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Endoprothesenregister Deutschland

The German Arthroplasty Registry (EPRD)

Annual Report 2022

EPRD Annual Report 2022

EPRD Deutsche Endoprothesenregister gGmbH

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The German Arthroplasty Registry

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

**GERMAN SOCIETY OF
ORTHOPAEDICS AND
ORTHOPAEDIC SURGERY (DGOOC)**

with partners

AOK-Bundesverband
Die Gesundheitskasse.

vdek
Die Ersatzkassen

BVMed
Gesundheit gestalten

Annual Report 2022

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Managing Director
Andreas Hey

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

Message from the Scientific Directorate of the EPRD

As the new Scientific Directorate of the EPRD, we are pleased to welcome you in 2022 for the first time. We would like to take this opportunity to thank Volkmar Jansson for his many years of excellent work in establishing the EPRD and his very successful scientific leadership.

We will of course maintain continuity in the ongoing evolution of the registry. With almost two million knee and hip arthroplasties now documented, the outcomes of which you will find in the current annual report, all those involved have succeeded in establishing the EPRD as one of the world's most comprehensive registries for hip and knee replacements. The ERPD's particular advantage is its ability to obtain follow-up information about knee and hip arthroplasties from all consenting patients through the participating health insurance providers. This is what makes our registry so unique and meaningful.

The EPRD outcomes have been used for many years to evaluate implants and have become an indispensable part of the manufacturers' quality measures. Both through the annual report and direct reporting to manufacturers and hospitals, the EPRD has been able to contribute to quality improvement of hip and knee arthroplasties. For instance, some implants with unsatisfactory performance are no longer in use and some hospitals report that in older patients they are increasingly implanting cemented stems because of the better registry outcomes for this age group.

Those who read our reports carefully and compare the outcomes with those of other European and international registries may note somewhat higher failure rates associated with specific arthroplasty conditions. One of the reasons for this is that the EPRD documents almost 100 % of revision procedures. Nevertheless, every revision operation spurs us on to become even better. Ultimately, valid analyses are only feasible in registries that include a large number of patients.

This year's "Specific Analysis" section focuses on patellar resurfacing. Our figures substantiate which general recommendations make sense. Other fascinating outcomes can be found in the publications that have emerged from the EPRD.[1] For example, we were able to demonstrate that, contrary to our impression, lipped inserts do not reduce the dislocation rate after all. These publications have contributed to the EPRD receiving increasing international attention. This has provided the incentive for organising the inaugural *International Society of Arthroplasty Registries* (ISAR) congress in Hamburg, Germany, in 2024.

We owe a debt of gratitude to all participating hospitals, surgeons and patients for their commitment: the EPRD would not exist without them! We hope that this report will provide you with many insights for your daily work, help and support implant selection, as well as assist with decisions on surgical strategy.

1 Available at www.eprd.de/en under "Downloads and Papers": https://www.eprd.de/en/downloads/papers

Prof. C. Perka, MD, PhD
Scientific Director

Prof. K.-P. Günther, MD, PhD
Scientific Directorate
(International Relations)

Prof. A. Steinbrück, MD, PhD
Scientific Directorate
(Study Coordination)

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1 Introduction

The publication of this report marks the tenth anniversary of the beginning of data collection in the German Arthroplasty Registry (EPRD). The EPRD was established as an initiative of the German Society of Orthopaedics and Orthopaedic Surgery (DGOOC) in November 2010 with support of the major health insurance providers and industry, and the objective of creating a robust database for the evaluation of hip and knee arthroplasties. Based on a purely voluntary participation the registry has come very close to achieving this goal: with a total of almost two million data records submitted by the participating hospitals for the years 2012 to 2021, with a highly granular product database that has been further refined in recent years, and with the comprehensive additional information that the participating health insurance providers make available to the EPRD.

True to its motto *"More quality with safety"*, the EPRD aims to further improve the quality of care in Germany with this data. In particular, the evaluation of arthroplasty survival outcomes in chapters 5 and 6 are meant to contribute to this. First, however, Chapter 2 will outline past and future developments and, on the occasion of the tenth anniversary, also let some long-standing supporters, sponsors and participants share their thoughts. Chapter 3 examines the available data in more detail and the basis for the evaluations. Chapter 4 covers the operating year 2021 and emerging developments in practice. Chapter 5 focuses on survival outcomes of various arthroplasties in the EPRD. Chapter 6 presents international trends and tendencies in hip and knee arthroplasty and compares EPRD outcomes with those of other arthroplasty registries. Chapter 6 also specifically addresses whether primary patellar resurfacing should be the rule and not the exception - as was the conclusion of last year's publication based on data from the British National Joint Registry (NJR).

The EPRD also hopes to contribute to improving the quality of care by identifying so-called "mismatch" cases early on. These are operations in which components, that are not actually compatible with each other, are combined. Chapter 7 details the number as well as the characteristics of cases the EPRD uncovers each year and how they can hopefully be better avoided in the future. And lastly, Chapter 8 summarises the main findings of this report.

2 Registry development

2 Registry development

History to date

From the start of data collection in November 2012 until the end of 2021, the EPRD was able to collect data on almost two million hip and knee arthroplasty procedures. Up to and including 2019, the annual data sets steadily increased. In 2020, however, those numbers dropped for the first time due to the COVID-19 pandemic. Although the documentation rate once again rebounded by 3.8 % in 2021, it is still below that of the last pre-pandemic year, 2019 (Figure 1).

While the decline in the annual documentation rate in the first year of the COVID-19 pandemic may be attributed primarily to the first lockdown in the spring of 2020, the 2021 operating year was also affected by the lockdown at the beginning of 2021 (Figure 2).

Even if summer saw a rise in the number of operations, this could not compensate for the low level of surgical activity in January and February 2021.

Fortunately, the commitment of the hospitals participating in the EPRD remains unfazed by all these crises. Between 2012 and 2021, the number of hospitals providing data rose steadily and most recently stood at 747 (see Figure 3).

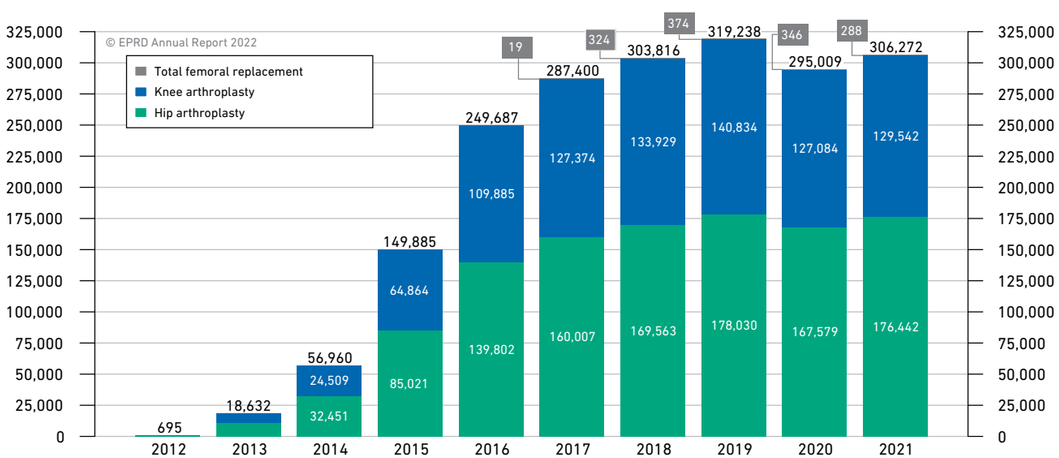

Figure 1: Annual procedure volume by operation date. The total number of documented procedures is shown above the respective bar. The respective number of total femoral replacements are indicated in grey.

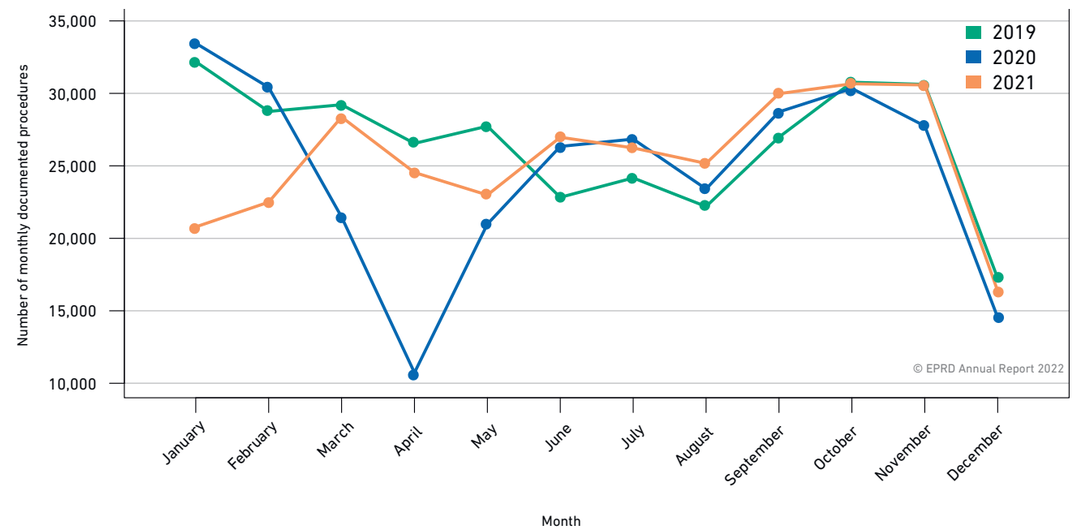

Figure 2: Comparison of monthly numbers of documented surgical procedures submitted to the EPRD from 2019 to 2021

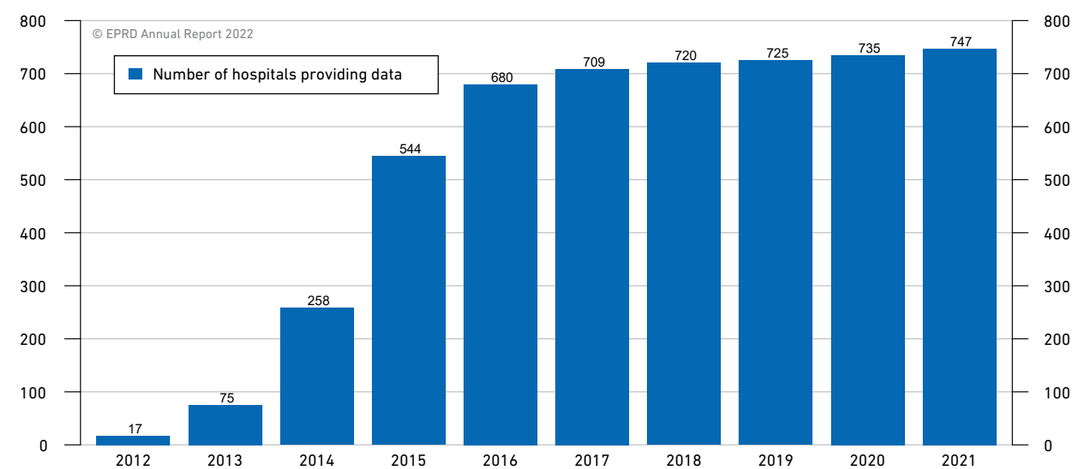

Figure 3: The number of hospitals that submit data each year. A hospital is considered "a data provider", if it submitted at least one surgical document to the EPRD during the calendar year.

Future developments

The EPRD started as a purely voluntary programme. However, in 2019, the German Parliament voted in favour of establishing a state-run, mandatory implant registry. The German Implant Registry (IRD - Implantateregister Deutschland) will initially document breast implants and subsequently extend to hip and knee arthroplasties as well as other implants. Due to several delays in its ramp-up, however, the date for the start of its regular operation has been postponed to January 1, 2024 for breast implants and to January 1, 2025 for hip and knee arthroplasties.[2]

The introduction of the IRD does, however, not constitute a completely new endeavour. Rather, the EPRD, which has in the past been repeatedly funded by the Federal Ministry of Health, serves as a blueprint for establishing the IRD. We are also planning to transfer the essential parts of the EPRD database collected over the past ten years to the IRD in a data protection-compliant manner such that this data can also be mined in the future. However, such an agreement between the German Federal Ministry of Health and the EPRD is still pending.

Until the launch of the IRD, the EPRD will not only continue to register hip and knee arthroplasties performed in Germany, but will also further expand the scope of variables that are documented. In order to provide additional parameters alongside arthroplasty survival times to assess the quality of care, starting in 2023 the EPRD also plans to survey patients directly about their arthroplasties and their quality of life. For the reporting hospitals this will constitute only a minor additional effort to compile these so-called PROMs (*Patient Reported Outcome Measures*), as the entire survey will be carried out 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 also be invited to participate in subsequent surveys.

In brief

- In 2021, about 306,000 operations were documented in the EPRD by 747 hospitals.
- In 2023, the EPRD will introduce patient surveys and start compiling PROMs.
- Regular operation of the hip and knee arthroplasty database of the national German Implant Registry (IRD) will not start until 2025.

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

Analysis evolution over time

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

- Each spring, the **participating hospitals** receive a descriptive comparison of the arthroplasty procedures they performed in the previous year and the total number of arthroplasties documented in the EPRD during the same period. This allows them to see, for example, whether they differ from other data-supplying hospitals in terms of the type of arthroplasty and/or stem 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 times and compare outcomes with other hospitals (see Figure 22, page 75).

- 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 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 EPRD 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 manufacturers concerned and, if necessary, the hospitals and asks them to respond.

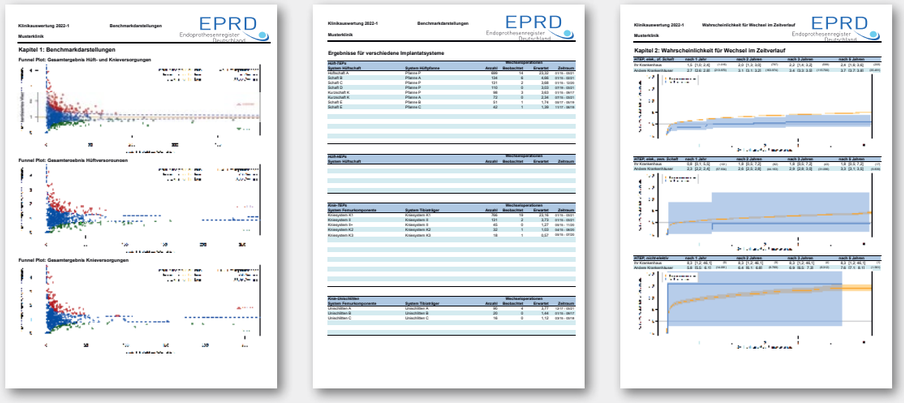

Illustration 1: Representative excerpts from a hospital evaluation

Reflecting on 10 years of the EPRD

The full anniversary brochure "Bilanz und Perspektiven" may be found on the EPRD website. The following quotes represent are excerpts:

The concept of a German arthroplasty registry was initially proposed by the coalition government in 2013. The last government then created the legal framework in 2019. The fact that there is still no operational German Implant Registry (IRD) is evidence of the enormous difficulties encountered in its implementation. The EPRD has solved most of these problems over the past 10 years or more and we regularly deliver results.

We are pleased to continue this successful work for the benefit of the patients who have entrusted us with their data. This valuable database of now about two million procedures as a foundation for long-term analysis must be preserved at all costs.

Prof. Bernd Kladny, MD, PhD
Secretary General,
German Society of Orthopaedics and Orthopaedic Surgery

Dr. Carola Reimann
Chairperson, Board of Directors,
AOK-Bundesverband
[Federation of General Health Insurance Funds]

The German Arthroplasty Registry (EPRD) is proof of the successful cooperation between different stakeholders in the health care system over the past ten years - and is thus unique. We can be proud of the fact that the EPRD is now one of the registries for hip and knee arthroplasties with scientific standing worldwide.

However, there is no light without shadows: One shortcoming is the voluntary nature of participation. Hence, not all patients undergoing surgery in Germany and not all implants are included in the registry. While lawmakers have made participation in the German Implant Registry mandatory, they have unfortunately , despite some well-known concerns, failed to address many of the structural design flaws that must be avoided in order to build a meaningful registry.

Ulrike Elsner
Permanent Chairperson,
vdek Board of Directors
[Association of Statutory Health Insurance Funds]

This year marks the tenth anniversary of the EPRD first starting to gather data in 2012. A significant milestone, as only a wealth of data allows to draw high-quality conclusions for the quality of future care.

The opportunities of such registries have also been recognised by lawmakers. For example, the EPRD served as a blueprint for establishing a mandatory implant registry codified in law in 2019. The benefit of the German Implant Registry (IRD): While about 70 percent of the hip and knee arthroplasties performed in Germany are currently documented in the EPRD, the future IRD will capture all of them. This is where the EPRD has done some ground breaking work.

This is another reason why it is important for the EPRD to continue gathering important data and reporting until the German Implant Registry actually starts compiling data on hip and knee arthroplasties. vdek will continue to support this vital contribution to improving quality.

Started as a voluntary initiative of physicians, health insurance providers, and industry, the EPRD has generated a valuable database with registry data advancing quality assurance and quality improvement of hip and knee arthroplasty care in Germany. Registry data can be used to analyse, for example, the number of reoperations, or infections, and implant survival. This project thus serves as an example and a blueprint for other registries.

Karin Maag
Independent member and Chair
of the Quality Assurance Subcommittee,
Federal Joint Committee

Dr. Gerald Gaß
Chairperson, Board of the German Hospital Federation

The EPRD benefits both patients and hospitals: With the implant ID card of the EPRD, patients and their attending physicians receive detailed information on their prosthetic implants. For their part, the participating hospitals receive a detailed hospital-specific analysis of their specific hip and knee arthroplasties, a key feature of the analysis being the individual service life of the various implants. Such feedback on the quality of care would not be feasible without the EPRD. Within a short time, the EPRD has thus become one of the largest international registries. Success and early, but also medium- to long-term failures in the individual selection, quality and implantation of endoprostheses are swiftly identified through this registry.

There was much talk, back in the day, about how to gather and further improve the quality of arthroplasties. But we just did it, with a lot of voluntary commitment, funding from the German Federal Ministry of Health (BMG) and the dedication of the organisations. In the end, we always found a satisfactory solution and all pulled together - for the good of the patients and for the best care possible. This is the secret behind the success of this registry!

Now we must look to the future. We still regard the EPRD as the blueprint for implementing the German Implant Registry. For this, we need to swiftly find viable solutions to leverage the treasure trove of data and the experience of the EPRD staff. This is the only way to maintain the safety and quality of care in arthroplasty patients at a quantifiable high level in the years to come.

Dr. Marc-Pierre Möll
Managing Director and Member of the Board, Bundesverband Medizintechnologie [German Medical Technology Association]

The founding of the German Arthroplasty Registry was prompted by the high failure rates of metal-on-metal hip arthroplasties. Although registries already existed, these problems were not noted, for example, in the UK. Thus, it was clear to us that only a joint approach by health insurance funds, manufacturers and the medical profession could solve the problem. A detailed database would furthermore allow to analyse specific implants but also design criteria such as material and coating.

Nowadays, implant problems are rare. However, the registries show that not every surgeon achieves the same outcome with an identical implant. Thus, the outcomes of individual authors and studies are not always applicable to the entire arthroplasty setting in Germany. These days we see that the differences in terms of reoperation probability between hospitals are far greater than between specific implants. Working out why remains a challenge for the future.

Prof. Carsten Perka, MD, PhD
Chief Medical Officer,
Centre for Musculoskeletal Surgery,
Charité Berlin

Prof. Heiko Graichen, MD, PhD
Head of Department, Asklepios Orthopaedic Hospital Lindenlohe

Only arthroplasty registries can compile data on factors such as patient age, implants, surgical techniques - this has now also translated to concrete recommendations for daily clinical practice. At the same time, implant failure can be detected much earlier than would be possible within one hospital. The feedback from the EPRD to hospitals and the medical profession in general is the decisive step in quality improvement. Outcome analysis of one's own hospital when compared to all of Germany also provides very good feedback. In summary, the EPRD has established itself as an important building block in quality assessment.

Dirk Herold, MD
Consultant,
Bad Mergentheim Hospital

The EPRD annual reports and internal hospital analyses are the basis for many of our decisions on medical direction. Above all, however, the EPRD cannot be credited highly enough for providing the scientific evidence to support the use of cemented stems in hip arthroplasty, thus removing the rationale for the routine use of uncemented femoral stems in older patients throughout Germany. The EPRD enables us to detect unwanted trends at an early stage and ultimately lets us draw the conclusions that will make complications as improbable as possible.

The bi-annual, standardised reporting of the EPRD provides the hospitals and their physicians with valuable insights into their own arthroplasty procedure quality, potential for improving their patient outcomes, and their standing compared to the 'competition'.

Good luck to the German Arthroplasty Registry for the next ten years. In its current form and with its experience, it is a blueprint for medical registries to come. Policymakers should seize these opportunities.

Dr. Christian Rotering
Founding Managing Director &
Advisory Board Member
(1990-2021) Manhagen Hospital

Helmut Huberti, MD
President, Deutsche
Arthrose-Hilfe e. V.
[German Osteoarthritis Aid]

The German Osteoarthritis Aid knows that the great EPRD project serves and benefits millions of people affected by osteoarthritis. We would therefore like to thank all those who were and are involved in the founding, organisation and ongoing analyses. Our hope for the future is that patients and physicians will be able to learn from this vast and ever-growing body of knowledge and continuously improve treatment particularly for the most severe forms of osteoarthritis.

3 Summary of statistical methodology and data linkage

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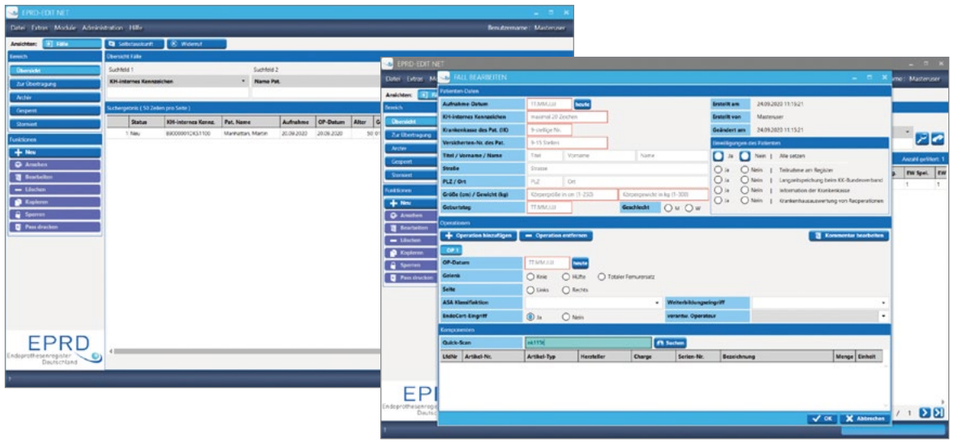


Illustration 2: For registry documentation, hospitals may enter their data via the EPRD-Edit software, among others. Illustrated here are: the main window after starting the software (back) and the dialogue window to document a new case (front).

The EPRD obtains data from three different sources: from the registry documentation of the participating hospitals, the product database of the participating implant manufacturers, and from routine data of the participating health insurance providers. This is how it works in detail:

- With the patients' consent, participating hospitals may document their arthroplasty procedures directly in the EPRD (Illustration 2). 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 operation, as well as the patient's age, sex, since 2017, height and weight, and since 2020 information on the patient's general state of health. No information allowing patient identification is submitted. 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 contains not only 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, one of the most granular of its kind from the very beginning, has been further refined in recent years through international exchange with the National Joint Registry (NJR) in the UK. At present, the database contains data on almost 69,000 separate 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.[3]

- The EPRD closely cooperates with the Federal Association of Local Health Insurance Funds (AOK-Bundesverband GbR) and the Verband der Ersatzkassen e. V. (vdek). By consenting to participate in the registry, the patient agrees that the health insurance provider 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 whether there are any further potential changes to the patient's arthroplasty. Any relevant reoperation or if the patient has died or has left the health insurance provider, will also be reported to the EPRD. In this way, the EPRD gets notified of reoperations even though they have not been documented directly in the registry.

For its own analysis, the EPRD combines the data from these three sources (see also Illustration 3). The purely descriptive analysis of the current arthroplasty situation (Chapter 4) 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. 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

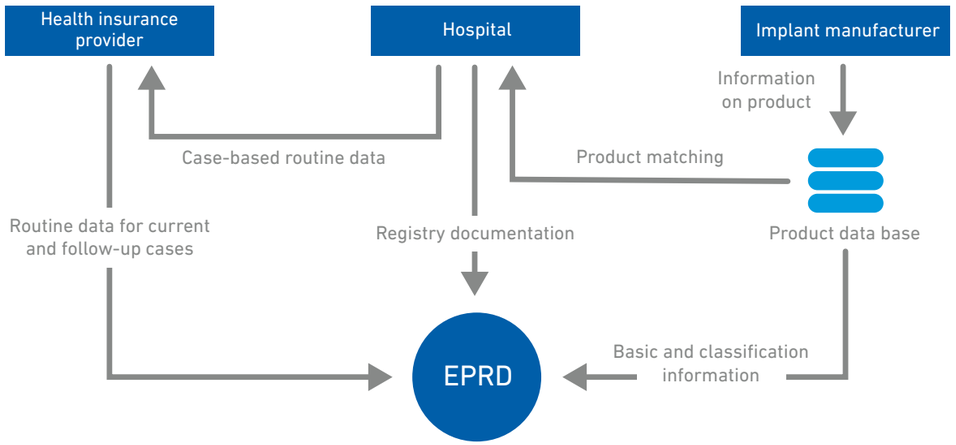


Illustration 3: The flow of data from hospitals, health insurers and implant manufacturers to the EPRD

3 The product database is continuously upgraded and improved. Changes may affect the analysis results. In order to clearly present the development year by year, documentation from previous years is also re-analysed retroactively with the current state of the product database. To some extent this limits any comparison of the outcomes of this report with previous annual reports.

(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.

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 this analysis. 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 798,000 primary arthroplasties and 26,000 first revisions.

The EPRD evaluates arthroplasty survival based on the probabilities of first or repeat procedures as well as any complementary surgeries. In the chapters below more detailed information on the particular illustrations and statistical methods is provided in highlighted text boxes at the beginning of the corresponding sections. In total, Chapter 5 analyses three different endpoints and timelines:

1. **Period between primary arthroplasty and first revision for any reason (including explantation of components)** (Sections 5.1 to 5.3 except for Table 45): 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 endpoint of the analysis – regardless of whether implant components were actually left *in situ* during the surgery or replaced. 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. **Period between the primary arthroplasty and subsequent secondary patellar resurfacing** (Table 45 in Section 5.2): 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, "standard" 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 5.4): Only revisions of primary arthroplasties already documented in the registry are considered. 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.

In order to compare EPRD outcomes with the international literature in (see Chapter 6), the EPRD makes an exception for this analysis by deviating from its own arthroplasty survival definitions and following the NJR definition. This means that a relevant reoperation is defined as the revision or explantation of implant components and also includes any subsequent complementary patellar resurfacing and thus marks the end of the service life of the primary arthroplasty.

In brief

- Arthroplasty survival analyses:
  Based on 798,000 primary procedures and almost 26,000 first revision arthroplasties followed up

4 The 2021 operating year

4 The 2021 operating year

Between January 1 and December 31, 2021, the EPRD registered a total of 306,272 hip and knee arthroplasty procedures. This chapter details the documentation of these procedures and describes the emerging trends in current health care practice.

In 2021, the COVID-19 crisis continued to impact day-to-day hospital life in Germany. However, it is not always possible to differentiate with certainty between pandemic-related effects and general trends. Table 1 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. Compared to 2020, there were once again more documented primary procedures, with an increase of 5.8 % in hip arthroplasties and 2.3 % in knee arthroplasties. Nevertheless, the numbers have not yet returned to the documentation levels of 2019. Compared to the first year of the pandemic, the number of documented hip arthroplasty reoperations increased only slightly (+0.9 % compared to 2020), and knee arthroplasty reoperations decreased once again (-1.0 %). The total number of all documented knee operations is thus still markedly below the corresponding pre-pandemic level (-8.0 % compared to 2019). This is in contrast to the number of hip operations, which fell only slightly (-0.8 %). These differences may be partly explained by the fact that hip procedures include non-elective operations that could not be postponed and were still being performed during the lockdown.

The following sections focus on the documentation submitted for the 2021 calendar year separately by the joint operated on and the type of surgery. This also highlights differences in hospital arthroplasty practices.

	Proportion [%]	Age	m/f [%]	BMI	ASA
All data sets submitted	100.0 (306,272)	70	40 / 60	28.0	2.3
Primary hip arthroplasties	51.8 (158,690)	72	40 / 60	26.8	2.3
Hip arthroplasty reoperations	5.8 (17,752)	76	42 / 58	27.0	2.5
Primary knee arthroplasties	37.7 (115,581)	69	41 / 59	29.7	2.2
Knee arthroplasty reoperations	4.6 (13,961)	69	41 / 59	30.1	2.4
Total femoral replacements	0.1 (288)	73	38 / 62	29.1	2.5

Table 1: Proportion of registered procedures by joint and type of intervention in 2021. Absolute number of data sets in brackets below the percentages.

Presentation of descriptive data

In this chapter, 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 the 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.

Classification into the various arthroplasty categories 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. In total, given percentages usually add up to 100% and 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.

"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	27.0	2.3
Category B	2.3	67	38 / 62	25.9	2.3
Subcategory B1	0.4	58	48 / 52	26.7	2.1
Subcategory B2	1.8	70	37 / 63	25.7	2.3
Subcategory B3	0.1	53	29 / 71	26.0	2.0

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

If the table includes indented category names, the above rule that the percentages shown in a table always add up to 100 % does not apply. Indented category names indicate subcategories of the category previously listed but not indented. Apart from rounding errors, the sum of the shares of the subcategories again equals the share of their parent category.

4.1 Primary hip arthroplasty

In 2021, the EPRD registered 158,690 primary hip arthroplasties. Only 40 % of these were in men. The percentage is significantly higher in the younger age groups, but continues to decline with increasing age (Table 2).

Significant operations prior to primary hip arthroplasty were reported in only 3.2 % of patients (Table 3). About half of these cases involved osteosynthesis or osteotomy in the femoral region.

Tables 4 to 16 provide a detailed view of the types of primary hip arthroplasties performed in 2021 and the corresponding patient characteristics. Compared to previous years, the following trends are noted in THA:

- After years of continuous increase in uncemented total hip arthroplasties, there is now a slight decrease: from 77.6 % in 2020 to 76.9 % in 2021. Fully cemented arthroplasties were also less common. Hybrid fixations, on the other hand, increased by almost one percentage point to 17.5 %.

- Short stems reached a new high of 12.0 %. Their share has increased every year since 2015, when they accounted for only 6.6 % of the femoral components.

- At 88 % modular cups remain by far the most widely used type of acetabular component. Monobloc cups, on the other hand, are being used less and less: After 9.6 % in the previous year, their share is now only 9 % - whereas in 2014 it was at 14.4 %. Similarly, the share of modular cups increased from 1.4 % to 1.9 %.

- Metal head component use is on the decline. Between 2014 and 2021, their share has decreased steadily from 13.2 % to only 7.1 %. In contrast, the percentage of ceramic and ceramicised metal head components increased in equal parts.

- Highly cross-linked polyethylene insert components are used more and more each year, both with and without additional antioxidants, their overall share increasing from 51.8 % in 2014 to 78.2 % in 2021.

- The trend favouring larger head components is just as consistent. Compared to the previous year, 36 mm heads increased by 2.8 percentage points to 44.4 %. For the first time since the start of the registry, 32 mm heads now account for 49.9 % of primary THAs, less than half the total. By comparison: in 2014, they were still used in 61.2 % of arthroplasties.

In brief

- Steady marked trend favouring highly cross-linked PE insert components (increase of 25 percentage points since 2014)
- Use of short stems increases to 12 % (increase of more than 5 percentage points since 2015)
- More 36 mm heads than ever before (currently 44.4 %, 2.8 percentage points increase since 2020)

How hip arthroplasties differ between hospitals

Sometimes the EPRD reveals major differences in terms of the type and characteristics of arthroplasties performed in the different hospitals. Here are a few examples of primary total hip arthroplasty from the 400 hospitals with at least 100 such procedures registered by the EPRD in 2021:

- In 120 and thus exactly 30 % of hospitals, the share of completely uncemented THAs was more than 90 %. But 34 hospitals predominantly cemented stems, with one hospital even cementing 86.6 % of stems.

- In 2021, ceramic-on-ceramic bearings were only employed in about 8 % of cases. However, there were still some hospitals that used these **bearings** as standard: 20 hospitals used them most of the time, three of them in more than 90 % of their arthroplasties. While metal-on-metal bearings were particularly popular at the beginning of this millennium, they are now used rather infrequently and only by 14 hospitals. In two of these hospitals, however, the percentage of metal-on-metal bearings in resurfacing arthroplasties is still significant (35.3 % and 15.6 %, respectively).

- Short-stem and femoral neck endoprostheses together account for about 13 % of arthroplasties. In 32 hospitals, however, these **types of stems** were implanted in more than half of the operations in 2021, the percentage in one hospital even reaching 92.2 %.

- While one quarter of the hospitals do not use monobloc **cups** at all, they accounted for more than half of the acetabular components in 22 others and even for more than 90 % in four of them. In seven hospitals, more than one in four primary cups used was a dual-mobility cup, and in one hospital it was even more than 70 %.

- More than 20 per cent of hospitals almost exclusively used one specific **head size**: 54 hospitals implanted 32 mm femoral heads in more than 90 % of cases and 27 other hospitals 36 mm heads.

- 106 hospitals implanted more XS and S heads than M or larger sizes. The highest share of these short heads in one hospital was 83.5 %. On the other hand, there were also 29 hospitals employing more heads size L and bigger than shorter **head-neck lengths**. The highest share for one hospital was 90.7 %.

	Proportion [%]	Age	m/f [%]	BMI	ASA
All primary hip arthroplasties	100.0	72	40 / 60	26.9	2.3
<45 years	1.7		55 / 45	27.4	1.8
45-54 years	6.8		51 / 49	28.6	1.9
55-64 years	20.9		48 / 52	28.1	2.0
65-74 years	29.0		40 / 60	27.6	2.2
75-84 years	30.9		34 / 66	26.0	2.4
≥85 years	10.8		30 / 70	24.5	2.7
Male	39.7	69	100 / 0	27.6	2.3
Female	60.3	73	0 / 100	26.3	2.3

Table 2: Primary hip arthroplasties in 2021 by patient age and sex

	Proportion [%]	Age	m/f [%]	BMI	ASA
No prior surgery	96.8	72	40 / 60	26.9	2.3
Osteosynthesis / Osteotomy	2.1	68	38 / 62	25.8	2.3
Pelvis	0.4	61	44 / 56	26.8	2.1
Femur	1.6	70	37 / 63	25.7	2.4
Pelvis and femur	0.1	52	31 / 69	25.8	2.0
Femoral head necrosis	0.3	62	56 / 44	27.4	2.3
Arthrodesis	<0.1	68	40 / 60	25.8	2.1
Other prior surgery	0.8	68	44 / 56	27.0	2.3

Table 3: Previous surgeries reported for primary hip arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Total arthroplasty	88.0	70	41 / 59	27.3	2.2
Hemiarthroplasty	12.0	84	32 / 68	24.2	2.9

Table 4: Types of primary hip replacements in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Uncemented implants	76.9	67	45 / 55	27.7	2.1
Hybrid implants	17.5	79	28 / 72	26.0	2.4
Cemented implants	4.1	81	24 / 76	25.5	2.6
Reverse hybrid implants	1.1	74	29 / 71	26.6	2.5
Unknown	0.4	71	35 / 65	27.2	2.4

Table 5: Fixations in primary total hip arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Cemented implants	88.2	85	31 / 69	24.2	2.9
Uncemented implants	11.4	83	37 / 63	24.6	2.9
Unknown	0.4	75	31 / 69	26.6	2.6

Table 6: Fixations in primary hip hemiarthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Femoral stem with modular head	85.6	71	40 / 60	27.2	2.2
Short stem	12.0	63	48 / 52	27.8	2.0
Femoral neck prosthesis	1.1	61	47 / 53	27.4	1.9
Revision or tumour stem	0.5	76	38 / 62	25.7	2.7
Modular stem	0.3	75	31 / 69	26.6	2.3
Surface replacement	0.1	58	96 / 4	27.8	1.8
Unknown	0.3	71	33 / 67	27.6	2.3

Table 7: Stem types in primary total hip arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Femoral stem with modular head	98.3	84	32 / 68	24.2	2.9
Revision or tumour stem	1.1	82.5	29 / 71	25.2	2.8
Modular stem	0.3	86	30 / 70	24.2	2.9
Short stem	0.2	84	39 / 61	23.8	2.4
Unknown	<0.1	89	0 / 100	27.3	2.7

Table 8: Stem types in primary hip hemiarthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Modular cup	88.0	69	42 / 58	27.3	2.2
Monobloc cup	9.0	74	36 / 64	26.7	2.3
Dual mobility	1.9	79	35 / 65	26.0	2.6
Revision cup	0.9	72	30 / 70	26.6	2.4
Resurfacing cup	0.1	56	97 / 3	27.7	1.8
Unknown	0.1	69	42 / 58	27.5	2.1

Table 9: Acetabular components in primary total hip arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Without reconstruction shell	99.8	70	41 / 59	27.3	2.2
With reconstruction shell	0.2	77	35 / 65	26.1	2.6

Table 10: Reconstruction shells in primary total hip arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
28 mm	5.2	72	17 / 83	26.3	2.3
32 mm	49.9	71	30 / 70	27.1	2.2
36 mm	44.4	69	55 / 45	27.6	2.2
Other diameters	0.5	68	42 / 58	26.2	2.1
Unknown	<0.1	76.5	0 / 100	24.7	2.0

Table 11: Head sizes in primary total hip arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
XS	0.7	70	29 / 71	26.6	2.3
S	38.3	70	33 / 67	27.0	2.2
M	37.7	70	42 / 58	27.4	2.2
L	17.1	69	51 / 49	27.6	2.2
XL	4.4	69	58 / 42	28.0	2.2
XXL	0.4	68	60 / 40	27.8	2.3
XXXL	<0.1	73	71 / 29	28.1	2.6
Unknown	1.4	76	45 / 55	26.7	2.4

Table 12: Head-neck lengths in primary total hip arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
hXLPE	57.4	70	40 / 60	27.3	2.2
hXLPE+antioxidant	20.8	69	42 / 58	27.5	2.2
Ceramic	8.1	63	47 / 53	27.5	2.1
PE	6.7	78	33 / 67	26.3	2.4
mXLPE	6.6	73	42 / 58	27.1	2.2
Metal	0.1	58	96 / 4	27.8	1.8
mXLPE+antioxidant	<0.1	73	67 / 33	25.4	3.0
Unknown	0.2	76	30 / 70	27.3	2.2

Table 13: Acetabular bearing materials in primary total hip arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Ceramic	89.5	69	41 / 59	27.3	2.2
Metal	7.1	80	34 / 66	26.1	2.5
Ceramicised metal	3.4	69	40 / 60	27.7	2.2
Unknown	<0.1	76.5	0 / 100	24.7	2.0

Table 14: Modular heads in primary total hip arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Ceramic / hXLPE	50.4	69	41 / 59	27.3	2.2
Ceramic / hXLPE+antioxidant	20.3	69	42 / 58	27.5	2.2
Ceramic / ceramic	8.1	63	47 / 53	27.5	2.1
Ceramic / mXLPE	5.9	72	43 / 57	27.2	2.2
Ceramic / PE	4.7	76	34 / 66	26.7	2.3
Metal / hXLPE	4.0	79	34 / 66	26.3	2.5
Ceramicised metal / hXLPE	3.0	69	41 / 59	27.7	2.2
Metal / PE	1.7	81	28 / 72	25.6	2.6
Metal / mXLPE	0.7	81	33 / 67	26.0	2.5
Metal / hXLPE+antioxidant	0.5	79	32 / 68	26.3	2.6
Ceramicised metal / PE	0.3	77	33 / 67	26.7	2.4
Metal / Metal	0.1	58	96 / 4	27.8	1.8
Ceramicised metal / hXLPE+antioxidant	<0.1	69	36 / 64	24.5	2.1
Ceramicised metal / mXLPE	<0.1	38	17 / 83	23.9	1.8
Ceramic / mXLPE+antioxidant	<0.1	73	67 / 33	25.4	3.0
Unknown	0.2	76	30 / 70	27.2	2.2

Table 15: Bearing materials in primary total hip arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Metal	96.1	84	32 / 68	24.2	2.9
Ceramic	2.8	83	34 / 66	24.7	2.6
Ceramicised metal	1.1	84	37 / 63	24.6	2.8
Unknown	<0.1	82	50 / 50	24.2	2.8

Table 16: Modular head materials in primary hip hemiarthroplasties in 2021

4.2 Hip arthroplasty reoperations

Among the 17,752 reoperations registered by the EPRD for 2021, there were 1,117 explantations and 1,948 implantations as part of two-stage revisions. Consistently with previous years explantations as two-stage revision procedures tended to be documented less often in the EPRD than re-implantations.

Tables 17 and 18 present the age and sex distribution of patients with documented reoperations. As in previous years, the most common reasons for reoperations were loosening (24.4 %), infections (16.7 %), periprosthetic fractures (14.3 %), and dislocations (13.0 %).

Table 19 summarises which components were newly implanted during reoperations and thus possibly replaced in 2021. Previously implanted head components (97.2 %) or inserts therefore were replaced in 97.2 % and 76.5 % of cases 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 (27.5 %). In almost three quarters of the procedures, at least one of the bone-anchored components was reimplanted (73.5 %), with stem replacements (49.8 %) only slightly less common than acetabular replacements (51.2 %).

Whether bone fixation components are replaced or not very much depends on the reason for the revision. Unlike revisions due to loosening, where at least the cup or stem component is replaced most of the time, this only applied to less than half of revisions due to infection (49.5 % in 2021). The replacement of cup or stem components in infection-related revisions has also been declining for years (2014: 67.2 %).

In 30.8 % of reoperations analysed at least one stem or acetabular component was replaced with a reoperation-specific model. In revisions involving replacement of the acetabular cup there is a trend towards the use of dual-mobility components: While these only represented 10 % of new acetabular components in 2014, they accounted for 31.9 % in 2021.

	Proportion [%]	Age	m/f [%]	BMI	ASA
All hip reoperations	100.0	76	42 / 58	27.0	2.5
<45 years	1.4		49 / 51	27.2	2.2
45-54 years	4.8		50 / 50	28.5	2.2
55-64 years	15.7		52 / 48	29.0	2.3
65-74 years	25.2		44 / 56	28.3	2.5
75-84 years	37.5		39 / 61	26.3	2.6
≥85 years	15.4		29 / 71	25.0	2.8
Male	41.6	73	100 / 0	27.5	2.6
Female	58.4	77	0 / 100	26.6	2.5

Table 17: Hip reoperations in 2021 by patient age and sex

	Proportion [%]	Age	m/f [%]	BMI	ASA
Infection	16.7	73	49 / 51	28.7	2.7
Loosening	24.4	75	42 / 58	27.0	2.5
Cup	12.9	75	35 / 65	26.8	2.4
Stem	9.2	75	50 / 50	27.2	2.4
Cup and stem	2.3	77	45 / 55	27.1	2.5
Osteolysis with fixed component	0.7	74	48 / 52	26.6	2.4
Cup	0.3	72	49 / 51	26.0	2.3
Stem	0.2	74	31 / 69	28.1	2.5
Cup and stem	0.2	74.5	60 / 40	28.6	2.3
Periprosthetic fracture	14.3	80	33 / 67	25.8	2.7
Dislocation	13.0	79	32 / 68	26.0	2.6
Wear	5.8	75	42 / 58	27.5	2.3
Component failure	2.2	76	45 / 55	26.6	2.5
Malalignment	2.0	74	36 / 64	26.3	2.4
Progression of arthrosis	0.4	69	35 / 65	25.3	2.3
Condition after removal	11.0	72	53 / 47	27.8	2.6
Other reasons	9.5	74	40 / 60	26.9	2.4

Table 18: Reasons for hip reoperations in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Stem, head, cup, insert	27.5	73	48 / 52	27.3	2.6
Head, cup, insert	22.1	77	33 / 67	26.4	2.5
Head, insert	17.7	74	45 / 55	27.8	2.5
Stem, head	15.4	79	38 / 62	26.4	2.6
Head	7.6	78	39 / 61	27.0	2.6
Stem, head, insert	6.9	74	49 / 51	27.4	2.5
Cup, insert	1.6	77	32 / 68	26.2	2.5
Insert	0.7	74.5	39 / 61	27.5	2.5
Accessory parts only (e.g., screws)	0.5	73	47 / 53	28.4	2.6

Table 19: Components replaced or complemented[4] in hip reoperations in 2021

4 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.

In brief

- The most common reasons for reoperations: loosening (24.4 %), infection (16.7 %), periprosthetic fracture (14.3 %), and dislocation (13.0 %).
- In at least three quarters of reoperations, at least one component with bony fixation was replaced; in infection-related revisions, this was only true in close to one in two cases.
- Revision-specific stem or acetabular components were re-implanted in 30.8 % of reoperations.

4.3 Primary knee arthroplasty

In 2021, a total of 115,581 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 20 and 21. Patients undergoing primary knee arthroplasty tend to be younger than those with hip arthroplasty (Section 4.1), but have a higher body mass index. In the EPRD, the median BMI of patients undergoing primary knee arthroplasty is almost 30, which, according to the definition of the World Health Organisation (WHO), is considered borderline morbid obesity. Roughly half of the patients undergoing knee arthroplasties would therefore be classified as morbidly obese. This percentage is even higher in younger patients (60.4 % in those aged 64 years and younger), but somewhat lower in older patients (only 31.8 % in patients 75 years and older). This suggests that premature wear and tear of the knee joint is often due to severe obesity.

Tables 22 to 34 present the number of primary arthroplasties documented in the EPRD for 2021, the type of arthroplasty and implant characteristics. Compared to previous years, the following trends are noted:

- For years, **fully cemented systems** have dominated total and unicondylar knee arthroplasties. At 95.2 % and 90.3 % respectively in 2021, they have reached their maximum to date in the EPRD.

- In contrast, arthroplasty systems with mobile bearings are gradually being employed significantly less often. In total knee arthroplasty, the figure was only 10.7 % compared to 19.5 % in 2016, and in unicondylar knee arthroplasty, the corresponding percentage was only 53.8 % compared to 71.6 % in 2014.

- In standard total knee arthroplasties, posterior-stabilised systems have become increasingly common in recent years - their share rising from 15.6 % in 2015 to 24.0 % in 2021.

- In knee arthroplasties, too, the trend is favouring the use of highly cross-linked polyethylenes. While these XLPEs are already being used in three quarters of hip arthroplasties (see Section 4.1), this is still much less the case in knee arthroplasties (most recently 23.9 % in TKAs and 22.1 % in unicondylar arthroplasties). This figure has almost doubled since 2014, when XLPEs were only deployed in 10.9 % of TKAs and 11.2 % of unicondylar arthroplasties.

In brief

- 95 % of primary total knee arthroplasties and 90 % of unicondylar arthroplasties were fully cemented.
- Continued decrease in the use of mobile bearings.

How knee arthroplasties differ between hospitals

Knee arthroplasty practices between hospitals sometimes also differ greatly. This relates, among other things, to the choice of **arthroplasty type**: Out of the 338 hospitals documenting at least 100 primary knee arthroplasties in the EPRD in 2021, there are, for example, five that implant more partial than total knee arthroplasties. Altogether, in 52 hospitals the share of partial knee replacements was more than one quarter.

A closer look at the TKAs reveals further inter-hospital differences. In 2021, 301 hospitals reported at least 100 primary total knee arthroplasties to the registry. For these hospitals the following applied:

- With regard to the **degree of constraint**, 276 hospitals used mostly fixed and 25 mobile bearings. 241 hospitals employed fixed bearings 90 % or more of the time, 205 hospitals used them exclusively. In contrast, 11 hospitals employed mobile bearings in at least 90 % of cases, one hospital used them exclusively.

- For virtually every **knee arthroplasty system**, there is at least one hospital that specialises in it and employs it in at least 90 % of cases: In 49 hospitals these are cruciate-retaining, in another 20 hospitals posterior-stabilised, in 9 hospitals cruciate-sacrificing and in 8 hospitals cruciate-retaining/sacrificing systems. And even for pivot systems, which are documented in only about 3 % of operations, there is one hospital that employs them quite often.

- The majority of hospitals chose fully cemented total knee arthroplasties in almost all cases: 190 hospitals only performed fully cemented arthroplasties, 81 others at least in more than 90 % of cases. However, there were also 14 hospitals where other **types of fixation** dominated: 12 employed hybrid fixation, two used completely uncemented systems.

- 209 hospitals performed **primary patellar resurfacing** in less than 5 % of cases, and 78 hospitals did not choose this option at all. On the other hand, there were also 21 hospitals performing it in more than 50 % of all TKAs, 8 of these hospitals even in more than 90 % of cases.

	Proportion [%]	Age	m/f [%]	BMI	ASA
All primary knee arthroplasties	100.0	69	40 / 60	29.8	2.2
<45 years	0.6		38 / 62	31.5	1.9
45-54 years	7.6		40 / 60	32.5	2.0
55-64 years	28.6		46 / 54	31.2	2.1
65-74 years	33.7		40 / 60	30.1	2.2
75-84 years	26.5		37 / 63	27.9	2.3
≥85 years	3.0		33 / 67	26.5	2.5
Male	40.5	67	100 / 0	29.4	2.2
Female	59.5	69	0 / 100	30.1	2.2

Table 20: Primary knee arthroplasties in 2021 by patient age and sex

	Proportion [%]	Age	m/f [%]	BMI	ASA
No prior surgery	92.6	69	40 / 60	29.8	2.2
Osteosynthesis / Osteotomy	1.9	63	53 / 47	29.0	2.1
Femur	0.4	65	47 / 53	28.3	2.2
Tibia	1.2	62	55 / 45	29.3	2.1
Patella	0.1	69	48 / 52	27.7	2.2
Several locations	0.2	62	60 / 40	29.0	2.2
Capsule and ligaments	2.4	61	56 / 44	29.1	2.1
Arthrodesis	<0.1	72	47 / 53	27.0	2.2
Other prior surgery	3.1	65	47 / 53	29.5	2.2

Table 21: Prior surgeries reported for knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Total knee arthroplasty	86.6	69	39 / 61	29.9	2.2
Unicondylar knee arthroplasty	13.2	63	50 / 50	29.3	2.0
Patellofemoral knee arthroplasty	0.2	55	36 / 64	28.2	2.0
Other arthroplasties	<0.1	64	0 / 100	25.3	2.0

Table 22: Types of primary knee replacements in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Standard systems	95.0	69	40 / 60	30.0	2.2
Cruciate-retaining	46.4	69	40 / 60	30.0	2.2
Posterior-stabilised	24.0	69	39 / 61	29.8	2.2
Cruciate-sacrificing	10.9	70	36 / 64	29.7	2.3
Cruciate-retaining/sacrificing	10.5	68	41 / 59	29.9	2.2
Pivot	3.3	69	40 / 60	30.1	2.2
Constrained systems	4.7	74	28 / 72	28.6	2.4
Hinged	2.8	76	26 / 74	27.8	2.4
Varus-valgus-stabilised	1.9	71	30 / 70	29.4	2.3
Unknown	0.3	69	50 / 50	29.5	2.4

Table 23: Grade of constraint in primary total knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Cemented implants	95.2	70	39 / 61	29.8	2.2
Hybrid implants	3.5	69	41 / 59	30.3	2.1
Uncemented implants	1.2	66	43 / 57	30.0	2.1
Reverse hybrid implants	<0.1	63.5	19 / 81	29.5	2.1
Unknown	0.2	68.5	28 / 72	27.8	2.4

Table 24: Fixations in primary total knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Cemented implants	90.3	63	50 / 50	29.3	2.1
Uncemented implants	9.0	63	57 / 43	29.3	1.9
Hybrid implants	0.6	66	39 / 61	28.3	2.0
Unknown	0.1	65.5	72 / 28	30.5	2.1

Table 25: Fixations in primary unicondylar knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Fixed bearing	89.3	69	39 / 61	29.9	2.2
Mobile bearing	10.7	69	40 / 60	29.9	2.3
Unknown	<0.1	78.5	44 / 56	28.4	2.4

Table 26: Bearing mobility in primary total knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Mobile bearing	53.8	63	48 / 52	29.4	2.0
Fixed bearing	46.2	63	53 / 47	29.1	2.1

Table 27: Bearing mobility in primary unicondylar knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Without patellar resurfacing	88.3	69	39 / 61	29.9	2.2
With patellar resurfacing	11.7	69	37 / 63	29.9	2.3

Table 28: Patellar resurfacing in primary total knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Uncoated metal	91.1	70	41 / 59	29.8	2.2
Coated metal	5.0	66	18 / 82	30.8	2.2
Ceramicised metal	3.9	64	22 / 78	31.2	2.1
Ceramic	<0.1	67	6 / 94	33.5	2.2
Unknown	<0.1	69	0 / 100	30.5	2.4

Table 29: Femoral bearing materials in primary total knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
PE	44.0	70	39 / 61	29.8	2.2
mXLPE	31.8	70	39 / 61	29.8	2.2
hXLPE	12.7	68	38 / 62	30.1	2.2
hXLPE+antioxidant	11.2	68	42 / 58	30.0	2.2
mXLPE+antioxidant	0.4	69	43 / 57	30.4	2.4
Unknown	<0.1	72	0 / 100	38.7	3.0

Table 30: Tibial bearing materials in primary total knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Uncoated metal / PE	39.3	70	41 / 59	29.7	2.2
Uncoated metal / mXLPE	28.9	70	41 / 59	29.7	2.2
Uncoated metal / hXLPE	11.6	69	39 / 61	30.0	2.2
Uncoated metal / hXLPE+antioxidant	10.9	69	43 / 57	30.0	2.2
Coated metal / mXLPE	2.9	65	15 / 85	31.0	2.2
Ceramicised metal / PE	2.8	65	20 / 80	31.2	2.1
Coated metal / PE	1.8	67	24 / 76	30.3	2.2
Ceramicised metal / hXLPE	1.1	62	26 / 74	31.1	2.1
Coated metal / hXLPE+antioxidant	0.3	63	11 / 89	32.0	2.2
Uncoated metal / mXLPE+antioxidant	0.3	69	43 / 57	30.4	2.4
Coated metal / mXLPE+antioxidant	<0.1	68	44 / 56	29.7	2.1
Ceramic / PE	<0.1	67	6 / 94	33.5	2.2
Unknown	<0.1	70.5	0 / 100	32.0	2.5

Table 31: Bearing materials in primary total knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Uncoated metal	92.4	63	52 / 48	29.3	2.0
Coated metal	4.8	59	15 / 85	30.1	2.0
Ceramicised metal	2.8	60	38 / 62	29.4	2.1

Table 32: Femoral bearing materials in primary unicondylar knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
mXLPE	55.5	63	47 / 53	29.3	2.0
PE	22.3	62	53 / 47	29.2	2.1
hXLPE+antioxidant	13.9	63	54 / 46	29.4	2.1
hXLPE	8.2	62	55 / 45	29.0	2.0

Table 33: Tibial bearing materials in primary unicondylar knee arthroplasties in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Uncoated metal / mXLPE	51.4	64	50 / 50	29.3	2.0
Uncoated metal / PE	18.9	62	56 / 44	29.1	2.1
Uncoated metal / hXLPE+antioxidant	13.9	63	54 / 46	29.4	2.1
Uncoated metal / hXLPE	8.2	62	55 / 45	29.0	2.0
Coated metal / mXLPE	3.9	59	11 / 89	30.3	2.0
Ceramicised metal / PE	2.5	60	38 / 62	29.6	2.1
Coated metal / PE	1.0	58	33 / 67	30.1	2.0
Ceramicised metal / mXLPE	0.3	61.5	45 / 55	27.4	2.1
Coated metal / hXLPE+antioxidant	<0.1	59	0 / 100	27.5	2.3

Table 34: Bearing materials in primary unicondylar knee arthroplasties in 2021

4.4 Knee arthroplasty reoperations

For the 2021 calendar year, 13,961 knee reoperations were documented in the EPRD. 2,719 of these were two-stage explantations and revisions. However, the re-implantations (1,775) in two-stage revision procedures were documented more often than explantations (944). Table 35 presents an overview of the age and sex distribution of patients undergoing knee arthroplasty reoperations in 2021. Table 36 presents the distribution of indications given for the procedures. As with hip arthroplasty reoperations, loosening (23.5 %) and infections (15.0 %) were also reported most frequently in knee reoperations.

Table 37 summarises which components in the reoperations considered were replaced or re-implanted. In 13.3 % of cases, it was presumably only secondary patellar resurfacing of an existing arthroplasty. However, in 54.7 %, and thus in more than half of reoperations, all of the prior arthroplasty components were exchanged. This percentage is almost twice as high in knee arthroplasty reoperations as in hip arthroplasty reoperations. In 64.3 % of procedures, at least one of the components with bone fixation was replaced. Bone-anchored components are also being replaced less and less often in infection-related knee arthroplasty revisions (53.0 % in 2021 versus 67.2 % in 2014).

Hospitals are more likely to use constrained systems for knee arthroplasty revisions. In 59.3 % of all total arthroplasty revisions analysed, a hinged or varus-valgus stabilised system was chosen. In primary knee arthroplasties, this figure was only 4.7 % (Table 23).

In brief

- Reasons for knee revisions included loosening (23.5 %) and infection (15.0 %)
- In more than half of all knee arthroplasty revisions all prior components were exchanged
- Often with a switch to a more constrained system

	Proportion [%]	Age	m/f [%]	BMI	ASA
All knee reoperations	100.0	69	41 / 59	30.1	2.4
<45 years	1.2		47 / 53	28.9	2.0
45-54 years	7.6		41 / 59	31.9	2.1
55-64 years	26.4		46 / 54	31.5	2.2
65-74 years	31.2		42 / 58	30.8	2.4
75-84 years	28.1		39 / 61	28.4	2.6
≥85 years	5.6		30 / 70	27.0	2.8
Male	41.4	68	100 / 0	29.6	2.4
Female	58.6	70	0 / 100	30.5	2.4

Table 35: Knee reoperations in 2021 by patient age and sex

	Proportion [%]	Age	m/f [%]	BMI	ASA
Infection	15.0	71	52 / 48	30.0	2.6
Loosening	23.5	70	39 / 61	30.1	2.4
Femoral component	4.4	71	42 / 58	29.8	2.4
Tibial tray	9.4	68	36 / 64	30.6	2.3
Patellar component	0.6	71	42 / 58	31.6	2.3
Several components	9.1	71	41 / 59	29.7	2.4
Osteolysis with fixed component	1.0	69	49 / 51	30.1	2.3
Femoral component	0.3	70	54 / 46	30.0	2.3
Tibial tray	0.3	69	40 / 60	30.8	2.5
Patellar component	0.1	62	50 / 50	29.1	2.2
Several components	0.3	68	51 / 49	29.7	2.3
Periprosthetic fracture	4.2	80	21 / 79	28.7	2.7
Ligament instability	8.4	66.5	30 / 70	30.9	2.3
Wear	5.5	70.5	40 / 60	30.0	2.2
Component failure	2.0	68	45 / 55	30.9	2.3
Prosthetic malalignment / Malrotation	1.6	67	31 / 69	29.5	2.3
Restricted mobility	5.4	67	40 / 60	30.0	2.2
Progression of arthrosis	6.0	68	39 / 61	30.1	2.3
Condition after removal	12.7	70	50 / 50	29.7	2.6
Other reasons	14.8	68	41 / 59	30.1	2.2

Table 36: Reasons for knee reoperations in 2021

	Proportion [%]	Age	m/f [%]	BMI	ASA
Femoral component, tibial tray, insert	47.6	70	42 / 58	30.0	2.4
Insert	20.2	69	47 / 53	30.1	2.4
Femoral component, tibial tray, insert, patellar arthroplasty	7.1	68	42 / 58	30.0	2.4
Insert, patellar arthroplasty	7.0	68	38 / 62	30.7	2.3
Patellar arthroplasty	6.3	68	39 / 61	30.9	2.3
Tibial tray, insert	4.7	68	39 / 61	30.7	2.4
Femoral component, insert	2.6	70	39 / 61	29.7	2.4
Accessory parts only (e.g., screws)	2.3	73	40 / 60	30.1	2.6
Femoral component	1.3	71	39 / 61	30.4	2.5
Tibial tray, insert, patellar arthroplasty	0.4	67	24 / 76	32.0	2.3
Femoral component, insert, patellar arthroplasty	0.4	69.5	40 / 60	30.3	2.3
Femoral component, patellar arthroplasty	0.1	59	13 / 87	27.4	2.3

Table 37: Components replaced or complemented[5] during knee reoperations in 2021

5 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.

5 Hip and knee arthroplasty survival

5 Hip and knee arthroplasty survival

In the EPRD the term "survival" denotes the time an arthroplasty system remains unchanged in the patient's body before it has to be removed or replaced. The annual reports focus on these system survival times because they are an important quality criterion in hip and knee arthroplasties. Since most cases are still being followed up, the next subsections discuss the probabilities of requiring a first revision (see the Sections 5.1 to 5.3) or a repeat revision (see Section 5.4) over time.

Section 5.1 presents the outcomes of various types of primary arthroplasties and addresses the effects of different implant and arthroplasty characteristics on survival. Section 5.2 then looks at the impact of non-implant-related factors, such as hospital-related and patient-related factors. Non-implant related factors may sometimes overlap with implant effects, which complicates the interpretation of some results. This should be taken into account especially when assessing the outcomes of the specific arthroplasty systems presented in section 5.3.

The tables at the end of each subchapter summarise the results and provide more detailed information. In its annual report, the EPRD presents outcomes for a period of up to seven years after primary arthroplasty or up to four years after the first revision. Compared to the expected arthroplasty survival time of 15 to 20 years, this follow-up period is still rather short. The following findings therefore only apply to the early phase of an arthroplasty, and arthroplasties with good short-term outcomes do not necessarily do as well in the medium to long term.

Calculation of revision and complementary arthroplasty probabilities

The EPRD defines the endpoint "arthroplasty failure" as any arthroplasty that subsequently requires 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:

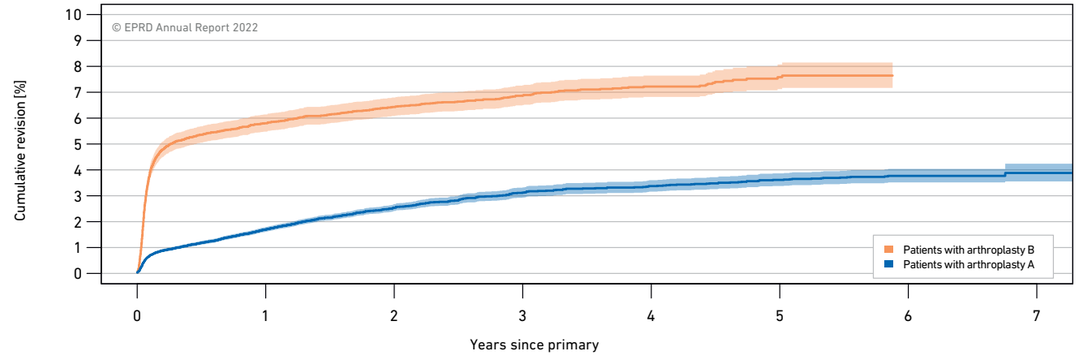
- at the time of the analysis the monitoring of the arthroplasty has not yet been completed in most cases and
- censoring events such as patient death or amputation of the leg may prevent the complete follow-up of an arthroplasty.

A similar approach is used to calculate the probability of secondary patellar resurfacing. Revision operations are regarded as additional censoring events and taken into account accordingly. The results of the estimates are presented as figures and tables (see the explanations in the following sections). 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.

In addition to the confidence intervals referenced to the respective point in time, the p-value of the test for parity of revision or complementary arthroplasty probabilities over the entire course of the arthroplasty is also determined and specified.

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.



Numbers at risk								
Patients with arthroplasty B	20,401	14,100	9,778	6,316	3,568	1,562		
Patients with arthroplasty A	87,454	57,218	16,188	9,167	8,394	7,695	2,481	802

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 any of the given time points examined.

The graphs in section 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.

5.1 Revision probabilities 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 impacts of specific arthroplasty and implant characteristics. Finally, the outcomes for the various types of arthroplasties and their characteristics are summarised in tables at the end of each subsection (see Table 38 and Table 39). Arthroplasty results which are not addressed in the text are only presented in the tables if they encompass the required minimum number of cases.

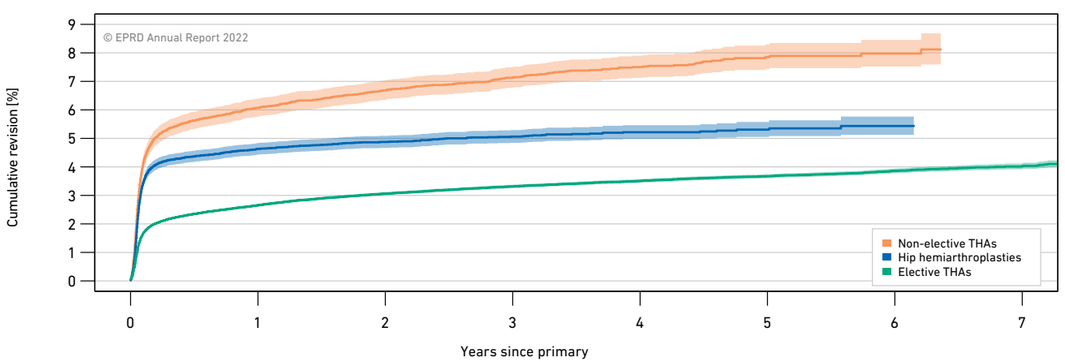
5.1.1 Comparison by type of hip arthroplasty

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, partial hip arthroplasties are more often performed on older patients with fractures. Hip hemiarthroplasties show significant diffferences in their revision probabilities (see Figure 4).

In Germany, the percentage of uncemented femoral components is rather high (also see Chapter 6). However, the EPRD recorded lower revision probabilities in both elective and non-elective arthroplasties with cemented femoral components (Figure 5). These cases were significantly affected by patient age. 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 (Figure 16 in Section 5.2).

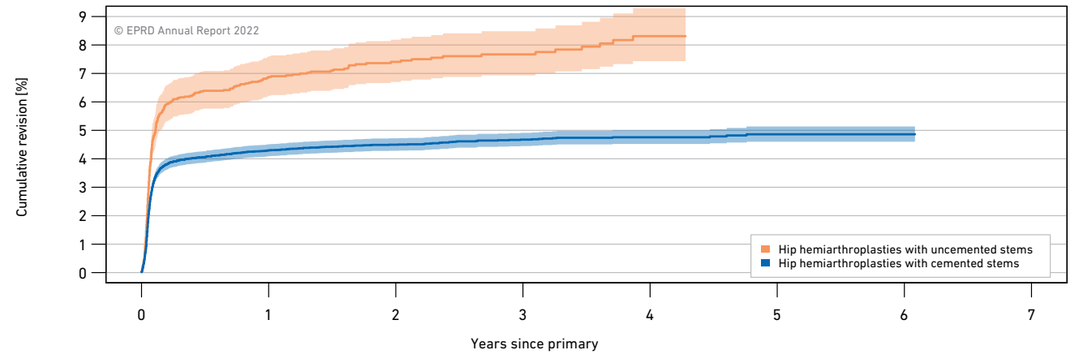
Total hip arthroplasties still predominantly occur in three different head sizes: 28 mm, 32 mm and 36 mm. For the period analysed, the larger the head component, the lower the revision probability, in both elective and non-elective procedures (Figure 6 and Table 38 respectively). This is probably due to a lower risk of dislocation with larger heads.

The EPRD has also identified a correlation between head-neck length and the risk of reoperation. Unlike with the head size, here the revision probability increases with longer neck lengths (Figure 7). However, it should be noted that cases with longer head-neck



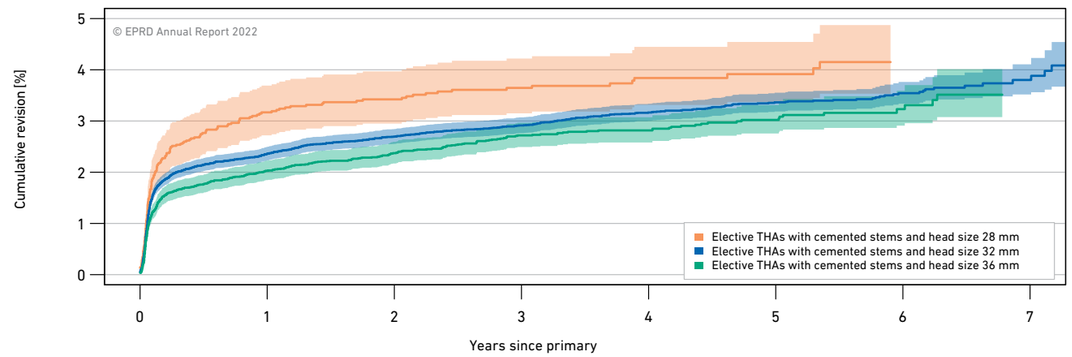
Numbers at risk								
Non-elective THAs	23,575	15,905	11,492	7,615	4,664	2,370	833	
Hip hemiarthroplasties	47,898	25,355	16,238	9,513	4,957	2,183	638	
Elective THAs	374,869	301,372	238,041	174,168	116,408	65,934	26,925	7,467

Figure 4: Revision probabilities of elective and non-elective hip arthroplasties *(p < 0.0001)*



Numbers at risk								
Hip hemiarthroplasties with uncemented stems	5,986	3,222	2,067	1,196	597			
Hip hemiarthroplasties with cemented stems	41,708	22,028	14,108	8,272	4,338	1,925	575	

Figure 5: Revision probabilities of uncemented and cemented partial hip arthroplasties *(p < 0.0001)*



Numbers at risk								
Elective THAs with cemented stems and head size 28 mm	5,297	4,109	3,291	2,479	1,739	1,031		
Elective THAs with cemented stems and head size 32 mm	51,782	41,963	33,341	24,572	16,781	9,792	4,299	1,195
Elective THAs with cemented stems and head size 36 mm	22,282	17,105	13,053	9,167	5,847	3,116	1,267	

Figure 6: Revision probabilities of elective total hip arthroplasties with cemented stems by head size *(p = 0.0004)*

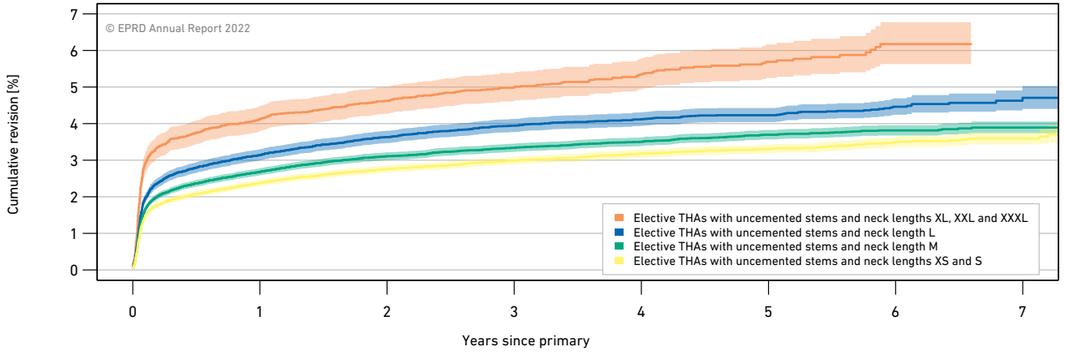
lengths - e.g., to compensate for a shorter leg length with a more cranial centre of rotation - may have fundamentally worse initial conditions than other arthroplasties.

For the period analysed, the EPRD finds significantly better outcomes for short-stem arthroplasties (Figure 8). However, in addition to the limited follow-up period, it should be noted that this particular type of femoral component is mainly implanted in younger and healthier patients. Even with the best possible consideration of this aspect and of comparable patient groups, short-stem arthroplasties benefit from a slightly lower infection rate (also see reference [1]).

Table 38 summarises the revision probabilities for various types and characteristics of hip arthroplasties.

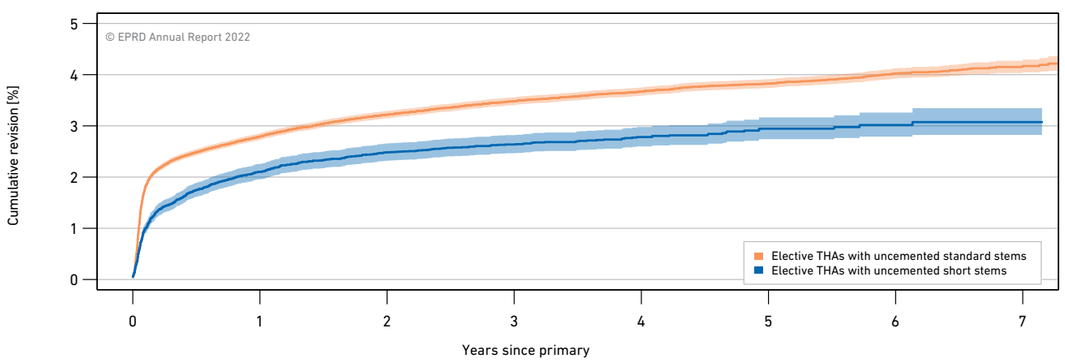
In brief

- Revision probabilities significantly higher for non-elective procedures
- Larger heads and shorter head-neck lengths generally linked to lower revision probabilities during the early phase
- To date, good outcomes have been observed with short-stem femoral components



Numbers at risk							
13,391	10,742	8,521	6,360	4,278	2,526	1,006	
50,936	41,508	33,430	25,240	17,414	10,328	4,386	1,195
109,608	88,533	69,963	51,206	34,437	19,682	7,894	2,222
117,646	94,538	74,291	53,678	35,040	19,014	7,456	2,081

Figure 7: Revision probabilities of elective total hip arthroplasties with uncemented stems by head-neck length *(p < 0.0001)*



Numbers at risk							
249,867	202,756	160,984	118,191	79,275	45,086	18,402	5,139
36,502	28,199	21,417	15,024	9,366	4,808	1,884	592

Figure 8: Revision probabilities of elective total hip arthroplasties with uncemented stems by stem type *(p < 0.0001)*

Tables of the revision and complementary arthroplasty probabilities

When presenting the outcomes by type of arthroplasty in sections 5.1.1 and 5.1.2, by risk factors in section 5.2, and by implant-related outcomes in section 5.3, the following parameters are presented in tables:

Number[6] refers to the total number of followed-up arthroplasties in the given category.

Age refers to the median age and the age quartiles of the patients who received these arthroplasties.

m/f refers to the percentage of male and female patients with these arthroplasties.

BMI refers to the median BMI of patients with the corresponding arthroplasty (not in tables 41 to 45).

Hosp. refers to the number of hospitals documenting these arthroplasties.

In the fields for the **revision probability**, the corresponding 95 % confidence interval (in brackets) and the number of arthroplasties still followed up at the respective point in time (in parentheses) are listed after the actual revision probability in percent – 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.

6 Not all arthroplasties can always be assigned to a category with certainty, for example, if details are not available. The total number of categories presented may therefore be less than the total number of arthroplasties considered.

								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
Elective THAs with uncemented stems		293,428	67 (59 - 75)	40/60	27.8	695		2.7 [2.7; 2.8] (236,763)	3.1 [3.1; 3.2] (187,299)	3.4 [3.3; 3.5] (137,209)	3.6 [3.5; 3.7] (91,609)	3.8 [3.7; 3.8] (51,787)	3.9 [3.8; 4.0] (20,842)	4.1 [4.0; 4.2] (5,796)
Bearing	Ceramic / hXLPE	145,225	67 (59 - 74)	40/60	27.9	605		2.7 [2.6; 2.8] (116,635)	3.1 [3.0; 3.2] (91,782)	3.4 [3.3; 3.5] (66,905)	3.5 [3.4; 3.6] (44,558)	3.7 [3.6; 3.8] (25,262)	3.9 [3.8; 4.0] (9,993)	4.0 [3.9; 4.2] (2,683)
	Ceramic / hXLPE + antiox.	53,197	67 (60 - 75)	41/59	28.0	357		2.6 [2.5; 2.8] (41,157)	3.0 [2.8; 3.1] (31,022)	3.1 [3.0; 3.3] (21,027)	3.2 [3.1; 3.4] (12,400)	3.3 [3.1; 3.5] (5,804)	3.4 [3.2; 3.6] (1,713)	3.4 [3.2; 3.6] (320)
	Ceramic / ceramic	32,218	62 (55 - 69)	43/57	27.7	359		2.1 [2.0; 2.3] (26,695)	2.6 [2.4; 2.7] (21,736)	2.8 [2.6; 3.0] (16,688)	2.9 [2.7; 3.1] (11,891)	3.1 [2.8; 3.3] (7,258)	3.2 [3.0; 3.5] (3,268)	3.3 [3.0; 3.5] (1,025)
	Ceramic / mXLPE	24,211	70 (63 - 76)	41/59	27.7	249		2.6 [2.4; 2.9] (20,221)	3.1 [2.9; 3.4] (16,264)	3.5 [3.2; 3.7] (12,384)	3.8 [3.5; 4.0] (8,726)	3.9 [3.6; 4.2] (5,060)	4.1 [3.8; 4.4] (2,110)	4.1 [3.8; 4.5] (638)
	Ceramic / PE	18,160	71 (63 - 77)	36/64	27.8	443		3.2 [3.0; 3.5] (15,727)	3.9 [3.6; 4.2] (13,433)	4.3 [4.0; 4.7] (10,695)	4.7 [4.4; 5.0] (7,963)	5.0 [4.6; 5.3] (5,006)	5.1 [4.8; 5.5] (2,344)	5.5 [5.1; 6.0] (776)
	Ceramicised metal / hXLPE	7,959	67 (59 - 74)	42/58	28.1	108		2.8 [2.4; 3.2] (6,165)	3.0 [2.7; 3.4] (4,661)	3.3 [2.9; 3.8] (3,059)	3.6 [3.1; 4.1] (1,627)	3.8 [3.3; 4.4] (652)	*4.0 [3.4; 4.8]* (126)	
	Metal / hXLPE	6,639	73 (64 - 79)	42/58	27.8	331		4.1 [3.7; 4.7] (5,335)	4.4 [3.9; 4.9] (4,311)	4.6 [4.1; 5.2] (3,251)	4.9 [4.3; 5.4] (2,233)	5.0 [4.5; 5.6] (1,323)	5.2 [4.6; 5.9] (559)	*5.4 [4.7; 6.2]* (132)
	Metal / mXLPE	2,272	75 (68 - 80)	36/64	27.7	140		4.7 [3.9; 5.7] (1,941)	5.4 [4.5; 6.4] (1,671)	5.7 [4.8; 6.7] (1,350)	5.9 [5.0; 7.0] (1,003)	5.9 [5.0; 7.0] (669)	6.1 [5.1; 7.2] (382)	*6.1 [5.1; 7.2]* (101)
	Metal / PE	1,394	77 (70 - 81)	31/69	27.1	275		5.6 [4.5; 6.9] (1,139)	5.7 [4.6; 7.1] (987)	6.1 [4.9; 7.5] (811)	6.3 [5.1; 7.8] (569)	7.1 [5.7; 8.8] (356)	7.4 [5.9; 9.2] (172)	*8.5 [6.2; 11.6]* (51)
	Metal / hXLPE + antiox.	924	77 (70 - 81)	37/63	27.8	119		5.7 [4.4; 7.4] (742)	6.0 [4.6; 7.7] (601)	6.1 [4.7; 7.9] (451)	6.1 [4.7; 7.9] (271)	6.1 [4.7; 7.9] (168)	*6.1 [4.7; 7.9]* (73)	
	Ceramicised metal / PE	815	74 (66 - 79)	33/67	27.6	54		3.8 [2.6; 5.3] (676)	4.5 [3.3; 6.2] (580)	4.9 [3.6; 6.8] (413)	5.4 [3.9; 7.4] (223)	*5.4 [3.9; 7.4]* (105)		
Acetabular articulating surface	hXLPE	159,827	67 (59 - 74)	40/60	27.9	615		2.8 [2.7; 2.8] (128,138)	3.2 [3.1; 3.3] (100,757)	3.4 [3.3; 3.5] (73,218)	3.6 [3.5; 3.7] (48,421)	3.8 [3.6; 3.9] (27,240)	4.0 [3.8; 4.1] (10,678)	4.1 [3.9; 4.2] (2,830)
	hXLPE + antiox.	54,162	68 (60 - 75)	41/59	28.0	369		2.7 [2.6; 2.8] (41,935)	3.0 [2.9; 3.2] (31,654)	3.2 [3.0; 3.3] (21,500)	3.3 [3.1; 3.4] (12,686)	3.4 [3.2; 3.5] (5,976)	3.4 [3.2; 3.6] (1,787)	3.4 [3.2; 3.6] (333)
	Ceramic	32,222	62 (55 - 69)	43/57	27.7	360		2.1 [2.0; 2.3] (26,698)	2.6 [2.4; 2.7] (21,739)	2.8 [2.6; 3.0] (16,690)	2.9 [2.7; 3.1] (11,892)	3.1 [2.8; 3.3] (7,259)	3.2 [3.0; 3.5] (3,268)	3.3 [3.0; 3.5] (1,025)
	mXLPE	26,501	71 (63 - 77)	40/60	27.7	266		2.8 [2.6; 3.0] (22,178)	3.3 [3.1; 3.6] (17,947)	3.7 [3.4; 3.9] (13,736)	3.9 [3.7; 4.2] (9,729)	4.1 [3.8; 4.3] (5,729)	4.2 [4.0; 4.6] (2,492)	4.3 [4.0; 4.6] (739)
	PE	20,370	72 (64 - 78)	36/64	27.8	499		3.4 [3.2; 3.7] (17,543)	4.0 [3.8; 4.3] (15,001)	4.5 [4.2; 4.8] (11,920)	4.8 [4.5; 5.2] (8,756)	5.1 [4.8; 5.5] (5,468)	5.3 [5.0; 5.7] (2,531)	5.8 [5.3; 6.3] (827)
Head component	Ceramic	273,338	67 (59 - 74)	41/59	27.8	692		2.6 [2.6; 2.7] (220,694)	3.1 [3.0; 3.1] (174,429)	3.3 [3.3; 3.4] (127,836)	3.5 [3.4; 3.6] (85,658)	3.7 [3.6; 3.8] (48,502)	3.9 [3.8; 4.0] (19,514)	4.0 [3.9; 4.1] (5,484)
	Metal	11,250	75 (66 - 80)	39/61	27.7	509		4.6 [4.2; 5.0] (9,170)	4.9 [4.5; 5.3] (7,580)	5.2 [4.7; 5.6] (5,872)	5.4 [4.9; 5.8] (4,081)	5.6 [5.1; 6.0] (2,519)	5.8 [5.3; 6.3] (1,186)	6.0 [5.4; 6.6] (297)
	Ceramicised metal	8,835	67 (59 - 75)	41/59	28.1	111		2.9 [2.5; 3.2] (6,895)	3.2 [2.8; 3.6] (5,286)	3.5 [3.1; 3.9] (3,497)	3.8 [3.3; 4.2] (1,866)	3.9 [3.5; 4.5] (762)	*4.2 [3.6; 4.9]* (142)	
Head size	28 mm	15,655	67 (58 - 75)	10/90	27.2	577		3.2 [3.0; 3.5] (13,052)	3.6 [3.3; 3.9] (10,793)	3.9 [3.6; 4.2] (8,358)	4.1 [3.8; 4.4] (6,003)	4.2 [3.8; 4.5] (3,640)	4.3 [3.9; 4.7] (1,575)	4.4 [4.0; 4.9] (423)
	32 mm	160,749	68 (60 - 75)	32/68	27.7	693		2.8 [2.7; 2.8] (131,732)	3.2 [3.1; 3.3] (105,379)	3.4 [3.3; 3.5] (77,888)	3.6 [3.5; 3.7] (52,187)	3.8 [3.7; 3.9] (29,505)	4.0 [3.8; 4.1] (12,103)	4.1 [4.0; 4.3] (3,417)
	36 mm	116,524	66 (59 - 74)	56/44	28.1	611		2.6 [2.5; 2.7] (91,604)	3.0 [2.9; 3.1] (70,822)	3.3 [3.2; 3.4] (50,732)	3.4 [3.3; 3.6] (33,256)	3.6 [3.5; 3.8] (18,555)	3.8 [3.7; 4.0] (7,135)	3.9 [3.7; 4.1] (1,951)
Head-neck length	XS	2,249	69 (62 - 76)	31/69	27.4	72		2.5 [1.9; 3.3] (1,798)	3.1 [2.4; 4.0] (1,373)	3.5 [2.7; 4.4] (928)	3.7 [2.9; 4.7] (571)	3.9 [3.1; 5.0] (348)	*3.9 [3.1; 5.0]* (143)	
	S	115,397	68 (60 - 75)	33/67	27.5	677		2.4 [2.3; 2.5] (92,740)	2.7 [2.7; 2.8] (72,918)	3.0 [2.9; 3.1] (52,750)	3.2 [3.1; 3.3] (34,469)	3.3 [3.2; 3.4] (18,666)	3.5 [3.3; 3.6] (7,313)	3.6 [3.4; 3.8] (2,055)
	M	109,608	67 (59 - 74)	42/58	28.0	689		2.7 [2.6; 2.8] (88,533)	3.1 [3.0; 3.2] (69,963)	3.3 [3.2; 3.5] (51,206)	3.5 [3.4; 3.6] (34,437)	3.7 [3.6; 3.8] (19,682)	3.8 [3.7; 4.0] (7,894)	3.9 [3.7; 4.1] (2,222)
	L	50,936	66 (59 - 74)	50/50	28.4	686		3.1 [3.0; 3.3] (41,508)	3.6 [3.5; 3.8] (33,430)	3.9 [3.8; 4.1] (25,240)	4.1 [3.9; 4.3] (17,414)	4.2 [4.0; 4.4] (10,328)	4.5 [4.2; 4.7] (4,386)	4.7 [4.4; 5.0] (1,195)
	XL	12,106	66 (58 - 73)	57/43	28.7	603		4.0 [3.7; 4.4] (9,686)	4.5 [4.1; 4.9] (7,662)	4.9 [4.5; 5.3] (5,690)	5.2 [4.8; 5.7] (3,793)	5.6 [5.1; 6.1] (2,230)	6.2 [5.6; 6.8] (871)	6.4 [5.7; 7.3] (246)

Table 38: 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
Head-neck length	XXL	1,245	67 (59 - 74)	62/38	28.9	221		5.4 [4.2; 6.8] (1,018)	6.1 [4.8; 7.6] (821)	6.3 [5.1; 7.9] (636)	6.5 [5.2; 8.1] (453)	6.7 [5.4; 8.4] (271)	*6.7 [5.4; 8.4]* (121)	
Cup type	Modular cup	271,190	67 (59 - 74)	41/59	27.8	690		2.7 [2.6; 2.8] (219,441)	3.1 [3.1; 3.2] (174,026)	3.4 [3.3; 3.5] (127,740)	3.6 [3.5; 3.7] (85,459)	3.7 [3.7; 3.8] (48,447)	3.9 [3.8; 4.0] (19,511)	4.1 [3.9; 4.2] (5,395)
	Monobloc cup	18,639	68 (60 - 76)	39/61	27.8	465		2.3 [2.1; 2.5] (14,711)	2.7 [2.4; 2.9] (11,302)	2.9 [2.6; 3.2] (8,059)	3.0 [2.8; 3.3] (5,245)	3.3 [3.0; 3.6] (2,842)	3.4 [3.0; 3.8] (1,129)	3.4 [3.0; 3.8] (335)
	Revision cup	2,310	64 (54 - 73)	32/68	27.3	304		6.5 [5.6; 7.6] (1,793)	7.7 [6.6; 8.9] (1,412)	7.9 [6.9; 9.2] (1,051)	8.1 [7.0; 9.4] (696)	8.4 [7.3; 9.8] (390)	8.4 [7.3; 9.8] (161)	
	Dual mobility	1,265	73 (63 - 80)	37/63	27.8	213		5.5 [4.4; 7.0] (815)	6.2 [4.9; 7.8] (557)	6.4 [5.1; 8.1] (359)	6.7 [5.3; 8.4] (209)	*6.7 [5.3; 8.4]* (108)		
Stem type	Femoral stem with modular head	249,867	68 (60 - 75)	40/60	27.9	693		2.8 [2.7; 2.9] (202,756)	3.2 [3.1; 3.3] (160,984)	3.5 [3.4; 3.6] (118,191)	3.7 [3.6; 3.8] (79,275)	3.8 [3.7; 3.9] (45,086)	4.0 [3.9; 4.1] (18,402)	4.2 [4.0; 4.3] (5,139)
	Short stem	36,502	62 (55 - 69)	44/56	27.8	351		2.1 [2.0; 2.3] (28,199)	2.5 [2.3; 2.7] (21,417)	2.6 [2.5; 2.8] (15,024)	2.8 [2.6; 3.0] (9,366)	2.9 [2.7; 3.2] (4,808)	3.0 [2.8; 3.3] (1,884)	3.1 [2.8; 3.3] (592)
	Femoral neck prosthesis	4,652	60 (53 - 67)	47/53	27.5	115		2.2 [1.8; 2.6] (3,873)	2.5 [2.1; 3.1] (3,259)	2.9 [2.4; 3.5] (2,653)	3.2 [2.7; 3.8] (1,924)	3.4 [2.8; 4.0] (1,279)	3.4 [2.8; 4.0] (389)	
	Modular stem	1,565	69 (61 - 76)	39/61	27.8	92		4.4 [3.5; 5.5] (1,329)	5.0 [4.0; 6.2] (1,168)	5.5 [4.4; 6.8] (1,001)	5.9 [4.8; 7.2] (836)	5.9 [4.8; 7.2] (509)	*6.3 [5.1; 7.9]* (122)	
	Revision or tumour stem	754	74 (63 - 80)	38/62	26.7	259		10.6 [8.6; 13.1] (533)	12.0 [9.8; 14.7] (408)	12.5 [10.2; 15.3] (290)	12.5 [10.2; 15.3] (177)	*14.4 [11.4; 18.0]* (97)		
Reconstruction shell	Without reconstruction shell	293,100	67 (59 - 75)	40/60	27.8	695		2.7 [2.7; 2.8] (236,509)	3.1 [3.1; 3.2] (187,085)	3.4 [3.3; 3.5] (137,050)	3.6 [3.5; 3.7] (91,506)	3.7 [3.7; 3.8] (51,730)	3.9 [3.8; 4.0] (20,823)	4.1 [3.9; 4.2] (5,789)
	With reconstruction shell	328	69 (58 - 77)	34/66	26.3	139		10.1 [7.3; 14.0] (254)	10.9 [7.9; 14.9] (214)	11.7 [8.6; 15.9] (159)	*12.3 [9.0; 16.7]* (103)	*14.2 [10.3; 19.4]* (57)		
Fixation	Uncemented	289,406	67 (59 - 74)	41/59	27.8	695		2.7 [2.6; 2.8] (233,638)	3.1 [3.0; 3.2] (184,824)	3.4 [3.3; 3.4] (135,364)	3.6 [3.5; 3.6] (90,369)	3.7 [3.6; 3.8] (51,114)	3.9 [3.8; 4.0] (20,597)	4.0 [3.9; 4.1] (5,730)
	Reverse-hybrid	4,022	74 (66 - 80)	24/76	27.2	488		5.3 [4.6; 6.0] (3,125)	5.9 [5.2; 6.7] (2,475)	6.5 [5.7; 7.4] (1,845)	6.6 [5.8; 7.4] (1,240)	7.1 [6.3; 8.1] (673)	7.4 [6.4; 8.4] (245)	*7.4 [6.4; 8.4]* (66)
Elective THAs with cemented stems		80,369	79 (75 - 82)	25/75	26.6	673		2.3 [2.2; 2.4] (63,977)	2.6 [2.5; 2.8] (50,335)	2.9 [2.8; 3.0] (36,689)	3.1 [3.0; 3.2] (24,650)	3.3 [3.2; 3.5] (14,080)	3.5 [3.3; 3.7] (6,068)	3.8 [3.5; 4.0] (1,670)
Bearing	Ceramic / hXLPE	36,042	78 (74 - 82)	25/75	26.6	498		2.0 [1.9; 2.2] (28,141)	2.3 [2.2; 2.5] (21,569)	2.6 [2.4; 2.8] (15,193)	2.8 [2.6; 3.0] (9,954)	3.0 [2.8; 3.2] (5,460)	3.1 [2.9; 3.4] (2,356)	3.3 [3.0; 3.6] (745)
	Ceramic / PE	11,815	79 (75 - 82)	25/75	26.7	438		2.2 [2.0; 2.5] (10,074)	2.7 [2.4; 3.0] (8,495)	2.9 [2.6; 3.2] (6,784)	3.1 [2.8; 3.4] (5,025)	3.2 [2.8; 3.5] (3,168)	3.5 [3.1; 3.9] (1,457)	3.6 [3.1; 4.0] (432)
	Metal / hXLPE	8,851	80 (77 - 83)	28/72	26.7	331		2.9 [2.5; 3.2] (7,060)	3.1 [2.7; 3.5] (5,534)	3.3 [2.9; 3.7] (4,002)	3.5 [3.1; 3.9] (2,537)	3.7 [3.2; 4.1] (1,364)	3.9 [3.4; 4.6] (549)	*3.9 [3.4; 4.6]* (117)
	Metal / PE	6,697	81 (77 - 84)	25/75	26.2	405		3.1 [2.7; 3.6] (5,368)	3.4 [3.0; 3.9] (4,383)	3.6 [3.2; 4.2] (3,359)	4.0 [3.5; 4.5] (2,364)	4.2 [3.7; 4.8] (1,434)	4.2 [3.7; 4.8] (655)	*4.7 [3.9; 5.7]* (133)
	Ceramic / hXLPE + antiox.	6,630	79 (74 - 82)	22/78	26.7	233		2.2 [1.8; 2.6] (5,084)	2.4 [2.1; 2.8] (3,828)	2.8 [2.4; 3.3] (2,450)	3.0 [2.5; 3.5] (1,415)	3.2 [2.7; 3.8] (672)	3.2 [2.7; 3.8] (250)	
	Ceramic / mXLPE	4,314	78 (74 - 82)	22/78	26.4	172		2.6 [2.2; 3.2] (3,378)	3.2 [2.6; 3.8] (2,572)	3.4 [2.9; 4.0] (1,897)	3.8 [3.2; 4.5] (1,314)	4.2 [3.5; 5.0] (841)	4.3 [3.6; 5.2] (372)	*4.6 [3.7; 5.6]* (97)
	Metal / mXLPE	1,927	81 (78 - 84)	24/76	26.0	148		3.7 [2.9; 4.6] (1,548)	4.0 [3.2; 5.0] (1,232)	4.5 [3.6; 5.6] (942)	5.0 [4.0; 6.2] (665)	5.5 [4.4; 6.9] (400)	5.5 [4.4; 6.9] (174)	*7.6 [4.9; 11.5]* (54)
	Ceramic / ceramic	1,366	76 (71 - 79)	24/76	27.1	115		1.5 [1.0; 2.3] (1,194)	1.8 [1.2; 2.6] (1,044)	1.9 [1.3; 2.8] (855)	2.0 [1.3; 2.9] (658)	2.1 [1.4; 3.1] (405)	3.0 [1.8; 5.0] (156)	
	Metal / hXLPE + antiox.	875	80 (77 - 84)	26/74	26.5	116		2.6 [1.7; 3.9] (666)	3.0 [2.0; 4.5] (506)	3.0 [2.0; 4.5] (361)	3.0 [2.0; 4.5] (223)	*3.0 [2.0; 4.5]* (118)		
	Metal / metal	693	56 (51 - 61)	93/7	27.8	29		1.0 [0.5; 2.1] (604)	1.6 [0.8; 2.9] (515)	1.8 [1.0; 3.2] (391)	2.3 [1.3; 4.0] (242)	*2.3 [1.3; 4.0]* (129)		
	Ceramicised metal / hXLPE	540	79 (75 - 82)	24/76	26.8	45		2.7 [1.6; 4.5] (372)	2.7 [1.6; 4.5] (294)	2.7 [1.6; 4.5] (208)	*3.2 [1.9; 5.4]* (97)			
	Ceramicised metal / PE	335	80 (77 - 83)	22/78	26.5	32		2.5 [1.2; 4.9] (266)	3.3 [1.8; 6.1] (207)	3.3 [1.8; 6.1] (159)	*3.3 [1.8; 6.1]* (107)			
Acetabular articulating surface	hXLPE	45,433	79 (75 - 82)	25/75	26.6	536		2.2 [2.1; 2.3] (35,573)	2.5 [2.3; 2.6] (27,397)	2.7 [2.6; 2.9] (19,403)	2.9 [2.7; 3.1] (12,588)	3.1 [2.9; 3.3] (6,848)	3.3 [3.1; 3.5] (2,913)	3.4 [3.1; 3.7] (865)

Table 38 (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
Acetabular articulating surface	PE	18,848	80 (76 - 83)	25/75	26.6	526		2.5 [2.3; 2.8] (15,709)	2.9 [2.7; 3.2] (13,086)	3.2 [2.9; 3.5] (10,303)	3.4 [3.1; 3.7] (7,497)	3.5 [3.2; 3.8] (4,644)	3.7 [3.4; 4.1] (2,122)	3.9 [3.5; 4.4] (565)
	hXLPE + antiox.	7,513	79 (75 - 82)	22/78	26.6	263		2.2 [1.9; 2.6] (5,754)	2.5 [2.2; 2.9] (4,338)	2.9 [2.5; 3.3] (2,813)	3.0 [2.6; 3.5] (1,638)	3.2 [2.8; 3.8] (790)	3.2 [2.8; 3.8] (288)	*3.7 [2.8; 4.9]* (60)
	mXLPE	6,242	79 (75 - 83)	23/77	26.3	220		2.9 [2.5; 3.4] (4,927)	3.4 [3.0; 3.9] (3,804)	3.8 [3.3; 4.3] (2,839)	4.2 [3.6; 4.8] (1,979)	4.6 [4.0; 5.3] (1,241)	4.7 [4.1; 5.4] (546)	5.6 [4.4; 7.0] (151)
	Ceramic	1,366	76 (71 - 79)	24/76	27.1	115		1.5 [1.0; 2.3] (1,194)	1.8 [1.2; 2.6] (1,044)	1.9 [1.3; 2.8] (855)	2.0 [1.3; 2.9] (658)	2.1 [1.4; 3.1] (405)	3.0 [1.8; 5.0] (156)	
	Metal	693	56 (51 - 61)	93/7	27.8	29		1.0 [0.5; 2.1] (604)	1.6 [0.8; 2.9] (515)	1.8 [1.0; 3.2] (391)	2.3 [1.3; 4.0] (242)	*2.3 [1.3; 4.0]* (129)		
Head component	Ceramic	60,243	78 (74 - 82)	24/76	26.6	646		2.1 [2.0; 2.2] (47,932)	2.5 [2.3; 2.6] (37,546)	2.7 [2.6; 2.9] (27,197)	2.9 [2.8; 3.1] (18,375)	3.1 [2.9; 3.3] (10,549)	3.3 [3.1; 3.5] (4,591)	3.5 [3.2; 3.7] (1,346)
	Metal	19,241	80 (77 - 84)	29/71	26.6	554		2.9 [2.7; 3.2] (15,401)	3.2 [3.0; 3.5] (12,283)	3.4 [3.2; 3.7] (9,122)	3.7 [3.4; 4.0] (6,070)	3.9 [3.6; 4.3] (3,465)	4.1 [3.7; 4.4] (1,459)	4.7 [4.1; 5.5] (321)
	Ceramicised metal	884	80 (76 - 83)	23/77	26.8	56		2.8 [1.9; 4.2] (643)	3.2 [2.2; 4.7] (505)	3.2 [2.2; 4.7] (369)	3.4 [2.3; 5.0] (204)	*3.4 [2.3; 5.0]* (65)		
Head size	28 mm	5,297	79 (75 - 83)	13/87	26.1	455		3.2 [2.7; 3.7] (4,109)	3.4 [3.0; 4.0] (3,291)	3.6 [3.1; 4.2] (2,479)	3.8 [3.3; 4.4] (1,739)	3.9 [3.4; 4.5] (1,031)	4.2 [3.5; 4.9] (455)	*4.4 [3.6; 5.2]* (104)
	32 mm	51,782	79 (75 - 82)	21/79	26.6	648		2.4 [2.2; 2.5] (41,963)	2.7 [2.6; 2.8] (33,341)	2.9 [2.8; 3.1] (24,572)	3.2 [3.0; 3.3] (16,781)	3.4 [3.2; 3.6] (9,792)	3.5 [3.3; 3.8] (4,299)	3.8 [3.5; 4.1] (1,195)
	36 mm	22,282	79 (75 - 82)	36/64	26.9	507		2.0 [1.8; 2.2] (17,105)	2.4 [2.2; 2.6] (13,053)	2.7 [2.5; 3.0] (9,167)	2.8 [2.6; 3.1] (5,847)	3.0 [2.8; 3.3] (3,116)	3.2 [2.9; 3.6] (1,267)	3.5 [3.1; 4.0] (365)
Head-neck length	XS	409	79 (76 - 83)	19/81	26.1	41		1.2 [0.5; 2.9] (351)	1.8 [0.9; 3.8] (278)	1.8 [0.9; 3.8] (201)	*1.8 [0.9; 3.8]* (122)	*3.1 [1.2; 7.6]* (61)		
	S	26,315	79 (75 - 82)	18/82	26.3	614		1.9 [1.8; 2.1] (20,603)	2.2 [2.1; 2.4] (15,813)	2.4 [2.2; 2.6] (11,121)	2.6 [2.4; 2.8] (7,370)	2.8 [2.6; 3.0] (4,066)	2.9 [2.7; 3.2] (1,696)	3.3 [2.9; 3.9] (479)
	M	31,420	79 (75 - 82)	24/76	26.6	643		2.1 [1.9; 2.2] (25,129)	2.4 [2.2; 2.6] (19,873)	2.7 [2.5; 2.9] (14,638)	2.9 [2.7; 3.1] (9,987)	3.1 [2.9; 3.3] (5,830)	3.2 [3.0; 3.5] (2,550)	3.5 [3.2; 3.9] (755)
	L	15,453	79 (75 - 82)	32/68	27.0	596		2.8 [2.6; 3.1] (12,541)	3.2 [2.9; 3.5] (10,191)	3.5 [3.2; 3.8] (7,665)	3.7 [3.4; 4.0] (5,224)	3.8 [3.5; 4.2] (3,005)	4.0 [3.7; 4.4] (1,290)	4.2 [3.7; 4.7] (330)
	XL	3,005	79 (74 - 82)	42/58	27.3	430		3.9 [3.2; 4.6] (2,377)	4.6 [3.9; 5.4] (1,856)	4.9 [4.2; 5.8] (1,386)	5.3 [4.5; 6.3] (881)	5.8 [4.8; 6.9] (491)	5.8 [4.8; 6.9] (199)	
	XXL	352	78 (73 - 82)	42/58	27.4	132		5.0 [3.2; 8.0] (292)	5.0 [3.2; 8.0] (242)	5.4 [3.4; 8.5] (202)	5.4 [3.4; 8.5] (161)	*5.4 [3.4; 8.5]* (93)		
Cup type	Modular cup	57,129	78 (75 - 82)	25/75	26.7	652		2.2 [2.1; 2.3] (45,103)	2.5 [2.4; 2.6] (35,024)	2.8 [2.6; 2.9] (25,154)	3.0 [2.8; 3.1] (16,636)	3.1 [3.0; 3.3] (9,222)	3.3 [3.1; 3.5] (3,883)	3.6 [3.3; 3.9] (1,019)
	Monobloc cup	20,046	80 (76 - 83)	24/76	26.6	538		2.2 [2.0; 2.4] (16,795)	2.6 [2.4; 2.8] (13,831)	2.8 [2.6; 3.1] (10,562)	3.1 [2.8; 3.3] (7,448)	3.3 [3.0; 3.6] (4,560)	3.5 [3.2; 3.8] (2,067)	3.7 [3.3; 4.2] (623)
	Dual mobility	1,649	80 (75 - 84)	26/74	25.7	240		3.0 [2.3; 4.0] (1,018)	3.3 [2.5; 4.4] (669)	3.6 [2.7; 4.8] (402)	4.0 [2.9; 5.5] (214)	*4.0 [2.9; 5.5]* (95)		
	Revision cup	1,219	78 (73 - 83)	31/69	26.0	282		8.8 [7.3; 10.6] (800)	9.3 [7.7; 11.2] (596)	10.1 [8.4; 12.1] (409)	10.7 [8.9; 12.9] (245)	*11.1 [9.1; 13.4]* (141)	*11.1 [9.1; 13.4]* (63)	
	Resurfacing cup	321	55 (51 - 59)	99/1	27.2	21		1.3 [0.5; 3.3] (261)	2.2 [1.0; 4.8] (215)	2.2 [1.0; 4.8] (162)	*2.2 [1.0; 4.8]* (107)	*2.2 [1.0; 4.8]* (62)		
Stem type	Femoral stem with modular head	78,953	79 (75 - 82)	25/75	26.6	669		2.3 [2.2; 2.4] (62,883)	2.6 [2.5; 2.8] (49,457)	2.9 [2.8; 3.0] (36,053)	3.1 [3.0; 3.2] (24,278)	3.3 [3.1; 3.4] (13,899)	3.5 [3.3; 3.7] (6,016)	3.7 [3.5; 4.0] (1,663)
	Surface replacement	693	56 (51 - 61)	93/7	27.8	29		1.0 [0.5; 2.1] (604)	1.6 [0.8; 2.9] (515)	1.8 [1.0; 3.2] (391)	2.3 [1.3; 4.0] (242)	*2.3 [1.3; 4.0]* (129)		
	Revision or tumour stem	348	79.5 (72 - 84)	27/73	25.2	150		9.2 [6.5; 12.9] (217)	9.6 [6.8; 13.4] (157)	*9.6 [6.8; 13.4]* (117)	*9.6 [6.8; 13.4]* (67)			
	Modular stem	342	80 (77 - 83)	26/74	27.4	6		0.9 [0.3; 2.8] (273)	1.3 [0.5; 3.4] (206)	*1.8 [0.7; 4.4]* (128)	*1.8 [0.7; 4.4]* (63)			
Reconstruction shell	Without reconstruction shell	79,844	79 (75 - 82)	25/75	26.6	671		2.3 [2.2; 2.4] (63,652)	2.6 [2.5; 2.7] (50,103)	2.8 [2.7; 3.0] (36,524)	3.0 [2.9; 3.2] (24,547)	3.2 [3.1; 3.4] (14,020)	3.4 [3.3; 3.6] (6,041)	3.7 [3.5; 3.9] (1,662)
	With reconstruction shell	525	79 (74 - 84)	34/66	25.1	193		11.3 [8.8; 14.6] (325)	12.6 [9.8; 16.0] (232)	13.4 [10.5; 17.0] (165)	*14.1 [11.0; 18.0]* (103)	*14.1 [11.0; 18.0]* (60)		

Table 38 (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
Fixation	Hybrid	61,016	78 (74 - 82)	26/74	26.7	661		2.2 [2.1; 2.3] (48,236)	2.5 [2.4; 2.7] (37,560)	2.8 [2.6; 2.9] (27,007)	3.0 [2.8; 3.1] (17,848)	3.2 [3.0; 3.4] (9,921)	3.4 [3.2; 3.6] (4,178)	3.7 [3.4; 4.0] (1,075)
	Cemented	19,353	80 (76 - 84)	23/77	26.3	566		2.6 [2.4; 2.9] (15,741)	3.0 [2.8; 3.3] (12,775)	3.3 [3.0; 3.5] (9,682)	3.5 [3.2; 3.8] (6,802)	3.7 [3.4; 4.0] (4,159)	3.8 [3.5; 4.2] (1,890)	4.1 [3.6; 4.6] (595)
Non-elective THAs		23,575	76 (68 - 82)	30/70	24.7	632		6.1 [5.8; 6.4] (15,905)	6.7 [6.4; 7.0] (11,492)	7.1 [6.8; 7.5] (7,615)	7.5 [7.1; 7.9] (4,664)	7.9 [7.4; 8.3] (2,370)	8.0 [7.5; 8.5] (833)	8.4 [7.7; 9.2] (158)
Bearing	Ceramic / hXLPE	8,290	74 (66 - 80)	31/69	24.7	450		6.2 [5.7; 6.8] (5,547)	6.8 [6.2; 7.4] (3,902)	7.2 [6.6; 7.8] (2,501)	7.6 [6.9; 8.3] (1,478)	7.8 [7.1; 8.5] (765)	7.8 [7.1; 8.5] (246)	
	Ceramic / hXLPE + antiox.	3,160	75 (67 - 80)	33/67	24.8	213		6.3 [5.5; 7.2] (2,073)	6.8 [5.9; 7.8] (1,403)	7.0 [6.1; 8.1] (874)	7.3 [6.3; 8.4] (464)	7.3 [6.3; 8.4] (216)	*7.3 [6.3; 8.4]* (81)	
	Metal / PE	2,823	81 (76 - 86)	26/74	24.4	290		6.2 [5.4; 7.2] (1,820)	7.1 [6.2; 8.2] (1,356)	7.7 [6.6; 8.9] (887)	8.2 [7.1; 9.5] (551)	8.6 [7.3; 10.0] (300)	*9.2 [7.6; 11.1]* (117)	
	Ceramic / PE	2,779	77 (70 - 83)	27/73	24.6	328		5.4 [4.6; 6.3] (1,971)	6.2 [5.3; 7.2] (1,513)	6.5 [5.6; 7.6] (1,082)	6.9 [5.9; 8.1] (724)	7.5 [6.3; 8.8] (388)	7.5 [6.3; 8.8] (152)	
	Metal / hXLPE	2,551	79 (74 - 84)	26/74	24.5	254		5.1 [4.3; 6.1] (1,704)	5.8 [4.9; 6.9] (1,205)	6.4 [5.4; 7.5] (788)	6.4 [5.4; 7.5] (486)	6.6 [5.5; 7.9] (213)	*7.1 [5.8; 8.7]* (64)	
	Ceramic / mXLPE	1,501	74 (67 - 79)	33/67	25.0	153		6.1 [5.0; 7.5] (1,123)	6.6 [5.4; 8.0] (873)	7.4 [6.1; 8.9] (617)	8.1 [6.7; 9.9] (385)	8.8 [7.1; 10.9] (190)	*8.8 [7.1; 10.9]* (75)	
	Ceramic / ceramic	874	68 (61 - 77)	33/67	24.9	130		5.4 [4.1; 7.2] (659)	5.7 [4.3; 7.6] (528)	6.2 [4.7; 8.2] (388)	6.2 [4.7; 8.2] (280)	7.5 [5.5; 10.0] (156)	*7.5 [5.5; 10.0]* (58)	
	Metal / mXLPE	780	80 (75 - 85)	29/71	24.8	103		8.5 [6.7; 10.8] (515)	8.9 [7.0; 11.2] (408)	9.2 [7.2; 11.6] (292)	9.9 [7.8; 12.5] (194)	*9.9 [7.8; 12.5]* (105)		
	Metal / hXLPE + antiox.	349	78 (72 - 84)	32/68	24.8	81		7.2 [4.8; 10.6] (203)	*7.2 [4.8; 10.6]* (121)	*8.0 [5.3; 12.0]* (69)				
Acetabular articulating surface	hXLPE	11,102	76 (68 - 81)	30/70	24.7	480		6.0 [5.5; 6.4] (7,404)	6.6 [6.1; 7.1] (5,204)	7.0 [6.5; 7.6] (3,348)	7.3 [6.8; 7.9] (1,994)	7.5 [6.9; 8.2] (987)	7.6 [7.0; 8.3] (311)	*8.0 [7.1; 9.1]* (59)
	PE	5,669	79 (73 - 85)	26/74	24.5	412		5.8 [5.2; 6.5] (3,839)	6.7 [6.0; 7.4] (2,901)	7.1 [6.4; 7.9] (1,992)	7.5 [6.8; 8.4] (1,284)	8.0 [7.1; 8.9] (691)	8.3 [7.3; 9.3] (269)	
	hXLPE + antiox.	3,513	75 (67 - 81)	33/67	24.8	234		6.4 [5.6; 7.3] (2,278)	6.8 [6.0; 7.8] (1,525)	7.2 [6.3; 8.2] (944)	7.4 [6.5; 8.4] (506)	7.4 [6.5; 8.4] (229)	*7.4 [6.5; 8.4]* (86)	
	mXLPE	2,282	76 (69 - 81)	31/69	24.9	178		6.9 [5.9; 8.1] (1,639)	7.4 [6.3; 8.6] (1,281)	8.0 [6.9; 9.3] (909)	8.7 [7.5; 10.2] (579)	9.2 [7.8; 10.8] (295)	*9.2 [7.8; 10.8]* (105)	
	Ceramic	875	68 (61 - 77)	33/67	24.9	131		5.4 [4.0; 7.2] (660)	5.7 [4.3; 7.5] (528)	6.2 [4.7; 8.2] (388)	6.2 [4.7; 8.2] (280)	7.5 [5.5; 10.0] (156)	*7.5 [5.5; 10.0]* (58)	
Head component	Ceramic	16,649	75 (67 - 80)	31/69	24.8	615		6.0 [5.7; 6.4] (11,401)	6.6 [6.2; 7.0] (8,231)	7.0 [6.6; 7.5] (5,465)	7.4 [7.0; 7.9] (3,333)	7.8 [7.3; 8.3] (1,716)	7.8 [7.3; 8.3] (613)	*8.4 [7.4; 9.4]* (121)
	Metal	6,593	80 (75 - 85)	27/73	24.5	439		6.1 [5.6; 6.8] (4,300)	6.9 [6.2; 7.5] (3,131)	7.4 [6.7; 8.1] (2,067)	7.7 [7.0; 8.5] (1,291)	8.0 [7.2; 8.8] (642)	8.4 [7.5; 9.5] (219)	
	Ceramicised metal	331	73 (64 - 80)	35/65	24.9	45		7.0 [4.7; 10.5] (202)	*8.1 [5.5; 12.0]* (129)	*8.1 [5.5; 12.0]* (82)				
Head size	28 mm	2,749	78 (70 - 84)	18/82	24.0	406		7.1 [6.1; 8.1] (1,744)	7.7 [6.7; 8.8] (1,275)	8.2 [7.2; 9.4] (839)	8.7 [7.6; 10.0] (526)	8.9 [7.7; 10.3] (280)	*9.2 [7.9; 10.8]* (124)	
	32 mm	13,366	76 (69 - 82)	25/75	24.6	597		5.9 [5.5; 6.4] (9,352)	6.6 [6.2; 7.1] (6,972)	7.0 [6.6; 7.5] (4,727)	7.4 [6.9; 7.9] (2,983)	7.7 [7.2; 8.3] (1,564)	7.9 [7.3; 8.5] (530)	*8.5 [7.5; 9.6]* (105)
	36 mm	7,230	76 (68 - 81)	44/56	25.0	445		6.0 [5.4; 6.6] (4,678)	6.5 [5.9; 7.1] (3,175)	7.0 [6.3; 7.6] (2,016)	7.4 [6.7; 8.1] (1,142)	7.7 [7.0; 8.6] (520)	7.7 [7.0; 8.6] (178)	
Head-neck length	S	6,119	76 (68 - 82)	23/77	24.4	542		5.2 [4.7; 5.8] (4,176)	5.7 [5.1; 6.3] (2,942)	6.1 [5.5; 6.8] (1,917)	6.4 [5.7; 7.1] (1,156)	6.8 [6.0; 7.6] (568)	7.1 [6.2; 8.3] (209)	*7.7 [6.3; 9.4]* (50)
	M	8,955	76 (69 - 82)	28/72	24.7	587		5.7 [5.2; 6.2] (6,029)	6.2 [5.7; 6.8] (4,363)	6.7 [6.2; 7.3] (2,910)	7.3 [6.7; 8.0] (1,768)	7.3 [6.7; 8.0] (951)	7.3 [6.7; 8.0] (316)	*8.0 [6.6; 9.7]* (56)
	L	5,516	76 (68 - 81)	35/65	24.9	550		6.8 [6.1; 7.5] (3,784)	7.6 [6.9; 8.4] (2,832)	7.9 [7.2; 8.7] (1,916)	8.1 [7.3; 8.9] (1,238)	8.5 [7.7; 9.5] (624)	8.5 [7.7; 9.5] (226)	
	XL	1,627	75 (67 - 81)	45/55	25.1	388		7.5 [6.3; 9.0] (1,077)	7.9 [6.7; 9.5] (778)	8.6 [7.2; 10.2] (527)	8.8 [7.4; 10.4] (324)	9.6 [7.9; 11.7] (158)	*9.6 [7.9; 11.7]* (59)	
Cup type	Modular cup	16,688	75 (67 - 80)	31/69	24.8	610		6.4 [6.0; 6.7] (11,476)	6.9 [6.5; 7.3] (8,341)	7.4 [6.9; 7.8] (5,547)	7.7 [7.3; 8.2] (3,391)	8.2 [7.6; 8.7] (1,725)	8.2 [7.7; 8.8] (625)	*8.8 [7.9; 9.7]* (125)

Table 38 (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
Cup type	Monobloc cup	5,232	80 (74 - 85)	25/75	24.4	394		5.0 [4.4; 5.6] (3,499)	5.8 [5.1; 6.5] (2,546)	6.1 [5.4; 6.9] (1,722)	6.4 [5.7; 7.2] (1,099)	6.6 [5.8; 7.4] (577)	6.9 [5.9; 8.1] (187)	
	Dual mobility	1,295	81 (74 - 86)	31/69	24.4	189		6.4 [5.1; 8.0] (695)	7.0 [5.6; 8.7] (428)	7.4 [5.9; 9.2] (225)	*8.6 [6.5; 11.2]* (101)			
	Revision cup	305	79 (70 - 85)	28/72	24.4	102		7.2 [4.7; 11.0] (199)	*9.0 [6.0; 13.3]* (145)	*10.5 [7.0; 15.4]* (96)	*10.5 [7.0; 15.4]* (55)			
Stem type	Femoral stem with modular head	22,624	76 (68 - 82)	30/70	24.7	629		6.0 [5.6; 6.3] (15,333)	6.6 [6.2; 6.9] (11,084)	7.0 [6.7; 7.4] (7,337)	7.4 [7.0; 7.8] (4,499)	7.8 [7.3; 8.2] (2,288)	7.9 [7.4; 8.4] (804)	8.3 [7.6; 9.1] (151)
	Revision or tumour stem	473	79 (72 - 86)	26/74	25.3	226		11.8 [9.0; 15.4] (258)	13.2 [10.2; 17.1] (190)	*13.7 [10.6; 17.7]* (135)	*13.7 [10.6; 17.7]* (83)			
	Short stem	304	67 (60 - 77)	35/65	24.1	68		5.8 [3.6; 9.3] (200)	*5.8 [3.6; 9.3]* (140)	*6.5 [4.0; 10.4]* (91)	*6.5 [4.0; 10.4]* (51)			
Reconstruction shell	Without reconstruction shell	23,498	76 (68 - 82)	30/70	24.7	632		6.1 [5.8; 6.4] (15,855)	6.7 [6.3; 7.0] (11,462)	7.1 [6.7; 7.5] (7,596)	7.5 [7.1; 7.9] (4,652)	7.8 [7.4; 8.3] (2,362)	7.9 [7.5; 8.4] (830)	8.3 [7.6; 9.1] (157)
Fixation	Uncemented	10,602	72 (64 - 78)	34/66	24.8	591		7.2 [6.7; 7.7] (7,362)	7.7 [7.2; 8.2] (5,459)	8.1 [7.5; 8.7] (3,717)	8.5 [7.9; 9.1] (2,285)	9.0 [8.3; 9.6] (1,169)	9.0 [8.3; 9.6] (426)	*9.2 [8.4; 10.1]* (77)
	Hybrid	7,405	78 (72 - 82)	27/73	24.7	534		5.0 [4.5; 5.5] (4,973)	5.6 [5.0; 6.2] (3,500)	6.2 [5.6; 6.9] (2,259)	6.7 [6.0; 7.4] (1,366)	6.9 [6.2; 7.7] (672)	7.1 [6.3; 7.9] (234)	*8.0 [6.2; 10.2]* (53)
	Cemented	4,832	81 (76 - 86)	24/76	24.4	401		4.7 [4.1; 5.4] (3,114)	5.4 [4.8; 6.2] (2,208)	5.6 [5.0; 6.4] (1,418)	5.9 [5.2; 6.7] (867)	6.0 [5.3; 6.9] (450)	*6.5 [5.4; 7.8]* (143)	
	Reverse-hybrid	565	76 (67 - 83)	27/73	25.2	211		9.3 [7.1; 12.1] (362)	10.3 [7.9; 13.3] (251)	11.2 [8.6; 14.5] (164)	*11.2 [8.6; 14.5]* (106)	*12.1 [9.1; 15.9]* (55)		
Hip hemiarthroplasties		47,898	84 (80 - 89)	28/72	24.2	556		4.6 [4.4; 4.8] (25,355)	4.9 [4.7; 5.1] (16,238)	5.1 [4.8; 5.3] (9,513)	5.2 [5.0; 5.5] (4,957)	5.3 [5.1; 5.6] (2,183)	5.4 [5.1; 5.8] (638)	*5.4 [5.1; 5.8]* (86)
Head component	Metal	45,541	84 (80 - 89)	28/72	24.2	543		4.6 [4.4; 4.8] (24,019)	4.8 [4.6; 5.0] (15,341)	5.0 [4.8; 5.2] (8,968)	5.1 [4.9; 5.4] (4,656)	5.2 [5.0; 5.5] (2,067)	5.4 [5.0; 5.7] (620)	*5.4 [5.0; 5.7]* (84)
	Ceramic	1,701	84 (79 - 89)	29/71	24.6	219		5.3 [4.3; 6.6] (994)	5.8 [4.7; 7.1] (636)	6.0 [4.8; 7.4] (372)	6.7 [5.2; 8.5] (202)	*6.7 [5.2; 8.5]* (78)		
Head size	28 mm	44,538	84 (80 - 89)	27/73	24.2	546		4.6 [4.4; 4.8] (23,464)	4.8 [4.6; 5.0] (15,012)	5.0 [4.7; 5.2] (8,823)	5.1 [4.9; 5.4] (4,584)	5.2 [4.9; 5.5] (2,006)	5.3 [5.0; 5.7] (580)	*5.3 [5.0; 5.7]* (78)
	32 mm	2,229	83 (79 - 88)	49/51	24.8	96		5.4 [4.5; 6.5] (1,341)	5.9 [4.9; 7.1] (889)	6.1 [5.1; 7.4] (517)	6.6 [5.4; 7.9] (286)	*6.6 [5.4; 7.9]* (136)		
Head-neck length	XS	368	84 (80 - 89)	31/69	23.9	24		3.6 [2.0; 6.2] (238)	3.6 [2.0; 6.2] (153)	*3.6 [2.0; 6.2]* (80)				
	S	15,993	84 (80 - 89)	24/76	24.1	481		4.4 [4.1; 4.7] (8,315)	4.6 [4.3; 5.0] (5,099)	4.7 [4.4; 5.1] (2,865)	4.8 [4.5; 5.2] (1,455)	5.0 [4.5; 5.4] (621)	5.0 [4.5; 5.4] (173)	
	M	20,932	84 (80 - 89)	29/71	24.3	505		4.4 [4.1; 4.7] (11,118)	4.6 [4.3; 4.9] (7,220)	4.7 [4.4; 5.1] (4,336)	4.9 [4.5; 5.2] (2,344)	4.9 [4.5; 5.2] (1,051)	5.0 [4.6; 5.4] (314)	
	L	4,475	84 (79 - 89)	35/65	24.6	432		5.5 [4.8; 6.3] (2,358)	5.9 [5.2; 6.7] (1,620)	5.9 [5.2; 6.8] (1,073)	6.2 [5.4; 7.1] (629)	6.4 [5.5; 7.4] (271)	*7.1 [5.6; 8.8]* (85)	
	XL	728	84 (79 - 89)	36/64	25.0	229		5.7 [4.2; 7.9] (390)	6.3 [4.6; 8.6] (273)	7.1 [5.2; 9.8] (180)	*7.7 [5.5; 10.6]* (106)			
Stem type	Femoral stem with modular head	47,078	84 (80 - 89)	28/72	24.2	551		4.6 [4.4; 4.8] (24,968)	4.8 [4.6; 5.0] (15,997)	5.0 [4.8; 5.2] (9,375)	5.1 [4.9; 5.4] (4,894)	5.2 [5.0; 5.5] (2,153)	5.3 [5.0; 5.6] (631)	*5.3 [5.0; 5.6]* (85)
	Revision or tumour stem	644	83 (75 - 88)	30/70	25.7	196		9.1 [6.9; 11.8] (305)	9.8 [7.5; 12.8] (196)	*9.8 [7.5; 12.8]* (113)	*9.8 [7.5; 12.8]* (56)			
Fixation	Cemented	41,708	85 (80 - 89)	28/72	24.2	537		4.3 [4.1; 4.5] (22,028)	4.5 [4.3; 4.7] (14,108)	4.7 [4.4; 4.9] (8,272)	4.8 [4.5; 5.0] (4,338)	4.9 [4.6; 5.1] (1,925)	4.9 [4.6; 5.1] (575)	*4.9 [4.6; 5.1]* (79)
	Uncemented	5,986	83 (78 - 88)	33/67	24.6	334		6.9 [6.2; 7.6] (3,222)	7.4 [6.7; 8.2] (2,067)	7.7 [6.9; 8.5] (1,196)	8.3 [7.4; 9.3] (597)	8.3 [7.4; 9.3] (249)	*9.1 [7.5; 11.1]* (62)	

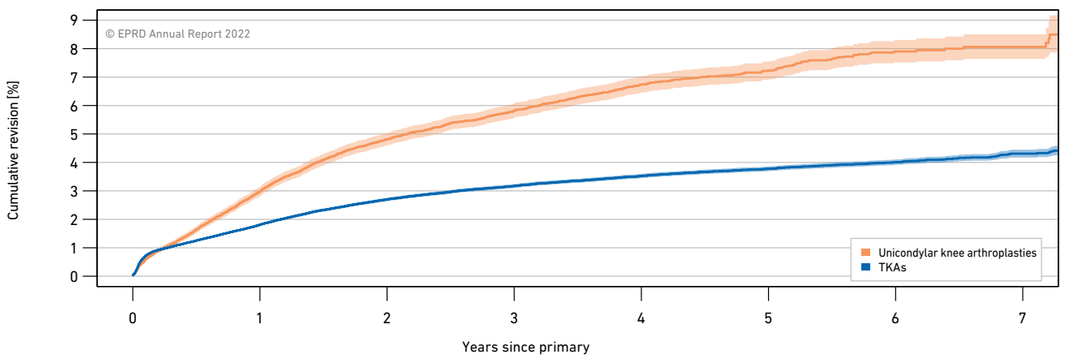
Table 38 (continued)

5.1.2 Comparison by type of knee arthroplasty

The most common type of knee replacement is total knee arthroplasty, where both the medial and lateral parts of the joint are replaced. In contrast, unicondylar arthroplasties only replace the affected 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 starting point for any subsequent reoperations that may become necessary.

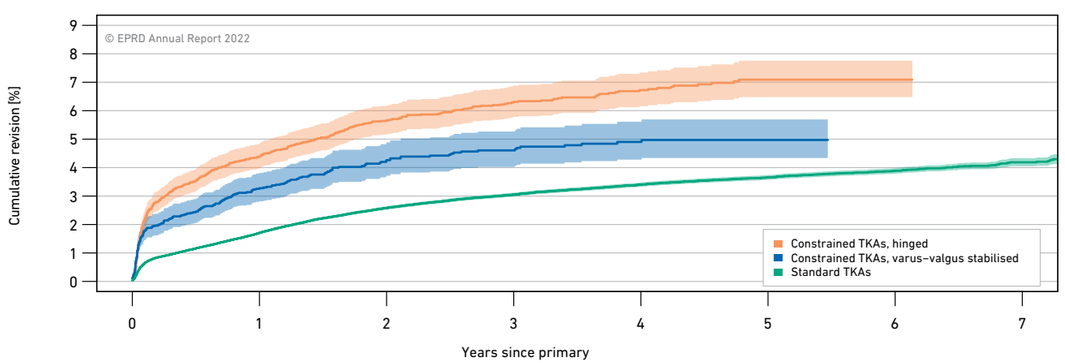
However, as is evident from Figure 9, unicondylar arthroplasties have a revision probability that is almost twice that of total knee arthroplasties.

Only a small number of patellofemoral resurfacing procedures have been registered in the EPRD. Their revision probabilities are significantly higher than total knee arthroplasties and strictly unicondylar arthroplasties (see Table 39 at the end of this section).



Numbers at risk								
Unicondylar knee arthroplasties	42,899	34,398	26,339	18,760	11,958	6,421	2,413	800
TKAs	307,455	251,933	199,372	145,952	96,805	54,503	22,424	5,955

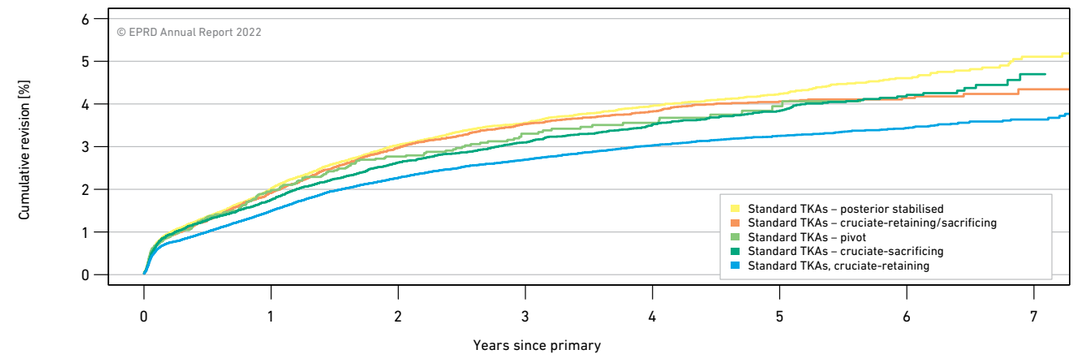
Figure 9: Revision probabilities of total and unicondylar knee arthroplasties *(p < 0.0001)*



Numbers at risk								
Constrained TKAs, hinged	8,979	7,065	5,513	3,962	2,595	1,397	592	
Constrained TKAs, varus–valgus stabilised	5,220	4,069	3,116	2,191	1,394	714		
Standard TKAs	293,256	240,799	190,743	139,799	92,816	52,392	21,551	5,746

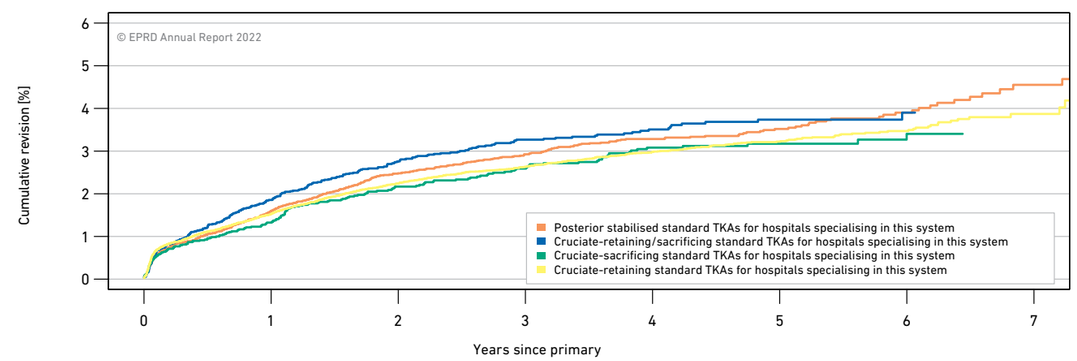
Figure 10: Revision probabilities of total knee arthroplasties by degree of constraint *(p < 0.0001)*

Total knee arthroplasties can be further differentiated according to their degree of stabilisation. The predominant 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, and are therefore also called constrained systems. In the EPRD, revision probabilities of these systems increase, in line with the different baseline conditions, as the degree of stabilisation increases (Figure 10).



Numbers at risk								
Standard TKAs – posterior stabilised	64,549	51,289	39,464	27,854	17,863	9,894	4,383	1,515
Standard TKAs – cruciate-retaining/sacrificing	36,379	30,594	24,599	18,252	12,197	6,835	2,712	677
Standard TKAs – pivot	6,697	5,048	3,729	2,626	1,684	848		
Standard TKAs – cruciate-sacrificing	37,590	30,975	24,597	18,463	12,475	6,956	2,601	575
Standard TKAs, cruciate-retaining	148,041	122,893	98,354	72,604	48,597	27,859	11,563	2,943

Figure 11: Revision probabilities of standard total knee arthroplasties by knee system *(p < 0.0001)*. Confidence intervals have been omitted for clarity.



Numbers at risk								
Posterior stabilised standard TKAs for hospitals specialising in this system	18,692	15,353	12,012	8,887	5,987	3,608	1,829	819
Cruciate-retaining/sacrificing standard TKAs for hospitals specialising in this system	9,021	7,733	6,306	4,628	2,985	1,608	553	
Cruciate-sacrificing standard TKAs for hospitals specialising in this system	7,400	6,067	4,896	3,902	2,755	1,595	710	
Cruciate-retaining standard TKAs for hospitals specialising in this system	48,168	40,414	32,340	23,797	15,898	9,219	3,802	918

Figure 12: Revision probabilities of standard total knee arthroplasties by knee system for hospitals that specialise in a single system *(p = 0.04)*. Confidence intervals have been omitted for clarity.

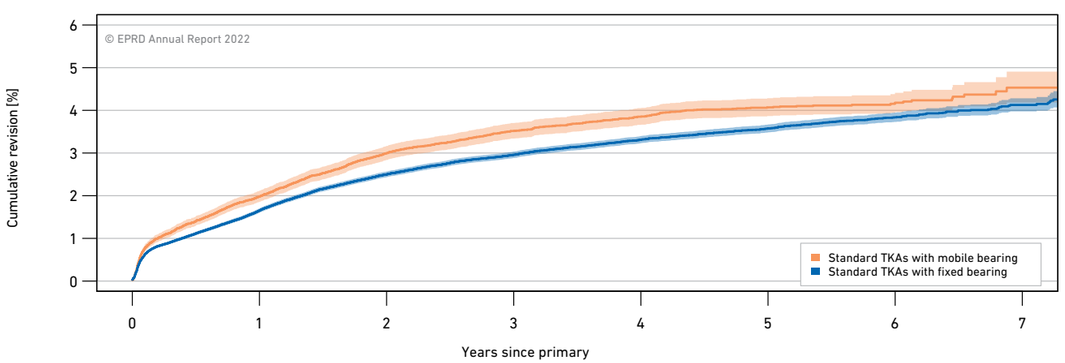
Differences between the various knee systems are also evident in the group of standard TKAs. Cruciate retaining systems have significantly lower revision probabilities (Figure 11). However, it should be noted that in some hospitals, pure cruciate retaining systems are probably only used in patients with 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 one particular knee system and implanting this in at least 90 % of the standard TKAs analysed (see also Page 22), the differences between the systems are generally smaller and practically non-existent for cruciate-retaining and cruciate-sacrificing systems (Figure 12).

During the first few years, total knee arthroplasties with fixed bearings have significantly lower revision probabilities than systems with mobile bearings (Figure 13). This is the case even in hospitals specialising in mobile bearings and using them in at least 90 % of their standard TKAs (see Page 22).

In brief:

- Revision probabilities of unicondylar arthroplasties are almost twice as high as those of total knee arthroplasties
- Higher probability of revision in the period analysed for total knee arthroplasties with mobile bearings than for those with fixed bearings

Table 39 summarises revision probabilities for different types of knee arthroplasties. The "Specific analysis" section on page 146 takes a more detailed look at the outcomes of knee arthroplasties with and without primary patellar resurfacing.



Numbers at risk								
Standard TKAs with mobile bearing	46,312	39,739	32,932	25,434	17,744	10,224	3,790	833
Standard TKAs with fixed bearing	246,944	201,060	157,811	114,365	75,072	42,168	17,761	4,913

Figure 13: Revision probabilities of standard total knee arthroplasties by bearing mobility *($p < 0.0001$)*

								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
Standard TKAs		293,256	70 (62 - 77)	34/66	30.1	684		1.7 [1.7; 1.8] (240,799)	2.6 [2.5; 2.6] (190,743)	3.1 [3.0; 3.1] (139,799)	3.4 [3.3; 3.5] (92,816)	3.7 [3.6; 3.7] (52,392)	3.9 [3.8; 4.0] (21,551)	4.2 [4.0; 4.3] (5,746)
Bearing mobility	Fixed bearing	246,944	70 (62 - 77)	34/66	30.1	663		1.7 [1.6; 1.7] (201,060)	2.5 [2.4; 2.6] (157,811)	3.0 [2.9; 3.0] (114,365)	3.3 [3.2; 3.4] (75,072)	3.6 [3.5; 3.7] (42,168)	3.8 [3.7; 3.9] (17,761)	4.1 [4.0; 4.3] (4,913)
	Mobile bearing	46,312	71 (63 - 77)	34/66	30.0	320		2.0 [1.9; 2.1] (39,739)	3.0 [2.8; 3.2] (32,932)	3.5 [3.3; 3.7] (25,434)	3.9 [3.7; 4.1] (17,744)	4.1 [3.9; 4.3] (10,224)	4.2 [4.0; 4.4] (3,790)	4.5 [4.2; 4.9] (833)
Bearing	Uncoated metal / PE	121,464	71 (63 - 77)	36/64	30.1	490		1.6 [1.5; 1.7] (100,922)	2.3 [2.2; 2.4] (80,862)	2.7 [2.6; 2.8] (60,523)	3.1 [2.9; 3.2] (40,818)	3.3 [3.2; 3.4] (23,728)	3.6 [3.4; 3.7] (10,075)	3.9 [3.7; 4.1] (2,845)
	Uncoated metal / mXLPE	105,119	71 (63 - 77)	36/64	30.0	429		1.8 [1.7; 1.9] (88,330)	2.7 [2.6; 2.8] (71,092)	3.2 [3.1; 3.3] (52,107)	3.6 [3.4; 3.7] (34,771)	3.8 [3.7; 4.0] (19,606)	4.0 [3.8; 4.1] (7,902)	4.2 [4.0; 4.4] (1,984)
	Uncoated metal / hXLPE	24,532	68 (61 - 76)	31/69	30.4	354		1.7 [1.5; 1.8] (19,218)	2.5 [2.3; 2.7] (14,814)	2.8 [2.6; 3.1] (10,419)	3.1 [2.9; 3.4] (6,580)	3.3 [3.0; 3.6] (3,566)	3.8 [3.4; 4.2] (1,548)	3.9 [3.5; 4.4] (357)
	Uncoated metal / hXLPE + antiox.	17,372	69 (61 - 76)	38/62	30.3	211		1.7 [1.5; 1.9] (12,298)	2.5 [2.3; 2.8] (8,441)	3.0 [2.7; 3.3] (5,428)	3.4 [3.0; 3.8] (3,432)	3.7 [3.3; 4.1] (1,828)	3.7 [3.3; 4.2] (711)	3.9 [3.4; 4.6] (190)
	Coated metal / mXLPE	8,865	66 (58 - 74)	14/86	31.2	341		2.1 [1.8; 2.5] (7,352)	3.8 [3.4; 4.2] (5,619)	4.5 [4.0; 5.0] (3,998)	4.9 [4.4; 5.5] (2,484)	5.3 [4.7; 6.0] (1,229)	5.9 [5.2; 6.8] (467)	*6.4 [5.5; 7.5]* (96)
	Ceramicised metal / PE	6,457	65 (58 - 73)	17/83	31.2	224		1.5 [1.2; 1.9] (4,975)	2.7 [2.3; 3.1] (3,792)	3.2 [2.7; 3.7] (2,731)	3.6 [3.0; 4.1] (1,792)	3.7 [3.2; 4.4] (1,039)	3.8 [3.3; 4.5] (506)	4.9 [3.8; 6.4] (242)
	Coated metal / PE	3,804	67 (60 - 75)	18/82	31.2	206		2.6 [2.1; 3.2] (2,992)	4.4 [3.8; 5.2] (2,339)	5.2 [4.5; 6.1] (1,738)	5.9 [5.1; 6.9] (1,223)	6.3 [5.4; 7.4] (712)	6.5 [5.5; 7.6] (223)	
	Ceramicised metal / hXLPE	3,560	65 (58 - 74)	30/70	30.5	107		2.7 [2.2; 3.3] (3,001)	3.8 [3.2; 4.5] (2,433)	4.7 [4.0; 5.5] (1,771)	5.3 [4.5; 6.2] (989)	5.4 [4.6; 6.3] (343)		
	Uncoated metal / mXLPE + antiox.	1,414	71 (64 - 77)	36/64	31.2	19		1.9 [1.3; 2.8] (1,240)	2.7 [2.0; 3.8] (1,061)	3.5 [2.6; 4.7] (929)	4.0 [3.0; 5.2] (643)	4.5 [3.4; 6.0] (300)	*5.3 [3.6; 7.7]* (71)	
	Coated Metal / hXLPE + antiox.	530	65 (59 - 72)	9/91	31.6	35		0.6 [0.2; 1.8] (360)	2.5 [1.2; 5.0] (195)	*3.1 [1.6; 6.3]* (84)				
Femoral articulating surface	Uncoated metal	269,901	71 (63 - 77)	36/64	30.1	678		1.7 [1.6; 1.7] (222,008)	2.5 [2.4; 2.6] (176,270)	3.0 [2.9; 3.0] (129,406)	3.3 [3.2; 3.4] (86,244)	3.5 [3.5; 3.6] (49,028)	3.8 [3.7; 3.9] (20,307)	4.0 [3.9; 4.2] (5,376)
	Coated metal	13,205	66 (59 - 74)	15/85	31.2	464		2.2 [2.0; 2.5] (10,704)	3.9 [3.6; 4.3] (8,153)	4.7 [4.3; 5.1] (5,820)	5.2 [4.7; 5.6] (3,750)	5.5 [5.1; 6.1] (1,965)	6.0 [5.4; 6.7] (694)	*6.3 [5.6; 7.1]* (127)
	Ceramicised metal	10,017	65 (58 - 73)	22/78	31.1	245		2.0 [1.7; 2.3] (7,976)	3.1 [2.7; 3.5] (6,225)	3.7 [3.3; 4.2] (4,502)	4.2 [3.7; 4.7] (2,781)	4.4 [3.9; 4.9] (1,382)	4.4 [3.9; 5.0] (546)	5.5 [4.4; 6.8] (243)
Tibial articulating surface	PE	131,858	70 (62 - 77)	34/66	30.1	555		1.6 [1.5; 1.7] (109,000)	2.4 [2.3; 2.5] (87,088)	2.8 [2.7; 2.9] (65,063)	3.2 [3.0; 3.3] (43,874)	3.4 [3.3; 3.5] (25,496)	3.7 [3.5; 3.8] (10,808)	4.1 [3.8; 4.3] (3,118)
	mXLPE	113,984	71 (63 - 77)	34/66	30.1	455		1.8 [1.7; 1.9] (95,682)	2.8 [2.7; 2.9] (76,711)	3.3 [3.2; 3.4] (56,105)	3.7 [3.6; 3.8] (37,255)	3.9 [3.8; 4.1] (20,835)	4.1 [4.0; 4.3] (8,369)	4.3 [4.1; 4.5] (2,080)
	hXLPE	28,092	68 (60 - 76)	31/69	30.4	373		1.8 [1.6; 2.0] (22,219)	2.7 [2.5; 2.9] (17,247)	3.1 [2.9; 3.3] (12,190)	3.4 [3.2; 3.7] (7,569)	3.6 [3.3; 3.9] (3,909)	4.0 [3.7; 4.4] (1,588)	4.2 [3.8; 4.6] (358)
	hXLPE + antiox.	17,902	69 (61 - 76)	37/63	30.4	216		1.7 [1.5; 1.9] (12,658)	2.5 [2.3; 2.8] (8,636)	3.0 [2.7; 3.3] (5,512)	3.4 [3.0; 3.8] (3,475)	3.6 [3.3; 4.1] (1,852)	3.7 [3.3; 4.2] (715)	3.9 [3.4; 4.5] (190)
	mXLPE + antiox.	1,420	71 (64 - 77)	36/64	31.2	20		1.9 [1.3; 2.7] (1,240)	2.7 [2.0; 3.8] (1,061)	3.5 [2.6; 4.7] (929)	4.0 [3.0; 5.2] (643)	4.5 [3.4; 6.0] (300)	*5.3 [3.6; 7.7]* (71)	
Knee system	CR	148,041	70 (62 - 77)	36/64	30.2	614		1.5 [1.4; 1.6] (122,893)	2.3 [2.2; 2.3] (98,354)	2.7 [2.6; 2.8] (72,604)	3.0 [2.9; 3.1] (48,597)	3.3 [3.1; 3.4] (27,859)	3.4 [3.3; 3.6] (11,563)	3.6 [3.5; 3.8] (2,943)
	PS	64,549	70 (62 - 77)	33/67	30.1	547		2.0 [1.9; 2.1] (51,289)	3.0 [2.9; 3.2] (39,464)	3.6 [3.4; 3.7] (27,854)	4.0 [3.8; 4.1] (17,863)	4.2 [4.0; 4.4] (9,894)	4.6 [4.4; 4.9] (4,383)	5.1 [4.8; 5.5] (1,515)
	CS	37,590	71 (63 - 77)	30/70	30.1	351		1.8 [1.6; 1.9] (30,975)	2.6 [2.5; 2.8] (24,597)	3.1 [2.9; 3.3] (18,463)	3.5 [3.3; 3.7] (12,475)	3.8 [3.6; 4.1] (6,956)	4.2 [3.9; 4.5] (2,601)	4.7 [4.2; 5.2] (575)
	CR/CS	36,379	69 (62 - 76)	35/65	30.0	291		1.9 [1.8; 2.1] (30,594)	3.0 [2.8; 3.2] (24,599)	3.5 [3.3; 3.7] (18,252)	3.8 [3.6; 4.1] (12,197)	4.1 [3.8; 4.3] (6,835)	4.1 [3.9; 4.4] (2,712)	4.3 [4.0; 4.7] (677)
	Pivot	6,697	69 (62 - 76)	37/63	30.2	93		2.0 [1.7; 2.4] (5,048)	2.8 [2.4; 3.2] (3,729)	3.3 [2.8; 3.8] (2,626)	3.6 [3.1; 4.1] (1,684)	3.9 [3.4; 4.6] (848)	4.3 [3.5; 5.2] (292)	
Patella	Without patellar resurfacing	260,813	70 (62 - 77)	34/66	30.1	682		1.7 [1.6; 1.7] (214,691)	2.6 [2.5; 2.6] (170,436)	3.0 [2.9; 3.1] (125,259)	3.4 [3.3; 3.4] (83,334)	3.6 [3.5; 3.7] (47,071)	3.8 [3.7; 3.9] (19,341)	4.1 [4.0; 4.3] (5,195)
	With patellar resurfacing	32,443	70 (62 - 77)	31/69	30.4	450		1.8 [1.7; 2.0] (26,108)	2.8 [2.6; 3.0] (20,307)	3.3 [3.1; 3.6] (14,540)	3.8 [3.5; 4.0] (9,482)	4.1 [3.8; 4.4] (5,321)	4.3 [4.0; 4.6] (2,210)	4.6 [4.2; 5.0] (551)

Table 39: 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
Fixation	Cemented	272,438	70 (62 - 77)	34/66	30.1	682		1.7 [1.6; 1.7] (222,682)	2.6 [2.5; 2.6] (175,426)	3.0 [3.0; 3.1] (127,559)	3.4 [3.3; 3.5] (84,153)	3.6 [3.6; 3.7] (47,277)	3.9 [3.8; 4.0] (19,433)	4.2 [4.0; 4.3] (5,129)
	Hybrid	16,465	69 (62 - 76)	39/61	30.2	181		1.9 [1.7; 2.1] (14,481)	2.8 [2.5; 3.0] (12,402)	3.3 [3.0; 3.6] (10,024)	3.5 [3.2; 3.8] (7,176)	3.8 [3.5; 4.1] (4,293)	4.1 [3.7; 4.5] (1,827)	4.4 [3.9; 4.9] (531)
	Uncemented	3,888	68 (60 - 75)	32/68	30.2	185		2.0 [1.6; 2.5] (3,240)	3.2 [2.7; 3.9] (2,599)	3.9 [3.3; 4.7] (1,998)	4.1 [3.5; 4.9] (1,370)	4.3 [3.6; 5.1] (777)	4.6 [3.8; 5.5] (277)	*4.6 [3.8; 5.5]* (85)
Constrained TKAs		14,199	75 (66 - 80)	24/76	29.0	625		4.0 [3.7; 4.3] (11,134)	5.1 [4.8; 5.5] (8,629)	5.7 [5.3; 6.1] (6,153)	6.1 [5.6; 6.5] (3,989)	6.3 [5.9; 6.8] (2,111)	6.6 [6.0; 7.1] (873)	6.9 [6.1; 7.7] (209)
Bearing	Uncoated metal / PE	9,636	75 (67 - 81)	24/76	28.7	525		3.9 [3.5; 4.3] (7,625)	5.0 [4.6; 5.5] (5,972)	5.5 [5.0; 6.0] (4,296)	5.9 [5.4; 6.4] (2,827)	6.2 [5.6; 6.8] (1,476)	6.4 [5.8; 7.2] (610)	*6.9 [5.9; 8.1]* (144)
	Uncoated metal / mXLPE	2,690	74 (66 - 80)	25/75	29.0	255		4.0 [3.3; 4.8] (2,135)	5.2 [4.3; 6.1] (1,688)	5.6 [4.7; 6.6] (1,238)	5.9 [5.0; 6.9] (808)	5.9 [5.0; 6.9] (493)	6.1 [5.1; 7.4] (205)	*6.1 [5.1; 7.4]* (55)
	Coated metal / PE	653	73 (64 - 79)	20/80	29.6	132		6.1 [4.5; 8.3] (488)	8.4 [6.4; 11.1] (350)	10.0 [7.7; 13.1] (227)	*11.1 [8.4; 14.6]* (124)			
	Uncoated metal / hXLPE	626	71 (62 - 79)	29/71	30.1	55		2.9 [1.8; 4.6] (467)	4.7 [3.2; 6.9] (324)	5.0 [3.4; 7.3] (199)	*6.1 [4.1; 9.1]* (109)			
Femoral articulating surface	Uncoated metal	13,019	75 (66 - 80)	25/75	28.8	617		3.9 [3.5; 4.2] (10,258)	5.0 [4.6; 5.4] (7,993)	5.5 [5.1; 5.9] (5,733)	5.9 [5.4; 6.3] (3,744)	6.1 [5.6; 6.6] (2,012)	6.4 [5.8; 6.9] (833)	6.7 [5.9; 7.6] (206)
	Coated metal	910	72 (63 - 79)	17/83	29.5	208		5.5 [4.2; 7.3] (673)	7.7 [6.0; 9.8] (488)	9.0 [7.1; 11.5] (322)	9.8 [7.7; 12.5] (190)	*10.3 [8.0; 13.2]* (70)		
Tibial articulating surface	PE	10,559	75 (66 - 80)	24/76	28.8	538		4.0 [3.7; 4.4] (8,316)	5.2 [4.7; 5.6] (6,470)	5.7 [5.3; 6.3] (4,621)	6.1 [5.6; 6.7] (3,006)	6.5 [5.9; 7.1] (1,544)	6.7 [6.1; 7.4] (637)	*7.2 [6.2; 8.3]* (146)
	mXLPE	2,947	74 (66 - 80)	24/76	29.0	275		4.0 [3.3; 4.8] (2,320)	5.2 [4.4; 6.1] (1,826)	5.7 [4.8; 6.7] (1,333)	5.9 [5.0; 6.9] (874)	5.9 [5.0; 6.9] (524)	6.2 [5.2; 7.3] (218)	*6.2 [5.2; 7.3]* (56)
	hXLPE	626	71 (62 - 79)	29/71	30.1	55		2.9 [1.8; 4.6] (467)	4.7 [3.2; 6.9] (324)	5.0 [3.4; 7.3] (199)	*6.1 [4.1; 9.1]* (109)			
Knee system	Hinged	8,979	76 (68 - 81)	22/78	28.3	570		4.4 [4.0; 4.8] (7,065)	5.7 [5.2; 6.2] (5,513)	6.3 [5.8; 6.9] (3,962)	6.7 [6.2; 7.3] (2,595)	7.1 [6.5; 7.8] (1,397)	7.1 [6.5; 7.8] (592)	*7.1 [6.5; 7.8]* (109)
	Varus-valgus-stabilised	5,220	72 (63 - 79)	28/72	29.9	381		3.3 [2.8; 3.8] (4,069)	4.3 [3.7; 4.9] (3,116)	4.6 [4.0; 5.3] (2,191)	4.9 [4.3; 5.6] (1,394)	5.0 [4.3; 5.7] (714)	5.7 [4.7; 6.8] (281)	*6.4 [4.9; 8.4]* (100)
Patella	Without patellar resurfacing	12,192	75 (66 - 80)	24/76	28.8	614		3.9 [3.5; 4.2] (9,589)	5.1 [4.7; 5.5] (7,421)	5.7 [5.2; 6.1] (5,284)	6.1 [5.6; 6.6] (3,444)	6.4 [5.9; 6.9] (1,821)	6.7 [6.1; 7.3] (755)	7.0 [6.1; 8.0] (183)
	With patellar resurfacing	2,007	73 (64 - 79)	25/75	29.5	212		4.7 [3.8; 5.7] (1,545)	5.5 [4.5; 6.6] (1,208)	5.8 [4.8; 7.0] (869)	5.9 [4.9; 7.2] (545)	5.9 [4.9; 7.2] (290)	*5.9 [4.9; 7.2]* (118)	
Fixation	Cemented	13,992	75 (66 - 80)	24/76	29.0	624		3.9 [3.6; 4.2] (11,022)	5.0 [4.6; 5.4] (8,566)	5.5 [5.1; 5.9] (6,116)	5.9 [5.4; 6.3] (3,967)	6.1 [5.7; 6.6] (2,100)	6.3 [5.8; 6.9] (871)	6.7 [5.9; 7.5] (209)
Unicondylar knee arthroplasties		42,899	64 (57 - 72)	44/56	29.5	600		3.0 [2.8; 3.1] (34,398)	4.8 [4.6; 5.0] (26,339)	5.8 [5.6; 6.1] (18,760)	6.7 [6.5; 7.0] (11,958)	7.2 [6.9; 7.6] (6,421)	7.9 [7.5; 8.3] (2,413)	8.1 [7.6; 8.5] (800)
Bearing mobility	Mobile bearing	26,033	64 (57 - 72)	44/56	29.7	417		3.1 [2.9; 3.3] (21,251)	4.8 [4.6; 5.1] (16,559)	5.7 [5.4; 6.1] (12,031)	6.6 [6.3; 7.0] (7,801)	7.1 [6.7; 7.5] (4,291)	7.8 [7.4; 8.3] (1,715)	7.8 [7.4; 8.3] (612)
	Fixed bearing	16,866	63 (57 - 72)	44/56	29.4	401		2.7 [2.5; 3.0] (13,147)	4.8 [4.4; 5.2] (9,780)	6.0 [5.6; 6.4] (6,729)	6.9 [6.4; 7.4] (4,157)	7.5 [6.9; 8.0] (2,130)	8.0 [7.4; 8.7] (698)	8.6 [7.7; 9.6] (188)
Bearing	Uncoated metal / mXLPE	24,813	65 (58 - 73)	46/54	29.5	388		2.9 [2.7; 3.1] (20,357)	4.5 [4.2; 4.7] (15,812)	5.3 [5.0; 5.7] (11,398)	6.2 [5.8; 6.6] (7,281)	6.6 [6.2; 7.0] (3,928)	7.1 [6.7; 7.6] (1,511)	7.1 [6.7; 7.6] (526)
	Uncoated metal / PE	7,036	64 (57 - 72)	46/54	29.4	235		2.5 [2.2; 2.9] (5,493)	4.4 [3.9; 4.9] (4,325)	5.4 [4.8; 6.0] (3,262)	6.3 [5.6; 7.0] (2,193)	6.9 [6.1; 7.7] (1,183)	7.5 [6.6; 8.5] (396)	*8.1 [6.9; 9.6]* (126)
	Uncoated metal / hXLPE	4,018	63 (57 - 71)	46/54	29.3	119		2.2 [1.8; 2.8] (3,359)	4.2 [3.6; 4.9] (2,640)	5.2 [4.5; 6.1] (1,980)	6.3 [5.5; 7.3] (1,321)	6.7 [5.8; 7.7] (743)	7.4 [6.3; 8.7] (286)	*7.8 [6.5; 9.5]* (67)
	Coated metal / mXLPE	3,302	61 (55 - 68)	26/74	30.1	292		4.0 [3.4; 4.8] (2,803)	7.3 [6.4; 8.3] (2,062)	9.0 [7.9; 10.1] (1,370)	10.2 [9.0; 11.5] (809)	10.8 [9.5; 12.3] (426)	13.0 [11.0; 15.3] (178)	*13.0 [11.0; 15.3]* (70)
	Uncoated metal / hXLPE + antiox.	2,483	63 (57 - 71)	48/52	29.6	90		2.7 [2.1; 3.4] (1,483)	4.0 [3.2; 5.1] (804)	5.2 [4.0; 6.8] (262)				
	Ceramicised metal / PE	851	60 (54 - 66)	34/66	30.0	123		5.1 [3.7; 6.9] (631)	8.0 [6.2; 10.3] (489)	9.5 [7.4; 12.1] (324)	10.1 [7.9; 12.9] (198)	*11.4 [8.7; 14.7]* (90)		
	Coated metal / PE	384	60 (54 - 68)	22/78	30.4	72		11.1 [8.2; 15.0] (269)	17.2 [13.4; 21.9] (207)	18.1 [14.2; 22.9] (164)	*20.9 [16.5; 26.2]* (117)	*24.1 [18.8; 30.6]* (51)		

Table 39 (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
Femoral articulating surface	Uncoated metal	38,350	64 (57 - 72)	46/54	29.4	574		2.8 [2.6; 2.9] (30,692)	4.4 [4.2; 4.6] (23,581)	5.3 [5.1; 5.6] (16,902)	6.2 [5.9; 6.5] (10,834)	6.6 [6.3; 7.0] (5,854)	7.2 [6.8; 7.6] (2,193)	7.4 [7.0; 7.9] (719)
	Coated metal	3,686	61 (55 - 68)	25/75	30.1	336		4.7 [4.1; 5.5] (3,072)	8.2 [7.3; 9.2] (2,269)	9.9 [8.8; 11.0] (1,534)	11.3 [10.1; 12.6] (926)	12.3 [10.9; 13.8] (477)	14.2 [12.3; 16.3] (194)	*14.2 [12.3; 16.3]* (75)
	Ceramicised metal	863	60 (54 - 66)	34/66	29.9	123		5.0 [3.7; 6.8] (634)	8.0 [6.2; 10.3] (489)	9.4 [7.4; 12.0] (324)	10.1 [7.9; 12.8] (198)	*11.3 [8.7; 14.7]* (90)		
Tibial articulating surface	mXLPE	28,127	64 (57 - 72)	43/57	29.6	423		3.0 [2.8; 3.3] (23,163)	4.8 [4.5; 5.1] (17,874)	5.8 [5.5; 6.1] (12,768)	6.7 [6.3; 7.0] (8,090)	7.1 [6.7; 7.5] (4,354)	7.8 [7.3; 8.3] (1,689)	7.8 [7.3; 8.3] (596)
	PE	8,271	63 (57 - 71)	44/56	29.5	292		3.2 [2.8; 3.6] (6,393)	5.3 [4.8; 5.9] (5,021)	6.4 [5.8; 7.0] (3,750)	7.4 [6.7; 8.1] (2,508)	8.1 [7.4; 9.0] (1,324)	8.7 [7.8; 9.7] (438)	*9.3 [8.1; 10.6]* (137)
	hXLPE	4,018	63 (57 - 71)	46/54	29.3	119		2.2 [1.8; 2.8] (3,359)	4.2 [3.6; 4.9] (2,640)	5.2 [4.5; 6.1] (1,980)	6.3 [5.5; 7.3] (1,321)	6.7 [5.8; 7.7] (743)	7.4 [6.3; 8.7] (286)	*7.8 [6.5; 9.5]* (67)
	hXLPE + antiox.	2,483	63 (57 - 71)	48/52	29.6	90		2.7 [2.1; 3.4] (1,483)	4.0 [3.2; 5.1] (804)	5.2 [4.0; 6.8] (262)				
Fixation	Cemented	37,629	64 (57 - 72)	42/58	29.5	597		2.9 [2.7; 3.0] (29,986)	4.8 [4.5; 5.0] (22,756)	5.8 [5.5; 6.1] (16,132)	6.8 [6.5; 7.1] (10,227)	7.3 [7.0; 7.7] (5,437)	8.0 [7.6; 8.5] (1,961)	8.2 [7.8; 8.7] (606)
	Uncemented	4,779	63 (57 - 71)	55/45	29.8	85		3.6 [3.1; 4.2] (3,996)	5.0 [4.4; 5.7] (3,216)	5.9 [5.2; 6.7] (2,330)	6.5 [5.7; 7.3] (1,514)	6.8 [6.0; 7.7] (874)	7.2 [6.3; 8.2] (404)	7.2 [6.3; 8.2] (166)
	Hybrid	438	66 (59 - 75)	37/63	28.4	42		4.2 [2.7; 6.7] (377)	5.6 [3.7; 8.3] (338)	6.5 [4.5; 9.4] (279)	6.5 [4.5; 9.4] (204)	*7.3 [4.9; 10.7]* (100)		
Patellofemoral arthroplasties		708	55 (48 - 61)	28/72	28.3	177		4.8 [3.4; 6.9] (540)	7.8 [5.9; 10.3] (404)	10.1 [7.8; 13.0] (290)	13.4 [10.4; 17.0] (183)	*16.1 [12.4; 20.8]* (88)		
Femoral articulating surface	Uncoated metal	397	55 (48 - 63)	28/72	28.2	105		3.4 [2.0; 5.9] (315)	6.2 [4.1; 9.6] (232)	8.5 [5.7; 12.4] (181)	*12.0 [8.4; 16.9]* (118)	*15.5 [10.7; 22.2]* (55)		
Patella	With patellar resurfacing	580	54.5 (48 - 61)	28/72	28.7	148		4.5 [3.0; 6.7] (445)	7.2 [5.1; 9.9] (338)	9.6 [7.1; 12.9] (232)	*11.5 [8.6; 15.3]* (145)	*14.2 [10.3; 19.4]* (59)		

Table 39 (continued)

5.2 Non-implant-related factors

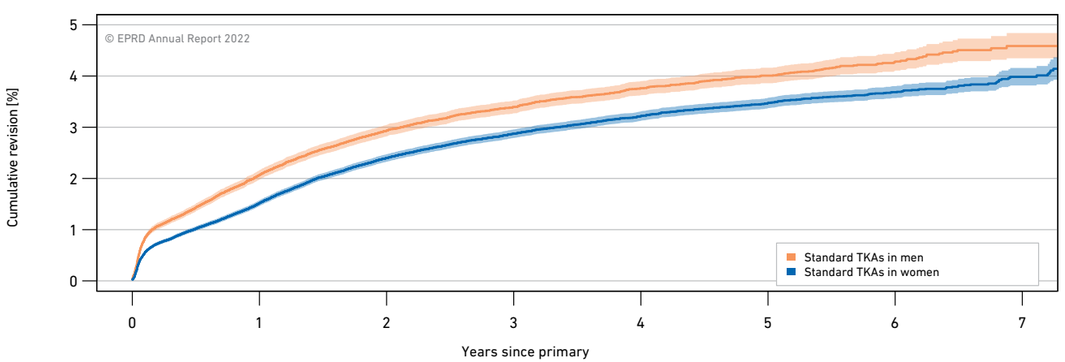
In addition to the arthroplasty system employed, there are other factors affecting the outcome of the procedure, such as the patient and the hospital that performed the surgery. Patient sex is indeed a significant established risk factor: With the exception of partial knee replacements, men are more likely to suffer from higher revision probabilities than women (see example Figure 14). This is largely due to a higher risk of infection in men and is not unique to the EPRD.

Patient age also affects the revision probability of arthroplasty, but differently in hip and knee arthroplasty. While revision probabilities of knee arthroplasty decrease with increasing patient age (see example Figure 15), the opposite is true for elective hip arthroplasty. This is due to the poorer performance of uncemented femoral components in older patients (Figure 16). In last year's annual report, the EPRD analysed this situation in more detail, taking other factors into account, and recommended that cemented stems be employed more often in this group of patients, which significantly reduces the specific risk of periprosthetic fractures.[2]

The EPRD has also been documenting patient height and weight since 2017. The body mass index - expressed as the ratio of weight to height squared in metres - is a simple measure of whether a person is underweight, normal weight or overweight. According to the WHO definition, obesity, i.e. being morbidly overweight, starts at 30 kg/m². In particular when looking at hip replacements, the EPRD has identified a clear correlation between different BMI values or degrees of severity of obesity and the revision probability of an arthroplasty (Figure 17).

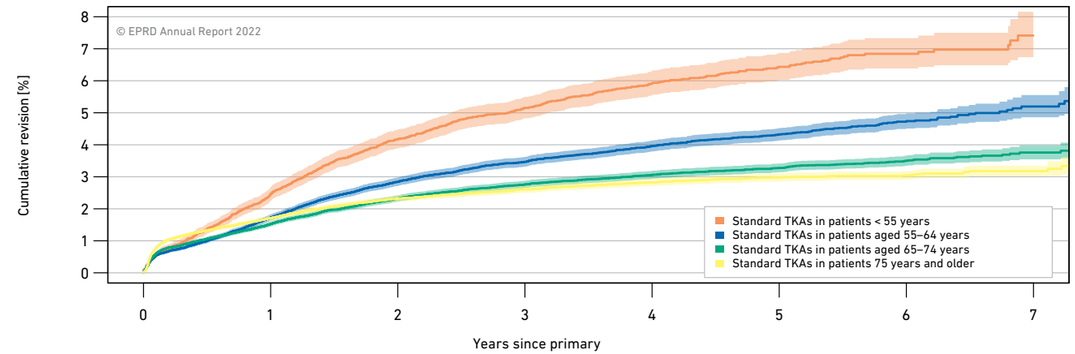
However, obesity is only one possible concomitant disease. Comorbidity indices such as the Elixhauser Comorbidity Score reflect the general condition of patients by asking the patient about the presence of various diseases. The Elixhauser Comorbidity Score, for example, includes physical and mental illnesses such as diabetes, depression, high blood pressure, and congestive heart failure. With the billing data made available by the health insurance providers, the EPRD can check the respective ICD codes at the time of primary arthroplasty [3] and thus determine the number of concomitant diseases for each patient. With standard TKA as an example (Figure 18), a high number of diagnosed concomitant diseases correlates with a significantly higher risk of revision - even though patients with more concomitant diseases are much older on average and, as previously shown, higher age actually tends to reduce the risk for these types of procedures. The impact of the hospital performing the surgery on arthroplasty outcome can also be substantial. The hospital experience with corresponding arthroplasties plays an important role in this. The EPRD tends to find lower revision probabilities for hospitals that, according to their quality reports, perform such procedures more often[7] – at least regarding elective arthroplasties (Figures 19 to 21). This is especially true for unicondylar knee arthroplasties.

7 For the rating in this report, the EPRD still used the hospital quality reports for 2019, the last calendar year before the COVID-19 pandemic.



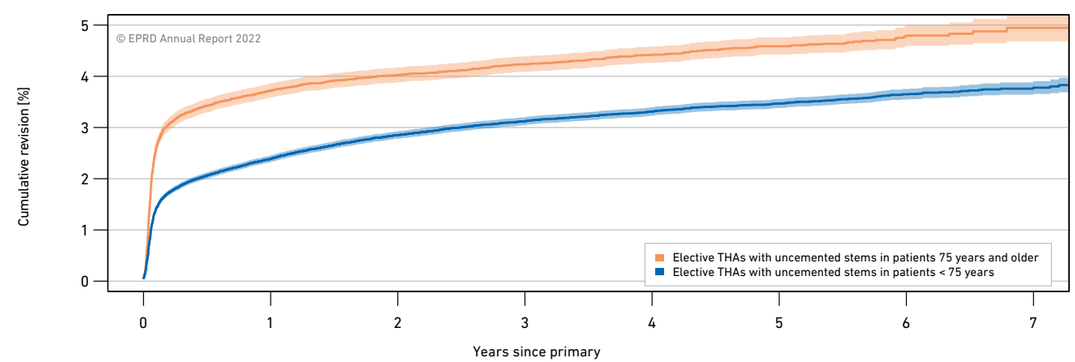
Numbers at risk	0	1	2	3	4	5	6	7
Standard TKAs in men	100,115	81,099	63,268	45,588	29,553	16,336	6,584	1,776
Standard TKAs in women	193,141	159,700	127,475	94,211	63,263	36,056	14,967	3,970

Figure 14: Revision probabilities of standard total knee arthroplasties by patient sex *(p < 0.0001)*



Numbers at risk	0	1	2	3	4	5	6	7
Standard TKAs in patients < 55 years	21,422	17,475	13,866	10,177	6,805	3,825	1,619	
Standard TKAs in patients aged 55–64 years	71,894	58,005	45,240	32,879	21,765	12,303	5,163	1,442
Standard TKAs in patients aged 65–74 years	98,492	81,131	64,556	47,869	32,227	18,656	7,900	2,225
Standard TKAs in patients 75 years and older	101,448	84,188	67,081	48,874	32,019	17,608	6,869	1,580

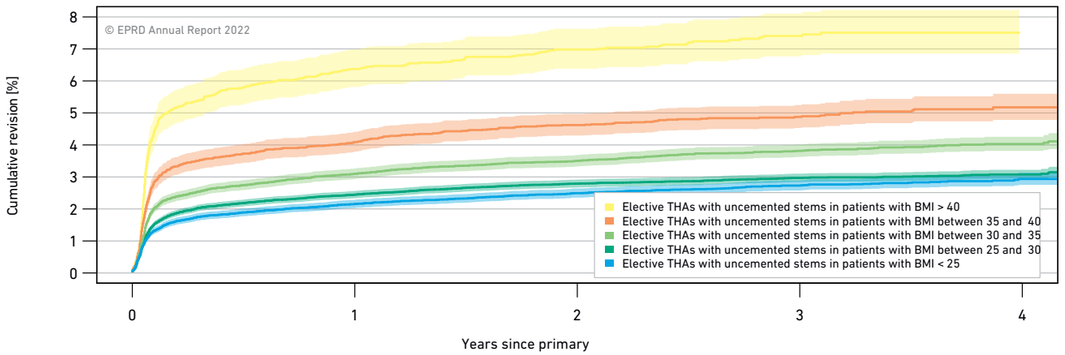
Figure 15: Revision probabilities of standard total knee arthroplasties by age group *(p < 0.0001)*



Numbers at risk	0	1	2	3	4	5	6	7
Elective THAs with uncemented stems in patients 75 years and older	74,237	59,425	46,823	33,719	21,725	11,539	4,122	965
Elective THAs with uncemented stems in patients < 75 years	219,191	177,338	140,476	103,490	69,884	40,248	16,720	4,831

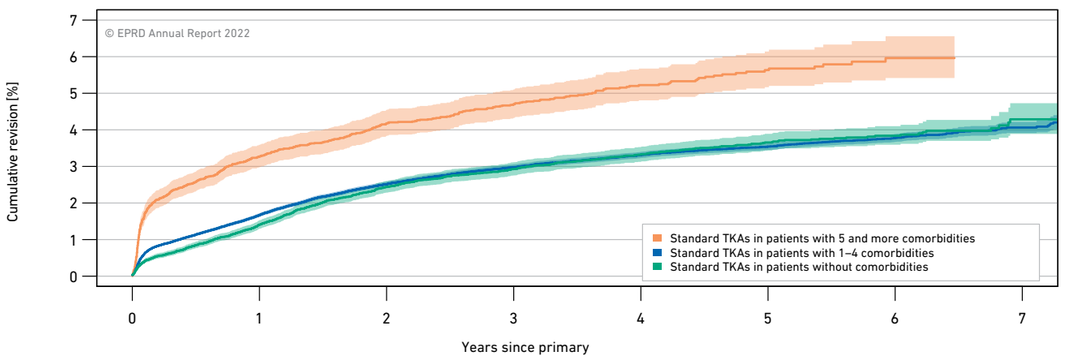
Figure 16: Revision probabilities of elective total hip arthroplasties with uncemented stems by age group *(p < 0.0001)*

However, the correlation between hospitals' annual case volumes and arthroplasty outcomes only reflects a trend. Moreover, hospital outcomes can also differ greatly; see example Figure 22. It is based on the presentations provided by the EPRD to participating hospitals twice a year as part of the individual analyses (see also Page 13). 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 dot in the present report depends on the annual number of cases of corresponding arthroplasty.



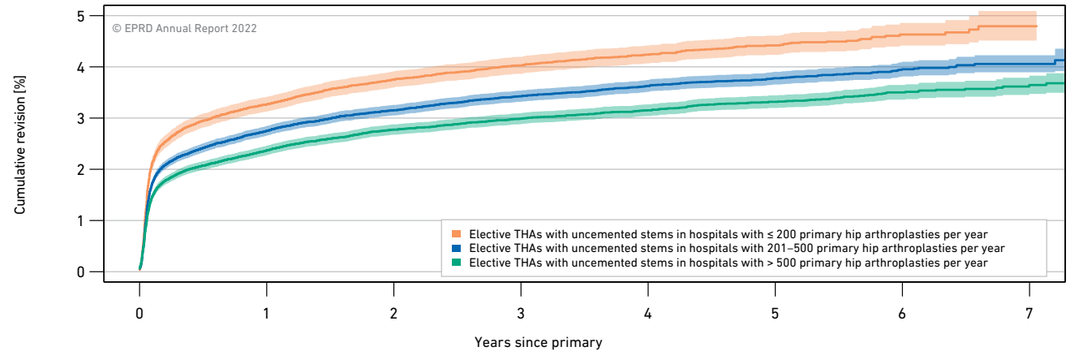
Numbers at risk					
	7,021	4,909	3,412	1,900	
	16,371	11,830	8,143	4,413	1,114
	44,787	33,108	22,767	12,418	3,233
	75,533	56,704	39,412	21,734	5,655
	51,268	38,106	26,233	14,306	3,666

Figure 17: Revision probabilities of elective total hip arthroplasties with uncemented stems by patient body mass index *(p < 0.0001)*



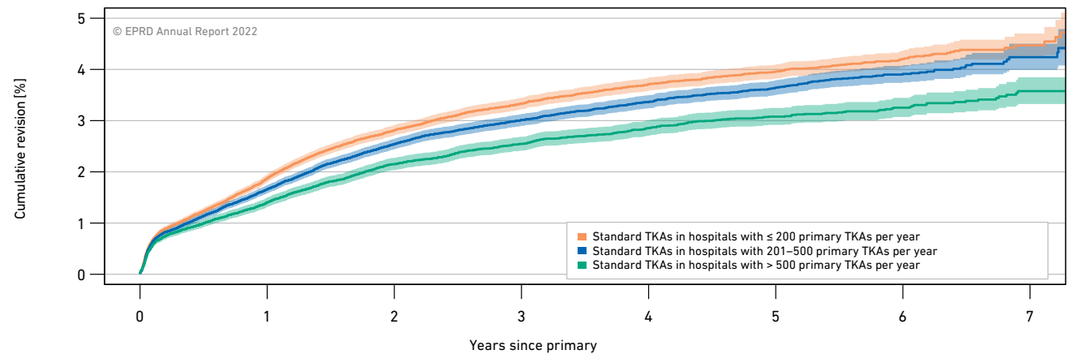
Numbers at risk								
	13,663	10,975	8,557	6,170	3,972	2,232	882	
	236,819	194,793	154,566	113,198	75,081	42,484	17,375	4,534
	42,774	35,031	27,620	20,431	13,763	7,676	3,294	978

Figure 18: Revision probabilities of standard total knee arthroplasties by concomitant disease diagnoses included in the Elixhauser Comorbidity Score *(p < 0.0001)*



Numbers at risk								
	60,715	48,437	38,309	28,178	18,501	9,967	3,518	586
	119,157	96,333	76,324	56,194	37,548	21,137	8,532	1,851
	108,883	88,132	69,458	50,310	33,781	19,619	8,351	3,236

Figure 19: Revision probabilities of elective total hip arthroplasties with uncemented stems by the hospital's annual volume of primary hip arthroplasties *(p < 0.0001)*



Numbers at risk								
	118,396	97,289	77,084	56,234	36,688	20,286	7,714	1,572
	103,521	85,416	67,861	49,901	32,949	18,357	7,317	1,546
	65,937	53,580	42,024	30,635	20,981	12,426	5,944	2,437

Figure 20: Revision probabilities of standard total knee arthroplasties by the hospital's annual volume of primary total knee arthroplasties *(p < 0.0001)*

The fact that hospitals with high annual case volumes in the EPRD tend to achieve good outcomes can also be seen in the following correlation: Of the 67 hospitals in the category with the largest treatment volumes, more than two-thirds are below the expectation line, which means that these hospitals performed fewer revisions than expected. 30 of these 67 hospitals even achieved significantly better outcomes. On the other hand, examples are also shown here of hospitals with high case volumes and poorer outcomes, as well as hospitals with lower case volumes and very good outcomes.

Table 40 differentiates the effects of several non-implant-related factors for different types of arthroplasties.

In brief:

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

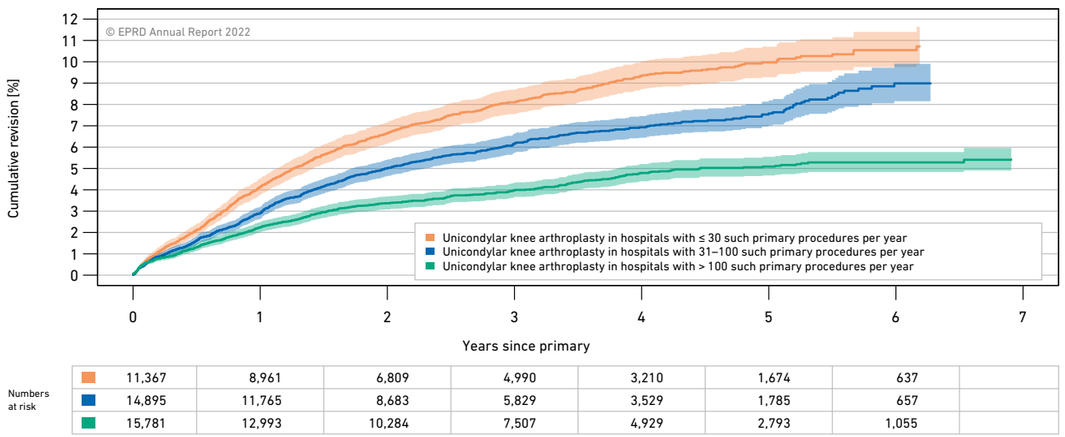


Figure 21: Revision probabilities of unicondylar knee arthroplasties by the number of primary unicondylar knee arthroplasties *($p < 0.0001$)*

Funnel plots for inter-hospital comparisons

Funnel plots show the outcomes from different hospitals with each hospital 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 time, increases. The calculation is stratified for the different types of arthroplasties, but does not include any further patient-related 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 hospital, their dot on the y-axis is above 1; if observation and expectation coincide, their dot is exactly 1; otherwise it is below that.

The graph contains a horizontal grey expectation line at the level of 1 as well as upper and lower 95 % confidence intervals represented as dashed grey lines. In hospitals above the upper dashed line, significantly more revisions were performed and for hospitals below the lower dashed line that number was significantly less. The grey dashed lines converge into a funnel from left to right giving the funnel plot its name.

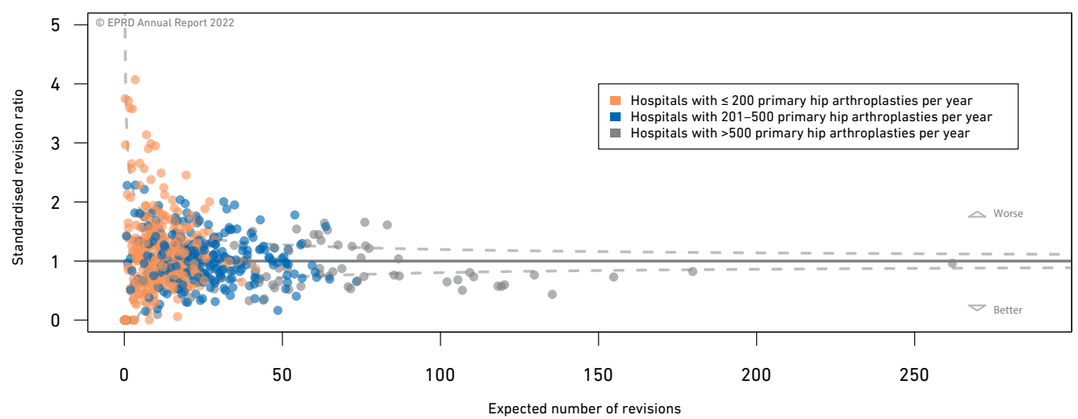


Figure 22: Funnel plot comparing primary hip arthroplasty outcomes between hospitals

								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
Elective THAs with uncemented stems		293,428	67 (59 - 75)	40/60	27.8	695		2.7 [2.7; 2.8] (236,763)	3.1 [3.1; 3.2] (187,299)	3.4 [3.3; 3.5] (137,209)	3.6 [3.5; 3.7] (91,609)	3.8 [3.7; 3.8] (51,787)	3.9 [3.8; 4.0] (20,842)	4.1 [4.0; 4.2] (5,796)
Age group	≤ 54 years	39,224	50 (46 - 53)	50/50	28.4	678		2.3 [2.1; 2.4] (32,072)	2.9 [2.7; 3.1] (25,728)	3.2 [3.1; 3.4] (19,109)	3.5 [3.3; 3.7] (12,918)	3.7 [3.5; 3.9] (7,557)	4.0 [3.7; 4.2] (3,175)	4.2 [3.8; 4.6] (967)
	55–64 years	81,625	60 (58 - 62)	44/56	28.6	685		2.3 [2.2; 2.4] (65,771)	2.8 [2.7; 2.9] (51,581)	3.1 [2.9; 3.2] (37,844)	3.2 [3.1; 3.4] (25,404)	3.4 [3.3; 3.6] (14,411)	3.6 [3.4; 3.7] (5,969)	3.6 [3.4; 3.8] (1,698)
	65–74 years	98,342	69 (67 - 72)	38/62	28.1	687		2.5 [2.4; 2.6] (79,495)	2.9 [2.8; 3.0] (63,167)	3.1 [3.0; 3.2] (46,537)	3.3 [3.2; 3.4] (31,562)	3.4 [3.3; 3.6] (18,280)	3.6 [3.4; 3.7] (7,576)	3.8 [3.6; 4.0] (2,166)
	75–84 years	68,766	78 (76 - 80)	36/64	26.9	682		3.7 [3.5; 3.8] (55,438)	4.0 [3.8; 4.1] (43,841)	4.2 [4.0; 4.3] (31,719)	4.4 [4.2; 4.5] (20,533)	4.5 [4.4; 4.7] (10,977)	4.7 [4.5; 4.9] (3,942)	4.8 [4.6; 5.1] (934)
	85 years and older	5,471	86 (85 - 88)	34/66	25.8	538		4.5 [4.0; 5.1] (3,987)	4.7 [4.1; 5.3] (2,982)	4.9 [4.3; 5.5] (2,000)	5.0 [4.4; 5.6] (1,192)	5.5 [4.8; 6.3] (562)	5.8 [4.9; 6.8] (180)	
Sex	Male	118,921	66 (58 - 74)	100/0	28.4	689		2.8 [2.7; 2.9] (95,563)	3.3 [3.2; 3.4] (74,900)	3.6 [3.4; 3.7] (54,505)	3.7 [3.6; 3.9] (36,115)	3.9 [3.8; 4.0] (20,099)	4.1 [4.0; 4.2] (8,006)	4.3 [4.1; 4.5] (2,228)
	Female	174,507	68 (60 - 75)	0/100	27.5	691		2.7 [2.6; 2.7] (141,200)	3.1 [3.0; 3.1] (112,399)	3.3 [3.2; 3.4] (82,704)	3.5 [3.4; 3.6] (55,494)	3.6 [3.5; 3.8] (31,688)	3.8 [3.7; 3.9] (12,836)	3.9 [3.8; 4.1] (3,568)
Body Mass Index	≤25	51,385	68 (60 - 76)	30/70	23.2	667		2.2 [2.0; 2.3] (38,184)	2.5 [2.4; 2.6] (26,295)	2.7 [2.6; 2.9] (14,345)	2.9 [2.8; 3.1] (3,676)			
	>25 to ≤30	75,422	68 (60 - 76)	46/54	27.4	675		2.4 [2.3; 2.6] (56,630)	2.8 [2.7; 2.9] (39,353)	3.0 [2.8; 3.1] (21,698)	3.1 [2.9; 3.2] (5,646)			
	>30 to ≤35	44,783	66 (59 - 73)	45/55	32.0	667		3.1 [2.9; 3.3] (33,106)	3.5 [3.3; 3.7] (22,766)	3.8 [3.6; 4.0] (12,417)	4.0 [3.8; 4.3] (3,232)			
	>35 to ≤40	16,396	64 (57 - 70)	40/60	36.8	641		4.1 [3.8; 4.4] (11,847)	4.6 [4.3; 5.0] (8,151)	4.9 [4.5; 5.2] (4,418)	5.2 [4.8; 5.6] (1,116)			
	>40	6,994	61 (55 - 68)	34/66	42.5	622		6.4 [5.8; 7.0] (4,890)	7.0 [6.4; 7.6] (3,402)	7.4 [6.8; 8.1] (1,893)	7.5 [6.9; 8.2] (487)			
Comorbidities	W/o comorbidities	69,526	62 (55 - 70)	43/57	25.9	686		1.7 [1.6; 1.8] (56,810)	2.1 [2.0; 2.2] (45,043)	2.4 [2.3; 2.5] (33,258)	2.5 [2.4; 2.7] (22,475)	2.7 [2.6; 2.9] (12,731)	2.9 [2.7; 3.0] (5,146)	2.9 [2.8; 3.1] (1,544)
	1-4 comorbidities	214,365	68 (61 - 75)	40/60	28.6	694		2.8 [2.8; 2.9] (172,920)	3.3 [3.2; 3.3] (136,841)	3.5 [3.4; 3.6] (100,152)	3.7 [3.6; 3.8] (66,740)	3.9 [3.8; 4.0] (37,741)	4.1 [4.0; 4.2] (15,241)	4.2 [4.1; 4.4] (4,146)
	More than 4 comorbidities	9,537	74 (67 - 79)	40/60	31.6	627		7.8 [7.3; 8.4] (7,033)	8.3 [7.8; 8.9] (5,415)	8.5 [8.0; 9.1] (3,799)	8.8 [8.2; 9.4] (2,394)	8.9 [8.3; 9.5] (1,315)	8.9 [8.3; 9.5] (455)	*8.9 [8.3; 9.5]* (106)
Hospital size*	Hospitals with low annual case volumes	60,715	69 (61 - 76)	40/60	28.1	353		3.3 [3.1; 3.4] (48,437)	3.8 [3.6; 3.9] (38,309)	4.0 [3.9; 4.2] (28,178)	4.2 [4.1; 4.4] (18,501)	4.4 [4.2; 4.6] (9,967)	4.6 [4.4; 4.9] (3,518)	4.8 [4.5; 5.1] (586)
	Hospitals with average annual case volumes	119,157	67 (60 - 75)	41/59	28.0	250		2.7 [2.7; 2.8] (96,333)	3.2 [3.1; 3.3] (76,324)	3.4 [3.3; 3.5] (56,194)	3.6 [3.5; 3.7] (37,548)	3.8 [3.7; 3.9] (21,137)	4.0 [3.8; 4.1] (8,532)	4.1 [3.9; 4.2] (1,851)
	Hospitals with high annual case volumes	108,883	66 (58 - 73)	40/60	27.6	67		2.4 [2.3; 2.5] (88,132)	2.8 [2.7; 2.9] (69,458)	3.0 [2.9; 3.1] (50,310)	3.2 [3.0; 3.3] (33,781)	3.3 [3.2; 3.4] (19,619)	3.5 [3.4; 3.6] (8,351)	3.6 [3.5; 3.8] (3,236)
Elective THAs with cemented stems		80,369	79 (75 - 82)	25/75	26.6	673		2.3 [2.2; 2.4] (63,977)	2.6 [2.5; 2.8] (50,335)	2.9 [2.8; 3.0] (36,689)	3.1 [3.0; 3.2] (24,650)	3.3 [3.2; 3.5] (14,080)	3.5 [3.3; 3.7] (6,068)	3.8 [3.5; 4.0] (1,670)
Age group	≤ 54 years	810	51 (47 - 53)	61/39	27.5	239		2.9 [1.9; 4.4] (652)	3.8 [2.6; 5.4] (522)	4.6 [3.2; 6.5] (383)	5.1 [3.7; 7.2] (232)	*5.1 [3.7; 7.2]* (126)		
	55–64 years	2,713	61 (59 - 63)	38/62	27.8	467		2.8 [2.3; 3.5] (2,105)	3.6 [3.0; 4.5] (1,679)	3.8 [3.1; 4.7] (1,246)	4.0 [3.3; 5.0] (845)	4.4 [3.6; 5.5] (473)	4.8 [3.8; 6.2] (196)	*4.8 [3.8; 6.2]* (60)
	65–74 years	15,480	72 (69 - 73)	24/76	27.7	591		2.3 [2.1; 2.5] (12,485)	2.7 [2.4; 2.9] (10,110)	3.0 [2.7; 3.3] (7,753)	3.3 [3.0; 3.7] (5,497)	3.6 [3.2; 3.9] (3,388)	3.9 [3.5; 4.3] (1,608)	4.2 [3.6; 4.8] (519)
	75–84 years	50,570	79 (77 - 82)	25/75	26.5	655		2.2 [2.1; 2.3] (40,718)	2.5 [2.4; 2.7] (32,110)	2.8 [2.6; 2.9] (23,286)	3.0 [2.8; 3.1] (15,555)	3.1 [2.9; 3.3] (8,827)	3.3 [3.1; 3.5] (3,772)	3.5 [3.3; 3.8] (991)
	85 years and older	10,796	87 (85 - 88)	24/76	25.5	619		2.7 [2.4; 3.0] (8,017)	2.9 [2.6; 3.2] (5,914)	3.0 [2.7; 3.4] (4,021)	3.1 [2.7; 3.4] (2,521)	3.3 [2.9; 3.7] (1,266)	3.3 [2.9; 3.7] (447)	*3.3 [2.9; 3.7]* (92)
Sex	Male	20,238	79 (74 - 82)	100/0	27.0	612		2.7 [2.5; 3.0] (15,970)	3.2 [2.9; 3.5] (12,495)	3.5 [3.2; 3.8] (9,053)	3.7 [3.5; 4.0] (6,014)	3.9 [3.6; 4.2] (3,405)	4.1 [3.7; 4.5] (1,452)	4.4 [3.9; 4.9] (380)
	Female	60,131	79 (75 - 82)	0/100	26.4	667		2.2 [2.1; 2.3] (48,007)	2.5 [2.3; 2.6] (37,840)	2.7 [2.6; 2.8] (27,636)	2.9 [2.8; 3.1] (18,636)	3.1 [3.0; 3.3] (10,675)	3.3 [3.1; 3.5] (4,616)	3.6 [3.3; 3.8] (1,290)

* For classification see legend in Figure 19

Table 40: Revision probabilities for different types of arthroplasties and 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
Body Mass Index	≤25	19,255	80 (76 - 83)	20/80	23.0	622		2.0 [1.8; 2.2] (13,783)	2.2 [2.0; 2.4] (9,261)	2.4 [2.2; 2.7] (4,956)	2.6 [2.3; 2.9] (1,388)			
	>25 to ≤30	20,648	79 (76 - 83)	29/71	27.3	615		2.1 [1.9; 2.3] (15,214)	2.4 [2.2; 2.6] (10,544)	2.6 [2.4; 2.9] (5,827)	2.7 [2.5; 3.0] (1,668)			
	>30 to ≤35	9,605	79 (74 - 82)	26/74	31.6	582		2.9 [2.5; 3.2] (7,058)	3.2 [2.9; 3.6] (4,921)	3.6 [3.2; 4.0] (2,717)	3.6 [3.2; 4.0] (789)			
	>35 to ≤40	2,795	77 (71 - 80)	22/78	36.7	463		4.8 [4.0; 5.6] (2,045)	5.1 [4.3; 6.1] (1,440)	5.3 [4.5; 6.3] (837)	5.4 [4.6; 6.4] (258)			
	>40	1,044	72 (66 - 78)	20/80	42.3	336		5.6 [4.3; 7.2] (748)	6.0 [4.6; 7.7] (514)	6.2 [4.8; 8.0] (295)	*6.2 [4.8; 8.0]* (90)			
Comorbidities	W/o comorbidities	9,753	77 (73 - 81)	26/74	24.8	573		1.2 [1.0; 1.5] (7,910)	1.5 [1.3; 1.8] (6,299)	1.8 [1.5; 2.1] (4,735)	2.0 [1.7; 2.3] (3,258)	2.4 [2.0; 2.8] (1,851)	2.6 [2.2; 3.2] (800)	2.8 [2.3; 3.4] (214)
	1-4 comorbidities	64,300	79 (75 - 82)	25/75	26.8	665		2.2 [2.1; 2.3] (51,466)	2.5 [2.4; 2.6] (40,584)	2.8 [2.6; 2.9] (29,623)	3.0 [2.8; 3.1] (19,934)	3.1 [3.0; 3.3] (11,438)	3.3 [3.1; 3.5] (4,959)	3.6 [3.3; 3.9] (1,368)
	More than 4 comorbidities	6,316	80 (76 - 84)	29/71	29.0	574		5.4 [4.9; 6.0] (4,601)	5.9 [5.3; 6.5] (3,452)	6.2 [5.6; 6.8] (2,331)	6.4 [5.8; 7.1] (1,458)	6.7 [6.0; 7.4] (791)	6.8 [6.1; 7.7] (309)	*7.2 [6.2; 8.3]* (88)
Hospital size*	Hospitals with low annual case volumes	16,170	79 (75 - 83)	26/74	26.8	339		2.9 [2.7; 3.2] (12,580)	3.2 [3.0; 3.5] (9,866)	3.5 [3.3; 3.9] (7,049)	3.7 [3.4; 4.1] (4,670)	3.9 [3.6; 4.2] (2,576)	4.0 [3.6; 4.3] (926)	4.6 [3.9; 5.3] (185)
	Hospitals with average annual case volumes	34,055	79 (75 - 82)	25/75	26.7	245		2.4 [2.2; 2.6] (27,537)	2.8 [2.6; 2.9] (22,032)	3.0 [2.8; 3.2] (16,472)	3.2 [3.0; 3.4] (11,214)	3.4 [3.2; 3.6] (6,491)	3.5 [3.3; 3.8] (2,777)	3.7 [3.4; 4.1] (653)
	Hospitals with high annual case volumes	28,101	79 (75 - 82)	25/75	26.3	67		1.8 [1.7; 2.0] (22,130)	2.1 [1.9; 2.3] (16,967)	2.4 [2.2; 2.6] (11,995)	2.6 [2.4; 2.8] (7,881)	2.7 [2.5; 3.0] (4,444)	3.0 [2.7; 3.4] (2,053)	3.3 [2.9; 3.7] (729)
Non-elective THAs		23,575	76 (68 - 82)	30/70	24.7	632		6.1 [5.8; 6.4] (15,905)	6.7 [6.4; 7.0] (11,492)	7.1 [6.8; 7.5] (7,615)	7.5 [7.1; 7.9] (4,664)	7.9 [7.4; 8.3] (2,370)	8.0 [7.5; 8.5] (833)	8.4 [7.7; 9.2] (158)
Age group	≤ 54 years	691	51 (48 - 53)	54/46	24.2	352		7.6 [5.8; 9.9] (509)	8.0 [6.1; 10.4] (397)	8.3 [6.4; 10.8] (283)	9.2 [7.0; 12.0] (170)	*9.8 [7.4; 13.0]* (78)		
	55–64 years	2,985	61 (58 - 63)	40/60	24.2	530		7.4 [6.4; 8.4] (2,063)	8.1 [7.1; 9.2] (1,461)	8.8 [7.7; 10.0] (954)	9.2 [8.1; 10.5] (612)	10.0 [8.7; 11.4] (339)	*10.0 [8.7; 11.4]* (125)	
	65–74 years	6,405	70 (67 - 72)	31/69	24.9	583		5.4 [4.9; 6.0] (4,559)	6.2 [5.6; 6.8] (3,372)	6.8 [6.1; 7.5] (2,314)	7.1 [6.4; 7.8] (1,482)	7.4 [6.6; 8.2] (780)	7.4 [6.6; 8.2] (293)	*8.1 [6.6; 9.9]* (65)
	75–84 years	9,762	79 (77 - 82)	26/74	24.8	585		6.1 [5.6; 6.6] (6,677)	6.6 [6.1; 7.2] (4,886)	6.9 [6.4; 7.5] (3,266)	7.3 [6.7; 7.9] (1,961)	7.6 [6.9; 8.2] (983)	7.9 [7.1; 8.7] (339)	*7.9 [7.1; 8.7]* (59)
	85 years and older	3,732	88 (86 - 90)	25/75	24.2	457		5.7 [4.9; 6.6] (2,097)	6.3 [5.5; 7.2] (1,376)	6.7 [5.8; 7.7] (798)	6.9 [6.0; 8.0] (439)	7.2 [6.1; 8.3] (190)		
Sex	Male	7,004	74 (66 - 81)	100/0	25.2	572		7.4 [6.8; 8.0] (4,429)	8.1 [7.4; 8.8] (3,096)	8.7 [8.0; 9.5] (2,012)	9.2 [8.4; 10.1] (1,203)	9.6 [8.7; 10.5] (588)	9.6 [8.7; 10.5] (214)	
	Female	16,571	77 (70 - 82)	0/100	24.4	621		5.5 [5.2; 5.9] (11,476)	6.1 [5.7; 6.5] (8,396)	6.5 [6.1; 6.9] (5,603)	6.8 [6.4; 7.3] (3,461)	7.2 [6.7; 7.7] (1,782)	7.3 [6.8; 7.9] (619)	*7.9 [7.0; 8.9]* (122)
Body Mass Index	≤25	8,914	76 (68 - 82)	27/73	22.5	571		5.3 [4.9; 5.8] (5,503)	5.9 [5.4; 6.5] (3,396)	6.3 [5.7; 6.9] (1,658)	7.0 [6.3; 7.9] (439)			
	>25 to ≤30	5,643	77 (69 - 82)	35/65	26.9	558		6.1 [5.5; 6.8] (3,549)	6.8 [6.1; 7.5] (2,299)	7.1 [6.4; 7.9] (1,225)	7.3 [6.5; 8.2] (344)			
	>30 to ≤35	1,575	75 (68 - 81)	30/70	31.6	417		8.0 [6.8; 9.5] (1,010)	8.6 [7.2; 10.2] (655)	9.2 [7.7; 10.9] (314)	*9.2 [7.7; 10.9]* (71)			
	>35 to ≤40	319	74 (66 - 79)	27/73	36.5	199		11.9 [8.7; 16.1] (194)	*11.9 [8.7; 16.1]* (127)	*11.9 [8.7; 16.1]* (69)				
Comorbidities	W/o comorbidities	3,175	71 (64 - 78)	30/70	23.9	521		3.7 [3.0; 4.4] (2,368)	4.3 [3.6; 5.1] (1,745)	4.7 [4.0; 5.6] (1,201)	5.0 [4.2; 6.0] (783)	5.4 [4.4; 6.4] (402)	5.4 [4.4; 6.4] (153)	
	1-4 comorbidities	17,197	76 (69 - 82)	29/71	24.7	622		5.8 [5.4; 6.2] (11,825)	6.4 [6.0; 6.8] (8,579)	6.8 [6.4; 7.2] (5,719)	7.2 [6.8; 7.6] (3,470)	7.6 [7.1; 8.1] (1,765)	7.7 [7.2; 8.3] (621)	*8.1 [7.2; 9.0]* (119)
	More than 4 comorbidities	3,203	79 (73 - 85)	33/67	25.5	479		10.2 [9.2; 11.4] (1,712)	11.1 [9.9; 12.3] (1,168)	11.8 [10.6; 13.2] (695)	12.1 [10.8; 13.6] (411)	12.4 [11.0; 14.0] (203)	*12.4 [11.0; 14.0]* (59)	
Hospital size*	Hospitals with low annual case volumes	9,936	76 (68 - 82)	30/70	24.8	320		5.9 [5.5; 6.4] (6,708)	6.6 [6.1; 7.1] (4,911)	7.1 [6.5; 7.7] (3,287)	7.5 [6.9; 8.1] (2,013)	8.1 [7.4; 8.8] (966)	8.1 [7.4; 8.8] (298)	

* For classification see legend in Figure 19

Table 40 (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
Hospital size*	Hospitals with average annual case volumes	10,538	76 (68 - 82)	30/70	24.7	232		5.9 [5.5; 6.4] (7,158)	6.5 [6.0; 7.0] (5,109)	6.9 [6.4; 7.5] (3,359)	7.3 [6.8; 7.9] (2,033)	7.5 [6.9; 8.2] (1,078)	7.6 [7.0; 8.3] (400)	*7.9 [7.1; 8.8]* (72)
	Hospitals with high annual case volumes	2,480	78 (70 - 84)	30/70	24.3	61		6.9 [5.9; 8.0] (1,627)	7.4 [6.4; 8.6] (1,155)	7.8 [6.7; 9.1] (735)	8.3 [7.1; 9.6] (454)	8.3 [7.1; 9.6] (232)	*9.1 [7.2; 11.4]* (88)	
Hip hemiarthroplasties		47,898	84 (80 - 89)	28/72	24.2	556		4.6 [4.4; 4.8] (25,355)	4.9 [4.7; 5.1] (16,238)	5.1 [4.8; 5.3] (9,513)	5.2 [5.0; 5.5] (4,957)	5.3 [5.1; 5.6] (2,183)	5.4 [5.1; 5.8] (638)	*5.4 [5.1; 5.8]* (86)
Age group	55–64 years	858	61 (59 - 63)	49/51	24.2	293		7.0 [5.3; 9.0] (449)	7.2 [5.5; 9.3] (298)	7.7 [5.8; 10.1] (177)	*8.3 [6.2; 11.0]* (110)	*8.3 [6.2; 11.0]* (60)		
	65–74 years	3,603	71 (69 - 73)	42/58	24.7	458		5.5 [4.8; 6.4] (2,052)	6.1 [5.3; 7.0] (1,367)	6.3 [5.5; 7.3] (876)	6.7 [5.7; 7.7] (491)	6.7 [5.7; 7.7] (264)	*7.3 [5.9; 9.0]* (85)	
	75–84 years	19,793	81 (79 - 83)	30/70	24.6	535		4.9 [4.6; 5.2] (11,342)	5.1 [4.8; 5.5] (7,524)	5.4 [5.0; 5.7] (4,556)	5.6 [5.2; 6.0] (2,420)	5.7 [5.3; 6.1] (1,073)	5.7 [5.3; 6.1] (321)	
	85 years and older	23,434	89 (87 - 92)	24/76	23.9	524		4.1 [3.9; 4.4] (11,384)	4.3 [4.0; 4.6] (6,961)	4.4 [4.1; 4.7] (3,832)	4.4 [4.1; 4.7] (1,895)	4.5 [4.1; 4.8] (763)	4.5 [4.1; 4.8] (208)	
Sex	Male	13,546	83 (78 - 88)	100/0	24.7	528		5.0 [4.6; 5.5] (6,139)	5.4 [5.0; 5.9] (3,656)	5.8 [5.3; 6.3] (2,004)	6.1 [5.5; 6.6] (947)	6.1 [5.5; 6.6] (415)	*6.3 [5.6; 7.0]* (117)	
	Female	34,352	85 (80 - 89)	0/100	24.0	546		4.5 [4.3; 4.7] (19,216)	4.7 [4.5; 4.9] (12,582)	4.8 [4.6; 5.1] (7,509)	4.9 [4.7; 5.2] (4,010)	5.1 [4.8; 5.4] (1,768)	5.2 [4.8; 5.5] (521)	*5.2 [4.8; 5.5]* (72)
Body Mass Index	≤25	19,644	85 (80 - 90)	27/73	22.3	522		4.6 [4.2; 4.9] (9,252)	4.7 [4.4; 5.1] (5,066)	4.9 [4.6; 5.3] (2,231)	4.9 [4.6; 5.3] (475)			
	>25 to ≤30	10,634	84 (80 - 88)	33/67	26.9	499		4.7 [4.2; 5.1] (5,407)	4.8 [4.4; 5.3] (3,097)	4.9 [4.4; 5.4] (1,435)	5.1 [4.6; 5.7] (310)			
	>30 to ≤35	2,710	83 (79 - 87)	25/75	31.2	442		6.3 [5.4; 7.3] (1,442)	6.5 [5.6; 7.6] (853)	6.8 [5.8; 8.0] (412)	*6.8 [5.8; 8.0]* (99)			
	>35 to ≤40	531	81 (77 - 85)	24/76	36.4	279		9.7 [7.3; 12.8] (257)	*10.1 [7.6; 13.3]* (145)	*10.1 [7.6; 13.3]* (78)				
Comorbidities	W/o comorbidities	2,627	83 (78 - 88)	26/74	23.6	420		2.9 [2.3; 3.6] (1,635)	3.2 [2.5; 4.0] (1,135)	3.6 [2.8; 4.5] (735)	4.0 [3.1; 5.1] (403)	4.0 [3.1; 5.1] (183)	*4.0 [3.1; 5.1]* (66)	
	1-4 comorbidities	33,761	84 (80 - 89)	27/73	24.2	546		4.1 [3.9; 4.4] (18,712)	4.4 [4.2; 4.6] (12,143)	4.5 [4.3; 4.8] (7,167)	4.7 [4.4; 5.0] (3,759)	4.7 [4.5; 5.0] (1,687)	4.9 [4.5; 5.3] (488)	*4.9 [4.5; 5.3]* (67)
	More than 4 comorbidities	11,510	84 (80 - 89)	32/68	24.8	510		6.6 [6.1; 7.2] (5,008)	6.8 [6.3; 7.4] (2,960)	7.1 [6.5; 7.7] (1,611)	7.1 [6.6; 7.7] (795)	7.6 [6.8; 8.4] (313)	*7.6 [6.8; 8.4]* (84)	
Hospital size*	Hospitals with low annual case volumes	24,631	84 (80 - 89)	29/71	24.3	307		4.4 [4.1; 4.7] (13,050)	4.6 [4.4; 4.9] (8,294)	4.8 [4.5; 5.1] (4,889)	5.0 [4.7; 5.3] (2,558)	5.0 [4.7; 5.4] (1,121)	5.2 [4.7; 5.7] (324)	
	Hospitals with average annual case volumes	19,853	85 (80 - 89)	28/72	24.2	202		4.9 [4.5; 5.2] (10,487)	5.1 [4.8; 5.4] (6,724)	5.3 [4.9; 5.7] (3,871)	5.5 [5.1; 5.9] (1,932)	5.6 [5.2; 6.1] (834)	5.6 [5.2; 6.1] (235)	
	Hospitals with high annual case volumes	1,523	85 (79 - 89)	27/73	24.0	29		5.3 [4.2; 6.7] (777)	6.0 [4.8; 7.5] (485)	6.5 [5.2; 8.2] (286)	6.5 [5.2; 8.2] (167)	*6.5 [5.2; 8.2]* (79)		
Standard TKAs		293,256	70 (62 - 77)	34/66	30.1	684		1.7 [1.7; 1.8] (240,799)	2.6 [2.5; 2.6] (190,743)	3.1 [3.0; 3.1] (139,799)	3.4 [3.3; 3.5] (92,816)	3.7 [3.6; 3.7] (52,392)	3.9 [3.8; 4.0] (21,551)	4.2 [4.0; 4.3] (5,746)
Age group	≤ 54 years	21,422	51 (49 - 53)	36/64	33.1	655		2.5 [2.3; 2.7] (17,475)	4.2 [3.9; 4.5] (13,866)	5.2 [4.8; 5.5] (10,177)	5.9 [5.6; 6.3] (6,805)	6.4 [6.0; 6.9] (3,825)	6.8 [6.4; 7.3] (1,619)	7.4 [6.7; 8.2] (499)
	55–64 years	71,894	60 (58 - 62)	38/62	32.0	677		1.7 [1.6; 1.8] (58,005)	2.8 [2.7; 3.0] (45,240)	3.5 [3.3; 3.6] (32,879)	4.0 [3.8; 4.1] (21,765)	4.3 [4.1; 4.5] (12,303)	4.7 [4.5; 5.0] (5,163)	5.2 [4.9; 5.6] (1,442)
	65–74 years	98,492	70 (67 - 72)	34/66	30.7	677		1.5 [1.4; 1.6] (81,131)	2.3 [2.2; 2.4] (64,556)	2.8 [2.6; 2.9] (47,869)	3.1 [2.9; 3.2] (32,227)	3.3 [3.1; 3.4] (18,656)	3.5 [3.3; 3.7] (7,900)	3.8 [3.5; 4.0] (2,225)
	75–84 years	93,492	78 (76 - 81)	32/68	28.4	675		1.7 [1.6; 1.8] (77,968)	2.3 [2.2; 2.4] (62,270)	2.6 [2.5; 2.7] (45,565)	2.8 [2.7; 2.9] (29,968)	3.0 [2.9; 3.1] (16,552)	3.0 [2.9; 3.2] (6,491)	3.2 [3.0; 3.4] (1,502)
	85 years and older	7,956	86 (85 - 88)	30/70	26.8	625		2.0 [1.7; 2.3] (6,220)	2.3 [2.0; 2.7] (4,811)	2.6 [2.3; 3.1] (3,309)	2.8 [2.4; 3.2] (2,051)	2.8 [2.4; 3.2] (1,056)	3.0 [2.4; 3.7] (378)	*3.0 [2.4; 3.7]* (78)
Sex	Male	100,115	69 (61 - 76)	100/0	29.6	676		2.1 [2.0; 2.2] (81,099)	2.9 [2.8; 3.0] (63,268)	3.4 [3.3; 3.5] (45,588)	3.8 [3.6; 3.9] (29,553)	4.0 [3.9; 4.2] (16,336)	4.3 [4.1; 4.5] (6,584)	4.6 [4.3; 4.8] (1,776)
	Female	193,141	71 (63 - 77)	0/100	30.5	681		1.5 [1.5; 1.6] (159,700)	2.4 [2.3; 2.5] (127,475)	2.9 [2.8; 3.0] (94,211)	3.2 [3.1; 3.3] (63,263)	3.5 [3.4; 3.6] (36,056)	3.7 [3.6; 3.8] (14,967)	4.0 [3.8; 4.2] (3,970)

* For classification see legend in Figure 19

Table 40 (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
Body Mass Index	≤25	27,465	75 (67 - 80)	31/69	23.6	641		1.4 [1.3; 1.6] (20,811)	2.2 [2.0; 2.4] (14,348)	2.6 [2.4; 2.8] (7,937)	2.9 [2.7; 3.2] (2,004)			
	>25 to ≤30	66,819	73 (65 - 78)	41/59	27.6	655		1.5 [1.4; 1.6] (50,732)	2.2 [2.1; 2.4] (35,403)	2.6 [2.5; 2.8] (19,387)	3.0 [2.8; 3.2] (4,998)			
	>30 to ≤35	56,355	69 (62 - 76)	36/64	32.0	650		1.6 [1.5; 1.8] (42,762)	2.4 [2.3; 2.6] (29,705)	2.9 [2.7; 3.1] (16,372)	3.2 [3.0; 3.4] (4,150)			
	>35 to ≤40	28,172	66 (59 - 72)	29/71	37.0	646		1.9 [1.7; 2.1] (21,216)	2.9 [2.7; 3.1] (14,689)	3.3 [3.1; 3.6] (8,031)	3.6 [3.3; 3.8] (2,044)			
	>40	15,786	62 (57 - 68)	22/78	42.9	636		2.5 [2.3; 2.8] (11,832)	3.3 [3.0; 3.7] (8,219)	4.0 [3.7; 4.4] (4,506)	4.4 [4.0; 4.8] (1,123)			
Comorbidities	W/o comorbidities	42,774	67 (59 - 75)	40/60	27.5	670		1.4 [1.3; 1.5] (35,031)	2.4 [2.3; 2.6] (27,620)	2.9 [2.8; 3.1] (20,431)	3.3 [3.1; 3.5] (13,763)	3.7 [3.4; 3.9] (7,676)	3.8 [3.6; 4.1] (3,294)	4.3 [3.9; 4.7] (978)
	1-4 comorbidities	236,819	70 (63 - 77)	33/67	30.5	683		1.7 [1.6; 1.7] (194,793)	2.5 [2.4; 2.6] (154,566)	3.0 [2.9; 3.1] (113,198)	3.3 [3.2; 3.4] (75,081)	3.5 [3.5; 3.6] (42,484)	3.8 [3.7; 3.9] (17,375)	4.1 [3.9; 4.2] (4,534)
	More than 4 comorbidities	13,663	74 (67 - 79)	30/70	33.5	639		3.3 [3.0; 3.6] (10,975)	4.2 [3.8; 4.5] (8,557)	4.7 [4.3; 5.1] (6,170)	5.2 [4.8; 5.7] (3,972)	5.6 [5.2; 6.1] (2,232)	6.0 [5.4; 6.6] (882)	6.0 [5.4; 6.6] (234)
Hospital size*	Hospitals with low annual case volumes	118,396	70 (62 - 77)	34/66	30.2	492		1.9 [1.8; 2.0] (97,289)	2.8 [2.7; 2.9] (77,084)	3.3 [3.2; 3.4] (56,234)	3.7 [3.6; 3.8] (36,688)	4.0 [3.8; 4.1] (20,286)	4.2 [4.0; 4.4] (7,714)	4.5 [4.2; 4.7] (1,572)
	Hospitals with average annual case volumes	103,521	70 (62 - 77)	34/66	30.1	136		1.7 [1.6; 1.7] (85,416)	2.5 [2.4; 2.6] (67,861)	3.0 [2.9; 3.1] (49,901)	3.4 [3.2; 3.5] (32,949)	3.6 [3.5; 3.8] (18,357)	3.9 [3.7; 4.1] (7,317)	4.2 [4.0; 4.5] (1,546)
	Hospitals with high annual case volumes	65,937	69 (61 - 76)	35/65	30.0	32		1.4 [1.3; 1.5] (53,580)	2.2 [2.0; 2.3] (42,024)	2.5 [2.4; 2.7] (30,635)	2.9 [2.7; 3.0] (20,981)	3.1 [2.9; 3.2] (12,426)	3.3 [3.1; 3.4] (5,944)	3.6 [3.3; 3.8] (2,437)
Constrained TKAs		14,199	75 (66 - 80)	24/76	29.0	625		4.0 [3.7; 4.3] (11,134)	5.1 [4.8; 5.5] (8,629)	5.7 [5.3; 6.1] (6,153)	6.1 [5.6; 6.5] (3,989)	6.3 [5.9; 6.8] (2,111)	6.6 [6.0; 7.1] (873)	6.9 [6.1; 7.7] (209)
Age group	≤ 54 years	842	51 (47 - 53)	36/64	32.8	285		4.4 [3.2; 6.1] (659)	6.1 [4.6; 8.1] (517)	7.5 [5.8; 9.8] (374)	7.8 [6.0; 10.1] (247)	*8.3 [6.3; 10.8]* (132)	*8.3 [6.3; 10.8]* (58)	
	55–64 years	2,242	60 (58 - 63)	32/68	32.1	456		4.4 [3.6; 5.4] (1,751)	5.9 [4.9; 7.0] (1,355)	6.6 [5.6; 7.8] (970)	7.2 [6.1; 8.5] (636)	7.6 [6.3; 9.0] (345)	*8.0 [6.6; 9.6]* (138)	
	65–74 years	4,004	70 (67 - 72)	24/76	30.6	527		4.2 [3.6; 4.8] (3,163)	5.6 [4.9; 6.4] (2,498)	6.4 [5.6; 7.2] (1,818)	6.9 [6.1; 7.9] (1,218)	7.2 [6.3; 8.2] (673)	7.2 [6.3; 8.2] (304)	*8.0 [6.3; 10.2]* (66)
	75–84 years	5,944	79 (77 - 82)	20/80	27.5	559		3.6 [3.1; 4.1] (4,715)	4.5 [4.0; 5.1] (3,648)	4.8 [4.2; 5.4] (2,566)	5.0 [4.4; 5.7] (1,629)	5.3 [4.6; 6.0] (850)	5.7 [4.9; 6.7] (338)	*5.7 [4.9; 6.7]* (81)
	85 years and older	1,167	87 (85 - 88)	18/82	25.8	403		4.2 [3.2; 5.6] (846)	4.6 [3.5; 6.1] (611)	4.6 [3.5; 6.1] (425)	4.6 [3.5; 6.1] (259)	*4.6 [3.5; 6.1]* (111)		
Sex	Male	3,407	72 (63 - 79)	100/0	28.7	499		5.0 [4.3; 5.8] (2,609)	6.2 [5.4; 7.1] (2,019)	7.0 [6.1; 8.0] (1,442)	7.4 [6.5; 8.4] (916)	7.7 [6.7; 8.9] (457)	7.7 [6.7; 8.9] (186)	
	Female	10,792	75 (67 - 81)	0/100	29.1	617		3.7 [3.3; 4.0] (8,525)	4.8 [4.4; 5.3] (6,610)	5.3 [4.8; 5.8] (4,711)	5.6 [5.2; 6.2] (3,073)	5.9 [5.4; 6.4] (1,654)	6.2 [5.6; 6.9] (687)	6.6 [5.7; 7.7] (164)
Body Mass Index	≤25	2,269	79 (71 - 83)	20/80	23.1	461		3.4 [2.7; 4.3] (1,619)	4.9 [4.0; 6.0] (1,057)	5.4 [4.4; 6.6] (558)	*5.4 [4.4; 6.6]* (147)			
	>25 to ≤30	3,181	77 (69 - 81)	30/70	27.5	500		3.9 [3.3; 4.7] (2,321)	5.0 [4.3; 5.9] (1,595)	5.5 [4.7; 6.5] (870)	5.7 [4.9; 6.8] (258)			
	>30 to ≤35	2,254	73 (66 - 79)	24/76	32.0	446		3.5 [2.8; 4.4] (1,670)	4.5 [3.6; 5.5] (1,148)	4.8 [3.9; 5.9] (619)	5.7 [4.4; 7.3] (185)			
	>35 to ≤40	1,149	69 (61 - 76)	21/79	37.0	346		5.0 [3.9; 6.5] (823)	6.6 [5.2; 8.4] (581)	7.3 [5.8; 9.3] (317)	*7.3 [5.8; 9.3]* (96)			
	>40	777	64 (57 - 70)	18/82	43.8	297		5.2 [3.8; 7.1] (577)	5.9 [4.4; 7.9] (408)	7.3 [5.5; 9.7] (234)	*7.8 [5.8; 10.6]* (56)			
Comorbidities	W/o comorbidities	1,548	71 (62 - 79)	30/70	26.6	402		2.2 [1.6; 3.1] (1,234)	3.5 [2.6; 4.7] (967)	3.8 [2.9; 5.1] (729)	4.0 [3.0; 5.3] (461)	4.3 [3.2; 5.8] (253)	*4.3 [3.2; 5.8]* (114)	
	1-4 comorbidities	11,304	74 (66 - 80)	24/76	29.3	609		3.9 [3.5; 4.3] (8,946)	5.0 [4.6; 5.4] (6,955)	5.6 [5.2; 6.1] (4,941)	6.0 [5.6; 6.6] (3,234)	6.2 [5.7; 6.7] (1,708)	6.5 [5.9; 7.1] (715)	6.9 [6.0; 7.9] (169)
	More than 4 comorbidities	1,347	78 (71 - 82)	21/79	30.9	405		6.9 [5.7; 8.5] (954)	8.3 [6.9; 10.1] (707)	8.5 [7.0; 10.2] (483)	8.7 [7.2; 10.4] (294)	9.9 [8.0; 12.4] (150)		

* For classification see legend in Figure 20

Table 40 (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
Hospital size*	Hospitals with low annual case volumes	7,464	75 (67 - 80)	24/76	29.1	441		3.9 [3.5; 4.4] (5,841)	5.2 [4.6; 5.7] (4,519)	5.8 [5.3; 6.5] (3,214)	6.3 [5.7; 7.0] (2,067)	6.7 [6.0; 7.4] (1,108)	7.0 [6.2; 7.9] (407)	*7.9 [6.2; 9.9]* (59)
	Hospitals with average annual case volumes	4,544	75 (66 - 80)	24/76	28.7	132		4.5 [4.0; 5.2] (3,539)	5.5 [4.9; 6.3] (2,733)	6.0 [5.2; 6.7] (1,912)	6.0 [5.3; 6.8] (1,207)	6.1 [5.4; 6.9] (593)	6.4 [5.5; 7.5] (223)	*6.4 [5.5; 7.5]* (53)
	Hospitals with high annual case volumes	1,961	72 (63 - 79)	26/74	29.1	32		3.0 [2.3; 3.9] (1,557)	4.1 [3.3; 5.1] (1,226)	4.4 [3.5; 5.5] (899)	5.0 [4.0; 6.2] (624)	5.0 [4.0; 6.2] (349)	5.0 [4.0; 6.2] (205)	*5.0 [4.0; 6.2]* (80)
Unicondylar knee arthroplasties		42,899	64 (57 - 72)	44/56	29.5	600		3.0 [2.8; 3.1] (34,398)	4.8 [4.6; 5.0] (26,339)	5.8 [5.6; 6.1] (18,760)	6.7 [6.5; 7.0] (11,958)	7.2 [6.9; 7.6] (6,421)	7.9 [7.5; 8.3] (2,413)	8.1 [7.6; 8.5] (800)
Age group	≤ 54 years	7,108	51 (49 - 53)	41/59	31.3	519		3.7 [3.2; 4.1] (5,670)	6.4 [5.8; 7.1] (4,331)	7.8 [7.1; 8.5] (3,134)	9.3 [8.5; 10.2] (2,008)	10.1 [9.2; 11.1] (1,097)	11.3 [10.1; 12.5] (465)	11.5 [10.3; 12.9] (170)
	55–64 years	15,641	60 (57 - 62)	48/52	30.4	566		2.9 [2.6; 3.2] (12,278)	5.1 [4.7; 5.4] (9,193)	6.2 [5.8; 6.7] (6,495)	7.3 [6.8; 7.8] (4,123)	7.8 [7.3; 8.4] (2,195)	8.5 [7.9; 9.3] (807)	8.5 [7.9; 9.3] (265)
	65–74 years	12,221	69 (67 - 72)	42/58	29.3	510		2.8 [2.5; 3.1] (9,897)	4.2 [3.8; 4.6] (7,703)	5.0 [4.6; 5.5] (5,519)	5.8 [5.3; 6.3] (3,578)	6.1 [5.6; 6.7] (1,978)	6.5 [5.9; 7.1] (724)	6.6 [6.0; 7.4] (238)
	75–84 years	7,472	78 (76 - 80)	42/58	27.7	431		2.9 [2.5; 3.3] (6,193)	4.0 [3.5; 4.4] (4,843)	4.5 [4.0; 5.1] (3,434)	5.0 [4.5; 5.6] (2,136)	5.2 [4.6; 5.9] (1,084)	5.8 [5.1; 6.7] (388)	*6.2 [5.2; 7.5]* (115)
	85 years and older	457	86 (85 - 88)	39/61	26.2	157		2.5 [1.4; 4.5] (360)	3.4 [2.0; 5.8] (269)	3.9 [2.3; 6.4] (178)	*4.5 [2.7; 7.6]* (113)	*4.5 [2.7; 7.6]* (67)		
Sex	Male	18,817	63 (57 - 72)	100/0	29.4	573		2.9 [2.6; 3.1] (14,982)	4.5 [4.2; 4.8] (11,388)	5.4 [5.1; 5.8] (8,006)	6.2 [5.8; 6.7] (5,071)	6.6 [6.2; 7.1] (2,670)	7.4 [6.8; 8.1] (1,037)	7.6 [6.9; 8.3] (348)
	Female	24,082	64 (57 - 72)	0/100	29.7	570		3.0 [2.8; 3.3] (19,416)	5.1 [4.8; 5.4] (14,951)	6.1 [5.8; 6.5] (10,754)	7.1 [6.7; 7.5] (6,887)	7.7 [7.3; 8.2] (3,751)	8.3 [7.8; 8.8] (1,376)	8.4 [7.9; 9.0] (452)
Body Mass Index	≤25	4,158	67 (59 - 76)	37/63	23.7	455		2.7 [2.2; 3.2] (3,036)	4.5 [3.8; 5.3] (1,990)	5.4 [4.7; 6.4] (1,071)	6.6 [5.5; 7.9] (299)			
	>25 to ≤30	10,686	65 (58 - 73)	50/50	27.7	524		2.4 [2.1; 2.7] (7,927)	4.1 [3.7; 4.6] (5,225)	5.4 [4.8; 5.9] (2,841)	6.0 [5.4; 6.6] (744)			
	>30 to ≤35	8,242	63 (57 - 70)	47/53	32.1	508		3.2 [2.9; 3.7] (6,090)	5.1 [4.6; 5.7] (4,072)	6.3 [5.7; 6.9] (2,202)	6.9 [6.2; 7.7] (576)			
	>35 to ≤40	3,569	60 (55 - 67)	39/61	36.9	420		3.0 [2.5; 3.7] (2,617)	5.1 [4.3; 6.0] (1,702)	6.0 [5.1; 7.0] (918)	6.4 [5.4; 7.6] (223)			
	>40	1,426	58 (53 - 63)	31/69	42.4	312		5.0 [3.9; 6.3] (1,037)	6.9 [5.6; 8.6] (704)	7.2 [5.8; 8.9] (408)	*8.0 [6.2; 10.3]* (95)			
Comorbidities	W/o comorbidities	9,783	61 (55 - 68)	48/52	27.5	533		2.7 [2.4; 3.1] (7,939)	4.6 [4.2; 5.1] (6,083)	5.7 [5.2; 6.2] (4,430)	6.5 [5.9; 7.1] (2,964)	7.0 [6.3; 7.6] (1,679)	7.8 [7.1; 8.7] (801)	7.8 [7.1; 8.7] (334)
	1-4 comorbidities	32,211	64 (58 - 73)	43/57	30.3	584		3.0 [2.8; 3.2] (25,738)	4.8 [4.6; 5.1] (19,714)	5.8 [5.5; 6.1] (13,951)	6.7 [6.4; 7.1] (8,775)	7.2 [6.9; 7.6] (4,621)	7.8 [7.4; 8.3] (1,565)	8.1 [7.6; 8.6] (460)
	More than 4 comorbidities	905	69 (61 - 76)	38/62	33.3	236		3.7 [2.7; 5.2] (721)	6.0 [4.5; 7.9] (542)	8.1 [6.3; 10.5] (379)	9.7 [7.5; 12.5] (219)	*9.7 [7.5; 12.5]* (121)		
Hospital size**	Hospitals with low annual case volumes	11,367	62 (56 - 70)	45/55	29.4	436		4.1 [3.8; 4.5] (8,961)	6.7 [6.2; 7.2] (6,809)	8.1 [7.5; 8.7] (4,990)	9.3 [8.7; 10.0] (3,210)	10.0 [9.3; 10.7] (1,674)	10.5 [9.8; 11.4] (637)	*10.7 [9.9; 11.6]* (132)
	Hospitals with average annual case volumes	14,895	63 (57 - 72)	45/55	29.6	122		2.9 [2.6; 3.2] (11,765)	5.0 [4.6; 5.4] (8,683)	6.2 [5.7; 6.6] (5,829)	6.9 [6.4; 7.5] (3,529)	7.6 [7.0; 8.2] (1,785)	9.0 [8.2; 9.9] (657)	9.2 [8.3; 10.2] (189)
	Hospitals with high annual case volumes	15,781	65 (58 - 73)	42/58	29.6	24		2.2 [2.0; 2.5] (12,993)	3.4 [3.1; 3.7] (10,284)	4.0 [3.6; 4.3] (7,507)	4.8 [4.4; 5.2] (4,929)	5.1 [4.7; 5.5] (2,793)	5.3 [4.8; 5.8] (1,055)	5.4 [4.9; 6.0] (453)
Patellofemoral arthroplasties		708	55 (48 - 61)	28/72	28.3	177		4.8 [3.4; 6.9] (540)	7.8 [5.9; 10.3] (404)	10.1 [7.8; 13.0] (290)	13.4 [10.4; 17.0] (183)	*16.1 [12.4; 20.8]* (88)		
Age group	≤ 54 years	353	48 (43 - 51)	26/74	28.3	132		6.1 [3.9; 9.4] (264)	10.8 [7.7; 15.1] (195)	*12.4 [9.0; 17.0]* (144)	*18.1 [13.4; 24.1]* (91)			
Sex	Female	509	54 (48 - 61)	0/100	28.0	149		5.1 [3.4; 7.5] (394)	8.0 [5.8; 11.1] (297)	9.4 [6.9; 12.8] (215)	*12.9 [9.6; 17.2]* (132)	*15.9 [11.6; 21.7]* (63)		
Comorbidities	1-4 comorbidities	449	57 (49 - 63)	27/73	29.2	143		4.6 [2.9; 7.2] (343)	7.4 [5.1; 10.6] (261)	10.9 [7.9; 15.0] (186)	*15.5 [11.5; 20.6]* (115)	*17.6 [13.0; 23.7]* (52)		

* For classification see legend in Figure 20, ** For classification see legend in Figure 21

Table 40 (continued)

5.3 Outcomes of specific implant systems (brands) and combinations

The following tables list the revision probabilities for specific implant systems and components. Hip arthroplasties are presented as femoral stem and acetabular component pairs (Table 41) and knee arthroplasties as femoral and tibial component pairs (Table 42). The outcomes for the stem and acetabular component, obtained by considering each component in isolation across all combinations, are also listed separately (tables 43 and 44). In addition, Table 45 also lists the probabilities for secondary patellar resurfacing for the various total knee arthroplasty systems.

For the following presentations, groups of comparable systems are created, since the baseline conditions for various implant systems can differ and certain implant systems, for example, are only used for very specific indications. 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 neck fracture.

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 3 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 primary arthroplasties with the corresponding components were 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
Hybrid fixation														
ABG II Stem (Stryker)	Trident Cup (Stryker)	440	9	79 (76 - 82)	22/78	2014-2021		2.5 [1.4; 4.5] (409)	3.0 [1.8; 5.1] (344)	3.0 [1.8; 5.1] (242)	*3.0 [1.8; 5.1]* (100)			
Avenir (Zimmer Biomet)	Allofit (Zimmer Biomet)	2,398	102	80 (76 - 83)	23/77	2014-2021		2.2 [1.6; 2.9] (1,556)	2.4 [1.8; 3.2] (959)	2.6 [1.9; 3.4] (594)	2.6 [1.9; 3.4] (384)	2.9 [2.1; 4.0] (195)	*2.9 [2.1; 4.0]* (82)	
Avenir (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	312	14	78 (75 - 81)	19/81	2014-2021		4.1 [2.3; 7.3] (187)	*4.1 [2.3; 7.3]* (105)					
BHR (Smith & Nephew)	BHR (Smith & Nephew)	319	21	55 (51 - 59)	99/1	2014-2021		1.3 [0.5; 3.4] (259)	2.2 [1.0; 4.8] (213)	2.2 [1.0; 4.8] (160)	*2.2 [1.0; 4.8]* (105)	*2.2 [1.0; 4.8]* (61)		
BICONTACT (Aesculap)	PLASMACUP (Aesculap)	315	20	78 (75 - 82)	30/70	2013-2021		2.3 [1.1; 4.7] (284)	2.6 [1.3; 5.1] (267)	2.6 [1.3; 5.1] (231)	3.0 [1.6; 5.8] (187)	*3.0 [1.6; 5.8]* (128)	*3.0 [1.6; 5.8]* (65)	
BICONTACT (Aesculap)	PLASMAFIT (Aesculap)	1,474	76	78.5 (74 - 82)	22/78	2013-2021		2.0 [1.4; 2.9] (1,229)	2.3 [1.6; 3.3] (1,027)	2.8 [2.0; 3.9] (789)	3.1 [2.2; 4.2] (560)	3.1 [2.2; 4.2] (334)	3.1 [2.2; 4.2] (158)	
C-STEM™ AMT-Hüftschaft (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	371	8	80 (75 - 84)	18/82	2014-2021		1.2 [0.4; 3.1] (293)	1.2 [0.4; 3.1] (250)	1.6 [0.6; 3.8] (220)	*1.6 [0.6; 3.8]* (145)	*1.6 [0.6; 3.8]* (82)		
CCA (Mathys)	Allofit (Zimmer Biomet)	427	4	76 (73 - 80)	32/68	2013-2021		2.4 [1.3; 4.3] (402)	3.4 [2.0; 5.6] (382)	3.9 [2.4; 6.2] (361)	4.4 [2.8; 6.9] (335)	4.7 [3.0; 7.3] (288)	4.7 [3.0; 7.3] (202)	*4.7 [3.0; 7.3]* (138)
CORAIL™ AMT-Hüftschaft (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	4,166	128	79 (75 - 82)	22/78	2012-2021		2.7 [2.3; 3.3] (3,007)	3.3 [2.7; 3.9] (2,087)	3.5 [2.9; 4.2] (1,335)	4.1 [3.4; 5.0] (797)	4.4 [3.6; 5.4] (410)	*4.4 [3.6; 5.4]* (143)	
EXCEPTION (Zimmer Biomet)	Allofit (Zimmer Biomet)	606	10	78 (74 - 82)	19/81	2016-2021		2.2 [1.3; 3.7] (500)	2.4 [1.4; 4.0] (358)	2.7 [1.6; 4.4] (196)	*2.7 [1.6; 4.4]* (69)			
EXCIA (Aesculap)	PLASMAFIT (Aesculap)	2,356	83	78 (74 - 82)	23/77	2014-2021		2.0 [1.5; 2.7] (1,811)	2.3 [1.8; 3.0] (1,344)	2.7 [2.0; 3.5] (829)	2.8 [2.1; 3.7] (488)	2.8 [2.1; 3.7] (273)	*2.8 [2.1; 3.7]* (87)	
ICON (IO-International Orthopaedics)	ICON (IO-International Orthopaedics)	303	13	56 (51 - 62)	88/12	2013-2021		1.0 [0.3; 3.0] (291)	1.3 [0.5; 3.5] (282)	1.7 [0.7; 4.1] (225)	*2.7 [1.3; 5.5]* (134)	*2.7 [1.3; 5.5]* (67)		
M.E.M. Geradschaft (Zimmer Biomet)	Allofit (Zimmer Biomet)	15,557	154	78 (75 - 82)	26/74	2012-2021		1.9 [1.7; 2.2] (12,053)	2.1 [1.9; 2.4] (9,202)	2.4 [2.1; 2.7] (6,368)	2.5 [2.2; 2.8] (4,017)	2.7 [2.4; 3.0] (2,060)	2.8 [2.5; 3.2] (820)	3.1 [2.6; 3.7] (168)
M.E.M. Geradschaft (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	350	16	79 (75 - 83)	22/78	2013-2021		2.4 [1.2; 4.7] (279)	2.4 [1.2; 4.7] (216)	*2.4 [1.2; 4.7]* (143)	*3.2 [1.6; 6.6]* (86)			
M.E.M. Geradschaft (Zimmer Biomet)	Trilogy (Zimmer Biomet)	1,302	11	77 (74 - 80)	29/71	2012-2021		1.2 [0.7; 2.0] (1,143)	1.3 [0.8; 2.1] (1,017)	1.4 [0.9; 2.2] (828)	1.4 [0.9; 2.2] (647)	1.5 [1.0; 2.5] (427)	1.5 [1.0; 2.5] (227)	*1.5 [1.0; 2.5]* (101)
METABLOC (Zimmer Biomet)	Allofit (Zimmer Biomet)	1,506	24	78 (75 - 82)	28/72	2013-2021		2.3 [1.7; 3.2] (1,378)	2.7 [2.0; 3.7] (1,177)	3.0 [2.2; 4.0] (911)	3.0 [2.2; 4.0] (634)	3.0 [2.2; 4.0] (396)	3.0 [2.2; 4.0] (172)	

Table 41: 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
Hybrid fixation														
MS-30 (Zimmer Biomet)	Allofit (Zimmer Biomet)	3,171	30	78 (73 - 81)	27/73	2014-2021		1.7 [1.3; 2.2] (2,732)	1.8 [1.4; 2.4] (2,286)	2.0 [1.6; 2.6] (1,812)	2.3 [1.8; 2.9] (1,341)	2.3 [1.8; 2.9] (800)	2.5 [1.9; 3.5] (307)	
Müller Geradschaft (OHST Medizintechnik)	R3 (Smith & Nephew)	827	12	78 (75 - 81)	31/69	2015-2021		3.3 [2.2; 4.8] (675)	3.6 [2.5; 5.1] (531)	3.6 [2.5; 5.1] (291)	*3.6 [2.5; 5.1]* (141)			
Polarschaft Cemented (Smith & Nephew)	R3 (Smith & Nephew)	1,061	49	79 (75 - 82)	23/77	2013-2021		3.1 [2.2; 4.4] (831)	3.3 [2.3; 4.6] (654)	3.4 [2.4; 4.7] (445)	3.6 [2.6; 5.1] (231)	*3.6 [2.6; 5.1]* (75)		
QUADRA (Medacta)	VERSAFITCUP CC TRIO (Medacta)	1,383	34	80 (77 - 83)	23/77	2015-2021		2.4 [1.7; 3.4] (1,048)	2.8 [2.0; 3.8] (749)	2.8 [2.0; 3.8] (435)	2.8 [2.0; 3.8] (184)	*2.8 [2.0; 3.8]* (64)		
SPECTRON (Smith & Nephew)	R3 (Smith & Nephew)	302	7	78.5 (75 - 82)	27/73	2013-2021		1.0 [0.3; 3.1] (232)	1.0 [0.3; 3.1] (182)	*1.0 [0.3; 3.1]* (145)	*1.0 [0.3; 3.1]* (100)	*1.0 [0.3; 3.1]* (52)		
SPII® Modell Lubinus (Waldemar Link)	Allofit (Zimmer Biomet)	4,547	43	77 (74 - 81)	29/71	2013-2021		2.2 [1.8; 2.7] (3,598)	2.7 [2.3; 3.3] (2,726)	3.1 [2.6; 3.7] (1,994)	3.3 [2.7; 3.9] (1,361)	3.4 [2.9; 4.1] (758)	4.2 [3.3; 5.3] (369)	*4.2 [3.3; 5.3]* (138)
SPII® Modell Lubinus (Waldemar Link)	CombiCup PF (Waldemar Link)	1,113	30	77 (73 - 81)	28/72	2014-2021		1.0 [0.6; 1.8] (991)	1.8 [1.2; 2.9] (825)	2.0 [1.3; 3.1] (622)	2.5 [1.7; 3.9] (418)	3.2 [2.1; 5.0] (245)	*3.2 [2.1; 5.0]* (91)	
SPII® Modell Lubinus (Waldemar Link)	MobileLink TiCaP Cluster Hole (Waldemar Link)	380	21	78 (73 - 82)	27/73	2017-2021		*2.9 [1.6; 5.3]* (148)						
Taperloc Cemented (Zimmer Biomet)	G7 (Zimmer Biomet)	367	10	80 (74 - 83)	25/75	2015-2021		1.7 [0.8; 3.7] (302)	2.7 [1.4; 5.2] (234)	2.7 [1.4; 5.2] (175)	*2.7 [1.4; 5.2]* (112)	*2.7 [1.4; 5.2]* (57)		
TRENDHIP (Aesculap)	PLASMAFIT (Aesculap)	405	30	80 (75 - 83)	26/74	2016-2021		2.6 [1.4; 4.8] (307)	2.6 [1.4; 4.8] (228)	*2.6 [1.4; 4.8]* (133)	*2.6 [1.4; 4.8]* (58)			
twinSys cem. (Mathys)	RM Pressfit vitamys (Mathys)	809	20	78 (72 - 82)	22/78	2014-2021		2.3 [1.5; 3.7] (661)	2.5 [1.6; 3.9] (503)	2.5 [1.6; 3.9] (344)	2.8 [1.8; 4.4] (153)	*3.7 [2.1; 6.5]* (50)		
Reverse-hybrid fixation														
BICONTACT (Aesculap)	All POLY CUP(Aesculap)	347	58	76 (70 - 80)	22/78	2013-2021		3.5 [2.0; 6.1] (299)	3.8 [2.2; 6.5] (249)	3.8 [2.2; 6.5] (209)	*3.8 [2.2; 6.5]* (145)	*4.5 [2.6; 7.7]* (83)		
Uncemented fixation														
A2 Kurzschaft (ARTIQO)	ANA.NOVA® Alpha Pfanne (ARTIQO)	2,761	37	64 (58 - 71)	42/58	2016-2021		2.0 [1.5; 2.7] (1,888)	2.1 [1.6; 2.7] (1,298)	2.3 [1.7; 3.0] (795)	2.3 [1.7; 3.0] (341)	*2.3 [1.7; 3.0]* (76)		
A2 Kurzschaft (ARTIQO)	ANA.NOVA® Hybrid Pfanne (ARTIQO)	3,972	30	63 (57 - 70)	37/63	2016-2021		1.6 [1.3; 2.1] (3,006)	2.0 [1.6; 2.5] (2,153)	2.1 [1.7; 2.7] (1,362)	2.3 [1.8; 2.9] (633)	*2.3 [1.8; 2.9]* (127)		
ABG II Stem (Stryker)	Trident Cup (Stryker)	387	12	66 (59 - 71)	43/57	2014-2021		3.4 [2.0; 5.8] (357)	5.3 [3.5; 8.2] (312)	6.0 [4.0; 9.0] (242)	6.4 [4.3; 9.5] (188)	*6.4 [4.3; 9.5]* (146)	*6.4 [4.3; 9.5]* (58)	
Accolade II Stem (Stryker)	Trident Cup (Stryker)	5,647	44	67 (60 - 75)	42/58	2014-2021		2.5 [2.1; 2.9] (4,275)	2.9 [2.4; 3.4] (3,051)	3.0 [2.6; 3.5] (1,754)	3.2 [2.7; 3.8] (850)	3.2 [2.7; 3.8] (411)	*3.2 [2.7; 3.8]* (138)	
Accolade II Stem (Stryker)	Trident TC Cup (Stryker)	482	10	69 (62 - 75)	36/64	2015-2021		1.7 [0.8; 3.3] (462)	2.1 [1.1; 3.9] (445)	2.3 [1.3; 4.2] (431)	2.8 [1.6; 4.8] (386)	3.6 [2.2; 5.8] (281)		
Accolade II Stem (Stryker)	Tritanium Cup (Stryker)	2,276	22	69 (62 - 76)	40/60	2014-2021		2.8 [2.2; 3.6] (1,761)	3.2 [2.5; 4.0] (1,293)	3.6 [2.8; 4.5] (846)	4.1 [3.2; 5.2] (580)	4.1 [3.2; 5.2] (305)	*4.1 [3.2; 5.2]* (117)	
Actinia cementless (Implantcast)	EcoFit cpTi (Implantcast)	585	11	69 (62 - 76)	40/60	2015-2021		2.4 [1.4; 4.0] (552)	3.3 [2.1; 5.1] (494)	3.3 [2.1; 5.1] (323)	*3.7 [2.4; 5.8]* (141)			
Actinia cementless (Implantcast)	EcoFit NH cpTi (Implantcast)	1,262	6	72 (65 - 78)	31/69	2015-2021		2.9 [2.1; 4.0] (1,124)	3.0 [2.2; 4.1] (871)	3.1 [2.3; 4.3] (293)	*3.1 [2.3; 4.3]* (97)			
ACTIS™-Hüftschaft (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	835	26	62 (55 - 69)	42/58	2018-2021		1.9 [1.1; 3.3] (450)	*1.9 [1.1; 3.3]* (129)					
Alloclassic (Zimmer Biomet)	Alloclassic (Zimmer Biomet)	388	7	67 (59 - 75)	32/68	2014-2020		3.9 [2.4; 6.4] (359)	4.5 [2.8; 7.1] (345)	5.0 [3.2; 7.8] (308)	5.7 [3.7; 8.6] (250)	5.7 [3.7; 8.6] (180)	*5.7 [3.7; 8.6]* (85)	
Alloclassic (Zimmer Biomet)	Allofit (Zimmer Biomet)	8,028	63	70 (62 - 76)	35/65	2012-2021		2.6 [2.2; 2.9] (6,935)	3.0 [2.7; 3.4] (5,844)	3.3 [2.9; 3.7] (4,734)	3.5 [3.1; 3.9] (3,509)	3.8 [3.3; 4.3] (2,362)	4.0 [3.5; 4.6] (1,095)	4.1 [3.6; 4.7] (264)
Alloclassic (Zimmer Biomet)	Trilogy (Zimmer Biomet)	473	5	67 (63 - 70)	34/66	2015-2021		3.5 [2.1; 5.6] (408)	4.2 [2.7; 6.5] (348)	4.2 [2.7; 6.5] (275)	4.6 [3.0; 7.1] (207)	*4.6 [3.0; 7.1]* (115)		
Alpha-Fit (Corin)	Trinity no Hole (Corin)	446	3	75 (69 - 78)	32/68	2014-2020		1.6 [0.8; 3.3] (432)	1.8 [0.9; 3.6] (416)	2.3 [1.2; 4.3] (347)	2.3 [1.2; 4.3] (244)	2.3 [1.2; 4.3] (182)	*2.3 [1.2; 4.3]* (107)	

Table 41 (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
Uncemented fixation														
AMISTEM (Medacta)	VERSAFITCUP CC TRIO (Medacta)	1,391	28	66 (58 - 74)	42/58	2015-2021		3.3 [2.5; 4.4] (1,045)	3.6 [2.7; 4.8] (753)	3.8 [2.8; 5.0] (529)	4.0 [3.0; 5.4] (328)	*4.3 [3.2; 5.9]* (142)		
ANA.NOVA® Alpha Schaft (ARTIQO)	ANA.NOVA® Alpha Pfanne (ARTIQO)	883	7	70 (63 - 76)	43/57	2015-2021		3.3 [2.3; 4.8] (767)	3.7 [2.7; 5.2] (654)	4.1 [2.9; 5.7] (518)	4.7 [3.4; 6.6] (350)	4.7 [3.4; 6.6] (223)	*4.7 [3.4; 6.6]* (51)	
ANA.NOVA® Alpha Schaft (ARTIQO)	ANA.NOVA® Hybrid Pfanne (ARTIQO)	929	10	69 (62 - 75)	38/62	2015-2021		1.8 [1.1; 2.9] (745)	2.2 [1.4; 3.5] (579)	2.5 [1.6; 3.8] (406)	2.5 [1.6; 3.8] (248)	*2.5 [1.6; 3.8]* (135)		
ANA.NOVA® Solitär Schaft (ARTIQO)	ANA.NOVA® Hybrid Pfanne (ARTIQO)	460	7	74 (65 - 80)	35/65	2015-2021		4.2 [2.7; 6.6] (398)	4.5 [2.9; 6.8] (300)	5.1 [3.4; 7.7] (176)	*5.1 [3.4; 7.7]* (85)			
Anato Stem (Stryker)	Trident Cup (Stryker)	358	9	68 (60 - 75)	44/56	2016-2021		2.9 [1.6; 5.3] (285)	3.7 [2.1; 6.4] (214)	3.7 [2.1; 6.4] (159)	*3.7 [2.1; 6.4]* (79)			
Avenir (Zimmer Biomet)	Allofit (Zimmer Biomet)	19,034	159	69 (62 - 76)	40/60	2013-2021		3.0 [2.7; 3.2] (14,202)	3.2 [3.0; 3.5] (10,048)	3.3 [3.1; 3.6] (6,289)	3.4 [3.1; 3.6] (3,783)	3.5 [3.2; 3.8] (1,857)	3.5 [3.2; 3.8] (526)	*3.5 [3.2; 3.8]* (62)
Avenir (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	2,357	47	67 (59 - 75)	40/60	2014-2021		3.6 [2.9; 4.4] (1,839)	4.0 [3.2; 4.9] (1,320)	4.2 [3.4; 5.1] (860)	4.2 [3.4; 5.1] (468)	4.6 [3.7; 5.9] (175)		
Avenir Complete (Zimmer Biomet)	Allofit (Zimmer Biomet)	458	19	68 (60 - 73)	38/62	2020-2021		*3.7 [2.2; 6.2]* (66)						
BICONTACT (Aesculap)	PLASMACUP (Aesculap)	4,442	29	70 (64 - 76)	40/60	2013-2021		2.2 [1.8; 2.6] (3,942)	2.5 [2.1; 3.0] (3,438)	2.7 [2.2; 3.2] (2,939)	2.8 [2.3; 3.4] (2,285)	2.8 [2.4; 3.4] (1,572)	2.8 [2.4; 3.4] (822)	2.8 [2.4; 3.4] (246)
BICONTACT (Aesculap)	PLASMAFIT (Aesculap)	11,054	99	71 (64 - 77)	40/60	2013-2021		3.6 [3.3; 4.0] (9,507)	3.9 [3.6; 4.3] (7,934)	4.1 [3.7; 4.5] (6,046)	4.1 [3.8; 4.5] (4,179)	4.2 [3.8; 4.6] (2,460)	4.2 [3.8; 4.6] (1,133)	4.2 [3.8; 4.6] (330)
BICONTACT (Aesculap)	SCREWCUP SC (Aesculap)	611	29	72 (63 - 77)	36/64	2013-2021		3.4 [2.2; 5.2] (518)	5.0 [3.5; 7.1] (418)	5.2 [3.6; 7.4] (316)	5.9 [4.2; 8.4] (173)	*7.7 [5.0; 11.7]* (81)		
Brexis (Zimmer Biomet)	Allofit (Zimmer Biomet)	519	26	61 (54 - 67)	45/55	2016-2021		2.7 [1.6; 4.6] (374)	3.1 [1.9; 5.2] (239)	*3.1 [1.9; 5.2]* (80)				
CLS Spotorno (Zimmer Biomet)	Allofit (Zimmer Biomet)	19,411	174	65 (58 - 72)	43/57	2012-2021		2.8 [2.6; 3.1] (16,460)	3.2 [3.0; 3.5] (13,954)	3.6 [3.3; 3.9] (11,194)	3.8 [3.5; 4.1] (8,241)	3.9 [3.6; 4.2] (5,215)	4.1 [3.8; 4.5] (2,484)	4.2 [3.9; 4.6] (769)
CLS Spotorno (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	1,359	32	66 (58 - 73)	43/57	2013-2021		1.4 [0.9; 2.2] (1,300)	2.3 [1.6; 3.2] (1,221)	2.3 [1.6; 3.2] (961)	2.3 [1.6; 3.2] (767)	2.4 [1.7; 3.4] (596)	2.4 [1.7; 3.4] (367)	2.4 [1.7; 3.4] (204)
CLS Spotorno (Zimmer Biomet)	Trilogy (Zimmer Biomet)	320	7	65 (57 - 71)	41/59	2014-2021		3.4 [1.9; 6.1] (284)	4.5 [2.7; 7.5] (272)	4.5 [2.7; 7.5] (244)	4.5 [2.7; 7.5] (211)	5.0 [3.0; 8.1] (173)	*5.0 [3.0; 8.1]* (92)	
CLS Spotorno (Zimmer Biomet)	Trilogy IT (Zimmer Biomet)	938	3	68 (61 - 74)	42/58	2014-2021		3.5 [2.5; 4.9] (801)	3.8 [2.7; 5.2] (696)	4.1 [2.9; 5.6] (555)	4.1 [2.9; 5.6] (401)	4.3 [3.1; 6.0] (260)	*4.9 [3.4; 7.0]* (106)	
CORAIL™ AMT-Hüftschaft (DePuy)	Allofit (Zimmer Biomet)	1,591	18	69 (60 - 76)	34/66	2015-2021		2.5 [1.9; 3.5] (1,397)	2.7 [2.0; 3.6] (1,216)	3.0 [2.2; 4.0] (986)	3.0 [2.2; 4.0] (575)	3.0 [2.2; 4.0] (260)		
CORAIL™ AMT-Hüftschaft (DePuy)	Allofit IT (Zimmer Biomet)	396	5	72 (66 - 77)	38/62	2015-2021		3.1 [1.7; 5.3] (370)	4.1 [2.6; 6.7] (348)	4.4 [2.8; 7.0] (338)	4.4 [2.8; 7.0] (319)	4.7 [3.0; 7.4] (238)		
CORAIL™ AMT-Hüftschaft (DePuy)	DURALOC™ OPTION™ Press Fit-Hüftpfanne (DePuy)	533	8	67 (60 - 75)	41/59	2013-2021		4.0 [2.6; 6.1] (458)	4.2 [2.8; 6.4] (380)	4.2 [2.8; 6.4] (314)	4.2 [2.8; 6.4] (242)	4.2 [2.8; 6.4] (165)	*4.2 [2.8; 6.4]* (61)	
CORAIL™ AMT-Hüftschaft (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	35,037	157	70 (62 - 76)	38/62	2012-2021		2.5 [2.4; 2.7] (27,905)	3.0 [2.8; 3.1] (21,423)	3.2 [3.0; 3.4] (15,436)	3.5 [3.3; 3.7] (10,045)	3.6 [3.4; 3.8] (5,353)	3.9 [3.6; 4.2] (1,966)	4.1 [3.7; 4.5] (555)
COREHIP (Aesculap)	PLASMAFIT (Aesculap)	1,578	26	68 (59 - 75)	40/60	2017-2021		1.8 [1.2; 2.6] (558)	*3.1 [1.7; 5.4]* (145)					
EcoFit cpTi (Implantcast)	EcoFit cpTi (Implantcast)	301	7	73 (66 - 77)	36/64	2014-2021		5.4 [3.3; 8.6] (270)	5.7 [3.6; 9.1] (253)	5.7 [3.6; 9.1] (222)	6.2 [3.9; 9.6] (187)	6.2 [3.9; 9.6] (156)		
EcoFit cpTi (Implantcast)	EcoFit EPORE (Implantcast)	545	3	75 (69 - 79)	25/75	2016-2021		4.4 [3.0; 6.5] (502)	5.4 [3.8; 7.7] (462)	6.4 [4.6; 9.0] (307)	6.9 [4.9; 9.6] (156)			
EXCEPTION (Zimmer Biomet)	Allofit (Zimmer Biomet)	1,401	12	69 (61 - 75)	49/51	2015-2021		4.4 [3.4; 5.6] (1,224)	4.8 [3.7; 6.0] (906)	5.2 [4.1; 6.6] (580)	5.2 [4.1; 6.6] (280)			
EXCIA (Aesculap)	PLASMAFIT (Aesculap)	9,154	104	70 (62 - 76)	40/60	2014-2021		3.2 [2.8; 3.6] (7,250)	3.6 [3.2; 4.0] (5,508)	3.7 [3.3; 4.1] (3,708)	3.7 [3.4; 4.2] (2,195)	3.8 [3.4; 4.2] (849)	3.8 [3.4; 4.2] (156)	
Fitmore (Zimmer Biomet)	Allofit (Zimmer Biomet)	18,301	186	63 (56 - 70)	46/54	2012-2021		2.2 [2.0; 2.4] (14,823)	2.6 [2.3; 2.8] (11,632)	2.8 [2.6; 3.1] (8,569)	2.9 [2.7; 3.2] (5,721)	3.0 [2.8; 3.3] (3,382)	3.2 [2.9; 3.5] (1,435)	3.2 [2.9; 3.5] (311)
Fitmore (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	2,290	58	58 (51 - 64)	47/53	2012-2021		2.9 [2.2; 3.6] (1,806)	3.6 [2.9; 4.5] (1,414)	4.0 [3.2; 5.0] (1,064)	4.0 [3.2; 5.0] (758)	4.3 [3.4; 5.3] (431)	4.5 [3.6; 5.7] (184)	*4.5 [3.6; 5.7]* (61)

Table 41 (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
Uncemented fixation														
Fitmore (Zimmer Biomet)	Trilogy (Zimmer Biomet)	2,201	13	62 (56 - 67)	43/57	2012-2021		1.7 [1.2; 2.3] (1,884)	2.1 [1.6; 2.8] (1,567)	2.3 [1.7; 3.1] (1,184)	2.5 [1.9; 3.3] (858)	2.7 [2.1; 3.6] (555)	3.0 [2.2; 4.0] (295)	3.0 [2.2; 4.0] (158)
GTS (Zimmer Biomet)	Allofit (Zimmer Biomet)	723	17	65 (57 - 71)	46/54	2014-2021		3.0 [1.9; 4.5] (641)	3.4 [2.3; 5.1] (539)	3.9 [2.6; 5.6] (384)	3.9 [2.6; 5.6] (193)	*3.9 [2.6; 5.6]* (108)		
GTS (Zimmer Biomet)	G7 (Zimmer Biomet)	421	10	66 (58 - 75)	36/64	2014-2021		4.2 [2.6; 6.6] (330)	5.1 [3.3; 7.9] (271)	5.1 [3.3; 7.9] (207)	*5.7 [3.7; 8.7]* (129)	*5.7 [3.7; 8.7]* (92)		
Konusprothese (Zimmer Biomet)	Allofit (Zimmer Biomet)	506	77	54 (45 - 61)	19/81	2013-2021		3.0 [1.8; 5.0] (431)	3.3 [2.0; 5.3] (347)	3.6 [2.2; 5.8] (268)	3.6 [2.2; 5.8] (200)	*3.6 [2.2; 5.8]* (137)	*4.9 [2.6; 8.9]* (63)	
Konusprothese (Zimmer Biomet)	Allofit IT (Zimmer Biomet)	352	16	69 (58 - 76)	11/89	2013-2021		2.9 [1.6; 5.3] (329)	3.5 [2.0; 6.1] (305)	4.2 [2.5; 6.9] (269)	4.6 [2.8; 7.5] (227)	4.6 [2.8; 7.5] (167)	*4.6 [2.8; 7.5]* (125)	*4.6 [2.8; 7.5]* (67)
LCU (Waldemar Link)	Allofit (Zimmer Biomet)	604	5	68 (61 - 75)	50/50	2015-2021		1.9 [1.0; 3.4] (472)	1.9 [1.0; 3.4] (366)	2.5 [1.4; 4.4] (258)	*2.5 [1.4; 4.4]* (138)			
LCU (Waldemar Link)	CombiCup PF (Waldemar Link)	1,096	19	69 (62 - 75)	43/57	2014-2021		2.4 [1.6; 3.5] (1,017)	2.8 [2.0; 4.0] (796)	2.9 [2.1; 4.2] (514)	3.2 [2.2; 4.5] (281)	*3.6 [2.5; 5.4]* (61)		
LCU (Waldemar Link)	CombiCup SC (Waldemar Link)	449	7	62 (54 - 68)	49/51	2015-2021		2.5 [1.4; 4.5] (395)	2.8 [1.6; 4.9] (338)	3.2 [1.8; 5.4] (263)	3.2 [1.8; 5.4] (172)	*3.2 [1.8; 5.4]* (79)		
LCU (Waldemar Link)	MobileLink TiCaP Cluster Hole (Waldemar Link)	467	17	68 (61 - 73)	41/59	2017-2021		4.3 [2.8; 6.7] (247)	*5.7 [3.5; 9.2]* (76)					
M/L Taper (Zimmer Biomet)	Allofit (Zimmer Biomet)	4,645	22	69 (62 - 75)	42/58	2013-2021		3.1 [2.6; 3.6] (3,810)	3.5 [3.0; 4.1] (3,150)	3.9 [3.3; 4.5] (2,526)	4.2 [3.6; 4.8] (1,681)	4.3 [3.7; 5.0] (862)	4.6 [3.8; 5.5] (372)	*4.6 [3.8; 5.5]* (93)
M/L Taper (Zimmer Biomet)	Trilogy (Zimmer Biomet)	521	3	69 (63 - 72)	32/68	2012-2021		1.4 [0.7; 2.8] (479)	1.8 [0.9; 3.4] (438)	1.8 [0.9; 3.4] (405)	1.8 [0.9; 3.4] (372)	2.1 [1.1; 3.8] (290)	2.1 [1.1; 3.8] (194)	*2.1 [1.1; 3.8]* (110)
METABLOC (Zimmer Biomet)	Allofit (Zimmer Biomet)	500	13	72.5 (66 - 78)	38/62	2012-2020		2.0 [1.1; 3.7] (480)	2.4 [1.4; 4.2] (433)	2.7 [1.6; 4.5] (378)	3.5 [2.1; 5.6] (322)	3.5 [2.1; 5.6] (225)	*3.5 [2.1; 5.6]* (129)	*3.5 [2.1; 5.6]* (64)
Metafix (Corin)	Trinity Hole (Corin)	597	11	74 (66 - 79)	36/64	2014-2021		1.6 [0.8; 3.1] (461)	1.6 [0.8; 3.1] (382)	1.9 [1.0; 3.5] (278)	1.9 [1.0; 3.5] (198)	*1.9 [1.0; 3.5]* (110)		
Metafix (Corin)	Trinity no Hole (Corin)	853	8	71 (64 - 76)	47/53	2014-2021		1.4 [0.8; 2.5] (789)	1.9 [1.2; 3.1] (715)	2.1 [1.3; 3.4] (544)	2.3 [1.4; 3.7] (436)	2.8 [1.8; 4.3] (290)	*2.8 [1.8; 4.3]* (131)	
METHA (Aesculap)	PLASMACUP (Aesculap)	1,239	33	58 (52 - 63)	44/56	2013-2021		1.6 [1.0; 2.5] (1,090)	2.3 [1.6; 3.4] (960)	2.3 [1.6; 3.4] (810)	2.5 [1.7; 3.6] (611)	2.5 [1.7; 3.6] (452)	2.5 [1.7; 3.6] (281)	*2.5 [1.7; 3.6]* (129)
METHA (Aesculap)	PLASMAFIT (Aesculap)	5,169	128	57 (52 - 62)	49/51	2013-2021		2.9 [2.5; 3.4] (4,300)	3.5 [3.0; 4.1] (3,501)	3.7 [3.2; 4.3] (2,600)	3.8 [3.3; 4.4] (1,741)	3.9 [3.4; 4.5] (1,028)	4.1 [3.5; 4.8] (513)	*4.1 [3.5; 4.8]* (128)
MiniHip (Corin)	Trinity Hole (Corin)	1,090	33	61 (54 - 68)	49/51	2013-2021		2.3 [1.6; 3.4] (905)	2.7 [1.9; 3.9] (768)	2.8 [2.0; 4.1] (633)	3.0 [2.1; 4.3] (461)	3.3 [2.3; 4.8] (275)	*3.3 [2.3; 4.8]* (113)	
MiniHip (Corin)	Trinity no Hole (Corin)	793	21	60 (54 - 66)	45/55	2014-2021		3.5 [2.4; 5.0] (697)	4.3 [3.1; 6.0] (594)	4.7 [3.4; 6.5] (455)	4.7 [3.4; 6.5] (274)	*5.3 [3.7; 7.6]* (148)		
Nanos Schenkelhalsprothese (OHST / Smith & Nephew)	Allofit (Zimmer Biomet)	802	19	62 (56 - 69)	49/51	2014-2021		2.0 [1.2; 3.3] (729)	2.4 [1.6; 3.8] (658)	2.6 [1.7; 4.0] (564)	2.6 [1.7; 4.0] (451)	2.6 [1.7; 4.0] (295)	*2.6 [1.7; 4.0]* (113)	
Nanos Schenkelhalsprothese (OHST / Smith & Nephew)	EP-FIT PLUS (Smith & Nephew)	396	28	57 (52 - 62)	55/45	2013-2021		3.0 [1.7; 5.4] (317)	3.0 [1.7; 5.4] (290)	3.0 [1.7; 5.4] (254)	3.5 [2.0; 6.1] (215)	3.5 [2.0; 6.1] (150)	*3.5 [2.0; 6.1]* (66)	
Nanos Schenkelhalsprothese (OHST / Smith & Nephew)	HI Lubricer Schale (Smith & Nephew)	478	12	60 (54 - 68)	48/52	2013-2021		1.3 [0.6; 2.8] (443)	2.2 [1.2; 4.0] (412)	3.9 [2.4; 6.2] (356)	4.8 [3.1; 7.4] (260)	5.7 [3.7; 8.7] (174)		
Nanos Schenkelhalsprothese (OHST / Smith & Nephew)	R3 (Smith & Nephew)	1,309	64	58 (52 - 64)	47/53	2013-2021		2.9 [2.1; 4.0] (964)	3.0 [2.2; 4.1] (725)	3.2 [2.3; 4.4] (521)	3.4 [2.5; 4.8] (312)	3.4 [2.5; 4.8] (159)		
Nanos Schenkelhalsprothese (OHST / Smith & Nephew)	REFLECTION (Smith & Nephew)	406	4	67 (58 - 75)	36/64	2013-2021		1.5 [0.7; 3.3] (322)	1.5 [0.7; 3.3] (273)	1.9 [0.9; 3.9] (243)	1.9 [0.9; 3.9] (156)	*1.9 [0.9; 3.9]* (127)		
optimys (Mathys)	Allofit (Zimmer Biomet)	3,040	24	63 (56 - 69)	46/54	2013-2021		2.1 [1.6; 2.6] (2,269)	2.1 [1.7; 2.7] (1,789)	2.3 [1.8; 3.0] (1,345)	2.3 [1.8; 3.0] (879)	2.3 [1.8; 3.0] (464)	2.3 [1.8; 3.0] (158)	
optimys (Mathys)	aneXys Flex (Mathys)	2,098	50	60 (55 - 66)	47/53	2016-2021		1.4 [0.9; 2.0] (1,389)	1.8 [1.3; 2.6] (908)	1.8 [1.3; 2.6] (501)	1.8 [1.3; 2.6] (255)			
optimys (Mathys)	RM Pressfit (Mathys)	610	8	72 (63 - 78)	42/58	2013-2021		2.5 [1.5; 4.1] (528)	3.1 [2.0; 4.9] (451)	3.1 [2.0; 4.9] (313)	3.8 [2.4; 5.9] (191)	*3.8 [2.4; 5.9]* (84)		
optimys (Mathys)	RM Pressfit vitamys (Mathys)	10,227	73	65 (58 - 73)	44/56	2013-2021		1.7 [1.5; 2.0] (7,729)	1.9 [1.7; 2.2] (5,634)	2.0 [1.8; 2.4] (3,780)	2.1 [1.8; 2.5] (2,233)	2.3 [2.0; 2.7] (1,017)	2.3 [2.0; 2.7] (275)	*2.3 [2.0; 2.7]* (63)

Table 41 (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
Uncemented fixation														
Polarschaft (Smith & Nephew)	EP-FIT PLUS (Smith & Nephew)	1,212	32	69 (61 - 75)	45/55	2013-2021		2.3 [1.6; 3.4] (1,047)	2.5 [1.8; 3.6] (932)	2.5 [1.8; 3.6] (803)	2.5 [1.8; 3.6] (566)	2.5 [1.8; 3.6] (277)		
Polarschaft (Smith & Nephew)	HI Lubricer Schale (Smith & Nephew)	2,539	17	70 (63 - 77)	34/66	2013-2021		2.4 [1.9; 3.1] (2,118)	2.8 [2.2; 3.6] (1,781)	2.8 [2.2; 3.6] (1,358)	3.1 [2.4; 3.9] (897)	3.2 [2.5; 4.1] (485)	3.7 [2.6; 5.1] (188)	*3.7 [2.6; 5.1]* (70)
Polarschaft (Smith & Nephew)	R3 (Smith & Nephew)	6,943	81	69 (61 - 76)	43/57	2013-2021		3.0 [2.6; 3.4] (5,427)	3.3 [2.9; 3.7] (4,214)	3.5 [3.1; 4.0] (2,851)	3.8 [3.3; 4.3] (1,659)	3.8 [3.3; 4.3] (717)	3.8 [3.3; 4.3] (206)	
PROFEMUR® GLADIATOR CLASSIC (MicroPort)	PROCOTYL® L BEADED (MicroPort)	331	12	69 (63 - 75)	39/61	2014-2021		3.0 [1.6; 5.6] (315)	4.0 [2.3; 6.8] (218)	*4.0 [2.3; 6.8]* (143)	*4.0 [2.3; 6.8]* (90)	*4.0 [2.3; 6.8]* (56)		
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)	5.1 [3.2; 8.0] (277)	5.4 [3.4; 8.5] (237)	5.4 [3.4; 8.5] (165)	*5.4 [3.4; 8.5]* (80)	
Pyramid (Atesos)	Pyramid (Atesos)	2,631	22	71 (64 - 77)	37/63	2014-2021		2.9 [2.3; 3.6] (2,261)	3.2 [2.6; 3.9] (1,894)	3.5 [2.8; 4.3] (1,528)	3.5 [2.9; 4.4] (1,081)	3.7 [3.0; 4.5] (599)	3.9 [3.1; 4.9] (180)	
QUADRA (Medacta)	VERSAFITCUP CC TRIO (Medacta)	7,231	48	68 (61 - 75)	39/61	2015-2021		2.6 [2.2; 3.0] (5,646)	3.1 [2.7; 3.5] (4,335)	3.4 [3.0; 3.9] (3,088)	3.7 [3.2; 4.3] (1,627)	4.2 [3.5; 4.9] (587)	*5.2 [3.8; 7.0]* (70)	
SL-PLUS Schaft (Smith & Nephew)	Allofit (Zimmer Biomet)	582	12	65 (58 - 71)	36/64	2012-2021		3.6 [2.4; 5.5] (540)	4.6 [3.1; 6.6] (512)	4.9 [3.4; 7.1] (488)	5.1 [3.6; 7.3] (464)	5.8 [4.1; 8.1] (404)	6.0 [4.3; 8.4] (346)	7.0 [5.1; 9.7] (252)
SL-PLUS Schaft (Smith & Nephew)	BICON-PLUS (Smith & Nephew)	1,292	26	72 (65 - 77.5)	37/63	2013-2021		2.2 [1.5; 3.2] (1,127)	3.3 [2.5; 4.5] (968)	4.2 [3.2; 5.6] (822)	5.3 [4.1; 6.8] (669)	5.6 [4.3; 7.2] (493)	6.5 [5.0; 8.4] (288)	*6.9 [5.3; 9.0]* (71)
SL-PLUS Schaft (Smith & Nephew)	EP-FIT PLUS (Smith & Nephew)	394	12	66 (62 - 72)	44/56	2014-2021		2.6 [1.4; 4.8] (344)	2.9 [1.6; 5.2] (310)	2.9 [1.6; 5.2] (271)	3.3 [1.9; 5.7] (232)	3.3 [1.9; 5.7] (173)	*3.8 [2.2; 6.6]* (77)	
SL-PLUS Schaft (Smith & Nephew)	R3 (Smith & Nephew)	1,749	24	69 (63 - 76)	34/66	2013-2021		3.5 [2.7; 4.5] (1,476)	4.3 [3.4; 5.4] (1,221)	4.7 [3.8; 5.9] (915)	4.9 [3.9; 6.0] (608)	5.4 [4.3; 6.7] (315)	*5.4 [4.3; 6.7]* (109)	
SL MIA HA Schaft (Smith & Nephew)	Allofit (Zimmer Biomet)	1,608	14	70 (60 - 78)	31/69	2014-2021		2.6 [1.9; 3.5] (1,200)	3.1 [2.3; 4.2] (846)	3.1 [2.3; 4.2] (457)	3.4 [2.5; 4.6] (276)	*3.4 [2.5; 4.6]* (104)		
SL MIA HA Schaft (Smith & Nephew)	BICON-PLUS (Smith & Nephew)	729	16	71 (64 - 77)	35/65	2013-2021		2.1 [1.3; 3.4] (673)	2.7 [1.7; 4.2] (624)	3.3 [2.2; 5.0] (561)	4.2 [2.9; 6.1] (505)	4.4 [3.1; 6.3] (423)	4.9 [3.4; 6.9] (304)	5.6 [3.9; 7.9] (150)
SL MIA HA Schaft (Smith & Nephew)	EP-FIT PLUS (Smith & Nephew)	625	10	73 (64 - 78)	40/60	2014-2021		3.1 [2.0; 4.8] (563)	3.9 [2.7; 5.8] (511)	4.1 [2.8; 6.1] (472)	4.1 [2.8; 6.1] (398)	4.1 [2.8; 6.1] (249)	*4.1 [2.8; 6.1]* (102)	
SL MIA HA Schaft (Smith & Nephew)	HI Lubricer Schale (Smith & Nephew)	307	7	69 (61 - 74)	35/65	2015-2021		1.4 [0.5; 3.6] (249)	1.8 [0.7; 4.2] (189)	*1.8 [0.7; 4.2]* (123)	*1.8 [0.7; 4.2]* (72)			
SL MIA HA Schaft (Smith & Nephew)	R3 (Smith & Nephew)	1,554	27	69 (61 - 76)	39/61	2015-2021		2.9 [2.2; 3.9] (1,277)	3.2 [2.4; 4.3] (1,001)	3.3 [2.5; 4.4] (689)	3.5 [2.6; 4.6] (343)	*3.8 [2.8; 5.1]* (93)		
SP-CL (Waldemar Link)	Allofit (Zimmer Biomet)	1,592	13	64 (57 - 69)	40/60	2015-2021		3.2 [2.5; 4.3] (1,337)	3.9 [3.0; 5.0] (1,054)	4.3 [3.3; 5.5] (776)	4.3 [3.3; 5.5] (497)	4.3 [3.3; 5.5] (187)		
SP-CL (Waldemar Link)	CombiCup PF (Waldemar Link)	623	22	66 (58 - 72)	39/61	2014-2021		3.6 [2.4; 5.3] (582)	3.9 [2.6; 5.8] (540)	4.3 [2.9; 6.2] (416)	4.3 [2.9; 6.2] (287)	*4.3 [2.9; 6.2]* (138)		
SP-CL (Waldemar Link)	MobileLink TiCaP Cluster Hole (Waldemar Link)	448	18	66 (57 - 73)	34/66	2017-2021		5.0 [3.3; 7.6] (261)	*6.9 [4.5; 10.6]* (102)					
SPS Evolution (Symbios)	APRIL Poly (Symbios)	324	4	60 (55 - 67)	46/54	2015-2021		0.9 [0.3; 2.9] (291)	1.6 [0.7; 3.8] (242)	1.6 [0.7; 3.8] (174)	*1.6 [0.7; 3.8]* (88)			
Taperloc (Zimmer Biomet)	Allofit (Zimmer Biomet)	1,408	22	67.5 (61 - 75)	41/59	2015-2021		2.6 [1.9; 3.6] (912)	2.9 [2.1; 4.0] (588)	3.0 [2.2; 4.2] (321)	3.0 [2.2; 4.2] (159)			
Taperloc (Zimmer Biomet)	G7 (Zimmer Biomet)	1,844	8	70 (62 - 76)	35/65	2014-2021		2.7 [2.0; 3.5] (1,601)	3.4 [2.6; 4.3] (1,403)	4.2 [3.3; 5.2] (1,165)	4.7 [3.7; 5.8] (761)	5.3 [4.1; 6.7] (303)		
TAPERLOC COMPLETE (Zimmer Biomet)	Allofit (Zimmer Biomet)	647	17	64 (57 - 71)	51/49	2017-2021		2.6 [1.6; 4.1] (430)	2.8 [1.8; 4.6] (193)	*2.8 [1.8; 4.6]* (64)				
TAPERLOC COMPLETE (Zimmer Biomet)	G7 (Zimmer Biomet)	693	7	68 (60 - 75)	38/62	2015-2021		3.6 [2.4; 5.3] (530)	4.7 [3.2; 6.7] (328)	*5.0 [3.5; 7.2]* (61)				
TAPERLOC COMPLETE (Zimmer Biomet)	PLASMAFIT (Aesculap)	2,406	3	66 (59 - 73)	43/57	2015-2021		1.4 [1.0; 1.9] (2,265)	1.5 [1.1; 2.0] (1,838)	1.5 [1.1; 2.0] (1,411)	1.6 [1.2; 2.2] (913)	1.6 [1.2; 2.2] (454)		
TRENDHIP (Aesculap)	PLASMAFIT (Aesculap)	4,618	52	69 (62 - 76)	40/60	2014-2021		2.6 [2.2; 3.1] (3,846)	2.8 [2.4; 3.4] (3,114)	2.8 [2.4; 3.4] (2,084)	2.9 [2.4; 3.5] (1,097)	2.9 [2.4; 3.5] (601)	2.9 [2.4; 3.5] (226)	
TRENDHIP (Aesculap)	SCREWCUP SC (Aesculap)	403	9	71 (63 - 78)	36/64	2015-2021		2.7 [1.5; 4.9] (371)	3.1 [1.8; 5.4] (275)	4.3 [2.6; 7.2] (169)	*5.0 [3.0; 8.3]* (91)			

Table 41 (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
Uncemented fixation														
TRILOCK™-Hüftschaft (DePuy)	PINNACLE™ Press Fit-Hüftpfanne (DePuy)	3,436	46	60 (54 - 66)	49/51	2013-2021		1.9 [1.5; 2.4] (2,786)	2.6 [2.1; 3.2] (2,159)	2.8 [2.3; 3.5] (1,464)	3.1 [2.5; 3.9] (1,025)	3.1 [2.5; 3.9] (638)	3.4 [2.6; 4.4] (296)	*3.4 [2.6; 4.4]* (76)
TRJ (Aesculap)	PLASMACUP (Aesculap)	407	7	72 (65 - 77)	28/72	2014-2021		2.5 [1.3; 4.6] (376)	2.8 [1.5; 5.0] (339)	2.8 [1.5; 5.0] (245)	3.2 [1.8; 5.7] (183)	*3.2 [1.8; 5.7]* (140)	*3.2 [1.8; 5.7]* (59)	
TRJ (Aesculap)	PLASMAFIT (Aesculap)	367	20	70 (62 - 76)	36/64	2013-2021		3.6 [2.0; 6.2] (259)	5.8 [3.6; 9.2] (182)	*5.8 [3.6; 9.2]* (120)	*5.8 [3.6; 9.2]* (67)			
twinSys uncem. (Mathys)	aneXys Flex (Mathys)	974	24	71 (65 - 77)	43/57	2016-2021		3.6 [2.6; 5.0] (675)	3.9 [2.8; 5.4] (457)	3.9 [2.8; 5.4] (232)	*4.4 [3.1; 6.2]* (101)			
twinSys uncem. (Mathys)	RM Classic (Mathys)	734	9	76 (70 - 80)	31/69	2013-2021		1.1 [0.6; 2.3] (624)	1.5 [0.8; 2.7] (484)	2.0 [1.1; 3.5] (368)	2.0 [1.1; 3.5] (291)	2.3 [1.3; 4.1] (243)	2.3 [1.3; 4.1] (192)	2.3 [1.3; 4.1] (160)
twinSys uncem. (Mathys)	RM Pressfit (Mathys)	464	9	75 (69 - 79)	40/60	2013-2021		2.4 [1.3; 4.3] (435)	3.1 [1.8; 5.1] (404)	3.3 [2.0; 5.4] (337)	3.6 [2.2; 5.8] (290)	3.6 [2.2; 5.8] (203)	*3.6 [2.2; 5.8]* (111)	
twinSys uncem. (Mathys)	RM Pressfit vitamys (Mathys)	2,205	28	72 (64 - 78)	37/63	2013-2021		2.1 [1.5; 2.8] (1,792)	2.3 [1.8; 3.1] (1,350)	2.5 [1.9; 3.3] (944)	2.6 [2.0; 3.4] (560)	2.6 [2.0; 3.4] (266)	*3.3 [2.1; 5.1]* (135)	
Cemented fixation														
Avenir (Zimmer Biomet)	Flachprofil (Zimmer Biomet)	701	59	81 (77 - 84)	22/78	2014-2021		3.1 [2.0; 4.7] (468)	3.4 [2.2; 5.2] (314)	3.4 [2.2; 5.2] (199)	*3.4 [2.2; 5.2]* (107)			
BICONTACT (Aesculap)	All POLY CUP (Aesculap)	1,472	64	81 (77 - 84)	22/78	2013-2021		2.4 [1.7; 3.3] (1,300)	2.4 [1.7; 3.3] (1,135)	2.6 [1.9; 3.6] (922)	2.7 [2.0; 3.7] (662)	2.7 [2.0; 3.7] (420)	2.7 [2.0; 3.7] (226)	*3.2 [2.2; 4.7]* (89)
CORAIL™ AMT-Hüftschaft (DePuy)	TRILOC® II-PE-Hüftpfanne (DePuy)	842	70	80 (76 - 84)	18/82	2013-2021		2.7 [1.8; 4.1] (692)	2.9 [1.9; 4.3] (572)	3.0 [2.0; 4.5] (433)	3.3 [2.2; 4.9] (316)	4.1 [2.7; 6.3] (179)		
CS PLUS Schaft (Smith & Nephew)	Hüftpfanne Müller II (OHST Medizintechnik)	485	20	79 (77 - 82)	26/74	2014-2019		1.0 [0.4; 2.5] (454)	1.7 [0.9; 3.4] (432)	2.2 [1.2; 4.0] (400)	2.2 [1.2; 4.0] (307)	2.2 [1.2; 4.0] (192)	*2.2 [1.2; 4.0]* (60)	
EXCIA (Aesculap)	All POLY CUP (Aesculap)	986	62	79.5 (75 - 83)	24/76	2014-2021		2.2 [1.5; 3.4] (785)	2.8 [1.9; 4.1] (609)	3.0 [2.0; 4.3] (477)	3.0 [2.0; 4.3] (342)	3.3 [2.2; 4.8] (221)	*3.3 [2.2; 4.8]* (86)	
M.E.M. Geradschaft (Zimmer Biomet)	Flachprofil (Zimmer Biomet)	4,150	130	80 (77 - 84)	24/76	2012-2021		2.3 [1.9; 2.8] (3,444)	2.7 [2.2; 3.3] (2,797)	2.8 [2.4; 3.4] (2,134)	3.0 [2.5; 3.6] (1,496)	3.1 [2.6; 3.7] (922)	3.1 [2.6; 3.7] (436)	*3.1 [2.6; 3.7]* (134)
METABLOC (Zimmer Biomet)	Flachprofil (Zimmer Biomet)	420	17	79 (76 - 83)	26/74	2013-2021		2.7 [1.5; 4.8] (375)	2.9 [1.7; 5.1] (312)	3.3 [1.9; 5.7] (240)	3.3 [1.9; 5.7] (161)	*3.3 [1.9; 5.7]* (82)		
MS-30 (Zimmer Biomet)	Flachprofil (Zimmer Biomet)	478	27	79 (75 - 83)	23/77	2013-2021		1.5 [0.7; 3.1] (442)	1.7 [0.9; 3.4] (403)	2.0 [1.1; 3.9] (299)	2.0 [1.1; 3.9] (202)	*2.0 [1.1; 3.9]* (141)	*2.0 [1.1; 3.9]* (64)	
Polarschaft Cemented (Smith & Nephew)	Hüftpfanne Müller II (OHST Medizintechnik)	591	29	80 (76 - 84)	23/77	2014-2021		3.5 [2.2; 5.3] (499)	3.9 [2.6; 5.8] (425)	3.9 [2.6; 5.8] (312)	3.9 [2.6; 5.8] (187)	*3.9 [2.6; 5.8]* (80)		
SPII® Modell Lubinus (Waldemar Link)	Endo-Modell Mark III (Waldemar Link)	470	6	77 (73 - 81)	18/82	2012-2021		2.2 [1.2; 4.0] (439)	2.8 [1.7; 4.9] (398)	2.8 [1.7; 4.9] (359)	3.1 [1.9; 5.2] (317)	3.1 [1.9; 5.2] (270)	3.1 [1.9; 5.2] (228)	3.1 [1.9; 5.2] (161)
SPII® Modell Lubinus (Waldemar Link)	IP-Hüftpfannen, UHMWPE (Waldemar Link)	386	15	80 (77 - 83)	26/74	2013-2021		1.8 [0.9; 3.8] (346)	2.4 [1.3; 4.6] (310)	2.8 [1.5; 5.1] (233)	2.8 [1.5; 5.1] (171)	*2.8 [1.5; 5.1]* (132)	*2.8 [1.5; 5.1]* (54)	
SPII® Modell Lubinus (Waldemar Link)	IP-Hüftpfannen, X-Linked (Waldemar Link)	778	22	81 (78 - 84)	25/75	2014-2021		2.5 [1.6; 3.9] (692)	2.8 [1.8; 4.2] (596)	3.3 [2.2; 4.9] (457)	4.2 [2.8; 6.1] (325)	4.2 [2.8; 6.1] (201)	*4.2 [2.8; 6.1]* (77)	
SPII® Modell Lubinus (Waldemar Link)	Kunststoffpfanne Modell Lubinus (Waldemar Link)	841	18	79 (75 - 83)	24/76	2013-2021		0.9 [0.4; 1.8] (699)	1.2 [0.6; 2.3] (554)	1.2 [0.6; 2.3] (426)	1.4 [0.8; 2.7] (314)	1.9 [1.0; 3.7] (180)	*1.9 [1.0; 3.7]* (90)	
twinSys cem. (Mathys)	CCB (Mathys)	432	21	80 (76 - 83)	24/76	2014-2021		1.4 [0.6; 3.2] (350)	2.3 [1.2; 4.4] (272)	2.3 [1.2; 4.4] (193)	*2.3 [1.2; 4.4]* (141)	*3.3 [1.6; 6.7]* (81)		

Table 41 (continued)

Total knee arthroplasties								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
Standard total knee systems, cruciate-retaining, fixed bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	309	5	71 (64 - 77)	44/56	2016-2021		0.7 [0.2; 2.7] (234)	1.2 [0.4; 3.8] (168)	*1.8 [0.7; 5.0]* (112)	*1.8 [0.7; 5.0]* (52)			
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	708	5	69 (62 - 76)	37/63	2014-2021		3.4 [2.3; 5.1] (662)	4.0 [2.8; 5.8] (569)	4.4 [3.1; 6.2] (434)	4.7 [3.3; 6.6] (285)	*5.2 [3.6; 7.5]* (135)		
EFK Femur zementfrei (OHST Medizintechnik)	EFK Tibia zementiert (OHST Medizintechnik)	1,230	15	70 (63 - 76)	42/58	2014-2021		1.2 [0.7; 2.0] (1,122)	1.5 [1.0; 2.4] (1,014)	1.8 [1.2; 2.8] (914)	2.0 [1.3; 3.0] (819)	2.5 [1.7; 3.6] (621)	3.5 [2.4; 5.1] (294)	
GENESIS II CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	438	6	68 (62 - 76)	43/57	2012-2021		0.8 [0.2; 2.3] (391)	1.3 [0.5; 3.0] (345)	1.6 [0.7; 3.5] (306)	1.6 [0.7; 3.5] (245)	1.6 [0.7; 3.5] (177)	*1.6 [0.7; 3.5]* (125)	*1.6 [0.7; 3.5]* (61)
LEGION CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	406	8	69 (61 - 77)	48/52	2017-2021		2.7 [1.4; 4.9] (267)	4.3 [2.4; 7.5] (153)	*4.3 [2.4; 7.5]* (85)				
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	737	18	69 (61 - 75)	49/51	2014-2021		0.6 [0.2; 1.5] (688)	1.9 [1.1; 3.3] (627)	2.1 [1.2; 3.5] (516)	2.3 [1.4; 3.8] (326)	2.6 [1.6; 4.3] (160)	*2.6 [1.6; 4.3]* (80)	
NexGen CR (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	503	6	69 (62 - 75)	49/51	2014-2021		0.6 [0.2; 1.9] (483)	1.0 [0.4; 2.4] (445)	1.0 [0.4; 2.4] (409)	1.0 [0.4; 2.4] (355)	1.4 [0.6; 3.1] (209)	*1.9 [0.8; 4.1]* (86)	
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	843	21	68 (61 - 76)	40/60	2014-2021		1.2 [0.7; 2.3] (731)	1.5 [0.9; 2.7] (621)	1.7 [1.0; 3.0] (488)	2.0 [1.2; 3.4] (322)	2.8 [1.6; 4.8] (178)	*2.8 [1.6; 4.8]* (70)	
TC-PLUS CR (Smith & Nephew)	TC-PLUS (Smith & Nephew)	475	12	70 (63 - 76)	40/60	2014-2021		2.8 [1.7; 4.8] (389)	3.4 [2.1; 5.6] (305)	3.4 [2.1; 5.6] (251)	*3.4 [2.1; 5.6]* (125)			
Triathlon CR (Stryker)	Triathlon (Stryker)	397	15	69 (63 - 75)	37/63	2014-2021		0.8 [0.3; 2.6] (344)	1.4 [0.6; 3.4] (291)	1.4 [0.6; 3.4] (213)	2.0 [0.9; 4.5] (152)	*2.0 [0.9; 4.5]* (66)		
Vanguard (Zimmer Biomet)	Vanguard (Zimmer Biomet)	854	9	68 (60 - 74)	42/58	2015-2021		1.9 [1.2; 3.1] (668)	3.0 [2.0; 4.6] (511)	4.1 [2.8; 6.0] (366)	4.9 [3.3; 7.1] (230)	*5.3 [3.6; 7.9]* (123)		
Standard total knee systems, cruciate-retaining, fixed bearing, cemented														
ACS cemented (Implantcast)	ACS FB cemented (Implantcast)	905	47	67 (59 - 74)	21/79	2014-2021		2.6 [1.7; 3.9] (700)	4.3 [3.0; 6.0] (527)	5.7 [4.2; 7.8] (345)	7.0 [5.1; 9.5] (194)	*7.0 [5.1; 9.5]* (83)		
ACS LD cemented (Implantcast)	ACS LD FB cemented (Implantcast)	373	10	71 (63 - 76)	47/53	2015-2021		3.0 [1.7; 5.4] (316)	4.0 [2.4; 6.7] (230)	4.0 [2.4; 6.7] (154)	*4.0 [2.4; 6.7]* (75)			
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	2,234	20	71 (64 - 78)	36/64	2014-2021		1.8 [1.3; 2.5] (1,782)	2.4 [1.8; 3.2] (1,378)	3.0 [2.3; 3.9] (960)	3.1 [2.4; 4.1] (616)	3.5 [2.7; 4.7] (272)	*3.5 [2.7; 4.7]* (76)	
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	15,540	138	70 (62 - 77)	34/66	2013-2021		1.2 [1.0; 1.4] (12,889)	2.1 [1.9; 2.4] (10,080)	2.6 [2.3; 2.9] (7,174)	2.9 [2.6; 3.2] (4,605)	3.1 [2.8; 3.5] (2,500)	3.3 [2.9; 3.7] (1,026)	3.5 [3.0; 4.0] (279)
EFK Femur zementiert (OHST Medizintechnik)	EFK Tibia zementiert (OHST Medizintechnik)	2,972	39	72 (64 - 77)	38/62	2014-2021		1.3 [1.0; 1.8] (2,801)	1.8 [1.4; 2.4] (2,616)	2.0 [1.5; 2.6] (2,422)	2.4 [1.9; 3.0] (2,163)	2.7 [2.2; 3.4] (1,466)	3.5 [2.7; 4.5] (521)	*4.2 [3.1; 5.6]* (50)
EFK Femur zementiert TiNbN (OHST Medizintechnik)	EFK Tibia zementiert TiNbN (OHST Medizintechnik)	454	45	66 (58 - 73)	7/93	2014-2021		1.8 [0.9; 3.6] (408)	2.5 [1.4; 4.6] (368)	3.7 [2.2; 6.0] (328)	4.0 [2.4; 6.4] (302)	4.7 [2.9; 7.4] (248)	*4.7 [2.9; 7.4]* (90)	
GEMINI SL Fixed Bearing CR / Mobile Bearing (zementiert) (Waldemar Link)	GEMINI SL Fixed Bearing CR/ PS (zementiert) (Waldemar Link)	515	31	72 (63 - 77)	29/71	2014-2021		1.9 [1.0; 3.5] (446)	3.5 [2.1; 5.6] (362)	4.9 [3.2; 7.5] (228)	*6.3 [4.0; 9.8]* (130)	*7.1 [4.5; 11.0]* (61)		
GENESIS II CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	8,532	88	70 (62 - 76)	34/66	2013-2021		1.7 [1.5; 2.0] (6,999)	2.6 [2.2; 3.0] (5,470)	3.0 [2.6; 3.4] (4,055)	3.4 [3.0; 3.9] (2,882)	3.5 [3.0; 4.0] (1,767)	3.6 [3.1; 4.1] (800)	3.7 [3.2; 4.3] (194)
GENESIS II CR OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	2,384	111	65 (58 - 73)	19/81	2012-2021		1.5 [1.1; 2.1] (2,030)	2.6 [2.0; 3.4] (1,689)	3.0 [2.3; 3.8] (1,352)	3.4 [2.7; 4.4] (971)	3.5 [2.8; 4.5] (630)	3.5 [2.8; 4.5] (319)	4.4 [3.1; 6.2] (152)
GENESIS II LDK COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	1,879	16	70 (62 - 76)	36/64	2013-2021		2.2 [1.7; 3.0] (1,808)	3.1 [2.4; 4.0] (1,741)	3.7 [2.9; 4.7] (1,570)	3.8 [3.0; 4.8] (1,161)	4.1 [3.3; 5.2] (836)	4.1 [3.3; 5.2] (367)	*4.1 [3.3; 5.2]* (106)
INNEX (Zimmer Biomet)	INNEX (Zimmer Biomet)	1,190	26	73 (65 - 78)	41/59	2013-2021		2.1 [1.4; 3.2] (1,028)	2.6 [1.8; 3.8] (855)	2.6 [1.8; 3.8] (686)	2.9 [2.1; 4.2] (484)	3.3 [2.2; 4.7] (275)	*3.3 [2.2; 4.7]* (137)	
INNEX Gender (Zimmer Biomet)	INNEX (Zimmer Biomet)	340	17	72.5 (65 - 78)	17/83	2013-2021		1.8 [0.8; 3.9] (303)	2.5 [1.2; 4.9] (262)	3.3 [1.8; 6.1] (207)	*3.3 [1.8; 6.1]* (147)	*3.3 [1.8; 6.1]* (93)	*4.5 [2.2; 8.8]* (50)	
JOURNEY II CR OXINIUM (Smith & Nephew)	JOURNEY (Smith & Nephew)	1,048	30	63 (58 - 71.5)	37/63	2015-2021		3.1 [2.2; 4.3] (934)	3.9 [2.9; 5.4] (771)	5.3 [4.1; 7.0] (574)	6.5 [4.9; 8.6] (266)	*6.5 [4.9; 8.6]* (93)		
LEGION CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	9,470	119	71 (63 - 77)	37/63	2014-2021		1.6 [1.4; 1.9] (7,081)	2.3 [2.0; 2.7] (5,095)	2.7 [2.3; 3.1] (2,957)	3.0 [2.6; 3.4] (1,303)	3.4 [2.8; 4.1] (453)	*3.4 [2.8; 4.1]* (51)	

Table 42: Implant outcomes for femoral-tibial combinations in knee arthroplasties. 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.

Total knee arthroplasties								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
Standard total knee systems, cruciate-retaining, fixed bearing, cemented														
LEGION CR OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	2,494	131	64 (58 - 72)	14/86	2012-2021		1.7 [1.2; 2.4] (1,741)	3.1 [2.4; 4.0] (1,178)	3.9 [3.0; 5.0] (724)	4.2 [3.2; 5.3] (339)	*4.2 [3.2; 5.3]* (94)		
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	646	36	72 (64 - 78)	33/67	2015-2021		1.3 [0.6; 2.9] (331)	2.3 [1.2; 4.5] (185)	*3.8 [1.9; 7.5]* (89)				
Natural Knee NK Flex (Zimmer Biomet)	Natural Knee NK II (Zimmer Biomet)	390	10	72 (63 - 78)	33/67	2013-2020		1.0 [0.4; 2.7] (377)	2.1 [1.1; 4.2] (349)	2.4 [1.3; 4.5] (304)	2.4 [1.3; 4.5] (205)	*2.9 [1.5; 5.4]* (113)	*3.8 [2.0; 7.4]* (71)	
NexGen CR-Flex-Gender (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	4,329	100	70 (62 - 77)	10/90	2012-2021		0.8 [0.6; 1.2] (3,729)	1.6 [1.3; 2.1] (3,147)	1.9 [1.5; 2.4] (2,433)	2.1 [1.7; 2.6] (1,657)	2.4 [1.9; 3.0] (1,029)	2.5 [2.0; 3.2] (504)	2.8 [2.1; 3.8] (201)
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	16,654	121	72 (64 - 77)	41/59	2012-2021		1.4 [1.2; 1.6] (14,135)	1.9 [1.7; 2.1] (11,496)	2.1 [1.9; 2.3] (8,705)	2.3 [2.1; 2.6] (5,854)	2.4 [2.2; 2.7] (3,495)	2.5 [2.2; 2.8] (1,696)	2.6 [2.3; 3.0] (552)
NexGen CR (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	3,464	54	70 (63 - 76)	43/57	2013-2021		1.2 [0.9; 1.6] (3,041)	1.9 [1.4; 2.4] (2,667)	2.4 [1.9; 3.0] (2,277)	3.0 [2.4; 3.7] (1,640)	3.1 [2.5; 3.8] (1,116)	3.4 [2.7; 4.2] (622)	3.7 [2.9; 4.7] (173)
Persona (Zimmer Biomet)	Persona (Zimmer Biomet)	4,295	83	69 (61 - 76)	39/61	2013-2021		1.1 [0.9; 1.5] (3,099)	1.4 [1.1; 1.9] (2,084)	1.6 [1.2; 2.1] (1,204)	1.8 [1.4; 2.4] (691)	1.8 [1.4; 2.4] (312)	*2.3 [1.4; 3.8]* (92)	
Scorpio NRG CR (Stryker)	Scorpio (Stryker)	339	8	71 (63 - 77)	30/70	2013-2018		0.9 [0.3; 2.7] (333)	1.8 [0.8; 3.9] (324)	2.7 [1.4; 5.1] (312)	3.0 [1.6; 5.6] (269)	3.4 [1.9; 6.1] (178)	*3.4 [1.9; 6.1]* (84)	
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	23,759	130	71 (63 - 77)	35/65	2012-2021		1.4 [1.2; 1.5] (20,157)	2.2 [2.0; 2.4] (16,139)	2.6 [2.4; 2.8] (11,742)	2.9 [2.6; 3.1] (8,186)	3.1 [2.8; 3.3] (4,570)	3.3 [3.0; 3.6] (1,899)	3.4 [3.1; 3.8] (532)
TC-PLUS CR (Smith & Nephew)	TC-PLUS (Smith & Nephew)	3,737	40	72 (64 - 78)	36/64	2014-2021		1.1 [0.8; 1.5] (3,282)	1.5 [1.2; 2.0] (2,699)	1.7 [1.3; 2.2] (1,945)	2.0 [1.6; 2.6] (979)	2.0 [1.6; 2.6] (411)	*2.0 [1.6; 2.6]* (96)	
Triathlon CR (Stryker)	Triathlon (Stryker)	10,071	80	70 (62 - 77)	38/62	2013-2021		1.5 [1.3; 1.8] (7,836)	2.4 [2.1; 2.7] (6,012)	2.9 [2.6; 3.4] (4,109)	3.4 [3.0; 3.9] (2,622)	3.6 [3.2; 4.1] (1,490)	3.7 [3.2; 4.3] (685)	3.9 [3.3; 4.5] (190)
Vanguard (Zimmer Biomet)	Vanguard (Zimmer Biomet)	11,539	93	71 (63 - 77)	34/66	2012-2021		1.8 [1.6; 2.1] (9,481)	2.7 [2.4; 3.0] (7,453)	3.2 [2.9; 3.6] (5,338)	3.5 [3.2; 4.0] (3,425)	3.9 [3.5; 4.3] (1,841)	3.9 [3.5; 4.3] (623)	*3.9 [3.5; 4.3]* (58)
Standard total knee systems, cruciate-retaining, mobile bearing, hybrid														
TC-PLUS CR (Smith & Nephew)	TC-PLUS SB (Smith & Nephew)	419	7	69 (61 - 77)	35/65	2015-2021		2.8 [1.5; 5.0] (355)	4.4 [2.8; 7.0] (326)	4.8 [3.0; 7.5] (293)	5.4 [3.5; 8.3] (250)	*5.4 [3.5; 8.3]* (142)		
Standard total knee systems, cruciate-retaining, mobile bearing, cemented														
ACS cemented (Implantcast)	ACS MB cemented (Implantcast)	635	22	70 (62 - 77)	29/71	2013-2021		2.0 [1.1; 3.5] (503)	3.7 [2.4; 5.7] (416)	3.9 [2.6; 6.0] (322)	5.3 [3.6; 8.0] (220)	*5.3 [3.6; 8.0]* (126)		
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	2,113	24	71 (64 - 77)	36/64	2013-2021		1.6 [1.1; 2.2] (1,866)	2.1 [1.6; 2.9] (1,558)	2.5 [1.9; 3.4] (1,146)	2.6 [2.0; 3.5] (784)	2.6 [2.0; 3.5] (446)	2.6 [2.0; 3.5] (177)	*2.6 [2.0; 3.5]* (51)
INNEX (Zimmer Biomet)	INNEX (Zimmer Biomet)	1,313	63	70 (62 - 77)	97/3	2013-2021		1.9 [1.3; 2.8] (1,125)	2.8 [2.0; 3.9] (928)	3.1 [2.3; 4.3] (738)	3.9 [2.9; 5.4] (519)	4.3 [3.2; 5.9] (291)	*4.8 [3.4; 6.6]* (94)	
INNEX Gender (Zimmer Biomet)	INNEX (Zimmer Biomet)	375	32	70 (63 - 76)	78/22	2014-2021		2.2 [1.1; 4.3] (305)	3.2 [1.8; 5.8] (237)	4.1 [2.4; 7.1] (180)	*4.8 [2.8; 8.3]* (124)	*5.6 [3.3; 9.6]* (59)		
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	622	10	70 (63 - 76)	42/58	2013-2021		0.7 [0.3; 1.8] (545)	1.4 [0.7; 2.9] (472)	2.3 [1.3; 4.1] (405)	3.2 [1.9; 5.2] (307)	3.2 [1.9; 5.2] (253)	*3.2 [1.9; 5.2]* (113)	
TC-PLUS CR (Smith & Nephew)	TC-PLUS SB (Smith & Nephew)	403	10	71 (63 - 77)	30/70	2015-2021		3.0 [1.7; 5.3] (355)	3.6 [2.2; 6.1] (296)	5.0 [3.2; 7.9] (241)	5.0 [3.2; 7.9] (194)	*5.0 [3.2; 7.9]* (104)		
ZEN Femur STD zementiert (OHST Medizintechnik)	ZEN Tibia STD zementiert (OHST Medizintechnik)	706	6	71 (65 - 78)	33/67	2015-2021		0.8 [0.3; 1.9] (554)	1.0 [0.4; 2.2] (397)	1.9 [1.0; 3.8] (223)	*2.5 [1.3; 5.1]* (108)			
Standard total knee systems, cruciate-retaining/sacrificing, fixed bearing, hybrid														
BPK-S INTEGRATION (Peter Brehm)	BPK-S INTEGRATION (Peter Brehm)	326	3	70 (63 - 77)	36/64	2016-2021		1.7 [0.7; 4.0] (275)	2.8 [1.4; 5.6] (223)	*4.3 [2.4; 7.7]* (141)	*5.7 [3.0; 10.9]* (57)			
Standard total knee systems, cruciate-retaining/sacrificing, fixed bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	7,127	110	67 (60 - 75)	39/61	2013-2021		1.5 [1.3; 1.9] (5,656)	2.5 [2.1; 2.9] (4,297)	3.0 [2.6; 3.5] (3,003)	3.2 [2.7; 3.7] (1,940)	3.4 [2.9; 3.9] (1,030)	3.4 [2.9; 3.9] (472)	*3.4 [2.9; 3.9]* (147)
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	2,406	21	69 (61 - 76)	34/66	2015-2021		1.1 [0.8; 1.7] (1,979)	1.9 [1.4; 2.6] (1,350)	2.4 [1.8; 3.3] (803)	2.4 [1.8; 3.3] (404)	*2.7 [1.9; 3.8]* (130)		

Table 42 (continued)

Total knee arthroplasties								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
Standard total knee systems, cruciate-retaining/sacrificing, fixed bearing, cemented														
Unity CR cmtd (Corin)	Unity cmtd (Corin)	470	13	73 (65 - 78)	30/70	2014-2021		0.9 [0.3; 2.5] (405)	1.7 [0.8; 3.6] (345)	2.3 [1.2; 4.4] (279)	2.3 [1.2; 4.4] (194)	*2.8 [1.5; 5.4]* (115)	*2.8 [1.5; 5.4]* (56)	
Standard total knee systems, cruciate-retaining/sacrificing, mobile bearing, hybrid														
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	2,909	35	70 (62 - 77)	34/66	2012-2021		2.5 [2.0; 3.1] (2,648)	3.4 [2.8; 4.2] (2,321)	4.1 [3.4; 4.9] (1,849)	4.4 [3.6; 5.2] (1,223)	4.5 [3.7; 5.4] (658)	4.5 [3.7; 5.4] (243)	*5.3 [3.8; 7.5]* (92)
Standard total knee systems, cruciate-retaining/sacrificing, mobile bearing, uncemented														
LCS™ COMPLETE™ Femur (DePuy)	LCS™ COMPLETE™ Tibia (DePuy)	585	72	64 (58 - 72)	6/94	2014-2021		2.3 [1.4; 4.0] (496)	4.2 [2.8; 6.4] (392)	5.1 [3.4; 7.5] (289)	5.4 [3.7; 7.9] (180)	*5.4 [3.7; 7.9]* (76)		
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	1,248	24	70 (61 - 76)	36/64	2012-2021		1.5 [0.9; 2.3] (1,171)	2.8 [2.0; 3.9] (1,006)	3.5 [2.6; 4.7] (813)	3.6 [2.7; 4.9] (571)	3.6 [2.7; 4.9] (352)	*3.6 [2.7; 4.9]* (145)	*3.6 [2.7; 4.9]* (68)
SCORE (Amplitude)	SCORE (Amplitude)	442	4	69 (62 - 77)	32/68	2015-2021		1.5 [0.7; 3.2] (355)	2.4 [1.2; 4.6] (253)	3.4 [1.8; 6.2] (161)	*3.4 [1.8; 6.2]* (97)			
Standard total knee systems, cruciate-retaining/sacrificing, mobile bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	1,834	26	69 (62 - 76)	35/65	2015-2021		1.5 [1.0; 2.2] (1,424)	2.0 [1.4; 2.9] (1,153)	2.6 [1.9; 3.5] (872)	3.0 [2.2; 4.1] (599)	3.0 [2.2; 4.1] (337)	*3.0 [2.2; 4.1]* (75)	
E.MOTION (Aesculap)	E.MOTION (Aesculap)	9,640	83	70 (62 - 77)	33/67	2012-2021		2.2 [1.9; 2.5] (8,011)	3.5 [3.1; 3.9] (6,400)	4.0 [3.6; 4.5] (4,599)	4.4 [4.0; 4.9] (2,901)	4.7 [4.3; 5.3] (1,533)	4.8 [4.3; 5.4] (603)	*5.1 [4.4; 5.9]* (139)
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	5,132	59	71 (64 - 77)	36/64	2013-2021		2.2 [1.8; 2.6] (4,728)	3.2 [2.7; 3.7] (4,194)	3.6 [3.1; 4.2] (3,497)	3.9 [3.4; 4.5] (2,735)	4.3 [3.7; 4.9] (1,826)	4.3 [3.7; 4.9] (831)	*4.4 [3.8; 5.1]* (145)
SCORE (Amplitude)	SCORE (Amplitude)	317	6	71 (62 - 77)	31/69	2014-2021		1.9 [0.9; 4.3] (280)	3.2 [1.6; 6.0] (210)	4.1 [2.3; 7.4] (165)	*5.6 [3.2; 9.7]* (110)	*5.6 [3.2; 9.7]* (66)		
SIGMA™ Femur (DePuy)	MBT Tibia (DePuy)	1,965	30	72 (64 - 78)	36/64	2012-2021		2.5 [1.9; 3.3] (1,693)	3.3 [2.5; 4.2] (1,317)	4.0 [3.2; 5.1] (895)	4.2 [3.3; 5.3] (585)	4.2 [3.3; 5.3] (311)	*4.2 [3.3; 5.3]* (68)	
Standard total knee systems, cruciate-sacrificing, fixed bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	1,096	9	70 (62.5 - 77)	44/56	2013-2021		2.5 [1.7; 3.6] (971)	4.0 [3.0; 5.4] (764)	4.5 [3.3; 6.0] (514)	4.9 [3.7; 6.6] (336)	4.9 [3.7; 6.6] (171)	*4.9 [3.7; 6.6]* (87)	
Standard total knee systems, cruciate-sacrificing, fixed bearing, cemented														
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	1,987	25	70 (62 - 77)	28/72	2013-2021		2.4 [1.8; 3.2] (1,475)	3.4 [2.6; 4.4] (1,050)	4.0 [3.1; 5.2] (702)	4.8 [3.7; 6.2] (383)	5.6 [4.2; 7.5] (187)	*5.6 [4.2; 7.5]* (103)	
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	3,140	88	70 (62 - 77)	27/73	2013-2021		2.2 [1.8; 2.8] (2,545)	3.2 [2.6; 3.9] (1,991)	3.6 [3.0; 4.4] (1,489)	4.0 [3.3; 4.8] (957)	4.1 [3.4; 5.0] (497)	*4.3 [3.5; 5.3]* (138)	
INNEX (Zimmer Biomet)	INNEX (Zimmer Biomet)	1,458	45	72 (64 - 78)	40/60	2013-2021		1.1 [0.7; 1.8] (1,288)	1.6 [1.1; 2.5] (1,048)	2.4 [1.7; 3.4] (753)	2.9 [2.1; 4.1] (462)	3.7 [2.6; 5.2] (222)	*4.1 [2.8; 6.0]* (67)	
INNEX Gender (Zimmer Biomet)	INNEX (Zimmer Biomet)	722	32	72 (66 - 78)	20/80	2013-2021		2.6 [1.6; 4.1] (631)	3.3 [2.2; 4.9] (547)	3.4 [2.3; 5.1] (430)	4.5 [3.1; 6.6] (265)	5.0 [3.4; 7.4] (166)	*5.0 [3.4; 7.4]* (54)	
Natural Knee NK Flex (Zimmer Biomet)	Natural Knee NK II (Zimmer Biomet)	479	10	68 (61 - 75)	32/68	2012-2020		1.9 [1.0; 3.6] (464)	2.3 [1.3; 4.1] (416)	2.8 [1.6; 4.8] (352)	2.8 [1.6; 4.8] (263)	2.8 [1.6; 4.8] (188)	*2.8 [1.6; 4.8]* (109)	*2.8 [1.6; 4.8]* (56)
Natural Knee NK II (Zimmer Biomet)	Natural Knee NK II (Zimmer Biomet)	341	8	73 (67 - 77)	28/72	2013-2017		2.1 [1.0; 4.3] (327)	3.0 [1.6; 5.5] (317)	3.0 [1.6; 5.5] (308)	3.0 [1.6; 5.5] (302)	3.7 [2.1; 6.5] (223)	4.3 [2.5; 7.4] (162)	*4.3 [2.5; 7.4]* (65)
Persona (Zimmer Biomet)	Persona (Zimmer Biomet)	4,381	74	69 (61 - 76)	36/64	2013-2021		1.3 [1.0; 1.7] (3,031)	1.9 [1.5; 2.4] (2,021)	2.3 [1.8; 2.9] (1,389)	2.7 [2.1; 3.5] (923)	2.7 [2.1; 3.5] (354)	*2.7 [2.1; 3.5]* (66)	
Triathlon CR (Stryker)	Triathlon (Stryker)	2,016	24	70 (62 - 77)	36/64	2014-2021		1.8 [1.3; 2.6] (1,635)	3.0 [2.3; 3.9] (1,186)	3.5 [2.7; 4.5] (760)	3.6 [2.8; 4.8] (401)	4.6 [3.3; 6.2] (251)	*5.0 [3.6; 6.9]* (128)	
Vanguard (Zimmer Biomet)	Vanguard (Zimmer Biomet)	7,350	84	72 (63 - 78)	29/71	2013-2021		1.4 [1.1; 1.7] (5,985)	2.2 [1.9; 2.6] (4,693)	2.7 [2.3; 3.1] (3,393)	3.2 [2.7; 3.7] (2,192)	3.2 [2.8; 3.8] (1,205)	3.6 [3.0; 4.2] (406)	
Standard total knee systems, cruciate-sacrificing, mobile bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR RP (Mathys)	851	6	71 (62 - 77)	38/62	2013-2021		1.7 [1.0; 2.8] (754)	3.1 [2.1; 4.5] (656)	3.2 [2.2; 4.8] (547)	3.4 [2.3; 5.0] (421)	3.4 [2.3; 5.0] (285)	3.4 [2.3; 5.0] (168)	*3.4 [2.3; 5.0]* (110)

Table 42 (continued)

Total knee arthroplasties								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
Standard total knee systems, cruciate-sacrificing, mobile bearing, cemented														
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR RP (Mathys)	619	9	74 (65 - 79)	28/72	2013-2021		1.2 [0.6; 2.5] (534)	2.0 [1.1; 3.6] (431)	2.3 [1.3; 4.0] (330)	2.3 [1.3; 4.0] (230)	*2.8 [1.5; 4.9]* (132)		
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	1,034	5	69 (62 - 76)	41/59	2014-2021		1.0 [0.5; 1.8] (922)	1.7 [1.0; 2.7] (819)	1.9 [1.2; 3.0] (708)	2.1 [1.3; 3.2] (581)	2.1 [1.3; 3.2] (395)	2.6 [1.5; 4.3] (193)	
INNEX (Zimmer Biomet)	INNEX (Zimmer Biomet)	5,161	65	73 (65 - 78)	30/70	2012-2021		2.3 [1.9; 2.8] (4,422)	3.2 [2.8; 3.8] (3,726)	3.8 [3.3; 4.4] (2,930)	4.2 [3.6; 4.8] (2,037)	4.4 [3.8; 5.0] (1,145)	4.5 [3.9; 5.3] (382)	
INNEX Gender (Zimmer Biomet)	INNEX (Zimmer Biomet)	4,147	60	72 (64 - 78)	19/81	2013-2021		1.6 [1.3; 2.0] (3,526)	2.3 [1.9; 2.9] (2,822)	2.6 [2.1; 3.2] (2,119)	2.9 [2.4; 3.5] (1,443)	3.2 [2.6; 3.9] (745)	3.4 [2.7; 4.4] (184)	
Standard total knee systems, pivot, fixed bearing, cemented														
3D (Speetec Implantate Gmbh)	3D (Speetec Implantate Gmbh)	1,618	21	71 (63 - 77)	36/64	2014-2021		2.0 [1.4; 2.9] (1,473)	2.7 [2.0; 3.6] (1,288)	3.3 [2.5; 4.4] (1,163)	3.7 [2.8; 4.8] (876)	4.1 [3.1; 5.3] (519)	4.6 [3.4; 6.1] (195)	
ADVANCE® (MicroPort)	ADVANCE® II (MicroPort)	463	8	72 (64 - 78)	50/50	2014-2021		4.2 [2.7; 6.5] (387)	5.5 [3.7; 8.1] (323)	5.5 [3.7; 8.1] (243)	5.5 [3.7; 8.1] (162)	*7.0 [4.6; 10.7]* (99)		
EVOLUTION® (MicroPort)	EVOLUTION® (MicroPort)	1,450	19	68 (60 - 76)	34/66	2016-2021		1.2 [0.7; 1.9] (1,120)	1.8 [1.2; 2.7] (785)	2.7 [1.8; 4.0] (429)	3.1 [2.0; 4.7] (195)			
GMK SPHERE (Medacta)	GMK (Medacta)	1,124	28	68 (61 - 75)	45/55	2014-2021		2.0 [1.3; 3.1] (765)	2.6 [1.7; 3.9] (463)	2.8 [1.9; 4.2] (287)	*2.8 [1.9; 4.2]* (135)			
Persona (Zimmer Biomet)	Persona (Zimmer Biomet)	959	12	69 (62 - 76)	40/60	2016-2021		1.4 [0.8; 2.6] (514)	2.1 [1.2; 3.7] (287)	*2.1 [1.2; 3.7]* (122)				
Standard total knee systems, posterior-stabilised, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	2,533	85	70 (61 - 78)	37/63	2013-2021		2.3 [1.7; 3.0] (1,734)	3.4 [2.6; 4.3] (1,234)	3.6 [2.9; 4.6] (896)	4.7 [3.7; 5.9] (642)	5.3 [4.2; 6.8] (369)	5.7 [4.4; 7.4] (160)	
balanSys BICONDYLAR PS cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	2,416	24	70 (63 - 77)	38/62	2013-2021		1.8 [1.3; 2.5] (1,862)	3.5 [2.8; 4.5] (1,236)	4.4 [3.5; 5.5] (702)	5.1 [4.0; 6.5] (321)	5.5 [4.2; 7.1] (179)	*5.5 [4.2; 7.1]* (92)	
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	513	37	70 (62 - 76)	34/66	2013-2021		4.2 [2.7; 6.3] (441)	6.3 [4.4; 8.9] (352)	6.6 [4.7; 9.2] (266)	7.5 [5.3; 10.5] (190)	*8.0 [5.7; 11.2]* (116)	*8.0 [5.7; 11.2]* (65)	
E.MOTION (Aesculap)	E.MOTION (Aesculap)	2,801	46	68 (61 - 76)	33/67	2012-2021		2.2 [1.7; 2.8] (2,221)	3.7 [3.0; 4.6] (1,691)	4.4 [3.6; 5.3] (1,203)	4.8 [4.0; 5.9] (803)	5.0 [4.1; 6.1] (457)	6.1 [4.9; 7.7] (212)	
GEMINI SL Fixed Bearing PS (zementiert) (Waldemar Link)	GEMINI SL Fixed Bearing CR/ PS (zementiert) (Waldemar Link)	1,034	22	71 (63 - 78)	36/64	2014-2021		2.2 [1.5; 3.4] (822)	3.0 [2.1; 4.4] (538)	3.5 [2.4; 5.1] (280)	*3.9 [2.7; 5.7]* (135)	*4.9 [3.0; 7.9]* (59)		
GENESIS II PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	3,016	64	71 (63 - 77)	35/65	2013-2021		2.6 [2.1; 3.2] (2,606)	3.4 [2.8; 4.1] (2,212)	3.5 [2.9; 4.3] (1,770)	4.1 [3.4; 4.9] (1,145)	4.6 [3.8; 5.6] (540)	5.1 [4.1; 6.3] (206)	*5.1 [4.1; 6.3]* (52)
GENESIS II PS OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	527	49	64 (57 - 72)	19/81	2013-2021		1.5 [0.7; 3.0] (430)	2.5 [1.4; 4.5] (353)	3.1 [1.8; 5.2] (264)	3.1 [1.8; 5.2] (191)	*3.1 [1.8; 5.2]* (90)		
JOURNEY II BCS COCR (Smith & Nephew)	JOURNEY (Smith & Nephew)	681	27	70 (62 - 77)	41/59	2017-2021		2.4 [1.4; 3.9] (439)	3.4 [2.1; 5.3] (287)	*4.1 [2.6; 6.3]* (111)				
JOURNEY II BCS OXINIUM (Smith & Nephew)	JOURNEY (Smith & Nephew)	1,488	37	68 (61 - 76)	31/69	2014-2021		3.4 [2.6; 4.5] (1,325)	4.5 [3.5; 5.7] (1,113)	4.9 [3.8; 6.1] (813)	5.3 [4.2; 6.7] (486)	*5.5 [4.3; 7.0]* (131)		
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	5,763	91	70 (62 - 77)	38/62	2014-2021		2.0 [1.7; 2.5] (3,980)	2.9 [2.5; 3.5] (2,761)	3.5 [3.0; 4.1] (1,570)	3.6 [3.1; 4.3] (687)	3.6 [3.1; 4.3] (256)	*4.2 [3.1; 5.6]* (65)	
LEGION PS OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	1,587	98	66 (59 - 74)	20/80	2012-2021		1.1 [0.7; 1.8] (1,147)	2.4 [1.6; 3.4] (829)	3.1 [2.2; 4.3] (543)	3.5 [2.5; 4.9] (337)	4.1 [2.9; 5.9] (209)	*4.1 [2.9; 5.9]* (103)	
NexGen LPS-Flex-Gender (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	3,644	79	69 (61 - 76)	8/92	2012-2021		1.4 [1.1; 1.9] (3,097)	2.3 [1.8; 2.8] (2,510)	2.7 [2.2; 3.3] (1,790)	2.8 [2.3; 3.5] (1,253)	3.3 [2.6; 4.1] (741)	3.5 [2.7; 4.4] (396)	3.8 [2.9; 5.0] (192)
NexGen LPS-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	12,539	210	69 (61 - 76)	30/70	2012-2021		1.8 [1.5; 2.0] (10,320)	2.8 [2.5; 3.1] (8,289)	3.2 [2.9; 3.5] (6,017)	3.6 [3.3; 4.0] (3,935)	3.8 [3.4; 4.2] (2,231)	4.0 [3.6; 4.5] (966)	4.8 [3.9; 5.8] (322)
NexGen LPS (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	8,732	71	70 (61 - 76)	41/59	2012-2021		1.2 [1.0; 1.5] (7,455)	1.8 [1.5; 2.1] (5,954)	2.2 [1.9; 2.5] (4,606)	2.4 [2.1; 2.8] (3,334)	2.5 [2.1; 2.9] (2,194)	2.8 [2.3; 3.3] (1,145)	3.0 [2.5; 3.7] (534)
Persona (Zimmer Biomet)	Persona (Zimmer Biomet)	1,927	58	70 (62 - 77)	38/62	2013-2021		2.6 [1.9; 3.5] (1,193)	3.5 [2.6; 4.5] (714)	4.2 [3.2; 5.6] (438)	4.2 [3.2; 5.6] (235)	*4.2 [3.2; 5.6]* (99)		
SIGMA™ Femur (DePuy)	MBT Tibia (DePuy)	669	41	73 (65 - 79)	28/72	2012-2021		2.0 [1.2; 3.5] (562)	2.8 [1.7; 4.5] (441)	3.3 [2.1; 5.2] (314)	3.7 [2.3; 5.7] (202)	*4.2 [2.6; 6.6]* (103)		

Table 42 (continued)

Total knee Unicondylar knee arthroplasties								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
Standard total knee systems, posterior-stabilised, cemented														
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	4,355	107	71 (63 - 77)	33/67	2012-2021		2.3 [1.9; 2.9] (3,726)	3.3 [2.8; 3.9] (3,141)	4.0 [3.4; 4.7] (2,407)	4.7 [4.1; 5.5] (1,700)	5.2 [4.5; 6.1] (924)	5.6 [4.8; 6.7] (356)	*6.0 [4.9; 7.3]* (106)
Triathlon PS (Stryker)	Triathlon (Stryker)	3,836	63	71 (63 - 77)	36/64	2013-2021		2.4 [1.9; 2.9] (2,955)	3.6 [3.0; 4.3] (2,194)	3.9 [3.3; 4.7] (1,472)	3.9 [3.3; 4.7] (714)	3.9 [3.3; 4.7] (294)	*4.6 [3.4; 6.2]* (114)	
Triathlon PS (Stryker)	Triathlon TS (Stryker)	334	34	68 (61 - 76)	37/63	2013-2021		2.6 [1.3; 5.1] (233)	3.1 [1.6; 6.0] (157)	*3.1 [1.6; 6.0]* (94)				
Vanguard (Zimmer Biomet)	Vanguard (Zimmer Biomet)	2,640	54	72 (64 - 78)	31/69	2014-2021		2.9 [2.3; 3.6] (1,937)	4.5 [3.7; 5.5] (1,390)	5.2 [4.3; 6.3] (911)	5.6 [4.6; 6.8] (580)	5.8 [4.7; 7.0] (322)	*6.1 [4.9; 7.6]* (91)	
VEGA (Aesculap)	VEGA (Aesculap)	1,472	39	69.5 (60 - 77)	30/70	2013-2021		1.8 [1.2; 2.7] (1,144)	2.8 [2.0; 3.9] (847)	4.6 [3.5; 6.2] (561)	5.2 [3.9; 6.9] (363)	6.4 [4.7; 8.7] (225)	*8.1 [5.8; 11.4]* (100)	
Constrained TKA systems, hinged, cemented														
Endo-Modell® - M, Rotationsversion (Waldemar Link)	Endo-Modell® - M, Rotationsversion (Waldemar Link)	985	113	77 (68 - 82)	24/76	2013-2021		5.6 [4.3; 7.3] (759)	7.2 [5.6; 9.1] (564)	7.4 [5.8; 9.3] (385)	8.4 [6.5; 10.8] (219)	*8.4 [6.5; 10.8]* (93)		
Endo-Modell®, Rotationsversion (Waldemar Link)	Endo-Modell®, Rotationsversion (Waldemar Link)	1,148	135	77 (70 - 82)	20/80	2013-2021		3.6 [2.7; 4.9] (923)	4.7 [3.6; 6.2] (732)	5.2 [4.0; 6.7] (515)	5.2 [4.0; 6.7] (347)	5.2 [4.0; 6.7] (194)	*5.2 [4.0; 6.7]* (91)	
ENDURO (Aesculap)	ENDURO (Aesculap)	1,757	149	75 (67 - 80)	22/78	2013-2021		3.7 [2.9; 4.7] (1,343)	4.8 [3.8; 6.0] (1,044)	5.6 [4.5; 7.0] (754)	5.9 [4.8; 7.3] (491)	5.9 [4.8; 7.3] (300)	*5.9 [4.8; 7.3]* (127)	
NexGen RHK (Zimmer Biomet)	NexGen RHK (Zimmer Biomet)	1,066	133	75 (67 - 81)	23/77	2012-2021		3.2 [2.3; 4.5] (870)	4.3 [3.2; 5.8] (694)	4.8 [3.6; 6.4] (489)	5.4 [4.0; 7.2] (310)	5.8 [4.3; 7.9] (168)	*5.8 [4.3; 7.9]* (85)	
RT-Plus (Smith & Nephew)	RT-Plus (Smith & Nephew)	1,943	127	77 (70 - 81)	20/80	2013-2021		3.8 [3.1; 4.8] (1,621)	4.6 [3.7; 5.7] (1,303)	5.1 [4.1; 6.2] (967)	5.3 [4.3; 6.5] (658)	5.4 [4.4; 6.6] (364)	*5.4 [4.4; 6.6]* (134)	
RT-Plus Modular (Smith & Nephew)	RT-Plus Modular (Smith & Nephew)	549	101	75 (66 - 81)	27/73	2013-2021		4.9 [3.4; 7.1] (445)	6.1 [4.3; 8.5] (364)	6.9 [5.0; 9.6] (276)	6.9 [5.0; 9.6] (197)	*7.5 [5.3; 10.4]* (98)		
Constrained TKA systems, varus-valgus-stabilised, cemented														
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	611	58	71 (64 - 78)	28/72	2015-2021		2.8 [1.7; 4.6] (389)	4.6 [3.0; 6.9] (259)	*5.0 [3.3; 7.5]* (108)				
LEGION Revision COCR (Smith & Nephew)	LEGION Revision (Smith & Nephew)	469	58	71 (64 - 78)	26/74	2014-2021		4.5 [2.9; 6.9] (371)	5.1 [3.4; 7.6] (308)	5.4 [3.6; 8.1] (229)	5.4 [3.6; 8.1] (152)	*6.0 [4.0; 9.1]* (59)		
NexGen LCCK (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	1,517	99	72 (63 - 79)	30/70	2012-2021		2.8 [2.0; 3.7] (1,238)	3.0 [2.3; 4.1] (993)	3.4 [2.5; 4.5] (763)	3.7 [2.7; 4.9] (532)	3.7 [2.7; 4.9] (284)	*3.7 [2.7; 4.9]* (108)	
Triathlon PS (Stryker)	Triathlon TS (Stryker)	374	37	71.5 (61 - 78)	28/72	2013-2021		2.3 [1.1; 4.5] (267)	4.4 [2.5; 7.5] (179)	*4.4 [2.5; 7.5]* (110)	*5.2 [3.0; 9.1]* (69)			
Unicondylar knee arthroplasties, fixed bearing, cemented														
balanSys UNI (Mathys)	balanSys UNI fix (Mathys)	498	27	63 (56 - 71)	50/50	2013-2021		3.0 [1.8; 5.0] (386)	5.0 [3.2; 7.5] (301)	7.0 [4.8; 10.1] (232)	7.4 [5.1; 10.6] (161)	*8.0 [5.5; 11.4]* (87)		
JOURNEY UNI COCR (Smith & Nephew)	JOURNEY UNI (Smith & Nephew)	1,021	70	63 (57 - 70)	48/52	2014-2021		2.0 [1.2; 3.1] (765)	4.0 [2.8; 5.6] (528)	4.7 [3.4; 6.6] (330)	5.1 [3.6; 7.2] (185)	*6.8 [4.4; 10.4]* (83)		
JOURNEY UNI OXINIUM (Smith & Nephew)	JOURNEY UNI (Smith & Nephew)	832	121	60 (54 - 66)	33/67	2013-2021		5.2 [3.8; 7.0] (619)	8.2 [6.4; 10.5] (478)	9.7 [7.6; 12.3] (317)	10.3 [8.1; 13.1] (192)	*11.6 [8.9; 15.0]* (87)		
Mako MCK (Stryker)	Mako MCK (Stryker)	460	11	62 (56 - 68.5)	50/50	2017-2021		1.2 [0.5; 2.9] (267)	*1.7 [0.7; 3.9]* (143)					
Oxford (Zimmer Biomet)	Oxford (Zimmer Biomet)	804	43	71 (61 - 78)	19/81	2015-2021		1.2 [0.6; 2.3] (685)	2.3 [1.4; 3.7] (487)	2.7 [1.7; 4.4] (318)	3.9 [2.4; 6.2] (160)	*4.7 [2.8; 7.9]* (59)		
Persona Partial Knee (Zimmer Biomet)	Persona Partial Knee (Zimmer Biomet)	2,295	75	63 (57 - 71)	47/53	2017-2021		2.6 [2.0; 3.4] (1,389)	3.8 [3.0; 4.9] (779)	5.0 [3.8; 6.7] (260)				
Schlittenprothese (Waldemar Link)	Schlittenprothese All-Poly (Waldemar Link)	576	25	65 (56 - 73)	54/46	2013-2021		3.1 [1.9; 5.0] (482)	6.5 [4.6; 9.1] (363)	8.8 [6.5; 11.9] (262)	10.4 [7.7; 13.9] (186)	*12.1 [9.0; 16.3]* (122)	*13.6 [9.7; 19.0]* (57)	
Schlittenprothese (Waldemar Link)	Schlittenprothese Metal backed (Waldemar Link)	686	47	63 (58 - 73)	45/55	2013-2021		3.2 [2.0; 4.9] (526)	6.9 [5.1; 9.4] (390)	9.1 [6.9; 12.1] (265)	10.8 [8.2; 14.3] (192)	*11.9 [8.9; 15.6]* (89)		
SIGMA™ HP Partial-Kniesystem (DePuy)	SIGMA™ HP Partial-Kniesystem (DePuy)	3,529	91	63 (57 - 71)	46/54	2012-2021		1.9 [1.5; 2.4] (2,956)	3.8 [3.2; 4.5] (2,306)	4.8 [4.0; 5.6] (1,710)	5.8 [4.9; 6.8] (1,127)	6.2 [5.2; 7.3] (637)	7.0 [5.8; 8.4] (232)	*7.5 [6.0; 9.4]* (56)

Table 42 (continued)

Total knee Unicondylar knee arthroplasties								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
Unicondylar knee arthroplasties, fixed bearing, cemented														
Triathlon PKR (Stryker)	Triathlon PKR (Stryker)	489	30	62 (56 - 70)	46/54	2014-2021		4.8 [3.2; 7.2] (403)	7.2 [5.2; 10.1] (334)	8.4 [6.1; 11.5] (270)	10.0 [7.4; 13.5] (194)	*10.4 [7.7; 14.1]* (106)	*10.4 [7.7; 14.1]* (54)	
UNIVATION (Aesculap)	UNIVATION (Aesculap)	1,602	72	62 (56 - 70)	44/56	2014-2020		4.8 [3.9; 6.0] (1,473)	8.4 [7.1; 9.9] (1,055)	11.1 [9.5; 13.0] (618)	12.2 [10.4; 14.2] (278)	*12.7 [10.7; 15.1]* (84)		
ZUK (Lima)	ZUK (Lima)	3,540	96	64 (58 - 73)	44/56	2012-2021		2.0 [1.6; 2.6] (2,784)	3.0 [2.4; 3.7] (2,326)	3.5 [2.8; 4.2] (1,912)	4.3 [3.6; 5.2] (1,292)	4.4 [3.7; 5.3] (687)	4.6 [3.8; 5.5] (198)	*5.4 [3.8; 7.5]* (50)
Unicondylar knee arthroplasties, mobile bearing, hybrid														
Oxford (Zimmer Biomet)	Oxford (Zimmer Biomet)	320	31	68 (61 - 76)	36/64	2013-2021		2.5 [1.3; 5.0] (285)	3.3 [1.8; 6.0] (255)	4.1 [2.4; 7.2] (208)	4.1 [2.4; 7.2] (152)	f*4.1 [2.4; 7.2]* (77)		
Unicondylar knee arthroplasties, mobile bearing, uncemented														
Oxford (Zimmer Biomet)	Oxford (Zimmer Biomet)	4,745	76	63 (57 - 71)	55/45	2012-2021		3.5 [3.0; 4.1] (3,971)	4.7 [4.1; 5.4] (3,195)	5.7 [5.0; 6.4] (2,313)	6.2 [5.4; 7.0] (1,503)	6.5 [5.7; 7.4] (872)	6.9 [6.0; 7.9] (404)	6.9 [6.0; 7.9] (166)
Unicondylar knee arthroplasties, mobile bearing, cemented														
Oxford (Zimmer Biomet)	Oxford (Zimmer Biomet)	20,424	375	64 (57 - 73)	42/58	2012-2021		2.8 [2.6; 3.1] (16,561)	4.6 [4.3; 4.9] (12,731)	5.4 [5.1; 5.8] (9,188)	6.3 [5.9; 6.8] (5,910)	6.8 [6.4; 7.3] (3,211)	7.5 [6.9; 8.1] (1,211)	7.5 [6.9; 8.1] (394)

Table 42 (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
Uncemented femoral stems													
A2 Kurzschaft (ARTIQO)	7,055	62	64 (57 - 70)	39/61	2016-2021		1.8 [1.5; 2.2] (5,125)	2.0 [1.7; 2.4] (3,612)	2.2 [1.8; 2.6] (2,271)	2.3 [1.9; 2.7] (1,054)	2.3 [1.9; 2.7] (260)		
ABG II Stem (Stryker)	460	15	66 (59 - 71)	41/59	2014-2021		4.9 [3.2; 7.3] (417)	6.7 [4.8; 9.5] (368)	7.3 [5.2; 10.2] (284)	8.0 [5.8; 11.1] (219)	8.0 [5.8; 11.1] (174)	*8.0 [5.8; 11.1]* (73)	
Accolade II Stem (Stryker)	8,972	59	68 (60 - 75)	41/59	2014-2021		2.6 [2.3; 2.9] (6,937)	2.9 [2.6; 3.3] (5,156)	3.2 [2.8; 3.6] (3,348)	3.5 [3.1; 3.9] (2,046)	3.6 [3.2; 4.1] (1,149)	3.6 [3.2; 4.1] (359)	
Actinia cementless (Implantcast)	2,632	19	72 (64 - 78)	33/67	2015-2021		3.3 [2.7; 4.1] (2,254)	3.7 [3.0; 4.5] (1,822)	3.9 [3.2; 4.7] (892)	4.3 [3.5; 5.4] (372)	*4.3 [3.5; 5.4]* (82)		
ACTIS™-Hüftschaft (DePuy)	864	27	62 (54 - 69)	42/58	2018-2021		2.2 [1.4; 3.6] (467)	*2.2 [1.4; 3.6]* (138)					
Alloclassic (Zimmer Biomet)	9,816	79	69 (62 - 76)	35/65	2012-2021		2.8 [2.5; 3.2] (8,483)	3.3 [2.9; 3.6] (7,159)	3.6 [3.3; 4.0] (5,740)	3.9 [3.5; 4.3] (4,246)	4.1 [3.7; 4.6] (2,820)	4.3 [3.9; 4.8] (1,282)	4.4 [3.9; 4.9] (301)
Alpha-Fit (Corin)	686	3	75 (69 - 78)	30/70	2014-2020		1.9 [1.1; 3.3] (658)	2.1 [1.2; 3.5] (633)	2.4 [1.5; 3.9] (535)	2.4 [1.5; 3.9] (368)	2.7 [1.7; 4.4] (273)	2.7 [1.7; 4.4] (157)	
AMISTEM (Medacta)	1,445	30	66 (58 - 74)	42/58	2015-2021		3.4 [2.5; 4.5] (1,086)	3.7 [2.8; 4.8] (784)	3.8 [2.9; 5.0] (559)	4.1 [3.1; 5.4] (356)	4.4 [3.2; 5.8] (155)		
ANA.NOVA® Alpha Schaft (ARTIQO)	1,839	12	69 (62 - 76)	40/60	2015-2021		2.7 [2.1; 3.6] (1,531)	3.2 [2.4; 4.1] (1,250)	3.4 [2.7; 4.4] (938)	3.8 [3.0; 4.9] (608)	3.8 [3.0; 4.9] (367)	*4.1 [3.1; 5.4]* (73)	
ANA.NOVA® SL-complete® Schaft (ARTIQO)	513	9	73 (65 - 78)	39/61	2015-2021		3.3 [2.0; 5.3] (403)	3.6 [2.2; 5.7] (326)	3.9 [2.5; 6.2] (234)	*4.3 [2.7; 6.8]* (144)	*4.3 [2.7; 6.8]* (72)		
ANA.NOVA® Solitär Schaft (ARTIQO)	504	7	74 (66 - 80)	35/65	2015-2021		4.1 [2.6; 6.2] (438)	4.3 [2.8; 6.5] (331)	4.9 [3.2; 7.2] (190)	4.9 [3.2; 7.2] (93)	*4.9 [3.2; 7.2]* (54)		
Anato Stem (Stryker)	389	9	68 (60 - 75)	44/56	2016-2021		3.2 [1.8; 5.6] (312)	3.9 [2.3; 6.5] (239)	3.9 [2.3; 6.5] (180)	*3.9 [2.3; 6.5]* (88)			
Avenir (Zimmer Biomet)	22,326	177	69 (62 - 76)	40/60	2013-2021		3.1 [2.9; 3.4] (16,704)	3.4 [3.2; 3.7] (11,883)	3.6 [3.3; 3.8] (7,488)	3.6 [3.3; 3.9] (4,445)	3.8 [3.5; 4.1] (2,108)	3.8 [3.5; 4.1] (593)	*3.8 [3.5; 4.1]* (76)
Avenir Complete (Zimmer Biomet)	488	22	67.5 (60 - 73)	38/62	2020-2021		*3.7 [2.2; 6.2]* (67)						
BICONTACT (Aesculap)	17,010	121	71 (63 - 77)	40/60	2013-2021		3.3 [3.0; 3.5] (14,747)	3.6 [3.3; 3.9] (12,462)	3.8 [3.5; 4.1] (9,867)	3.9 [3.6; 4.2] (7,061)	4.0 [3.7; 4.3] (4,375)	4.0 [3.7; 4.3] (2,109)	4.0 [3.7; 4.3] (612)
Brexis (Zimmer Biomet)	720	29	59 (53 - 65)	47/53	2016-2021		2.3 [1.4; 3.7] (555)	2.9 [1.8; 4.5] (398)	2.9 [1.8; 4.5] (176)	*2.9 [1.8; 4.5]* (62)			
CBC Evolution (Mathys)	733	13	68 (62 - 75)	41/59	2013-2021		2.6 [1.6; 4.0] (614)	3.6 [2.4; 5.3] (539)	4.0 [2.7; 5.8] (444)	4.4 [3.1; 6.4] (366)	4.4 [3.1; 6.4] (243)	*4.4 [3.1; 6.4]* (93)	*4.4 [3.1; 6.4]* (54)
CFP (Waldemar Link)	1,256	30	61 (54 - 67)	55/45	2012-2021		2.0 [1.4; 3.0] (1,117)	2.7 [1.9; 3.8] (968)	2.9 [2.1; 4.0] (860)	3.2 [2.3; 4.4] (689)	3.5 [2.5; 4.9] (444)	3.5 [2.5; 4.9] (243)	3.5 [2.5; 4.9] (159)
CLS Spotorno (Zimmer Biomet)	22,861	196	65 (58 - 72)	43/57	2012-2021		2.8 [2.6; 3.1] (19,565)	3.3 [3.1; 3.5] (16,784)	3.6 [3.4; 3.9] (13,471)	3.8 [3.5; 4.1] (10,002)	3.9 [3.7; 4.2] (6,449)	4.1 [3.9; 4.5] (3,148)	4.3 [3.9; 4.6] (1,024)
CORAIL™ AMT-Hüftschaft (DePuy)	38,918	165	70 (62 - 76)	38/62	2012-2021		2.6 [2.5; 2.8] (31,287)	3.0 [2.9; 3.2] (24,390)	3.3 [3.1; 3.5] (17,974)	3.6 [3.4; 3.8] (11,908)	3.7 [3.5; 3.9] (6,536)	4.0 [3.7; 4.2] (2,420)	4.1 [3.8; 4.4] (722)
COREHIP (Aesculap)	2,395	27	69 (61 - 75)	38/62	2017-2021		2.0 [1.5; 2.7] (1,012)	2.7 [1.9; 3.8] (418)	*3.2 [2.2; 4.6]* (58)				
EcoFit 133° cpTi (Implantcast)	329	6	73 (67 - 80)	26/74	2019-2021		*5.0 [3.0; 8.4]* (131)						
EcoFit cpTi (Implantcast)	969	13	74 (67 - 79)	29/71	2014-2021		4.9 [3.7; 6.5] (884)	5.6 [4.4; 7.3] (819)	6.2 [4.8; 8.0] (604)	6.6 [5.1; 8.4] (394)	6.9 [5.4; 8.9] (198)		
EcoFit HA (Implantcast)	724	7	71 (64 - 78)	44/56	2014-2021		2.6 [1.6; 4.0] (600)	2.9 [1.9; 4.5] (451)	2.9 [1.9; 4.5] (304)	2.9 [1.9; 4.5] (174)	*2.9 [1.9; 4.5]* (54)		
EcoFit Short cpTi (Implantcast)	346	6	68 (61 - 76)	44/56	2018-2021		4.5 [2.7; 7.3] (236)	*4.5 [2.7; 7.3]* (117)					
EXCEPTION (Zimmer Biomet)	1,427	14	68 (61 - 75)	49/51	2015-2021		4.4 [3.4; 5.6] (1,246)	4.7 [3.7; 6.0] (925)	5.2 [4.1; 6.6] (596)	5.2 [4.1; 6.6] (288)	*5.8 [4.3; 7.6]* (53)		

Table 43: Implant 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
Uncemented femoral stems													
EXCIA (Aesculap)	9,786	108	70 (62 - 76)	40/60	2013-2021		3.2 [2.9; 3.6] (7,765)	3.6 [3.2; 4.0] (5,888)	3.7 [3.4; 4.2] (3,966)	3.8 [3.4; 4.2] (2,359)	3.8 [3.4; 4.3] (927)	3.8 [3.4; 4.3] (177)	
Fitmore (Zimmer Biomet)	23,714	223	62 (55 - 69)	46/54	2012-2021		2.2 [2.1; 2.4] (19,283)	2.7 [2.5; 2.9] (15,250)	2.9 [2.7; 3.2] (11,333)	3.1 [2.8; 3.3] (7,717)	3.2 [3.0; 3.5] (4,603)	3.4 [3.1; 3.7] (2,006)	3.4 [3.1; 3.7] (558)
GTS (Zimmer Biomet)	1,766	30	64 (57 - 71)	41/59	2013-2021		3.4 [2.7; 4.4] (1,534)	4.2 [3.4; 5.3] (1,323)	4.4 [3.5; 5.5] (1,013)	4.5 [3.6; 5.6] (626)	4.9 [3.9; 6.1] (344)	*4.9 [3.9; 6.1]* (120)	
Konusprothese (Zimmer Biomet)	1,244	116	57 (48 - 66)	16/84	2013-2021		3.1 [2.3; 4.3] (1,088)	3.9 [2.9; 5.1] (937)	4.3 [3.3; 5.7] (773)	4.5 [3.4; 5.9] (614)	4.6 [3.5; 6.1] (429)	5.0 [3.7; 6.6] (247)	*5.0 [3.7; 6.6]* (100)
LCU (Waldemar Link)	2,793	32	67 (60 - 75)	45/55	2014-2021		2.7 [2.1; 3.3] (2,273)	3.0 [2.4; 3.7] (1,697)	3.3 [2.7; 4.2] (1,146)	3.5 [2.8; 4.3] (646)	3.6 [2.9; 4.6] (199)		
M/L Taper (Zimmer Biomet)	5,435	24	68 (61 - 74)	41/59	2012-2021		2.9 [2.5; 3.4] (4,492)	3.4 [2.9; 3.9] (3,752)	3.6 [3.2; 4.2] (3,061)	3.9 [3.4; 4.5] (2,152)	4.0 [3.5; 4.7] (1,209)	4.2 [3.6; 4.9] (591)	4.2 [3.6; 4.9] (210)
METABLOC (Zimmer Biomet)	714	15	71.5 (65 - 78)	39/61	2012-2020		2.4 [1.5; 3.8] (684)	2.7 [1.7; 4.2] (621)	2.8 [1.8; 4.4] (535)	3.4 [2.3; 5.1] (421)	3.4 [2.3; 5.1] (271)	*3.4 [2.3; 5.1]* (132)	*3.4 [2.3; 5.1]* (64)
Metafix (Corin)	1,491	15	72 (65 - 77)	42/58	2014-2021		1.4 [0.9; 2.2] (1,284)	1.8 [1.2; 2.6] (1,126)	2.0 [1.3; 2.9] (847)	2.1 [1.4; 3.0] (655)	2.4 [1.7; 3.5] (412)	2.4 [1.7; 3.5] (176)	
METHA (Aesculap)	6,963	150	57 (52 - 63)	48/52	2012-2021		2.6 [2.3; 3.1] (5,886)	3.3 [2.9; 3.8] (4,912)	3.5 [3.1; 4.0] (3,802)	3.6 [3.2; 4.1] (2,677)	3.7 [3.3; 4.3] (1,741)	3.8 [3.4; 4.4] (919)	3.8 [3.4; 4.4] (305)
MiniHip (Corin)	2,001	43	61 (54 - 67)	46/54	2013-2021		2.9 [2.2; 3.7] (1,695)	3.5 [2.7; 4.4] (1,441)	3.7 [2.9; 4.7] (1,149)	3.9 [3.1; 4.9] (776)	4.3 [3.4; 5.5] (442)	4.3 [3.4; 5.5] (167)	
Nanos Schenkelhalsprothese (OHST / Smith & Nephew)	4,319	111	59 (53 - 66)	48/52	2013-2021		2.2 [1.8; 2.7] (3,607)	2.6 [2.1; 3.1] (3,089)	2.9 [2.5; 3.5] (2,562)	3.3 [2.7; 3.9] (1,881)	3.4 [2.9; 4.1] (1,257)	3.4 [2.9; 4.1] (378)	
optimys (Mathys)	17,397	105	64 (57 - 71)	44/56	2013-2021		1.8 [1.6; 2.0] (13,017)	2.1 [1.9; 2.3] (9,564)	2.2 [1.9; 2.4] (6,460)	2.3 [2.1; 2.6] (3,910)	2.4 [2.2; 2.7] (1,824)	2.4 [2.2; 2.7] (517)	*2.6 [2.2; 3.2]* (95)
Peira Schaft (ARTIQO)	382	6	72 (66 - 77)	36/64	2015-2021		3.4 [2.0; 5.8] (356)	3.4 [2.0; 5.8] (330)	3.8 [2.3; 6.3] (240)	*3.8 [2.3; 6.3]* (141)			
Polarschaft (Smith & Nephew)	11,967	106	69 (62 - 76)	40/60	2013-2021		2.7 [2.4; 3.0] (9,715)	3.1 [2.8; 3.4] (7,905)	3.3 [3.0; 3.6] (5,817)	3.5 [3.1; 3.8] (3,686)	3.5 [3.1; 3.9] (1,822)	3.7 [3.3; 4.2] (601)	*4.3 [3.2; 5.6]* (142)
PROFEMUR® GLADIATOR (MicroPort)	327	7	72 (65 - 76)	34/66	2014-2021		3.2 [1.7; 5.8] (254)	3.6 [2.0; 6.4] (198)	*4.8 [2.7; 8.3]* (138)	*5.6 [3.2; 9.6]* (95)	*5.6 [3.2; 9.6]* (50)		
PROFEMUR® GLADIATOR CLASSIC (MicroPort)	707	13	70 (63 - 76)	38/62	2014-2021		2.6 [1.6; 4.1] (496)	3.2 [2.1; 5.0] (347)	3.8 [2.5; 5.8] (235)	*3.8 [2.5; 5.8]* (145)	*3.8 [2.5; 5.8]* (87)		
PROFEMUR®Preserve (MicroPort)	393	12	60 (54 - 67)	48/52	2014-2021		2.3 [1.2; 4.5] (271)	3.1 [1.7; 5.5] (170)	*3.1 [1.7; 5.5]* (125)	*3.1 [1.7; 5.5]* (72)			
Proxy PLUS Schaft (Smith & Nephew)	865	24	69 (63 - 75)	44/56	2013-2021		3.5 [2.5; 5.0] (793)	4.1 [3.0; 5.7] (709)	4.4 [3.2; 6.0] (607)	4.6 [3.3; 6.2] (478)	4.6 [3.3; 6.2] (312)	*5.2 [3.8; 7.2]* (118)	
Pyramid (Atesos)	2,739	23	71 (64 - 77)	36/64	2014-2021		2.9 [2.3; 3.6] (2,341)	3.2 [2.6; 3.9] (1,950)	3.4 [2.8; 4.2] (1,576)	3.5 [2.9; 4.3] (1,116)	3.6 [3.0; 4.5] (615)	3.9 [3.1; 4.8] (188)	
QUADRA (Medacta)	7,742	51	68 (61 - 75)	39/61	2015-2021		2.7 [2.4; 3.1] (5,988)	3.2 [2.8; 3.7] (4,553)	3.6 [3.1; 4.0] (3,256)	3.9 [3.4; 4.4] (1,745)	4.3 [3.7; 4.9] (636)	*5.2 [3.9; 6.9]* (76)	
SBG-Schaft (Smith & Nephew)	479	10	72 (64 - 78)	36/64	2013-2021		5.5 [3.8; 8.0] (414)	6.0 [4.2; 8.6] (347)	6.5 [4.6; 9.2] (304)	6.5 [4.6; 9.2] (232)	*7.0 [4.9; 9.9]* (145)	*7.0 [4.9; 9.9]* (76)	
SL-PLUS Schaft (Smith & Nephew)	4,880	60	69 (62 - 76)	36/64	2012-2021		3.1 [2.6; 3.6] (4,263)	3.9 [3.4; 4.5] (3,715)	4.4 [3.8; 5.1] (3,117)	4.8 [4.2; 5.5] (2,466)	5.2 [4.6; 6.0] (1,734)	5.7 [5.0; 6.5] (949)	6.4 [5.4; 7.5] (379)
SL MIA HA Schaft (Smith & Nephew)	5,378	50	70 (62 - 77)	36/64	2013-2021		2.8 [2.4; 3.3] (4,398)	3.3 [2.8; 3.8] (3,531)	3.5 [3.0; 4.0] (2,531)	3.8 [3.3; 4.4] (1,720)	3.9 [3.4; 4.6] (979)	4.1 [3.5; 4.9] (465)	4.6 [3.8; 5.7] (174)
SP-CL (Waldemar Link)	3,048	45	64 (57 - 70)	38/62	2014-2021		3.6 [3.0; 4.4] (2,494)	4.3 [3.6; 5.1] (1,917)	4.7 [4.0; 5.6] (1,390)	4.7 [4.0; 5.6] (867)	4.7 [4.0; 5.6] (361)	*5.0 [4.1; 6.1]* (50)	
SPS Evolution (Symbios)	981	14	63 (57 - 69)	44/56	2013-2021		1.9 [1.2; 3.0] (855)	2.4 [1.6; 3.6] (693)	2.7 [1.8; 4.0] (507)	2.7 [1.8; 4.0] (272)	*2.7 [1.8; 4.0]* (129)		
Taperloc (Zimmer Biomet)	3,707	32	69 (62 - 76)	37/63	2014-2021		2.7 [2.2; 3.2] (2,883)	3.2 [2.7; 3.9] (2,331)	3.8 [3.2; 4.5] (1,792)	4.1 [3.4; 4.9] (1,204)	4.4 [3.7; 5.4] (565)	4.4 [3.7; 5.4] (164)	
TAPERLOC COMPLETE (Zimmer Biomet)	3,787	24	66 (58 - 73)	44/56	2015-2021		2.0 [1.6; 2.5] (3,255)	2.3 [1.8; 2.8] (2,375)	2.3 [1.9; 2.9] (1,549)	2.5 [2.0; 3.0] (954)	2.6 [2.1; 3.3] (466)		

Table 43 (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
Uncemented femoral stems													
TRENDHIP (Aesculap)	5,263	55	70 (62 - 76)	39/61	2013-2021		2.7 [2.3; 3.1] (4,426)	2.9 [2.5; 3.4] (3,568)	3.0 [2.5; 3.5] (2,392)	3.1 [2.6; 3.6] (1,281)	3.4 [2.8; 4.1] (697)	3.4 [2.8; 4.1] (258)	
TRILOCK™-Hüftschaft (DePuy)	4,304	47	61 (55 - 67)	49/51	2013-2021		2.0 [1.6; 2.4] (3,578)	2.6 [2.2; 3.2] (2,903)	3.0 [2.5; 3.6] (2,140)	3.3 [2.7; 3.9] (1,605)	3.4 [2.8; 4.1] (1,023)	3.6 [2.9; 4.4] (432)	*3.6 [2.9; 4.4]* (92)
TRJ (Aesculap)	895	27	70 (63 - 77)	34/66	2013-2021		2.7 [1.8; 4.0] (748)	3.5 [2.5; 5.1] (619)	3.7 [2.6; 5.3] (448)	4.2 [3.0; 6.0] (317)	4.2 [3.0; 6.0] (220)	*4.2 [3.0; 6.0]* (108)	
twinSys uncem. (Mathys)	4,843	48	73 (66 - 78)	37/63	2013-2021		2.4 [2.0; 2.9] (3,893)	2.7 [2.3; 3.3] (2,992)	2.9 [2.5; 3.5] (2,089)	3.1 [2.6; 3.7] (1,402)	3.3 [2.7; 3.9] (845)	3.5 [2.8; 4.2] (491)	3.5 [2.8; 4.2] (220)
VEKTOR-TITAN (Peter Brehm)	316	7	66 (59 - 73)	42/58	2014-2020		2.2 [1.1; 4.6] (306)	2.9 [1.5; 5.4] (299)	3.5 [2.0; 6.3] (273)	3.9 [2.2; 6.8] (236)	4.3 [2.5; 7.4] (200)	*4.3 [2.5; 7.4]* (143)	
Cemented femoral stems													
ABG II Stem (Stryker)	669	11	79 (76 - 82)	22/78	2014-2021		2.7 [1.7; 4.3] (615)	3.2 [2.1; 4.9] (537)	3.4 [2.3; 5.1] (416)	3.4 [2.3; 5.1] (241)	*4.0 [2.5; 6.3]* (133)		
Actinia cemented (Implantcast)	551	11	80 (77 - 83)	19/81	2015-2021		3.0 [1.8; 4.8] (489)	3.8 [2.5; 5.9] (388)	3.8 [2.5; 5.9] (185)	*4.5 [2.8; 7.2]* (56)			
AS PLUS Schaft (Smith & Nephew)	656	23	80 (76 - 83)	21/79	2013-2021		3.3 [2.2; 5.0] (580)	3.6 [2.4; 5.4] (526)	4.0 [2.7; 5.9] (460)	4.3 [2.9; 6.3] (319)	4.3 [2.9; 6.3] (185)	*4.3 [2.9; 6.3]* (50)	
Avenir (Zimmer Biomet)	3,710	120	80 (76 - 83)	23/77	2014-2021		2.7 [2.2; 3.3] (2,366)	2.9 [2.4; 3.6] (1,480)	3.1 [2.5; 3.7] (878)	3.2 [2.6; 3.9] (531)	3.4 [2.7; 4.3] (266)	*3.4 [2.7; 4.3]* (110)	
BHR (Smith & Nephew)	319	21	55 (51 - 59)	99/1	2014-2021		1.3 [0.5; 3.4] (259)	2.2 [1.0; 4.8] (213)	2.2 [1.0; 4.8] (160)	*2.2 [1.0; 4.8]* (105)	*2.2 [1.0; 4.8]* (61)		
Bicana (Implantcast)	386	18	79 (75 - 81)	29/71	2013-2021		3.2 [1.8; 5.5] (350)	3.7 [2.2; 6.2] (324)	4.0 [2.4; 6.6] (291)	4.4 [2.7; 7.0] (258)	4.4 [2.7; 7.0] (215)	*4.8 [3.0; 7.7]* (149)	
BICONTACT (Aesculap)	3,541	102	79 (76 - 83)	24/76	2013-2021		2.5 [2.0; 3.1] (3,044)	2.7 [2.2; 3.3] (2,628)	3.0 [2.5; 3.7] (2,096)	3.2 [2.6; 3.9] (1,505)	3.2 [2.6; 3.9] (928)	3.2 [2.6; 3.9] (464)	3.4 [2.7; 4.3] (155)
C-STEM™ AMT-Hüftschaft (DePuy)	515	11	79 (75 - 84)	20/80	2013-2021		1.4 [0.7; 3.0] (415)	2.0 [1.0; 3.7] (350)	2.8 [1.6; 4.9] (312)	3.1 [1.8; 5.4] (224)	*3.8 [2.2; 6.7]* (141)	*3.8 [2.2; 6.7]* (66)	
CCA (Mathys)	1,366	23	78 (74 - 81)	29/71	2012-2021		2.9 [2.1; 4.0] (1,190)	3.7 [2.8; 4.9] (1,026)	4.1 [3.1; 5.3] (839)	4.5 [3.4; 5.8] (704)	4.8 [3.7; 6.2] (518)	5.0 [3.8; 6.5] (303)	5.0 [3.8; 6.5] (178)
CORAIL™ AMT-Hüftschaft (DePuy)	5,747	134	79 (75 - 83)	21/79	2012-2021		3.0 [2.5; 3.4] (4,204)	3.4 [2.9; 3.9] (3,014)	3.6 [3.1; 4.2] (2,002)	4.1 [3.6; 4.8] (1,284)	4.5 [3.9; 5.3] (703)	5.0 [4.1; 6.1] (237)	
COREHIP (Aesculap)	490	17	81 (78 - 84)	19/81	2018-2021		4.5 [2.9; 7.0] (201)	*5.0 [3.2; 7.8]* (68)					
CS PLUS Schaft (Smith & Nephew)	938	32	78 (75 - 82)	26/74	2014-2020		1.7 [1.1; 2.8] (886)	2.4 [1.6; 3.6] (852)	2.6 [1.8; 3.9] (751)	2.6 [1.8; 3.9] (489)	2.6 [1.8; 3.9] (298)	*3.2 [2.0; 5.1]* (107)	
EXCEPTION (Zimmer Biomet)	726	13	79 (75 - 82)	20/80	2016-2021		2.5 [1.6; 4.0] (585)	2.9 [1.9; 4.5] (412)	3.1 [2.0; 4.8] (234)	*3.1 [2.0; 4.8]* (85)			
EXCIA (Aesculap)	3,790	105	79 (75 - 83)	24/76	2014-2021		2.1 [1.7; 2.6] (2,979)	2.4 [2.0; 3.0] (2,279)	2.7 [2.2; 3.3] (1,542)	2.9 [2.4; 3.6] (1,006)	3.1 [2.5; 3.9] (624)	3.1 [2.5; 3.9] (237)	
Exeter Stem (Stryker)	444	19	80 (76 - 84)	24/76	2015-2021		3.3 [2.0; 5.5] (312)	3.3 [2.0; 5.5] (208)	*3.8 [2.3; 6.4]* (107)	*5.2 [2.7; 9.7]* (58)			
ICON (IO-International Orthopaedics)	303	13	56 (51 - 62)	88/12	2013-2021		1.0 [0.3; 3.0] (291)	1.3 [0.5; 3.5] (282)	1.7 [0.7; 4.1] (225)	*2.7 [1.3; 5.5]* (134)	*2.7 [1.3; 5.5]* (67)		
LCP (Waldemar Link)	583	8	81 (78 - 84)	14/86	2012-2021		2.8 [1.7; 4.6] (471)	2.8 [1.7; 4.6] (375)	3.1 [1.9; 4.9] (292)	3.1 [1.9; 4.9] (181)	*3.1 [1.9; 4.9]* (80)	*4.5 [2.3; 8.9]* (53)	
LCU (Waldemar Link)	390	12	78 (74 - 82)	29/71	2019-2021		2.8 [1.5; 5.3] (203)						
M.E.M. Geradschaft (Zimmer Biomet)	22,868	184	79 (75 - 82)	26/74	2012-2021		2.1 [1.9; 2.3] (18,041)	2.3 [2.1; 2.5] (14,080)	2.5 [2.3; 2.7] (10,086)	2.6 [2.4; 2.8] (6,647)	2.8 [2.5; 3.1] (3,630)	2.8 [2.6; 3.1] (1,585)	3.1 [2.7; 3.5] (442)
METABLOC (Zimmer Biomet)	2,286	28	79 (75 - 82)	27/73	2013-2021		2.7 [2.1; 3.4] (2,078)	3.0 [2.4; 3.8] (1,781)	3.3 [2.6; 4.1] (1,389)	3.4 [2.7; 4.2] (969)	3.5 [2.8; 4.4] (594)	3.7 [2.9; 4.7] (247)	*3.7 [2.9; 4.7]* (64)
MS-30 (Zimmer Biomet)	3,778	36	78 (74 - 81)	26/74	2013-2021		1.7 [1.4; 2.2] (3,279)	1.9 [1.5; 2.4] (2,776)	2.1 [1.7; 2.7] (2,182)	2.3 [1.9; 2.9] (1,601)	2.3 [1.9; 2.9] (977)	2.6 [2.0; 3.3] (382)	

Table 43 (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
Cemented femoral stems													
MUELLER V40 Stem (Stryker)	321	11	79 (74 - 83)	25/75	2014-2021		2.5 [1.3; 5.0] (300)	3.2 [1.7; 5.9] (270)	3.6 [2.0; 6.4] (251)	4.0 [2.3; 6.9] (208)	*5.0 [2.9; 8.3]* (146)	*5.0 [2.9; 8.3]* (55)	
Müller Geradschaft (OHST Medizintechnik)	1,850	46	79 (75 - 82)	26/74	2014-2021		2.6 [1.9; 3.4] (1,609)	2.8 [2.1; 3.7] (1,386)	2.9 [2.2; 3.8] (1,059)	3.1 [2.3; 4.0] (752)	3.1 [2.3; 4.0] (415)	3.5 [2.5; 5.0] (162)	
MV40 Schaft (OHST Medizintechnik)	305	18	80 (76 - 83)	24/76	2015-2021		1.0 [0.3; 3.1] (255)	1.0 [0.3; 3.1] (217)	1.5 [0.6; 4.0] (164)	*1.5 [0.6; 4.0]* (108)			
Polarschaft Cemented (Smith & Nephew)	2,437	72	79 (76 - 82)	24/76	2013-2021		3.4 [2.8; 4.3] (1,936)	3.6 [2.9; 4.5] (1,543)	3.7 [3.0; 4.5] (1,086)	3.8 [3.1; 4.6] (652)	3.8 [3.1; 4.6] (280)	*3.8 [3.1; 4.6]* (106)	
PROFEMUR® GLADIATOR CEMENTED (MicroPort)	333	4	80 (77 - 83)	26/74	2015-2021		0.9 [0.3; 2.9] (267)	1.3 [0.5; 3.5] (203)	*1.8 [0.8; 4.5]* (125)	*1.8 [0.8; 4.5]* (63)			
QUADRA (Medacta)	1,683	39	80 (77 - 83)	23/77	2015-2021		2.5 [1.9; 3.4] (1,266)	2.9 [2.2; 3.9] (904)	2.9 [2.2; 3.9] (534)	2.9 [2.2; 3.9] (257)	*2.9 [2.2; 3.9]* (84)		
SPECTRON (Smith & Nephew)	444	12	79.5 (76 - 83)	26/74	2013-2021		1.4 [0.6; 3.1] (334)	1.7 [0.8; 3.6] (262)	1.7 [0.8; 3.6] (209)	*1.7 [0.8; 3.6]* (138)	*1.7 [0.8; 3.6]* (75)		
SPII® Modell Lubinus (Waldemar Link)	11,201	110	78 (74 - 81)	27/73	2012-2021		1.9 [1.7; 2.2] (9,091)	2.4 [2.1; 2.7] (7,222)	2.7 [2.4; 3.1] (5,576)	3.1 [2.7; 3.4] (3,997)	3.3 [2.9; 3.7] (2,391)	3.6 [3.2; 4.1] (1,116)	3.9 [3.3; 4.5] (396)
Standard C Cem (Waldemar Link)	428	6	78 (74 - 81)	32/68	2014-2021		0.9 [0.4; 2.5] (410)	1.7 [0.8; 3.5] (390)	2.2 [1.2; 4.3] (322)	2.9 [1.6; 5.3] (214)	*2.9 [1.6; 5.3]* (112)		
Taperloc Cemented (Zimmer Biomet)	1,262	30	80 (75 - 83)	19/81	2014-2021		1.9 [1.3; 2.9] (948)	2.3 [1.5; 3.3] (676)	2.5 [1.7; 3.6] (446)	2.5 [1.7; 3.6] (254)	*2.5 [1.7; 3.6]* (124)		
TRENDHIP (Aesculap)	563	34	80 (76 - 83)	24/76	2016-2021		2.3 [1.3; 4.0] (434)	2.3 [1.3; 4.0] (338)	2.7 [1.5; 4.7] (207)	*2.7 [1.5; 4.7]* (97)			
twinSys cem. (Mathys)	1,694	38	79 (74 - 82)	24/76	2013-2021		2.0 [1.4; 2.8] (1,369)	2.3 [1.6; 3.1] (1,056)	2.4 [1.7; 3.3] (736)	2.7 [1.9; 3.7] (441)	3.3 [2.3; 4.8] (216)	*3.3 [2.3; 4.8]* (103)	
Weber (Zimmer Biomet)	318	30	81 (77 - 84)	21/79	2014-2021		2.3 [1.1; 4.8] (260)	2.7 [1.4; 5.4] (208)	3.9 [2.1; 7.3] (157)	*3.9 [2.1; 7.3]* (102)	*3.9 [2.1; 7.3]* (53)		

Table 43 (continued)

Elective total hip arthroplasties							Revision probabilities after ...						
Acetabular cups	Number	Hosp.	Age	m/f	Period		1 year	2 years	3 years	4 years	5 years	6 years	7 years
Uncemented acetabular cup													
Alloclassic (Zimmer Biomet)	517	10	69 (60 - 77)	30/70	2014-2021		3.1 [1.9; 5.1] (484)	3.7 [2.4; 5.8] (463)	4.2 [2.7; 6.3] (414)	4.7 [3.1; 6.9] (329)	4.7 [3.1; 6.9] (240)	*4.7 [3.1; 6.9]* (119)	
Alloclassic Variall (Zimmer Biomet)	545	14	71 (61 - 78)	34/66	2013-2021		0.6 [0.2; 1.7] (507)	0.8 [0.3; 2.1] (440)	1.1 [0.4; 2.5] (330)	1.1 [0.4; 2.5] (214)	*1.1 [0.4; 2.5]* (136)	*1.1 [0.4; 2.5]* (74)	
Allofit (Zimmer Biomet)	117,514	352	70 (61 - 77)	38/62	2012-2021		2.5 [2.4; 2.6] (93,959)	2.9 [2.8; 3.0] (73,878)	3.1 [3.0; 3.3] (54,458)	3.3 [3.2; 3.4] (37,065)	3.4 [3.3; 3.6] (21,542)	3.7 [3.5; 3.8] (9,350)	3.8 [3.7; 4.0] (2,545)
Allofit IT (Zimmer Biomet)	8,415	109	65 (56 - 74)	39/61	2012-2021		2.9 [2.5; 3.2] (6,952)	3.4 [3.1; 3.9] (5,634)	3.7 [3.3; 4.1] (4,213)	3.8 [3.4; 4.2] (3,026)	4.0 [3.6; 4.5] (1,835)	4.1 [3.6; 4.6] (820)	4.1 [3.6; 4.6] (367)
ANA.NOVA® Alpha Pfanne (ARTIQO)	4,277	42	66 (59 - 74)	42/58	2015-2021		2.4 [2.0; 2.9] (3,155)	2.6 [2.1; 3.1] (2,365)	2.8 [2.3; 3.4] (1,591)	3.1 [2.5; 3.8] (838)	3.3 [2.6; 4.0] (341)	*3.3 [2.6; 4.0]* (63)	
ANA.NOVA® Hybrid Pfanne (ARTIQO)	7,236	46	67 (59 - 75)	36/64	2015-2021		2.2 [1.9; 2.6] (5,695)	2.6 [2.2; 3.0] (4,341)	2.9 [2.5; 3.3] (2,994)	3.0 [2.5; 3.4] (1,763)	3.1 [2.7; 3.6] (805)	*3.5 [2.8; 4.2]* (128)	
aneXys Flex (Mathys)	3,539	56	64 (58 - 72)	44/56	2016-2021		2.2 [1.8; 2.8] (2,387)	2.7 [2.1; 3.3] (1,607)	2.9 [2.3; 3.6] (899)	3.0 [2.4; 3.8] (483)	*3.0 [2.4; 3.8]* (129)		
APRIL Poly (Symbios)	473	14	62 (56 - 70)	40/60	2014-2021		1.5 [0.7; 3.2] (398)	2.0 [1.1; 3.9] (331)	2.0 [1.1; 3.9] (232)	*2.0 [1.1; 3.9]* (115)	*2.0 [1.1; 3.9]* (50)		
BHR (Smith & Nephew)	319	21	55 (51 - 59)	99/1	2014-2021		1.3 [0.5; 3.4] (259)	2.2 [1.0; 4.8] (213)	2.2 [1.0; 4.8] (160)	*2.2 [1.0; 4.8]* (105)	*2.2 [1.0; 4.8]* (61)		
BICON-PLUS (Smith & Nephew)	2,792	51	71.5 (63 - 77)	36/64	2013-2021		2.4 [1.9; 3.0] (2,494)	3.2 [2.6; 3.9] (2,196)	3.8 [3.1; 4.6] (1,917)	4.5 [3.8; 5.5] (1,610)	4.9 [4.1; 5.8] (1,214)	5.5 [4.6; 6.6] (735)	6.0 [5.0; 7.2] (233)
CombiCup PF (Waldemar Link)	3,378	53	71 (63 - 78)	37/63	2013-2021		2.1 [1.7; 2.6] (3,103)	2.7 [2.2; 3.3] (2,590)	3.0 [2.4; 3.6] (1,897)	3.3 [2.7; 4.0] (1,255)	3.6 [2.9; 4.4] (597)	4.1 [3.2; 5.4] (213)	
CombiCup SC (Waldemar Link)	1,093	11	71 (61 - 78)	40/60	2015-2021		1.8 [1.2; 2.8] (941)	2.4 [1.6; 3.5] (796)	2.8 [1.9; 4.0] (611)	3.3 [2.3; 4.8] (384)	3.3 [2.3; 4.8] (195)	*3.3 [2.3; 4.8]* (52)	
DURALOC™ OPTION™ Press Fit-Hüftpfanne (DePuy)	1,305	13	70 (61 - 76)	39/61	2013-2021		3.2 [2.4; 4.3] (1,143)	3.7 [2.8; 5.0] (976)	4.2 [3.2; 5.5] (830)	4.5 [3.5; 5.9] (707)	4.7 [3.6; 6.1] (526)	4.7 [3.6; 6.1] (234)	
EcoFit cpTi (Implantcast)	1,231	21	73 (65 - 79)	34/66	2014-2021		3.1 [2.3; 4.3] (1,134)	3.8 [2.9; 5.1] (1,014)	3.9 [3.0; 5.2] (727)	4.4 [3.3; 5.7] (400)	4.4 [3.3; 5.7] (191)		
EcoFit EPORE (Implantcast)	1,628	22	74 (66 - 79)	30/70	2016-2021		4.5 [3.6; 5.6] (1,173)	5.0 [4.0; 6.2] (849)	5.6 [4.5; 7.0] (520)	5.9 [4.7; 7.4] (262)			
EcoFit EPORE NH (Implantcast)	491	5	72 (64 - 79)	42/58	2018-2021		2.3 [1.3; 4.2] (336)	2.6 [1.5; 4.6] (188)					
EcoFit NH cpTi (Implantcast)	2,192	13	72 (64 - 78)	34/66	2014-2021		3.3 [2.6; 4.1] (1,929)	3.5 [2.8; 4.3] (1,507)	3.7 [2.9; 4.6] (649)	3.7 [2.9; 4.6] (335)	4.4 [3.3; 5.9] (155)	*5.7 [3.4; 9.4]* (52)	
EcoFit SC (Implantcast)	301	7	73 (65 - 79)	28/72	2014-2021		5.4 [3.3; 8.9] (209)	5.9 [3.6; 9.5] (163)	*7.3 [4.6; 11.5]* (101)	*8.9 [5.3; 14.6]* (54)			
EL PFANNE (Smith & Nephew)	350	4	71 (63 - 77)	32/68	2013-2015		4.9 [3.1; 7.8] (325)	4.9 [3.1; 7.8] (310)	5.2 [3.3; 8.1] (302)	5.8 [3.8; 8.9] (283)	5.8 [3.8; 8.9] (274)	5.8 [3.8; 8.9] (250)	*5.8 [3.8; 8.9]* (137)
EP-FIT PLUS (Smith & Nephew)	3,471	65	69 (61 - 76)	43/57	2013-2021		2.7 [2.2; 3.3] (3,056)	3.0 [2.5; 3.7] (2,767)	3.1 [2.6; 3.8] (2,442)	3.2 [2.7; 3.9] (1,956)	3.2 [2.7; 3.9] (1,232)	3.3 [2.7; 4.0] (470)	*3.3 [2.7; 4.0]* (111)
Exceed (Zimmer Biomet)	339	10	72 (63 - 77)	34/66	2013-2019		2.9 [1.6; 5.4] (318)	3.6 [2.0; 6.2] (305)	3.6 [2.0; 6.2] (294)	3.6 [2.0; 6.2] (288)	3.6 [2.0; 6.2] (275)	4.2 [2.4; 7.2] (161)	
Fitmore (Zimmer Biomet)	730	12	68 (59 - 76)	34/66	2012-2021		1.9 [1.2; 3.2] (697)	2.4 [1.5; 3.8] (675)	2.6 [1.7; 4.1] (560)	2.6 [1.7; 4.1] (406)	3.6 [2.3; 5.5] (207)	*3.6 [2.3; 5.5]* (73)	
G7 (Zimmer Biomet)	3,448	23	70 (62 - 77)	35/65	2014-2021		3.0 [2.5; 3.7] (2,834)	3.9 [3.3; 4.6] (2,289)	4.5 [3.8; 5.3] (1,649)	4.9 [4.1; 5.8] (1,057)	5.4 [4.5; 6.5] (480)	*5.4 [4.5; 6.5]* (92)	
HI Lubricer Schale (Smith & Nephew)	5,399	39	70 (62 - 77)	36/64	2013-2021		2.5 [2.1; 3.0] (4,603)	3.0 [2.6; 3.5] (3,872)	3.3 [2.8; 3.9] (3,017)	3.7 [3.2; 4.3] (2,027)	4.0 [3.4; 4.6] (1,191)	4.3 [3.6; 5.1] (455)	*5.1 [3.9; 6.6]* (110)
ICON (IO-International Orthopaedics)	303	13	56 (51 - 62)	88/12	2013-2021		1.0 [0.3; 3.0] (291)	1.3 [0.5; 3.5] (282)	1.7 [0.7; 4.1] (225)	*2.7 [1.3; 5.5]* (134)	*2.7 [1.3; 5.5]* (67)		
MobileLink TiCaP Cluster Hole (Waldemar Link)	1,730	38	71 (62 - 78)	36/64	2017-2021		4.0 [3.1; 5.1] (849)	5.2 [4.0; 6.9] (249)	5.*2 [4.0; 6.9]* (91)				

Table 44: Implant 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 cups	Number	Hosp.	Age	m/f	Period		1 year	2 years	3 years	4 years	5 years	6 years	7 years
Uncemented acetabular cup													
PINNACLE™ Press Fit-Hüftpfanne (DePuy)	45,271	181	70 (61 - 77)	37/63	2012-2021		2.5 [2.4; 2.7] (35,604)	3.0 [2.8; 3.1] (27,005)	3.2 [3.0; 3.4] (19,154)	3.5 [3.3; 3.7] (12,486)	3.6 [3.4; 3.8] (6,797)	3.9 [3.6; 4.2] (2,547)	4.0 [3.7; 4.3] (712)
PINNACLE™ SPIROFIT™-Schraubpfanne (DePuy)	440	18	74 (65 - 79)	26/74	2013-2020		3.9 [2.4; 6.2] (407)	4.1 [2.6; 6.5] (394)	4.4 [2.8; 6.8] (368)	4.4 [2.8; 6.8] (305)	5.2 [3.4; 8.0] (189)	*5.2 [3.4; 8.0]* (117)	
PLASMACUP (Aesculap)	7,731	55	69 (61 - 76)	38/62	2013-2021		2.2 [1.9; 2.5] (6,690)	2.6 [2.3; 3.0] (5,713)	2.7 [2.4; 3.1] (4,613)	2.9 [2.5; 3.3] (3,546)	3.0 [2.6; 3.4] (2,470)	3.0 [2.6; 3.4] (1,314)	3.0 [2.6; 3.4] (448)
PLASMAFIT (Aesculap)	40,648	224	69 (61 - 77)	39/61	2013-2021		2.9 [2.8; 3.1] (32,930)	3.3 [3.1; 3.5] (26,048)	3.4 [3.3; 3.6] (18,668)	3.5 [3.3; 3.7] (11,907)	3.6 [3.4; 3.8] (6,348)	3.6 [3.4; 3.8] (2,397)	3.6 [3.4; 3.8] (544)
PROCOTYL® L BEADED (MicroPort)	1,125	24	68 (60 - 75)	40/60	2014-2021		2.6 [1.8; 3.7] (961)	3.4 [2.4; 4.6] (661)	3.9 [2.8; 5.3] (427)	4.2 [3.0; 5.8] (266)	*4.7 [3.3; 6.7]* (140)		
PROCOTYL® P (MicroPort)	376	11	68 (61 - 75.5)	39/61	2020-2021								
Pyramid (Atesos)	2,825	23	71 (64 - 77)	36/64	2014-2021		2.9 [2.3; 3.6] (2,404)	3.2 [2.6; 3.9] (2,000)	3.5 [2.8; 4.2] (1,602)	3.5 [2.9; 4.3] (1,130)	3.7 [3.0; 4.6] (624)	3.9 [3.2; 4.9] (186)	
R3 (Smith & Nephew)	15,787	123	70 (61 - 77)	39/61	2013-2021		3.0 [2.8; 3.3] (12,583)	3.4 [3.1; 3.7] (9,888)	3.6 [3.3; 4.0] (6,906)	3.8 [3.5; 4.2] (4,060)	4.0 [3.6; 4.3] (1,830)	4.1 [3.7; 4.5] (548)	*4.1 [3.7; 4.5]* (91)
REFLECTION (Smith & Nephew)	1,021	9	69 (60 - 77)	37/63	2013-2021		1.6 [1.0; 2.6] (882)	1.9 [1.2; 3.0] (765)	2.3 [1.5; 3.5] (621)	2.3 [1.5; 3.5] (411)	2.3 [1.5; 3.5] (282)	*2.3 [1.5; 3.5]* (51)	
RM Classic (Mathys)	1,915	20	75 (69 - 80)	32/68	2013-2021		2.5 [1.9; 3.3] (1,683)	2.9 [2.2; 3.8] (1,454)	3.1 [2.4; 4.0] (1,214)	3.3 [2.6; 4.3] (1,010)	3.5 [2.7; 4.5] (766)	3.9 [3.0; 5.0] (394)	3.9 [3.0; 5.0] (182)
RM Pressfit (Mathys)	1,215	12	74 (66 - 79)	40/60	2013-2021		2.3 [1.6; 3.3] (1,098)	2.9 [2.1; 4.0] (980)	3.2 [2.3; 4.5] (729)	3.7 [2.7; 5.0] (540)	3.7 [2.7; 5.0] (316)	*3.7 [2.7; 5.0]* (140)	
RM Pressfit vitamys (Mathys)	14,255	77	68 (60 - 76)	41/59	2013-2021		1.8 [1.6; 2.0] (11,062)	2.0 [1.8; 2.3] (8,220)	2.2 [1.9; 2.4] (5,616)	2.3 [2.0; 2.6] (3,347)	2.5 [2.2; 2.9] (1,611)	2.7 [2.3; 3.2] (580)	*2.7 [2.3; 3.2]* (119)
SCREWCUP SC (Aesculap)	2,021	55	73 (63 - 78)	35/65	2013-2021		3.1 [2.4; 4.0] (1,799)	3.9 [3.1; 4.8] (1,466)	4.4 [3.5; 5.4] (1,092)	4.8 [3.9; 6.0] (685)	5.8 [4.6; 7.3] (375)	5.8 [4.6; 7.3] (185)	*6.3 [4.9; 8.2]* (58)
seleXys PC(Mathys)	547	7	70 (61 - 77)	39/61	2015-2021		0.9 [0.4; 2.2] (501)	0.9 [0.4; 2.2] (435)	0.9 [0.4; 2.2] (339)	1.6 [0.7; 3.4] (238)	*1.6 [0.7; 3.4]* (127)		
Stemcup (IO-International Orthopaedics)	326	14	71 (62 - 78)	39/61	2018-2021		1.8 [0.7; 4.2] (162)	*1.8 [0.7; 4.2]* (66)					
T.O.P. Hüftpfannensystem (Waldemar Link)	351	8	62 (56 - 69)	50/50	2012-2020		2.3 [1.1; 4.5] (338)	2.6 [1.3; 4.9] (325)	2.9 [1.6; 5.3] (313)	3.2 [1.8; 5.7] (290)	3.6 [2.0; 6.2] (253)	3.6 [2.0; 6.2] (179)	*3.6 [2.0; 6.2]* (121)
TM Modular (Zimmer Biomet)	1,279	122	64 (54 - 74)	28/72	2012-2021		6.2 [5.0; 7.6] (1,009)	7.1 [5.8; 8.7] (822)	7.4 [6.1; 9.1] (633)	7.8 [6.4; 9.5] (449)	8.0 [6.5; 9.8] (281)	*8.0 [6.5; 9.8]* (134)	
Trident Cup (Stryker)	7,708	56	69 (61 - 76)	40/60	2014-2021		2.6 [2.2; 3.0] (6,014)	3.1 [2.8; 3.6] (4,496)	3.4 [2.9; 3.8] (2,862)	3.6 [3.1; 4.1] (1,528)	3.7 [3.2; 4.2] (773)	3.7 [3.2; 4.2] (264)	
Trident TC Cup (Stryker)	832	15	73 (65 - 78)	32/68	2014-2021		2.5 [1.7; 3.9] (785)	3.0 [2.1; 4.5] (756)	3.4 [2.4; 4.9] (731)	3.9 [2.7; 5.4] (663)	4.3 [3.1; 6.0] (485)	*4.3 [3.1; 6.0]* (120)	
Trilogy (Zimmer Biomet)	5,766	28	68 (60 - 75)	37/63	2012-2021		2.0 [1.7; 2.4] (5,035)	2.6 [2.2; 3.1] (4,418)	2.8 [2.4; 3.2] (3,577)	2.9 [2.5; 3.4] (2,747)	3.1 [2.7; 3.6] (1,807)	3.2 [2.7; 3.7] (942)	3.2 [2.7; 3.7] (408)
Trilogy IT (Zimmer Biomet)	1,349	6	71 (62 - 77)	39/61	2013-2021		3.3 [2.4; 4.4] (1,149)	3.5 [2.6; 4.6] (979)	3.7 [2.8; 4.9] (785)	3.8 [2.9; 5.1] (576)	4.0 [3.0; 5.3] (380)	4.7 [3.4; 6.4] (157)	
Trinity Hole (Corin)	1,978	40	66 (58 - 75)	42/58	2013-2021		2.4 [1.8; 3.1] (1,576)	2.6 [1.9; 3.4] (1,292)	2.7 [2.1; 3.6] (1,019)	2.9 [2.2; 3.8] (738)	3.0 [2.3; 4.0] (427)	3.0 [2.3; 4.0] (169)	
Trinity no Hole (Corin)	2,306	26	68 (61 - 76)	42/58	2014-2021		2.1 [1.6; 2.8] (2,120)	2.6 [2.0; 3.4] (1,922)	3.0 [2.3; 3.8] (1,522)	3.0 [2.4; 3.9] (1,112)	3.4 [2.6; 4.3] (719)	3.5 [2.7; 4.5] (310)	
Tritanium Cup (Stryker)	2,606	25	70 (63 - 77)	39/61	2014-2021		2.8 [2.2; 3.5] (2,025)	3.1 [2.5; 3.9] (1,497)	3.6 [2.9; 4.4] (963)	4.0 [3.2; 5.0] (648)	4.0 [3.2; 5.0] (334)	*4.0 [3.2; 5.0]* (119)	
VERSAFITCUP CC TRIO (Medacta)	10,297	53	70 (61 - 77)	37/63	2015-2021		2.7 [2.4; 3.1] (7,959)	3.1 [2.8; 3.5] (5,989)	3.4 [3.1; 3.8] (4,138)	3.7 [3.3; 4.1] (2,185)	4.1 [3.6; 4.6] (810)	*5.5 [4.2; 7.3]* (90)	

Table 44 (continued)

Elective total hip arthroplasties							Revision probabilities after ...						
Acetabular cups	Number	Hosp.	Age	m/f	Period		1 year	2 years	3 years	4 years	5 years	6 years	7 years
Cemented acetabular cup													
All POLY CUP (Aesculap)	3,767	140	80 (76 - 83)	22/78	2013-2021		2.8 [2.4; 3.4] (3,111)	3.2 [2.7; 3.9] (2,565)	3.5 [2.9; 4.2] (1,995)	3.6 [3.0; 4.3] (1,379)	3.8 [3.2; 4.6] (837)	3.8 [3.2; 4.6] (391)	*4.1 [3.3; 5.1]* (134)
AVANTAGE (Zimmer Biomet)	813	114	79 (72 - 83)	26/74	2014-2021		5.1 [3.7; 6.9] (508)	5.3 [3.9; 7.2] (338)	5.7 [4.1; 7.9] (195)	*6.6 [4.5; 9.6]* (100)	*6.6 [4.5; 9.6]* (51)		
CCB (Mathys)	925	41	79 (74 - 83)	22/78	2013-2021		2.7 [1.8; 4.0] (710)	3.4 [2.4; 4.9] (520)	3.4 [2.4; 4.9] (340)	3.4 [2.4; 4.9] (232)	*4.0 [2.6; 6.0]* (135)	*4.0 [2.6; 6.0]* (54)	
Endo-Modell Mark III (Waldemar Link)	574	6	77 (72 - 81)	18/82	2012-2021		2.1 [1.2; 3.7] (533)	2.9 [1.8; 4.7] (485)	3.3 [2.1; 5.2] (433)	3.5 [2.3; 5.5] (382)	3.5 [2.3; 5.5] (320)	3.5 [2.3; 5.5] (266)	3.5 [2.3; 5.5] (190)
Flachprofil (Zimmer Biomet)	7,477	279	80 (76 - 83)	23/77	2012-2021		3.0 [2.6; 3.4] (6,019)	3.4 [3.0; 3.8] (4,889)	3.8 [3.3; 4.2] (3,665)	3.9 [3.4; 4.4] (2,518)	4.1 [3.7; 4.7] (1,514)	4.4 [3.9; 5.1] (658)	4.4 [3.9; 5.1] (188)
Hüftpfanne Müller II (OHST Medizintechnik)	2,584	107	80 (76 - 83)	24/76	2013-2021		2.9 [2.3; 3.6] (2,248)	3.4 [2.8; 4.2] (1,974)	3.7 [3.0; 4.6] (1,645)	3.9 [3.1; 4.7] (1,190)	3.9 [3.1; 4.7] (676)	4.0 [3.3; 4.9] (237)	
IP-Hüftpfannen, UHMWPE (Waldemar Link)	409	18	80 (76 - 83)	26/74	2013-2021		2.5 [1.3; 4.6] (363)	3.1 [1.7; 5.3] (320)	3.4 [2.0; 5.8] (239)	3.4 [2.0; 5.8] (175)	*3.4 [2.0; 5.8]* (136)	*3.4 [2.0; 5.8]* (55)	
IP-Hüftpfannen, X-Linked (Waldemar Link)	905	30	81 (78 - 84)	26/74	2014-2021		2.5 [1.6; 3.8] (799)	2.9 [1.9; 4.2] (681)	3.3 [2.3; 4.8] (515)	4.1 [2.9; 5.9] (358)	4.1 [2.9; 5.9] (210)	*4.1 [2.9; 5.9]* (79)	
Kunststoffpfanne Modell Lubinus (Waldemar Link)	1,054	33	79 (74 - 83)	24/76	2013-2021		1.7 [1.0; 2.7] (862)	1.9 [1.2; 3.0] (677)	2.1 [1.3; 3.2] (508)	2.3 [1.5; 3.6] (376)	3.0 [1.9; 4.7] (209)	*3.0 [1.9; 4.7]* (104)	
Mueller II (Implantcast)	358	32	79 (73 - 83)	22/78	2014-2021		3.8 [2.2; 6.5] (277)	4.9 [3.0; 7.9] (217)	*5.4 [3.4; 8.7]* (134)	*7.3 [4.5; 11.9]* (90)			
TRILOC® II-PE-Hüftpfanne (DePuy)	1,212	87	79 (74 - 83)	18/82	2013-2021		3.0 [2.2; 4.2] (994)	3.1 [2.3; 4.3] (813)	3.4 [2.5; 4.6] (619)	3.5 [2.6; 4.8] (458)	4.3 [3.1; 6.0] (270)	*4.8 [3.4; 6.8]* (92)	

Table 44 (continued)

Total knee arthroplasties								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
Standard total knee systems, cruciate-retaining, fixed bearing, hybrid														
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	708	5	69 (62 - 76)	37/63	2014-2021		0.0 (662)	0.0 (569)	0.0 (434)	0.0 (285)	*0.0 (135)*		
EFK Femur zementfrei (OHST Medizintechnik)	EFK Tibia zementiert (OHST Medizintechnik)	1,207	14	70 (63 - 76)	42/58	2014-2021		0.3 [0.1; 0.8] (1,097)	0.6 [0.3; 1.3] (987)	0.6 [0.3; 1.3] (890)	0.6 [0.3; 1.3] (796)	0.6 [0.3; 1.3] (603)	0.6 [0.3; 1.3] (287)	
GENESIS II CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	423	6	68 (62 - 76)	44/56	2012-2021		0.3 [0.0; 1.8] (377)	0.3 [0.0; 1.8] (334)	0.9 [0.3; 2.8] (293)	0.9 [0.3; 2.8] (237)	0.9 [0.3; 2.8] (171)	*0.9 [0.3; 2.8] (120)*	*0.9 [0.3; 2.8] (57)*
LEGION CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	402	8	69 (62 - 77)	48/52	2017-2021		0.4 [0.1; 2.6] (263)	0.4 [0.1; 2.6] (152)	*1.1 [0.3; 4.6] (83)*				
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	552	18	69 (61 - 75)	51/49	2014-2021		0.6 [0.2; 1.8] (509)	1.0 [0.4; 2.3] (465)	1.0 [0.4; 2.3] (378)	1.0 [0.4; 2.3] (241)	*1.0 [0.4; 2.3] (131)*	*1.0 [0.4; 2.3] (78)*	
NexGen CR (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	503	6	69 (62 - 75)	49/51	2014-2021		0.0 (483)	0.0 (445)	0.0 (409)	0.0 (355)	0.0 (209)	*0.0 (86)*	
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	839	21	68 (61 - 76)	40/60	2014-2021		0.1 [0.0; 0.9] (727)	0.4 [0.1; 1.3] (615)	0.6 [0.2; 1.6] (481)	0.6 [0.2; 1.6] (318)	0.6 [0.2; 1.6] (176)	*0.6 [0.2; 1.6] (69)*	
TC-PLUS CR (Smith & Nephew)	TC-PLUS (Smith & Nephew)	475	12	70 (63 - 76)	40/60	2014-2021		0.2 [0.0; 1.7] (388)	0.2 [0.0; 1.7] (304)	0.2 [0.0; 1.7] (250)	*0.2 [0.0; 1.7] (124)*			
Triathlon CR (Stryker)	Triathlon (Stryker)	358	15	69 (63 - 75)	38/62	2014-2021		0.0 (306)	0.7 [0.2; 2.6] (258)	1.2 [0.4; 3.6] (191)	*1.2 [0.4; 3.6] (147)*	*1.2 [0.4; 3.6] (65)*		
Vanguard (Zimmer Biomet)	Vanguard (Zimmer Biomet)	852	9	68 (60 - 74)	42/58	2015-2021		0.0 (666)	0.5 [0.2; 1.6] (506)	1.2 [0.5; 2.7] (359)	1.6 [0.7; 3.5] (227)	*1.6 [0.7; 3.5] (121)*		
Standard total knee systems, cruciate-retaining, fixed bearing, cemented														
ACS cemented (Implantcast)	ACS FB cemented (Implantcast)	779	43	66 (59 - 74)	22/78	2014-2021		0.1 [0.0; 1.0] (623)	0.5 [0.2; 1.5] (479)	1.1 [0.5; 2.5] (321)	1.1 [0.5; 2.5] (184)	*1.1 [0.5; 2.5] (78)*		
ACS LD cemented (Implantcast)	ACS LD FB cemented (Implantcast)	362	10	70 (63 - 76)	48/52	2015-2021		0.3 [0.0; 2.2] (306)	1.4 [0.5; 3.7] (219)	*1.4 [0.5; 3.7] (146)*	*1.4 [0.5; 3.7] (72)*			
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	2,122	20	71 (64 - 78)	37/63	2014-2021		0.1 [0.0; 0.4] (1,692)	0.1 [0.0; 0.5] (1,309)	0.3 [0.1; 0.8] (916)	0.3 [0.1; 0.8] (597)	0.3 [0.1; 0.8] (269)	*0.3 [0.1; 0.8] (75)*	
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	14,928	135	70 (62 - 77)	34/66	2013-2021		0.2 [0.1; 0.3] (12,316)	0.7 [0.5; 0.8] (9,575)	0.8 [0.6; 1.0] (6,793)	0.8 [0.7; 1.0] (4,344)	0.9 [0.8; 1.2] (2,352)	0.9 [0.8; 1.2] (989)	0.9 [0.8; 1.2] (275)
EFK Femur zementiert (OHST Medizintechnik)	EFK Tibia zementiert (OHST Medizintechnik)	2,956	39	72 (64 - 77)	38/62	2014-2021		0.1 [0.0; 0.3] (2,783)	0.3 [0.1; 0.6] (2,595)	0.4 [0.2; 0.7] (2,399)	0.4 [0.2; 0.7] (2,141)	0.4 [0.2; 0.8] (1,450)	0.5 [0.3; 0.9] (513)	
EFK Femur zementiert TiNbN (OHST Medizintechnik)	EFK Tibia zementiert TiNbN (OHST Medizintechnik)	444	44	66 (59 - 73)	6/94	2014-2021		0.2 [0.0; 1.7] (398)	0.2 [0.0; 1.7] (358)	0.6 [0.1; 2.2] (317)	0.6 [0.1; 2.2] (291)	0.6 [0.1; 2.2] (238)	*0.6 [0.1; 2.2] (87)*	
GEMINI SL Fixed Bearing CR / Mobile Bearing (zementiert) (Waldemar Link)	GEMINI SL Fixed Bearing CR/ PS (zementiert) (Waldemar Link)	400	30	72 (63 - 77)	32/68	2014-2021		0.3 [0.0; 1.9] (354)	0.6 [0.1; 2.3] (310)	0.6 [0.1; 2.3] (221)	*0.6 [0.1; 2.3] (127)*	*0.6 [0.1; 2.3] (61)*		
GENESIS II CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	7,785	87	70 (62 - 76)	35/65	2013-2021		0.5 [0.4; 0.7] (6,395)	1.3 [1.0; 1.6] (4,960)	1.6 [1.3; 2.0] (3,660)	1.7 [1.4; 2.1] (2,605)	1.8 [1.5; 2.2] (1,579)	1.8 [1.5; 2.2] (690)	1.9 [1.5; 2.5] (150)
GENESIS II CR OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	2,227	109	65 (58 - 73)	20/80	2012-2021		0.4 [0.2; 0.9] (1,899)	1.0 [0.6; 1.6] (1,578)	1.5 [1.0; 2.2] (1,254)	1.6 [1.1; 2.3] (897)	1.9 [1.3; 2.7] (580)	1.9 [1.3; 2.7] (296)	*1.9 [1.3; 2.7] (142)*
GENESIS II LDK COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	1,699	16	70 (62 - 76)	38/62	2013-2021		0.3 [0.1; 0.7] (1,627)	1.1 [0.7; 1.8] (1,550)	1.4 [1.0; 2.2] (1,388)	1.8 [1.2; 2.6] (1,026)	1.8 [1.2; 2.6] (740)	1.9 [1.3; 2.7] (342)	*1.9 [1.3; 2.7] (97)*
INNEX (Zimmer Biomet)	INNEX (Zimmer Biomet)	1,183	25	73 (65 - 78)	41/59	2013-2021		0.2 [0.0; 0.7] (1,022)	0.3 [0.1; 0.9] (849)	0.7 [0.3; 1.6] (678)	0.7 [0.3; 1.6] (479)	0.7 [0.3; 1.6] (272)	*0.7 [0.3; 1.6] (135)*	
INNEX Gender (Zimmer Biomet)	INNEX (Zimmer Biomet)	337	17	73 (65 - 78)	17/83	2013-2021		0.3 [0.0; 2.2] (299)	1.0 [0.3; 3.2] (256)	1.0 [0.3; 3.2] (202)	*1.0 [0.3; 3.2] (144)*	*1.0 [0.3; 3.2] (90)*		
JOURNEY II CR OXINIUM (Smith & Nephew)	JOURNEY (Smith & Nephew)	982	27	64 (58 - 72)	36/64	2015-2021		0.3 [0.1; 1.0] (871)	0.8 [0.4; 1.7] (728)	1.0 [0.5; 2.0] (547)	1.6 [0.9; 3.0] (256)	*1.6 [0.9; 3.0] (92)*		
LEGION CR COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	9,150	118	71 (63 - 77)	38/62	2014-2021		0.3 [0.2; 0.4] (6,827)	0.7 [0.6; 1.0] (4,869)	0.9 [0.7; 1.2] (2,781)	1.1 [0.8; 1.5] (1,209)	1.3 [0.9; 1.8] (440)		
LEGION CR OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	2,206	127	64 (58 - 72)	15/85	2012-2021		0.3 [0.1; 0.7] (1,524)	1.0 [0.6; 1.6] (1,015)	1.3 [0.8; 2.2] (612)	1.3 [0.8; 2.2] (288)	*1.3 [0.8; 2.2] (92)*		

Table 45: Implant outcomes for secondary patellar resurfacing

Total knee arthroplasties								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
Standard total knee systems, cruciate-retaining, fixed bearing, cemented														
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	594	36	72 (64 - 79)	33/67	2015-2021		0.3 [0.0; 1.9] (303)	1.2 [0.4; 3.9] (165)	*1.2 [0.4; 3.9]* (85)				
Natural Knee NK Flex (Zimmer Biomet)	Natural Knee NK II (Zimmer Biomet)	385	10	72 (63 - 78)	33/67	2013-2020		0.0 (372)	0.3 [0.0; 1.9] (345)	0.6 [0.1; 2.2] (300)	0.6 [0.1; 2.2] (202)	*0.6 [0.1; 2.2]* (113)	*0.6 [0.1; 2.2]* (71)	
NexGen CR-Flex-Gender (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	4,119	98	70 (62 - 77)	10/90	2012-2021		0.1 [0.0; 0.3] (3,553)	0.4 [0.2; 0.7] (2,983)	0.6 [0.4; 1.0] (2,293)	0.6 [0.4; 1.0] (1,554)	0.6 [0.4; 1.0] (953)	0.6 [0.4; 1.0] (468)	0.6 [0.4; 1.0] (194)
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	14,382	119	71 (64 - 77)	42/58	2012-2021		0.1 [0.0; 0.1] (12,173)	0.2 [0.2; 0.3] (9,874)	0.3 [0.2; 0.5] (7,403)	0.4 [0.3; 0.5] (4,927)	0.4 [0.3; 0.6] (2,935)	0.4 [0.3; 0.6] (1,400)	0.4 [0.3; 0.6] (517)
NexGen CR (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	3,242	52	70 (63 - 76)	43/57	2013-2021		0.1 [0.1; 0.4] (2,824)	0.4 [0.2; 0.8] (2,450)	0.7 [0.4; 1.1] (2,060)	0.8 [0.5; 1.3] (1,450)	0.8 [0.5; 1.3] (975)	0.8 [0.5; 1.3] (561)	0.8 [0.5; 1.3] (163)
Persona (Zimmer Biomet)	Persona (Zimmer Biomet)	4,130	80	69 (61 - 76)	39/61	2013-2021		0.1 [0.0; 0.2] (2,974)	0.2 [0.1; 0.4] (2,010)	0.3 [0.2; 0.7] (1,165)	0.3 [0.2; 0.7] (669)	0.3 [0.2; 0.7] (307)	*0.3 [0.2; 0.7]* (92)	
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	19,976	127	71 (63 - 77)	36/64	2012-2021		0.2 [0.2; 0.3] (16,937)	0.5 [0.4; 0.6] (13,606)	0.6 [0.5; 0.7] (9,992)	0.6 [0.5; 0.8] (6,992)	0.7 [0.6; 0.9] (3,944)	0.8 [0.6; 1.0] (1,633)	0.8 [0.6; 1.0] (494)
TC-PLUS CR (Smith & Nephew)	TC-PLUS (Smith & Nephew)	3,685	40	72 (64 - 78)	36/64	2014-2021		0.2 [0.1; 0.4] (3,236)	0.3 [0.1; 0.5] (2,654)	0.3 [0.2; 0.6] (1,916)	0.3 [0.2; 0.6] (963)	0.5 [0.2; 0.9] (402)	*0.5 [0.2; 0.9]* (96)	
Triathlon CR (Stryker)	Triathlon (Stryker)	7,049	77	71 (63 - 77)	37/63	2013-2021		0.3 [0.2; 0.5] (5,618)	0.9 [0.7; 1.2] (4,444)	1.3 [1.0; 1.6] (3,221)	1.4 [1.1; 1.8] (2,157)	1.5 [1.2; 2.0] (1,232)	1.8 [1.4; 2.4] (563)	1.8 [1.4; 2.4] (155)
Vanguard (Zimmer Biomet)	Vanguard (Zimmer Biomet)	11,111	91	71 (63 - 77)	34/66	2012-2021		0.2 [0.1; 0.3] (9,103)	0.4 [0.3; 0.6] (7,154)	0.7 [0.5; 0.9] (5,120)	0.7 [0.6; 0.9] (3,290)	0.8 [0.6; 1.1] (1,770)	0.8 [0.6; 1.1] (604)	*0.8 [0.6; 1.1]* (55)
Standard total knee systems, cruciate-retaining, mobile bearing, hybrid														
TC-PLUS CR (Smith & Nephew)	TC-PLUS SB (Smith & Nephew)	419	7	69 (61 - 77)	35/65	2015-2021		0.3 [0.0; 1.9] (354)	0.3 [0.0; 1.9] (326)	0.3 [0.0; 1.9] (293)	0.6 [0.2; 2.5] (249)	*0.6 [0.2; 2.5]* (141)		
Standard total knee systems, cruciate-retaining, mobile bearing, cemented														
ACS cemented (Implantcast)	ACS MB cemented (Implantcast)	618	22	70 (62 - 77)	29/71	2013-2021		0.2 [0.0; 1.4] (487)	0.6 [0.2; 1.9] (403)	1.2 [0.5; 2.8] (310)	1.2 [0.5; 2.8] (213)	*1.2 [0.5; 2.8]* (122)		
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	2,076	24	71 (64 - 77)	36/64	2013-2021		0.2 [0.1; 0.6] (1,827)	0.3 [0.1; 0.6] (1,522)	0.3 [0.1; 0.6] (1,123)	0.4 [0.2; 0.9] (768)	0.4 [0.2; 0.9] (441)	0.4 [0.2; 0.9] (176)	*0.4 [0.2; 0.9]* (51)
INNEX (Zimmer Biomet)	INNEX (Zimmer Biomet)	1,157	61	70 (62 - 77)	97/3	2013-2021		0.3 [0.1; 0.9] (988)	0.4 [0.1; 1.0] (817)	0.5 [0.2; 1.3] (640)	0.7 [0.3; 1.6] (445)	0.9 [0.4; 2.1] (245)	*1.5 [0.6; 3.8]* (69)	
INNEX Gender (Zimmer Biomet)	INNEX (Zimmer Biomet)	301	31	70 (63 - 76)	81/19	2014-2021		0.0 (242)	0.5 [0.1; 3.2] (187)	*0.5 [0.1; 3.2]* (143)	*0.5 [0.1; 3.2]* (100)			
NexGen CR-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	534	9	70 (63 - 76)	41/59	2013-2021		0.4 [0.1; 1.6] (461)	0.7 [0.2; 2.0] (392)	0.7 [0.2; 2.0] (326)	0.7 [0.2; 2.0] (236)	0.7 [0.2; 2.0] (184)	*0.7 [0.2; 2.0]* (77)	
TC-PLUS CR (Smith & Nephew)	TC-PLUS SB (Smith & Nephew)	403	10	71 (63 - 77)	30/70	2015-2021		0.5 [0.1; 2.1] (353)	1.1 [0.4; 2.9] (292)	1.5 [0.6; 3.5] (237)	1.5 [0.6; 3.5] (190)	*1.5 [0.6; 3.5]* (101)		
ZEN Femur STD zementiert (OHST Medizintechnik)	ZEN Tibia STD zementiert (OHST Medizintechnik)	699	6	71 (65 - 78)	33/67	2015-2021		0.0 (548)	0.3 [0.0; 1.8] (390)	0.5 [0.1; 2.1] (217)	*0.5 [0.1; 2.1]* (103)			
Standard total knee systems, cruciate-retaining/sacrificing, fixed bearing, hybrid														
BPK-S INTEGRATION (Peter Brehm)	BPK-S INTEGRATION (Peter Brehm)	325	3	70 (63 - 77)	36/64	2016-2021		0.0 (275)	0.0 (223)	*0.0* (141)	*0.7 [0.1; 5.2]* (57)			
Standard total knee systems, cruciate-retaining/sacrificing, fixed bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	5,671	108	67 (59 - 75)	39/61	2013-2021		0.2 [0.1; 0.4] (4,526)	0.6 [0.4; 0.9] (3,477)	0.8 [0.6; 1.1] (2,475)	0.9 [0.7; 1.3] (1,630)	1.0 [0.7; 1.4] (849)	1.0 [0.7; 1.4] (394)	*1.0 [0.7; 1.4]* (121)
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	1,774	21	68 (60 - 76)	34/66	2015-2021		0.1 [0.0; 0.5] (1,519)	0.3 [0.1; 0.8] (1,073)	0.9 [0.5; 1.8] (686)	0.9 [0.5; 1.8] (357)	*0.9 [0.5; 1.8]* (112)		
Unity CR cmtd (Corin)	Unity cmtd (Corin)	417	12	74 (66 - 78)	27/73	2014-2021		0.5 [0.1; 2.0] (359)	0.8 [0.3; 2.5] (306)	0.8 [0.3; 2.5] (258)	1.2 [0.5; 3.3] (180)	*1.2 [0.5; 3.3]* (110)	*1.2 [0.5; 3.3]* (55)	

Table 45 (continued)

Total knee arthroplasties								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
Standard total knee systems, cruciate-retaining/sacrificing, mobile bearing, hybrid														
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	2,891	34	70 (62 - 77)	35/65	2012-2021		0.1 [0.1; 0.4] (2,629)	0.5 [0.3; 0.9] (2,294)	0.6 [0.4; 1.0] (1,829)	0.6 [0.4; 1.0] (1,209)	0.6 [0.4; 1.0] (650)	0.6 [0.4; 1.0] (240)	*0.6 [0.4; 1.0] (91)*
Standard total knee systems, cruciate-retaining/sacrificing, mobile bearing, uncemented														
LCS™ COMPLETE™ Femur (DePuy)	LCS™ COMPLETE™ Tibia (DePuy)	562	71	64 (58 - 72)	6/94	2014-2021		0.2 [0.0; 1.4] (475)	0.7 [0.2; 2.2] (373)	1.0 [0.4; 2.6] (273)	1.0 [0.4; 2.6] (172)	*1.0 [0.4; 2.6] (76)*		
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	1,210	22	70 (61 - 76)	36/64	2012-2021		0.4 [0.2; 1.0] (1,132)	0.7 [0.4; 1.4] (969)	0.7 [0.4; 1.4] (780)	0.7 [0.4; 1.4] (541)	0.9 [0.5; 1.8] (326)	*0.9 [0.5; 1.8] (132)*	*0.9 [0.5; 1.8] (62)*
SCORE (Amplitude)	SCORE (Amplitude)	441	4	69 (62 - 77)	32/68	2015-2021		0.0 (354)	0.3 [0.0; 2.1] (251)	0.3 [0.0; 2.1] (159)	*0.3 [0.0; 2.1] (96)*			
Standard total knee systems, cruciate-retaining/sacrificing, mobile bearing, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	1,549	26	69 (62 - 75)	37/63	2015-2021		0.2 [0.1; 0.7] (1,181)	0.5 [0.2; 1.2] (940)	0.8 [0.4; 1.5] (691)	0.9 [0.5; 1.8] (462)	0.9 [0.5; 1.8] (259)	*0.9 [0.5; 1.8] (73)*	
E.MOTION (Aesculap)	E.MOTION (Aesculap)	9,220	81	70 (62 - 77)	34/66	2012-2021		0.6 [0.5; 0.8] (7,633)	1.5 [1.3; 1.8] (6,052)	1.8 [1.5; 2.1] (4,345)	2.1 [1.8; 2.5] (2,731)	2.1 [1.8; 2.5] (1,437)	2.2 [1.9; 2.7] (566)	*2.2 [1.9; 2.7] (130)*
LCS™ COMPLETE™ Femur (DePuy)	MBT Tibia (DePuy)	5,082	58	71 (64 - 77)	36/64	2013-2021		0.3 [0.2; 0.5] (4,670)	0.9 [0.6; 1.2] (4,114)	1.1 [0.8; 1.4] (3,420)	1.1 [0.8; 1.4] (2,667)	1.1 [0.8; 1.5] (1,782)	1.1 [0.8; 1.5] (812)	*1.1 [0.8; 1.5] (139)*
SCORE (Amplitude)	SCORE (Amplitude)	316	6	71.5 (62 - 77)	30/70	2014-2021		0.3 [0.0; 2.4] (278)	0.7 [0.2; 2.8] (209)	1.3 [0.4; 3.9] (163)	*1.3 [0.4; 3.9] (109)*	*1.3 [0.4; 3.9] (66)*		
SIGMA™ Femur (DePuy)	MBT Tibia (DePuy)	1,891	28	72 (64 - 78)	37/63	2013-2021		0.2 [0.1; 0.6] (1,628)	0.8 [0.5; 1.4] (1,256)	1.2 [0.7; 1.9] (846)	1.3 [0.8; 2.2] (553)	1.3 [0.8; 2.2] (294)	*1.3 [0.8; 2.2] (62)*	
Standard total knee systems, cruciate-sacrificing, fixed bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	1,059	9	70 (63 - 77)	44/56	2013-2021		0.2 [0.1; 0.8] (937)	0.8 [0.4; 1.7] (737)	0.8 [0.4; 1.7] (499)	1.0 [0.5; 2.0] (324)	1.0 [0.5; 2.0] (162)	*1.7 [0.7; 4.1] (82)*	
Standard total knee systems, cruciate-sacrificing, fixed bearing, cemented														
balanSys BICONDYLAR cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	1,650	25	70 (62 - 77)	28/72	2013-2021		0.0 (1,211)	0.8 [0.4; 1.5] (854)	1.2 [0.6; 2.1] (578)	1.2 [0.6; 2.1] (319)	1.2 [0.6; 2.1] (159)	*1.2 [0.6; 2.1] (84)*	
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	3,029	85	70 (62 - 77)	27/73	2013-2021		0.0 (2,444)	0.2 [0.1; 0.5] (1,893)	0.3 [0.2; 0.7] (1,401)	0.3 [0.2; 0.7] (909)	0.3 [0.2; 0.7] (468)	*0.3 [0.2; 0.7] (137)*	
INNEX (Zimmer Biomet)	INNEX (Zimmer Biomet)	1,158	42	72 (64 - 78)	40/60	2013-2021		0.3 [0.1; 0.9] (1,037)	0.6 [0.3; 1.3] (879)	0.6 [0.3; 1.3] (669)	0.7 [0.3; 1.6] (420)	0.7 [0.3; 1.6] (207)	*0.7 [0.3; 1.6] (61)*	
INNEX Gender (Zimmer Biomet)	INNEX (Zimmer Biomet)	665	31	72 (66 - 78)	20/80	2013-2021		0.2 [0.0; 1.1] (578)	0.5 [0.2; 1.6] (499)	0.5 [0.2; 1.6] (398)	0.5 [0.2; 1.6] (251)	0.5 [0.2; 1.6] (158)	*0.5 [0.2; 1.6] (53)*	
Natural Knee NK Flex (Zimmer Biomet)	Natural Knee NK II (Zimmer Biomet)	478	9	68 (61 - 75)	32/68	2012-2020		0.2 [0.0; 1.5] (462)	0.4 [0.1; 1.7] (413)	0.7 [0.2; 2.1] (349)	1.0 [0.4; 2.6] (260)	1.0 [0.4; 2.6] (187)	*1.0 [0.4; 2.6] (108)*	*1.0 [0.4; 2.6] (56)*
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] (219)	0.3 [0.0; 2.2] (159)	*0.3 [0.0; 2.2] (64)*
Persona (Zimmer Biomet)	Persona (Zimmer Biomet)	2,982	71	69 (61 - 76)	37/63	2013-2021		0.0 [0.0; 0.3] (2,015)	0.3 [0.1; 0.7] (1,272)	0.3 [0.1; 0.7] (774)	0.3 [0.1; 0.7] (473)	0.3 [0.1; 0.7] (221)	*0.3 [0.1; 0.7] (63)*	
Triathlon CR (Stryker)	Triathlon (Stryker)	1,693	24	69 (61 - 76)	37/63	2014-2021		0.1 [0.0; 0.5] (1,356)	0.5 [0.2; 1.0] (940)	0.8 [0.4; 1.6] (566)	1.1 [0.5; 2.2] (279)	1.1 [0.5; 2.2] (174)	*1.1 [0.5; 2.2] (79)*	
Vanguard (Zimmer Biomet)	Vanguard (Zimmer Biomet)	6,672	82	72 (64 - 78)	30/70	2013-2021		0.2 [0.1; 0.4] (5,387)	0.7 [0.5; 0.9] (4,192)	0.9 [0.7; 1.3] (2,997)	1.1 [0.8; 1.4] (1,907)	1.1 [0.8; 1.4] (1,034)	1.1 [0.8; 1.4] (352)	
Standard total knee systems, cruciate-sacrificing, mobile bearing, hybrid														
balanSys BICONDYLAR uncem. (Mathys)	balanSys BICONDYLAR RP (Mathys)	644	6	70 (62 - 77)	40/60	2013-2021		0.7 [0.2; 1.7] (591)	1.0 [0.4; 2.2] (515)	1.2 [0.6; 2.5] (439)	1.4 [0.7; 2.9] (338)	1.7 [0.9; 3.4] (229)	*1.7 [0.9; 3.4] (132)*	*2.7 [1.2; 5.9] (84)*
Standard total knee systems, cruciate-sacrificing, mobile bearing, cemented														
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	1,028	5	69 (62 - 76)	41/59	2014-2021		0.2 [0.1; 0.8] (914)	0.6 [0.3; 1.4] (807)	0.6 [0.3; 1.4] (698)	0.8 [0.4; 1.7] (571)	0.8 [0.4; 1.7] (388)	1.1 [0.5; 2.5] (190)	

Table 45 (continued)

Total knee arthroplasties								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
Standard total knee systems, cruciate-sacrificing, mobile bearing, cemented														
INNEX (Zimmer Biomet)	INNEX (Zimmer Biomet)	4,502	63	73 (65 - 78)	31/69	2012-2021		0.1 [0.1; 0.3] (3,867)	0.6 [0.4; 0.9] (3,231)	0.8 [0.6; 1.2] (2,497)	1.0 [0.7; 1.4] (1,693)	1.1 [0.7; 1.5] (908)	1.1 [0.7; 1.5] (286)	
INNEX Gender (Zimmer Biomet)	INNEX (Zimmer Biomet)	3,683	59	72 (64 - 78)	19/81	2013-2021		0.3 [0.2; 0.6] (3,123)	1.0 [0.7; 1.4] (2,473)	1.3 [0.9; 1.7] (1,814)	1.3 [1.0; 1.9] (1,220)	1.4 [1.0; 2.0] (613)	1.4 [1.0; 2.0] (151)	
Standard total knee systems, pivot, fixed bearing, cemented														
3D (Speetec Implantate Gmbh)	3D (Speetec Implantate Gmbh)	1,443	20	71 (63 - 77)	36/64	2014-2021		0.2 [0.1; 0.7] (1,300)	1.0 [0.5; 1.7] (1,115)	1.0 [0.6; 1.8] (1,016)	1.0 [0.6; 1.8] (770)	1.2 [0.7; 2.1] (466)	1.2 [0.7; 2.1] (174)	
ADVANCE® (MicroPort)	ADVANCE® II (MicroPort)	437	8	72 (64 - 78)	50/50	2014-2021		0.0 (367)	1.4 [0.6; 3.4] (301)	1.4 [0.6; 3.4] (228)	1.9 [0.8; 4.2] (153)	*1.9 [0.8; 4.2]* (95)		
EVOLUTION® (MicroPort)	EVOLUTION® (MicroPort)	1,331	19	68 (61 - 76)	36/64	2016-2021		0.4 [0.2; 1.1] (1,021)	0.7 [0.4; 1.5] (719)	0.9 [0.5; 1.8] (402)	1.7 [0.8; 3.6] (186)			
GMK SPHERE (Medacta)	GMK (Medacta)	1,075	27	68 (60 - 75)	45/55	2014-2021		0.5 [0.2; 1.3] (729)	1.1 [0.6; 2.3] (428)	1.1 [0.6; 2.3] (255)	*1.1 [0.6; 2.3]* (107)			
Persona (Zimmer Biomet)	Persona (Zimmer Biomet)	922	11	69 (62 - 76)	40/60	2016-2021		0.3 [0.1; 1.4] (505)	0.3 [0.1; 1.4] (281)	*0.3 [0.1; 1.4]* (119)				
Standard total knee systems, posterior-stabilised, cemented														
ATTUNE™ Femur (DePuy)	ATTUNE™ Tibia (DePuy)	2,177	79	71 (62 - 78)	37/63	2013-2021		0.4 [0.2; 0.9] (1,482)	1.2 [0.7; 1.9] (1,042)	1.4 [0.9; 2.2] (755)	1.6 [1.0; 2.5] (543)	1.6 [1.0; 2.5] (309)	*1.6 [1.0; 2.5]* (138)	
balanSys BICONDYLAR PS cem. (Mathys)	balanSys BICONDYLAR fix (Mathys)	1,131	24	71 (64 - 78)	40/60	2013-2021		0.2 [0.0; 0.8] (950)	0.4 [0.2; 1.1] (679)	0.4 [0.2; 1.1] (427)	0.4 [0.2; 1.1] (218)	*0.4 [0.2; 1.1]* (106)		
COLUMBUS (Aesculap)	COLUMBUS (Aesculap)	502	37	69 (62 - 76)	34/66	2013-2021		0.4 [0.1; 1.8] (432)	0.4 [0.1; 1.8] (346)	0.8 [0.2; 2.4] (262)	0.8 [0.2; 2.4] (188)	*0.8 [0.2; 2.4]* (115)	*0.8 [0.2; 2.4]* (65)	
E.MOTION (Aesculap)	E.MOTION (Aesculap)	2,686	43	68 (61 - 76)	33/67	2012-2021		0.7 [0.4; 1.1] (2,123)	1.9 [1.4; 2.6] (1,603)	2.7 [2.1; 3.6] (1,135)	3.0 [2.3; 4.0] (756)	3.2 [2.4; 4.2] (425)	3.5 [2.6; 4.7] (197)	
GEMINI SL Fixed Bearing PS (zementiert) (Waldemar Link)	GEMINI SL Fixed Bearing CR/ PS (zementiert) (Waldemar Link)	992	21	71 (63 - 78)	37/63	2014-2021		0.1 [0.0; 0.7] (793)	1.0 [0.5; 2.1] (516)	1.3 [0.7; 2.6] (268)	*1.3 [0.7; 2.6]* (131)	*1.3 [0.7; 2.6]* (57)		
GENESIS II PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	2,747	62	71 (63 - 77)	35/65	2013-2021		0.4 [0.2; 0.8] (2,348)	1.6 [1.2; 2.2] (1,947)	1.9 [1.4; 2.5] (1,547)	2.1 [1.5; 2.8] (1,001)	2.3 [1.6; 3.1] (485)	2.3 [1.6; 3.1] (172)	
GENESIS II PS OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	480	44	64 (57 - 71)	20/80	2013-2021		0.7 [0.2; 2.2] (383)	1.3 [0.5; 3.1] (306)	1.7 [0.7; 3.8] (232)	1.7 [0.7; 3.8] (170)	*1.7 [0.7; 3.8]* (82)		
JOURNEY II BCS COCR (Smith & Nephew)	JOURNEY (Smith & Nephew)	639	27	70 (62 - 77)	42/58	2017-2021		1.1 [0.5; 2.6] (395)	3.0 [1.6; 5.4] (246)	*3.0 [1.6; 5.4]* (104)				
JOURNEY II BCS OXINIUM (Smith & Nephew)	JOURNEY (Smith & Nephew)	1,357	34	68 (61 - 76)	32/68	2014-2021		0.9 [0.5; 1.6] (1,195)	2.3 [1.6; 3.3] (987)	2.4 [1.7; 3.5] (722)	2.5 [1.8; 3.6] (427)	*2.5 [1.8; 3.6]* (101)		
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	5,041	89	70 (62 - 77)	38/62	2014-2021		0.7 [0.5; 1.0] (3,464)	2.0 [1.5; 2.5] (2,401)	2.1 [1.7; 2.7] (1,403)	2.4 [1.9; 3.1] (637)	2.4 [1.9; 3.1] (241)	*2.4 [1.9; 3.1]* (60)	
LEGION PS OXINIUM (Smith & Nephew)	Genesis II (Smith & Nephew)	1,394	96	66 (59 - 74)	21/79	2012-2021		0.7 [0.3; 1.4] (1,010)	1.9 [1.2; 3.0] (722)	2.5 [1.6; 3.8] (474)	2.5 [1.6; 3.8] (297)	2.8 [1.8; 4.4] (180)	*2.8 [1.8; 4.4]* (83)	
NexGen LPS-Flex-Gender (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	3,112	77	69 (61 - 76)	9/91	2012-2021		0.2 [0.1; 0.4] (2,641)	0.4 [0.2; 0.8] (2,136)	0.9 [0.5; 1.4] (1,476)	1.0 [0.6; 1.6] (1,035)	1.0 [0.6; 1.6] (604)	1.2 [0.7; 1.9] (333)	1.2 [0.7; 1.9] (158)
NexGen LPS-Flex (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	10,440	207	69 (61 - 76)	29/71	2012-2021		0.2 [0.1; 0.3] (8,532)	0.6 [0.5; 0.8] (6,794)	0.6 [0.5; 0.8] (4,879)	0.6 [0.5; 0.8] (3,151)	0.6 [0.5; 0.8] (1,736)	0.7 [0.5; 0.9] (732)	0.7 [0.5; 0.9] (245)
NexGen LPS (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	8,368	67	70 (61 - 76)	41/59	2012-2021		0.1 [0.0; 0.2] (7,137)	0.5 [0.3; 0.7] (5,671)	0.6 [0.5; 0.9] (4,397)	0.7 [0.6; 1.0] (3,187)	0.8 [0.6; 1.0] (2,100)	0.8 [0.6; 1.0] (1,109)	0.8 [0.6; 1.0] (525)
Persona (Zimmer Biomet)	Persona (Zimmer Biomet)	1,787	56	71 (62 - 77)	38/62	2013-2021		0.6 [0.3; 1.2] (1,115)	1.0 [0.5; 1.8] (667)	1.1 [0.6; 2.1] (406)	1.1 [0.6; 2.1] (220)	*1.1 [0.6; 2.1]* (95)		
SIGMA™ Femur (DePuy)	MBT Tibia (DePuy)	578	37	73 (66 - 79)	29/71	2014-2021		0.6 [0.2; 1.8] (480)	1.0 [0.4; 2.5] (369)	1.0 [0.4; 2.5] (257)	1.4 [0.6; 3.2] (165)	*1.4 [0.6; 3.2]* (77)		
SIGMA™ Femur (DePuy)	SIGMA™ Tibia (DePuy)	2,900	98	71 (64 - 78)	33/67	2013-2021		0.6 [0.4; 1.0] (2,406)	1.4 [1.0; 1.9] (1,964)	1.7 [1.2; 2.3] (1,471)	1.8 [1.3; 2.4] (1,028)	1.9 [1.4; 2.6] (577)	1.9 [1.4; 2.6] (216)	
Triathlon PS (Stryker)	Triathlon (Stryker)	2,966	59	71 (64 - 77)	36/64	2013-2021		0.4 [0.2; 0.8] (2,301)	1.2 [0.8; 1.8] (1,689)	1.4 [1.0; 2.1] (1,140)	1.4 [1.0; 2.1] (593)	1.4 [1.0; 2.1] (236)	*1.4 [1.0; 2.1]* (83)	

Table 45 (continued)

Total knee arthroplasties								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
Standard total knee systems, posterior-stabilised, cemented														
Vanguard (Zimmer Biomet)	Vanguard (Zimmer Biomet)	2,458	51	72 (64 - 78)	32/68	2014-2021		0.4 [0.2; 0.8] (1,787)	0.9 [0.6; 1.5] (1,261)	0.9 [0.6; 1.5] (813)	1.0 [0.6; 1.7] (512)	1.3 [0.7; 2.3] (284)	*1.3 [0.7; 2.3]* (77)	
VEGA (Aesculap)	VEGA (Aesculap)	1,301	37	69 (60 - 77)	31/69	2013-2021		0.3 [0.1; 0.8] (1,029)	1.5 [0.9; 2.5] (764)	2.4 [1.5; 3.7] (503)	3.0 [1.9; 4.5] (315)	3.3 [2.1; 5.0] (184)	*3.3 [2.1; 5.0]* (74)	
Constrained TKA systems, hinged, cemented														
Endo-Modell® - M, Rotationsversion (Waldemar Link)	Endo-Modell® - M, Rotationsversion (Waldemar Link)	887	106	77 (68 - 82)	23/77	2013-2021		0.1 [0.0; 0.9] (688)	1.0 [0.4; 2.1] (510)	1.2 [0.6; 2.4] (348)	1.6 [0.7; 3.4] (198)	*1.6 [0.7; 3.4]* (83)		
Endo-Modell®, Rotationsversion (Waldemar Link)	Endo-Modell®, Rotationsversion (Waldemar Link)	1,003	129	77 (70 - 82)	20/80	2013-2021		0.4 [0.1; 1.1] (800)	0.8 [0.3; 1.7] (640)	0.8 [0.3; 1.7] (450)	0.8 [0.3; 1.7] (312)	0.8 [0.3; 1.7] (178)	*0.8 [0.3; 1.7]* (86)	
ENDURO (Aesculap)	ENDURO (Aesculap)	1,398	142	76 (68 - 80)	21/79	2013-2021		0.5 [0.2; 1.1] (1,090)	1.1 [0.6; 1.9] (841)	1.5 [0.9; 2.6] (608)	1.5 [0.9; 2.6] (400)	1.5 [0.9; 2.6] (236)	*1.5 [0.9; 2.6]* (100)	
NexGen RHK (Zimmer Biomet)	NexGen RHK (Zimmer Biomet)	912	126	75 (67 - 81)	23/77	2012-2021		0.3 [0.1; 1.0] (745)	0.6 [0.2; 1.5] (586)	1.0 [0.5; 2.3] (413)	1.0 [0.5; 2.3] (260)	*1.0 [0.5; 2.3]* (145)	*1.0 [0.5; 2.3]* (73)	
RT-Plus (Smith & Nephew)	RT-Plus (Smith & Nephew)	1,816	123	77 (70 - 81)	21/79	2013-2021		0.4 [0.2; 0.9] (1,507)	0.7 [0.4; 1.3] (1,207)	1.1 [0.7; 1.8] (895)	1.2 [0.7; 2.0] (603)	1.2 [0.7; 2.0] (334)	*1.5 [0.9; 2.7]* (122)	
RT-Plus Modular (Smith & Nephew)	RT-Plus Modular (Smith & Nephew)	501	98	75 (66 - 81)	28/72	2013-2021		0.7 [0.2; 2.1] (400)	0.9 [0.4; 2.5] (322)	0.9 [0.4; 2.5] (246)	0.9 [0.4; 2.5] (172)	*0.9 [0.4; 2.5]* (85)		
Constrained TKA systems, varus-valgus-stabilised, cemented														
LEGION PS COCR (Smith & Nephew)	Genesis II (Smith & Nephew)	564	54	71 (64 - 78)	29/71	2015-2021		0.2 [0.0; 1.5] (365)	0.2 [0.0; 1.5] (244)	*0.2 [0.0; 1.5]* (102)				
LEGION Revision COCR (Smith & Nephew)	LEGION Revision (Smith & Nephew)	381	55	71 (64 - 78)	28/72	2014-2021		0.3 [0.0; 2.2] (301)	0.7 [0.2; 2.7] (251)	0.7 [0.2; 2.7] (192)	*0.7 [0.2; 2.7]* (134)	*2.4 [0.6; 9.9]* (52)		
NexGen LCCK (Zimmer Biomet)	NexGen CR (Zimmer Biomet)	1,190	95	72 (63 - 79)	31/69	2012-2021		0.2 [0.0; 0.8] (972)	0.8 [0.4; 1.6] (775)	0.8 [0.4; 1.6] (592)	0.8 [0.4; 1.6] (420)	0.8 [0.4; 1.6] (228)	*0.8 [0.4; 1.6]* (85)	

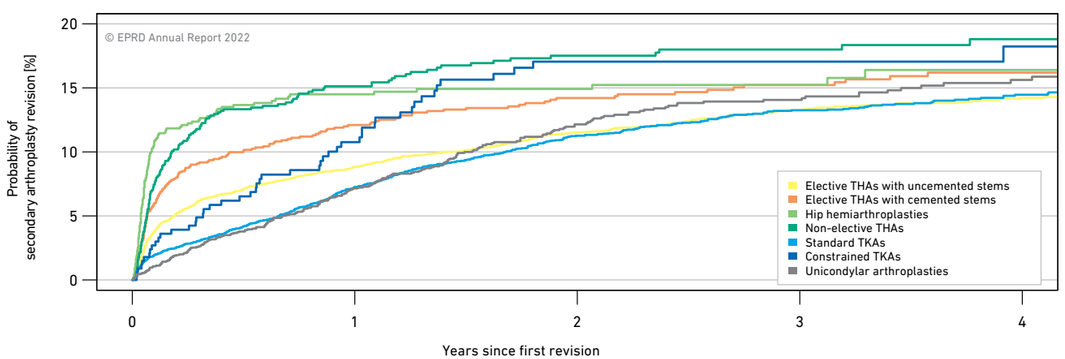
Table 45 (continued)

5.4 Re-revision probability of hip and knee arthroplasties

As already pointed out, the probability that a primary arthroplasty will need to be revised within seven years is well below 10 % for most types of arthroplasties. However, the probability of a second revision after the first revision is - as will become clear below - much higher than that of the first revision itself. This figure already surpasses the 10 percent mark after less than two years.

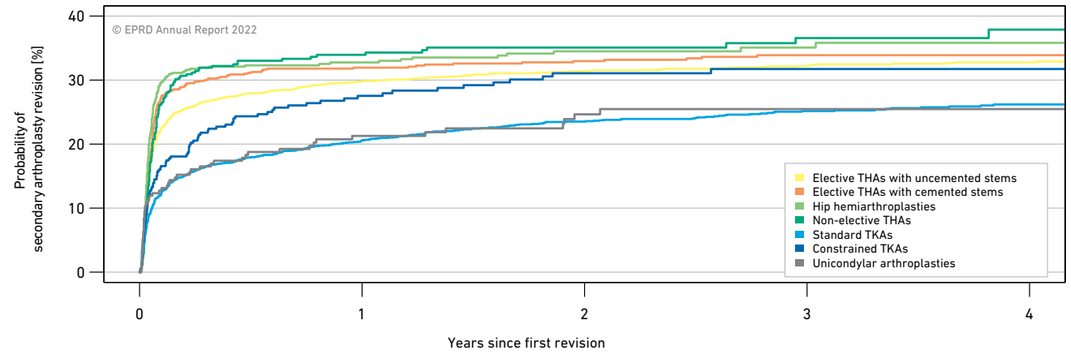
How high the risk of a second revision is, largely depends on the underlying cause for the first revision. Of the 26,197 first revisions followed up in the EPRD, 8,710 were due to periprosthetic infection and 17,487 were aseptic revisions. Depending on the initial type of arthroplasty, the probability of a second revision within two years after an aseptic first revision ranges from 11.3% to 17.5% (Figure 23), but after a septic revision it is more than twice as high, reaching values of between 23.5% and 35.1% (Figure 24).

Patient mortality is also higher after infection-related revisions than following non-infection-related revisions. In women that had non-infection-related first revisions after elective THAs with uncemented acetabular components, for example, the EPRD found a significant difference in the one-year mortality of 1.4% for non-infection-related and 3.8% for infection-related revisions, even though the two groups of women did not differ in mean age.



Numbers at risk					
Elective THAs with uncemented stems	6,220	4,401	3,218	2,209	1,364
Elective THAs with cemented stems	1,281	850	615	407	243
Hip hemiarthroplasties	1,029	440	278	166	77
Non-elective THAs	1,002	561	390	256	154
Standard TKAs	5,470	3,936	2,761	1,816	1,006
Constrained TKAs	341	236	160	103	67
Unicondylar arthroplasties	1,995	1,420	964	631	342

Figure 23: Probability of second revision following primary revision for reasons other than infection by type of primary arthroplasty



Numbers at risk					
Elective THAs with uncemented stems	3,199	1,758	1,270	850	503
Elective THAs with cemented stems	910	456	345	227	133
Hip hemiarthroplasties	848	272	181	91	43
Non-elective THAs	473	189	125	78	40
Standard TKAs	2,636	1,608	1,143	743	436
Constrained TKAs	351	185	135	83	41
Unicondylar arthroplasties	253	147	97	59	32

Figure 24: Probability of second revision following primary revision for infection by type of primary arthroplasty

In brief:

Probability of a second arthroplasty revision within two years of the first revision is:

- 23.5 % to 35.1 % after a first revision for periprosthetic infection
- 11.3 % to 17.5 % after a first aseptic revision

6 Results in international comparison

6 Results in international comparison

The *Swedish Knee Arthroplasty Registry (SKAR)* and the *Swedish Hip Arthroplasty Registry (SHAR)* were among the first national arthroplasty registries. They began documenting arthroplasty procedures nationwide in 1975 and 1979 respectively and meanwhile report jointly as the *Swedish Arthroplasty Registry (SAR)*. Over the next decades, other national arthroplasty registries were founded in Europe, North America and Australia. Among the many registry initiatives worldwide, the EPRD report authors have selected some well-established national registries for the comparisons in this chapter (Table 46). The selection criteria included extensive experience, as is true for the Swedish SAR and the *Australian Orthopaedic Association National Joint Replacement Registry* (AOANJRR), or very high documentation rates, as exemplified in the British *National Joint Registry* (NJR) and the US *American Joint Replacement Registry* (AJRR). Also included as a close neighbour are the Netherlands with the *Landelijke Registratie Orthopedische Interventies* (LROI).

At present, the world's largest registry in terms of hip and knee replacements is the British NJR with records of 2.8 million procedures between 2003 and 2020. Even though the American AJRR is still further removed from a full national US coverage than the EPRD in Germany, it has already collected data on 2.5 million arthroplasties within ten years and thus has become the second largest registry. However, only a markedly smaller fraction of the AJRR data sets lend themselves to survival analysis. The EPRD has also been collecting data on hip and knee arthroplasties for ten years. Despite its short existence, it is already the third largest registry of its kind worldwide, with almost two million data sets collected by the end of 2021. In contrast, since their inception more than 40 years ago both Swedish registries have collected just under one million hip and knee replacements by the end of 2020.

National equivalent	Name of registry	Acronym	Documentation started in	Number of hip and knee arthroplasties documented[8]	Sources
Australia	The Australian Orthopaedic Association National Joint Replacement Registry	AOANJRR	1999	1.7 million	[4]
England, Wales, Northern Ireland, Isle of Man, and Guernsey	The National Joint Registry	NJR	2003	2.8 million	[5]
The Netherlands	Landelijke Registratie Orthopedische Implantaten	LROI	2007	0.46 million	[6]
Sweden	Swedish Arthroplasty Register	SAR	1975 (knee) 1979 (hip)	1 million	[7]
USA	American Joint Replacement Registry	AJRR	2011	2.5 million	[8]

Table 46: Comparative summary of selected national arthroplasty registries

8 The numbers, in each case until the end of 2020, include both primary arthroplasties and reoperations. Not all registries provide the same level of follow-up and completeness of revision.

Even if the quantity of documented arthroplasties is not a quality criterion in itself, it is an important condition for the presentation of the respective treatment reality and more in-depth survival analyses. In order to obtain representative results, it is important that the national documentation rate is as high as possible. However, as an essential factor for the significance and quality of survival outcomes, the complete documentation and linkage of revisions as part of the follow-up is even more important. In order to ensure this completeness, the EPRD only includes patients with known health insurance data in its arthroplaty survival analyses. By regularly publishing available data and analyses, the EPRD not only contributes to the scientific discourse in Germany, but also internationally.[9]

Due to the COVID-19 pandemic, hospitals had to postpone some elective operations or suspend them altogether for the time being. This is reflected in the EPRD as well as in the numbers of other registries. The Swedish SAR, for example, saw a 23 % drop in primary hip arthroplasties and a 30 % decline in primary knee arthroplasties between 2019 and 2020. Less marked declines of respectively 5 % and 7 % were observed in the Australian registry.

All arthroplasty registries compared below present not only descriptive outcomes (see Chapter 4) but also survival and revision probabilities of different implants and types of arthroplasties, based on the time between the index operation (e.g. initial implantation) and the next reoperation (see Chapter 5). However, the registries sometimes differ markedly not only in terms of data integrity, but also in terms of the type of data collection, the parameters collected, and the definitions of terms and analysis rules. For example, the EPRD does not consider a total knee replacement as failed if patellar resurfacing was performed in a subsequent reoperation, regardless of whether a prophylactic insert replacement was performed at the same time or not. The other registries selected for comparison classify the addition of this complementary component as failure of the primary knee arthroplasty. When comparing the findings of different registries, it is therefore important to keep in mind the different definitions and approaches.

Based on the respective percentages and trends of the basic types of arthroplasty in the registries, the following sections 6.1 and 6.2 present the somewhat different realities of arthroplasty in the various countries, thus allowing a better understanding of registry outcomes. In some cases, analysis also includes survival outcomes. There is no general comparison of the revision probabilities of different types of arthroplasties. This is partly due to the differences in the respective health care systems, in the design and structure of the registries, in their definitions and in the data collection methodology, which stand in the way of a direct comparison.

9 Available at www.EPRD.de/en under "Downloads and Papers": https://www.eprd.de/en/downloads/papers

In brief

- The EPRD is the third largest hip and knee arthroplasty registry in the world
- International arthroplasty registries differ in their data collection methodology and structure
- Across all countries considered, fewer arthroplasties were documented due to the pandemic

6.1 Hip arthroplasty - international comparison

The EPRD also includes arthroplasties following femoral neck fractures, whereas the Australian and Swedish registries focus on osteoarthritis procedures and the US registry on elective procedures. The British and Dutch registries do not explicitly limit themselves to specific indications or elective procedures in their descriptive presentations and also include arthroplasties resulting from fractures of the femoral neck.

There is a wide difference internationally regarding component fixation in total hip arthroplasties (Table 47). In the British NJR and Swedish SAR uncemented femoral components account for less than half of cases (37 % and 42 %, respectively). They are markedly more common in the Australian AOANJRR (61 %), the Dutch LROI (72 %) and the EPRD (78 %), but are still far from the 94 % reported by the American AJRR. In this respect, however, the extremes have already started to converge in recent years. For example, the share of uncemented stems in the US has recently declined somewhat, while in Sweden it has soared over the last 20 years from around 3 % to over 40 %.

In the registries compared, two trends can be identified (except for the American AJRR, which only differentiates between arthroplasties with uncemented and cemented stems):

- Fully cemented arthroplasties are on the decline. In The Netherlands, for example, their share decreased steadily from 29 % to 21 % between 2010 and 2020, in Australia from 14 % to 2 % between 2003 and 2020, and in Sweden from over 90 % in 2000 to only 50 % at the last count.
- The rate of hybrid arthroplasties (cemented stem and uncemented cup) is increasing, although mostly only modestly and for at least the last five years. The most significant increase was seen in the British NJR. Compared to 2012, the share of hybrid arthroplasties there has more than doubled and, at 38 %, is even higher than that of the long-time leader, Australia.

	AOANJRR	EPRD	NJR	LROI	SAR[10]	AJRR
Uncemented	61	77	35	69	33	94
Reverse-hybrid	-	1	2	3	9	
Cemented	2	4	22	21	50	6
Hybrid	37	18	38	7	8	

Table 47: Proportion (%) of primary total hip arthroplasty bone fixations reported in selected international registries

10 Since the annual report does not provide proportions as numerical values, these were extrapolated from the graph.

While uncemented stems demonstrate a low probability of revision in registries including the AJRR, this is particularly true for men. Amongst women 65 years and older, improved long term survival is seen with cemented stems. Furthermore, the AJRR demonstrates that cemented stems carry a reduced risk of periprosthetic fractures in both men and women 65 years and older. Unfortunately, the AJRR does not provide separate outcomes for older age groups, probably due to the overall low number of cases with cemented stems. In the Australian AOANJRR the revision probabilities for hybrid arthroplasties are lower than those for fully uncemented arthroplasties, especially in older age groups.

In Germany, The Netherlands, Sweden, and also the United Kingdom[11] the 32 mm head is still the one predominantly used (Table 48). In these registries very small (<28 mm) and very large (>36 mm) head diameters are used rather sparingly, if at all. At roughly 44 %, the 36 mm heads in the EPRD attain their highest level ever reported (Table 11), which clearly stands out from the other European registries compared here. In the AJRR, the 36 mm head remains the most common head size at 59 %, and at 8 % extremely large heads of more than 36 mm diameter also have notably increased. The US registry reports dual-mobility systems separately because they already account for more than 10 % of arthroplasties. Since the majority of dual-mobility systems contain 28 mm modular heads, the reported share of 4 % for the 28 mm heads would actually correspond to 13-14 % in international comparisons.

In the EPRD, ceramic is clearly the most widely used head material (Table 14) in total hip arthroplasties, accounting for almost 90 %. Only The Netherlands and the US report a prevalence of ceramic heads in their registries (Table 49). Both registries also explicitly report, as does the EPRD, the proportion of heads made of ceramicised metal, i.e. head components where a zirconium metal alloy is heat treated to yield a zirconium oxide ceramic surface. At 12 % and 10 % respectively, their share in the Dutch and

	EPRD	LROI	SAR[12]	AJRR[13]
< 28 mm	<0.5	11	<1	4
28 mm	5		6	
32 mm	50	66	83	19
36 mm	44	23	10	59
> 36 mm	<0.1	<1	0	8

Table 48: Proportion (%) of hip arthroplasty head sizes in selected international registries

11 The UK annual report does not list percentages of head sizes, but does give frequency of use: 1st place 32 mm, 2nd place 36 mm and 3rd place 28 mm.
12 Since the annual report does not provide proportions as numerical values, these were extrapolated from the graph.
13 The share of dual mobility (DM) arthroplasties is presented separately in the AJRR and amounts to about 10 %.

	EPRD	NJR	LROI	SAR[14]	AJRR[15]
Ceramic	90	35	68	26	63
Metal	7	63	20	73	16
Ceramicised metal	3		12		10
Unknown	<0.1	3	-	-	12 (DM)

Table 49: Proportion (%) of total hip arthroplasty head component materials in selected international registries

US registries is markedly higher than in the EPRD where they represent about 3 %. In recent years, the share of ceramic heads in the British NJR has decreased in favour of metal heads. However, this registry does not yet differentiate between conventional and ceramicised metal heads.

In brief

Total hip arthroplasty:

- Fully cemented arthroplasties continue to decline in the national registries compared, while hybrid fixations are on the rise
- 32 mm heads remain the most common head size in Europe, but 36 mm heads are becoming more common

14 Since the annual report does not provide proportions as numerical values, these were extrapolated from the graph.
15 Since the AJRR does not specify modular head materials for Dual Mobility (DM) arthroplasties, these are reported in the "unknown" category.

6.2 Knee arthroplasty - international comparison

In terms of the basic types of knee arthroplasty, the European registries consistently report higher shares of unicondylar arthroplasties than the Australian registry with 6 % and the North American registry with 4 % (Table 50). At 19 %, the Dutch registry is the front-runner with the most significant increase. In the German and British registries, this share is 13 %, and the Swedish registry with its trend towards unicondylar arthroplasties over the last five years has now also reached 11 %. Documenting the different knee systems is a challenge, as specific implant features must be classified and plausibly matched for their accurate identification. At present, the Swedish registry does not provide percentages for specific knee systems. The reason given is a lack of validation of their own product database. Compared to Germany, the number of implants and manufacturers reported in Sweden is still quite manageable. Even though as in the EPRD - the classification of the documented arthroplasty systems is quite detailed, figures and data cannot be readily compared across registries (Table 51). It may be expected that arthroplasty classifications of the NJR and

	AOANJRR	EPRD	NJR	LROI	SAR[16]	AJRR
Total knee arthroplasty	94	87	85	80	88	95
Unicondylar knee arthroplasty	6	13	13	19	11	4
Patellofemoral knee arthroplasty	<1	<1	1	<1	<1	<1

Table 50: Proportion (%) of knee arthroplasties reported in selected international registries

	AOANJRR	EPRD	NJR[17]	LROI	AJRR
Cruciate-retaining	74	46	75	35	46
Cruciate-retaining/ sacrificing		11			
Cruciate-sacrificing	16	11	22	<1 (BS[18])	9 (UC[19])
Posterior-stabilised systems (without varus-valgus stabilisation)		24		62	45
Pivot	10	3	-	2	-
Constrained systems	<1	5	2	<1	<1

Table 51: Proportion (%) of primary total knee arthroplasty systems in selected international registries

16 Since the annual report does not provide proportions as numerical values, these were extrapolated from the graph.
17 The percentages were converted to the percentage of total knee arthroplasties based on the figures given for total knee arthroplasty in the annual report.
18 "Bicruciate sacrificing"
19 "Ultra congruency"

EPRD will in the future lead to international harmonisation of registry product databases and thus lay the groundwork for better comparisons. One current hurdle, for example, is that systems allowing both cruciate-retaining (CR) and cruciate-sacrificing (CS) procedures are not reported separately in the other registries. Therefore, these arthroplasty systems are often grouped with pure CR systems and referred to as "Unconstrained" (NJR) or "Minimal(ly)-Stabilised" (AOANJRR, LROI), for example. Moreover, some registries include cruciate sacrificing systems among the posterior-stabilised systems. These ambiguities and definition differences therefore only allow for limited direct comparisons.

Nevertheless, it can be stated that, for example, in the registries of the US and especially The Netherlands, posterior-stabilised systems are markedly more common compared to the other registries, even if their numbers are beginning to decline in the US and The Netherlands. The AJRR, NJR and AOANJRR, report higher revision probabilities for posterior-stabilised systems than for cruciate-retaining systems. A similar trend is also evident in the EPRD (see Subsection 5.1.2).

Fully cemented systems, which are the international standard for total knee arthroplasties, are reported at frequencies of greater than 90 % by the European registries (Table 52). In Australia, the share of fully cemented arthroplasties is traditionally lower than in other established registries and most recently stood at 67 %. In Australia hybrid fixations (cemented tibial tray and uncemented femoral component) account for 17 % and fully uncemented arthroplasties for 16 %. This relatively common uncemented knee arthroplasty in the AOANJRR is remarkable, because the survival of the most prevalent minimally stabilised systems (cruciate retaining systems) suffers from consistently higher revision probabilities than cemented or hybrid systems. Accordingly, the Australian registry explicitly stresses that cemented tibial components give the best outcomes. For posterior stabilised systems, however, the Australian registry outcomes are not as clear-cut. Uncemented arthroplasties are increasingly being used in the US as well (now 14 %).

At around 11 % in the EPRD, mobile bearings continue to decline in total knee arthroplasty (see Section 4.3). Among the registries compared, only the NJR still reports the shares of mobile bearings in the respective calendar year. There, they have remained stable at a low level of about 3 % over the last few years. The Netherlands and US, which reported 9 % mobile systems in their previous annual reports, do not currently provide shares or dedicated outcomes on the revision probabilities [9, 10]. However, the British NJR and the Australian AOANJRR reveal significantly higher revision probabilities for mobile bearings - similar to the EPRD in the period analysed (Figure 13).

	AOANJRR	EPRD	NJR[20]	LROI	SAR	AJRR
Cemented	67	95	97	93	91	83
Uncemented	16	1	2	4	9	14
Hybrid	17	4	<1	3	<1	2

Table 52: Proportion (%) of primary total knee arthroplasty bone fixations reported in selected international registries

20 The percentages were converted to the percentage of total knee arthroplasties based on the figures given for total knee arthroplasty in the annual report.

	AOANJRR	EPRD	LROI	SAR	AJRR
Without patellar resurfacing	25	88	79	97	10
With patellar resurfacing	75	12	21	3	90

Table 53: Proportion (%) of patellar resurfacing at primary total knee arthroplasty in selected international registries

According to the European registries, patellar resurfacing is rarely performed at the same time as the primary arthroplasty (Table 53). The situation is quite different in Australia and the US: the AOANJRR reported patellar resurfacing in three quarters of all primary TKAs, and the AJRR in 90 %, although this percentage has been decreasing slightly since the inception of the registry. A strong declining trend in simultaneous patellar resurfacing has been seen over several years in Sweden, where only 3 % of primary TKAs are now performed with patellar resurfacing. These quite contrasting arthroplasty realities point to fundamentally different philosophies. In the following "Specific Analysis" section, the EPRD therefore specifically addresses current publications and recommendations on this topic and contrasts these outcomes with its own experience.

In brief

- Unicondylar knee arthroplasty is quite common, especially in Europe

Total knee arthroplasty:

- The international standard is still fully cemented fixations (ranging from 67 % to 97 %)
- More uncemented arthroplasties internationally
- In Europe, the majority without primary patellar resurfacing (ranging from 79 % to 97 %), in the US and Australia the majority with resurfacing

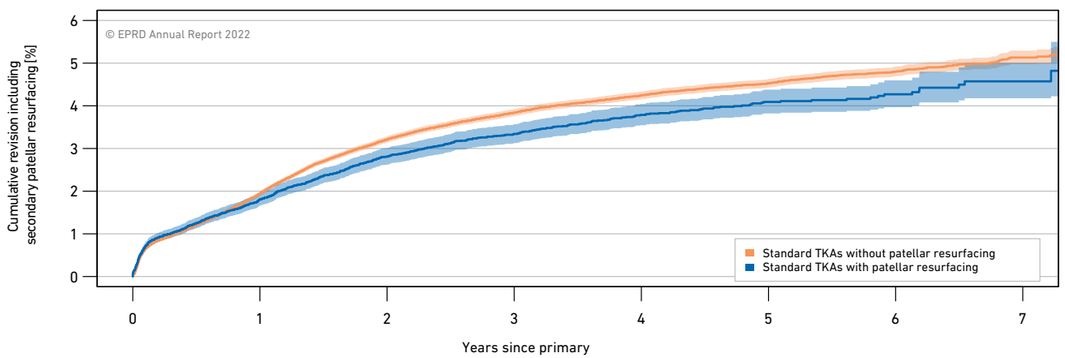
Specific analysis: Patellar resurfacing is not required for all primary TKAs

Compared to some other countries, patellar resurfacing as part of a primary TKA is quite uncommon in Germany (Table 53). Whether it makes more strategic sense to employ it as standard or to selectively resurface has been and continues to be the subject of much international debate, with partly quite divergent outcomes. The US AJRR and the Australian AOANJRR - both countries in which primary patellar resurfacing is quite common - report higher revision probabilities for TKAs without patellar resurfacing, in the AJRR especially for women aged 65 and older. Although in Sweden TKAs with patellar resurfacing have steadily decreased from over 70% to less than 3% since the mid-1980s, the Swedish Knee Register reported lower reoperation probabilities for primary patellar resurfacing as recently as the beginning of this century. More recent data from the Swedish registry, however, initially showed the opposite result and ultimately no longer any significant differences between arthroplasties with and without primary patellar resurfacing. However, a 2021 publication based on data from the British NJR again finds higher reoperation probabilities for primary TKAs without patellar resurfacing and generally recommends patellar resurfacing in primary TKAs [11].

With this publication, the EPRD is examining the extent to which the German data speaks for or against such a general recommendation in terms of primary patellar resurfacing.

Results from the EPRD

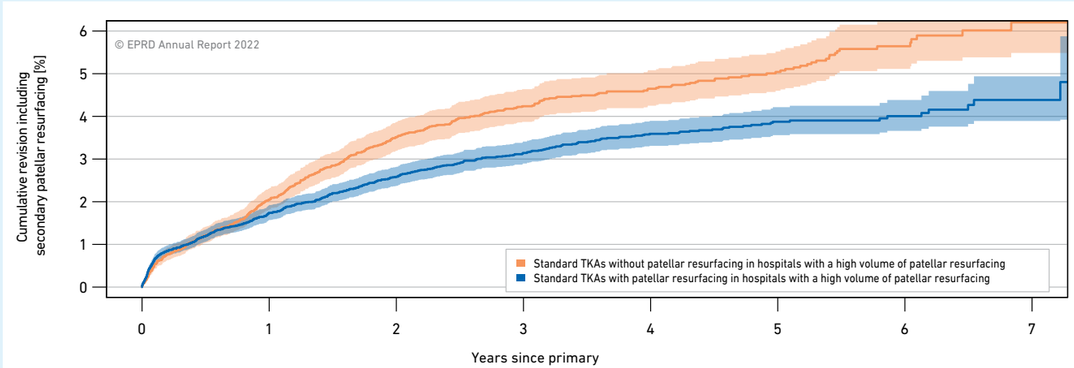
In order to analyse the EPRD data in comparable terms below, we diverge from the usual EPRD definition, according to which secondary patellar resurfacing is not considered to be the end of the primary arthroplasty survival period but is instead scored as a relevant reoperation. When applying this definition, the EPRD also demonstrates a slightly lower risk of relevant reoperation for primary arthroplasties with patellar resurfacing (Figure 25).



Numbers at risk	0	1	2	3	4	5	6	7
Standard TKAs without patellar resurfacing	260,813	214,146	169,297	124,186	82,520	46,570	19,116	5,118
Standard TKAs with patellar resurfacing	32,443	26,108	20,307	14,540	9,482	5,321	2,210	551

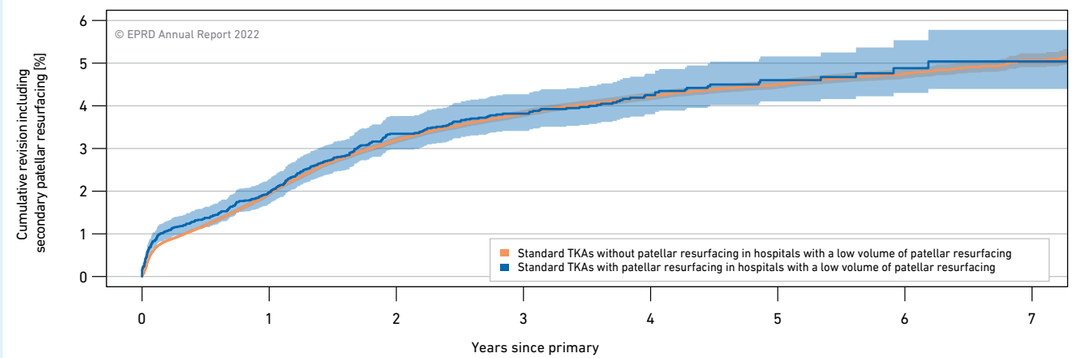
Figure 25: Reoperation probabilities of standard primary total knee arthroplasties with and without patellar resurfacing *(p = 0.0006)*

However, arthroplasties with patellar resurfacing only fare better if hospitals perform these procedures often (Figure 26). In contrast, there is no difference for hospitals that perform patellar resurfacing less frequently (Figure 27).



Numbers at risk	0	1	2	3	4	5	6	7
Standard TKAs without patellar resurfacing in hospitals with a high volume of patellar resurfacing	13,659	11,073	8,748	6,359	4,454	2,783	1,175	376
Standard TKAs with patellar resurfacing in hospitals with a high volume of patellar resurfacing	23,078	18,367	14,107	9,930	6,430	3,651	1,505	343

Figure 26: Reoperation probabilities of standard primary total knee arthroplasties with and without patellar resurfacing for hospitals performing more than 30% of patellar replacements *(p < 0.0001)*



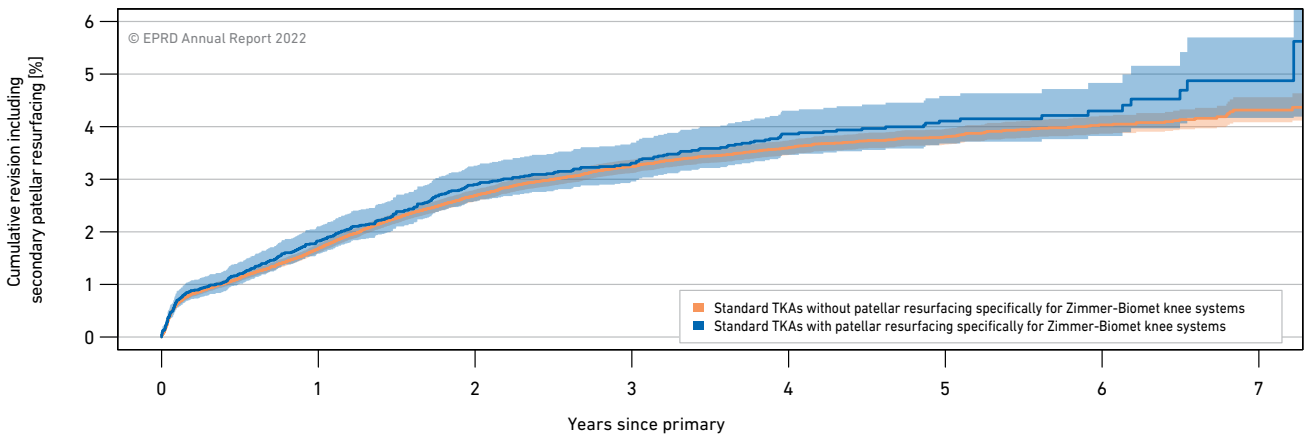
Numbers at risk	0	1	2	3	4	5	6	7
Standard TKAs without patellar resurfacing in hospitals with a low volume of patellar resurfacing	247,154	203,073	160,549	117,827	78,066	43,787	17,941	4,742
Standard TKAs with patellar resurfacing in hospitals with a low volume of patellar resurfacing	9,365	7,741	6,200	4,610	3,052	1,670	705	208

Figure 27: Reoperation probabilities of standard primary total knee arthroplasties with and without patellar resurfacing for hospitals performing up to 30% of patellar replacements *(p = 0.7)*

Differences between systems and manufacturers

An important consideration to address the question is how often a primary TKA without patellar resurfacing required subsequent patellar resurfacing. Since 2020, the EPRD has reported these probabilities of complementary patellar resurfacing separately in its annual report (Table 45). Depending on the system and the manufacturer of the arthroplasty, the outcomes can vary greatly. In a recent publication, the Dutch LROI also found system-related differences for the probabilities of secondary patellar resurfacing [12].

These differences are so obvious in the EPRD that even when looking at the reoperation probabilities shown in figures 26 to 28, a completely different picture emerges, if, for example, the analysis is limited to TKAs with components from the Zimmer Biomet systems. While in the EPRD, arthroplasties from this manufacturer account for about one third of standard TKAs with or without primary patellar resurfacing, both groups do not differ significantly (p-value 0.2; see Figure 28). This is also true when only the data from hospitals performing primary patellar resurfacing infrequently and those performing it frequently are considered (p-values 0.7 and 0.9, respectively).



Numbers at risk								
	93,396	76,938	61,239	45,357	30,430	17,696	7,699	2,335
	10,900	9,061	7,343	5,814	4,134	2,421	999	205

Figure 28: Reoperation probabilities of standard primary total knee arthroplasties with and without patellar resurfacing specifically for Zimmer-Biomet systems *(p = 0.2)*

Conclusion

It is the view of the EPRD that these outcomes do not justify a blanket recommendation for patellar resurfacing in primary TKAs. However, when using systems for which the present annual report shows a high probability of complementary patellar resurfacing (Table 45), it may indeed make sense to consider primary patellar resurfacing.

7 Mismatch detection in the EPRD

7 Mismatch detection in the EPRD

Among the many arthroplasties documented annually in the EPRD some include combinations of components that were not intended to be implanted together. These are termed "mismatches". In revision surgery very rare cases of mismatches are unavoidable. However, incompatible components should, in theory, never be combined in primary arthroplasty. The fact that mismatches still occasionally occur during primary arthroplasties is in all likelihood due to oversight, ignorance or, under certain circumstances, the lack of suitable components in the hospital.

To help hospitals avoid or quickly correct such cases, the EPRD provides timely feedback on such situations. 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 mismatch cases. The earlier a procedure is documented in the hospital, the greater the chances of correction.

However, documentation mistakes in hospitals and classification errors in the product database of the EPRD may also lead to erroneous warning messages. For the year 2021, the following potential mismatch cases were identified in otherwise plausibly documented primary arthroplasties:

- In 38 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 16 cases and too small in 22 cases (Table 54 and an example in Table 55). Heads that are too large may result in malalignment, and heads that are too small in impingement and insert damage. Also identified was a hemiarthroplasty combining a 32 mm head component with a modular bipolar head and a 28 mm insert.

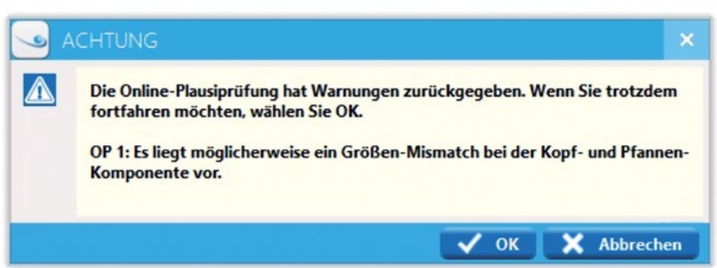


Illustration 4: An EPRD-Edit software mismatch notification during data entry. The text shown is: The online plausibility check has returned warnings. If you still want to continue, select ok. OP 1: There may be a size mismatch in the head and acetabular component.

- In two arthroplasties, the stem taper did not match that of the ceramic head, and in one of those two cases, the components were from different manufacturers. A taper mismatch increases the fracture risk.

- In 24 total knee arthroplasties, components intended solely for the left knee were combined with components approved only for the right knee. Whether this type of mismatch has consequences for the arthroplasty itself and the patient depends on the specific design of the knee system. However, since all side-specific components are available for both sides, such a mismatch is unnecessary and preventable.

- For 374 total knee arthroplasties and one unicondylar knee replacement, the documented side of all components implanted in the procedure did not match the side specification stored in the product database. It can be assumed that the majority of these cases are not actual mismatches, but merely incorrect side entries in the registry documentation. However, through feedback from hospitals the EPRD is also aware of some cases in which components were actually implanted in the wrong side.

- Unicondylar knee arthroplasty can be performed either medially on the inside or laterally on the outside of the knee. However,

		Inner diameter of insert/acetabular component			
		22.25 mm	28 mm	32 mm	36 mm
Head size	22 mm		3		
	28 mm			7	
	32 mm		4		12
	36 mm	1		10	
	40 mm				1

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Table 54: Number of mismatches due to deviations between head size and inner diameter of the insert or cup in 2021

Component type	Identification	Manufacturer
Acetabular component	ALLOFIT Alloclassic Schale 58/LL	Zimmer Biomet
Acetabular insert	Allofit Durasul Alpha-Einsatz LL/36	Zimmer Biomet
Femoral component	Lubinus SPII® Hip Prosthesis Stem, Hip Stem XL, right, CoCrMo, medium Stem-l. 150, CCD <) 126° Taper 12/14	Waldemar Link
Head component	Standard Prosthesis Heads, ceramic Prosthesis Head A, BIOLOX® delta Taper 12/14, Ø 32mm, Neck.L long	Waldemar Link

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Table 55: Example of a total hip arthroplasty mismatch. In this particular case the problem was not due to stem and acetabular components being made by different manufacturers, but due to the head diameter being 4 mm too small for the insert which may have induced impingement or insert damage.

in 17 unicondylar knee replacements, components approved only for medial use were combined with components approved only for lateral use.

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

Mismatch checks in the EPRD are based on the product database but cannot yet identify all mismatch scenarios. For example, while anatomical femoral stems are side-specific, so far it has not been possible to store the specification of the respective side in the product database. Moreover, difficult-to-detect size mismatches may also be found in knee replacements. Most knee systems have one or more size compatibility tables indicating approved combinations of femoral and tibial components. The EPRD is currently looking for a solution to map such information into the product database and render it usable for future mismatch checks.

In the last annual report, the EPRD reported for the first time on the status of its mismatch checks. Mismatch cases have slightly decreased since the previous report. It is still unclear whether this decline is due to more feedback from the EPRD to the hospitals, and above all whether it is sustainable. The EPRD clearly aims to further reduce the number of mismatch cases.

8 Summary

8 Summary

The EPRD celebrates ten years of data collection this year. The EPRD was founded with the aim of creating a reliable database of the practice of hip and knee arthroplasty in Germany. On a purely voluntary basis, it has now come very close to achieving this goal: with a total of almost two million data records submitted by the participating hospitals for the years 2012 to 2021, with an highly granular product database that has been further refined in recent years, and with the comprehensive additional information that the participating health insurance providers make available to the EPRD. Between 2012 and 2021, the number of hospitals providing data has risen steadily despite the COVID-19 pandemic.

Due to its growth and scientific publications, the EPRD is also becoming more and more important internationally. Further evolution of the EPRD is already planned for the future. For example, the satisfaction of patients with their joint replacements will be documented in the EPRD through so-called PROMs (*Patient Reported Outcome Measures*) with minimal data input as early as 2023. Regular operation of the German national implant registry (IRD) for hip and knee arthroplasty is also currently scheduled to start in 2025.

The 2021 operating year

In 2021, the EPRD documented 306,272 surgical procedures from 747 hospitals. Compared to the previous year, this is an increase of 3.8 %. However, the pre-pandemic level of 2019 has not yet been regained. Sometimes the EPRD reveals major differences in terms of the different types and characteristics of arthroplasties performed in the various hospitals. For the first time, this annual report therefore presents examples of different hospital philosophies on hip and knee arthroplasty.

In 2021, the EPRD registered 158,690 hip arthroplasties. 60 % of patients were women. 76.9 % of hip arthroplasties were uncemented. Hybrid fixations increased slightly to 17.5 %, while fully cemented arthroplasties continued to decrease. Short stems continued to increase to 12 %. At 88 %, modular acetabular components are the standard in primary hip arthroplasty, while the share of monobloc acetabular systems is declining to 9 %. In THA, highly cross-linked polyethylene inserts are now used in 78.2 % of cases. Ceramic heads are used in almost 90 % of primary THAs. The use of metal heads, on the other hand, is continuously decreasing: their share in THA between 2014 and 2021 has fallen from 13.2 % to only 7.1 %. The trend favouring 36 mm heads continues, with this head size now accounting for 44.4 %, which is another 2.8 percentage points higher than in the previous year.

For the 2021 calendar year, 17,752 hip reoperations were documented in the EPRD. As in previous years, the most common reasons for revisions were loosening (24.4 %), infections (16.7 %), periprosthetic fractures (14.3 %), and dislocations (13.0 %). As components with bone fixation, the cup and/or stem were almost always replaced in case of loosening. In revisions due to periprosthetic infection, components with bone fixation have been replaced less and less often for years (2014: 67.2 % versus 2021: 49.5 %). In revisions involving replacement of the acetabular cup there is a continuing trend towards the use of dual-mobility systems: While they represented only 10 % of new acetabular components in such revisions in 2014, they already accounted for 31.9 % in 2021.

In the 2021 calendar year a total of 115,581 primary knee arthroplasties were documented in the EPRD. As with hip arthroplasties, 60 % of patients were women. Unlike hip arthroplasty patients, knee arthroplasty patients tended to be younger, but had a higher body mass index: almost half of patients could be classified as morbidly obese at the time of their knee surgery. At 95.2 % and 90.3 % respectively, fully cemented components have dominated in total and unicondylar knee arthroplasties. Mobile bearings, on the other hand, have been steadily declining in recent years (10.7 % for TKAs and 53.8 % for unicondylar arthroplasties in 2021, down from 19.5 % and 71.6 % respectively in 2014). In standard knee arthroplasty, posterior-stabilised systems have become increasingly common in recent years, their share rising from 15.6 % in 2015 to 24.0 % in 2021. At 23.9 % in TKA and 22.1 % in unicondylar arthroplasty, XLPEs are also employed more frequently, although in percentage terms less than in hip arthroplasties.

For the 2021 calendar year, 13,961 knee reoperations were documented in the EPRD. As with hip arthroplasty reoperations, loosening (23.5 %) and infections (15.0 %) were also reported most frequently for reoperations in knee arthroplasties. In more than half of the revisions, all components were replaced. By now, bone-anchored components are also being replaced less and less often in infection-related knee arthroplasty revisions (53.0 % in 2021 versus 67.2 % in 2014). In complete revisions, almost 60 % of cases are converted to a constrained knee system.

Hip and knee arthroplasty survival

Valid follow-up data on some 798,000 primary arthroplasties and 26,000 first revisions were available for the survival analysis in this report. As expected, non-elective hip arthroplasties exhibit significantly higher revision probabilities than elective cases. Arthroplasties with uncemented stems are quite common in Germany. However, uncemented stems suffer from higher revision probabilities, both for elective procedures in older patients as well as in all non-elective operations. In elective hip replacements, lower revision probabilities have been observed in the follow-up period to date when larger heads and shorter head-neck lengths are used. Short stems also continue to do well, but this particular type of stem is mainly implanted in younger and healthier patients.

Unicondylar arthroplasties have a revision probability that is still almost twice that of TKAs. It is even higher in the rare patellar resurfacing cases. Cruciate-retaining systems continue to demonstrate very good outcomes in standard TKA compared to other knee systems, e.g. posterior-stabilised knee systems. However, the outcomes also depend on how often the systems are used in the various hospitals. More constrained knee systems are reserved for special primary knee arthroplasty cases and then suffer from higher revision rates. In the period analysed to date, TKA systems with mobile bearings display higher revision probabilities than those with fixed bearings.

Patient-specific factors such as age, sex, BMI and the presence of concomitant disease have a significant impact on the revision probability. For example, in most types of arthroplasties in men, the risk of revision during the first years after primary arthroplasty is significantly higher than in women. The major reason for this is the higher infection rate. In knee replacements, higher revision probabilities are observed in

the younger patient groups. Other negative factors are a high BMI and the presence of other concomitant disorders, both of which may shorten arthroplasty survival. Hospitals with higher patient volumes tend to have a lower risk of revision. However, there are exceptions in both directions.

The probability of a repeat revision after the primary revision is significantly higher than the probability of primary revision after primary arthroplasty. If the first revision was due to periprosthetic infection, the probability of a second revision within two years is about twice as high (23.5 % versus 35.1 %, depending on the original type of arthroplasty) as in aseptic first revisions (11.3 % versus 17.5 %).

International comparison

The EPRD is now the third largest arthroplasty registry in the world, after the national registries from the UK and US. While it is relatively young by international standards, it has already been able to gather documentation on almost two million arthroplasties by the end of 2021.

Between 2019 and 2021, the COVID-19 pandemic reduced the overall number of data sets in each national registry, albeit to varying degrees. Comparing the outcomes of the various national registries is complicated by differences in data collection methodology and registry structure, but some common developments and similarities can be identified.

For example, the share of hip arthroplasties with fully cemented bone fixation is declining worldwide. In contrast, the share of hybrid fixation has increased in all registries analysed, in most cases only slightly. While Europe still favours the 32 mm head as standard, more 36 mm head components are used in the US. Unicondylar knee arthroplasty is quite common, especially in Europe. In marked contrast to the US and Australia, most TKAs in Europe are performed without primary patellar resurfacing.

In the "Specific Analysis" section the EPRD deals more thoroughly with the question to what extent primary patellar resurfacing is advisable in general. Data from international registries - including Europe - tend to document higher revision rates for TKAs without primary patellar resurfacing. Therefore, publications increasingly recommend primary patellar resurfacing. However, a focused analysis based on the EPRD's own data reveals that arthroplasties with primary patellar resurfacing only perform better in hospitals performing this procedure frequently. In addition, there are obviously sometimes considerable differences between systems and manufacturers. Therefore, the EPRD cannot recommend primary patellar resurfacing in general. However, it should be considered for knee arthroplasty systems where the EPRD has shown a high probability of complementary surgery.

Mismatch detection in the EPRD

The EPRD can easily identify many cases of so-called mismatches, where the implanted components do not match according to the EPRD product database. In 2021, the EPRD once again detected a three-figure number of potential mismatch cases. The sooner an arthroplasty is documented in the EPRD, the sooner the EPRD can report back a corresponding warning to the hospital via the documentation software and the individual monthly reports. The implantation of mismatched components should, in theory, not occur in primary arthroplasty. This is why the EPRD has set itself the goal of contributing to the elimination of mismatches through comprehensive and early feedback.

Appendix

9 Glossary

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

Term	Description
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 reduces oxidation of the polyethylene used in arthroplasty.
ASA status	ASA status refers to a patient health status classification system to estimate 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).
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).
Censoring events	Events such as patient death mean that a complete follow-up from the index operation to its subsequent revision is not possible. As far as the EPRD is concerned such censoring events may also include patients that are lost to further follow-up as a result of changing health insurer. In such cases arthroplasties are considered to have reached a premature end of service life, but are not considered to have failed.
Ceramicised metal	Implant components that consist of a zirconium alloy substrate and a ceramic surface modification — oxidised zirconium alloy.
Coated metal	Implant components that have been coated with ceramics (e.g., titanium nitride).
Complementary surgery	Patella resurfacing following primary bicondylar knee arthroplasty on the same joint affected by "normal" progression of the disease, is a complementary operation, rather than a revision operation.
Cone	Part of the femoral stem with the geometric shape of a frustum uniting the femoral stem with the modular head. Cones taper very little but, depending on the design, may have different angles, diameters and surface features for example.
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".

Term	Description
Cruciate retaining	Design preserving the posterior cruciate ligament without constraining knee motion/kinematic.
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 kinematic, which partially permits a limited relative motion in all three planes.
Cup	See: "*Acetabular component*".
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	The Elixhauser Comorbidity Score measures patient health status, based on diagnosis codes from the billing data, and substantiates the presence of specific comorbidities. The higher the value, the worse the patient's state of health and the greater the risk of death.
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	A hip stem component that is primarily fixed in the femoral neck. This also includes large head mid neck resection "resurfacing" prosthesis.
Fixed bearing	Monobloc design of the tibial tray or modular connection between the tibial tray and the tibial insert without permitting any relative movement between these components. As opposed to a mobile bearing.
German ICPM code	German hospitals use the German ICPM (International Classification of Procedures in Medicine) codes for reimbursement with the health insurance providers to document which procedures have been carried out during the patient's stay. 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)*".

Term	Description
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 to the health insurance providers the diagnoses during the patient's stay in hospital. For example, S72.0 codes 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.
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 a 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)".

Term	Description
Monobloc stem	A femoral stem component that consists of one part and which 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)".
mXLPE	Moderately cross-linked polyethylene (UHMWPE).
Offset	The distance from the center of rotation of the femoral head to a line bisecting the longaxis of the femoral stem.
Partial knee arthroplasty	In a partial knee prosthesis only part of the joint surface is replaced. A typical example is a unicondylar prosthesis in which only the medial/lateral part of the knee joint is replaced, but 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. Also refer to "Complementary surgery".
Patellofemoral arthroplasty	Artificial replacement of the patella surface and the trochlea (groove in the thighbone).
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.
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 irradiating 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 implantation	See: "*Primary surgery*".
Primary surgery/arthroplasty	The primary implantation of one or more arthroplasty components in a particular 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 bony loss, e.g. tumour or post-traumatic reconstructions.

Term	Description
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 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.
Revision surgery	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 arthrosis is not interpreted as failure of the initial arthroplasty. Also refer to "Reoperation" and "Complementary surgery".
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.
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 which is integral to the component and which extends into the femoral neck. It 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 accepts 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 intended to replace a hip joint within the body. In contrast to a hemiarthroplasty, a total hip arthroplasty replaces the entire joint.

Term	Description
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" for bicompartmental knee arthroplasties is used widely in Germany.
Tribological 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 mentioned material always refers to the femoral component of the articulation.
Tumour stem	Primarily modular stem system, which can be implanted as reconstruction option in extensive bony defects after femoral tumour resection or repeated revision surgery.
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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11 List of figures

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