (467)	2.7 [2.0; 3.5] (168)	
GENESIS II PS OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	616	54	64 (58 - 72)	23/77	2013-2022	0.6 [0.2; 1.8] (472)	1.8 [0.9; 3.5] (380)	2.6 [1.5; 4.7] (310)	2.6 [1.5; 4.7] (240)	2.6 [1.5; 4.7] (180)	*2.6 [1.5; 4.7]* (87)		
JOURNEY II BCS COCR (Smith & Nephew)	JOURNEY (Smith & Nephew)	873	32	70 (62 - 77)	42/58	2017-2022	1.0 [0.5; 2.1] (617)	2.5 [1.5; 4.2] (381)	3.8 [2.4; 6.0] (235)	*4.4 [2.7; 7.1]* (101)				
JOURNEY II BCS OXINIUM (Smith & Nephew)	JOURNEY (Smith & Nephew)	1,441	36	68 (61 - 75)	32/68	2014-2022	0.9 [0.5; 1.6] (1,284)	2.2 [1.5; 3.1] (1,153)	2.6 [1.8; 3.6] (966)	3.0 [2.1; 4.1] (702)	3.0 [2.1; 4.1] (414)	*4.2 [2.8; 6.3]* (96)		
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	6,767	113	70 (62 - 77)	40/60	2014-2022	0.6 [0.4; 0.8] (5,030)	1.9 [1.5; 2.3] (3,408)	2.2 [1.8; 2.7] (2,349)	2.3 [1.9; 2.9] (1,372)	2.4 [2.0; 3.0] (618)	2.4 [2.0; 3.0] (234)	*2.4 [2.0; 3.0]* (56)	
LEGION PS OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	1,913	112	66 (59 - 74)	22/78	2012-2022	0.6 [0.3; 1.1] (1,398)	1.6 [1.1; 2.5] (997)	2.3 [1.6; 3.4] (708)	2.5 [1.7; 3.6] (467)	2.7 [1.9; 3.9] (290)	2.7 [1.9; 3.9] (175)	*2.7 [1.9; 3.9]* (79)	
NexGen LPS-Flex-Gender (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	3,537	82	69 (61 - 76)	9/91	2012-2022	0.2 [0.1; 0.4] (3,089)	0.4 [0.2; 0.7] (2,608)	0.7 [0.5; 1.1] (2,088)	0.9 [0.6; 1.4] (1,451)	0.9 [0.6; 1.4] (1,013)	1.0 [0.7; 1.6] (590)	1.0 [0.7; 1.6] (329)	*1.0 [0.7; 1.6]* (149)
NexGen LPS-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	12,640	220	69 (61 - 76)	30/70	2012-2022	0.3 [0.2; 0.4] (10,311)	0.6 [0.5; 0.8] (8,395)	0.6 [0.5; 0.8] (6,725)	0.7 [0.5; 0.9] (4,793)	0.7 [0.5; 0.9] (3,094)	0.8 [0.6; 1.0] (1,691)	0.8 [0.6; 1.1] (710)	0.8 [0.6; 1.1] (236)
NexGen LPS (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	9,566	36	69 (62 - 76)	41/59	2012-2022	0.1 [0.0; 0.2] (8,084)	0.5 [0.3; 0.6] (6,839)	0.6 [0.5; 0.9] (5,474)	0.7 [0.6; 1.0] (4,246)	0.7 [0.6; 1.0] (3,075)	0.8 [0.6; 1.1] (2,017)	0.8 [0.6; 1.1] (1,070)	0.8 [0.6; 1.1] (511)
Persona PS (Zimmer Biomet)	Persona Tibia (Zimmer Biomet)	2,985	70	71 (62 - 78)	37/63	2013-2022	0.4 [0.2; 0.8] (1,755)	1.0 [0.7; 1.7] (1,108)	1.1 [0.7; 1.8] (660)	1.1 [0.7; 1.8] (405)	1.1 [0.7; 1.8] (212)	*1.1 [0.7; 1.8]* (95)		
SIGMA™ Femur (DePuy)	MBT Tibia (DePuy)	657	40	73 (66 - 79)	30/70	2014-2022	0.5 [0.2; 1.6] (556)	0.9 [0.4; 2.1] (468)	0.9 [0.4; 2.1] (366)	1.2 [0.5; 2.6] (251)	1.2 [0.5; 2.6] (161)	*1.2 [0.5; 2.6]* (74)		
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	3,343	107	71 (64 - 78)	33/67	2013-2022	0.6 [0.4; 0.9] (2,794)	1.3 [0.9; 1.8] (2,343)	1.6 [1.2; 2.2] (1,908)	1.6 [1.2; 2.2] (1,428)	1.7 [1.3; 2.3] (986)	1.9 [1.4; 2.6] (562)	1.9 [1.4; 2.6] (202)	
Triathlon PS (Stryker)	Triathlon (Stryker)	3,552	65	71 (64 - 78)	36/64	2013-2022	0.5 [0.3; 0.8] (2,845)	1.2 [0.8; 1.7] (2,231)	1.4 [1.0; 2.0] (1,644)	1.4 [1.0; 2.0] (1,105)	1.7 [1.2; 2.4] (567)	1.7 [1.2; 2.4] (232)	*1.7 [1.2; 2.4]* (79)	
Triathlon PS (Stryker)	Triathlon TS (Stryker)	369	35	69 (61 - 77)	36/64	2013-2022	0.3 [0.0; 2.1] (286)	0.3 [0.0; 2.1] (203)	*0.3 [0.0; 2.1]* (132)	*0.3 [0.0; 2.1]* (75)				
Vanguard PS (Zimmer Biomet)	Vanguard Tibia Cruciate (Zimmer Biomet)	2,680	47	72 (64 - 78)	35/65	2014-2022	0.4 [0.2; 0.7] (2,050)	0.9 [0.6; 1.4] (1,474)	0.9 [0.6; 1.4] (1,040)	1.0 [0.6; 1.6] (664)	1.2 [0.7; 2.0] (417)	1.2 [0.7; 2.0] (238)	*1.2 [0.7; 2.0]* (68)	
VEGA (Aesculap)	VEGA (Aesculap)	1,659	49	70 (61 - 77)	31/69	2013-2022	0.4 [0.1; 0.9] (1,261)	1.7 [1.1; 2.7] (990)	2.5 [1.7; 3.7] (726)	3.0 [2.1; 4.2] (491)	3.2 [2.2; 4.5] (299)	3.2 [2.2; 4.5] (176)	*3.2 [2.2; 4.5]* (68)	

Table 51 (continued)

5.5 Re-revision probability of hip and knee arthroplasties

While the previous sections focused on the period between primary arthroplasty and the first revision, the current section investigates the period after revision and the survival of revised arthroplasties. The EPRD currently has data on a total of 102,005 revisions backed by plausible documentation, for which it also receives follow-up information from health insurance providers. For the vast majority of these procedures, the EPRD is not aware of the patient's medical history. In most cases, patients' EPRD data entry starts with a reoperation, e.g., because the primary arthroplasty predates EPRD data collection.

In some cases, however, the complete arthroplasty history is known, starting with the primary surgery. This means that all subsequent revisions can be listed consecutively. Table 52 details the revisions with a known history under observation. Over the next few years, the percentage of revisions with previously documented primary procedures will increase in the EPRD. At this stage, there is already a clear trend of significantly higher revision probabilities for revision reoperations.

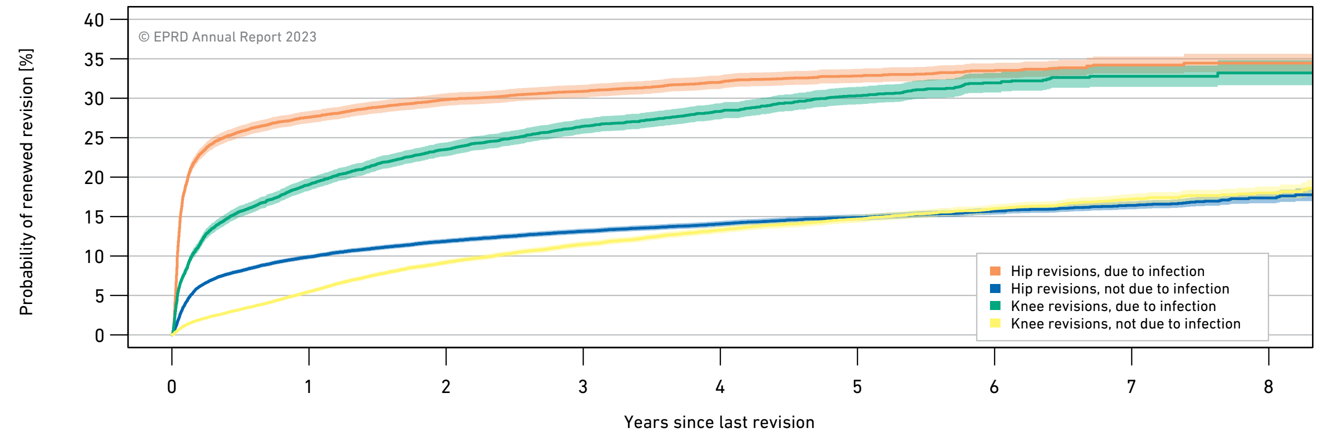
Figure 36 presents the probabilities of repeat revisions (re-revisions) for all documented revisions under observation, over time - irrespectively of their previous history, and therefore also independently of the number of revisions involved. The revisions have been broken down by the joint operated on and whether they were infection-related or not. Although hip and knee re-revision probabilities initially differ, they gradually converge over time.

For infection-related revisions the risk of re-revision within two years is more than twice that of non-infection-related revisions (29.7 % vs. 11.8 % for hips, 23.4 % vs. 9.2 % for knees). This highlights the serious consequences of periprosthetic infection for the patient, particularly since these cases also entail a significantly higher mortality rate - as shown in Chapter 6.

The following trends can be observed when focusing on revisions with a known medical history, which include the primary arthroplasty. On the one hand, the probability of re-revision increases as the number of revisions increases. However, as this increase is significantly greater for non-infection-related than for infection-related revisions, the numbers for both types of revisions

Category	Documented revisions being followed up	First revisions	Second revisions	Third revisions	Fourth or more revisions	Revisions without complete medical history
Hip revisions, due to infection	13,860	3,689	1,141	373	185	8,472
Hip revisions, not due to infection	44,280	6,966	711	126	66	36,411
Knee revisions, due to infection	10,163	2,163	625	184	94	7,097
Knee revisions, not due to infection	33,702	6,343	806	136	52	26,365

Table 52: Summary of revisions under observation.



Numbers at risk	0	1	2	3	4	5	6	7	8
(orange)	13,860	7,859	6,022	4,538	3,093	1,917	1,055	430	101
(blue)	44,280	32,131	25,425	19,648	14,188	9,427	5,301	2,332	723
(green)	10,163	6,641	5,005	3,664	2,548	1,590	846	340	86
(yellow)	33,702	26,776	21,025	16,149	11,614	7,700	4,366	1,869	543

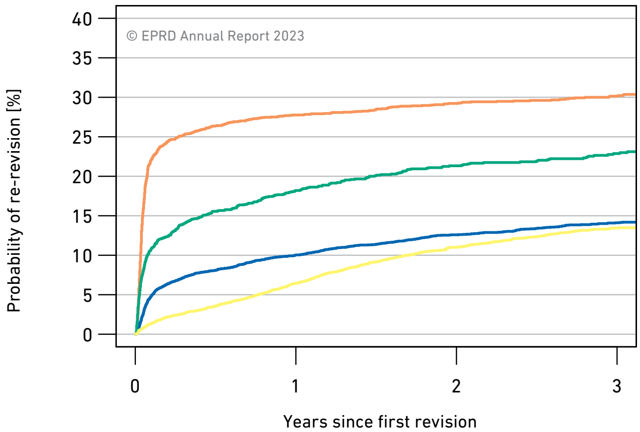
Figure 36: Probability of re-revision over time *($p < 0.0001$)*

continue to converge with each additional revision registered. On the other hand, the percentage of non-infection-related and infection-related revisions continues to diverge more and more. While significantly more first revisions are non-infection-related than infection-related, by the third revision, most are septic procedures. It should be noted, however, that due to the relatively short documentation period in the EPRD of not quite 11 years, septic revisions are still over-represented among first revisions, as they predominantly occur within the first few years of the primary arthroplasty. Figure 37 presents outcomes separately after a first, second and third revision.

In brief:

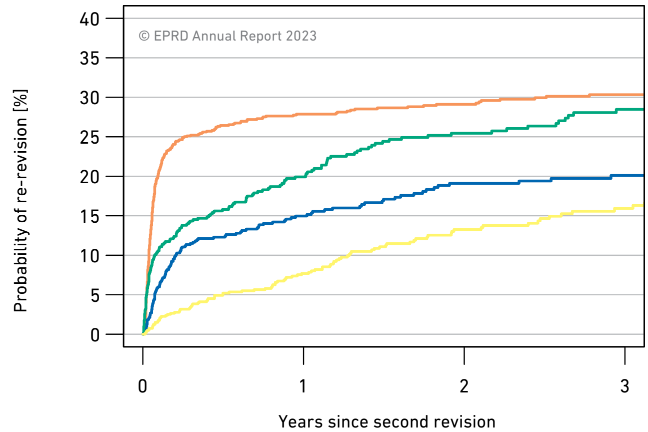
The probability of re-revision ...

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



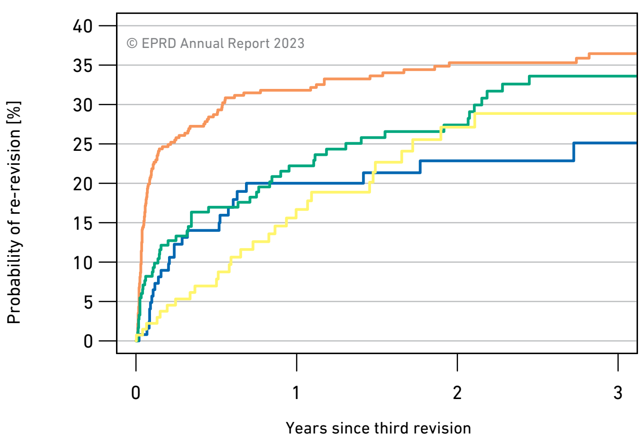
Numbers at risk

3,689	1,913	1,362	953
6,966	4,693	3,386	2,424
2,163	1,358	971	663
6,343	4,681	3,367	2,320



Numbers at risk

1,141	592	441	314
711	433	300	205
625	378	272	174
806	563	352	224



Numbers at risk

373	194	142	101
126	68	43	32
184	112	86	49
136	77	43	29

- Hip revisions, due to infection
- Hip revisions, not due to infection
- Knee revisions, due to infection
- Knee revisions, not due to infection

Figure 37: Probability of re-revision after first, second and third revision. Due to the low number of cases, confidence intervals have been omitted for clarity.

6 Patient mortality

6 Patient mortality

For the first time in an EPRD annual report, this chapter details patient mortality following arthroplasty. Once a year, the EPRD receives information directly from the participating federal health insurance provider associations about the vital status of participating patients. However, this is limited to information 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 the following patient mortality tables, the arthroplasty surgery and the death of the respective patient are thus not necessarily related.

As stated in Chapter 5 above, the choice of treatment often hinges on the patient's physical condition. This introduces a certain degree of patient selection.

	Type of procedure	Number	Age	%M	Mortality within …				
					3 months	6 months	12 months	24 months	36 months
Primary arthroplasties	Elective THAs with uncemented stems	352,072	67	40.6	0.3 [0.3; 0.3] (337,232)	0.5 [0.5; 0.6] (322,416)	0.9 [0.9; 1.0] (293,716)	2.1 [2.0; 2.1] (241,464)	3.4 [3.4; 3.5] (191,126)
	Elective THAs with cemented stems	95,671	79	24.8	1.2 [1.1; 1.2] (90,613)	1.9 [1.8; 2.0] (86,020)	3.1 [3.0; 3.2] (78,146)	6.0 [5.9; 6.2] (63,319)	9.5 [9.2; 9.7] (49,677)
	Non-elective THAs	29,083	76	30.1	6.2 [5.9; 6.4] (26,113)	8.5 [8.2; 8.8] (24,359)	12.0 [11.6; 12.4] (21,173)	18.0 [17.5; 18.5] (15,838)	24.5 [24.0; 25.1] (11,361)
	Hemiarthroplasties	59,874	84	28.6	17.5 [17.2; 17.8] (47,249)	23.4 [23.1; 23.8] (41,719)	30.6 [30.2; 31.0] (33,815)	42.3 [41.9; 42.7] (22,207)	53.0 [52.6; 53.5] (13,928)
	Standard TKAs	351,531	70	34.4	0.2 [0.2; 0.3] (337,147)	0.4 [0.4; 0.4] (322,738)	0.8 [0.8; 0.9] (293,178)	2.0 [2.0; 2.1] (242,780)	3.7 [3.6; 3.7] (193,146)
	Constrained TKAs	17,600	75	23.9	1.2 [1.0; 1.4] (16,696)	2.0 [1.8; 2.3] (15,859)	3.4 [3.2; 3.7] (14,329)	6.5 [6.1; 6.9] (11,648)	10.1 [9.6; 10.6] (9,079)
	Unicondylar knee arthroplasties	51,875	63	44.4	0.1 [0.1; 0.1] (49,781)	0.2 [0.2; 0.3] (47,552)	0.5 [0.4; 0.5] (43,102)	1.1 [1.0; 1.1] (35,345)	2.0 [1.8; 2.1] (27,491)
	Patellofemoral arthroplasties	849	54	27.4	0.0 (819)	0.0 (780)	0.3 [0.1; 1.1] (712)	0.6 [0.2; 1.6] (563)	0.8 [0.3; 1.9] (437)
Revisions	Hip revisions, not due to infection	44,280	76	34.8	3.7 [3.5; 3.9] (41,237)	5.1 [4.9; 5.3] (39,166)	7.1 [6.8; 7.3] (35,501)	10.8 [10.5; 11.1] (28,713)	14.8 [14.4; 15.2] (22,500)
	Hip revisions, due to infection	13,860	74	45.6	5.8 [5.5; 6.2] (12,581)	8.3 [7.8; 8.7] (11,827)	10.7 [10.2; 11.2] (10,591)	14.7 [14.1; 15.3] (8,385)	18.8 [18.1; 19.5] (6,416)
	Knee revisions, not due to infection	33,702	70	33.2	0.9 [0.8; 1.0] (32,342)	1.4 [1.2; 1.5] (31,026)	2.2 [2.0; 2.4] (28,389)	4.1 [3.9; 4.4] (23,256)	6.3 [6.0; 6.6] (18,382)
	Knee revisions, due to infection	10,163	72	46.9	2.7 [2.4; 3.0] (9,532)	3.8 [3.5; 4.2] (9,071)	5.9 [5.5; 6.4] (8,217)	9.7 [9.1; 10.3] (6,603)	14.0 [13.2; 14.8] (5,073)

Table 53: Summary of patient mortality, 3, 6, 12, 24, and 36 months after primary arthroplasty or revision

Table 53 presents the cumulative mortality of patients at various points in time[5] up to three years after primary or revision arthroplasty. 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 significantly at the current time point.

However, these figures already illustrate the serious consequences of a femoral fracture near the hip joint: Non-elective THA or hemiarthroplasty patients have the highest mortality rate of all the primary procedures analysed. This cannot solely be rationalised by the older age of non-elective THA patients, since elective THA patients with cemented stems were a median three years older, but had a much lower mortality rate.

In general, mortality after primary knee arthroplasty is slightly less than after elective hip arthroplasty. Although standard TKA patients were older on average than patients undergoing elective THA with an uncemented stem, standard TKA patients had a lower mortality rate. However, the mortality rate is significantly higher for hinged and varus-valgus stabilised systems than for standard TKAs.

5 Since the EPRD is only notified of the month, but not the day, of death, these dates can only be determined for individual patients with an accuracy of around two weeks (also refer to the explanations in Chapter 3.).

Male patients		1-year mortality expressed as a percent of the age group … (age in years)							
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	0.42 [0.34; 0.51] (19,555)	0.57 [0.47; 0.69] (16,418)	0.73 [0.62; 0.85] (19,915)	0.99 [0.87; 1.13] (19,400)	1.17 [1.03; 1.33] (17,508)	2.18 [1.98; 2.41] (16,469)	3.64 [3.27; 4.06] (7,696)	5.87 [4.95; 6.95] (1,777)
	Elective THAs with cemented stems	3.41 [2.16; 5.37] (478)	6.06 [4.28; 8.56] (422)	5.79 [4.24; 7.87] (563)	5.95 [4.73; 7.47] (1,000)	4.13 [3.47; 4.92] (2,564)	3.69 [3.27; 4.17] (6,048)	4.42 [3.96; 4.93] (5,937)	7.44 [6.54; 8.46] (2,353)
	Non-elective THAs	6.09 [4.15; 8.89] (356)	8.40 [6.34; 11.10] (434)	10.82 [8.92; 13.11] (658)	10.47 [8.82; 12.41] (879)	10.88 [9.22; 12.81] (914)	14.78 [13.10; 16.65] (1,202)	20.00 [17.96; 22.24] (944)	36.06 [33.28; 38.99] (609)
	Hemiarthroplasties	24.12 [17.69; 32.38] (91)	23.88 [18.02; 31.25] (105)	28.76 [24.23; 33.94] (208)	29.48 [25.95; 33.37] (360)	30.94 [28.41; 33.64] (711)	33.46 [31.68; 35.32] (1,543)	36.72 [35.28; 38.20] (2,274)	47.44 [46.26; 48.65] (3,009)
	Standard TKAs	0.37 [0.26; 0.53] (7,740)	0.48 [0.37; 0.62] (11,146)	0.56 [0.46; 0.68] (16,424)	0.83 [0.70; 0.98] (15,730)	1.16 [1.01; 1.32] (17,301)	1.74 [1.57; 1.92] (19,111)	2.92 [2.63; 3.24] (10,052)	4.78 [4.04; 5.66] (2,320)
	Constrained TKAs	1.47 [0.61; 3.50] (307)	1.52 [0.64; 3.61] (315)	1.69 [0.85; 3.36] (417)	3.31 [2.10; 5.20] (470)	3.13 [1.98; 4.93] (504)	4.89 [3.56; 6.69] (670)	6.20 [4.55; 8.42] (522)	10.17 [7.03; 14.61] (198)
	Unicondylar knee arthroplasties	0.26 [0.13; 0.52] (2,919)	0.34 [0.20; 0.57] (3,622)	0.34 [0.20; 0.56] (3,947)	0.90 [0.62; 1.31] (2,697)	0.79 [0.52; 1.22] (2,406)	0.97 [0.65; 1.44] (2,245)	1.66 [1.04; 2.66] (895)	4.46 [2.34; 8.43] (172)
	Patellofemoral arthroplasties	0.00 (91)	0.00 (49)	0.00 (15)	0.00 (18)	14.29 [2.14; 66.59] (6)	0.00 (10)	0.00 (3)	0.00 (6)
Revisions	Hip revisions, not due to infection	0.90 [0.50; 1.62] (1,147)	1.27 [0.75; 2.13] (999)	2.17 [1.53; 3.07] (1,275)	3.81 [2.98; 4.86] (1,422)	5.11 [4.25; 6.15] (1,807)	6.61 [5.78; 7.55] (2,645)	11.60 [10.43; 12.89] (2,055)	26.77 [24.60; 29.09] (945)
	Hip revisions, due to infection	3.10 [1.96; 4.87] (526)	3.93 [2.58; 5.97] (469)	3.29 [2.21; 4.87] (635)	5.52 [4.12; 7.37] (669)	4.84 [3.59; 6.52] (733)	9.01 [7.49; 10.83] (960)	16.43 [14.23; 18.94] (720)	34.56 [30.14; 39.43] (226)
	Knee revisions, not due to infection	0.38 [0.14; 1.00] (1,025)	0.94 [0.53; 1.64] (1,159)	0.67 [0.37; 1.20] (1,470)	1.75 [1.20; 2.54] (1,386)	1.51 [1.02; 2.23] (1,478)	2.51 [1.89; 3.34] (1,643)	4.03 [3.00; 5.40] (922)	13.93 [10.71; 18.03] (274)
	Knee revisions, due to infection	2.92 [1.63; 5.21] (345)	2.80 [1.60; 4.88] (382)	2.12 [1.21; 3.71] (500)	2.38 [1.46; 3.85] (589)	7.43 [5.74; 9.60] (616)	5.81 [4.47; 7.53] (812)	13.80 [11.26; 16.85] (452)	22.37 [17.13; 28.91] (136)
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

Table 54: 1-year mortality after arthroplasty in male patients by age category and type of arthroplasty

In general, mortality after revision surgery is significantly higher than after elective primary procedures, but lower than after non-elective hip arthroplasty. Postoperative mortality after hip revision is higher than after knee revision, which cannot be explained by age differences alone.

Mortality tends to be higher for infection-related procedures. It is noteworthy in this context that in reoperations unrelated to periprosthetic infections, the mortality rate is higher for operations involving the exchange of bone fixation components than for those involving the retention of such components, whereas the reverse is true for reoperations due to infection. The EPRD will continue to analyse this issue in future publications.

Tables 54 and 55 present separately for men and women and for different age groups the cumulative mortality up to one year after the corresponding surgery. The last row of the table also presents the mortality probabilities calculated by the German Federal Statistical Office (DESTATIS) for men and women in this age group for the German population as a whole in order to better interpret the findings.[6]

In primary arthroplasty, the patient mortality rate recorded in the EPRD for elective THAs with uncemented stems, standard TKAs and knee hemiarthroplasties is in part markedly lower than the corresponding figures from the German Federal Statistical Office. One possible reason for this could be that these procedures tend to be performed on healthier patients.

For elective arthroplasties with cemented stems and constrained TKAs, the corresponding DESTATIS figures are lower for younger age groups, but comparable or even higher for older age groups. Furthermore, for elective THAs with cemented stems, the mortality rate observed in the EPRD does not rise steadily with age, but initially declines again in men aged 70 and over as well as in women aged 60 and over. This is where the earlier aspect of patient selection comes into play: This type of treatment is probably only preferred for younger patients in very poor physical condition and no longer solely for older patients.

Patient mortality following revision surgery is almost always higher than the corresponding figures from the German Federal Statistical Office for the respective age group. With the notable exception of non-infection-related knee revisions.

6 Mortality tables can be downloaded from https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Sterbefaelle-Lebenserwartung/Tabellen/_tabellen-innen-lebenserwartung-sterbetafel.html

Female patients		1-year mortality expressed as a percent of the age group … (age in years)							
Type of procedure		≤ 54 years	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	0.25 [0.19; 0.33] (19,959)	0.25 [0.19; 0.32] (19,075)	0.37 [0.31; 0.44] (26,683)	0.44 [0.37; 0.51] (31,186)	0.67 [0.59; 0.77] (30,438)	1.06 [0.96; 1.18] (29,480)	1.93 [1.73; 2.15] (14,639)	4.27 [3.70; 4.94] (3,518)
	Elective THAs with cemented stems	6.64 [4.46; 9.83] (301)	6.27 [4.49; 8.71] (445)	3.39 [2.54; 4.52] (1,165)	2.38 [1.91; 2.95] (3,030)	1.49 [1.27; 1.76] (8,507)	1.85 [1.67; 2.04] (18,808)	2.37 [2.18; 2.59] (18,657)	5.38 [4.94; 5.86] (7,868)
	Non-elective THAs	4.34 [2.68; 7.00] (318)	4.55 [3.27; 6.31] (623)	5.36 [4.28; 6.69] (1,128)	5.45 [4.58; 6.48] (1,881)	5.46 [4.69; 6.35] (2,393)	7.05 [6.33; 7.85] (3,716)	11.98 [10.99; 13.05] (2,974)	24.42 [22.98; 25.94] (2,144)
	Hemiarthroplasties	21.78 [15.14; 30.75] (78)	26.78 [20.83; 34.02] (112)	26.56 [22.25; 31.53] (219)	21.18 [18.33; 24.41] (487)	21.59 [19.73; 23.60] (1,184)	19.55 [18.49; 20.65] (3,737)	21.14 [20.39; 21.92] (7,536)	32.58 [31.94; 33.22] (12,161)
	Standard TKAs	0.16 [0.11; 0.24] (13,780)	0.24 [0.18; 0.32] (18,491)	0.34 [0.28; 0.42] (26,337)	0.39 [0.33; 0.47] (31,017)	0.52 [0.45; 0.60] (34,567)	0.87 [0.78; 0.96] (40,362)	1.30 [1.17; 1.45] (23,325)	2.47 [2.11; 2.88] (5,475)
	Constrained TKAs	1.37 [0.69; 2.72] (538)	1.39 [0.75; 2.58] (632)	1.29 [0.76; 2.17] (941)	2.13 [1.51; 3.01] (1,338)	2.61 [2.00; 3.42] (1,753)	2.60 [2.06; 3.26] (2,451)	4.27 [3.57; 5.11] (2,332)	8.86 [7.37; 10.63] (941)
	Unicondylar knee arthroplasties	0.09 [0.03; 0.24] (4,257)	0.12 [0.05; 0.28] (3,979)	0.23 [0.13; 0.41] (4,224)	0.22 [0.11; 0.42] (3,750)	0.38 [0.23; 0.64] (3,396)	0.76 [0.51; 1.13] (2,994)	0.70 [0.38; 1.30] (1,325)	1.21 [0.46; 3.20] (274)
	Patellofemoral arthroplasties	0.00 (267)	0.00 (82)	1.16 [0.16; 7.97] (84)	0.00 (22)	0.00 (16)	0.00 (27)	0.00 (13)	0.00 (3)
Revisions	Hip revision, not due to infection	0.85 [0.49; 1.46] (1,422)	1.39 [0.90; 2.15] (1,273)	1.74 [1.25; 2.41] (1,843)	2.51 [1.98; 3.17] (2,359)	2.89 [2.39; 3.50] (3,109)	4.20 [3.72; 4.75] (5,186)	7.53 [6.89; 8.24] (4,875)	20.67 [19.51; 21.88] (3,139)
	Hip revision, due to infection	1.15 [0.48; 2.73] (374)	5.26 [3.46; 7.95] (346)	2.68 [1.65; 4.35] (517)	4.34 [3.09; 6.09] (638)	7.13 [5.72; 8.87] (865)	10.63 [9.21; 12.24] (1,315)	17.15 [15.27; 19.22] (1,026)	31.61 [28.79; 34.63] (572)
	Knee revisions, not due to infection	0.24 [0.10; 0.59] (1,895)	0.37 [0.18; 0.74] (1,980)	0.42 [0.23; 0.76] (2,506)	0.63 [0.39; 0.99] (2,630)	1.42 [1.07; 1.88] (3,128)	1.96 [1.57; 2.44] (3,653)	4.85 [4.10; 5.74] (2,297)	14.42 [12.60; 16.48] (943)
	Knee revisions, due to infection	1.94 [0.93; 4.03] (323)	1.50 [0.68; 3.31] (363)	1.43 [0.72; 2.84] (482)	3.81 [2.65; 5.48] (649)	2.93 [1.96; 4.38] (684)	7.25 [5.82; 9.01] (891)	8.84 [7.14; 10.92] (721)	16.44 [13.00; 20.68] (272)
Corresponding DESTATIS figures		<0.28	0.31 – 0.46	0.51 – 0.73	0.81 – 1.16	1.27 – 1.86	2.03 – 3.12	3.56 – 6.34	>7.33

Table 55: 1-year mortality after arthroplasty in female patients by age category and type of arthroplasty

7 Mismatch detection for more patient safety

7 Mismatch detection for more patient safety

A very important objective of the EPRD is the improvement of patient safety, for example, by reducing so-called mismatches in hip and knee arthroplasty procedures. Among the many arthroplasties documented annually in the EPRD, there are always some cases where the combination of implanted components is not authorised or unsuitable. Incompatible components should, in theory, never be combined in primary arthroplasty. The fact that mismatches still occasionally occur is in all likelihood due to oversight, ignorance or, under certain circumstances, the lack of suitable components in the hospital. These cases must be avoided at all costs. Unfortunately, in revision surgery mismatches are sometimes unavoidable. However, such a decision should be carefully considered and discussed with the respective patient. [7]

To help hospitals avoid or quickly correct mismatches, the EPRD provides timely feedback on the components used. In the event of a mismatch, a corresponding warning message is issued directly in the data acquisition software after scanning the labels of the implant components (Illustration 4). The case queries provided with the monthly summary reports of the EPRD also point out potential mismatches. However, an easy correction is then no longer possible. The earlier a procedure is documented in the hospital, the greater the chances the mismatch can be corrected without harming the patient. The EPRD therefore recommends that procedures be documented during surgery, provided that the workflow in the hospital allows this. Documentation mistakes in hospitals (e.g. wrong label scanned) and classification errors in the product database of the EPRD may, however, lead to false alerts in some cases. Continuous processing of such cases will further reduce the number of false alarms.

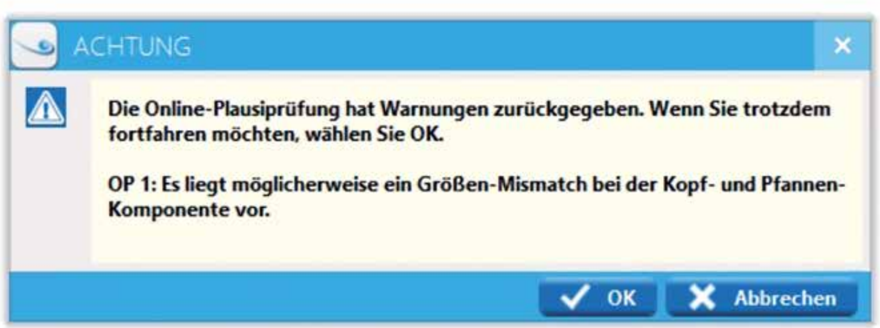


Illustration 5: An EPRD-Edit software mismatch notification during data entry. The text shown is: The online plausibility check has returned warnings. If you still want to continue, select ok. OP 1: There may be a size mismatch in the head and acetabular component.

For the year 2022, the following potential mismatch cases were identified in otherwise plausibly documented primary arthroplasties:

- In 55 THAs, the documented sizes of the head component and the insert or acetabular component differed. The selected head was too large for the insert or cup in 27 cases and too small in 28 cases (Table 56 and an example in Table 57). Heads that are too large may result in malalignment, and heads that are too small in impingement and insert damage. Similar size mismatches were also observed in two hemiarthroplasty procedures. In these cases, the bipolar head or its insert did not match the modular head used.
- In two arthroplasties, the stem taper did not match the taper of the ceramic head (see example in Table 58). Such a taper mismatch increases the risk of head fracture.
- In 16 total knee arthroplasties, components intended solely for the left knee were combined with components approved only for the right knee (see example in Table 59). Whether this type of mismatch has conse-

		Inner diameter of insert/acetabular component				
		22 mm	28 mm	32 mm	36 mm	40 mm
Head size	22 mm		3	1		
	28 mm			8	2	
	32 mm	1	6		13	
	36 mm		1	19		1

Table 56: Number of mismatches due to deviations between head size and inner diameter of insert or cup in 2022

Component type	Identification	Manufacturer
Acetabular component	Allofit IT Alloclassic Schale 56/KK	Zimmer Biomet
Acetabular insert	IT acetabular insert Longevity XLPE neutral **36** KK	Zimmer Biomet
Femoral component	Avenir Müller Schaft 5 Lateral	Zimmer Biomet
Head component	Biolox Delta Head 12/14 **Size 32** x -3.5	Zimmer Biomet

Table 57: Example of a head size mismatch in total hip arthroplasty

Component type	Identification	Manufacturer
Femoral component	BICONTACT S PLASMAPORE **12/14** SIZE 13MM	Aesculap AG
Head component	ISODUR PROSTHESIS HEAD **14/16** 28MM S	Aesculap AG
Head component	BIPOLAR CUP ID28MM OD43MM SELF-CENTERING	Aesculap AG

Table 58: Example of a taper mismatch in hemiarthroplasty of the hip

quences for the arthroplasty itself and the patient depends on the specific design of the respective knee system. However, since all side-specific components are available for both sides, such a mismatch is unnecessary and preventable.

- For 415 total knee arthroplasties and 2 unicondylar replacements, the documented side of all components implanted in the procedure did not match the side specification stored in the product database. It is hoped that the majority of these cases are not actual mismatches, but merely incorrect side entries in the registry documentation. However, through feedback from enquiries to the hospitals the EPRD is also aware of some cases in which components were actually implanted in the wrong side.

- Unicondylar arthroplasties can be performed either medially on the inside or laterally on the outside of the knee. However, in 25 unicondylar knee replacements, components approved only for medial use were combined with components approved only for lateral use.

- In 17 total knee arthroplasties a posterior-stabilised insert component was documented together with a femoral component not designed for this type of stabilisation (see example in Table 60). Depending on the design, this may result in impingement problems, extension deficit and partial dislocation upon leg extension.

Mismatch checks are based on the EPRD's own product database but cannot yet identify all mismatch scenarios. For example, it is currently impossible to automatically detect size mismatches in knee arthroplasties. However, the EPRD product database will be expanded by the end of the year to include the option of mapping the size compatibility tables for most available knee systems, so that automated verification of knee components can begin in 2024 as well. The verifications should also be expanded in other respects: The register, for example, includes documented cases in which strictly uncemented components have been used together with bone cement. In some cases, there may be a medical indication for this. However, the surgeons bear sole responsibility for this type of arthroplasty and should ensure that they inform the patients concerned about this deviation from the instructions for use and the reasons for it. The EPRD will therefore continue to issue corresponding alerts in these cases.

Unfortunately, to date the EPRD has not been able to detect a sustained decline in the annual mismatch rates. Compared to 2021, the number of mismatch cases detected in 2022 is even significantly higher than the corresponding increase in documentation figures. This is very unfortunate and may prove to be a serious problem for the patients concerned.

Component type	Identification	Manufacturer
Tibial tray	GNS II CMT TIB SIZE 7 **LEFT**	Smith & Nephew
Insert component	GII C/R ART INS SZ 7-8 11MM	Smith & Nephew
Femoral component	GNS II C/R FEM SIZE 8 **RIGHT**	Smith & Nephew

Table 59: Example of a side mismatch in total knee arthroplasty

Component type	Identification	Manufacturer
Tibial tray	Triathlon Tritanium Base Plate, Size 6	Stryker
Insert component	TRIATHLON **PS** X3 TIBIAL INSERT 6, 10 mm	Stryker
Femoral component	TRIATHLON P/A **CR** FEM COMP CEMENTLESS 6 L	Stryker

Table 60: Example of a PS insert and non-PS femoral component mismatch

8 Summary

8 Summary

The EPRD has been documenting the practice of hip and knee arthroplasty in Germany for more than ten years. After a decline in the annual procedure volume registered in the EPRD during the years of the pandemic, volumes increased by 9 % in 2022, compared to 2019. This is the highest number of procedures recorded since inception of the registry. The EPRD has documented more than two million procedures from data provided on a strictly voluntary basis.

In the spring of this year, the first pilot hospitals began using PROMs (*Patient Reported Outcome Measures*) to assess patient satisfaction following arthroplasty. The EPRD is also planning to document individual surgeon data, provided on a voluntary basis. Regular operation of the German national implant registry (IRD) for hip and knee arthroplasty is still currently scheduled to start in 2025.

The 2022 operating year

In 2022, the EPRD documented a total of 347,702 hip and knee arthroplasty procedures performed in 751 hospitals. 41 % of the patients treated were men. 177,826 of the documented cases involved primary hip arthroplasties. Total arthroplasties accounted for more than 88 % of cases. With 77.2 % of uncemented THAs performed in 2022, this figure is comparable to previous years and the procedure continues to be the standard. Hybrid THAs increased slightly. In 2022, hemiarthroplasties of the hip were still relying on cemented stems in almost 89 % of documented cases. In recent years, short stem THAs have steadily increased to 13.3 %. The use of monobloc cups continued to decline to less than 9 %. A ceramic head is the general rule for THAs performed in Germany. The proportion of metal heads has continued to decline to 6.6 %. There is also a continuing trend favouring larger head sizes; 36 mm heads accounted for 47.1 % of head components in 2022. In more than 41 % of cases, short head-neck lengths, i.e. XS or S, are now being used. The standard bearing material is ceramic with (cross-linked) PE, while bearings with ceramic inserts have declined continuously in recent years, currently amounting to only 7.5 %. Inserts made of highly cross-linked polyethylene are now used in more than 80 % of THAs, which represents an increase of 28 percentage points since 2014.

Of the 18,145 hip reoperations documented for 2022, the most common reasons for revision were loosening (22.7 %), infection (16.4 %), periprosthetic fractures (15.9 %), and dislocation (13.6 %). The proportion of reoperations with loosening as a documented indication has therefore almost declined by half since 2014. What has also been striking in recent years is that revisions for periprosthetic infections that retain bone fixation components have become increasingly common. While in 2014 at least one bone fixation component was replaced in almost 68 % of reoperations due to infection, in 2022 this was only the case in less than half of cases. A strong trend towards switching to a dual mobility cup in acetabular revisions has been observed in the EPRD since 2014 (from 10 % in 2014 to 38.5 % in 2022).

A total of 137,030 primary knee arthroplasties were documented in the EPRD in 2022. Knee arthroplasty patients tended to be younger than hip arthroplasty patients. However, at 48 %, significantly more knee arthroplasty patients were classified as morbidly obese based on their BMI. By far the most common type of fixation in both TKA (95.6 %) and unicondylar arthroplasties (88.9 %) is the fully cemented fixation. Since 2016, the percentage of fully cemented fixation systems in TKAs has risen by 5 points. The use of mobile bearings has been trending downwards since 2016. While they were still used in 18.7 % of all TKAs in 2016, their use fell to 9.3 % in 2022. Cruciate retaining systems continue to be the most common choice in TKAs (proportion in 2022: 46.9 %). However, they have been steadily losing ground since 2015 in favour of posterior stabilised systems (proportion in 2022: 25.6 %). Patellar resurfacing at primary TKA was performed in 10.5 % of TKAs in 2022.

As in previous years, the most common reason given for the 14,379 documented knee arthroplasty reoperations was loosening (22.8 %). However, their proportion has also declined over the years (from 33.8 % in 2014 to 22.8 % in 2022), although not as much as for hip arthroplasties. Secondary patellar resurfacing accounted for 13 % of reoperations. As with hip arthroplasty, there has been an increase in implant-retaining procedures for periprosthetic infections in knee arthroplasty: in 2022, at least one of the bone fixation components was replaced in only half of these cases. Overall, however, almost 56 % of knee reoperations involved the replacement of all components, with over 60 % of these involving a switch to a constrained knee system.

Hip and knee arthroplasty survival

Valid follow-up data on some 960,000 primary arthroplasties and 102,000 revisions were available for the arthroplasty survival analysis in this report. In primary arthroplasty, this data shows higher revision probabilities for non-elective hip arthroplasties compared to elective cases and for unicondylar arthroplasties compared to standard TKAs.

Patient-specific factors such as age, sex, BMI, and the presence of comorbidities have a significant impact on early revision probabilities in particular. Patient age appears to affect the outcomes of hip and knee arthroplasty differently. For knee arthroplasties, the probability of revision surgery decreases with increasing patient age, while in hip arthroplasties it rises with increasing age. This is because arthroplasties with uncemented stem components are much more likely to be revised in older patients, especially in cases of periprosthetic fractures. The EPRD therefore recommends the use of cemented stems in older patients. A BMI of over 40 leads to a sharp increase in the revision probability of hip and knee arthroplasty.

In addition to patient-specific factors, the hospitals also have an effect on arthroplasty outcome: in hospitals with high patient volumes, the risk of elective arthroplasty revisions tends to be lower. In the EPRD, this so-called volume outcome effect is particularly evident for unicondylar arthroplasties.

One of the objectives of the EPRD is the reduction of revision rates in arthroplasty. When considering the revision probabilities in elective THA by operating year however, this envisaged improvement is not yet reflected in the short and medium-term outcomes currently available. However, the EPRD is still a relatively young registry with ten years of data collection and has only started within the last three years to make cautious recommendations for certain types of arthroplasties. The fact that, unlike in hip arthroplasties, the revision probability in knee arthroplasties is already lower cannot therefore be attributed to the existence and work of the EPRD. Nevertheless, the fact that these developments can be identified in a valid manner is already one of the successes of the registry.

The EPRD data shows that the probability of a re-revision after a first revision is generally significantly higher than that of a first revision after the primary arthroplasty. The probability of a re-revision after periprosthetic infection is more than twice that of a non-infection-related revision. However, the risk of revision surgery increases with each additional revision. This increase is lower for infection-related than for non-infection-related revisions.

Patient mortality

For the first time, the EPRD also presents the patient mortality rate following arthroplasty procedures. The death of the patient is however not necessarily related to the arthroplasty operation *per se*. For most of the primary arthroplasties documented in the EPRD, patient mortality is less than the benchmark figures published by the German Federal Statistical Office. This suggests that arthroplasty patients tend to be healthier than the general population by respective age groups. One exception is the treatment of femoral fractures close to the hip joint: in the overall analysis across all age groups, the 1-year mortality rate for non-elective THAs is 12 % and for hemiarthroplasties as high as 30.6 %. In the EPRD, mortality after elective primary arthroplasties is less than these figures, but significantly higher than those for elective primary arthroplasty - it tends to be higher for infection-related revisions than for other indications.

Mismatch detection for more patient safety

A very important objective of the EPRD is the improvement of patient safety, for example, by reducing so-called mismatches in hip and knee arthroplasty procedures. With the help of the product database, the EPRD also identified a three-digit number of mismatched implant combinations in 2022. Compared to previous years, the number of documented mismatch cases has increased. In the event of a mismatch, a corresponding alert is issued directly in the data acquisition software after scanning the labels of the implant components. This allows the respective hospital to check the case promptly and correct it, if necessary. The EPRD is working on continuing to improve the accuracy of mismatch detection and expanding it to include scenarios not yet covered. Automated size compatibility check for knee systems is expected to start in 2024. The EPRD aims to make an important contribution to avoiding implant mismatches in the future by detecting mismatch cases at an early stage and providing feedback to the hospitals.

Glossary and indexes

Glossary

The following summary explains the terms and designations used in the tables and text.

Term	Explanation
Acetabular component	Part of the hip arthroplasty that replaces the acetabulum. The acetabular component can either consist of one part (monobloc) or of several parts (modular acetabular component). Typically, a modular acetabular component consists of a metal cup and an acetabular insert.
Antioxidant	Additive/chemical compound, such as Vitamin E, which decreases oxidation of the polyethylene used in arthroplasty.
ASA status	ASA status refers to a patient health status classification system which estimates perioperative risk. The classification system was established over 60 years ago by the American Society of Anesthesiologists (ASA). The anaesthesiologist assigns each patient a status between I (normal, without relevant concomitant diseases) and VI (brain dead). In the EPRD, the spectrum ranges from I to V (a moribund patient who is not expected to survive without the operation).
Bearing	Describes the materials of the two surfaces that move against each other in a joint replacement. Examples are: metal/polyethylene, metal/metal, ceramic/polyethylene, ceramic/ceramic. In this report, the first material mentioned always refers to the *femoral component* of the articulation.
Body Mass Index (acronym: BMI)	Ratio between the height and weight of a person, defined as their weight (in kilograms) divided by their squared height (in metres).
Bone cement	Material used to anchor prosthetic components in the bone. The material used is polymethyl methacrylate (PMMA). Antibiotics reduce the risk of infection and can be added to the bone cement either during production or during the surgery.
Cemented	Component fixation with cement
Cementless /Uncemented	Component fixation without cement
Censoring events	In some cases events such as patient death or lost-to-follow-up, may occure before the patient requires a subsequent arthroplasty revision (endpoint). Up to the occurrence of these so-called censoring events the outcome is still accounted, but the patient is no longer followed up.
Ceramicised metal	Implant components that consist of a zirconium alloy substrate and a ceramic surface modification – oxidised zirconium alloy. It is therefore neither all-ceramic nor a *coated metal*.
Coated metal	Implant components that have been coated with titanium nitride, titanium niobium nitride or zirconium nitride. In the EPRD, these coated components are treated separately from components made of *ceramicised metal* or all-ceramic components.

Term	Explanation
Complementary surgery	Patella resurfacing following primary bicondylar knee arthroplasty on the same joint affected by "normal" progression of the disease (including exchange of the insert for prophylactic reasons), is a complementary operation, rather than a revision.
Confidence interval	Interval that contains the true value within a specified probability range (confidence level).
Constraint	Knee replacements are characterised by their level of constraint (stabilisation). In this report, we define "standard" knee systems as cruciate-retaining, cruciate-retaining/sacrificing, pure cruciate-sacrificing and also posterior-stabilised systems without varus-valgus stabilisation. Varus-valgus-stabilised and (rigid/rotational) hinge systems are considered as "constrained".
Cruciate retaining	Design preserving the posterior cruciate ligament without constraining knee motion/kinematics.
Cruciate retaining/sacrificing	The design is suitable for both a cruciate ligament-retaining or a replacement procedure.
Cruciate sacrificing	Design replacing the posterior cruciate ligament with kinematics, which partially permits a limited relative motion in all three planes.
Cup	See *Acetabular component*
DAIR	Acronym for debridement, antibiotics, implant retention. Refers to a surgical procedure for periprosthetic infections. An implant retaining procedure may be indicated in certain circumstances (acute early infection, solid implant fixation, etc.). This also includes procedures where components that are not bone-anchored, such as inserts and modular heads, are also replaced.
Dual mobility	In case of a dual mobility arthroplasty the acetabular insert is designed (convex surface) to articulate with a dual mobility acetabular component. It is inserted into the concave surface of this bone facing shell. The femoral head is usually inserted into the dual mobility insert which is in turn inserted into the bone facing shell.
Elixhauser Comorbidity Score	Comorbidity index which is checked for the presence and the overall severity of certain comorbidities based on the diagnosis codes from the billing data. This is then used to calculate a measure of the patient's state of health. The higher the score, the worse the patient's health and the higher the mortality risk.
Femoral component (hip)	Arthroplasty component inserted into the proximal femur. It is either already inseparably connected to the femoral head (monobloc) or a modular head can be attached to obtain a complete femoral component (modular head stem), it can also include a modular structure with a modular neck or proximal section (modular stem).
Femoral component (knee)	Arthroplasty component inserted onto the distal femur. It can form either one single femoral condyle or both femoral condyles, and the femoral trochlear.
Femoral neck prosthesis	Generally refers to a hip stem component anchored in the femoral neck but it also refers to the "mid-head resection" prosthesis.
Fixed bearing	Monobloc design of the tibial tray or modular connection between the tibial tray and the tibial insert that does not permit any relative movement between these components. Hinged systems with a rotating hinge are also classified as fixed bearings, as opposed to a mobile bearing.

Term	Explanation
German ICPM code	German hospitals use the German ICPM (International Classification of Procedures in Medicine) codes to document inpatient procedures tor health insurance claims. Each procedure has been assigned a numerical code. For example, code 5-820.01 refers to cemented total hip arthroplasty.
Head (component)	See *Modular head*.
Head-neck length	Describes the distance between the centre of the head and a reference point on the taper in the direction of the taper axis. The size specifications which range from XS to XXXL vary between manufacturers.
Hemiarthroplasty	In contrast to a total arthroplasty, a hemiarthroplasty (hemi = half) does not replace the entire joint but only part of it. A typical example is a dual-head arthroplasty, in which only the femoral component of the hip joint is replaced with the head, but not the acetabular component.
Hinge	Describes coupled knee systems with lateral joint stability and with a simple (single degree of mobility = a "rigid hinge") or a rotating hinge joint between the femoral component and the tibial tray.
Hip stem	See *Femoral component (hip)*.
hXLPE	Highly cross-linked polyethylene (UHMWPE). Also refer to *Polyethylene (PE)*.
Hybrid	Arthroplasty in which one component is cemented while the other is not cemented. In hip replacement, "hybrid" refers to the combination of a cemented stem and an uncemented acetabular component, while "reverse hybrid" refers to the combination of an uncemented stem and a cemented acetabular component. In the case of knee arthroplasty, "hybrid" refers to the combination of cemented tibial tray and uncemented femoral component and "reverse hybrid" the reverse combination.
ICD-10 code	The International Statistical Classification of Diseases and Related Health Problems (Version 10) is an internationally accepted system for documenting principal diagnoses and concomitant diseases. German hospitals use the German ICD-10 codes to document the diagnoses determined during the patient's stay in hospital to the health insurance providers. For example, S72.0 is the code for "fracture of neck of femur".
Impingement	Mechanical complication due to inappropriate contact of implant components and/or bone.
Insert	Tibial inserts are part of a knee replacement and are attached to the superior surface of the tibial tray and provide the articulating surface with the femoral component. Acetabular Inserts are part of a hip replacement and are inserted inside of a modular acetabular component.
Kaplan-Meier estimator	Statistical methodology to determine the probability that a given event of interest will not occur within a specified time interval. Events that make it impossible to observe the occurrence of the given events can be taken into account in the calculation and can be censored.
Mismatch	Arthroplasty involving a combination of components that are either incompatible or a component that is incompatible with existing components.
Mobile bearing	Mobile connection between the tibial tray and the tibial insert. As opposed to a fixed bearing. Hinged systems with a rotating hinge are not classified as mobile bearings. See *Fixed bearing*

Term	Explanation
Modular cup	An acetabular component designed to accommodate a separate bearing surface within its internal diameter. Also refer to *Monobloc cup* and *Acetabular component*.
Modular head	Femoral head with an upper convex surface which articulates with the acetabular articular surface. At its distal aspect, there is a female taper which is designed to engage with the male taper of the modular femoral stem or modular femoral neck. Heads are available in varying sizes to match the internal diameter of the acetabular articulating surface.
Modular stem	A femoral stem component that is composed of several parts and which also requires a modular head. Also refer to *Monobloc stem* and *Femoral component (hip)*.
Monobloc	A component consisting of one part, e.g. for hip replacement a stem component with an integrated head or a polyethylene cup that does not require a separate insert.
Monobloc cup	An acetabular component, which usually consists of one part or parts that have been "inseparably" pre-assembled/connected. In contrast, modular cups consist of at least two parts, which are usually only connected to one another during the implantation. Also refer to *Modular cup* and *Femoral component (hip)*.
Monobloc stem	A femoral stem component that consists of one part and does not require a separate head component. In contrast, other stems consist of at least two parts. Also refer to *Modular stem* and *Femoral component (hip)*.
Mortality	Refers to the number of deaths in a given period as a percentage of the total number of individuals considered.
mXLPE	Moderately cross-linked polyethylene (UHMWPE).
Offset	The distance from the center of rotation of the femoral head to a line bisecting the longitudinal axis of the femoral stem.
Partial knee arthroplasty	A partial knee prosthesis only replaces part of the joint surface. A typical example is a unicondylar prosthesis which only replaces the medial/lateral part of the knee joint, not the entire knee joint.. Also refer to *Total knee arthroplasty*
Partially cemented	Partially cemented indicates that one component is not cemented and the other is. Also refer to *Hybrid*.
Patellar component	Component of patellar resurfacing. While this often only consists of a polyethylene cap, which is cemented into the posterior surface of the patella, there are also designs in which a polyethylene cap is fixed to a metal base plate. Also refer to *Patellar resurfacing*.
Patellar resurfacing	Use of an implant replacing the articulation surface of the kneecap. For secondary patella resurfacing following primary bicondylar knee arthroplasty also refer to *Complementary surgery*.
Patellofemoral arthroplasty	Artificial replacement of the trochlea (groove in the distal femur) and usually of the patellar surface too, also applies to cases with an additional unicondylar replacement.
Periprosthetic joint infection	These infections are generally a bacterial colonisation of an implanted endoprosthesis. This is a particularly dreaded complication, which is difficult and time-consuming to treat surgically. Typically, the infection is caused by pathogens that are part of the normal human skin and mucosal flora.

Term	Explanation
Pivot	Describes knee systems designed to support natural rotation/translation kinematics.
Polyethylene (PE)	Polyethylene (abbreviation PE) is a thermoplastic made by chain polymerisation of ethene [CH2=CH2], from which prosthetic components (e.g. inserts) can be produced. In arthroplasty, ultra high molecular weight polyethylene (UHMWPE) is usually used. This can subsequently be modified by irradiation and coupling to antioxidants. Also refer to *hXLPE or mXLPE*.
Posterior stabilised	Design allowing the posterior cruciate ligament to be replaced with a mechanical element such as an articulated polyethylene extension which controls and limits anterior and/or posterior movement.
Primary surgery/arthroplasty	The primary implantation of one or more arthroplasty components in a specific joint.
p-value	Lowest significance level at which a statistical test would still reject the null hypothesis. Values below 0.05 are usually referred to as being statistically significant.
Reconstruction shell	A device to provide structural stability to the pelvis prior to implanting the definitive acetabular articular component. Such a device may be required in bony defect situations. This may be the case in revision surgery, but also in primary surgery where pelvic discontinuity arises secondary to bone loss, e.g. tumour or post-traumatic reconstructions.
Reoperation	Umbrella term including revision arthroplasty, where components are exchanged and complementary surgery where further arthroplasty components are added to compensate for natural disease progression.
Reverse-hybrid	See *Hybrid.*
Revision (surgery/arthroplasty)	Surgery referring to the removal and, if necessary, the replacement of previously implanted hip or knee arthroplasty components. Revision surgery may or may not be followed by re-implantation of new arthroplasty components during the same operation (one-stage revision) or at a later date (multi-stage revision) and is interpreted as failure of the index arthroplasty. In contrast, the reoperation of a knee replacement with patellofemoral-resurfacing as a consequence of progressive patellofemoral osteoarthritis is not interpreted as failure of the initial arthroplasty. Also refer to *Reoperation* and *Complementary surgery*.
Revision cup	Monobloc or modular acetabulum component with added design characteristics for bridging acetabular bone defects or for added bony fixation (e.g. additional screw hole).
Revision stem	A hip stem component that is specifically designed for revision hip arthroplasties.
Routine data	Data stored by public health insurance companies, in particular for administrative and billing purposes, in accordance with §301 SGB V (German Social Code, Book V). This data, which includes ICD codes for main and secondary diagnoses as well as OPS codes for treatments, is delivered to the EPRD together with the vital status of the participating patients twice a year. The data is used to supplement the case documentation submitted directly to the registry from participating hospitals.

Term	Explanation
Short stem	Hip stem components that are specified by the manufacturer as anchoring in the metaphyseal area. These include: Femoral neck-preserving systems, in which only the femoral head is removed and the femoral neck is left intact, femoral neck-preserving systems, in which parts of the femoral neck are also removed, and femoral neck-resecting systems, in which the femoral neck is also completely removed.
Standard TKA	Describes "unconstrained/minimally stabilised" knee systems such as cruciate-retaining/sacrificing, pure cruciate-sacrificing and also posterior stabilised systems without varus-valgus stabilisation.
Surface replacement (hip)	Surface replacement of the femoral head (resurfacing head) and/or the acetabular cup (surface replacement cup). The "resurfacing head" is used to describe a femoral component that is designed only to cover the patient's own femoral head. There may be an anchoring device for epiphyseal fixation (e.g.; central pins). The head is used with a corresponding "surface replacement cup" which is made of one piece of material (monobloc).
Tibial tray	The component that replaces/resurfaces the upper tibia can be modular (more than one piece and accept an insert, monobloc (one piece), preassembled (the insert and tibial tray are assembled by the manufacturer but can be separated) or prefixed (where the tibial tray and insert are assembled by the manufacturer and cannot be separated).
Total hip arthroplasty (acronym: THA)	Orthopaedic implant which replaces a hip joint. In contrast to a hemiarthroplasty, a total hip arthroplasty replaces the entire joint.
Total knee arthroplasty (acronym: TKA)	A knee arthroplasty replacing all three compartments of the knee joint (medial and lateral compartment of the tibiofemoral joint, and the patellofemoral compartment). Current practice in knee arthroplasty in Germany rarely includes patellar resurfacing. Strictly speaking, these cases should therefore not be classified as total knee arthroplasties, but rather as bicompartmental arthroplasties. However, the term "total knee arthroplasty" to refer to a bicompartmental knee arthroplasty is widely used in Germany.
Tumour stem	Primarily refers to a modular stem system, implanted as a reconstruction option for extensive bony defects after femoral tumour resection or at repeat revision (re-revision).
Two-stage revision surgery	The EPRD defines this as a procedure in which the removal and the re-implantation (replacement) of prosthetic components are performed separately and not during the same operation. This is usually performed as part of infection-related revision surgery. As further interventions may be necessary between explantation and re-implantation (e.g. spacer replacement, etc.), these procedures are also referred to as "two-/multi-stage revisions". See *Revision arthroplasty*
Uncoated metal	Implant components that have not been ceramic coated.
Unicondylar knee arthroplasty	Replacement of only one femoral condyle and the corresponding portion of the tibial plateau of the knee joint.

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Appendix: Separate implant outcomes for acetabular and femoral components

Elective total hip arthroplasties						Revision probabilities after …							
Femoral stem	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented femoral component													
A2 Kurzschaft (ARTIQO)	9,339	73	64 (57 - 71)	40/60	2016-2022	2.0 [1.7; 2.3] (6,896)	2.2 [1.9; 2.6] (5,079)	2.4 [2.1; 2.8] (3,576)	2.6 [2.2; 3.0] (2,241)	2.6 [2.2; 3.0] (1,034)	2.8 [2.3; 3.4] (255)		
ABG II Stem (Stryker)	493	15	66 (59 - 71)	40/60	2014-2022	4.5 [3.0; 6.8] (437)	6.4 [4.5; 9.0] (402)	6.8 [4.9; 9.5] (360)	7.4 [5.3; 10.3] (279)	7.4 [5.3; 10.3] (211)	7.9 [5.7; 10.9] (167)	*7.9 [5.7; 10.9]* (71)	
Accolade II Stem (Stryker)	10,742	64	68 (60 - 75)	41/59	2014-2022	2.6 [2.3; 2.9] (8,692)	3.0 [2.6; 3.3] (6,839)	3.2 [2.8; 3.5] (5,064)	3.4 [3.0; 3.8] (3,283)	3.6 [3.2; 4.0] (1,998)	3.7 [3.3; 4.1] (1,110)	3.8 [3.3; 4.3] (348)	
Actinia cementless (Implantcast)	2,947	24	72 (65 - 78)	33/67	2015-2022	3.5 [2.9; 4.2] (2,550)	3.8 [3.2; 4.6] (2,243)	3.9 [3.3; 4.7] (1,821)	4.3 [3.5; 5.1] (871)	4.6 [3.8; 5.7] (364)	*4.6 [3.8; 5.7]* (77)		
ACTIS™-Hüftschaft (DePuy)	1,614	36	62 (55 - 69)	43/57	2018-2022	1.7 [1.1; 2.5] (851)	2.2 [1.4; 3.2] (461)	*2.2 [1.4; 3.2]* (137)					
Alloclassic (Zimmer Biomet)	10,843	85	69 (62 - 76)	34/66	2012-2022	2.9 [2.6; 3.3] (9,400)	3.4 [3.1; 3.8] (8,300)	3.8 [3.5; 4.2] (7,000)	4.2 [3.8; 4.6] (5,595)	4.4 [4.0; 4.8] (4,139)	4.7 [4.2; 5.1] (2,729)	4.8 [4.3; 5.3] (1,245)	5.2 [4.5; 5.9] (288)
Alpha-Fit (Corin)	691	3	75 (69 - 79)	30/70	2014-2022	1.9 [1.1; 3.2] (660)	2.0 [1.2; 3.4] (650)	2.3 [1.4; 3.8] (622)	2.3 [1.4; 3.8] (520)	2.9 [1.8; 4.6] (357)	2.9 [1.8; 4.6] (259)	3.8 [2.3; 6.0] (150)	
AMISTEM-H (Medacta)	1,000	28	67 (58 - 74)	43/57	2015-2020	3.2 [2.3; 4.5] (957)	3.5 [2.5; 4.9] (926)	3.8 [2.7; 5.1] (772)	4.2 [3.1; 5.7] (547)	4.6 [3.4; 6.3] (344)	*5.8 [4.2; 8.1]* (147)		
AMISTEM-H ProxCoat (Medacta)	348	3	60 (52.5 - 66)	48/52	2016-2022	1.8 [0.8; 3.9] (275)	2.1 [1.0; 4.4] (221)	2.6 [1.3; 5.2] (169)	*3.3 [1.7; 6.5]* (87)				
AMISTEM-P (Medacta)	764	24	66 (59 - 73)	41/59	2019-2022	2.7 [1.7; 4.2] (441)	*2.7 [1.7; 4.2]* (139)						
ANA.NOVA® Alpha Schaft (ARTIQO)	2,141	13	70 (63 - 76)	40/60	2015-2022	2.4 [1.8; 3.2] (1,765)	2.9 [2.2; 3.7] (1,505)	3.1 [2.4; 4.0] (1,225)	3.4 [2.6; 4.3] (915)	3.7 [2.9; 4.7] (584)	3.9 [3.0; 5.0] (362)	*3.9 [3.0; 5.0]* (70)	
ANA.NOVA® SL-complete® Schaft (ARTIQO)	604	10	72 (64 - 78)	40/60	2015-2022	3.5 [2.3; 5.4] (487)	3.9 [2.6; 5.9] (383)	4.2 [2.8; 6.3] (318)	4.5 [3.0; 6.7] (230)	*4.5 [3.0; 6.7]* (140)	*6.6 [3.9; 10.9]* (68)		
ANA.NOVA® Solitär Schaft (ARTIQO)	543	7	74 (66 - 80)	35/65	2015-2022	4.0 [2.6; 6.0] (476)	4.2 [2.8; 6.2] (424)	4.6 [3.1; 6.8] (322)	5.1 [3.4; 7.6] (180)	*6.0 [3.8; 9.3]* (87)	*6.0 [3.8; 9.3]* (52)		
Anato Stem (Stryker)	423	9	68 (60 - 75)	45/55	2016-2022	3.1 [1.8; 5.3] (370)	3.7 [2.2; 6.0] (306)	3.7 [2.2; 6.0] (233)	3.7 [2.2; 6.0] (176)	*3.7 [2.2; 6.0]* (87)			
Avenir (Zimmer Biomet)	27,945	198	69 (62 - 76)	40/60	2013-2022	3.1 [2.9; 3.3] (21,491)	3.3 [3.1; 3.6] (16,443)	3.6 [3.3; 3.8] (11,682)	3.6 [3.4; 3.8] (7,329)	3.8 [3.5; 4.0] (4,335)	3.8 [3.5; 4.0] (2,036)	3.8 [3.5; 4.1] (577)	*3.8 [3.5; 4.1]* (70)
Avenir Complete (Zimmer Biomet)	1,506	46	67 (60 - 74)	40/60	2020-2022	2.9 [2.1; 4.0] (513)	*2.9 [2.1; 4.0]* (74)						
BICONTACT (Aesculap)	18,808	130	71 (63 - 77)	40/60	2013-2022	3.2 [3.0; 3.5] (16,482)	3.6 [3.3; 3.9] (14,601)	3.7 [3.5; 4.0] (12,393)	3.8 [3.6; 4.1] (9,737)	3.9 [3.7; 4.2] (6,899)	4.0 [3.7; 4.3] (4,274)	4.0 [3.7; 4.3] (2,059)	4.0 [3.7; 4.4] (596)
Brexis (Zimmer Biomet)	976	33	59 (53 - 66)	47/53	2016-2022	2.2 [1.4; 3.3] (713)	2.8 [1.9; 4.1] (549)	2.8 [1.9; 4.1] (392)	2.8 [1.9; 4.1] (176)	*3.5 [2.1; 5.8]* (60)			
C.F.P. Hip Prosthesis Stem (Waldemar Link)	1,347	31	61 (54 - 67)	55/45	2012-2022	2.1 [1.5; 3.1] (1,212)	2.9 [2.1; 4.0] (1,096)	3.2 [2.3; 4.3] (958)	3.5 [2.6; 4.7] (844)	3.7 [2.8; 5.0] (679)	3.9 [2.9; 5.2] (435)	3.9 [2.9; 5.2] (238)	3.9 [2.9; 5.2] (157)
CBC Evolution (Mathys)	831	14	68 (62 - 75)	44/56	2013-2022	3.2 [2.2; 4.7] (699)	4.1 [2.9; 5.8] (595)	4.5 [3.2; 6.2] (526)	5.1 [3.7; 6.9] (438)	5.1 [3.7; 6.9] (361)	5.1 [3.7; 6.9] (237)	*5.1 [3.7; 6.9]* (93)	*5.1 [3.7; 6.9]* (54)
CBH (Mathys)	301	7	74 (69 - 78)	29/71	2013-2022	1.7 [0.7; 4.0] (271)	2.8 [1.4; 5.6] (243)	2.8 [1.4; 5.6] (216)	2.8 [1.4; 5.6] (178)	*2.8 [1.4; 5.6]* (147)	*2.8 [1.4; 5.6]* (93)		
CLS Spotorno (Zimmer Biomet)	26,315	201	65 (58 - 72)	43/57	2012-2022	2.8 [2.6; 3.1] (22,521)	3.3 [3.1; 3.5] (19,454)	3.6 [3.3; 3.8] (16,477)	3.7 [3.5; 4.0] (13,232)	3.8 [3.6; 4.1] (9,808)	4.0 [3.8; 4.3] (6,310)	4.1 [3.9; 4.4] (3,068)	4.3 [4.0; 4.6] (999)
CORAIL™ AMT-Hüftschaft mit Kragen (DePuy)	11,792	103	69 (61 - 76)	36/64	2012-2022	1.7 [1.5; 1.9] (9,254)	2.1 [1.9; 2.4] (7,357)	2.4 [2.1; 2.7] (5,330)	2.5 [2.2; 2.8] (3,477)	2.6 [2.3; 3.0] (2,118)	3.0 [2.5; 3.4] (974)	3.0 [2.5; 3.4] (221)	*3.0 [2.5; 3.4]* (62)
CORAIL™ AMT-Hüftschaft ohne Kragen (DePuy)	34,824	171	70 (62 - 76)	38/62	2012-2022	2.9 [2.8; 3.1] (28,777)	3.3 [3.1; 3.5] (23,693)	3.6 [3.4; 3.9] (18,802)	3.9 [3.7; 4.1] (14,183)	4.0 [3.8; 4.3] (9,534)	4.3 [4.0; 4.5] (5,355)	4.5 [4.2; 4.8] (2,135)	5.2 [4.6; 5.8] (637)
COREHIP (Aesculap)	4,610	59	68 (61 - 75)	38/62	2017-2022	2.1 [1.7; 2.6] (2,479)	2.5 [2.0; 3.1] (1,020)	3.0 [2.3; 3.8] (409)	*3.0 [2.3; 3.8]* (56)				
EcoFit 133° cpTi (Implantcast)	493	6	73 (67 - 80)	29/71	2019-2022	4.4 [2.9; 6.8] (313)	*5.5 [3.6; 8.2]* (125)						

Table 61: Outcomes for femoral stems in elective total hip arthroplasties. For each type of fixation, the femoral stems are listed alphabetically by their designation.

Elective total hip arthroplasties							Revision probabilities after …							
Femoral stem	Number	Hosp.	Age	m/f	Period		1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented femoral component														
EcoFit 133° HA (Implantcast)	324	5	71.5 (64 - 77)	43/57	2018-2022		2.8 [1.5; 5.4] (218)	*3.3 [1.8; 6.2]* (149)	*3.3 [1.8; 6.2]* (84)					
EcoFit cpTi (Implantcast)	1,035	17	73 (66 - 78)	30/70	2014-2022		4.9 [3.7; 6.4] (920)	5.6 [4.4; 7.2] (870)	6.1 [4.7; 7.7] (788)	6.5 [5.1; 8.2] (591)	6.7 [5.2; 8.4] (385)	6.7 [5.2; 8.4] (194)		
EcoFit HA (Implantcast)	868	8	70 (64 - 78)	43/57	2014-2022		2.9 [2.0; 4.3] (695)	3.2 [2.2; 4.7] (586)	3.2 [2.2; 4.7] (435)	3.2 [2.2; 4.7] (300)	3.2 [2.2; 4.7] (168)	*3.2 [2.2; 4.7]* (53)		
EcoFit Short cpTi (Implantcast)	459	8	69 (61 - 76)	43/57	2018-2022		4.5 [2.9; 6.8] (338)	4.5 [2.9; 6.8] (242)	*4.5 [2.9; 6.8]* (122)					
EXCEPTION (Zimmer Biomet)	1,486	14	68.5 (61 - 75)	49/51	2015-2022		4.4 [3.5; 5.6] (1,352)	4.8 [3.9; 6.1] (1,228)	5.4 [4.3; 6.7] (905)	5.4 [4.3; 6.7] (574)	6.1 [4.8; 7.7] (281)	*6.1 [4.8; 7.7]* (52)		
EXCIA (Aesculap)	11,830	116	70 (62 - 76)	40/60	2013-2022		3.3 [3.0; 3.6] (9,377)	3.7 [3.3; 4.0] (7,629)	3.8 [3.5; 4.2] (5,771)	3.9 [3.5; 4.3] (3,902)	3.9 [3.6; 4.3] (2,297)	4.0 [3.6; 4.4] (906)	4.2 [3.7; 4.7] (168)	
Fitmore (Zimmer Biomet)	28,041	239	62 (55 - 69)	46/54	2012-2022		2.3 [2.2; 2.5] (23,090)	2.7 [2.6; 2.9] (19,013)	3.0 [2.8; 3.2] (15,010)	3.1 [2.9; 3.4] (11,176)	3.2 [3.0; 3.5] (7,606)	3.4 [3.1; 3.6] (4,534)	3.4 [3.2; 3.7] (1,978)	3.6 [3.3; 3.9] (549)
GTS (Zimmer Biomet)	1,902	30	64 (57 - 71)	41/59	2013-2022		3.5 [2.8; 4.5] (1,666)	4.4 [3.6; 5.5] (1,500)	4.7 [3.8; 5.7] (1,301)	5.0 [4.1; 6.1] (998)	5.2 [4.2; 6.4] (613)	5.5 [4.4; 6.8] (337)	*5.5 [4.4; 6.8]* (117)	
Konusprothese (Zimmer Biomet)	1,439	125	58 (48 - 67)	16/84	2013-2022		3.0 [2.2; 4.0] (1,262)	3.7 [2.8; 4.9] (1,095)	4.1 [3.2; 5.3] (930)	4.2 [3.3; 5.5] (767)	4.5 [3.5; 5.8] (606)	4.7 [3.6; 6.1] (420)	4.7 [3.6; 6.1] (240)	*4.7 [3.6; 6.1]* (99)
LCU Hip System, cementless (Waldemar Link)	3,316	40	68 (61 - 74.5)	44/56	2014-2022		2.7 [2.2; 3.3] (2,741)	3.0 [2.5; 3.7] (2,225)	3.3 [2.7; 4.0] (1,677)	3.4 [2.8; 4.1] (1,125)	3.6 [2.9; 4.4] (633)	4.2 [3.2; 5.6] (197)		
M/L Taper (Zimmer Biomet)	6,121	25	68 (61 - 74)	42/58	2012-2022		3.1 [2.6; 3.5] (5,215)	3.5 [3.1; 4.0] (4,393)	3.8 [3.3; 4.3] (3,663)	4.0 [3.5; 4.5] (3,004)	4.2 [3.7; 4.7] (2,092)	4.4 [3.8; 5.0] (1,183)	4.6 [4.0; 5.3] (571)	4.8 [4.1; 5.7] (209)
METABLOC (Zimmer Biomet)	713	14	72 (65 - 78)	39/61	2012-2020		2.4 [1.5; 3.8] (685)	2.7 [1.7; 4.2] (653)	2.8 [1.8; 4.4] (604)	3.5 [2.4; 5.2] (516)	3.5 [2.4; 5.2] (402)	3.5 [2.4; 5.2] (263)	*3.5 [2.4; 5.2]* (125)	*3.5 [2.4; 5.2]* (58)
Metafix (Corin)	1,657	17	72 (65 - 78)	42/58	2014-2022		1.6 [1.1; 2.4] (1,448)	1.9 [1.3; 2.7] (1,259)	2.1 [1.5; 2.9] (1,098)	2.2 [1.5; 3.0] (828)	2.4 [1.7; 3.4] (639)	2.4 [1.7; 3.4] (395)	2.4 [1.7; 3.4] (167)	
METHA (Aesculap)	7,836	160	57 (52 - 63)	47/53	2012-2022		2.7 [2.4; 3.1] (6,779)	3.4 [3.0; 3.8] (5,801)	3.6 [3.2; 4.1] (4,868)	3.7 [3.3; 4.2] (3,763)	3.8 [3.4; 4.3] (2,657)	4.0 [3.5; 4.5] (1,721)	4.0 [3.6; 4.6] (908)	4.0 [3.6; 4.6] (303)
MiniHip (Corin)	2,409	46	61 (54 - 67)	46/54	2013-2022		2.8 [2.2; 3.6] (1,959)	3.4 [2.7; 4.2] (1,657)	3.6 [2.9; 4.5] (1,421)	3.8 [3.0; 4.7] (1,129)	4.1 [3.3; 5.1] (761)	4.4 [3.5; 5.5] (437)	4.4 [3.5; 5.5] (163)	
MRP-TITAN (Peter Brehm)	366	130	74 (62 - 81)	35/65	2013-2022		13.5 [10.3; 17.6] (256)	15.6 [12.1; 20.0] (195)	15.6 [12.1; 20.0] (155)	*15.6 [12.1; 20.0]* (110)	*16.9 [12.8; 22.1]* (50)			
Nanos Schenkelhalsprothese (OHST/Smith & Nephew)	5,073	116	59 (53 - 66)	47/53	2013-2022		2.2 [1.8; 2.6] (4,265)	2.5 [2.1; 3.0] (3,573)	2.9 [2.4; 3.4] (3,075)	3.1 [2.7; 3.7] (2,535)	3.3 [2.8; 3.9] (1,867)	3.3 [2.8; 3.9] (1,242)	3.6 [3.0; 4.4] (373)	
optimys (Mathys)	22,504	128	64 (57 - 71)	44/56	2013-2022		1.8 [1.7; 2.0] (17,015)	2.1 [1.9; 2.3] (12,827)	2.2 [2.0; 2.4] (9,445)	2.3 [2.1; 2.5] (6,332)	2.4 [2.2; 2.6] (3,831)	2.4 [2.2; 2.7] (1,787)	2.5 [2.2; 2.8] (506)	*2.5 [2.2; 2.8]* (93)
Peira Schaft (ARTIQO)	385	6	72 (66 - 77)	36/64	2015-2022		3.4 [2.0; 5.8] (362)	3.4 [2.0; 5.8] (354)	3.7 [2.2; 6.1] (320)	3.7 [2.2; 6.1] (238)	*4.1 [2.5; 6.7]* (136)			
Polarschaft (Smith & Nephew)	14,057	118	69 (62 - 76)	41/59	2013-2022		2.7 [2.4; 2.9] (11,535)	3.0 [2.7; 3.3] (9,513)	3.2 [2.9; 3.5] (7,756)	3.3 [3.0; 3.7] (5,651)	3.4 [3.1; 3.7] (3,589)	3.5 [3.2; 3.9] (1,756)	3.9 [3.4; 4.4] (577)	*3.9 [3.4; 4.4]* (136)
PROFEMUR® GLADIATOR (MicroPort)	399	8	71 (64 - 76)	34/66	2014-2022		2.9 [1.6; 5.2] (314)	3.2 [1.8; 5.6] (250)	4.1 [2.4; 7.0] (191)	*4.8 [2.8; 8.0]* (135)	*4.8 [2.8; 8.0]* (92)			
PROFEMUR® GLADIATOR CLASSIC (MicroPort)	982	16	70 (63 - 76)	36/64	2014-2022		2.9 [2.0; 4.2] (699)	3.3 [2.3; 4.8] (494)	4.2 [3.0; 5.9] (341)	4.2 [3.0; 5.9] (229)	*4.2 [3.0; 5.9]* (145)	*4.2 [3.0; 5.9]* (87)		
PROFEMUR® L Classic (MicroPort)	367	10	69 (62 - 76)	40/60	2015-2022		1.9 [0.9; 4.0] (275)	*1.9 [0.9; 4.0]* (130)	*1.9 [0.9; 4.0]* (80)					
PROFEMUR®Preserve (MicroPort)	645	18	62 (55 - 68)	49/51	2014-2022		2.4 [1.5; 4.0] (429)	3.2 [2.0; 5.1] (288)	3.2 [2.0; 5.1] (182)	*3.2 [2.0; 5.1]* (132)	*4.2 [2.3; 7.5]* (72)			
Proxy PLUS Schaft (Smith & Nephew)	879	24	69 (62 - 75)	44/56	2013-2022		3.7 [2.6; 5.1] (828)	4.3 [3.1; 5.8] (755)	4.5 [3.3; 6.1] (687)	4.7 [3.4; 6.3] (593)	4.9 [3.6; 6.6] (463)	5.3 [3.9; 7.1] (299)	*5.3 [3.9; 7.1]* (117)	
Pyramid (Atesos)	2,944	25	71 (64 - 77)	36/64	2014-2022		3.0 [2.5; 3.7] (2,621)	3.3 [2.7; 4.0] (2,300)	3.6 [3.0; 4.4] (1,900)	3.7 [3.0; 4.4] (1,536)	3.7 [3.1; 4.5] (1,083)	3.8 [3.2; 4.7] (592)	3.8 [3.2; 4.7] (180)	
QUADRA-H (Medacta)	9,779	65	68 (61 - 75)	39/61	2015-2022		2.7 [2.4; 3.0] (7,489)	3.2 [2.9; 3.6] (5,854)	3.5 [3.2; 4.0] (4,460)	3.9 [3.5; 4.4] (3,179)	4.2 [3.8; 4.7] (1,699)	4.6 [4.0; 5.2] (614)	*4.8 [4.1; 5.6]* (75)	

Table 61 (continued)

Elective total hip arthroplasties						Revision probabilities after ...							
Femoral stem	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented femoral component													
S-ROM™-Hüftschaft (DePuy)	363	32	59 (48 - 68)	29/71	2013-2022	5.2 [3.3; 8.2] (269)	5.2 [3.3; 8.2] (187)	*5.2 [3.3; 8.2]* (122)	*5.2 [3.3; 8.2]* (62)				
SBG-Schaft (Smith & Nephew)	513	10	72 (64 - 78)	37/63	2013-2022	4.9 [3.3; 7.2] (466)	5.3 [3.7; 7.7] (395)	5.8 [4.1; 8.3] (335)	6.1 [4.3; 8.6] (296)	6.5 [4.6; 9.1] (222)	*6.5 [4.6; 9.1]* (139)	*6.5 [4.6; 9.1]* (73)	
SL-PLUS Schaft (Smith & Nephew)	5,357	63	69 (62 - 76)	36/64	2012-2022	3.2 [2.7; 3.7] (4,751)	4.0 [3.5; 4.6] (4,232)	4.5 [3.9; 5.1] (3,689)	4.9 [4.3; 5.5] (3,093)	5.2 [4.6; 5.9] (2,444)	5.7 [5.0; 6.4] (1,683)	6.4 [5.6; 7.2] (920)	6.7 [5.8; 7.7] (376)
SL MIA HA Schaft (Smith & Nephew)	6,292	52	70 (61.5 - 77)	36/64	2013-2022	2.9 [2.5; 3.3] (5,227)	3.3 [2.9; 3.8] (4,368)	3.6 [3.1; 4.1] (3,510)	3.8 [3.3; 4.3] (2,504)	3.9 [3.4; 4.5] (1,695)	4.3 [3.7; 5.0] (950)	5.0 [4.2; 5.9] (447)	5.0 [4.2; 5.9] (162)
SP-CL Hip Stem, uncemented (Waldemar Link)	3,673	46	64 (57 - 70)	39/61	2014-2022	3.4 [2.9; 4.1] (2,965)	4.1 [3.5; 4.8] (2,452)	4.5 [3.8; 5.3] (1,879)	4.5 [3.8; 5.3] (1,371)	4.8 [4.1; 5.6] (853)	5.1 [4.3; 6.0] (352)	*5.1 [4.3; 6.0]* (51)	
SPS Evolution (Symbios)	1,089	15	63 (57 - 70)	45/55	2013-2022	2.3 [1.6; 3.4] (960)	2.7 [1.9; 3.9] (843)	3.1 [2.2; 4.4] (682)	3.4 [2.4; 4.8] (501)	3.4 [2.4; 4.8] (267)	*3.4 [2.4; 4.8]* (127)		
Stemcup (IO-International Orthopaedics)	412	11	68 (60 - 74.5)	42/58	2018-2022	1.8 [0.8; 3.7] (250)	*1.8 [0.8; 3.7]* (138)	*1.8 [0.8; 3.7]* (73)					
STEMSYS Schaft (ARTIQO)	352	10	74 (70 - 79)	38/62	2018-2022	6.6 [4.4; 9.8] (236)	*6.6 [4.4; 9.8]* (127)	*6.6 [4.4; 9.8]* (50)					
Taperloc (Zimmer Biomet)	4,727	36	69 (62 - 76)	37/63	2014-2022	2.9 [2.4; 3.4] (3,666)	3.4 [2.9; 4.0] (2,881)	3.9 [3.3; 4.5] (2,318)	4.3 [3.7; 5.0] (1,763)	4.8 [4.1; 5.6] (1,179)	4.9 [4.2; 5.8] (545)	5.3 [4.5; 6.4] (158)	
TAPERLOC COMPLETE (Zimmer Biomet)	4,429	31	66 (58 - 73)	44/56	2015-2022	2.3 [1.9; 2.8] (3,688)	2.6 [2.2; 3.1] (3,211)	2.7 [2.3; 3.3] (2,351)	2.9 [2.4; 3.4] (1,515)	3.0 [2.5; 3.5] (941)	3.0 [2.5; 3.5] (455)		
TRENDHIP (Aesculap)	6,132	58	69 (62 - 76)	40/60	2013-2022	2.5 [2.2; 3.0] (5,083)	2.8 [2.4; 3.2] (4,364)	2.9 [2.5; 3.4] (3,506)	3.0 [2.6; 3.5] (2,353)	3.2 [2.8; 3.8] (1,262)	3.3 [2.8; 3.9] (683)	3.3 [2.8; 3.9] (255)	
TRILOCK™-Hüftschaft (DePuy)	5,015	50	61 (55 - 67)	49/51	2013-2022	1.9 [1.6; 2.3] (4,217)	2.5 [2.1; 3.0] (3,533)	2.9 [2.4; 3.4] (2,858)	3.2 [2.7; 3.8] (2,115)	3.2 [2.7; 3.8] (1,579)	3.3 [2.8; 3.9] (1,003)	3.5 [2.9; 4.3] (423)	*4.1 [3.0; 5.7]* (90)
TRJ (Aesculap)	1,040	28	71 (63 - 77)	34/66	2013-2022	2.7 [1.9; 3.9] (857)	3.5 [2.5; 4.8] (723)	3.7 [2.7; 5.2] (606)	4.2 [3.0; 5.7] (434)	4.2 [3.0; 5.7] (308)	4.5 [3.2; 6.3] (205)	*4.5 [3.2; 6.3]* (102)	
twinSys uncem. (Mathys)	5,616	55	73 (66 - 78)	37/63	2013-2022	2.6 [2.2; 3.0] (4,661)	2.9 [2.4; 3.3] (3,799)	3.0 [2.6; 3.5] (2,915)	3.2 [2.7; 3.7] (2,045)	3.3 [2.8; 3.9] (1,362)	3.6 [3.0; 4.2] (804)	3.6 [3.0; 4.2] (469)	3.6 [3.0; 4.2] (208)
VEKTOR-TITAN (Peter Brehm)	317	8	66 (59 - 73)	42/58	2014-2021	2.2 [1.1; 4.6] (307)	2.8 [1.5; 5.4] (301)	3.5 [2.0; 6.2] (292)	4.2 [2.5; 7.1] (267)	4.6 [2.7; 7.6] (229)	4.6 [2.7; 7.6] (196)	*6.1 [3.8; 9.8]* (137)	
Cemented femoral component													
ABG II Stem (Stryker)	674	11	79 (76 - 82)	22/78	2014-2022	2.7 [1.7; 4.2] (632)	3.2 [2.1; 4.8] (599)	3.3 [2.2; 5.0] (520)	3.3 [2.2; 5.0] (398)	3.7 [2.4; 5.6] (230)	*3.7 [2.4; 5.6]* (130)		
Actinia cemented (Implantcast)	591	15	80 (77 - 83)	20/80	2015-2022	3.6 [2.3; 5.4] (534)	4.3 [2.9; 6.3] (484)	4.3 [2.9; 6.3] (388)	4.6 [3.2; 6.8] (183)	*5.4 [3.5; 8.1]* (59)			
AS PLUS Schaft (Smith & Nephew)	688	23	80 (76.5 - 83)	21/79	2013-2022	3.1 [2.0; 4.7] (609)	3.4 [2.3; 5.1] (558)	3.8 [2.6; 5.6] (505)	4.0 [2.8; 5.9] (439)	4.3 [2.9; 6.2] (296)	4.3 [2.9; 6.2] (173)		
Avenir (Zimmer Biomet)	5,233	141	80 (76 - 83)	23/77	2014-2022	2.6 [2.2; 3.1] (3,522)	2.8 [2.3; 3.3] (2,293)	3.0 [2.5; 3.5] (1,427)	3.1 [2.6; 3.7] (844)	3.4 [2.8; 4.1] (506)	3.4 [2.8; 4.1] (249)	*3.4 [2.8; 4.1]* (103)	
BHR (Smith & Nephew)	375	23	55 (51 - 59)	99/1	2014-2022	1.1 [0.4; 2.9] (318)	1.8 [0.8; 4.0] (268)	2.2 [1.0; 4.6] (223)	2.2 [1.0; 4.6] (164)	*2.2 [1.0; 4.6]* (108)	*2.2 [1.0; 4.6]* (61)		
Bicana (Implantcast)	391	18	78 (75 - 81)	28/72	2013-2022	3.1 [1.8; 5.4] (358)	3.7 [2.2; 6.1] (335)	3.9 [2.4; 6.5] (310)	4.3 [2.6; 6.9] (281)	4.3 [2.6; 6.9] (240)	4.7 [2.9; 7.5] (196)	*4.7 [2.9; 7.5]* (137)	
BICONTACT (Aesculap)	3,896	107	80 (76 - 83)	23/77	2013-2022	2.5 [2.0; 3.0] (3,364)	2.6 [2.2; 3.2] (2,960)	3.0 [2.5; 3.6] (2,543)	3.2 [2.7; 3.9] (1,978)	3.3 [2.8; 4.0] (1,423)	3.4 [2.8; 4.1] (881)	3.5 [2.9; 4.2] (432)	*3.8 [3.0; 4.6]* (141)
C-STEM™ AMT-Hüftschaft (DePuy)	653	13	80 (76 - 84)	19/81	2013-2022	1.7 [1.0; 3.1] (520)	2.2 [1.3; 3.8] (415)	2.9 [1.8; 4.8] (356)	3.5 [2.2; 5.6] (301)	4.3 [2.7; 6.8] (213)	*4.3 [2.7; 6.8]* (131)	*4.3 [2.7; 6.8]* (61)	
CCA (Mathys)	1,468	25	78 (74 - 82)	28/72	2012-2022	2.9 [2.2; 4.0] (1,262)	3.7 [2.9; 4.9] (1,124)	4.0 [3.1; 5.2] (976)	4.3 [3.4; 5.6] (797)	4.6 [3.6; 5.9] (666)	5.1 [4.0; 6.5] (493)	5.4 [4.2; 7.1] (282)	6.3 [4.7; 8.4] (165)
CORAIL™ AMT-Hüftschaft ohne Kragen (DePuy)	7,261	149	80 (75 - 83)	21/79	2012-2022	2.9 [2.5; 3.3] (5,424)	3.2 [2.8; 3.7] (4,051)	3.5 [3.0; 3.9] (2,876)	3.9 [3.4; 4.4] (1,910)	4.4 [3.8; 5.1] (1,210)	4.8 [4.1; 5.6] (661)	4.9 [4.2; 5.8] (219)	
COREHIP (Aesculap)	798	32	81 (78 - 84)	17/83	2018-2022	4.3 [3.0; 6.0] (462)	4.5 [3.2; 6.3] (196)	*4.5 [3.2; 6.3]* (65)					

Table 61 (continued)

Elective total hip arthroplasties						Revision probabilities after ...							
Femoral stem	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Cemented femoral component													
CS PLUS Schaft (Smith & Nephew)	937	33	78 (75 - 82)	26/74	2014-2020	1.7 [1.1; 2.8] (889)	2.4 [1.6; 3.6] (854)	2.6 [1.8; 3.9] (819)	2.6 [1.8; 3.9] (710)	2.6 [1.8; 3.9] (461)	2.9 [1.9; 4.4] (278)	*2.9 [1.9; 4.4]* (98)	
EXCEPTION (Zimmer Biomet)	758	14	79 (75 - 82)	20/80	2016-2022	2.7 [1.7; 4.1] (687)	3.0 [2.0; 4.5] (560)	3.1 [2.1; 4.7] (398)	3.1 [2.1; 4.7] (212)	*3.6 [2.3; 5.5]* (82)			
EXCIA (Aesculap)	4,592	112	79 (75 - 83)	23/77	2014-2022	2.2 [1.8; 2.6] (3,584)	2.5 [2.1; 3.0] (2,857)	2.8 [2.4; 3.4] (2,179)	3.1 [2.6; 3.7] (1,470)	3.3 [2.7; 3.9] (942)	3.3 [2.7; 3.9] (587)	3.4 [2.8; 4.2] (221)	
Exeter Stem (Stryker)	567	22	80 (77 - 84)	24/76	2015-2022	3.4 [2.2; 5.3] (422)	3.4 [2.2; 5.3] (304)	3.4 [2.2; 5.3] (207)	*4.2 [2.5; 6.9]* (103)	*4.2 [2.5; 6.9]* (55)			
ICON (IO-International Orthopaedics)	304	13	56 (51 - 62)	87/13	2013-2022	1.0 [0.3; 3.0] (295)	1.3 [0.5; 3.5] (286)	2.0 [0.9; 4.5] (275)	2.8 [1.4; 5.5] (221)	*2.8 [1.4; 5.5]* (133)	*2.8 [1.4; 5.5]* (67)		
LCU Hip System, cemented, CoCrMo (Waldemar Link)	553	16	78 (74 - 82)	29/71	2019-2022	3.1 [1.9; 5.0] (375)	3.1 [1.9; 5.0] (194)						
Lubinus Classic Plus, cemented, CoCrMo (Waldemar Link)	661	8	81 (78 - 84)	14/86	2012-2022	2.8 [1.8; 4.4] (542)	2.8 [1.8; 4.4] (451)	3.0 [1.9; 4.7] (365)	3.0 [1.9; 4.7] (275)	3.6 [2.2; 5.7] (172)	*4.9 [2.9; 8.1]* (78)		
M.E.M. Geradschaft (Zimmer Biomet)	27,626	194	79 (75 - 82)	26/74	2012-2022	2.2 [2.0; 2.4] (21,893)	2.4 [2.3; 2.6] (17,449)	2.6 [2.4; 2.8] (13,524)	2.8 [2.6; 3.0] (9,659)	3.0 [2.8; 3.2] (6,282)	3.1 [2.8; 3.3] (3,420)	3.3 [3.0; 3.6] (1,478)	3.4 [3.0; 3.7] (413)
METABLOC (Zimmer Biomet)	2,288	28	79 (75 - 82)	27/73	2013-2022	2.7 [2.1; 3.4] (2,154)	3.0 [2.3; 3.8] (1,990)	3.2 [2.6; 4.0] (1,698)	3.3 [2.6; 4.1] (1,327)	3.6 [2.8; 4.5] (912)	3.8 [3.0; 4.8] (549)	3.8 [3.0; 4.8] (228)	*3.8 [3.0; 4.8]* (59)
MS-30 (Zimmer Biomet)	4,139	37	78 (74 - 81)	26/74	2013-2022	1.7 [1.3; 2.2] (3,627)	1.9 [1.5; 2.3] (3,184)	2.1 [1.7; 2.6] (2,672)	2.3 [1.9; 2.9] (2,097)	2.4 [1.9; 2.9] (1,537)	2.5 [2.0; 3.1] (934)	2.5 [2.0; 3.1] (357)	
MUELLER V40 Stem (Stryker)	322	13	79 (74 - 83)	26/74	2014-2022	2.8 [1.5; 5.3] (304)	3.5 [1.9; 6.2] (283)	3.8 [2.2; 6.6] (259)	4.2 [2.5; 7.1] (240)	5.0 [3.0; 8.2] (192)	*5.0 [3.0; 8.2]* (137)	*5.0 [3.0; 8.2]* (52)	
Müller Geradschaft (OHST Medizintechnik)	1,966	48	79 (75 - 82)	26/74	2014-2022	2.4 [1.8; 3.2] (1,753)	2.7 [2.1; 3.6] (1,552)	2.8 [2.1; 3.6] (1,329)	2.9 [2.3; 3.8] (1,002)	3.1 [2.4; 4.0] (709)	3.3 [2.5; 4.3] (385)	3.3 [2.5; 4.3] (150)	
MV40 Schaft (OHST Medizintechnik)	341	19	80 (76 - 83)	23/77	2015-2022	0.9 [0.3; 2.7] (301)	0.9 [0.3; 2.7] (247)	1.3 [0.5; 3.5] (210)	*1.3 [0.5; 3.5]* (148)	*1.3 [0.5; 3.5]* (102)			
Polarschaft Cemented (Smith & Nephew)	2,907	81	79 (76 - 83)	24/76	2013-2022	3.1 [2.5; 3.8] (2,264)	3.4 [2.7; 4.1] (1,855)	3.5 [2.8; 4.2] (1,484)	3.6 [3.0; 4.4] (1,028)	3.8 [3.1; 4.7] (609)	3.8 [3.1; 4.7] (261)	*4.2 [3.3; 5.5]* (101)	
PROFEMUR® GLADIATOR CEMENTED (MicroPort)	436	4	80 (77 - 83)	26/74	2015-2022	1.4 [0.6; 3.1] (319)	2.1 [1.0; 4.2] (255)	2.9 [1.5; 5.4] (188)	*2.9 [1.5; 5.4]* (119)	*2.9 [1.5; 5.4]* (61)			
QUADRA-C (Medacta)	2,095	47	80 (77 - 83)	22/78	2015-2022	2.4 [1.8; 3.2] (1,609)	2.8 [2.1; 3.6] (1,227)	2.8 [2.1; 3.6] (864)	2.8 [2.1; 3.6] (511)	3.1 [2.3; 4.3] (247)	*3.1 [2.3; 4.3]* (81)		
SPECTRON (Smith & Nephew)	509	13	80 (76 - 83)	25/75	2013-2022	1.4 [0.7; 2.9] (426)	1.6 [0.8; 3.3] (320)	1.6 [0.8; 3.3] (254)	1.6 [0.8; 3.3] (198)	*1.6 [0.8; 3.3]* (124)	*1.6 [0.8; 3.3]* (73)		
SPII Model Lubinus Hip Stem (Waldemar Link)	13,359	142	78 (74 - 82)	26/74	2012-2022	2.1 [1.8; 2.3] (10,774)	2.6 [2.3; 2.9] (8,833)	2.9 [2.6; 3.2] (6,982)	3.1 [2.8; 3.5] (5,365)	3.4 [3.0; 3.7] (3,804)	3.6 [3.3; 4.1] (2,286)	4.0 [3.5; 4.6] (1,070)	4.3 [3.7; 4.9] (371)
Standard C, cemented (Waldemar Link)	430	6	77.5 (74 - 81)	33/67	2014-2022	1.2 [0.5; 2.8] (409)	1.9 [1.0; 3.8] (389)	2.4 [1.3; 4.5] (378)	3.0 [1.7; 5.2] (307)	3.0 [1.7; 5.2] (200)	*3.0 [1.7; 5.2]* (109)		
Taperloc Cemented (Zimmer Biomet)	1,567	32	80 (75 - 83)	20/80	2014-2022	2.4 [1.7; 3.3] (1,218)	2.9 [2.1; 3.9] (930)	3.0 [2.2; 4.0] (658)	3.0 [2.2; 4.0] (435)	3.0 [2.2; 4.0] (235)	*3.0 [2.2; 4.0]* (115)		
TRENDHIP (Aesculap)	673	35	80 (76 - 83)	23/77	2016-2022	2.2 [1.3; 3.7] (538)	2.2 [1.3; 3.7] (425)	2.7 [1.7; 4.5] (327)	2.7 [1.7; 4.5] (199)	*2.7 [1.7; 4.5]* (88)			
twinSys cem. (Mathys)	1,965	42	79 (74 - 82)	23/77	2013-2022	2.1 [1.5; 2.9] (1,616)	2.4 [1.8; 3.2] (1,328)	2.5 [1.8; 3.3] (1,017)	2.8 [2.1; 3.7] (702)	3.3 [2.4; 4.4] (416)	3.7 [2.6; 5.3] (203)	*3.7 [2.6; 5.3]* (94)	
Weber (Zimmer Biomet)	344	30	81 (77 - 84)	21/79	2014-2022	2.1 [1.0; 4.3] (295)	2.5 [1.2; 4.9] (246)	3.4 [1.8; 6.3] (196)	*4.0 [2.2; 7.2]* (149)	*4.8 [2.6; 8.8]* (92)			

Table 61 (continued)

Elective total hip arthroplasties						Revision probabilities after ...							
Acetabular component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented acetabular component													
Alloclassic (Zimmer Biomet)	535	12	68 (59 - 77)	30/70	2014-2022	3.2 [2.0; 5.1] (501)	3.8 [2.5; 5.8] (479)	4.2 [2.8; 6.3] (460)	4.6 [3.1; 6.8] (405)	4.6 [3.1; 6.8] (321)	5.0 [3.4; 7.3] (235)	*5.0 [3.4; 7.3]* (115)	
Alloclassic Variall (Zimmer Biomet)	560	14	70 (61 - 78)	34/66	2013-2022	0.5 [0.2; 1.7] (536)	0.9 [0.4; 2.3] (489)	1.4 [0.7; 2.8] (425)	1.7 [0.8; 3.4] (319)	1.7 [0.8; 3.4] (208)	*2.2 [1.1; 4.6]* (136)	*2.2 [1.1; 4.6]* (73)	
Allofit (Zimmer Biomet)	141,312	376	70 (61 - 77)	38/62	2012-2022	2.6 [2.5; 2.7] (113,687)	2.9 [2.8; 3.0] (92,325)	3.2 [3.1; 3.3] (72,412)	3.3 [3.2; 3.4] (53,284)	3.5 [3.4; 3.6] (36,134)	3.6 [3.5; 3.8] (20,901)	3.8 [3.7; 4.0] (9,046)	4.1 [3.9; 4.2] (2,468)
Allofit IT (Zimmer Biomet)	10,160	116	65 (57 - 74)	39/61	2012-2022	2.9 [2.6; 3.3] (8,496)	3.5 [3.2; 3.9] (6,952)	3.7 [3.4; 4.2] (5,533)	3.9 [3.5; 4.3] (4,135)	4.2 [3.8; 4.6] (2,943)	4.3 [3.9; 4.8] (1,794)	4.3 [3.9; 4.8] (796)	4.5 [4.0; 5.1] (353)
ANA.NOVA® Alpha Pfanne (ARTIQO)	5,723	51	66 (59 - 74)	42/58	2015-2022	2.4 [2.0; 2.9] (4,129)	2.6 [2.2; 3.1] (3,115)	2.8 [2.4; 3.3] (2,327)	3.2 [2.7; 3.8] (1,565)	3.5 [2.9; 4.2] (813)	3.6 [3.0; 4.4] (337)	*3.6 [3.0; 4.4]* (62)	
ANA.NOVA® Hybrid Pfanne (ARTIQO)	8,756	53	67 (59 - 75)	36/64	2015-2022	2.3 [2.0; 2.6] (7,014)	2.6 [2.3; 3.0] (5,602)	2.8 [2.5; 3.2] (4,263)	2.9 [2.5; 3.3] (2,925)	3.1 [2.7; 3.6] (1,704)	3.4 [2.9; 4.0] (787)	*3.9 [3.1; 4.7]* (124)	
aneXys Cluster (Mathys)	433	28	60 (55 - 69)	38/62	2016-2022	3.3 [1.9; 5.7] (262)	4.2 [2.5; 7.0] (183)	*4.2 [2.5; 7.0]* (140)	*4.2 [2.5; 7.0]* (79)	*4.2 [2.5; 7.0]* (60)			
aneXys Flex (Mathys)	4,928	64	64 (58 - 72)	45/55	2016-2022	2.5 [2.1; 3.0] (3,437)	2.9 [2.5; 3.5] (2,347)	3.1 [2.6; 3.7] (1,580)	3.2 [2.7; 3.8] (880)	3.2 [2.7; 3.8] (477)	*3.2 [2.7; 3.8]* (122)		
aneXys Uno (Mathys)	326	12	55 (48 - 64)	41/59	2019-2022	2.0 [0.9; 4.5] (218)	3.2 [1.6; 6.4] (151)						
APRIL Poly (Symbios)	560	15	63 (56 - 70)	40/60	2014-2022	1.5 [0.7; 2.9] (462)	1.9 [1.0; 3.5] (394)	1.9 [1.0; 3.5] (326)	2.2 [1.2; 4.0] (227)	*2.2 [1.2; 4.0]* (113)			
AVANTAGE (Zimmer Biomet)	311	46	77 (67 - 83)	33/67	2013-2022	4.0 [2.3; 7.0] (209)	*5.2 [3.1; 8.9]* (140)	*5.2 [3.1; 8.9]* (101)	*5.2 [3.1; 8.9]* (65)				
BHR (Smith & Nephew)	375	23	55 (51 - 59)	99/1	2014-2022	1.1 [0.4; 2.9] (318)	1.8 [0.8; 4.0] (268)	2.2 [1.0; 4.6] (223)	2.2 [1.0; 4.6] (164)	*2.2 [1.0; 4.6]* (108)	*2.2 [1.0; 4.6]* (61)		
BICON-PLUS (Smith & Nephew)	2,907	51	71 (63 - 77)	36/64	2013-2022	2.4 [1.9; 3.1] (2,673)	3.2 [2.6; 4.0] (2,406)	3.9 [3.2; 4.7] (2,137)	4.5 [3.8; 5.4] (1,854)	4.8 [4.1; 5.7] (1,565)	5.6 [4.7; 6.6] (1,161)	6.4 [5.4; 7.6] (701)	6.4 [5.4; 7.6] (221)
BiMobile Dual Mobility System, uncemented (Waldemar Link)	337	27	74 (65 - 80)	34/66	2017-2022	3.4 [1.9; 6.0] (194)	*3.9 [2.2; 6.9]* (100)						
CombiCup (Waldemar Link)	4,747	55	71 (62 - 78)	38/62	2013-2022	2.1 [1.7; 2.5] (4,312)	2.6 [2.2; 3.1] (3,940)	2.9 [2.4; 3.4] (3,316)	3.2 [2.7; 3.8] (2,443)	3.4 [2.8; 4.0] (1,595)	3.6 [3.0; 4.3] (770)	3.8 [3.1; 4.6] (252)	
DURALOC™ OPTION™ Press Fit-Hüftpfanne (DePuy)	1,425	13	70 (61 - 76)	39/61	2013-2022	3.1 [2.3; 4.2] (1,227)	3.7 [2.8; 4.9] (1,100)	4.1 [3.2; 5.3] (946)	4.5 [3.5; 5.8] (802)	4.7 [3.6; 6.0] (688)	4.7 [3.6; 6.0] (518)	4.7 [3.6; 6.0] (229)	
EcoFit cpTi (Implantcast)	1,336	25	73 (64 - 79)	35/65	2014-2022	3.4 [2.5; 4.5] (1,214)	4.0 [3.1; 5.3] (1,133)	4.1 [3.2; 5.4] (1,007)	4.5 [3.5; 5.8] (723)	4.8 [3.8; 6.2] (398)	4.8 [3.8; 6.2] (186)		
EcoFit EPORE (Implantcast)	1,990	28	73 (66 - 79)	31/69	2016-2022	4.5 [3.7; 5.6] (1,540)	5.1 [4.2; 6.2] (1,149)	5.5 [4.5; 6.6] (825)	6.0 [4.9; 7.3] (510)	6.3 [5.1; 7.7] (254)			
EcoFit EPORE NH (Implantcast)	678	6	71 (64 - 79)	41/59	2018-2022	2.9 [1.8; 4.5] (471)	3.1 [2.0; 4.7] (334)	3.1 [2.0; 4.7] (187)					
EcoFit NH cpTi (Implantcast)	2,448	15	72 (64 - 78)	34/66	2014-2022	3.3 [2.7; 4.1] (2,141)	3.5 [2.8; 4.3] (1,927)	3.6 [2.9; 4.4] (1,501)	3.6 [2.9; 4.4] (629)	3.9 [3.1; 4.9] (324)	*4.9 [3.5; 6.9]* (149)	*5.6 [3.8; 8.2]* (51)	
EcoFit SC (Implantcast)	359	7	73 (65 - 79)	29/71	2014-2022	4.4 [2.7; 7.3] (278)	4.8 [3.0; 7.7] (201)	6.4 [4.1; 10.0] (159)	*7.2 [4.6; 11.3]* (98)	*7.2 [4.6; 11.3]* (53)			
EL PFANNE (Smith & Nephew)	350	4	71 (63 - 77)	32/68	2013-2015	4.9 [3.1; 7.8] (327)	4.9 [3.1; 7.8] (310)	5.2 [3.3; 8.1] (304)	5.8 [3.8; 8.9] (284)	5.8 [3.8; 8.9] (275)	5.8 [3.8; 8.9] (261)	5.8 [3.8; 8.9] (246)	*5.8 [3.8; 8.9]* (135)
EP-FIT PLUS (Smith & Nephew)	3,730	66	69 (61 - 76)	43/57	2013-2022	2.6 [2.2; 3.2] (3,323)	3.0 [2.5; 3.6] (2,990)	3.1 [2.6; 3.7] (2,698)	3.2 [2.7; 3.8] (2,382)	3.3 [2.7; 3.9] (1,896)	3.4 [2.8; 4.0] (1,188)	3.4 [2.8; 4.0] (452)	*3.6 [2.9; 4.5]* (106)
Exceed (Zimmer Biomet)	339	10	72 (63 - 77)	34/66	2013-2019	2.9 [1.6; 5.4] (319)	3.6 [2.0; 6.2] (306)	3.6 [2.0; 6.2] (298)	3.6 [2.0; 6.2] (290)	3.6 [2.0; 6.2] (279)	4.3 [2.6; 7.2] (266)	4.7 [2.8; 7.6] (154)	
Fitmore (Zimmer Biomet)	732	12	68 (59 - 76)	34/66	2012-2022	2.1 [1.2; 3.4] (701)	2.5 [1.6; 3.9] (680)	2.8 [1.8; 4.3] (658)	2.8 [1.8; 4.3] (549)	3.4 [2.2; 5.1] (391)	3.4 [2.2; 5.1] (203)	*3.4 [2.2; 5.1]* (71)	
G7 (Zimmer Biomet)	4,222	28	70 (62 - 77)	35/65	2014-2022	3.0 [2.6; 3.6] (3,406)	3.9 [3.3; 4.5] (2,824)	4.5 [3.8; 5.2] (2,266)	5.1 [4.4; 5.9] (1,610)	5.6 [4.9; 6.5] (1,023)	5.9 [5.0; 6.8] (461)	*6.1 [5.2; 7.2]* (88)	

Table 62: Outcomes for acetabular cups in elective total hip arthroplasties. For each type of fixation, the cups are listed alphabetically by their designation.

Elective total hip arthroplasties						Revision probabilities after ...							
Acetabular component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented acetabular component													
HI Lubricer Schale (Smith & Nephew)	5,945	39	70 (62 - 77)	36/64	2013-2022	2.4 [2.0; 2.8] (5,218)	2.9 [2.4; 3.3] (4,496)	3.1 [2.7; 3.6] (3,783)	3.4 [3.0; 4.0] (2,922)	3.7 [3.2; 4.3] (1,962)	4.0 [3.4; 4.6] (1,153)	4.6 [3.9; 5.6] (431)	*5.7 [4.2; 7.7]* (104)
ICON (IO-International Orthopaedics)	304	13	56 (51 - 62)	87/13	2013-2022	1.0 [0.3; 3.0] (295)	1.3 [0.5; 3.5] (286)	2.0 [0.9; 4.5] (275)	2.8 [1.4; 5.5] (221)	*2.8 [1.4; 5.5]* (133)	*2.8 [1.4; 5.5]* (67)		
MobileLink, Cluster Hole (Waldemar Link)	2,744	46	71 (62 - 78)	36/64	2017-2022	3.6 [2.9; 4.4] (1,722)	4.5 [3.7; 5.4] (838)	4.5 [3.7; 5.4] (248)	*4.5 [3.7; 5.4]* (91)				
PINNACLE™ Press Fit-Hüftpfanne (DePuy)	55,626	198	70 (61 - 77)	37/63	2012-2022	2.5 [2.4; 2.6] (44,312)	2.9 [2.8; 3.1] (35,341)	3.2 [3.0; 3.4] (26,707)	3.5 [3.3; 3.6] (18,836)	3.6 [3.4; 3.8] (12,226)	3.8 [3.6; 4.1] (6,585)	4.1 [3.8; 4.4] (2,471)	4.8 [4.3; 5.3] (687)
PINNACLE™ SPIROFIT™-Schraubpfanne (DePuy)	440	18	74 (65 - 79)	26/74	2013-2020	3.9 [2.4; 6.2] (408)	4.4 [2.8; 6.7] (396)	4.6 [3.0; 7.0] (384)	4.6 [3.0; 7.0] (355)	5.2 [3.5; 7.8] (290)	5.2 [3.5; 7.8] (180)	*5.2 [3.5; 7.8]* (113)	
PLASMACUP (Aesculap)	8,696	58	69 (61 - 76)	38/62	2013-2022	2.2 [1.9; 2.6] (7,503)	2.6 [2.3; 3.0] (6,544)	2.7 [2.4; 3.1] (5,618)	2.9 [2.5; 3.2] (4,517)	2.9 [2.6; 3.3] (3,459)	2.9 [2.6; 3.3] (2,417)	2.9 [2.6; 3.3] (1,282)	3.0 [2.6; 3.4] (438)
PLASMAFIT (Aesculap)	48,729	245	69 (61 - 77)	39/61	2013-2022	2.9 [2.8; 3.1] (39,472)	3.3 [3.1; 3.4] (32,597)	3.5 [3.3; 3.6] (25,785)	3.6 [3.4; 3.7] (18,393)	3.6 [3.5; 3.8] (11,670)	3.7 [3.5; 3.9] (6,183)	3.7 [3.5; 3.9] (2,329)	3.8 [3.5; 4.0] (529)
PROCOTYL® L BEADED (MicroPort)	1,161	25	68 (60 - 75)	41/59	2014-2021	2.5 [1.7; 3.6] (1,119)	3.2 [2.3; 4.4] (975)	3.7 [2.7; 5.0] (662)	3.9 [2.8; 5.2] (430)	4.2 [3.0; 5.7] (262)	*5.0 [3.5; 7.1]* (136)		
PROCOTYL® P (MicroPort)	1,099	19	68 (61 - 75)	38/62	2020-2022	2.9 [2.0; 4.2] (444)							
Pyramid (Atesos)	3,111	26	71 (64 - 77)	35/65	2014-2022	3.0 [2.4; 3.6] (2,705)	3.2 [2.7; 3.9] (2,359)	3.5 [2.9; 4.3] (1,947)	3.6 [3.0; 4.3] (1,559)	3.7 [3.1; 4.5] (1,093)	3.8 [3.2; 4.7] (600)	3.8 [3.2; 4.7] (178)	
R3 (Smith & Nephew)	18,881	136	69 (61 - 77)	39/61	2013-2022	3.0 [2.7; 3.2] (15,314)	3.3 [3.0; 3.6] (12,416)	3.5 [3.2; 3.8] (9,776)	3.7 [3.4; 4.0] (6,794)	3.8 [3.5; 4.2] (3,994)	3.9 [3.6; 4.3] (1,785)	4.0 [3.7; 4.5] (529)	*4.0 [3.7; 4.5]* (87)
REFLECTION (Smith & Nephew)	1,146	9	69 (60 - 77)	36/64	2013-2022	1.5 [0.9; 2.4] (1,003)	1.9 [1.3; 2.9] (853)	2.3 [1.5; 3.4] (752)	2.3 [1.5; 3.4] (613)	2.3 [1.5; 3.4] (399)	2.5 [1.7; 3.8] (274)		
RM Classic (Mathys)	2,061	20	76 (69 - 80)	31/69	2013-2022	2.6 [2.0; 3.4] (1,828)	3.0 [2.4; 3.9] (1,644)	3.2 [2.5; 4.0] (1,408)	3.5 [2.7; 4.4] (1,173)	3.6 [2.9; 4.6] (970)	4.0 [3.1; 5.0] (727)	4.0 [3.1; 5.0] (379)	4.0 [3.1; 5.0] (172)
RM Pressfit (Mathys)	1,288	13	74 (66 - 79)	41/59	2013-2022	2.6 [1.8; 3.6] (1,173)	3.1 [2.3; 4.2] (1,062)	3.4 [2.5; 4.6] (952)	3.7 [2.8; 4.9] (709)	3.9 [2.9; 5.1] (520)	3.9 [2.9; 5.1] (301)	*3.9 [2.9; 5.1]* (133)	
RM Pressfit vitamys (Mathys)	17,767	90	68 (60 - 75)	41/59	2013-2022	1.8 [1.6; 2.0] (13,911)	2.0 [1.8; 2.3] (10,881)	2.1 [1.9; 2.4] (8,096)	2.3 [2.0; 2.5] (5,502)	2.4 [2.2; 2.7] (3,269)	2.6 [2.3; 2.9] (1,570)	2.6 [2.3; 2.9] (561)	*2.6 [2.3; 2.9]* (117)
SCREWCUP SC (Aesculap)	2,251	59	73 (64 - 78)	34/66	2013-2022	3.1 [2.5; 3.9] (1,976)	3.9 [3.2; 4.8] (1,768)	4.4 [3.6; 5.4] (1,448)	4.7 [3.9; 5.7] (1,076)	5.5 [4.5; 6.7] (675)	5.8 [4.8; 7.2] (377)	6.9 [5.4; 8.8] (179)	*8.3 [5.6; 12.1]* (54)
seleXys PC (Mathys)	559	7	70 (61 - 77)	39/61	2015-2022	0.9 [0.4; 2.1] (535)	0.9 [0.4; 2.1] (490)	0.9 [0.4; 2.1] (426)	1.7 [0.8; 3.4] (330)	1.7 [0.8; 3.4] (233)	*1.7 [0.8; 3.4]* (122)		
Stemcup (IO-International Orthopaedics)	527	15	70 (61 - 77)	39/61	2018-2022	2.3 [1.3; 4.1] (316)	2.6 [1.5; 4.6] (161)	*2.6 [1.5; 4.6]* (66)					
T.O.P., HX (Waldemar Link)	353	8	62 (56 - 69)	50/50	2012-2022	2.3 [1.1; 4.5] (341)	2.9 [1.5; 5.2] (330)	3.2 [1.8; 5.6] (319)	3.5 [2.0; 6.0] (310)	3.8 [2.2; 6.4] (282)	4.1 [2.5; 6.9] (250)	4.1 [2.5; 6.9] (173)	*4.1 [2.5; 6.9]* (120)
TM Modular (Zimmer Biomet)	1,492	139	65 (54 - 75)	29/71	2012-2022	6.3 [5.2; 7.7] (1,182)	7.2 [6.0; 8.7] (998)	7.6 [6.3; 9.1] (810)	7.8 [6.5; 9.4] (625)	8.1 [6.8; 9.8] (446)	8.6 [7.1; 10.4] (272)	*8.6 [7.1; 10.4]* (133)	
Trident Cup (Stryker)	9,094	57	69 (61 - 76)	40/60	2014-2022	2.6 [2.2; 2.9] (7,499)	3.0 [2.7; 3.4] (5,952)	3.2 [2.8; 3.6] (4,413)	3.3 [3.0; 3.8] (2,798)	3.4 [3.0; 3.9] (1,482)	3.6 [3.2; 4.1] (744)	3.6 [3.2; 4.1] (257)	
Trident II Tritanium Cup (Stryker)	404	16	73 (66 - 79)	37/63	2018-2022								
Trident TC Cup (Stryker)	833	15	73 (65 - 78)	32/68	2014-2021	2.5 [1.7; 3.9] (790)	3.0 [2.1; 4.5] (768)	3.4 [2.4; 4.9] (744)	3.8 [2.7; 5.4] (711)	4.2 [3.0; 5.9] (643)	4.2 [3.0; 5.9] (472)	*4.2 [3.0; 5.9]* (116)	
Trilogy (Zimmer Biomet)	6,411	31	68 (60 - 75)	38/62	2012-2022	2.1 [1.8; 2.5] (5,589)	2.7 [2.3; 3.1] (4,920)	2.9 [2.5; 3.3] (4,285)	3.1 [2.6; 3.5] (3,491)	3.2 [2.8; 3.7] (2,667)	3.2 [2.8; 3.7] (1,767)	3.3 [2.9; 3.8] (922)	3.3 [2.9; 3.8] (397)
Trilogy IT (Zimmer Biomet)	1,531	6	71 (62 - 77)	39/61	2013-2022	3.3 [2.5; 4.3] (1,276)	3.4 [2.6; 4.5] (1,122)	3.8 [2.9; 5.0] (949)	4.0 [3.1; 5.2] (757)	4.3 [3.4; 5.6] (554)	4.9 [3.8; 6.4] (361)	4.9 [3.8; 6.4] (152)	
Trinity Hole (Corin)	2,378	44	66 (58 - 75)	42/58	2013-2022	2.3 [1.7; 3.0] (1,924)	2.4 [1.9; 3.1] (1,544)	2.6 [2.0; 3.3] (1,272)	2.7 [2.1; 3.4] (995)	2.8 [2.1; 3.6] (718)	2.8 [2.1; 3.6] (416)	3.0 [2.3; 4.1] (164)	
Trinity no Hole (Corin)	2,493	30	68 (60 - 75)	42/58	2014-2022	2.2 [1.7; 2.9] (2,242)	2.7 [2.1; 3.4] (2,081)	3.0 [2.4; 3.8] (1,881)	3.1 [2.5; 3.9] (1,495)	3.5 [2.8; 4.4] (1,089)	3.8 [3.1; 4.7] (689)	4.2 [3.3; 5.3] (293)	

Table 62 (continued)

Elective total hip arthroplasties						Revision probabilities after ...							
Acetabular component	Number	Hosp.	Age	m/f	Period	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Uncemented acetabular component													
Tritanium Cup (Stryker)	2,835	28	70 (62 - 77)	39/61	2014-2022	2.8 [2.2; 3.5] (2,501)	3.2 [2.6; 4.0] (1,973)	3.6 [2.9; 4.4] (1,468)	3.9 [3.2; 4.8] (949)	4.1 [3.3; 4.9] (629)	4.1 [3.3; 4.9] (325)	*4.5 [3.5; 5.9]* (115)	
VERSAFITCUP CC TRIO (Medacta)	13,341	67	69 (61 - 77)	38/62	2015-2022	2.6 [2.3; 2.9] (10,271)	3.0 [2.7; 3.3] (8,045)	3.3 [3.0; 3.7] (6,069)	3.7 [3.3; 4.0] (4,148)	4.0 [3.6; 4.4] (2,193)	4.5 [3.9; 5.1] (802)	*4.6 [4.0; 5.4]* (86)	
Cemented acetabular component													
All POLY CUP (Aesculap)	4,102	149	80 (76 - 83)	22/78	2013-2022	2.9 [2.4; 3.5] (3,474)	3.3 [2.8; 3.9] (2,966)	3.6 [3.0; 4.2] (2,452)	3.8 [3.2; 4.4] (1,883)	4.0 [3.4; 4.7] (1,282)	4.1 [3.4; 4.8] (778)	4.4 [3.6; 5.2] (367)	*5.3 [3.9; 7.2]* (118)
AVANTAGE (Zimmer Biomet)	1,141	133	79 (72 - 84)	27/73	2014-2022	5.3 [4.1; 6.8] (758)	5.4 [4.2; 7.0] (513)	5.9 [4.6; 7.6] (338)	6.4 [4.8; 8.4] (190)	*6.4 [4.8; 8.4]* (93)	*7.4 [5.2; 10.6]* (50)		
CCB (Mathys)	1,075	43	79 (74 - 83)	22/78	2013-2022	2.8 [2.0; 4.0] (844)	3.5 [2.6; 4.9] (672)	3.5 [2.6; 4.9] (486)	3.8 [2.7; 5.3] (320)	4.2 [2.9; 5.9] (222)	*4.2 [2.9; 5.9]* (125)	*4.2 [2.9; 5.9]* (51)	
Cemented Acetabular Cup System, Endo-Model Cup, UHMWPE (Waldemar Link)	601	6	77 (72 - 82)	17/83	2012-2022	2.0 [1.2; 3.6] (554)	2.8 [1.7; 4.5] (513)	3.2 [2.0; 5.0] (464)	3.4 [2.2; 5.2] (414)	3.4 [2.2; 5.2] (363)	3.4 [2.2; 5.2] (312)	3.4 [2.2; 5.2] (255)	4.2 [2.7; 6.6] (173)
Cemented Acetabular Cup System, IP Cup, UHMWPE (Waldemar Link)	429	18	80 (76 - 83)	27/73	2013-2022	2.4 [1.3; 4.4] (384)	2.9 [1.7; 5.0] (362)	3.2 [1.9; 5.4] (304)	3.2 [1.9; 5.4] (232)	3.2 [1.9; 5.4] (171)	*3.2 [1.9; 5.4]* (130)	*3.2 [1.9; 5.4]* (57)	
Cemented Acetabular Cup System, IP Cup, X-Linked (Waldemar Link)	965	32	81 (78 - 84)	26/74	2014-2022	2.4 [1.6; 3.6] (849)	2.8 [1.9; 4.1] (757)	3.2 [2.2; 4.6] (649)	3.8 [2.7; 5.3] (483)	3.8 [2.7; 5.3] (332)	4.1 [2.9; 5.8] (196)	*4.1 [2.9; 5.8]* (73)	
Cemented Acetabular Cup System, Lubinus, UHMWPE (Waldemar Link)	530	29	80 (75 - 84)	19/81	2013-2022	2.0 [1.1; 3.6] (453)	2.0 [1.1; 3.6] (385)	2.8 [1.6; 4.8] (303)	3.1 [1.9; 5.3] (254)	4.0 [2.4; 6.5] (199)	*4.0 [2.4; 6.5]* (129)	*4.0 [2.4; 6.5]* (79)	
Cemented Acetabular Cup System, Lubinus, X-Linked (Waldemar Link)	628	17	79 (74 - 82)	27/73	2014-2022	1.9 [1.1; 3.4] (546)	2.3 [1.4; 3.9] (442)	2.8 [1.7; 4.7] (345)	2.8 [1.7; 4.7] (227)	2.8 [1.7; 4.7] (155)	*2.8 [1.7; 4.7]* (70)		
EcoFit 2M cemented (Implantcast)	348	64	78 (69 - 83)	33/67	2014-2022	7.3 [5.0; 10.7] (220)	*9.3 [6.4; 13.3]* (138)	*10.0 [6.9; 14.3]* (77)					
Flachprofil (Zimmer Biomet)	8,545	294	80 (76 - 83)	23/77	2012-2022	3.0 [2.7; 3.4] (6,939)	3.4 [3.1; 3.9] (5,727)	3.8 [3.4; 4.2] (4,624)	3.9 [3.5; 4.3] (3,473)	4.2 [3.7; 4.7] (2,356)	4.4 [3.9; 4.9] (1,408)	4.4 [3.9; 5.0] (612)	4.6 [4.0; 5.4] (177)
Mueller II (Implantcast)	447	34	79 (74 - 83)	23/77	2014-2022	4.0 [2.5; 6.3] (340)	5.2 [3.4; 7.9] (264)	5.6 [3.7; 8.5] (207)	*6.8 [4.5; 10.4]* (126)	*7.8 [5.0; 12.0]* (87)			
Müller II Pfanne (OHST Medizintechnik)	2,729	111	80 (76 - 83)	23/77	2013-2022	3.0 [2.4; 3.7] (2,392)	3.5 [2.9; 4.3] (2,144)	3.8 [3.1; 4.6] (1,887)	3.9 [3.3; 4.8] (1,558)	4.1 [3.4; 5.0] (1,116)	4.2 [3.4; 5.1] (623)	4.2 [3.4; 5.1] (217)	
POLARCUP cemented (Smith & Nephew)	351	54	79 (71 - 84)	29/71	2013-2022	3.7 [2.1; 6.4] (224)	4.6 [2.7; 7.7] (164)	*5.3 [3.1; 8.7]* (113)	*5.3 [3.1; 8.7]* (71)				
PROCOTYL® C (MicroPort)	353	6	80 (76 - 83)	25/75	2015-2022	0.9 [0.3; 2.7] (288)	1.6 [0.7; 3.9] (226)	2.6 [1.2; 5.5] (160)	*3.3 [1.6; 6.7]* (92)				
TRILOC® II-PE-Hüftpfanne (DePuy)	1,328	95	79 (74 - 83)	18/82	2013-2022	3.5 [2.6; 4.7] (1,114)	3.6 [2.7; 4.8] (941)	3.8 [2.9; 5.0] (766)	3.9 [3.0; 5.2] (587)	4.5 [3.4; 6.0] (425)	4.8 [3.6; 6.3] (246)	*6.1 [4.1; 9.0]* (84)	

Table 62 (continued)

Appendix: Publications based on EPRD data

Publications based on EPRD data

The following list, in reverse chronological order, includes all publications and study collaborations, that appeared in journals since 2012, and that are based on the systematic approach and objectives of the EPRD and the underlying data. Analyses based on data from the EPRD or extracts from its collective database can be requested for scientific purposes. Details on the procedures, formalities and any potential fees are listed on the EPRD website at https://www.eprd.de/de/downloads/auswertungsantraege.

Leopold VJ, Krull P, Hardt S, Hipfl C, Melsheimer O, Steinbrück A, Perka C, Giebel GM.
Is Elective Total Hip Arthroplasty Safe in Nonagenarians?: An Arthroplasty Registry Analysis.
J Bone Joint Surg Am 2023. https://doi.org/10.2106/JBJS.23.00092

Leta TH, Fenstad AM, Lygre SHL, Lie SA, Lindberg-Larsen M, Pedersen AB, A WD, Rolfson O, Bulow E, Ashforth JA, Van Steenbergen LN, Nelissen R, Harries D, De Steiger R, Lutro O, Hakulinen E, Makela K, Willis J, Wyatt M, Frampton C, Grimberg A, Steinbrück A, Wu Y, Armaroli C, Molinari M, Picus R, Mullen K, Illgen R, Stoica IC, Vorovenci AE, Dragomirescu D, Dale H, Brand C, Christen B, Shapiro J, Wilkinson JM, Armstrong R, Wooster K, Hallan G, Gjertsen JE, Chang RN, Prentice HA, Paxton EW, Furnes O.
The use of antibiotic-loaded bone cement and systemic antibiotic prophylactic use in 2,971,357 primary total knee arthroplasties from 2010 to 2020: an international register-based observational study among countries in Africa, Europe, North America, and Oceania.
Acta Orthop 2023;94: 416-425. https://doi.org/10.2340/17453674.2023.17737

Lützner J, Melsheimer O, Steinbrück A, Postler AE.
High revision rates and mortality after distal femoral replacement for periprosthetic distal femoral fractures: analysis from the German Arthroplasty Registry (EPRD).
Eur J Orthop Surg Traumatol 2023. https://doi.org/10.1007/s00590-023-03582-2

Szymski D, Walter N, Krull P, Melsheimer O, Schindler M, Grimberg A, Alt V, Steinbrück A, Rupp M.
Comparison of mortality rate and septic and aseptic revisions in total hip arthroplasties for osteoarthritis and femoral neck fracture: an analysis of the German Arthroplasty Registry.
J Orthop Traumatol 2023;24(1): 29. https://doi.org/10.1186/s10195-023-00711-9

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Dtsch Arztebl Int 2023;120: 297-8. https://doi.org/10.3238/arztebl.m2023.0007

Szymski D, Walter N, Krull P, Melsheimer O, Grimberg A, Alt V, Steinbrück A, Rupp M.
Infection after intracapsular femoral neck fracture - does antibiotic-loaded bone cement reduce infection risk after hemiarthroplasty and total hip arthroplasty?
Bone Joint Res 2023;12(5): 331-338. https://doi.org/10.1302/2046-3758.125.BJR-2022-0314.R1

Szymski D, Walter N, Krull P, Melsheimer O, Lang S, Grimberg A, Alt V, Steinbrück A, Rupp M.
The Prophylactic Effect of Single vs. Dual Antibiotic-Loaded Bone Cement against Periprosthetic Joint Infection Following Hip Arthroplasty for Femoral Neck Fracture: An Analysis of the German Arthroplasty Registry.
Antibiotics (Basel) 2023;12(4). https://doi.org/10.3390/antibiotics12040732

Krull P, Steinbrück A, Grimberg AW, Melsheimer O, Morlock MM, Perka C.
Standard- und Spezialinlays in primarer Huftendoprothetik: Aktuelle Studien- und Umfrageergebnisse aus dem Endoprothesenregister Deutschland (EPRD).
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Der Orthopade 2021;50(4): 296-305. https://doi.org/10.1007/s00132-021-04083-y

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Endoprothesenregister Deutschland (EPRD) - Stellenwert in Deutschland und international – was können wir lernen, was nicht?
Orthopädie und Unfallchirurgie up2date 2022;17(4): 1-15.
https://doi.org/10.1055/a-1588-2644

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https://doi.org/10.1302/0301-620X.103B4.BJJ-2020-1046.R2

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