# THE NEW ZEALAND JOINT REGISTRY

24 | Twenty-four Year Report
January 1999 to December 2022

2023

NEW ZEALAND JOINT REGISTRY

NZOA
New Zealand Orthopaedic Association

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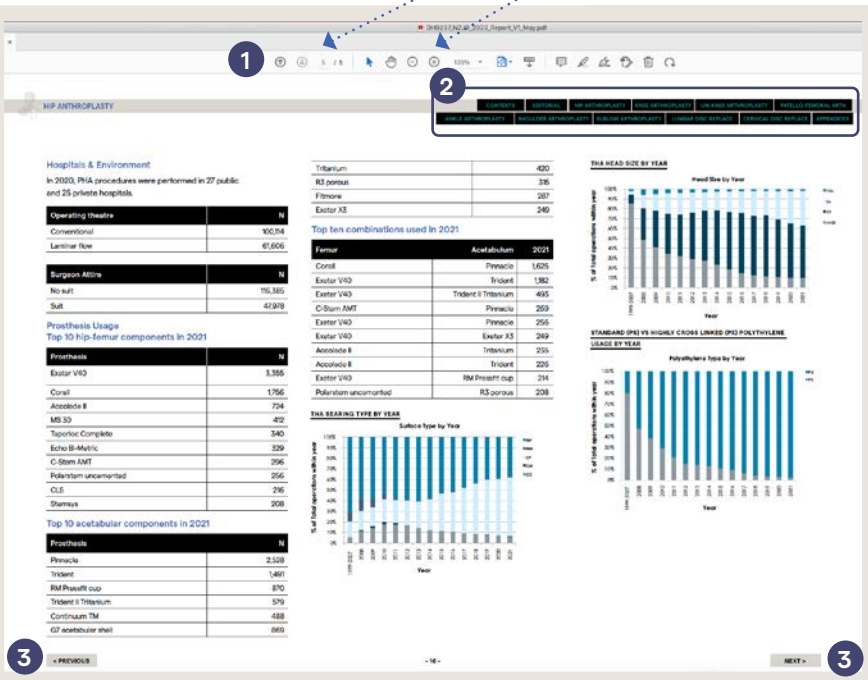


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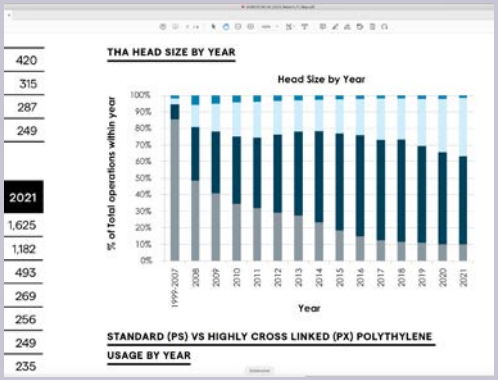



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# EDITORIAL COMMENT

## The Registry Management Committee is pleased to present the twenty-four-year report of the New Zealand Orthopaedic Association Joint Registry.

Following the obligatory delays caused by COVID-19, the Joint Registry celebrated its twenty-first birthday at the Joint Registry Plenary at the combined NZOA AOA Annual Scientific Meeting in Christchurch last year.

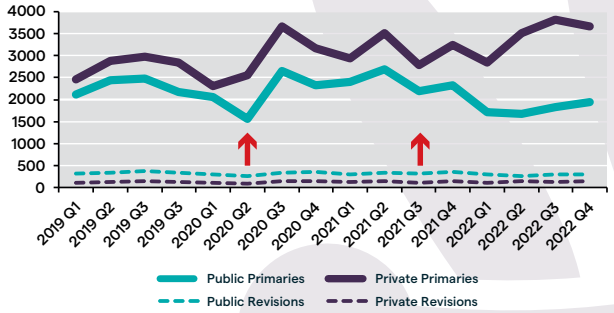
The maturing and coming of age of the registry is further developed this year with a move to a fully digital online report as an interactive PDF. The new format retains all the tables of different prosthetic combinations usually found in the report, but some of the material is presented in a data supplement after the appendices. Having this data presented separately, we hope this makes the core report more concise, readable, and clinically useful without losing any of the detail.

The report format remains similar to previous years with each arthroplasty chapter self-contained. Common explanatory notes and definitions have been moved to the beginning of the report rather than being repeated in each chapter.

At 31 December 2022 the total number of registered arthroplasties was 396,052 which have been performed on 262,831 individual patients. 71,526 (27.2%) have now died during the twenty-four-year period. The number of observed component years (ocys) now exceeds two million.

The number of new primary registrations remains very similar for the past three years with 21,001 in 2022, 22,060 in 2021 and 20,274 in 2020, despite COVID-19 related delays (marked by red arrows in the graph below). It is concerning that the total number of primary arthroplasties registered each year remains static while the over 65-year-old demographic continues to grow.

**Primary and Revision Arthroplasty by Quarter 2019-2022**



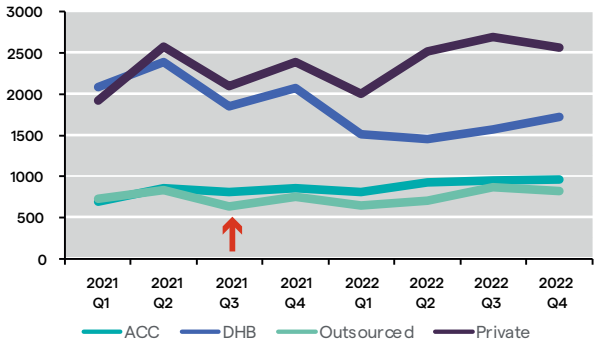

The mean BMIs were 31.3 and 29.1 kg/m2 for knees and hips respectively but significant numbers of morbidly obese (BMI>40) people received arthroplasties.

There are a significant number of revision procedures registered, for which the primary arthroplasty is lacking. In most cases is this is explained by the primary procedure having pre-dated the registry. As for previous years, analyses of revision data reported here have been confined to primary registered arthroplasties. Data on reasons for revision continues to be reassessed with pain no longer being included as a diagnosis, although some cases of unexplained pain are still recorded.

Since the introduction of upgraded forms in 2020, we can now more accurately document arthroplasty by funding source. The early trend shows a divergence between public and privately funded arthroplasty with a decline in publicly funded and a corresponding increase in those privately funded.

This is an undoubted consequence of the challenges many people are facing trying to access publicly funded non-acute surgery.

**Primary Arthroplasty Procedures by Funding Type 2021-2022**




Ongoing effort is being made regarding registry data integrity. Concerns were raised in 2019 that the numbers of anterior hip approaches were inappropriately high. This led to a significant review of primary entries confirming that many of these forms had been incorrected completed. For this reason, we are only reporting anterior approach data for the most recent two years while we continue to audit the data.

Similar concerns arose regarding the data on the use of antibiotic loaded cement which previously was only classified as antibiotic loaded if it was specified in the name, or specifically entered. After confirmation from the suppliers we are confident that almost all cement used in New Zealand is antibiotic loaded. We have decided to no longer report the use of systemic antibiotics as this represents universal practice and adds little additional value to the report.

We continue to report post-operative PROMs with the Oxford scores, and these continue to be a strong predictor of future survival or revision risk. We hope to be able to report pre-operative scores and changes in years to come when we have a more robust pre-operative collection system.

## Hip Arthroplasty

There are now 173,306 recorded primary total hip joint replacements in the New Zealand register. Since October 2020, hemiarthroplasty has been added in addition to resurfacing hip arthroplasty, with a total of 174,739 primary hip arthroplasties of all types recorded.

For 2022, it is notable that for the first time the annual number of primary hip replacements has dropped by 3.4% over the 2021 year. Whilst, the NJR cannot provide an explanation, one can assume that reduced healthcare access and limited elective surgery consequent to the COVID-19 pandemic is at least a likely contributing factor.

Resurfacing hip arthroplasty numbers are relatively consistent at 130 cases per year, excepting a relative drop in numbers in 2021. Resurfacing hip replacement represents only 1% of primary hip arthroplasties in NZ per annum.

The distribution of age, gender, BMI, and ethnicity of patients receiving primary hip arthroplasty remains consistent over the past 12 years.

Most patients (97.6%) have had no previous hip surgery. The predominant diagnosis is osteoarthritis (88%).

280 surgeons across 52 hospitals performed the above procedures, with an average of 38 procedures per surgeon.

Of the surgical approaches, the posterior remains the predominant at 76%. There is an increasing number of anterior approach hip replacements, with data from 2021 and 2022 recording around 600 procedures per year compared to 300-350 per year from 2019-2020, and around 200 per year from 2014-18. Nevertheless, this represents less than 1% of hip replacement surgeries in 2022.

Since the latest NJR form was introduced in 2020, more detail of surgical attire and type of space suit has been recorded. It is too soon to draw any conclusions based on this limited data.

Of the top 10 femoral components used in 2022, there was a slight predominance of cemented components at 3,869 (51.6%), versus 3,631 uncemented components (48.4%)

Of the top 10 acetabulum components used in 2022, all were uncemented components.

This is reflected in the overall fixation rate of implant combinations with 45% uncemented, 51% hybrid, and 4% cemented combinations. This is reasonably consistent over the past three years.

There are 257 prosthesis combinations reported with >50 procedures over the course of the NJR, but only 102 of these combinations were used in 2022 and only 58 with >20 registrations.

While the Top 10 femoral implants accounted for 7,500 procedures (81.5%) and the Top 10 acetabular implants were used in 7,839 procedures (85.1%), the Top 10 combinations accounted for only 54% of total procedures (4940). There remains a significant number of components and combinations used in very low volumes.

The predominant head size used in 88% of surgeries was 32 or 36 mm. 28 mm heads were used in 10% of surgeries, and > 36 mm heads were used in only 2% of cases.

Polyethylene was the predominant bearing surface, either as metal-polyethylene or ceramic-polyethylene combination. 97% of polyethylene used was highly cross-linked versus 3% conventional polyethylene. This results in highly cross-linked polyethylene being used in 91% of all primary total hip arthroplasty in 2022. Ceramic-ceramic bearings represented 7% of the total use.

The percentage of primary hips revised within one year from surgery pleasingly falls for the third year in a row, from a high in 2019 of 1.7% to 1.5% of primary procedures. However, a significant proportion (33%) of failures within the first year are loosening of either acetabulum or femoral components or periprosthetic fracture. Conceivably, these issues are within the surgeon's control

and should be a focus for further improvement. Furthermore, 37% of revisions were carried out for dislocation – again, potentially able to be reduced further by careful analysis of technique and implant selection. One-third of cases were revision for deep infection: once further data on space suit type and laminar flow theatre data is available, hopefully further advice can be provided by the registry.

Outcomes are generally positive with survivorship curves allowing surgeons to reassure patients that they have a 95% chance of their implants surviving at 10 years and 85% chance of remaining revision-free at 20 years (rounded figures).

Survivorship disparity remains between age at surgery, gender, and ethnicity. Risk of revision also increases by comorbidity as measured by ASA class, and with extremely low or high BMI. There is no difference in revision risk between public and privately funded procedures.

Metal on metal bearings have a substantially higher risk of revision then all other bearing options reported. This correlates with head size greater than 36 mm also being a substantially higher revision risk. Of note, despite declining use, ceramic-ceramic bearings have the lowest revision rate with all head sizes and in all age groups.

The Oxford score remains a powerful predictor of survival of a primary hip arthroplasty. Whether the Oxford score is obtained at six months, 5, 10 or 15 years, a low score has a highly significant correlation with subsequent revision surgery within 2 years. Surgeons should consider regular follow-up for their patients using the Oxford score and recalling those patients with an unexplained Poor or Fair score.

## Knee Arthroplasty

A total of 143,007 conventional total knee arthroplasties have been registered totalling 1,142,507 ocys with the overall revision rate 0.46/100 ocys, (95% CI: 0.44-0.47). The number of TKA's implanted per year was slightly reduced, with 7,794 implanted in 2022, less than the 8,605 implanted in 2021, 8,137 in 2020 and 8,378 implanted in 2019. This decrease likely reflects ongoing issues post-COVID such as lack of staff, which impacted many hospitals throughout 2022.

There are 46 different knee prostheses in the Registry that have a minimum of 50 registrations. The Triathlon remains the most popular TKA prosthesis in 2022, closely followed by the Attune and Persona. The Triathlon has the biggest total number of registrations at 30,777 with 184,755 ocys and a revision rate of 0.39/100 ocys.

As noted in previous editorials, the use of 'revisions per 100 component years' as an outcome measure will tend to disadvantage newer prostheses such as the Persona, as revision for infection occurs more commonly in the first- year post implantation.

The use of fully uncemented knee arthroplasty continues to increase, now representing 14% of all primary knee arthroplasties. It has a significantly higher revision rate than either fully cemented or hybrid in which the tibial component is cemented and the femoral component uncemented. This is true for all brands of implant, when the uncemented is compared to its cemented version.

The analyses comparing revision rates and survival of fixed versus mobile bearing knees continue to show that there is similar longer- term survival for both versions. The use of mobile bearings continues to decline, less than 3% of TKAs implanted in 2022 had a mobile bearing.

As in previous years, separate analyses for cruciate retaining (CR) versus posterior stabilised (PS) knee prostheses demonstrate that overall, there are significantly higher revision rates for posterior stabilised prostheses. This is also evident with KM survival graphs and seems to hold true across almost all brands that have both PS and CR versions. The use of PS versions continues to decrease but has stabilised in recent years to around 20% of TKAs.

Revision rate tables and survival curves are included for the five different BMI groupings and like hip arthroplasty, the morbidly obese (BMI > 40) group have statistically significant poorer prosthesis survival.

There are 877 registered patellofemoral prostheses, with 76 added in 2022. There have been 110 revisions. The revision rate of 2.0/100 ocys is over four times that for total knee arthroplasty. In the majority of cases, patellofemoral arthroplasties are revised to a total knee arthroplasty.

## Ankle arthroplasty

In 2022 a further 166 primary ankle replacements were registered bringing the total in the registry to 2,183 with a total of 15,709 ocys, a mean revision rate of 1.53/100 ocys and a 19-year survival of 77.9%. Except for one custom implant in 2021 only four implants have been in use since 2017. Those four have the lowest revision rates in the registry data. Although some are only in their initial years of usage, so it be interesting to monitor revision rates as they accumulate more ocys in subsequent years. This year's data analysis section has some changes versus earlier reports due to the evolution of the data set with the updated data collection forms introduced in late 2020.

## Shoulder arthroplasty

By the end of 2022, the joint registry has recorded 14,888 primary shoulder arthroplasties with observed component years of 91,980. There has been a slight drop in the number of cases performed in 2022 compared to the previous years with 1078 primary arthroplasty cases being registered. This is predominantly due to a slight drop in reverse shoulder arthroplasties which remains the dominant arthroplasty type representing almost three-quarters of all primary shoulder arthroplasties. Total shoulder arthroplasty numbers remain stable over the past decade. The revision-free survival of primary shoulder arthroplasty continues its improvement and the ten year survival is 92.3% and twenty year is 85.9%. Reverse shoulder arthroplasty out to ten years has a 96% survival so there would be expected to see a slow improvement towards this survival rate due to the increasing proportion of reverse shoulder arthroplasty over the past decade.

These steady improvements are also seen in the rate per 100 component year revision rates where all arthroplasties, total and reverse have continued to improve to 0.87, 0.93 and 0.67 respectively. Reverse shoulder replacement does have an increased revision rate in the first two years compared to total shoulder but then outperforms total shoulder arthroplasty.

In this year's edition, there has been a change to the way that pain has been reported. After discussion at the NZ Shoulder and Elbow Society meeting, it was decided to review all cases where pain was listed as a cause of revision. There were 132 cases with pain as an indication for revision. As pain is a symptom rather than a diagnosis, this has been recategorized going forward as unexplained pain. After contacting the operating surgeon at the time of revision, the reason for revision has been clarified. In the majority of these cases, there were already other reasons listed for revision. This has left a small number of cases of unexplained pain left in the registry. The main reason for revision is now loosening of the glenoid component with dislocation and subacromial impingement with rotator cuff failure the next biggest causes.

Ethnicity data is now included in the registry. Māori patients have a higher rate of revision than other ethnicities.

There are a number of factors that may be associated with this increase and this is currently being investigated.

The Oxford scores have remained unchanged from previous years. 70% of patients have a good or excellent score at six months which increases to 81% at five years. This is stable through to fifteen years where there is a slight drop in Oxford scores. A score of less than 27 at six months has a six fold increase in the risk of revision compared to a person scoring over 41.

## Elbow arthroplasty

The annual number of elbow arthroplasties has not significantly increased. The cumulative number for elbow arthroplasty due to post trauma is about to surpass rheumatoid arthritis. The Coonrad-Morrey remain the best performing elbow prosthesis. The Nexel is not better but not significantly worse than the Coonrad-Morrey.

**John McKie** – Supervisor
**Jinny Willis** – Coordinator
**Chris Frampton** – Statistician

# STATISTICAL TERMS/NOTES

Throughout the report, there are two statistical terms readers may not be familiar with:

## i) Observed component years

This is the number of registered primary procedures multiplied by the number of years each component has been in place.

ii) Rate/100 component years

This is equivalent to the yearly revision rate expressed as a percent and is derived by dividing the number of prostheses revised by the observed component years multiplied by 100. It therefore allows for the number of years of post-operative follow up in calculating the revision rate. These rates are usually very low, hence are expressed per 100 component years rather than per component year. Statisticians consider that this is a more accurate way of deriving a revision rate for comparison when analysing data with widely varying follow up times. It is also important to note the confidence intervals. The closer they are to the estimated revision rate/100 component years, the more precise the estimate is.

## Statistical Significance

Where it is stated that a difference among results is significant the p value is 0.05 or less. In most of these situations this is because there is no overlap of the confidence intervals (CIs) but sometimes significance can apply in the presence of CI overlap.

## Deceased Person's Data

A deceased person's data is valid in perpetuity for all analyses involving the time interval prior to the person's death e.g., if a person dies eight years post primary hip replacement their data is always valid for all analyses for that eight- year period. Hence the rider "deceased patients censored at time of death".

## ASA CLASS

This was introduced with the updated forms at the beginning of 2005. The data are provided in each of the joint chapters. The categories are defined below.

## Definitions

**ASA class 1:** A healthy patient

**ASA class 2:** A patient with mild systemic disease

**ASA class 3:** A patient with severe systemic disease that limits activity but is not incapacitating

**ASA class 4:** A patient with an incapacitating disease that is a constant threat to life

## Ethnicity

Ethnicity data of patients and revision rates by ethnicity were presented in the annual NZJR report for the first time in last year's report. Ethnicity data is recorded for every entry in registry. At the point of data entry, the ethnicity associated with the NHI is retrieved from the Ministry of Health database. For a proportion of individuals, the ethnicity is entered as Not Recorded, meaning the patient has not been asked to provide the information, or has declined to provide the data. For the purpose of reporting revision rates by ethnicity, the rate is not reported for patients whose ethnicity is not recorded.

## Trainee Surgeons

In all the analyses reported, consultants took responsibility for their registrar surgeon procedures.

## Bilateral Joint Replacements

The following joint replacements were undertaken on the left and right side and carried out under the same anaesthetic:

**Bilateral total hips**

3,290 Patients

(6,580 hips)

**Bilateral total knees**

6,818 Patients

(13,636 knees)

**Bilateral Unicompartmental knees**

1,283 Patients

(2,566 knees)

**Bilateral ankles**

2 Patients

(4 ankles)

**Bilateral shoulders**

4 Patients

(8 shoulders)

# DEVELOPMENT & IMPLEMENTATION OF THE NEW ZEALAND JOINT REGISTER

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The year 1997 marked 30 years since the first total hip replacement had been performed in New Zealand and as a way of recognizing this milestone it was unanimously agreed by the membership of the New Zealand Orthopaedic Association (NZOA) to adopt a proposal by the then President, Alastair Rothwell, to set up a National Joint Registry.

New Zealand surgeons had always been heavily dependent upon northern hemisphere teaching, training and outcome studies for developing their joint arthroplasty practice and it was felt that it was more than timely to determine the characteristics of joint arthroplasty practice in New Zealand and compare the outcomes with northern hemisphere counterparts. It was further considered that New Zealand would be ideally suited for a National Registry with its strong and co-operative NZOA membership, close relationship with the implant supply industry and its relatively small population. Advantages of a Registry were seen to be survivorship of different types of implants and techniques; revision rates and reasons for these; infection and dislocation rates; patient satisfaction outcomes; audit for individual surgeons, hospitals, and regions; opportunities for in-depth studies of certain cohorts and as a database for fundraising for research.

## Administrative Network

It was decided that the Registry should be based in the Department of Orthopaedic Surgery, Christchurch Hospital, and initially run by three part-time staff: a Registry Supervisor (Alastair Rothwell), the Registry Coordinator (Toni Hobbs) and the Registry Secretary (Pat Manning). As all three already worked in the Orthopaedic Department, it was a cost-effective and efficient arrangement to get the Registry underway.

New Zealand was divided into 19 geographic regions and an orthopaedic surgeon in each region was designated as the Regional Coordinator whose task was to set up and maintain the data collection network within the hospitals for that region. This network included a Theatre Nurse Coordinator in every hospital in New Zealand who voluntarily took responsibility for supervising the completion, collection and dispatch of the data forms to the Registry.

## Data Collection Forms

The new data forms were introduced at the beginning of December 2020.

In order to improve data accuracy, a surgeon signature box has been added.

A funding box has been added with the options ACC, Private, DHB and DHB outsourced.

A theatre number has been added, meaning that individual theatre ventilation can be analysed.

Robotic assisted has been added under Surgical Adjuncts for hip and knee and under Approach for ankles.

Bone graft has been deleted on all forms except revision shoulder.

Surgeon Attire is a new heading. Option 1 is Space Suits/Helmet Fan. Option 2 is Conventional Gown.

Revision forms have been changed to include re-operation. There is now a Revision/Reoperation form for each joint.

The hip form now has 3 procedure sub types- total, resurfacing and hemiarthroplasty, a new sub type.

The knee form also has 3 procedure sub types- total, patello-femoral and unicompartmental.

In conclusion, the aim has been to minimise compromising legacy data, while deleting data points that have not been used in research projects over the past 20 years.

## Database

The Microsoft Access 97 database programme was chosen because it is easy to use, has powerful query functions, can cope with one patient having several procedures on one or more joints over a lifetime and has "add on" provisions. The database is expected to meet the projected requirements of the Registry for at least 20 years. It can accommodate software upgrades as required.

## Patient Recorded Outcome Measures

The New Zealand Registry was one of the first to collect data from patient generated outcomes. The validated Oxford Hip and Knee outcomes questionnaires were chosen, and questions were added to these, relating to dislocation, infection and any other complication that did not require further joint surgery. These additions have now been discontinued. It was agreed that these questionnaires should be sent to all registered patients six months following surgery and then at five yearly intervals. The initial response rate was between 70 and 75% and this has remained steady.

However, because of the large number of registered primary hip and knee arthroplasties and, on the advice of our statistician, questionnaires have been sent out on a random selection basis since July 2002 to achieve an annual response of 20% for each group. All patients in the other arthroplasty groups, including revision arthroplasty, are sent the questionnaires.

## Funding

Several sources of funding were investigated including contributions from the Ministry of Health, various funding agencies, medical insurance societies and an implant levy payable by surgeons and public hospitals to supplement a grant from the NZOA. In the early years the Registry had a "hand to mouth" existence relying on grants from the NZOA and Wishbone Trust until it received significant annual grants from the Accident Compensation Corporation.

From 2002, funding became more reliable with the surgeons paying a $10 levy, and they now pay $25 for each joint registered from a private hospital.

The latest MOH contract has been extended for a further year with 2 six monthly payments of $37,500 (excluding GST).

Since 2005 the Southern Cross Hospitals have contributed a grant of $10,000 annually.

## Ethical Approval

Application was made to the Canterbury Ethical Committee early in 1998; first for approval for hospital data collection without the need for patient consent and second for the patient generated outcomes using the Oxford 12 questionnaire plus the additional questions. The first part of the application was initially readily approved but the second part required several amendments to patient information and consent forms before approval was obtained.

A reapplication had to be made when the Ethics Committee of a private hospital chain refused to allow their nurses to participate in the project unless there was prior written patient consent. This view was supported by the Privacy Commissioner on the grounds that the Registry data includes patient identification details. The approval process was eventually successful but did delay the New Zealand-wide launch.

## Surgeon and Hospital Reports

Since 2008 each surgeon receives an annual report giving their revision rate for primary registered primary arthroplasties, and this includes their questionnaire responses.

## Introduction of the Registry

The National Joint Registry was introduced as a planned staged procedure.

### Stage I: November 1997 to March 1998

The base administrative structure was established. The data forms and the database were developed, and a trial was performed at Burwood Hospital.

### Stage II: April 1998 to June 1998

Further trialling was performed throughout the Christchurch Hospitals and the data forms and information packages were further refined.

### Stage III: July 1998 to March 1999

The data collection was expanded into five selected New Zealand regions for trial and assessment.

Also, during this time communication networks and the distribution of information packages into the remaining regions of New Zealand were carried out.

### Stage IV: April 1st, 1999

The National Joint Registry became fully operational throughout New Zealand.

## Inclusion of Other Joint Replacement Arthroplasties

At the request of the NZOA membership, the database for the Registry was expanded to include total hip replacements for fractured neck of femur, unicompartmental replacements for knees, and total joint replacements for ankles, elbows and shoulders (including hemiarthroplasty for the latter). Commencement of this data collection was in January 2000 and this information is included in the annual surgeon and hospital reports.

The validated Oxford questionnaire was available for the shoulder and derived, but not validated, questionnaires developed for the elbow and ankle joints.

In 2016 the Oxford Elbow Score (OES) and the Manchester-Oxford Foot Questionnaire were introduced replacing the former questionnaires that were not validated.

All patients receiving total arthroplasty of the above joints, as well as unicompartmental knee arthroplasties, are sent questionnaires with a response rate of 70 %. As for hips and knees, the questionnaires are sent out 6M post-surgery then at 5Y, 10Y and 15Y and 20Y.

## Monitoring of Data Collection

The aim of the Registry is to achieve a minimum of 90% compliance for all hospitals undertaking joint replacement surgery in New Zealand.

It is quite easy to check the compliance for public hospitals as they are required to make regular returns with details of all joint replacement surgery to the NZ Health Information Service. The registered joints from the Registry can be compared against the hospital returns for the same period and the compliance calculated. Any obvious discrepancies are checked out with the hospitals concerned and the situation remedied. It is more difficult with private hospital surgery as they are not required to file electronic returns. However, by enlisting the aid of prosthesis supply companies, it is possible to check the use of prostheses region by region and any significant discrepancy is further investigated. In addition, any change in the pattern of returns from private hospitals is checked.

Another method is to check data entry for each hospital against the previous corresponding months and if there is an obvious trend change then again this is investigated.

The most recent compliance audit in February 2021 again demonstrated a New Zealand-wide public hospital compliance of > 95% when compared to NZHIS data.

Following the introduction of the South Island PICS system at the beginning of October 2018, the Registry lost the ability to search for nationwide NHI entries and was not able to access nationwide date of death registrations.

This has now been overcome, and the data entry staff now use the MOH HealthUI (Health User Interface) lookup system to check NHI entries and addresses.

Also, the Registry can now access the nationwide death files through the MOH's Connected Health Network SFPT service with twice monthly updates.

Accurate date of death registrations are essential for both our statistical analyses and our monthly questionnaire mail outs.

## NZJR Staff

The current staff are data entry (2.25 FTE), Registry coordinator (1.0 FTE), Registry supervisor (0.2 FTE) and statistician (0.04 FTE).

# HIP ARTHROPLASTY

14

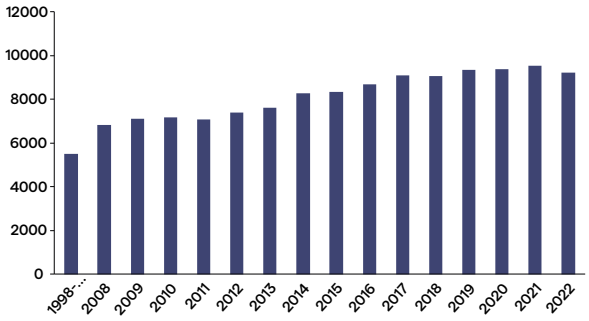
## PRIMARY HIP ARTHROPLASTY

The **twenty-four–year** report analyses data for the period January 1999 – December 2022.

New data forms introduced in October 2020 now have 3 categories of Primary Hip Arthroplasty. These are:

- Total hip arthroplasty (THA)
- Resurfacing hip arthroplasty (RHA)
- Hemiarthroplasty (HHA)

### Number of Total Hip Arthroplasties by year

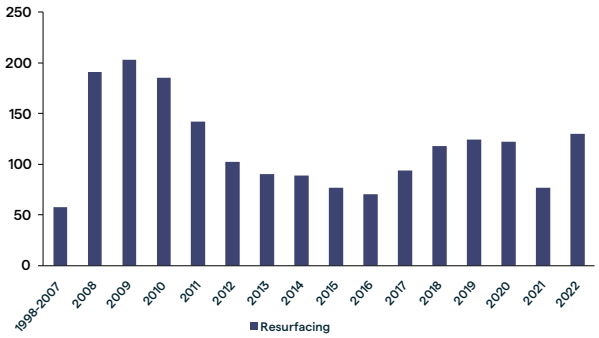



### Primary Hip Arthroplasty by Type and Year

| Year | Total Hip | Resurfacing | Hemiarthroplasty |
|---|---|---|---|
| 1998-2007 | 49,610 | 516 | 0 |
| 2008 | 6,813 | 191 | 0 |
| 2009 | 7,103 | 203 | 0 |
| 2010 | 7,183 | 185 | 0 |
| 2011 | 7,078 | 142 | 0 |
| 2012 | 7,391 | 102 | 0 |
| 2013 | 7,620 | 90 | 0 |
| 2014 | 8,259 | 89 | 0 |
| 2015 | 8,345 | 77 | 0 |
| 2016 | 8,675 | 70 | 0 |
| 2017 | 9,083 | 94 | 0 |
| 2018 | 9,068 | 118 | 0 |
| 2019 | 9,358 | 124 | 0 |
| 2020 | 9,366 | 122 | 79 |
| 2021 | 9,535 | 77 | 1,037 |
| 2022 | 9,207 | 130 | 1,303 |
| **TOTAL** | **173,306** | **2,330** | **2,419** |

TABLE 1.1

### Number of Resurfacing by Year




Hemiarthroplasty procedures have only been recorded in the registry since 2020. The numbers of procedures for 2020-2022 are included in the table above but have not been presented graphically.

### Age of Primary Hip Arthroplasty Patients by Gender

| | Female | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Hemiarthroplasty | 84.8 | 35.3 | 106.7 | 1,616 (66.8%) |
| Resurfacing hip | 50.0 | 25.7 | 65.9 | 263 (11.3%) |
| Total hip | 68.6 | 11.7 | 101.0 | 93,209 (53.7%) |

TABLE 1.2

| | Male | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Hemiarthroplasty | 84.2 | 41.8 | 102.2 | 803 (33.2%) |
| Resurfacing hip | 52.6 | 17.7 | 81.4 | 2,067 (88.7%) |
| Total hip | 65.9 | 11.9 | 100.0 | 80,485 (46.3%) |

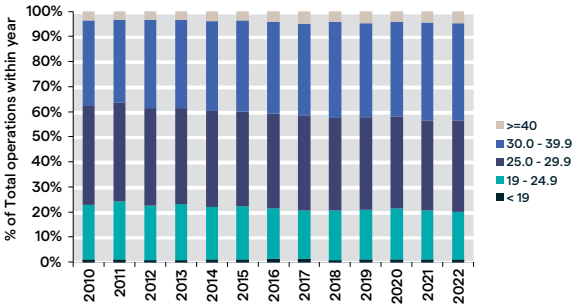
TABLE 1.3

Data form analysis includes new form and legacy data and is for Total Hip Arthroplasty.

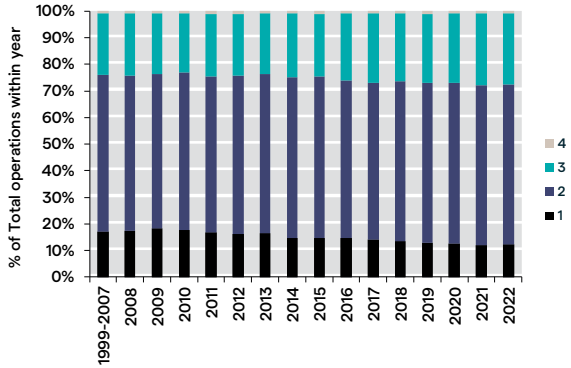
### Body Mass Index of Primary Hip Arthroplasty Patients

BMI data was added with the 2010 form update. For the twelve-year period 2010 – 2022 there were 82,396 BMI registrations for primary hip replacements. The average was 29.13 kg/m2 with a range of 13 – 66 and a standard deviation of 5.73.

### BMI by Year




### ASA Class by Year




### Ethnicity of Total Hip Arthroplasty Patients

| Ethnicity | No. Operations | % |
|---|---|---|
| Asian | 1,462 | 0.8 |
| Euro/Other | 152,069 | 87.6 |
| Māori | 13,588 | 7.8 |
| Pacifica | 1,836 | 1.1 |

TABLE 1.4

### Prior Surgery in Total Hip Arthroplasty Patients

| Previous Operation | N | % |
|---|---|---|
| None | 174,979 | 97.6 |
| Internal Fixation | 3,221 | 1.8 |
| Osteotomy | 922 | 0.5 |
| Arthrodesis | 134 | 0.1 |
| Hip Arthroscopy | 86 | 0.0 |

TABLE 1.5

### Indication for Total Hip Arthroplasty

| Diagnosis | N | % |
|---|---|---|
| Osteoarthritis | 153,148 | 88.2 |
| Rheumatoid Arthritis | 2,973 | 1.7 |
| Other Inflammatory | 1,153 | 0.7 |
| Acute Fracture NOF | 6,721 | 3.9 |
| Old Fracture NOF | 1,915 | 1.1 |
| Avascular Necrosis | 5,207 | 3.0 |
| Developmental Dysplasia | 3,453 | 2.0 |
| Tumour | 786 | 0.5 |
| Post-acute dislocation | 367 | 0.2 |

TABLE 1.6

## Surgeons

In 2022, 280 surgeons performed 10,653 primary hip replacements, an average of 38 procedures per surgeon. The updated forms introduced in 2005 have separated advanced trainee into supervised and unsupervised. The following figures are for the 18-year period 2005 – 2022.

| Surgeon grade | N |
|---|---|
| Consultant | 97,014 |
| Advanced trainee supervised | 9,803 |
| Advanced trainee unsupervised | 2,864 |
| Basic trainee | 1,490 |

TABLE 1.7

## Surgical Approach

| Approach | Operations (N) |
|---|---|
| Posterior | 125,250 |
| Superior | 152 |
| Lateral | 38,960 |
| Trans-trochanteric (osteotomy) | 265 |

TABLE 1.8

| Surgical Adjuncts and Attire (2022) | (N) |
|---|---|
| Computer Navigation | 168 |
| Robotic Assisted | 4 |
| Space suits – One piece Toga or Sterile Hood Gown* | 6,165 |
| Conventional Gown | 5,740 |

TABLE 1.9

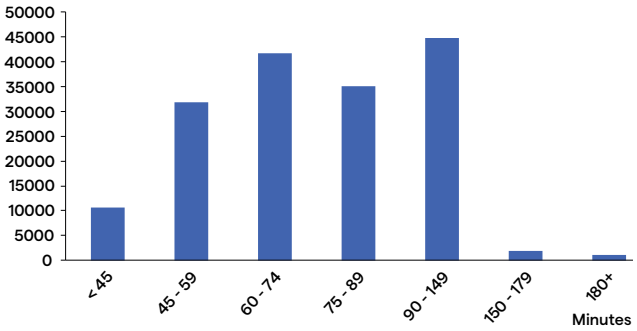
** With the 2021 theatre form update, the space suit (unspecified) was revised to two subcategories, the space suit one-piece "onesie"/toga and the sterile hood and gown.*

## Hospitals

In 2022, primary hip replacement was performed in 52 hospitals, 27 public and 25 private.

### Operative Time (Skin-to-Skin Minutes)

### Number of operations by Surgical Time




## Prosthesis Usage

### Top Hip Femur Components in 2022

| Femur | All Years | 2022 |
|---|---|---|
| Exeter V40 | 54,258 | 3,174 |
| Corail | 19,670 | 1,670 |
| Accolade II | 4,780 | 801 |
| MS 30 | 6,404 | 412 |
| Taperloc Complete | 1,853 | 309 |
| C-Stem AMT | 5 | 283 |
| Echo Bi-Metric | 1,641 | 223 |
| Optimys | 647 | 219 |
| Summit | 3,397 | 210 |
| Polarstem uncemented | 3,010 | 199 |

TABLE 1.10

### Top 10 acetabular components in 2022

| Acetabulum | All Years | 2022 |
|---|---|---|
| Pinnacle | 28,780 | 2,516 |
| Trident II Tritanium | 2,469 | 1,249 |
| Trident | 20,070 | 994 |
| RM Pressfit cup | 15,638 | 862 |
| G7 acetabular shell | 1,156 | 683 |
| Continuum TM | 10,168 | 451 |
| Acetabular Shell | 6 | 339 |
| R3 porous | 6,171 | 268 |
| Fitmore | 7,706 | 245 |
| Trilogy | 7,342 | 232 |

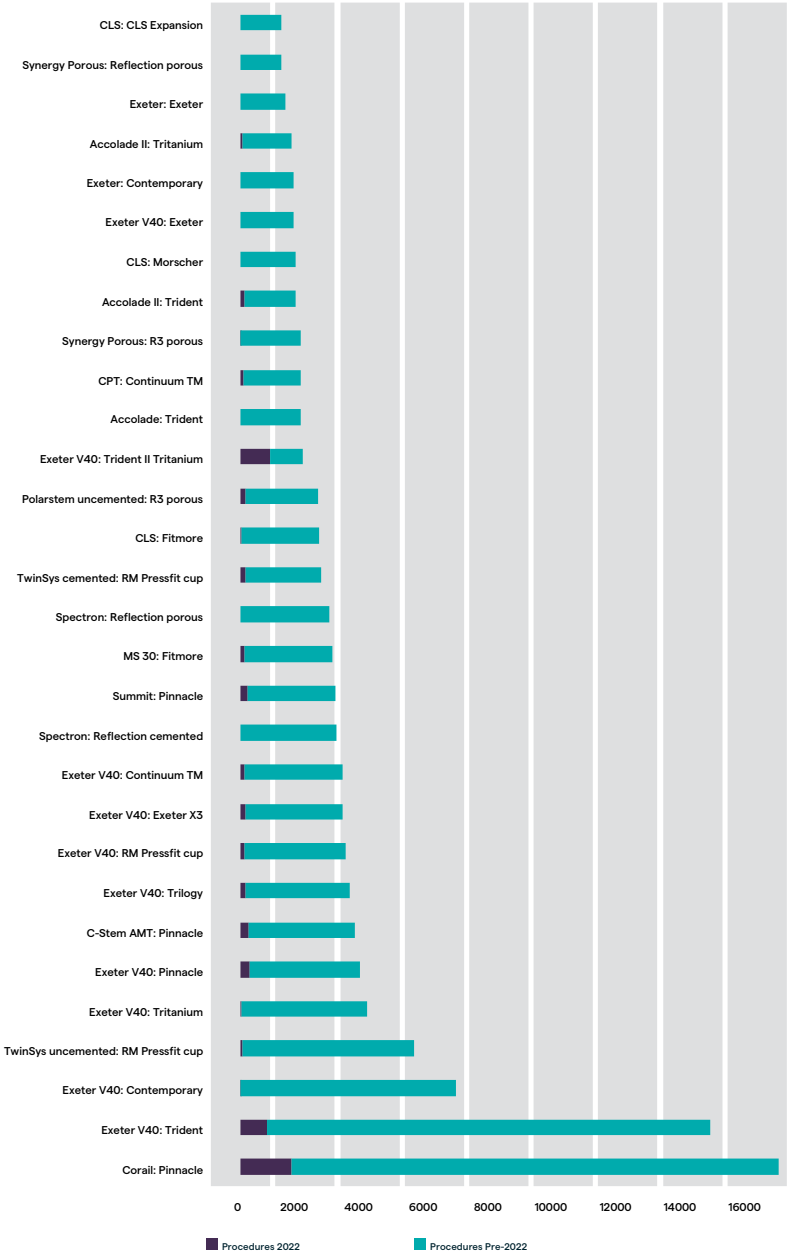
TABLE 1.11

### Top ten combinations used in 2022

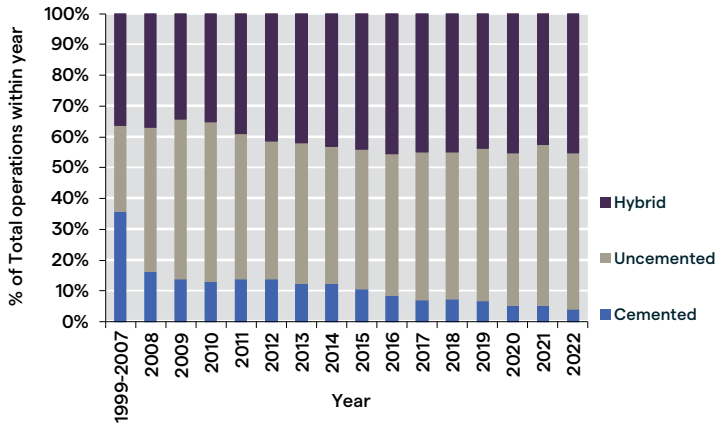
| Femur | Acetabulum | All Years | 2022 |
|---|---|---|---|
| Corail | Pinnacle | 16,671 | 1,593 |
| Exeter V40 | Trident II Tritanium | 1,933 | 915 |
| Exeter V40 | Trident | 14,536 | 814 |
| Accolade II | Trident II Tritanium | 446 | 314 |
| Exeter V40 | Pinnacle | 3,694 | 276 |
| C-Stem AMT | Pinnacle | 3,550 | 244 |
| Optimys | RM Pressfit cup | 642 | 219 |
| Summit | Pinnacle | 2,947 | 202 |
| Echo Bi-Metric | G7 acetabular shell | 344 | 194 |
| Polarstem uncemented | R3 porous | 2,391 | 169 |

TABLE 1.12

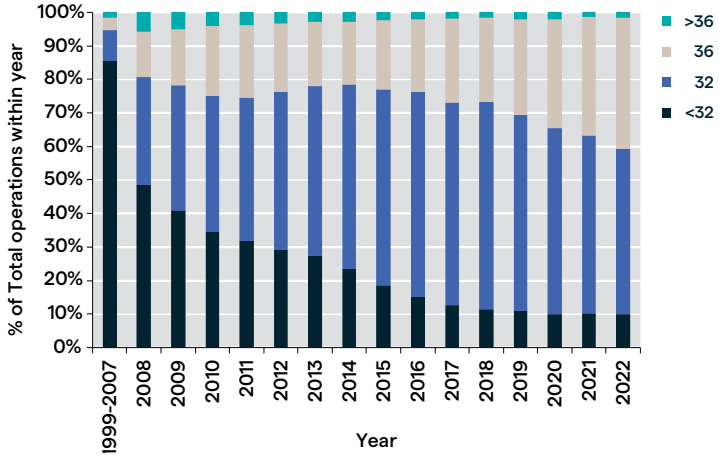
# Top Thirty Femur and Acetabular Combinations in 2022 and Prior to 2022



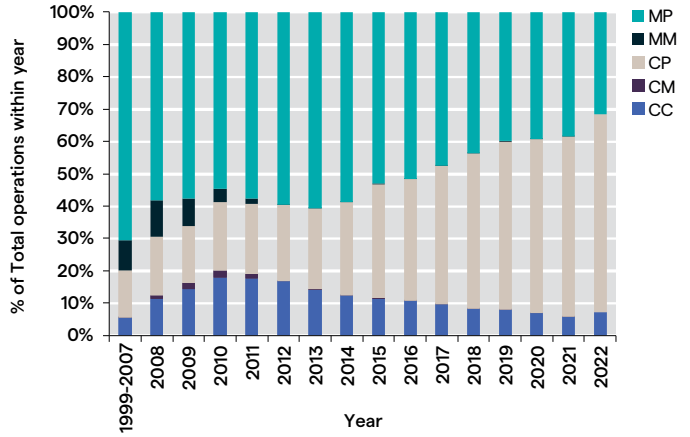
## Cementation rates for THA by Year



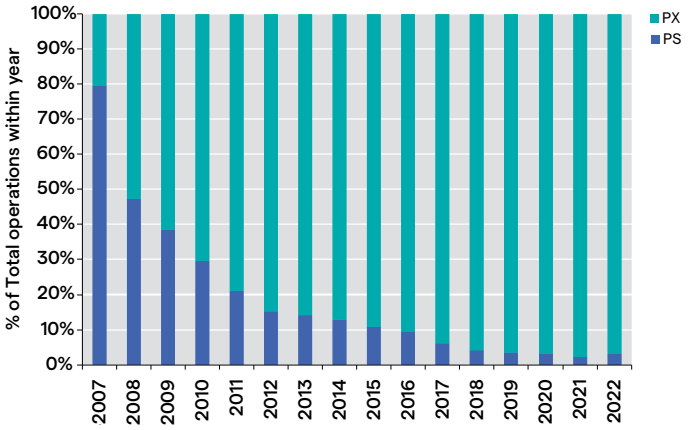

## Head Size for THA by Year




## Surface Type for THA by Year




## Polyethylene by Year



# Revision Hip Arthroplasty

Revision is defined by the Registry as a new operation in a previously replaced hip joint during which one of the components is exchanged, removed, manipulated or added.

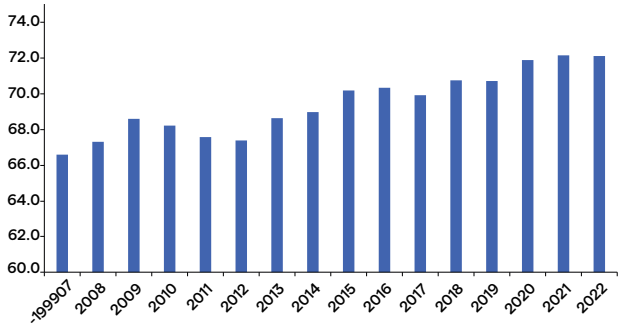
Procedures where all components are removed (e.g. Girdlestone or removal of components and insertion of a cement spacer for infection) are all recorded as revisions.

## Data analysis

For the **twenty-four-year** period January 1999 – December 2022, there were 29,541 hip revision procedures registered. This is an additional 1,204 revisions added in 2022.

The average age for a hip revision was 70 years, with a range of 17 – 100 years.

### Mean Age at Revision of THA




### Revision of Registered Hip Arthroplasties

This section analyses data for revisions of registered Total Hip Arthroplasties for the twenty-four-year period.

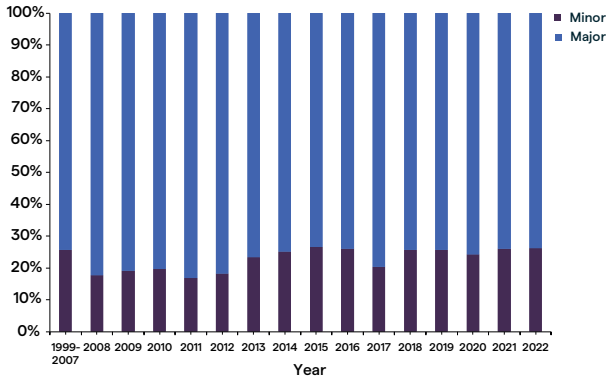
| Reason for revision | N |
|---|---|
| Dislocation/instability | 1,951 |
| Loosening acetabular component | 1,929 |
| Loosening femoral component | 1,552 |
| Unexplained pain | 1,278 |
| Deep infection | 1,365 |
| Fracture femur | 1,294 |

TABLE 1.13

| Time to Revision from Primary Procedure | Days | (Equiv. ears) |
|---|---|---|
| Average | 2,538 | 6.9 |
| Maximum | 8,875 | 24.3 |
| Minimum | 0 | 0 |

TABLE 1.14

### Prevalence of Major and Minor Revisions by Year




### Revision THA procedures are categorised according to the table below –

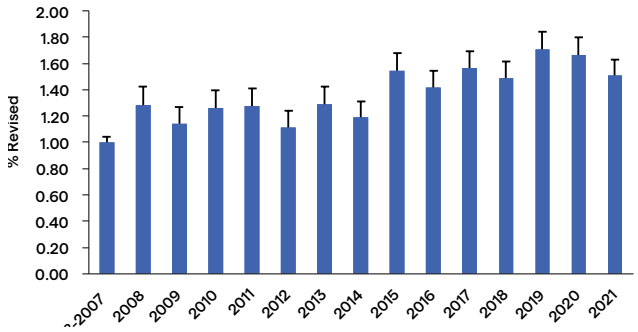
| Revision Procedure | Category |
|---|---|
| Change of all components | Major |
| Change of femoral component | Major |
| Change of acetabular shell | Major |
| Change of acetabular liner | Minor |
| Change of modular femoral head | Minor |
| Removal of components only | Major |

TABLE 1.15

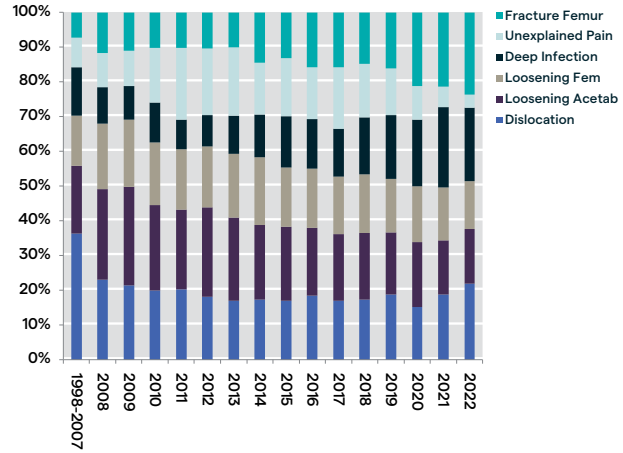
Re-operation only: no components added, exchanged or removed.

## All Cause Revision

### % Total Hip Arthroplasty Revised within First Year




### Major Reasons for Revision by Year

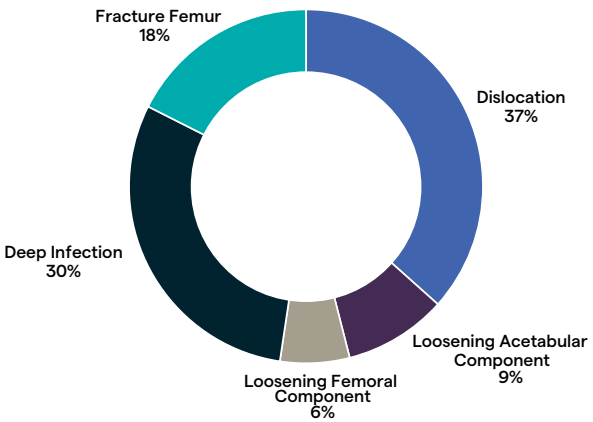



## Reason for Revision of THA by Years since Operation

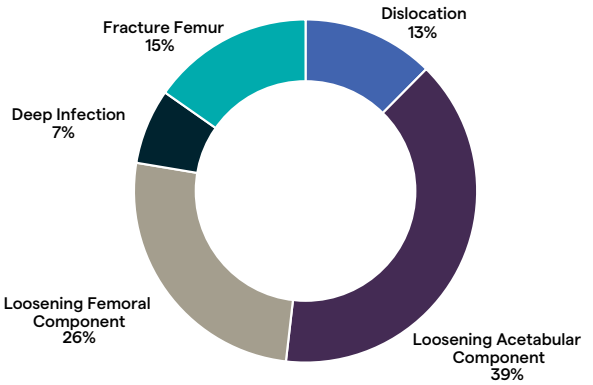
| Years since operation | Dislocation | | Loosening Acetabulum | | Loosening Femur | | Deep Infection | | Unexplained Pain | | Fracture Femur | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % | N | % |
| 0 | 774 | 39.9 | 199 | 10.4 | 134 | 8.8 | 636 | 47.9 | 97 | 7.9 | 371 | 29.3 |
| 1 | 208 | 10.7 | 91 | 4.8 | 100 | 6.5 | 125 | 9.4 | 120 | 9.8 | 66 | 5.2 |
| 2 | 157 | 8.1 | 88 | 4.6 | 91 | 5.9 | 105 | 7.9 | 105 | 8.6 | 64 | 5.1 |
| 3 | 115 | 5.9 | 95 | 5.0 | 88 | 5.8 | 64 | 4.8 | 82 | 6.7 | 61 | 4.8 |
| 4 | 84 | 4.3 | 77 | 4.0 | 78 | 5.1 | 45 | 3.4 | 78 | 6.4 | 74 | 5.8 |
| 5 | 82 | 4.2 | 90 | 4.7 | 80 | 5.2 | 48 | 3.6 | 85 | 7.0 | 58 | 4.6 |
| 6 | 76 | 3.9 | 104 | 5.4 | 104 | 6.8 | 36 | 2.7 | 72 | 5.9 | 51 | 4.0 |
| 7 | 54 | 2.8 | 94 | 4.9 | 97 | 6.3 | 39 | 2.9 | 60 | 4.9 | 50 | 4.0 |
| 8 | 70 | 3.6 | 112 | 5.9 | 92 | 6.0 | 39 | 2.9 | 70 | 5.7 | 59 | 4.7 |
| 9 | 45 | 2.3 | 130 | 6.8 | 88 | 5.8 | 34 | 2.6 | 64 | 5.2 | 69 | 5.5 |
| 10 | 43 | 2.2 | 97 | 5.1 | 98 | 6.4 | 25 | 1.9 | 65 | 5.3 | 58 | 4.6 |
| >10 | 231 | 11.9 | 733 | 38.4 | 480 | 31.4 | 132 | 9.9 | 325 | 26.6 | 284 | 22.5 |
| **Total** | **1939** | **100** | **1910** | **100** | **1530** | **100** | **1328** | **100** | **1223** | **100** | **1265** | **100** |

TABLE 1.16

### Indication for Revision (%) within First Year




### Indication for Revision (%) beyond 10 Years

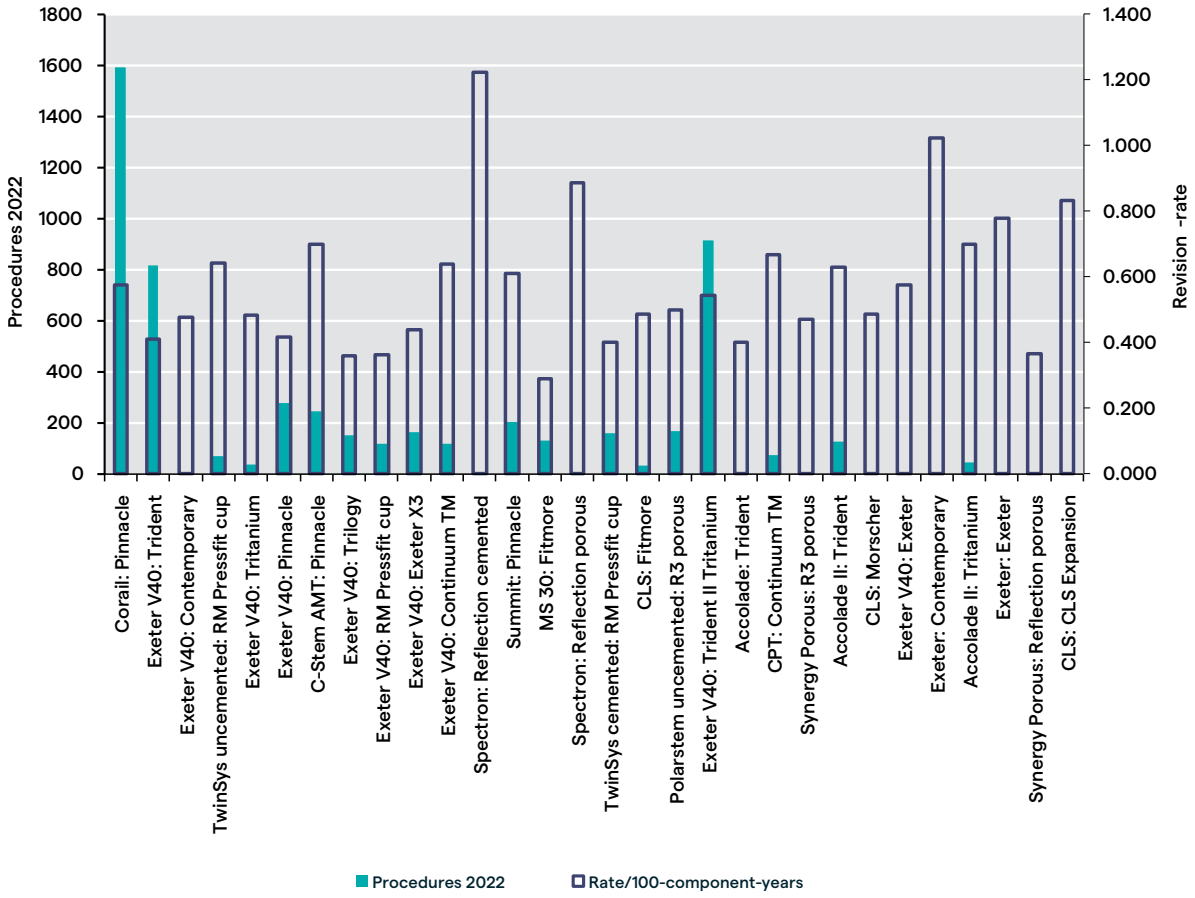



### Reason for Revision of THA by Years since Operation

| Years | Dislocation | | Loosening Acetabulum | | Loosening Femur | | Deep Infection | | Unexplained Pain | | Fracture Femur | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % | N | % | |
| 1998-2007 | 469 | 38.1 | 251 | 20.4 | 186 | 15.1 | 179 | 14.5 | 109 | 8.8 | 94 | 7.6 | **1232** |
| 2008 | 82 | 24.3 | 92 | 27.3 | 67 | 19.9 | 37 | 11.0 | 35 | 10.4 | 41 | 12.2 | **337** |
| 2009 | 84 | 22.5 | 111 | 29.7 | 76 | 20.3 | 38 | 10.2 | 40 | 1.7 | 43 | 11.5 | **374** |
| 2010 | 88 | 21.4 | 108 | 26.2 | 79 | 19.2 | 50 | 12.1 | 69 | 16.7 | 45 | 10.9 | **412** |
| 2011 | 106 | 20.4 | 119 | 22.9 | 90 | 17.3 | 45 | 8.7 | 107 | 20.6 | 53 | 10.2 | **519** |
| 2012 | 92 | 17.2 | 130 | 24.3 | 89 | 16.6 | 46 | 8.6 | 97 | 18.1 | 52 | 9.7 | **536** |
| 2013 | 95 | 15.8 | 134 | 22.3 | 103 | 17.1 | 61 | 10.1 | 110 | 18.3 | 56 | 9.3 | **602** |
| 2014 | 87 | 15.1 | 108 | 19.1 | 97 | 17.1 | 62 | 11.0 | 75 | 13.3 | 72 | 12.7 | **566** |
| 2015 | 103 | 16.4 | 129 | 20.5 | 103 | 16.4 | 89 | 14.2 | 102 | 16.2 | 79 | 12.6 | **628** |
| 2016 | 105 | 16.9 | 110 | 17.7 | 96 | 15.5 | 81 | 13.0 | 84 | 13.5 | 89 | 14.3 | **621** |
| 2017 | 104 | 16.0 | 116 | 18.6 | 101 | 16.2 | 84 | 13.4 | 107 | 17.1 | 96 | 15.4 | **625** |
| 2018 | 102 | 16.2 | 114 | 18.1 | 99 | 16.2 | 97 | 15.4 | 91 | 14.1 | 87 | 13.4 | **631** |
| 2019 | 131 | 18.5 | 125 | 17.7 | 107 | 15.1 | 127 | 18.0 | 94 | 13.3 | 112 | 13.8 | **707** |
| 2020 | 84 | 14.9 | 103 | 18.3 | 88 | 15.7 | 106 | 18.9 | 53 | 9.4 | 117 | 20.8 | **562** |
| 2021 | 100 | 16.8 | 83 | 13.9 | 82 | 13.7 | 123 | 20.6 | 31 | 5.2 | 114 | 19.1 | **597** |
| 2022 | 107 | 20.0 | 77 | 14.4 | 67 | 12.5 | 103 | 19.3 | 19 | 3.6 | 115 | 21.5 | **535** |

TABLE 1.17

## Femur and Acetabulum Combinations by Numbers used in 2022 and Revision Rate



# Kaplan Meier Curves Hips

The following Kaplan Meier survival analyses are from the **24 years** 1999-2022 with deceased patients censored at time of death

| Years | % Revision-free | N |
|---|---|---|
| 1 | 98.69 | 159,864 |
| 2 | 98.24 | 147,601 |
| 3 | 97.81 | 135,490 |
| 4 | 97.43 | 123,465 |
| 5 | 97.04 | 111,753 |
| 6 | 96.61 | 100,179 |
| 7 | 96.13 | 89,369 |
| 8 | 95.65 | 78,936 |
| 9 | 95.08 | 69,158 |
| 10 | 94.44 | 60,195 |
| 11 | 93.75 | 51,963 |
| 12 | 93.03 | 44,445 |
| 13 | 92.20 | 37,375 |
| 14 | 91.34 | 31,059 |
| 15 | 90.47 | 25,488 |
| 16 | 89.47 | 20,496 |
| 17 | 88.41 | 16,212 |
| 18 | 87.45 | 12,424 |
| 19 | 86.44 | 9,070 |
| 20 | 85.60 | 6,509 |

TABLE 1.18

| | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| All patients | 173,693 | 1,423,696.1 | 9,484 | 0.67 (0.65 - 0.68) |

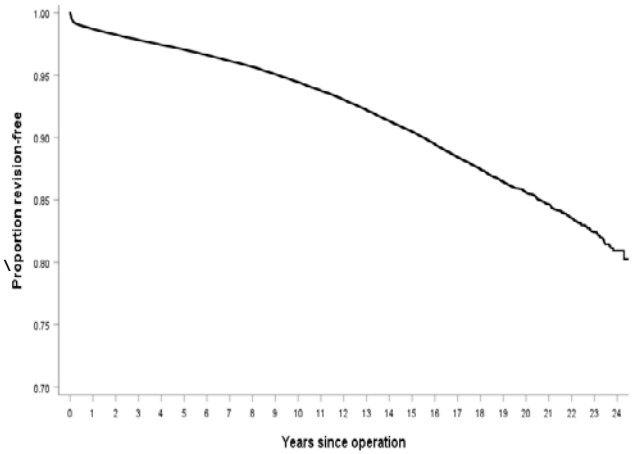
TABLE 1.19

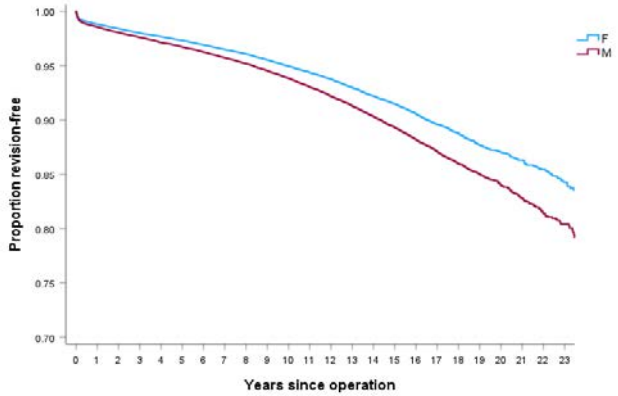
### Revision by Gender

| Sex | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| F | 93,209 | 761,302.5 | 4,543 | 0.60 (0.58 - 0.61) |
| M | 80,484 | 662,393.7 | 4,941 | 0.75 (0.73 - 0.77) |

TABLE 1.20

### Proportion of THA Cases Free of Revision from All Causes

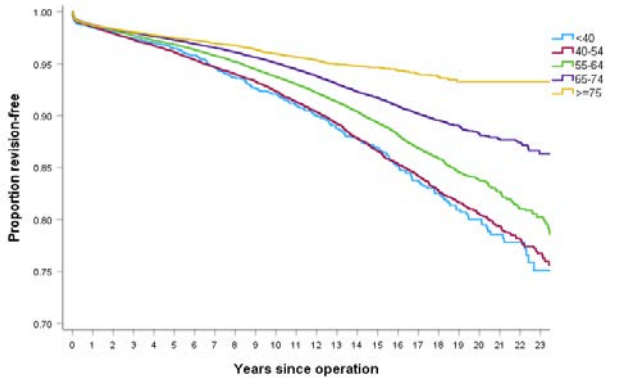





## Revision by Age Group

| Age Groups | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| <40 | 2,700 | 27,874.7 | 279 | 1 (0.89 - 1.12) |
| 40-54 | 21,702 | 211,749.1 | 2,014 | 0.95 (0.91 - 0.99) |
| 55-64 | 43,718 | 394,786.0 | 3,000 | 0.76 (0.73 - 0.79) |
| 65-74 | 58,908 | 485,609.8 | 2,798 | 0.58 (0.56 - 0.6) |
| >=75 | 46,665 | 303,676.4 | 1,393 | 0.46 (0.43 - 0.48) |

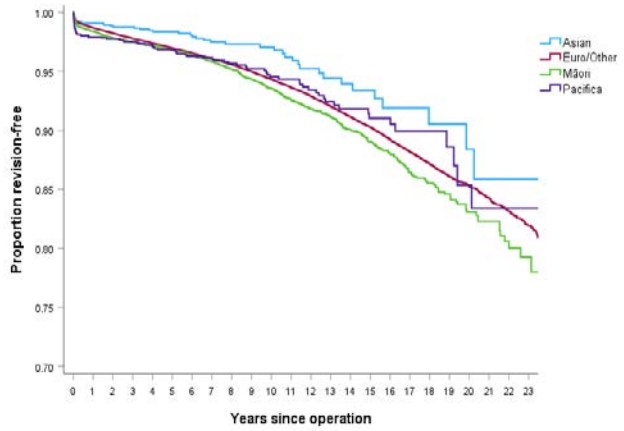
TABLE 1.21




## Revision by Ethnicity

| Ethnicity | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Asian | 1,462 | 9,996.4 | 44 | 0.44 (0.32 - 0.59) |
| Euro/Other | 152,069 | 1,244,855.2 | 8,455 | 0.68 (0.66 - 0.69) |
| Māori | 13,588 | 101,530.7 | 776 | 0.76 (0.71 - 0.82) |
| Pacifica | 1,836 | 134,27.5 | 89 | 0.66 (0.53 - 0.82) |

TABLE 1.22




## Revision by ASA

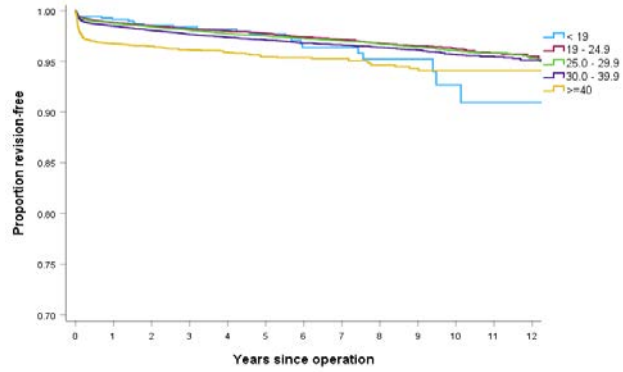
| ASA Class | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| 1 | 20,857 | 168,811.6 | 1,002 | 0.59 (0.56 - 0.63) |
| 2 | 82,712 | 579,026.1 | 3,225 | 0.56 (0.54 - 0.58) |
| 3 | 34,001 | 195,001.1 | 1,281 | 0.66 (0.62 - 0.69) |
| 4 | 1,214 | 4,661.5 | 41 | 0.88 (0.62 - 1.18) |

TABLE 1.23

## BMI

| BMI | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| < 19 | 853 | 3,927.1 | 24 | 0.61 (0.39-0.91) |
| 19 - 24 | 16,733 | 85,706.5 | 397 | 0.46 (0.42-0.51) |
| 25 - 29 | 30,748 | 159,553.7 | 776 | 0.49 (0.45-0.52) |
| 30 - 39 | 30,467 | 152,717.5 | 862 | 0.56 (0.53-0.60) |
| 40+ | 3,415 | 16,194.6 | 147 | 0.91 (0.76-1.06) |

TABLE 1.24



## Effect of Age and Cementation

| | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| **Cemented** | | | | |
| <40 | 88 | 953.9 | 13 | 1.36 (0.69 - 2.26) |
| 40-54 | 738 | 8,635.8 | 169 | 1.96 (1.67 - 2.27) |
| 55-64 | 2,802 | 34,790.6 | 420 | 1.21 (1.09 - 1.33) |
| 65-74 | 9,948 | 112,497.4 | 770 | 0.68 (0.64 - 0.73) |
| >=75 | 15,974 | 124,714.9 | 465 | 0.37 (0.34 - 0.41) |
| **Uncemented** | | | | |
| <40 | 2,131 | 21,543.1 | 208 | 0.97 (0.84 - 1.11) |
| 40-54 | 16,190 | 154,074.1 | 1,305 | 0.85 (0.8 - 0.89) |
| 55-64 | 26,412 | 219,624.8 | 1,580 | 0.72 (0.68 - 0.76) |
| 65-74 | 20,839 | 146,936.6 | 858 | 0.58 (0.55 - 0.62) |
| >=75 | 8,069 | 45,114.7 | 306 | 0.68 (0.6 - 0.76) |
| **Hybrid** | | | | |
| <40 | 481 | 5,377.8 | 58 | 1.08 (0.81 - 1.38) |
| 40-54 | 4,774 | 49,039.2 | 540 | 1.1 (1.01 - 1.2) |
| 55-64 | 14,504 | 140,370.6 | 1,000 | 0.71 (0.67 - 0.76) |
| 65-74 | 28121 | 226,175.8 | 1,170 | 0.52 (0.49 - 0.55) |
| >=75 | 22,622 | 133,846.8 | 622 | 0.46 (0.43 - 0.5) |

TABLE 1.25

## Revision by Adjunct Type

| Image guided | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Conventional | 172,786 | 1,418,114.5 | 9,460 | 0.67 (0.65 - 0.68) |
| Computer Navigated | 907 | 5,581.7 | 24 | 0.43 (0.28 - 0.64) |

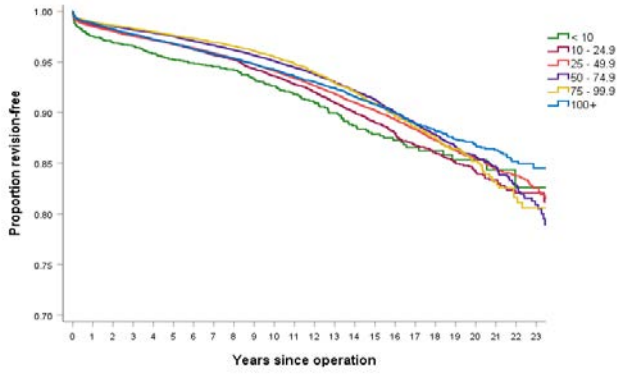
TABLE 1.26

## Revision Rate by Number of Procedures Performed per Year

| Ops. per Year | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| <10 | 2,519 | 22,830.7 | 196 | 0.86 (0.74 - 0.99) |
| 10-24 | 18,113 | 157,880.5 | 1,183 | 0.75 (0.71 - 0.79) |
| 25-49 | 67,802 | 563,254.4 | 3,951 | 0.7 (0.68 - 0.72) |
| 50-74 | 42,879 | 331,751.4 | 1,998 | 0.6 (0.58 - 0.63) |
| 75-99 | 22,126 | 162,608.5 | 933 | 0.57 (0.54 - 0.61) |
| >=100 | 20,254 | 185,370.6 | 1,223 | 0.66 (0.62 - 0.7) |

TABLE 1.27

**Revision Rate by Number of Procedures Performed per Year**




| Public/ Private | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Public | 89,276 | 724,190.1 | 4,770 | 0.66 (0.64 - 0.68) |
| Private | 84,417 | 699,506.1 | 4,714 | 0.67 (0.65 - 0.69) |

TABLE 1.28

## Revision by Bearing Surface

| Surfaces | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Ceramic-Ceramic (CC) | 16,050 | 148,342.7 | 710 | 0.48 (0.44 - 0.52) |
| Ceramic -Metal (CM) | 516 | 5,525.0 | 39 | 0.71 (0.5 - 0.96) |
| Ceramic -Poly (CP) | 50,449 | 334,764.7 | 1,963 | 0.59 (0.56 - 0.61) |
| Metal-Metal (MM) | 6,218 | 88,523.4 | 1,224 | 1.38 (1.31 - 1.46) |
| Metal-Poly (MP) | 92,658 | 811,147.1 | 5,279 | 0.65 (0.63 - 0.67) |

TABLE 1.29

## Revision by Head Size

| Head Size (mm) | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| <=28 | 66,908 | 756,826.3 | 5,334 | 0.7 (0.69 - 0.72) |
| 32 | 67,939 | 419,454.0 | 2,138 | 0.51 (0.49 - 0.53) |
| 36 | 31,798 | 187,530.7 | 1,147 | 0.61 (0.58 - 0.65) |
| >36 | 4,182 | 35,822.4 | 693 | 1.93 (1.79 - 2.08) |

TABLE 1.30

## Revision by Head Size and Bearing Surface

| Size | Surfaces | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|---|
| <32 | Ceramic-Ceramic | 824 | 10,654.9 | 68 | 0.64 (0.5 - 0.81) |
| <32 | Ceramic-Metal | 64 | 318.7 | 2 | 0.63 (0.08 - 2.27) |
| <32 | Ceramic-Poly | 13,252 | 149,636.2 | 1,006 | 0.67 (0.63 - 0.72) |
| <32 | Metal-Metal | 3,081 | 50,449.1 | 382 | 0.76 (0.68 - 0.84) |
| <32 | Metal -Poly | 48,476 | 537,796.9 | 3,815 | 0.71 (0.69 - 0.73) |
| 32 | Ceramic-Ceramic | 4,256 | 45,019.7 | 208 | 0.46 (0.4 - 0.53) |
| 32 | Ceramic-Poly | 23,251 | 124,208.9 | 595 | 0.48 (0.44 - 0.52) |
| 32 | Metal-Metal | 482 | 6,330.0 | 57 | 0.9 (0.68 - 1.17) |
| 32 | Metal -Poly | 37,853 | 241,317.0 | 1,256 | 0.52 (0.49 - 0.55) |
| 36 | Ceramic-Ceramic | 8,567 | 75,748.0 | 361 | 0.48 (0.43 - 0.53) |
| 36 | Ceramic-Metal | 441 | 5,107.2 | 37 | 0.72 (0.51 - 1) |
| 36 | Ceramic-Poly | 13,451 | 59,656.2 | 343 | 0.57 (0.52 - 0.64) |
| 36 | Metal-Metal | 1,004 | 13,302.0 | 167 | 1.26 (1.07 - 1.46) |
| 36 | Metal -Poly | 6,270 | 31,600.6 | 207 | 0.66 (0.57 - 0.75) |
| >36 | Ceramic-Ceramic | 2,359 | 16,754.5 | 73 | 0.44 (0.34 - 0.55) |
| >36 | Ceramic-Metal | 7 | 88.1 | 0 | 0 (0 - 4.19) |
| >36 | Ceramic-Poly | 43 | 126.1 | 2 | 1.59 (0 - 5.73) |
| >36 | Metal-Metal | 1,649 | 18,429.9 | 616 | 3.34 (3.08 - 3.62) |
| >36 | Metal -Poly | 39 | 271.3 | 1 | 0.37 (0 - 2.05) |

TABLE 1.31

## Revision by Bearing Surface and Age Group

| Surfaces | Age Groups | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|---|
| Ceramic-Ceramic | <40 | 900 | 761.6 | 50 | 0.63 |
| | 40-54 | 5,292 | 5010.5 | 276 | 0.55 |
| | 55-64 | 6,392 | 6093.0 | 248 | 0.41 |
| | 65-74 | 3,084 | 2684.7 | 125 | 0.47 |
| | >=75 | 382 | 2392.9 | 11 | 0.46 |
| Ceramic-Metal | <40 | 13 | 147.8 | 3 | 2.03 |
| | 40-54 | 167 | 1,968.8 | 11 | 0.56 |
| | 55-64 | 220 | 2,391.8 | 20 | 0.84 |
| | 65-74 | 93 | 872.3 | 5 | 0.57 |
| | >=75 | 23 | 144.3 | 0 | 0.00 |
| Ceramic-Poly | <40 | 828 | 6,723.9 | 70 | 1.04 |
| | 40-54 | 8,182 | 61,687.0 | 480 | 0.78 |
| | 55-64 | 17,421 | 121,796.3 | 710 | 0.58 |
| | 65-74 | 17,086 | 108,768.3 | 515 | 0.47 |
| | >=75 | 6,932 | 35,789.2 | 188 | 0.53 |
| Metal-Metal | <40 | 427 | 7,117.9 | 86 | 1.21 |
| | 40-54 | 2,495 | 37,902.3 | 518 | 1.37 |
| | 55-64 | 2,384 | 33,253.5 | 506 | 1.52 |
| | 65-74 | 708 | 8,685.6 | 103 | 1.19 |
| | >=75 | 204 | 1,564.2 | 11 | 0.70 |
| Metal-Poly | <40 | 425 | 5,350.9 | 57 | 1.07 |
| | 40-54 | 4,821 | 55,621.2 | 677 | 1.22 |
| | 55-64 | 15,514 | 167,994.3 | 1,447 | 0.86 |
| | 65-74 | 35,195 | 327,109.5 | 1,967 | 0.60 |
| | >=75 | 36,703 | 255,071.2 | 1,131 | 0.44 |

TABLE 1.32

| Surfaces | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Ceramic-Ceramic | 16,050 | 148,342.7 | 710 | 0.48 (0.44 - 0.52) |
| Ceramic-Metal | 516 | 5,525.0 | 39 | 0.71 (0.5 - 0.96) |
| Ceramic-Poly All | 5,0449 | 334,764.6 | 1,963 | 0.59 (0.56 - 0.61) |
| Ceramic - PS | 7,616 | 100,599.9 | 818 | 0.81 (0.76 - 0.87) |
| Ceramic -PX | 42,833 | 234,164.8 | 1,145 | 0.49 (0.46 - 0.52) |
| Metal-Metal | 6,218 | 88,523.4 | 1,224 | 1.38 (1.31 - 1.46) |
| Metal-Poly All | 92,658 | 811,147.1 | 5,279 | 0.65 (0.63 - 0.67) |
| Metal - PS | 37,913 | 418,472.7 | 3,309 | 0.79 (0.76 - 0.82) |
| Metal - PX | 54,745 | 392,674.4 | 1,970 | 0.5 (0.48 - 0.52) |

TABLE 1.33

### Cemented

| Surfaces | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Ceramic-Poly | 962 | 8,478.6 | 66 | 0.78 (0.6 - 0.99) |
| Metal-Metal | 48 | 459.1 | 4 | 0.87 (0.24 - 2.23) |
| Metal-Poly | 26,893 | 253,756.1 | 1,658 | 0.65 (0.62 - 0.69) |

TABLE 1.34

### UnCemented

| Surfaces | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Ceramic-Ceramic | 12,483 | 117,108.4 | 586 | 0.5 (0.46 - 0.54) |
| Ceramic-Metal | 492 | 5,439.7 | 38 | 0.7 (0.49 - 0.96) |
| Ceramic-Poly | 33,664 | 218,326.2 | 1,290 | 0.59 (0.56 - 0.62) |
| Metal-Metal | 5,429 | 78,044.6 | 1,115 | 1.43 (1.35 - 1.52) |
| Metal-Poly | 18,775 | 160,283.0 | 1,144 | 0.71 (0.67 - 0.76) |

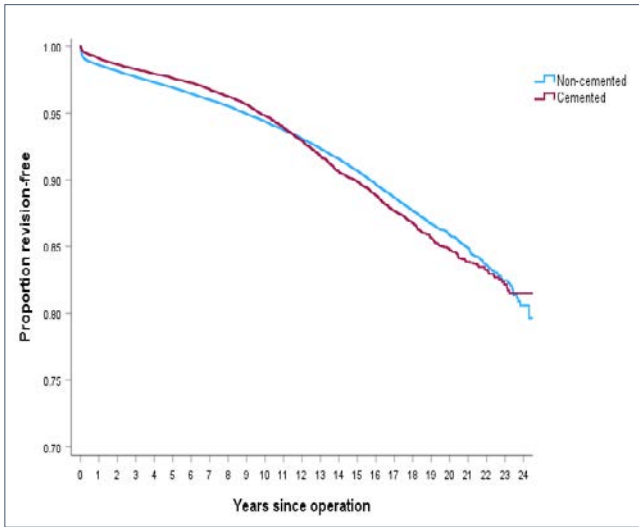
TABLE 1.35

### Hybrid

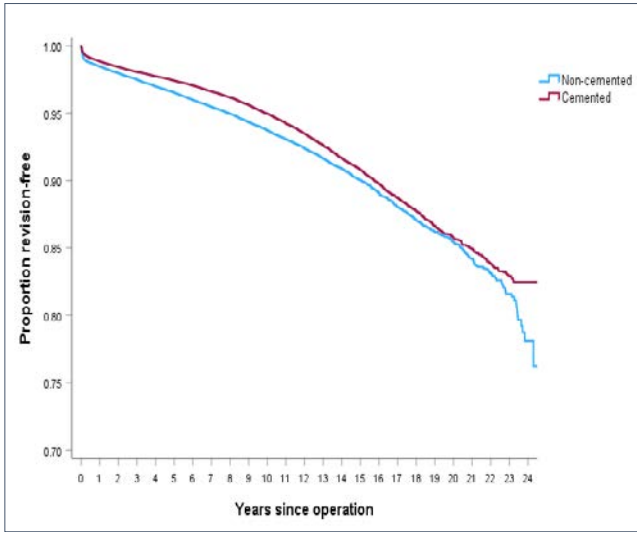
| Surfaces | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Ceramic-Ceramic | 3,564 | 31,230.6 | 124 | 0.4 (0.33 - 0.47) |
| Ceramic-Metal | 24 | 85.3 | 1 | 1.17 (0.03 - 6.53) |
| Ceramic-Poly | 15,823 | 107,959.9 | 607 | 0.56 (0.52 - 0.61) |
| Metal-Metal | 741 | 10,019.7 | 105 | 1.05 (0.86 - 1.27) |
| Metal-Poly | 46,990 | 397,108.0 | 2,477 | 0.62 (0.6 - 0.65) |

TABLE 1.36

### Revision according to cementation of Acetabulum




### Revision according to cementation of Femur



## Cement Status and Proportion of Revision-Free Cases by Years from Surgery

| | All | | Un-Cemented | | Cemented | | Hybrid | |
|---|---|---|---|---|---|---|---|---|
| Years | % Revision-free | N | % Revision-free | N | % Revision-free | N | % Revision-free | N |
| 1 | 98.69 | 159,864 | 98.47 | 67,517 | 99.11 | 27,861 | 98.74 | 64,486 |
| 2 | 98.24 | 147,601 | 97.98 | 61,840 | 98.67 | 26,482 | 98.34 | 59,279 |
| 3 | 97.81 | 135,490 | 97.49 | 56,528 | 98.31 | 25,046 | 97.94 | 53,916 |
| 4 | 97.43 | 123,465 | 96.99 | 51,260 | 97.97 | 23,395 | 97.65 | 48,810 |
| 5 | 97.04 | 111,753 | 96.54 | 46,316 | 97.66 | 21,695 | 97.31 | 43,742 |
| 6 | 96.61 | 100,179 | 95.99 | 41,382 | 97.32 | 20,000 | 96.95 | 38,797 |
| 7 | 96.13 | 89,369 | 95.49 | 36,950 | 96.81 | 18,260 | 96.52 | 34,159 |
| 8 | 95.65 | 78,936 | 94.96 | 32,757 | 96.29 | 16,343 | 96.11 | 29,836 |
| 9 | 95.08 | 69,158 | 94.33 | 28,769 | 95.70 | 14,548 | 95.60 | 25,841 |
| 10 | 94.44 | 60,195 | 93.74 | 25,068 | 94.83 | 12,792 | 95.03 | 22,335 |
| 11 | 93.75 | 51,963 | 93.08 | 21,710 | 93.93 | 11,121 | 94.44 | 19,132 |
| 12 | 93.03 | 44,445 | 92.41 | 18,471 | 92.97 | 9,608 | 93.81 | 16,366 |
| 13 | 92.20 | 37,375 | 91.64 | 15,157 | 91.83 | 8,263 | 93.10 | 13,955 |
| 14 | 91.34 | 31,059 | 90.91 | 12,195 | 90.69 | 7,065 | 92.24 | 11,799 |
| 15 | 90.47 | 25,488 | 90.08 | 9,710 | 89.95 | 5,971 | 91.27 | 9807 |
| 16 | 89.47 | 20,496 | 89.17 | 7,604 | 89.00 | 4,942 | 90.15 | 7950 |
| 17 | 88.41 | 16,212 | 88.13 | 5,847 | 87.84 | 4,000 | 89.13 | 6365 |
| 18 | 87.45 | 12,424 | 87.18 | 4,437 | 86.94 | 3,125 | 88.13 | 4862 |
| 19 | 86.44 | 9,070 | 86.29 | 3,217 | 85.84 | 2,349 | 87.07 | 3504 |
| 20 | 85.60 | 6,509 | 85.56 | 2,261 | 84.94 | 1,745 | 86.15 | 2503 |

TABLE 1.37

### Revision by Approach

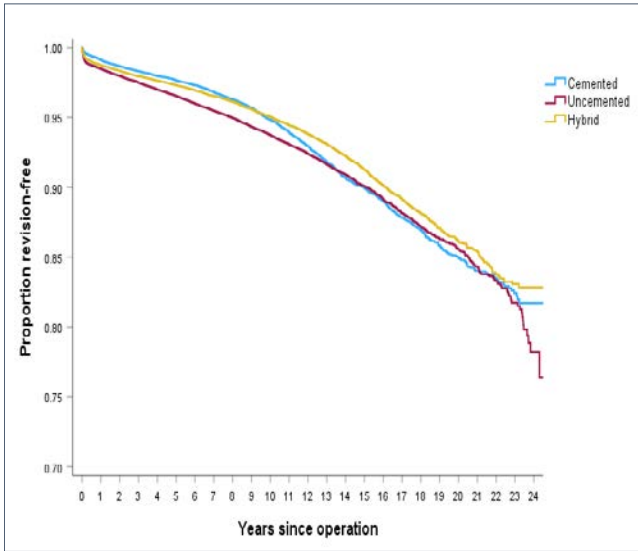
| Approach | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Posterior | 119,303 | 933,479.9 | 6,273 | 0.67 (0.66 - 0.69) |
| Lateral | 37,125 | 348,051.1 | 2,183 | 0.63 (0.6 - 0.65) |
| Troch_ Osteo | 233 | 2,171.2 | 25 | 1.15 (0.75 - 1.7) |
| Superior | 146 | 145.6 | 3 | 2.06 (0.42 - 6.02) |

TABLE 1.38

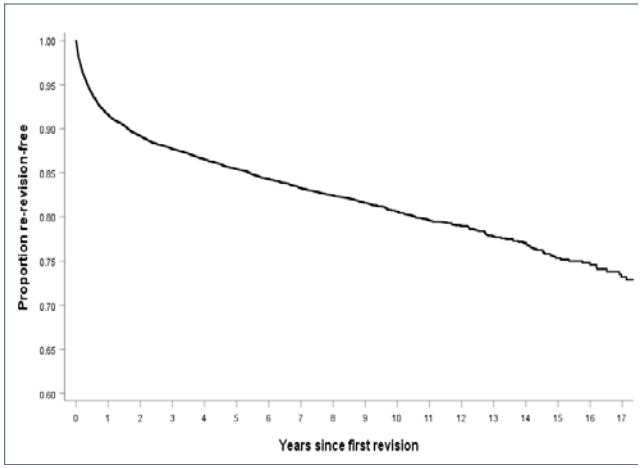
### Revision by Cement Status

| Cementation | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Cemented | 29,550 | 281,592.5 | 1,837 | 0.65 (0.62 - 0.68) |
| Uncemented | 73,641 | 587,293.4 | 4,257 | 0.72 (0.7 - 0.75) |
| Hybrid | 70,502 | 554,810.2 | 3,390 | 0.61 (0.59 - 0.63) |

TABLE 1.39




### Proportion of cases that have been revised more than once




### Revisions in Cases that have had a Prior Revision

| | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Revised | 9,429 | 56,337.1 | 1,490 | 2.64 (2.51-2.78) |

TABLE 1.40

### Classification of Re-Revisions as Major or Minor

| | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Minor | 2,218 | 12,823.7 | 448 | 3.49 (3.18-3.83) |
| Major | 7,211 | 43,513.3 | 1,042 | 2.39 (2.25-2.54) |

TABLE 1.41

| Years | Percentage Re-revision free % | N |
|---|---|---|
| 1 | 91.57 | 7,944 |
| 2 | 89.17 | 7,079 |
| 3 | 87.67 | 6,329 |
| 4 | 86.53 | 5,494 |
| 5 | 85.41 | 4,817 |
| 6 | 84.29 | 4,126 |
| 7 | 83.27 | 3,502 |
| 8 | 82.45 | 2,925 |
| 9 | 81.55 | 2,465 |
| 10 | 80.64 | 1,974 |
| 11 | 79.58 | 1,536 |
| 12 | 78.98 | 1,162 |
| 13 | 77.79 | 868 |
| 14 | 77.07 | 663 |
| 15 | 75.34 | 469 |
| 16 | 74.57 | 336 |
| 17 | 73.18 | 228 |
| 18 | 71.98 | 164 |

TABLE 1.42

# Patient Recorded Outcome Measures

## Patient based questionnaire outcomes after primary hip arthroplasty at six months, five years, ten years, fifteen years and twenty years post-surgery

### Questionnaires at six months post-surgery

At six months post-surgery, a random selection of patients is sent the Oxford-12 questionnaire in order to achieve a response rate of 20%, deemed ample to provide powerful statistical analysis.

There are 12 questions with the scores ranging from 0 to 4. A score of 48 is the best, indicating normal function. A score of 0 is the worst, indicating the most severe disability.

The questionnaire responses are grouped according to the classification system published by Kalairajah et al, 2005 (see appendix 1).

This groups each score into four categories:

| Category | Score | Interpretation |
|---|---|---|
| 1 | < 27 | Poor |
| 2 | 27-33 | Fair |
| 3 | 34-41 | Good |
| 4 | >41 | Excellent |

TABLE 1.43

For the twenty-two-year period, there were 34,457 primary hip questionnaire responses registered six months post-surgery. The average hip score was 40.3 (standard deviation 7.6, range 0-48). At six months post-surgery, 84% had an excellent or good score.

| Kalairajah Classification at 6 Months | N | % |
|---|---|---|
| Poor | 2,276 | 6.6 |
| Fair | 3,357 | 9.8 |
| Good | 9,554 | 27.8 |
| Excellent | 19,130 | 55.7 |

TABLE 1.44

### Questionnaires at five years post-surgery

All patients who had a six- month registered questionnaire, and who had not had revision surgery were sent a further questionnaire at five years post-surgery.

This dataset represents sequential Oxford hip scores for 14,049 individual patients.

At five years post-surgery, 89% of these patients achieved an excellent or good score and had an average of 42.4 (standard deviation 7.0, range 1 – 48).

| Kalairajah Classification at 5 Years | N | % |
|---|---|---|
| Poor | 589 | 4.6 |
| Fair | 843 | 6.6 |
| Good | 2,494 | 19.4 |
| Excellent | 8,924 | 69.4 |

TABLE 1.45

### Questionnaires at ten years post-surgery

All patients who had a six-month registered questionnaire, and who had not had revision surgery were sent a further questionnaire at ten years post-surgery.

This dataset represents sequential Oxford hip scores for 10,116 individual patients.

At ten years post-surgery, 87% of these patients achieved an excellent or good score and had an average of 41.9 (standard deviation 7.4, range 2-48).

| Kalairajah Classification at 10 Years | N | % |
|---|---|---|
| Poor | 508 | 5.6 |
| Fair | 650 | 7.2 |
| Good | 1,821 | 20.0 |
| Excellent | 6,110 | 67.2 |

TABLE 1.46

## Questionnaires at fifteen years post-surgery

All patients who had a six- month registered questionnaire, and who had not had revision surgery were sent a further questionnaire at fifteen years post-surgery.

This dataset represents sequential Oxford hip scores for 4,238 individual patients.

At fifteen years post-surgery, 85% of these patients achieved an excellent or good score and had an average of 41.4 (standard deviation 7.9, range 0-48).

| Kalairajah Classification at 15 Years | N | % |
|---|---|---|
| Poor | 251 | 6.9 |
| Fair | 280 | 7.7 |
| Good | 754 | 20.6 |
| Excellent | 2,374 | 64.9 |

TABLE 1.47

## Questionnaires at twenty years post-surgery

All patients who had a six- month registered questionnaire, and who had not had revision surgery were sent a further questionnaire at twenty years post-surgery.

This dataset represents sequential Oxford hip scores for 1,802 individual patients.

At twenty years post-surgery, 83% of these patients achieved an excellent or good score and had an average of 40.7 (standard deviation 8.6, range 4-48.)

| Kalairajah Classification at 20 Years | N | % |
|---|---|---|
| Poor | 84 | 8.9 |
| Fair | 75 | 7.9 |
| Good | 207 | 21.9 |
| Excellent | 579 | 61.3 |

TABLE 1.48

### Oxford Hip Score at 6 months post - Total Hip Arthroplasty vs BMI

| BMI | N | Mean | SE |
|---|---|---|---|
| < 19 | 107 | 39.32 | 0.778 |
| 19 - 24 | 2,609 | 41.11 | 0.139 |
| 25 - 29 | 4,455 | 40.68 | 0.107 |
| 30 - 39 | 3,826 | 39.38 | 0.125 |
| 40+ | 354 | 36.99 | 0.461 |
| Total | 11,351 | 40.21 | 0.070 |

TABLE 1.50

# Oxford 12 Score as a predictor of Hip Arthroplasty Revision

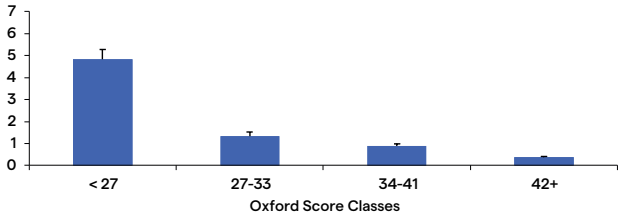
A statistically significant relationship has been confirmed between a Poor Oxford score (<27) and arthroplasty revision within two years of the Oxford 12 questionnaire date. This is true whether the Oxford score is obtained at 6 months, 5, 10 or 15 years post-operatively.

## Six- month score and revision arthroplasty

Plotting the patients' six-month Oxford scores in the Kalairajah groupings against the proportion of hips revised demonstrates that there is an incremental increase in risk of arthroplasty revision within two years related to the Oxford score.

A patient with a Poor score (<27) has 13 times the risk of a revision within two years compared to a person with an Excellent score (>42).

**Revision (%) to 2 years by Oxford score at 6 months**




**Risk of Revision within Two Years of the Six-month Score Date versus Kalairajah Score Group.**

| Kalairajah Classification at 6 months | Revision to 2 Years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 2,276 | 110 | 4.83 | 0.45 |
| Fair | 3,357 | 45 | 1.34 | 0.20 |
| Good | 9,554 | 84 | 0.88 | 0.10 |
| Excellent | 19,130 | 72 | 0.38 | 0.04 |

TABLE 1.51

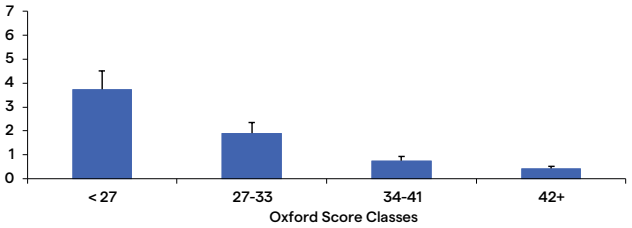
## Five-year score and revision arthroplasty

As with the six-month scores, plotting the patients' five-year scores in the Kalairajah groupings against the proportion of hips revised for that same group demonstrates that there is an incremental increase in risk during the next two years related to the Oxford score. A patient with a Poor score (<27) has 9 times the risk of a revision within two years compared to a person with an Excellent score (>42).

| Kalairajah Classification at 5 years | Revision to 2 Years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 589 | 22 | 3.74 | 0.78 |
| Fair | 843 | 16 | 1.90 | 0.47 |
| Good | 2,494 | 19 | 0.76 | 0.17 |
| Excellent | 8,924 | 40 | 0.45 | 0.07 |

TABLE 1.52

**Revision (%) to 2 years by Oxford score at 5 years**



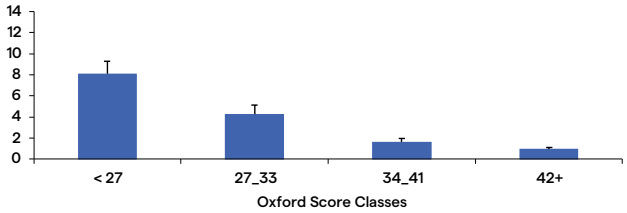
## Ten-year score and revision arthroplasty

As with the six-month and five-year scores, plotting the patients' ten-year scores in the Kalairajah groupings against the proportion of hips revised for that same group demonstrates that there is an incremental increase in risk during the next two years related to the Oxford score. A patient with a Poor score (<27) has 8 times the risk of a revision within two years compared to a person with an Excellent score (>42).

| Kalairajah Classification at 10 years | Revision to 2 Years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 508 | 41 | 8.07 | 1.21 |
| Fair | 650 | 28 | 4.31 | 0.80 |
| Good | 1,821 | 30 | 1.65 | 0.30 |
| Excellent | 6,110 | 62 | 1.01 | 0.13 |

TABLE 1.53

### Revision (%) to 2 years by Oxford score at 10 years



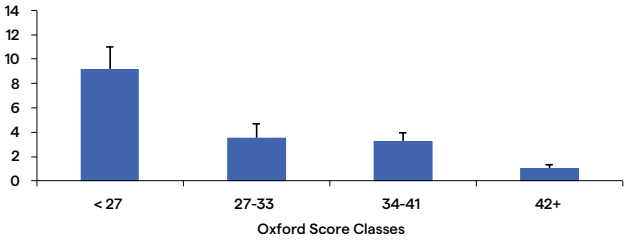

## Fifteen-year score and revision arthroplasty

As with the six- month, five- year and ten- year scores, plotting the patients' fifteen- year scores in the Kalairajah groupings against the proportion of hips revised for that same group demonstrates that there is an incremental increase in risk during the next two years related to the Oxford score. A patient with a Poor score (<27) has 9 times the risk of a revision within two years compared to a person with an Excellent score (>42).

| Kalairajah Classification at 15 years | Revision to 2 Years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 251 | 23 | 9.16 | 1.82 |
| Fair | 280 | 10 | 3.57 | 1.11 |
| Good | 754 | 25 | 3.32 | 0.65 |
| Excellent | 2,374 | 26 | 1.10 | 0.21 |

TABLE 1.54

### Revison (%) to 2 years by Oxford score at 15 years



In view of the large number of six- month Oxford scores it is possible with statistical significance to further break down the score groupings to demonstrate an even more convincing relationship between score and risk of revision within two years.

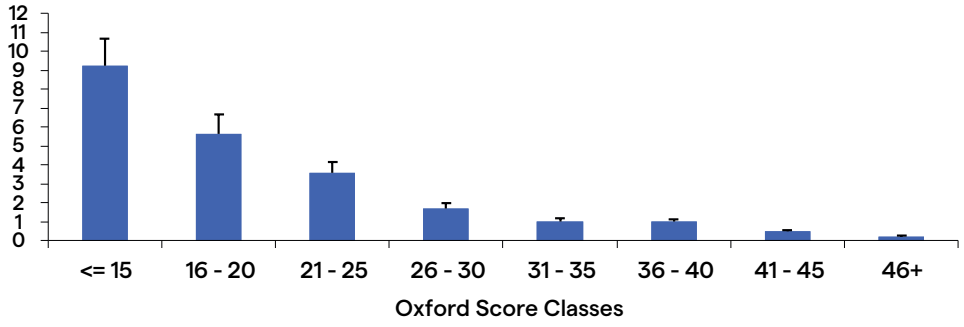
| Oxford Score at 6 months | Revision to 2 Years | N revised | % | Std error |
|---|---|---|---|---|
| <= 15 | 412 | 38 | 9.22 | 1.43 |
| 16 - 20 | 498 | 28 | 5.62 | 1.03 |
| 21 - 25 | 1,063 | 38 | 3.57 | 0.57 |
| 26 - 30 | 1,938 | 33 | 1.70 | 0.29 |
| 31 - 35 | 3,391 | 34 | 1.00 | 0.17 |
| 36 - 40 | 6,071 | 61 | 1.00 | 0.13 |
| 41 - 45 | 10,941 | 56 | 0.51 | 0.07 |
| 46+ | 10,003 | 23 | 0.23 | 0.05 |

TABLE 1.55

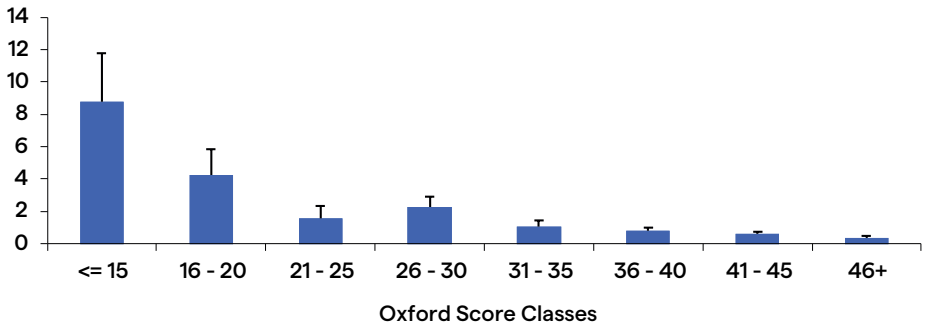
| Oxford Score at 5 years | Revision to 2 Years | N revised | % | Std error |
|---|---|---|---|---|
| <= 15 | 91 | 8 | 8.79 | 2.97 |
| 16 - 20 | 164 | 7 | 4.27 | 1.58 |
| 21 - 25 | 256 | 4 | 1.56 | 0.78 |
| 26 - 30 | 487 | 11 | 2.26 | 0.67 |
| 31 - 35 | 834 | 9 | 1.08 | 0.36 |
| 36 - 40 | 1,616 | 13 | 0.80 | 0.22 |
| 41 - 45 | 3,670 | 23 | 0.63 | 0.13 |
| 46+ | 5,732 | 22 | 0.38 | 0.08 |

TABLE 1.56

## Revision (%) to 2 years by Oxford score at 6 months




## Revision (%) to 2 years - by Oxford score at 5 years



## Prediction of second revision from six- month score following first revision

Plotting the patients' six-month scores following their first revision in the Kalairajah groupings, against the proportion of hips revised for that same group, again demonstrates that there is an incremental increase in risk during the next two years related to the Oxford score. A patient with a Poor score (<27) has almost 8 times the risk of a revision within two years compared to a person with an Excellent score (>42).

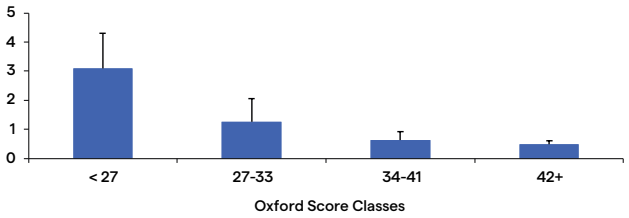
## Revision hip questionnaire responses

There were 11,658 revision hip responses. This group includes all revision hip procedures including revisions of primary arthroplasties performed prior to 1999. The average revision hip score was 34.90 (standard deviation 9.92, range 2-48).

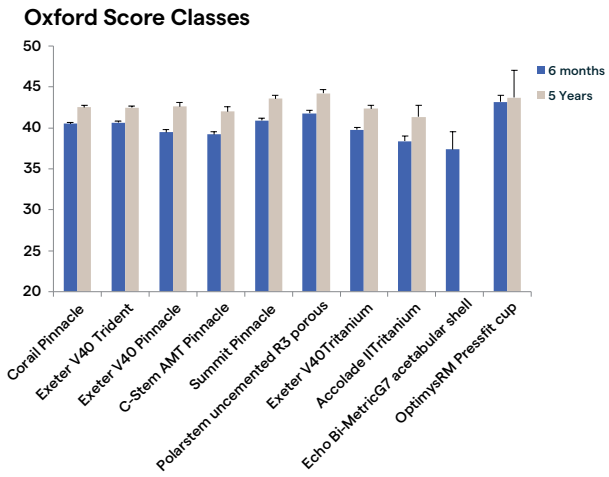
| Kalairajah grouping of Oxford Score at 2 years | Revision to 2 Years | N revised | % | Std error |
|---|---|---|---|---|
| < 27 | 774 | 24 | 3.10 | 0.62 |
| 27-33 | 640 | 8 | 1.25 | 0.44 |
| 34-41 | 1131 | 7 | 0.62 | 0.23 |
| 42+ | 1246 | 6 | 0.48 | 0.20 |

TABLE 1.57

**Re - Revison (%) to 2 years by Oxford score at Revision**




**Mean Oxford scores at 6 months and 5 years for Top 10 hip combinations with > 2000 registrations.**



## All Matches >50 procedures sorted by Femur Component

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| ABG | Duraloc | 135 | 2411.2 | 57 | 2.36 | 1.79 | 3.06 | 0 |
| ABG | ABGII | 79 | 1356.6 | 22 | 1.62 | 0.99 | 2.41 | 0 |
| ABGII | Duraloc | 139 | 2223.7 | 55 | 2.47 | 1.84 | 3.19 | 0 |
| ABGII | RM Pressfit cup | 91 | 541.1 | 9 | 1.66 | 0.76 | 3.16 | 0 |
| ABGII | Trident | 342 | 5042.0 | 46 | 0.91 | 0.67 | 1.22 | 0 |
| ABGII | Delta-PF Cup | 107 | 1603.4 | 13 | 0.81 | 0.43 | 1.39 | 0 |
| ABGII | Pinnacle | 67 | 875.7 | 6 | 0.69 | 0.25 | 1.49 | 0 |
| Accolade | Muller PE cup | 114 | 1370.5 | 11 | 0.80 | 0.40 | 1.44 | 0 |
| Accolade | Trident | 1867 | 26227.7 | 105 | 0.40 | 0.33 | 0.48 | 0 |
| Accolade | Tritanium | 152 | 1593.0 | 3 | 0.19 | 0.04 | 0.55 | 0 |
| Accolade | Pinnacle | 180 | 2144.4 | 4 | 0.19 | 0.05 | 0.48 | 0 |
| Accolade II | Trident II Tritanium | 446 | 424.1 | 9 | 2.12 | 0.97 | 4.03 | 314 |
| Accolade II | Continuum TM | 344 | 671.1 | 11 | 1.64 | 0.82 | 2.93 | 108 |
| Accolade II | RM Pressfit cup | 298 | 742.8 | 11 | 1.48 | 0.74 | 2.65 | 62 |
| Accolade II | Fitmore | 136 | 375.1 | 3 | 0.80 | 0.16 | 2.34 | 26 |
| Accolade II | Tritanium | 1579 | 7272.9 | 51 | 0.70 | 0.52 | 0.92 | 43 |
| Accolade II | Trident | 1701 | 7145.9 | 45 | 0.63 | 0.46 | 0.84 | 125 |
| Accolade II | Delta-TT Cup | 91 | 389.9 | 2 | 0.51 | 0.06 | 1.85 | 18 |
| Accolade II | Trident II Clusterhole HA | 81 | 22.0 | 0 | 0.00 | 0.00 | 16.74 | 81 |
| Actis Duofix | Pinnacle | 105 | 109.4 | 3 | 2.74 | 0.57 | 8.01 | 48 |
| AML | Duraloc | 54 | 894.0 | 10 | 1.12 | 0.54 | 2.06 | 0 |
| AML MMA | Duraloc | 77 | 1264.7 | 15 | 1.19 | 0.66 | 1.96 | 0 |
| Anthology Porous | BHR Acetabular Cup | 93 | 876.8 | 57 | 6.50 | 4.87 | 8.36 | 0 |
| Anthology Porous | R3 porous | 68 | 605.0 | 35 | 5.79 | 3.96 | 7.95 | 0 |
| Avenir Muller uncemented | Continuum TM | 182 | 1609.7 | 15 | 0.93 | 0.52 | 1.54 | 0 |
| Avenir Muller uncemented | RM cup | 105 | 1127.6 | 5 | 0.44 | 0.12 | 0.97 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Avenir Muller uncemented | Fitmore | 70 | 451.7 | 2 | 0.44 | 0.05 | 1.60 | 0 |
| Avenir Muller uncemented | Tritanium | 91 | 931.2 | 3 | 0.32 | 0.07 | 0.94 | 0 |
| Avenir Muller uncemented | RM Pressfit cup | 53 | 343.3 | 1 | 0.29 | 0.01 | 1.62 | 0 |
| Avenir Muller uncemented | Pinnacle | 99 | 1158.6 | 3 | 0.26 | 0.04 | 0.69 | 0 |
| Basis | Reflection porous | 108 | 1097.8 | 2 | 0.18 | 0.02 | 0.66 | 0 |
| CBC | Expansys shell | 183 | 2204.3 | 31 | 1.41 | 0.96 | 2.00 | 0 |
| CBC | RM Pressfit cup | 445 | 4124.2 | 27 | 0.65 | 0.43 | 0.95 | 0 |
| CBC | Fitmore | 59 | 807.0 | 5 | 0.62 | 0.20 | 1.45 | 0 |
| CCA SS | Contemporary | 78 | 853.1 | 10 | 1.17 | 0.56 | 2.16 | 0 |
| CCA SS | CCB | 784 | 7064.6 | 39 | 0.55 | 0.39 | 0.75 | 0 |
| CCA SS | RM Pressfit cup | 135 | 1458.3 | 8 | 0.55 | 0.24 | 1.08 | 0 |
| Charnley | Charnley Cup Ogee | 303 | 4250.2 | 33 | 0.78 | 0.53 | 1.09 | 0 |
| Charnley | Charnley | 461 | 5982.4 | 28 | 0.47 | 0.31 | 0.68 | 0 |
| CLS | Artek | 59 | 807.2 | 28 | 3.47 | 2.31 | 5.01 | 0 |
| CLS | Durom | 198 | 2408.1 | 71 | 2.95 | 2.28 | 3.70 | 0 |
| CLS | RM cup | 114 | 1472.0 | 20 | 1.36 | 0.83 | 2.10 | 0 |
| CLS | Duraloc | 714 | 10864.1 | 134 | 1.23 | 1.03 | 1.46 | 0 |
| CLS | Allofit | 192 | 2462.5 | 25 | 1.02 | 0.66 | 1.50 | 0 |
| CLS | Fitek | 66 | 1388.3 | 13 | 0.94 | 0.50 | 1.60 | 0 |
| CLS | CLS Expansion | 1263 | 18717.7 | 156 | 0.83 | 0.71 | 0.97 | 0 |
| CLS | Weill ring | 118 | 2150.7 | 17 | 0.79 | 0.44 | 1.24 | 0 |
| CLS | Monoblock Acetabular Cup | 80 | 1090.4 | 7 | 0.64 | 0.26 | 1.32 | 0 |
| CLS | RM Pressfit cup | 667 | 5940.5 | 38 | 0.64 | 0.45 | 0.87 | 18 |
| CLS | Trident | 165 | 2274.9 | 14 | 0.62 | 0.32 | 1.00 | 0 |
| CLS | Tritanium | 89 | 682.3 | 4 | 0.59 | 0.16 | 1.50 | 0 |
| CLS | Trilogy | 766 | 6569.7 | 36 | 0.55 | 0.38 | 0.76 | 30 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| CLS | Reflection porous | 403 | 4269.6 | 23 | 0.54 | 0.34 | 0.81 | 0 |
| CLS | Continuum TM | 1060 | 6261.0 | 32 | 0.51 | 0.35 | 0.72 | 70 |
| CLS | Trabecular Metal Shell | 59 | 588.1 | 3 | 0.51 | 0.11 | 1.49 | 0 |
| CLS | Fitmore | 2447 | 31465.8 | 153 | 0.49 | 0.41 | 0.57 | 33 |
| CLS | Morscher | 1701 | 28211.3 | 137 | 0.49 | 0.41 | 0.57 | 0 |
| CLS | Pinnacle | 130 | 991.9 | 4 | 0.40 | 0.11 | 1.03 | 6 |
| Contemporary | Contemporary | 71 | 979.9 | 12 | 1.22 | 0.63 | 2.14 | 0 |
| Corail | ASR | 156 | 1435.8 | 87 | 6.06 | 4.85 | 7.47 | 0 |
| Corail | Trident II Tritanium | 51 | 93.7 | 1 | 1.07 | 0.00 | 4.99 | 6 |
| Corail | Duraloc | 464 | 6238.3 | 62 | 0.99 | 0.76 | 1.27 | 0 |
| Corail | Fitmore | 365 | 2125.5 | 19 | 0.89 | 0.52 | 1.37 | 13 |
| Corail | RM Pressfit cup | 176 | 1086.4 | 9 | 0.83 | 0.35 | 1.51 | 9 |
| Corail | Trident | 120 | 881.2 | 7 | 0.79 | 0.32 | 1.64 | 7 |
| Corail | Monoblock Acetabular Cup | 95 | 1244.1 | 9 | 0.72 | 0.33 | 1.37 | 0 |
| Corail | Pinnacle | 16671 | 96973.5 | 559 | 0.58 | 0.53 | 0.63 | 1593 |
| Corail | Continuum TM | 337 | 2309.6 | 12 | 0.52 | 0.27 | 0.91 | 1 |
| Corail | Trilogy | 251 | 1719.1 | 6 | 0.35 | 0.13 | 0.76 | 16 |
| Corail | Reflection porous | 140 | 1761.6 | 6 | 0.34 | 0.12 | 0.74 | 0 |
| Corail | Ultima | 135 | 1310.3 | 4 | 0.31 | 0.08 | 0.78 | 0 |
| Corail | Tritanium | 175 | 1457.3 | 4 | 0.27 | 0.07 | 0.70 | 0 |
| Corail | Delta-PF Cup | 82 | 1159.3 | 3 | 0.26 | 0.05 | 0.76 | 0 |
| Corail | G7 acetabular | 102 | 423.4 | 1 | 0.24 | 0.01 | 1.32 | 1 |
| Corail | DeltaMotion Cup | 78 | 822.3 | 1 | 0.12 | 0.00 | 0.68 | 0 |
| CPCS | R3 porous | 381 | 2005.2 | 9 | 0.45 | 0.21 | 0.85 | 13 |
| CPT | G7 acetabular | 118 | 432.1 | 9 | 2.08 | 0.88 | 3.80 | 1 |
| CPT | Tritanium | 85 | 899.9 | 8 | 0.89 | 0.38 | 1.75 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| CPT | Fitmore | 195 | 1637.6 | 14 | 0.85 | 0.44 | 1.40 | 0 |
| CPT | Trilogy | 850 | 8392.8 | 67 | 0.80 | 0.62 | 1.01 | 0 |
| CPT | Duraloc | 212 | 2722.6 | 20 | 0.73 | 0.43 | 1.11 | 0 |
| CPT | Monoblock Acetabular Cup | 84 | 1156.2 | 8 | 0.69 | 0.27 | 1.31 | 0 |
| CPT | ZCA | 563 | 6279.6 | 42 | 0.67 | 0.48 | 0.90 | 0 |
| CPT | Continuum TM | 1866 | 10918.9 | 73 | 0.67 | 0.52 | 0.84 | 75 |
| CPT | Trident | 145 | 2052.0 | 13 | 0.63 | 0.34 | 1.08 | 0 |
| CPT | Delta-TT Cup | 143 | 598.8 | 3 | 0.50 | 0.10 | 1.46 | 15 |
| CPT | Pinnacle | 66 | 663.4 | 2 | 0.30 | 0.04 | 1.09 | 0 |
| CPT | ZCA all-poly cup | 99 | 712.0 | 1 | 0.14 | 0.00 | 0.78 | 0 |
| C-Stem | Duraloc | 53 | 717.6 | 6 | 0.84 | 0.31 | 1.82 | 0 |
| C-Stem | Pinnacle | 85 | 540.3 | 4 | 0.74 | 0.20 | 1.90 | 0 |
| C-Stem | Elite Plus Ogee | 55 | 576.4 | 2 | 0.35 | 0.04 | 1.25 | 0 |
| C-Stem | Marathon cemented | 94 | 602.6 | 1 | 0.17 | 0.00 | 0.92 | 0 |
| C-Stem AMT | RM Pressfit cup | 137 | 882.0 | 7 | 0.79 | 0.32 | 1.64 | 5 |
| C-Stem AMT | Pinnacle | 3550 | 17903.2 | 125 | 0.70 | 0.58 | 0.83 | 244 |
| C-Stem AMT | Marathon cemented | 369 | 2619.8 | 18 | 0.69 | 0.41 | 1.09 | 1 |
| Echo Bi-Metric | G7 acetabular shell | 344 | 284.2 | 8 | 2.82 | 1.10 | 5.31 | 194 |
| Echo Bi-Metric | Continuum TM | 190 | 731.8 | 6 | 0.82 | 0.30 | 1.78 | 13 |
| Echo Bi-Metric | G7 acetabular | 1000 | 3670.1 | 21 | 0.57 | 0.35 | 0.87 | 12 |
| Echo Bi-Metric | Exceed ABT Ringloc-X | 57 | 524.9 | 1 | 0.19 | 0.00 | 1.06 | 0 |
| Elite plus | Duraloc | 614 | 8157.4 | 129 | 1.58 | 1.31 | 1.87 | 0 |
| Elite plus | Charnley | 302 | 4022.2 | 26 | 0.65 | 0.42 | 0.95 | 0 |
| Elite plus | Elite Plus LPW | 284 | 3410.9 | 18 | 0.53 | 0.31 | 0.83 | 0 |
| Elite plus | Elite Plus Ogee | 111 | 1151.7 | 6 | 0.52 | 0.19 | 1.13 | 0 |
| Exeter | Duraloc | 619 | 9816.2 | 138 | 1.41 | 1.18 | 1.66 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Exeter | Contemporary | 1625 | 20342.5 | 208 | 1.02 | 0.89 | 1.17 | 0 |
| Exeter | Exeter | 1376 | 17045.7 | 133 | 0.78 | 0.65 | 0.92 | 0 |
| Exeter | Osteolock | 836 | 12344.1 | 85 | 0.69 | 0.55 | 0.85 | 0 |
| Exeter | Muller PE cup | 132 | 1776.8 | 11 | 0.62 | 0.31 | 1.11 | 0 |
| Exeter | CLS Expansion | 129 | 1715.9 | 10 | 0.58 | 0.28 | 1.07 | 0 |
| Exeter | Bio-clad poly | 113 | 1298.6 | 7 | 0.54 | 0.22 | 1.11 | 0 |
| Exeter | Morscher | 579 | 9800.2 | 48 | 0.49 | 0.36 | 0.64 | 0 |
| Exeter | Trilogy | 213 | 3351.9 | 14 | 0.42 | 0.23 | 0.70 | 0 |
| Exeter | Trident | 84 | 1478.7 | 2 | 0.14 | 0.02 | 0.49 | 0 |
| Exeter V40 | Trident II Clusterhole HA | 105 | 24.0 | 3 | 12.47 | 2.57 | 36.46 | 105 |
| Exeter V40 | G7 acetabular shell | 194 | 164.3 | 3 | 1.83 | 0.38 | 5.34 | 96 |
| Exeter V40 | Trabecular Metal Shell | 272 | 1678.3 | 19 | 1.13 | 0.68 | 1.77 | 15 |
| Exeter V40 | Duraloc | 987 | 12725.7 | 131 | 1.03 | 0.86 | 1.22 | 0 |
| Exeter V40 | Continuum TM | 3155 | 20067.7 | 128 | 0.64 | 0.53 | 0.76 | 118 |
| Exeter V40 | Bio-clad poly | 140 | 1263.5 | 8 | 0.63 | 0.27 | 1.25 | 0 |
| Exeter V40 | Exeter | 1636 | 17732.8 | 102 | 0.58 | 0.47 | 0.70 | 0 |
| Exeter V40 | G7 acetabular | 370 | 1249.9 | 7 | 0.56 | 0.23 | 1.15 | 3 |
| Exeter V40 | Trident II Tritanium | 1933 | 2566.9 | 14 | 0.55 | 0.30 | 0.92 | 915 |
| Exeter V40 | R3 porous | 898 | 4680.1 | 25 | 0.53 | 0.35 | 0.79 | 78 |
| Exeter V40 | Delta-TT Cup | 356 | 1812.7 | 9 | 0.50 | 0.23 | 0.94 | 35 |
| Exeter V40 | Tritanium | 3933 | 23911.9 | 116 | 0.49 | 0.40 | 0.58 | 38 |
| Exeter V40 | Morscher | 630 | 8734.9 | 42 | 0.48 | 0.35 | 0.65 | 0 |
| Exeter V40 | Contemporary | 6678 | 62306.4 | 297 | 0.48 | 0.42 | 0.53 | 10 |
| Exeter V40 | Exeter X3 | 3161 | 16443.5 | 72 | 0.44 | 0.34 | 0.55 | 162 |
| Exeter V40 | Osteolock | 270 | 3655.1 | 16 | 0.44 | 0.24 | 0.71 | 0 |
| Exeter V40 | CCB | 609 | 4476.2 | 19 | 0.42 | 0.25 | 0.65 | 3 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Exeter V40 | Pinnacle | 3694 | 22032.5 | 92 | 0.42 | 0.33 | 0.51 | 276 |
| Exeter V40 | Trident | 14536 | 104991.1 | 431 | 0.41 | 0.37 | 0.45 | 814 |
| Exeter V40 | Reflection cemented | 1017 | 7983.6 | 31 | 0.39 | 0.26 | 0.55 | 12 |
| Exeter V40 | PolarCup cemented | 94 | 258.6 | 1 | 0.39 | 0.01 | 2.15 | 24 |
| Exeter V40 | RM Pressfit cup | 3269 | 20571.4 | 75 | 0.36 | 0.29 | 0.46 | 118 |
| Exeter V40 | Trilogy | 3394 | 28885.6 | 104 | 0.36 | 0.29 | 0.44 | 152 |
| Exeter V40 | Monoblock Acetabular Cup | 123 | 1897.3 | 6 | 0.32 | 0.12 | 0.69 | 0 |
| Exeter V40 | Muller PE cup | 94 | 1023.8 | 3 | 0.29 | 0.06 | 0.86 | 0 |
| Exeter V40 | Reflection porous | 476 | 5294.4 | 15 | 0.28 | 0.15 | 0.46 | 0 |
| Exeter V40 | CLS Expansion | 88 | 1131.2 | 3 | 0.27 | 0.05 | 0.78 | 0 |
| Exeter V40 | Polymax | 85 | 379.0 | 1 | 0.26 | 0.01 | 1.47 | 0 |
| Exeter V40 | Weber | 53 | 641.1 | 1 | 0.16 | 0.00 | 0.87 | 0 |
| Exeter V40 | Fitmore | 1205 | 8753.9 | 13 | 0.15 | 0.08 | 0.25 | 41 |
| Exeter V40 | ZCA | 103 | 758.0 | 1 | 0.13 | 0.00 | 0.74 | 0 |
| Exeter V40 | Trident PSL HA Cluster | 74 | 30.6 | 0 | 0.00 | 0.00 | 12.06 | 70 |
| Exeter V40 | ZCA all-poly cup | 110 | 643.4 | 0 | 0.00 | 0.00 | 0.57 | 0 |
| Friendly | Delta-TT Cup | 69 | 622.9 | 6 | 0.96 | 0.35 | 2.10 | 1 |
| Friendly | Delta-PF Cup | 178 | 2291.6 | 6 | 0.26 | 0.10 | 0.57 | 3 |
| Furlong | Furlong | 66 | 979.2 | 7 | 0.71 | 0.29 | 1.47 | 0 |
| Furlong Evolution Collared Ste | Delta-PF Cup | 66 | 41.8 | 0 | 0.00 | 0.00 | 8.83 | 52 |
| H-Max C | Delta-TT Cup | 137 | 482.2 | 7 | 1.45 | 0.58 | 2.99 | 13 |
| H-Max M | Delta-PF Cup | 71 | 724.9 | 10 | 1.38 | 0.66 | 2.54 | 0 |
| H-Max M | Delta-TT Cup | 86 | 934.4 | 5 | 0.54 | 0.17 | 1.25 | 0 |
| H-Max S | Delta-PF Cup | 315 | 1534.1 | 11 | 0.72 | 0.36 | 1.28 | 36 |
| H-Max S | Delta-TT Cup | 1036 | 6165.2 | 43 | 0.70 | 0.50 | 0.93 | 69 |
| H-Max S | Trident | 67 | 292.2 | 1 | 0.34 | 0.01 | 1.91 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Lateral straight stem | Trilogy | 69 | 689.7 | 13 | 1.88 | 1.00 | 3.22 | 0 |
| Lateral straight stem | RM cup | 534 | 6329.7 | 51 | 0.81 | 0.60 | 1.06 | 0 |
| Lateral straight stem | Continuum TM | 78 | 705.0 | 4 | 0.57 | 0.12 | 1.35 | 0 |
| Lateral straight stem | Muller PE cup | 770 | 7968.6 | 44 | 0.55 | 0.40 | 0.74 | 0 |
| Lateral straight stem | Weber | 287 | 3168.2 | 11 | 0.35 | 0.17 | 0.62 | 0 |
| Lateral straight stem | RM Pressfit cup | 173 | 1656.7 | 4 | 0.24 | 0.07 | 0.62 | 0 |
| Lateral straight stem | ZCA | 98 | 934.1 | 1 | 0.11 | 0.00 | 0.60 | 0 |
| Lateral straight stem | ZCA all-poly cup | 70 | 617.3 | 0 | 0.00 | 0.00 | 0.60 | 0 |
| M/L Taper | Delta-TT Cup | 64 | 533.8 | 6 | 1.12 | 0.41 | 2.45 | 0 |
| M/L Taper | Continuum TM | 1047 | 8042.9 | 44 | 0.55 | 0.40 | 0.73 | 0 |
| M/L Taper | Trilogy | 215 | 2573.6 | 14 | 0.54 | 0.30 | 0.91 | 0 |
| M/L Taper | Trident | 333 | 1967.3 | 7 | 0.36 | 0.14 | 0.73 | 0 |
| Mallory-Head | M2A | 105 | 1531.3 | 18 | 1.18 | 0.70 | 1.86 | 0 |
| MasterSL | Delta-TT Cup | 131 | 479.6 | 8 | 1.67 | 0.72 | 3.29 | 1 |
| Metafix | Trinity | 143 | 308.2 | 5 | 1.62 | 0.53 | 3.79 | 32 |
| MS 30 | G7 acetabular | 179 | 365.5 | 6 | 1.64 | 0.60 | 3.57 | 15 |
| MS 30 | Contemporary | 128 | 1342.0 | 12 | 0.89 | 0.46 | 1.56 | 0 |
| MS 30 | Duraloc | 88 | 1466.2 | 13 | 0.89 | 0.47 | 1.52 | 0 |
| MS 30 | Morscher | 804 | 11455.6 | 72 | 0.63 | 0.49 | 0.79 | 0 |
| MS 30 | RM Pressfit cup | 90 | 936.4 | 5 | 0.53 | 0.14 | 1.17 | 0 |
| MS 30 | Muller PE cup | 504 | 5221.0 | 19 | 0.36 | 0.21 | 0.56 | 1 |
| MS 30 | Continuum TM | 506 | 3210.7 | 10 | 0.31 | 0.14 | 0.55 | 29 |
| MS 30 | Fitmore | 2842 | 22118.4 | 64 | 0.29 | 0.22 | 0.37 | 130 |
| MS 30 | Trilogy | 422 | 3127.9 | 6 | 0.19 | 0.06 | 0.40 | 17 |
| MS 30 | Pinnacle | 228 | 546.0 | 1 | 0.18 | 0.00 | 1.02 | 63 |
| MS 30 | ZCA all-poly cup | 96 | 759.8 | 1 | 0.13 | 0.00 | 0.73 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| MS 30 | G7 acetabular shell | 214 | 159.0 | 0 | 0.00 | 0.00 | 2.32 | 140 |
| Omnifit | Trident | 149 | 2213.2 | 14 | 0.63 | 0.33 | 1.03 | 0 |
| Optimys | RM Pressfit cup | 642 | 1371.5 | 10 | 0.73 | 0.32 | 1.29 | 219 |
| PLS | Delta-TT Cup | 52 | 299.8 | 1 | 0.33 | 0.01 | 1.86 | 0 |
| Polarstem uncemented | RM Pressfit cup | 197 | 471.3 | 4 | 0.85 | 0.23 | 2.17 | 22 |
| Polarstem uncemented | Reflection porous | 335 | 3097.4 | 17 | 0.55 | 0.32 | 0.88 | 0 |
| Polarstem uncemented | R3 porous | 2391 | 11999.0 | 60 | 0.50 | 0.38 | 0.64 | 169 |
| Prodigy | Duraloc | 129 | 1909.5 | 31 | 1.62 | 1.08 | 2.27 | 0 |
| Quadra-C | Acetabular Shell | 311 | 604.6 | 5 | 0.83 | 0.27 | 1.93 | 70 |
| Quadra-H | Acetabular Shell | 410 | 807.8 | 12 | 1.49 | 0.77 | 2.59 | 65 |
| Quadra-P | Acetabular Shell | 65 | 88.0 | 1 | 1.14 | 0.03 | 6.33 | 24 |
| SL modular stem | RM cup | 322 | 5142.0 | 44 | 0.86 | 0.61 | 1.14 | 0 |
| SL modular stem | Muller PE cup | 110 | 1541.0 | 3 | 0.19 | 0.04 | 0.57 | 0 |
| SL monoblock | Muller PE cup | 560 | 6861.1 | 32 | 0.47 | 0.31 | 0.65 | 0 |
| Spectron | Duraloc | 1179 | 15645.3 | 215 | 1.37 | 1.20 | 1.57 | 0 |
| Spectron | Reflection cemented | 2984 | 32252.5 | 395 | 1.22 | 1.11 | 1.35 | 0 |
| Spectron | Muller PE cup | 67 | 701.0 | 8 | 1.14 | 0.49 | 2.25 | 0 |
| Spectron | Morscher | 211 | 3132.5 | 35 | 1.12 | 0.78 | 1.55 | 0 |
| Spectron | Reflection porous | 2755 | 32783.4 | 291 | 0.89 | 0.79 | 1.00 | 0 |
| Spectron | Trident | 78 | 1042.1 | 6 | 0.58 | 0.18 | 1.19 | 0 |
| Spectron | Biomex acet shell porous | 68 | 1174.2 | 6 | 0.51 | 0.19 | 1.11 | 0 |
| Spectron | Fitmore | 78 | 1062.4 | 5 | 0.47 | 0.13 | 1.03 | 0 |
| Spectron | Mallory-Head | 152 | 2127.4 | 9 | 0.42 | 0.19 | 0.80 | 0 |
| Spectron | R3 porous | 456 | 3753.9 | 14 | 0.37 | 0.19 | 0.61 | 5 |
| S-Rom | ASR | 130 | 927.3 | 97 | 10.46 | 8.48 | 12.76 | 0 |
| S-Rom | Ultima | 78 | 1492.8 | 15 | 1.00 | 0.56 | 1.66 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| S-Rom | Pinnacle | 403 | 4951.5 | 41 | 0.83 | 0.59 | 1.12 | 5 |
| Standard straight stem | RM cup | 138 | 1799.5 | 14 | 0.78 | 0.43 | 1.31 | 0 |
| Standard straight stem | Muller PE cup | 640 | 6446.9 | 23 | 0.36 | 0.22 | 0.53 | 2 |
| Standard straight stem | Weber | 134 | 1417.2 | 4 | 0.28 | 0.08 | 0.72 | 0 |
| Standard straight stem | RM Pressfit cup | 137 | 1347.4 | 1 | 0.07 | 0.00 | 0.41 | 0 |
| Std Femoral Stem | Acetabular Shell | 137 | 58.1 | 0 | 0.00 | 0.00 | 6.35 | 132 |
| Stemsys | Agilis Ti-por | 545 | 3485.3 | 23 | 0.66 | 0.42 | 0.99 | 0 |
| Stemsys | Fixa Ti Por | 962 | 5964.4 | 30 | 0.50 | 0.34 | 0.72 | 29 |
| Stemsys | Polymax | 192 | 862.6 | 4 | 0.46 | 0.13 | 1.19 | 10 |
| Stemsys | Delta-PF Cup | 626 | 3145.4 | 12 | 0.38 | 0.20 | 0.67 | 20 |
| Stemsys | RM Pressfit cup | 404 | 2425.8 | 8 | 0.33 | 0.13 | 0.62 | 14 |
| Stemsys | DeltaMotion Cup | 541 | 4460.6 | 10 | 0.22 | 0.10 | 0.40 | 0 |
| Stemsys | Maxera Cup | 117 | 198.8 | 0 | 0.00 | 0.00 | 1.86 | 31 |
| Stemsys | Zimmer Maxera Cup | 58 | 92.6 | 0 | 0.00 | 0.00 | 3.98 | 11 |
| Stemsys cemented | Delta-PF Cup | 91 | 443.4 | 0 | 0.00 | 0.00 | 0.83 | 0 |
| Stemsys cemented | RM Pressfit cup | 82 | 399.6 | 0 | 0.00 | 0.00 | 0.92 | 0 |
| Summit | ASR | 88 | 912.5 | 40 | 4.38 | 3.09 | 5.91 | 0 |
| Summit | Pinnacle | 2947 | 22702.7 | 139 | 0.61 | 0.51 | 0.72 | 202 |
| Summit | Trilogy | 202 | 1912.6 | 8 | 0.42 | 0.16 | 0.82 | 8 |
| Summit | Duraloc | 101 | 1513.9 | 6 | 0.40 | 0.15 | 0.86 | 0 |
| Synergy Porous | BHR Acetabular Cup | 114 | 1282.0 | 44 | 3.43 | 2.46 | 4.56 | 0 |
| Synergy Porous | R3 porous | 1855 | 14439.4 | 68 | 0.47 | 0.37 | 0.60 | 2 |
| Synergy Porous | Reflection porous | 1271 | 16107.1 | 59 | 0.37 | 0.28 | 0.47 | 0 |
| Synergy Porous | Delta-PF Cup | 118 | 1172.0 | 3 | 0.26 | 0.05 | 0.75 | 0 |
| Synergy Porous | Continuum TM | 55 | 340.5 | 0 | 0.00 | 0.00 | 1.08 | 0 |
| Taperloc Complete | G7 acetabular shell | 191 | 156.2 | 4 | 2.56 | 0.70 | 6.56 | 109 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Taperloc Complete | RM Pressfit cup | 459 | 1480.6 | 11 | 0.74 | 0.35 | 1.29 | 81 |
| Taperloc Complete | G7 acetabular | 523 | 1966.2 | 14 | 0.71 | 0.39 | 1.19 | 16 |
| Taperloc Complete | Continuum TM | 284 | 967.5 | 6 | 0.62 | 0.20 | 1.28 | 8 |
| Taperloc Complete | Delta-TT Cup | 189 | 480.6 | 2 | 0.42 | 0.05 | 1.50 | 45 |
| Taperloc Complete | Trident | 153 | 246.2 | 1 | 0.41 | 0.01 | 2.26 | 35 |
| Trabecular Metal Stem | Continuum TM | 521 | 3925.7 | 22 | 0.56 | 0.34 | 0.83 | 18 |
| Trabecular Metal Stem | Monoblock Acetabular Cup | 74 | 1092.5 | 3 | 0.27 | 0.04 | 0.73 | 0 |
| Tri-Lock BPS | Pinnacle | 160 | 783.4 | 4 | 0.51 | 0.14 | 1.31 | 31 |
| TwinSys cemented | Pinnacle | 160 | 687.5 | 10 | 1.45 | 0.65 | 2.58 | 20 |
| TwinSys cemented | Selexys TPS | 65 | 634.2 | 6 | 0.95 | 0.35 | 2.06 | 0 |
| TwinSys cemented | CCB | 466 | 3175.3 | 26 | 0.82 | 0.52 | 1.18 | 6 |
| TwinSys cemented | Continuum TM | 154 | 893.0 | 4 | 0.45 | 0.12 | 1.15 | 2 |
| TwinSys cemented | RM cup | 148 | 1837.5 | 8 | 0.44 | 0.19 | 0.86 | 0 |
| TwinSys cemented | RM Pressfit cup | 2504 | 15428.6 | 62 | 0.40 | 0.31 | 0.52 | 161 |
| TwinSys cemented | Reflection porous | 73 | 445.9 | 0 | 0.00 | 0.00 | 0.83 | 0 |
| TwinSys stem cemented | RM Pressfit cup | 66 | 46.9 | 0 | 0.00 | 0.00 | 7.86 | 49 |
| TwinSys uncemented | Selexys TPS | 1231 | 14320.1 | 162 | 1.13 | 0.96 | 1.32 | 0 |
| TwinSys uncemented | RM cup | 122 | 1400.1 | 13 | 0.93 | 0.49 | 1.59 | 0 |
| TwinSys uncemented | RM Pressfit cup | 5372 | 44554.4 | 286 | 0.64 | 0.57 | 0.72 | 70 |
| TwinSys uncemented | Trilogy | 209 | 2475.7 | 13 | 0.53 | 0.28 | 0.90 | 0 |
| TwinSys uncemented | Continuum TM | 138 | 1299.8 | 5 | 0.38 | 0.12 | 0.90 | 0 |
| TwinSys uncemented | Delta-PF Cup | 391 | 4411.8 | 5 | 0.11 | 0.03 | 0.25 | 0 |
| Versys | Trilogy | 272 | 4605.9 | 20 | 0.43 | 0.27 | 0.67 | 0 |
| Versys cemented | ZCA | 391 | 4652.2 | 34 | 0.73 | 0.50 | 1.01 | 0 |
| Versys cemented | Trilogy | 238 | 2968.1 | 8 | 0.27 | 0.12 | 0.53 | 0 |
| Wagner cone stem | Continuum TM | 67 | 352.1 | 2 | 0.57 | 0.07 | 2.05 | 6 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Wagner cone stem | Fitmore | 79 | 1069.8 | 5 | 0.47 | 0.13 | 1.02 | 1 |

TABLE 1.58

**All Matches > 50 procedures sorted by Acetabular Component**

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| ABGII | ABG | 79 | 1356.6 | 22 | 1.62 | 0.99 | 2.41 | 0 |
| Agilis Ti-por | Stemsys | 545 | 3485.3 | 23 | 0.66 | 0.42 | 0.99 | 0 |
| Allofit | CLS | 192 | 2462.5 | 25 | 1.02 | 0.66 | 1.50 | 0 |
| Artek | CLS | 59 | 807.2 | 28 | 3.47 | 2.31 | 5.01 | 0 |
| ASR | Corail | 156 | 1435.8 | 87 | 6.06 | 4.85 | 7.47 | 0 |
| ASR | S-Rom | 130 | 927.3 | 97 | 10.46 | 8.48 | 12.76 | 0 |
| ASR | Summit | 88 | 912.5 | 40 | 4.38 | 3.09 | 5.91 | 0 |
| BHR Acetabular Cup | Anthology Porous | 93 | 876.8 | 57 | 6.50 | 4.87 | 8.36 | 0 |
| BHR Acetabular Cup | Synergy Porous | 114 | 1282.0 | 44 | 3.43 | 2.46 | 4.56 | 0 |
| Bio-clad poly | Exeter | 113 | 1298.6 | 7 | 0.54 | 0.22 | 1.11 | 0 |
| Bio-clad poly | Exeter V40 | 140 | 1263.5 | 8 | 0.63 | 0.27 | 1.25 | 0 |
| Biomex acet shell porous | Spectron | 68 | 1174.2 | 6 | 0.51 | 0.19 | 1.11 | 0 |
| CCB | CCA SS | 784 | 7064.6 | 39 | 0.55 | 0.39 | 0.75 | 0 |
| CCB | Exeter V40 | 609 | 4476.2 | 19 | 0.42 | 0.25 | 0.65 | 3 |
| CCB | TwinSys cemented | 466 | 3175.3 | 26 | 0.82 | 0.52 | 1.18 | 6 |
| Charnley | Charnley | 461 | 5982.4 | 28 | 0.47 | 0.31 | 0.68 | 0 |
| Charnley | Elite plus | 302 | 4022.2 | 26 | 0.65 | 0.42 | 0.95 | 0 |
| Charnley Cup Ogee | Charnley | 303 | 4250.2 | 33 | 0.78 | 0.53 | 1.09 | 0 |
| CLS Expansion | CLS | 1263 | 18717.7 | 156 | 0.83 | 0.71 | 0.97 | 0 |

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| CLS Expansion | Exeter | 129 | 1715.9 | 10 | 0.58 | 0.28 | 1.07 | 0 |
| CLS Expansion | Exeter V40 | 88 | 1131.2 | 3 | 0.27 | 0.05 | 0.78 | 0 |
| Contemporary | CCA SS | 78 | 853.1 | 10 | 1.17 | 0.56 | 2.16 | 0 |
| Contemporary | Contemporary | 71 | 979.9 | 12 | 1.22 | 0.63 | 2.14 | 0 |
| Contemporary | Exeter | 1625 | 20342.5 | 208 | 1.02 | 0.89 | 1.17 | 0 |
| Contemporary | Exeter V40 | 6678 | 62306.4 | 297 | 0.48 | 0.42 | 0.53 | 10 |
| Contemporary | MS 30 | 128 | 1342.0 | 12 | 0.89 | 0.46 | 1.56 | 0 |
| Continuum TM | Accolade II | 344 | 671.1 | 11 | 1.64 | 0.82 | 2.93 | 108 |
| Continuum TM | Avenir Muller uncemented | 182 | 1609.7 | 15 | 0.93 | 0.52 | 1.54 | 0 |
| Continuum TM | CLS | 1060 | 6261.0 | 32 | 0.51 | 0.35 | 0.72 | 70 |
| Continuum TM | Corail | 337 | 2309.6 | 12 | 0.52 | 0.27 | 0.91 | 1 |
| Continuum TM | CPT | 1866 | 10918.9 | 73 | 0.67 | 0.52 | 0.84 | 75 |
| Continuum TM | Echo Bi-Metric | 190 | 731.8 | 6 | 0.82 | 0.30 | 1.78 | 13 |
| Continuum TM | Exeter V40 | 3155 | 20067.7 | 128 | 0.64 | 0.53 | 0.76 | 118 |
| Continuum TM | Lateral straight stem | 78 | 705.0 | 4 | 0.57 | 0.12 | 1.35 | 0 |
| Continuum TM | M/L Taper | 1047 | 8042.9 | 44 | 0.55 | 0.40 | 0.73 | 0 |
| Continuum TM | MS 30 | 506 | 3210.7 | 10 | 0.31 | 0.14 | 0.55 | 29 |
| Continuum TM | Synergy Porous | 55 | 340.5 | 0 | 0.00 | 0.00 | 1.08 | 0 |
| Continuum TM | Taperloc Complete | 284 | 967.5 | 6 | 0.62 | 0.20 | 1.28 | 8 |
| Continuum TM | Trabecular Metal Stem | 521 | 3925.7 | 22 | 0.56 | 0.34 | 0.83 | 18 |
| Continuum TM | TwinSys cemented | 154 | 893.0 | 4 | 0.45 | 0.12 | 1.15 | 2 |
| Continuum TM | TwinSys uncemented | 138 | 1299.8 | 5 | 0.38 | 0.12 | 0.90 | 0 |
| Continuum TM | Wagner cone stem | 67 | 352.1 | 2 | 0.57 | 0.07 | 2.05 | 6 |
| DeltaMotion Cup | Corail | 78 | 822.3 | 1 | 0.12 | 0.00 | 0.68 | 0 |
| DeltaMotion Cup | Stemsys | 541 | 4460.6 | 10 | 0.22 | 0.10 | 0.40 | 0 |
| Delta-PF Cup | ABGII | 107 | 1603.4 | 13 | 0.81 | 0.43 | 1.39 | 0 |

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Delta-PF Cup | Corail | 82 | 1159.3 | 3 | 0.26 | 0.05 | 0.76 | 0 |
| Delta-PF Cup | Friendly | 178 | 2291.6 | 6 | 0.26 | 0.10 | 0.57 | 3 |
| Delta-PF Cup | Furlong Evolution Collared Ste | 66 | 41.8 | 0 | 0.00 | 0.00 | 8.83 | 52 |
| Delta-PF Cup | H-Max M | 71 | 724.9 | 10 | 1.38 | 0.66 | 2.54 | 0 |
| Delta-PF Cup | H-Max S | 315 | 1534.1 | 11 | 0.72 | 0.36 | 1.28 | 36 |
| Delta-PF Cup | Stemsys | 626 | 3145.4 | 12 | 0.38 | 0.20 | 0.67 | 20 |
| Delta-PF Cup | Stemsys cemented | 91 | 443.4 | 0 | 0.00 | 0.00 | 0.83 | 0 |
| Delta-PF Cup | Synergy Porous | 118 | 1172.0 | 3 | 0.26 | 0.05 | 0.75 | 0 |
| Delta-PF Cup | TwinSys uncemented | 391 | 4411.8 | 5 | 0.11 | 0.03 | 0.25 | 0 |
| Delta-TT Cup | Accolade II | 91 | 389.9 | 2 | 0.51 | 0.06 | 1.85 | 18 |
| Delta-TT Cup | CPT | 143 | 598.8 | 3 | 0.50 | 0.10 | 1.46 | 15 |
| Delta-TT Cup | Exeter V40 | 356 | 1812.7 | 9 | 0.50 | 0.23 | 0.94 | 35 |
| Delta-TT Cup | Friendly | 69 | 622.9 | 6 | 0.96 | 0.35 | 2.10 | 1 |
| Delta-TT Cup | H-Max C | 137 | 482.2 | 7 | 1.45 | 0.58 | 2.99 | 13 |
| Delta-TT Cup | H-Max M | 86 | 934.4 | 5 | 0.54 | 0.17 | 1.25 | 0 |
| Delta-TT Cup | H-Max S | 1036 | 6165.2 | 43 | 0.70 | 0.50 | 0.93 | 69 |
| Delta-TT Cup | M/L Taper | 64 | 533.8 | 6 | 1.12 | 0.41 | 2.45 | 0 |
| Delta-TT Cup | MasterSL | 131 | 479.6 | 8 | 1.67 | 0.72 | 3.29 | 1 |
| Delta-TT Cup | PLS | 52 | 299.8 | 1 | 0.33 | 0.01 | 1.86 | 0 |
| Delta-TT Cup | Taperloc Complete | 189 | 480.6 | 2 | 0.42 | 0.05 | 1.50 | 45 |
| Duraloc | ABG | 135 | 2411.2 | 57 | 2.36 | 1.79 | 3.06 | 0 |
| Duraloc | ABGII | 139 | 2223.7 | 55 | 2.47 | 1.84 | 3.19 | 0 |
| Duraloc | AML | 54 | 894.0 | 10 | 1.12 | 0.54 | 2.06 | 0 |
| Duraloc | AML MMA | 77 | 1264.7 | 15 | 1.19 | 0.66 | 1.96 | 0 |
| Duraloc | CLS | 714 | 10864.1 | 134 | 1.23 | 1.03 | 1.46 | 0 |
| Duraloc | Corail | 464 | 6238.3 | 62 | 0.99 | 0.76 | 1.27 | 0 |

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Duraloc | CPT | 212 | 2722.6 | 20 | 0.73 | 0.43 | 1.11 | 0 |
| Duraloc | C-Stem | 53 | 717.6 | 6 | 0.84 | 0.31 | 1.82 | 0 |
| Duraloc | Elite plus | 614 | 8157.4 | 129 | 1.58 | 1.31 | 1.87 | 0 |
| Duraloc | Exeter | 619 | 9816.2 | 138 | 1.41 | 1.18 | 1.66 | 0 |
| Duraloc | Exeter V40 | 987 | 12725.7 | 131 | 1.03 | 0.86 | 1.22 | 0 |
| Duraloc | MS 30 | 88 | 1466.2 | 13 | 0.89 | 0.47 | 1.52 | 0 |
| Duraloc | Prodigy | 129 | 1909.5 | 31 | 1.62 | 1.08 | 2.27 | 0 |
| Duraloc | Spectron | 1179 | 15645.3 | 215 | 1.37 | 1.20 | 1.57 | 0 |
| Duraloc | Summit | 101 | 1513.9 | 6 | 0.40 | 0.15 | 0.86 | 0 |
| Durom | CLS | 198 | 2408.1 | 71 | 2.95 | 2.28 | 3.70 | 0 |
| Elite Plus LPW | Elite plus | 284 | 3410.9 | 18 | 0.53 | 0.31 | 0.83 | 0 |
| Elite Plus Ogee | C-Stem | 55 | 576.4 | 2 | 0.35 | 0.04 | 1.25 | 0 |
| Elite Plus Ogee | Elite plus | 111 | 1151.7 | 6 | 0.52 | 0.19 | 1.13 | 0 |
| Exceed ABT Ringloc-X | Echo Bi-Metric | 57 | 524.9 | 1 | 0.19 | 0.00 | 1.06 | 0 |
| Exeter | Exeter | 1376 | 17045.7 | 133 | 0.78 | 0.65 | 0.92 | 0 |
| Exeter | Exeter V40 | 1636 | 17732.8 | 102 | 0.58 | 0.47 | 0.70 | 0 |
| Exeter X3 | Exeter V40 | 3161 | 16443.5 | 72 | 0.44 | 0.34 | 0.55 | 162 |
| Expansys shell | CBC | 183 | 2204.3 | 31 | 1.41 | 0.96 | 2.00 | 0 |
| Fitek | CLS | 66 | 1388.3 | 13 | 0.94 | 0.50 | 1.60 | 0 |
| Fitmore | Accolade II | 136 | 375.1 | 3 | 0.80 | 0.16 | 2.34 | 26 |
| Fitmore | Avenir Muller uncemented | 70 | 451.7 | 2 | 0.44 | 0.05 | 1.60 | 0 |
| Fitmore | CBC | 59 | 807.0 | 5 | 0.62 | 0.20 | 1.45 | 0 |
| Fitmore | CLS | 2447 | 31465.8 | 153 | 0.49 | 0.41 | 0.57 | 33 |
| Fitmore | Corail | 365 | 2125.5 | 19 | 0.89 | 0.52 | 1.37 | 13 |
| Fitmore | CPT | 195 | 1637.6 | 14 | 0.85 | 0.44 | 1.40 | 0 |
| Fitmore | Exeter V40 | 1205 | 8753.9 | 13 | 0.15 | 0.08 | 0.25 | 41 |

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Fitmore | MS 30 | 2842 | 22118.4 | 64 | 0.29 | 0.22 | 0.37 | 130 |
| Fitmore | Spectron | 78 | 1062.4 | 5 | 0.47 | 0.13 | 1.03 | 0 |
| Fitmore | Wagner cone stem | 79 | 1069.8 | 5 | 0.47 | 0.13 | 1.02 | 1 |
| Fixa Ti Por | Stemsys | 962 | 5964.4 | 30 | 0.50 | 0.34 | 0.72 | 29 |
| Furlong | Furlong | 66 | 979.2 | 7 | 0.71 | 0.29 | 1.47 | 0 |
| G7 acetabular | Corail | 102 | 423.4 | 1 | 0.24 | 0.01 | 1.32 | 1 |
| G7 acetabular | CPT | 118 | 432.1 | 9 | 2.08 | 0.88 | 3.80 | 1 |
| G7 acetabular | Echo Bi-Metric | 1000 | 3670.1 | 21 | 0.57 | 0.35 | 0.87 | 12 |
| G7 acetabular | Exeter V40 | 370 | 1249.9 | 7 | 0.56 | 0.23 | 1.15 | 3 |
| G7 acetabular | MS 30 | 179 | 365.5 | 6 | 1.64 | 0.60 | 3.57 | 15 |
| G7 acetabular | Taperloc Complete | 523 | 1966.2 | 14 | 0.71 | 0.39 | 1.19 | 16 |
| G7 acetabular shell | Echo Bi-Metric | 344 | 284.2 | 8 | 2.82 | 1.10 | 5.31 | 194 |
| G7 acetabular shell | Exeter V40 | 194 | 164.3 | 3 | 1.83 | 0.38 | 5.34 | 96 |
| G7 acetabular shell | MS 30 | 214 | 159.0 | 0 | 0.00 | 0.00 | 2.32 | 140 |
| G7 acetabular shell | Taperloc Complete | 191 | 156.2 | 4 | 2.56 | 0.70 | 6.56 | 109 |
| M2A | Mallory-Head | 105 | 1531.3 | 18 | 1.18 | 0.70 | 1.86 | 0 |
| Mallory-Head | Spectron | 152 | 2127.4 | 9 | 0.42 | 0.19 | 0.80 | 0 |
| Marathon cemented | C-Stem | 94 | 602.6 | 1 | 0.17 | 0.00 | 0.92 | 0 |
| Marathon cemented | C-Stem AMT | 369 | 2619.8 | 18 | 0.69 | 0.41 | 1.09 | 1 |
| Maxera Cup | Stemsys | 117 | 198.8 | 0 | 0.00 | 0.00 | 1.86 | 31 |
| Monoblock Acetabular Cup | CLS | 80 | 1090.4 | 7 | 0.64 | 0.26 | 1.32 | 0 |
| Monoblock Acetabular Cup | Corail | 95 | 1244.1 | 9 | 0.72 | 0.33 | 1.37 | 0 |
| Monoblock Acetabular Cup | CPT | 84 | 1156.2 | 8 | 0.69 | 0.27 | 1.31 | 0 |
| Monoblock Acetabular Cup | Exeter V40 | 123 | 1897.3 | 6 | 0.32 | 0.12 | 0.69 | 0 |
| Monoblock Acetabular Cup | Trabecular Metal Stem | 74 | 1092.5 | 3 | 0.27 | 0.04 | 0.73 | 0 |
| Morscher | CLS | 1701 | 28211.3 | 137 | 0.49 | 0.41 | 0.57 | 0 |

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Morscher | Exeter | 579 | 9800.2 | 48 | 0.49 | 0.36 | 0.64 | 0 |
| Morscher | Exeter V40 | 630 | 8734.9 | 42 | 0.48 | 0.35 | 0.65 | 0 |
| Morscher | MS 30 | 804 | 11455.6 | 72 | 0.63 | 0.49 | 0.79 | 0 |
| Morscher | Spectron | 211 | 3132.5 | 35 | 1.12 | 0.78 | 1.55 | 0 |
| Muller PE cup | Accolade | 114 | 1370.5 | 11 | 0.80 | 0.40 | 1.44 | 0 |
| Muller PE cup | Exeter | 132 | 1776.8 | 11 | 0.62 | 0.31 | 1.11 | 0 |
| Muller PE cup | Exeter V40 | 94 | 1023.8 | 3 | 0.29 | 0.06 | 0.86 | 0 |
| Muller PE cup | Lateral straight stem | 770 | 7968.6 | 44 | 0.55 | 0.40 | 0.74 | 0 |
| Muller PE cup | MS 30 | 504 | 5221.0 | 19 | 0.36 | 0.21 | 0.56 | 1 |
| Muller PE cup | SL modular stem | 110 | 1541.0 | 3 | 0.19 | 0.04 | 0.57 | 0 |
| Muller PE cup | SL monoblock | 560 | 6861.1 | 32 | 0.47 | 0.31 | 0.65 | 0 |
| Muller PE cup | Spectron | 67 | 701.0 | 8 | 1.14 | 0.49 | 2.25 | 0 |
| Muller PE cup | Standard straight stem | 640 | 6446.9 | 23 | 0.36 | 0.22 | 0.53 | 2 |
| Osteolock | Exeter | 836 | 12344.1 | 85 | 0.69 | 0.55 | 0.85 | 0 |
| Osteolock | Exeter V40 | 270 | 3655.1 | 16 | 0.44 | 0.24 | 0.71 | 0 |
| Pinnacle | ABGII | 67 | 875.7 | 6 | 0.69 | 0.25 | 1.49 | 0 |
| Pinnacle | Accolade | 180 | 2144.4 | 4 | 0.19 | 0.05 | 0.48 | 0 |
| Pinnacle | Actis Duofix | 105 | 109.4 | 3 | 2.74 | 0.57 | 8.01 | 48 |
| Pinnacle | Avenir Muller uncemented | 99 | 1158.6 | 3 | 0.26 | 0.04 | 0.69 | 0 |
| Pinnacle | CLS | 130 | 991.9 | 4 | 0.40 | 0.11 | 1.03 | 6 |
| Pinnacle | Corail | 16671 | 96973.5 | 559 | 0.58 | 0.53 | 0.63 | 1593 |
| Pinnacle | CPT | 66 | 663.4 | 2 | 0.30 | 0.04 | 1.09 | 0 |
| Pinnacle | C-Stem | 85 | 540.3 | 4 | 0.74 | 0.20 | 1.90 | 0 |
| Pinnacle | C-Stem AMT | 3550 | 17903.2 | 125 | 0.70 | 0.58 | 0.83 | 244 |
| Pinnacle | Exeter V40 | 3694 | 22032.5 | 92 | 0.42 | 0.33 | 0.51 | 276 |
| Pinnacle | MS 30 | 228 | 546.0 | 1 | 0.18 | 0.00 | 1.02 | 63 |

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Pinnacle | S-Rom | 403 | 4951.5 | 41 | 0.83 | 0.59 | 1.12 | 5 |
| Pinnacle | Summit | 2947 | 22702.7 | 139 | 0.61 | 0.51 | 0.72 | 202 |
| Pinnacle | Tri-Lock BPS | 160 | 783.4 | 4 | 0.51 | 0.14 | 1.31 | 31 |
| Pinnacle | TwinSys cemented | 160 | 687.5 | 10 | 1.45 | 0.65 | 2.58 | 20 |
| PolarCup cemented | Exeter V40 | 94 | 258.6 | 1 | 0.39 | 0.01 | 2.15 | 24 |
| Polymax | Exeter V40 | 85 | 379.0 | 1 | 0.26 | 0.01 | 1.47 | 0 |
| Polymax | Stemsys | 192 | 862.6 | 4 | 0.46 | 0.13 | 1.19 | 10 |
| R3 porous | Anthology Porous | 68 | 605.0 | 35 | 5.79 | 3.96 | 7.95 | 0 |
| R3 porous | CPCS | 381 | 2005.2 | 9 | 0.45 | 0.21 | 0.85 | 13 |
| R3 porous | Exeter V40 | 898 | 4680.1 | 25 | 0.53 | 0.35 | 0.79 | 78 |
| R3 porous | Polarstem uncemented | 2391 | 11999.0 | 60 | 0.50 | 0.38 | 0.64 | 169 |
| R3 porous | Spectron | 456 | 3753.9 | 14 | 0.37 | 0.19 | 0.61 | 5 |
| R3 porous | Synergy Porous | 1855 | 14439.4 | 68 | 0.47 | 0.37 | 0.60 | 2 |
| Reflection cemented | Exeter V40 | 1017 | 7983.6 | 31 | 0.39 | 0.26 | 0.55 | 12 |
| Reflection cemented | Spectron | 2984 | 32252.5 | 395 | 1.22 | 1.11 | 1.35 | 0 |
| Reflection porous | Basis | 108 | 1097.8 | 2 | 0.18 | 0.02 | 0.66 | 0 |
| Reflection porous | CLS | 403 | 4269.6 | 23 | 0.54 | 0.34 | 0.81 | 0 |
| Reflection porous | Corail | 140 | 1761.6 | 6 | 0.34 | 0.12 | 0.74 | 0 |
| Reflection porous | Exeter V40 | 476 | 5294.4 | 15 | 0.28 | 0.15 | 0.46 | 0 |
| Reflection porous | Polarstem uncemented | 335 | 3097.4 | 17 | 0.55 | 0.32 | 0.88 | 0 |
| Reflection porous | Spectron | 2755 | 32783.4 | 291 | 0.89 | 0.79 | 1.00 | 0 |
| Reflection porous | Synergy Porous | 1271 | 16107.1 | 59 | 0.37 | 0.28 | 0.47 | 0 |
| Reflection porous | TwinSys cemented | 73 | 445.9 | 0 | 0.00 | 0.00 | 0.83 | 0 |
| RM cup | Avenir Muller uncemented | 105 | 1127.6 | 5 | 0.44 | 0.12 | 0.97 | 0 |
| RM cup | CLS | 114 | 1472.0 | 20 | 1.36 | 0.83 | 2.10 | 0 |
| RM cup | Lateral straight stem | 534 | 6329.7 | 51 | 0.81 | 0.60 | 1.06 | 0 |

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| RM cup | SL modular stem | 322 | 5142.0 | 44 | 0.86 | 0.61 | 1.14 | 0 |
| RM cup | Standard straight stem | 138 | 1799.5 | 14 | 0.78 | 0.43 | 1.31 | 0 |
| RM cup | TwinSys cemented | 148 | 1837.5 | 8 | 0.44 | 0.19 | 0.86 | 0 |
| RM cup | TwinSys uncemented | 122 | 1400.1 | 13 | 0.93 | 0.49 | 1.59 | 0 |
| RM Pressfit cup | ABGII | 91 | 541.1 | 9 | 1.66 | 0.76 | 3.16 | 0 |
| RM Pressfit cup | Accolade II | 298 | 742.8 | 11 | 1.48 | 0.74 | 2.65 | 62 |
| RM Pressfit cup | Avenir Muller uncemented | 53 | 343.3 | 1 | 0.29 | 0.01 | 1.62 | 0 |
| RM Pressfit cup | CBC | 445 | 4124.2 | 27 | 0.65 | 0.43 | 0.95 | 0 |
| RM Pressfit cup | CCA SS | 135 | 1458.3 | 8 | 0.55 | 0.24 | 1.08 | 0 |
| RM Pressfit cup | CLS | 667 | 5940.5 | 38 | 0.64 | 0.45 | 0.87 | 18 |
| RM Pressfit cup | Corail | 176 | 1086.4 | 9 | 0.83 | 0.35 | 1.51 | 9 |
| RM Pressfit cup | C-Stem AMT | 137 | 882.0 | 7 | 0.79 | 0.32 | 1.64 | 5 |
| RM Pressfit cup | Exeter V40 | 3269 | 20571.4 | 75 | 0.36 | 0.29 | 0.46 | 118 |
| RM Pressfit cup | Lateral straight stem | 173 | 1656.7 | 4 | 0.24 | 0.07 | 0.62 | 0 |
| RM Pressfit cup | MS 30 | 90 | 936.4 | 5 | 0.53 | 0.14 | 1.17 | 0 |
| RM Pressfit cup | Optimys | 642 | 1371.5 | 10 | 0.73 | 0.32 | 1.29 | 219 |
| RM Pressfit cup | Polarstem uncemented | 197 | 471.3 | 4 | 0.85 | 0.23 | 2.17 | 22 |
| RM Pressfit cup | Standard straight stem | 137 | 1347.4 | 1 | 0.07 | 0.00 | 0.41 | 0 |
| RM Pressfit cup | Stemsys | 404 | 2425.8 | 8 | 0.33 | 0.13 | 0.62 | 14 |
| RM Pressfit cup | Stemsys cemented | 82 | 399.6 | 0 | 0.00 | 0.00 | 0.92 | 0 |
| RM Pressfit cup | Taperloc Complete | 459 | 1480.6 | 11 | 0.74 | 0.35 | 1.29 | 81 |
| RM Pressfit cup | TwinSys cemented | 2504 | 15428.6 | 62 | 0.40 | 0.31 | 0.52 | 161 |
| RM Pressfit cup | TwinSys stem cemented | 66 | 46.9 | 0 | 0.00 | 0.00 | 7.86 | 49 |
| RM Pressfit cup | TwinSys uncemented | 5372 | 44554.4 | 286 | 0.64 | 0.57 | 0.72 | 70 |
| Selexys TPS | TwinSys cemented | 65 | 634.2 | 6 | 0.95 | 0.35 | 2.06 | 0 |
| Selexys TPS | TwinSys uncemented | 1231 | 14320.1 | 162 | 1.13 | 0.96 | 1.32 | 0 |

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Trabecular Metal Shell | CLS | 59 | 588.1 | 3 | 0.51 | 0.11 | 1.49 | 0 |
| Trabecular Metal Shell | Exeter V40 | 272 | 1678.3 | 19 | 1.13 | 0.68 | 1.77 | 15 |
| Trident | ABGII | 342 | 5042.0 | 46 | 0.91 | 0.67 | 1.22 | 0 |
| Trident | Accolade | 1867 | 26227.7 | 105 | 0.40 | 0.33 | 0.48 | 0 |
| Trident | Accolade II | 1701 | 7145.9 | 45 | 0.63 | 0.46 | 0.84 | 125 |
| Trident | CLS | 165 | 2274.9 | 14 | 0.62 | 0.32 | 1.00 | 0 |
| Trident | Corail | 120 | 881.2 | 7 | 0.79 | 0.32 | 1.64 | 7 |
| Trident | CPT | 145 | 2052.0 | 13 | 0.63 | 0.34 | 1.08 | 0 |
| Trident | Exeter | 84 | 1478.7 | 2 | 0.14 | 0.02 | 0.49 | 0 |
| Trident | Exeter V40 | 14536 | 104991.1 | 431 | 0.41 | 0.37 | 0.45 | 814 |
| Trident | H-Max S | 67 | 292.2 | 1 | 0.34 | 0.01 | 1.91 | 0 |
| Trident | M/L Taper | 333 | 1967.3 | 7 | 0.36 | 0.14 | 0.73 | 0 |
| Trident | Omnifit | 149 | 2213.2 | 14 | 0.63 | 0.33 | 1.03 | 0 |
| Trident | Spectron | 78 | 1042.1 | 6 | 0.58 | 0.18 | 1.19 | 0 |
| Trident | Taperloc Complete | 153 | 246.2 | 1 | 0.41 | 0.01 | 2.26 | 35 |
| Trident II Clusterhole HA | Accolade II | 81 | 22.0 | 0 | 0.00 | 0.00 | 16.74 | 81 |
| Trident II Clusterhole HA | Exeter V40 | 105 | 24.0 | 3 | 12.47 | 2.57 | 36.46 | 105 |
| Trident II Tritanium | Accolade II | 446 | 424.1 | 9 | 2.12 | 0.97 | 4.03 | 314 |
| Trident II Tritanium | Corail | 51 | 93.7 | 1 | 1.07 | 0.00 | 4.99 | 6 |
| Trident II Tritanium | Exeter V40 | 1933 | 2566.9 | 14 | 0.55 | 0.30 | 0.92 | 915 |
| Trident PSL HA Cluster | Exeter V40 | 74 | 30.6 | 0 | 0.00 | 0.00 | 12.06 | 70 |
| Trilogy | CLS | 766 | 6569.7 | 36 | 0.55 | 0.38 | 0.76 | 30 |
| Trilogy | Corail | 251 | 1719.1 | 6 | 0.35 | 0.13 | 0.76 | 16 |
| Trilogy | CPT | 850 | 8392.8 | 67 | 0.80 | 0.62 | 1.01 | 0 |
| Trilogy | Exeter | 213 | 3351.9 | 14 | 0.42 | 0.23 | 0.70 | 0 |
| Trilogy | Exeter V40 | 3394 | 28885.6 | 104 | 0.36 | 0.29 | 0.44 | 152 |

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Trilogy | Lateral straight stem | 69 | 689.7 | 13 | 1.88 | 1.00 | 3.22 | 0 |
| Trilogy | M/L Taper | 215 | 2573.6 | 14 | 0.54 | 0.30 | 0.91 | 0 |
| Trilogy | MS 30 | 422 | 3127.9 | 6 | 0.19 | 0.06 | 0.40 | 17 |
| Trilogy | Summit | 202 | 1912.6 | 8 | 0.42 | 0.16 | 0.82 | 8 |
| Trilogy | TwinSys uncemented | 209 | 2475.7 | 13 | 0.53 | 0.28 | 0.90 | 0 |
| Trilogy | Versys | 272 | 4605.9 | 20 | 0.43 | 0.27 | 0.67 | 0 |
| Trilogy | Versys cemented | 238 | 2968.1 | 8 | 0.27 | 0.12 | 0.53 | 0 |
| Trinity | Metafix | 143 | 308.2 | 5 | 1.62 | 0.53 | 3.79 | 32 |
| Tritanium | Accolade | 152 | 1593.0 | 3 | 0.19 | 0.04 | 0.55 | 0 |
| Tritanium | Accolade II | 1579 | 7272.9 | 51 | 0.70 | 0.52 | 0.92 | 43 |
| Tritanium | Avenir Muller uncemented | 91 | 931.2 | 3 | 0.32 | 0.07 | 0.94 | 0 |
| Tritanium | CLS | 89 | 682.3 | 4 | 0.59 | 0.16 | 1.50 | 0 |
| Tritanium | Corail | 175 | 1457.3 | 4 | 0.27 | 0.07 | 0.70 | 0 |
| Tritanium | CPT | 85 | 899.9 | 8 | 0.89 | 0.38 | 1.75 | 0 |
| Tritanium | Exeter V40 | 3933 | 23911.9 | 116 | 0.49 | 0.40 | 0.58 | 38 |
| Ultima | Corail | 135 | 1310.3 | 4 | 0.31 | 0.08 | 0.78 | 0 |
| Ultima | S-Rom | 78 | 1492.8 | 15 | 1.00 | 0.56 | 1.66 | 0 |
| Weber | Exeter V40 | 53 | 641.1 | 1 | 0.16 | 0.00 | 0.87 | 0 |
| Weber | Lateral straight stem | 287 | 3168.2 | 11 | 0.35 | 0.17 | 0.62 | 0 |
| Weber | Standard straight stem | 134 | 1417.2 | 4 | 0.28 | 0.08 | 0.72 | 0 |
| Weill ring | CLS | 118 | 2150.7 | 17 | 0.79 | 0.44 | 1.24 | 0 |
| ZCA | CPT | 563 | 6279.6 | 42 | 0.67 | 0.48 | 0.90 | 0 |
| ZCA | Exeter V40 | 103 | 758.0 | 1 | 0.13 | 0.00 | 0.74 | 0 |
| ZCA | Lateral straight stem | 98 | 934.1 | 1 | 0.11 | 0.00 | 0.60 | 0 |
| ZCA | Versys cemented | 391 | 4652.2 | 34 | 0.73 | 0.50 | 1.01 | 0 |
| ZCA all-poly cup | CPT | 99 | 712.0 | 1 | 0.14 | 0.00 | 0.78 | 0 |

| Acetabular Prosthesis | Femur Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| ZCA all-poly cup | Exeter V40 | 110 | 643.4 | 0 | 0.00 | 0.00 | 0.57 | 0 |
| ZCA all-poly cup | Lateral straight stem | 70 | 617.3 | 0 | 0.00 | 0.00 | 0.60 | 0 |
| ZCA all-poly cup | MS 30 | 96 | 759.8 | 1 | 0.13 | 0.00 | 0.73 | 0 |
| Zimmer Maxera Cup | Stemsys | 58 | 92.6 | 0 | 0.00 | 0.00 | 3.98 | 11 |

TABLE 1.59

### All Matches > 50 procedures sorted by Revision Rate

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Exeter V40 | Trident II Clusterhole HA | 105 | 24.0 | 3 | 12.47 | 2.57 | 36.46 | 105 |
| S-Rom | ASR | 130 | 927.3 | 97 | 10.46 | 8.48 | 12.76 | 0 |
| Anthology Porous | BHR Acetabular Cup | 93 | 876.8 | 57 | 6.50 | 4.87 | 8.36 | 0 |
| Corail | ASR | 156 | 1435.8 | 87 | 6.06 | 4.85 | 7.47 | 0 |
| Anthology Porous | R3 porous | 68 | 605.0 | 35 | 5.79 | 3.96 | 7.95 | 0 |
| Summit | ASR | 88 | 912.5 | 40 | 4.38 | 3.09 | 5.91 | 0 |
| CLS | Artek | 59 | 807.2 | 28 | 3.47 | 2.31 | 5.01 | 0 |
| Synergy Porous | BHR Acetabular Cup | 114 | 1282.0 | 44 | 3.43 | 2.46 | 4.56 | 0 |
| CLS | Durom | 198 | 2408.1 | 71 | 2.95 | 2.28 | 3.70 | 0 |
| Echo Bi-Metric | G7 acetabular shell | 344 | 284.2 | 8 | 2.82 | 1.10 | 5.31 | 194 |
| Actis Duofix | Pinnacle | 105 | 109.4 | 3 | 2.74 | 0.57 | 8.01 | 48 |
| Taperloc Complete | G7 acetabular shell | 191 | 156.2 | 4 | 2.56 | 0.70 | 6.56 | 109 |
| ABGII | Duraloc | 139 | 2223.7 | 55 | 2.47 | 1.84 | 3.19 | 0 |
| ABG | Duraloc | 135 | 2411.2 | 57 | 2.36 | 1.79 | 3.06 | 0 |
| Accolade II | Trident II Tritanium | 446 | 424.1 | 9 | 2.12 | 0.97 | 4.03 | 314 |
| CPT | G7 acetabular | 118 | 432.1 | 9 | 2.08 | 0.88 | 3.80 | 1 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Lateral straight stem | Trilogy | 69 | 689.7 | 13 | 1.88 | 1.00 | 3.22 | 0 |
| Exeter V40 | G7 acetabular shell | 194 | 164.3 | 3 | 1.83 | 0.38 | 5.34 | 96 |
| MasterSL | Delta-TT Cup | 131 | 479.6 | 8 | 1.67 | 0.72 | 3.29 | 1 |
| ABGII | RM Pressfit cup | 91 | 541.1 | 9 | 1.66 | 0.76 | 3.16 | 0 |
| MS 30 | G7 acetabular | 179 | 365.5 | 6 | 1.64 | 0.60 | 3.57 | 15 |
| Accolade II | Continuum TM | 344 | 671.1 | 11 | 1.64 | 0.82 | 2.93 | 108 |
| Prodigy | Duraloc | 129 | 1909.5 | 31 | 1.62 | 1.08 | 2.27 | 0 |
| Metafix | Trinity | 143 | 308.2 | 5 | 1.62 | 0.53 | 3.79 | 32 |
| ABG | ABGII | 79 | 1356.6 | 22 | 1.62 | 0.99 | 2.41 | 0 |
| Elite plus | Duraloc | 614 | 8157.4 | 129 | 1.58 | 1.31 | 1.87 | 0 |
| Quadra-H | Acetabular Shell | 410 | 807.8 | 12 | 1.49 | 0.77 | 2.59 | 65 |
| Accolade II | RM Pressfit cup | 298 | 742.8 | 11 | 1.48 | 0.74 | 2.65 | 62 |
| TwinSys cemented | Pinnacle | 160 | 687.5 | 10 | 1.45 | 0.65 | 2.58 | 20 |
| H-Max C | Delta-TT Cup | 137 | 482.2 | 7 | 1.45 | 0.58 | 2.99 | 13 |
| CBC | Expansys shell | 183 | 2204.3 | 31 | 1.41 | 0.96 | 2.00 | 0 |
| Exeter | Duraloc | 619 | 9816.2 | 138 | 1.41 | 1.18 | 1.66 | 0 |
| H-Max M | Delta-PF Cup | 71 | 724.9 | 10 | 1.38 | 0.66 | 2.54 | 0 |
| Spectron | Duraloc | 1179 | 15645.3 | 215 | 1.37 | 1.20 | 1.57 | 0 |
| CLS | RM cup | 114 | 1472.0 | 20 | 1.36 | 0.83 | 2.10 | 0 |
| CLS | Duraloc | 714 | 10864.1 | 134 | 1.23 | 1.03 | 1.46 | 0 |
| Spectron | Reflection cemented | 2984 | 32252.5 | 395 | 1.22 | 1.11 | 1.35 | 0 |
| Contemporary | Contemporary | 71 | 979.9 | 12 | 1.22 | 0.63 | 2.14 | 0 |
| AML MMA | Duraloc | 77 | 1264.7 | 15 | 1.19 | 0.66 | 1.96 | 0 |
| Mallory-Head | M2A | 105 | 1531.3 | 18 | 1.18 | 0.70 | 1.86 | 0 |
| CCA SS | Contemporary | 78 | 853.1 | 10 | 1.17 | 0.56 | 2.16 | 0 |
| Spectron | Muller PE cup | 67 | 701.0 | 8 | 1.14 | 0.49 | 2.25 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Quadra-P | Acetabular Shell | 65 | 88.0 | 1 | 1.14 | 0.03 | 6.33 | 24 |
| Exeter V40 | Trabecular Metal Shell | 272 | 1678.3 | 19 | 1.13 | 0.68 | 1.77 | 15 |
| TwinSys uncemented | Selexys TPS | 1231 | 14320.1 | 162 | 1.13 | 0.96 | 1.32 | 0 |
| M/L Taper | Delta-TT Cup | 64 | 533.8 | 6 | 1.12 | 0.41 | 2.45 | 0 |
| AML | Duraloc | 54 | 894.0 | 10 | 1.12 | 0.54 | 2.06 | 0 |
| Spectron | Morscher | 211 | 3132.5 | 35 | 1.12 | 0.78 | 1.55 | 0 |
| Corail | Trident II Tritanium | 51 | 93.7 | 1 | 1.07 | 0.00 | 4.99 | 6 |
| Exeter V40 | Duraloc | 987 | 12725.7 | 131 | 1.03 | 0.86 | 1.22 | 0 |
| Exeter | Contemporary | 1625 | 20342.5 | 208 | 1.02 | 0.89 | 1.17 | 0 |
| CLS | Allofit | 192 | 2462.5 | 25 | 1.02 | 0.66 | 1.50 | 0 |
| S-Rom | Ultima | 78 | 1492.8 | 15 | 1.00 | 0.56 | 1.66 | 0 |
| Corail | Duraloc | 464 | 6238.3 | 62 | 0.99 | 0.76 | 1.27 | 0 |
| Friendly | Delta-TT Cup | 69 | 622.9 | 6 | 0.96 | 0.35 | 2.10 | 1 |
| TwinSys cemented | Selexys TPS | 65 | 634.2 | 6 | 0.95 | 0.35 | 2.06 | 0 |
| CLS | Fitek | 66 | 1388.3 | 13 | 0.94 | 0.50 | 1.60 | 0 |
| Avenir Muller uncemented | Continuum TM | 182 | 1609.7 | 15 | 0.93 | 0.52 | 1.54 | 0 |
| TwinSys uncemented | RM cup | 122 | 1400.1 | 13 | 0.93 | 0.49 | 1.59 | 0 |
| ABGII | Trident | 342 | 5042.0 | 46 | 0.91 | 0.67 | 1.22 | 0 |
| MS 30 | Contemporary | 128 | 1342.0 | 12 | 0.89 | 0.46 | 1.56 | 0 |
| Corail | Fitmore | 365 | 2125.5 | 19 | 0.89 | 0.52 | 1.37 | 13 |
| CPT | Tritanium | 85 | 899.9 | 8 | 0.89 | 0.38 | 1.75 | 0 |
| Spectron | Reflection porous | 2755 | 32783.4 | 291 | 0.89 | 0.79 | 1.00 | 0 |
| MS 30 | Duraloc | 88 | 1466.2 | 13 | 0.89 | 0.47 | 1.52 | 0 |
| SL modular stem | RM cup | 322 | 5142.0 | 44 | 0.86 | 0.61 | 1.14 | 0 |
| CPT | Fitmore | 195 | 1637.6 | 14 | 0.85 | 0.44 | 1.40 | 0 |
| Polarstem uncemented | RM Pressfit cup | 197 | 471.3 | 4 | 0.85 | 0.23 | 2.17 | 22 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| C-Stem | Duraloc | 53 | 717.6 | 6 | 0.84 | 0.31 | 1.82 | 0 |
| CLS | CLS Expansion | 1263 | 18717.7 | 156 | 0.83 | 0.71 | 0.97 | 0 |
| Corail | RM Pressfit cup | 176 | 1086.4 | 9 | 0.83 | 0.35 | 1.51 | 9 |
| S-Rom | Pinnacle | 403 | 4951.5 | 41 | 0.83 | 0.59 | 1.12 | 5 |
| Quadra-C | Acetabular Shell | 311 | 604.6 | 5 | 0.83 | 0.27 | 1.93 | 70 |
| Echo Bi-Metric | Continuum TM | 190 | 731.8 | 6 | 0.82 | 0.30 | 1.78 | 13 |
| TwinSys cemented | CCB | 466 | 3175.3 | 26 | 0.82 | 0.52 | 1.18 | 6 |
| ABGII | Delta-PF Cup | 107 | 1603.4 | 13 | 0.81 | 0.43 | 1.39 | 0 |
| Lateral straight stem | RM cup | 534 | 6329.7 | 51 | 0.81 | 0.60 | 1.06 | 0 |
| Accolade | Muller PE cup | 114 | 1370.5 | 11 | 0.80 | 0.40 | 1.44 | 0 |
| Accolade II | Fitmore | 136 | 375.1 | 3 | 0.80 | 0.16 | 2.34 | 26 |
| CPT | Trilogy | 850 | 8392.8 | 67 | 0.80 | 0.62 | 1.01 | 0 |
| Corail | Trident | 120 | 881.2 | 7 | 0.79 | 0.32 | 1.64 | 7 |
| C-Stem AMT | RM Pressfit cup | 137 | 882.0 | 7 | 0.79 | 0.32 | 1.64 | 5 |
| CLS | Weill ring | 118 | 2150.7 | 17 | 0.79 | 0.44 | 1.24 | 0 |
| Exeter | Exeter | 1376 | 17045.7 | 133 | 0.78 | 0.65 | 0.92 | 0 |
| Standard straight stem | RM cup | 138 | 1799.5 | 14 | 0.78 | 0.43 | 1.31 | 0 |
| Charnley | Charnley Cup Ogee | 303 | 4250.2 | 33 | 0.78 | 0.53 | 1.09 | 0 |
| Taperloc Complete | RM Pressfit cup | 459 | 1480.6 | 11 | 0.74 | 0.35 | 1.29 | 81 |
| C-Stem | Pinnacle | 85 | 540.3 | 4 | 0.74 | 0.20 | 1.90 | 0 |
| CPT | Duraloc | 212 | 2722.6 | 20 | 0.73 | 0.43 | 1.11 | 0 |
| Versys cemented | ZCA | 391 | 4652.2 | 34 | 0.73 | 0.50 | 1.01 | 0 |
| Optimys | RM Pressfit cup | 642 | 1371.5 | 10 | 0.73 | 0.32 | 1.29 | 219 |
| Corail | Monoblock Acetabular Cup | 95 | 1244.1 | 9 | 0.72 | 0.33 | 1.37 | 0 |
| H-Max S | Delta-PF Cup | 315 | 1534.1 | 11 | 0.72 | 0.36 | 1.28 | 36 |
| Furlong | Furlong | 66 | 979.2 | 7 | 0.71 | 0.29 | 1.47 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Taperloc Complete | G7 acetabular | 523 | 1966.2 | 14 | 0.71 | 0.39 | 1.19 | 16 |
| Accolade II | Tritanium | 1579 | 7272.9 | 51 | 0.70 | 0.52 | 0.92 | 43 |
| C-Stem AMT | Pinnacle | 3550 | 17903.2 | 125 | 0.70 | 0.58 | 0.83 | 244 |
| H-Max S | Delta-TT Cup | 1036 | 6165.2 | 43 | 0.70 | 0.50 | 0.93 | 69 |
| CPT | Monoblock Acetabular Cup | 84 | 1156.2 | 8 | 0.69 | 0.27 | 1.31 | 0 |
| Exeter | Osteolock | 836 | 12344.1 | 85 | 0.69 | 0.55 | 0.85 | 0 |
| C-Stem AMT | Marathon cemented | 369 | 2619.8 | 18 | 0.69 | 0.41 | 1.09 | 1 |
| ABGII | Pinnacle | 67 | 875.7 | 6 | 0.69 | 0.25 | 1.49 | 0 |
| CPT | ZCA | 563 | 6279.6 | 42 | 0.67 | 0.48 | 0.90 | 0 |
| CPT | Continuum TM | 1866 | 10918.9 | 73 | 0.67 | 0.52 | 0.84 | 75 |
| Stemsys | Agilis Ti-por | 545 | 3485.3 | 23 | 0.66 | 0.42 | 0.99 | 0 |
| CBC | RM Pressfit cup | 445 | 4124.2 | 27 | 0.65 | 0.43 | 0.95 | 0 |
| Elite plus | Charnley | 302 | 4022.2 | 26 | 0.65 | 0.42 | 0.95 | 0 |
| CLS | Monoblock Acetabular Cup | 80 | 1090.4 | 7 | 0.64 | 0.26 | 1.32 | 0 |
| TwinSys uncemented | RM Pressfit cup | 5372 | 44554.4 | 286 | 0.64 | 0.57 | 0.72 | 70 |
| CLS | RM Pressfit cup | 667 | 5940.5 | 38 | 0.64 | 0.45 | 0.87 | 18 |
| Exeter V40 | Continuum TM | 3155 | 20067.7 | 128 | 0.64 | 0.53 | 0.76 | 118 |
| CPT | Trident | 145 | 2052.0 | 13 | 0.63 | 0.34 | 1.08 | 0 |
| Exeter V40 | Bio-clad poly | 140 | 1263.5 | 8 | 0.63 | 0.27 | 1.25 | 0 |
| Omnifit | Trident | 149 | 2213.2 | 14 | 0.63 | 0.33 | 1.03 | 0 |
| Accolade II | Trident | 1701 | 7145.9 | 45 | 0.63 | 0.46 | 0.84 | 125 |
| MS 30 | Morscher | 804 | 11455.6 | 72 | 0.63 | 0.49 | 0.79 | 0 |
| Taperloc Complete | Continuum TM | 284 | 967.5 | 6 | 0.62 | 0.20 | 1.28 | 8 |
| CBC | Fitmore | 59 | 807.0 | 5 | 0.62 | 0.20 | 1.45 | 0 |
| Exeter | Muller PE cup | 132 | 1776.8 | 11 | 0.62 | 0.31 | 1.11 | 0 |
| CLS | Trident | 165 | 2274.9 | 14 | 0.62 | 0.32 | 1.00 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Summit | Pinnacle | 2947 | 22702.7 | 139 | 0.61 | 0.51 | 0.72 | 202 |
| CLS | Tritanium | 89 | 682.3 | 4 | 0.59 | 0.16 | 1.50 | 0 |
| Exeter | CLS Expansion | 129 | 1715.9 | 10 | 0.58 | 0.28 | 1.07 | 0 |
| Corail | Pinnacle | 16671 | 96973.5 | 559 | 0.58 | 0.53 | 0.63 | 1593 |
| Spectron | Trident | 78 | 1042.1 | 6 | 0.58 | 0.18 | 1.19 | 0 |
| Exeter V40 | Exeter | 1636 | 17732.8 | 102 | 0.58 | 0.47 | 0.70 | 0 |
| Echo Bi-Metric | G7 acetabular | 1000 | 3670.1 | 21 | 0.57 | 0.35 | 0.87 | 12 |
| Wagner cone stem | Continuum TM | 67 | 352.1 | 2 | 0.57 | 0.07 | 2.05 | 6 |
| Lateral straight stem | Continuum TM | 78 | 705.0 | 4 | 0.57 | 0.12 | 1.35 | 0 |
| Trabecular Metal Stem | Continuum TM | 521 | 3925.7 | 22 | 0.56 | 0.34 | 0.83 | 18 |
| Exeter V40 | G7 acetabular | 370 | 1249.9 | 7 | 0.56 | 0.23 | 1.15 | 3 |
| Lateral straight stem | Muller PE cup | 770 | 7968.6 | 44 | 0.55 | 0.40 | 0.74 | 0 |
| CCA SS | CCB | 784 | 7064.6 | 39 | 0.55 | 0.39 | 0.75 | 0 |
| Polarstem uncemented | Reflection porous | 335 | 3097.4 | 17 | 0.55 | 0.32 | 0.88 | 0 |
| CCA SS | RM Pressfit cup | 135 | 1458.3 | 8 | 0.55 | 0.24 | 1.08 | 0 |
| CLS | Trilogy | 766 | 6569.7 | 36 | 0.55 | 0.38 | 0.76 | 30 |
| M/L Taper | Continuum TM | 1047 | 8042.9 | 44 | 0.55 | 0.40 | 0.73 | 0 |
| Exeter V40 | Trident II Tritanium | 1933 | 2566.9 | 14 | 0.55 | 0.30 | 0.92 | 915 |
| M/L Taper | Trilogy | 215 | 2573.6 | 14 | 0.54 | 0.30 | 0.91 | 0 |
| Exeter | Bio-clad poly | 113 | 1298.6 | 7 | 0.54 | 0.22 | 1.11 | 0 |
| CLS | Reflection porous | 403 | 4269.6 | 23 | 0.54 | 0.34 | 0.81 | 0 |
| H-Max M | Delta-TT Cup | 86 | 934.4 | 5 | 0.54 | 0.17 | 1.25 | 0 |
| Exeter V40 | R3 porous | 898 | 4680.1 | 25 | 0.53 | 0.35 | 0.79 | 78 |
| MS 30 | RM Pressfit cup | 90 | 936.4 | 5 | 0.53 | 0.14 | 1.17 | 0 |
| Elite plus | Elite Plus LPW | 284 | 3410.9 | 18 | 0.53 | 0.31 | 0.83 | 0 |
| TwinSys uncemented | Trilogy | 209 | 2475.7 | 13 | 0.53 | 0.28 | 0.90 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Elite plus | Elite Plus Ogee | 111 | 1151.7 | 6 | 0.52 | 0.19 | 1.13 | 0 |
| Corail | Continuum TM | 337 | 2309.6 | 12 | 0.52 | 0.27 | 0.91 | 1 |
| Accolade II | Delta-TT Cup | 91 | 389.9 | 2 | 0.51 | 0.06 | 1.85 | 18 |
| CLS | Continuum TM | 1060 | 6261.0 | 32 | 0.51 | 0.35 | 0.72 | 70 |
| Spectron | Biomex acet shell porous | 68 | 1174.2 | 6 | 0.51 | 0.19 | 1.11 | 0 |
| Tri-Lock BPS | Pinnacle | 160 | 783.4 | 4 | 0.51 | 0.14 | 1.31 | 31 |
| CLS | Trabecular Metal Shell | 59 | 588.1 | 3 | 0.51 | 0.11 | 1.49 | 0 |
| Stemsys | Fixa Ti Por | 962 | 5964.4 | 30 | 0.50 | 0.34 | 0.72 | 29 |
| CPT | Delta-TT Cup | 143 | 598.8 | 3 | 0.50 | 0.10 | 1.46 | 15 |
| Polarstem uncemented | R3 porous | 2391 | 11999.0 | 60 | 0.50 | 0.38 | 0.64 | 169 |
| Exeter V40 | Delta-TT Cup | 356 | 1812.7 | 9 | 0.50 | 0.23 | 0.94 | 35 |
| Exeter | Morscher | 579 | 9800.2 | 48 | 0.49 | 0.36 | 0.64 | 0 |
| CLS | Fitmore | 2447 | 31465.8 | 153 | 0.49 | 0.41 | 0.57 | 33 |
| CLS | Morscher | 1701 | 28211.3 | 137 | 0.49 | 0.41 | 0.57 | 0 |
| Exeter V40 | Tritanium | 3933 | 23911.9 | 116 | 0.49 | 0.40 | 0.58 | 38 |
| Exeter V40 | Morscher | 630 | 8734.9 | 42 | 0.48 | 0.35 | 0.65 | 0 |
| Exeter V40 | Contemporary | 6678 | 62306.4 | 297 | 0.48 | 0.42 | 0.53 | 10 |
| Synergy Porous | R3 porous | 1855 | 14439.4 | 68 | 0.47 | 0.37 | 0.60 | 2 |
| Spectron | Fitmore | 78 | 1062.4 | 5 | 0.47 | 0.13 | 1.03 | 0 |
| Charnley | Charnley | 461 | 5982.4 | 28 | 0.47 | 0.31 | 0.68 | 0 |
| Wagner cone stem | Fitmore | 79 | 1069.8 | 5 | 0.47 | 0.13 | 1.02 | 1 |
| SL monoblock | Muller PE cup | 560 | 6861.1 | 32 | 0.47 | 0.31 | 0.65 | 0 |
| Stemsys | Polymax | 192 | 862.6 | 4 | 0.46 | 0.13 | 1.19 | 10 |
| CPCS | R3 porous | 381 | 2005.2 | 9 | 0.45 | 0.21 | 0.85 | 13 |
| TwinSys cemented | Continuum TM | 154 | 893.0 | 4 | 0.45 | 0.12 | 1.15 | 2 |
| Avenir Muller uncemented | RM cup | 105 | 1127.6 | 5 | 0.44 | 0.12 | 0.97 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Avenir Muller uncemented | Fitmore | 70 | 451.7 | 2 | 0.44 | 0.05 | 1.60 | 0 |
| Exeter V40 | Exeter X3 | 3161 | 16443.5 | 72 | 0.44 | 0.34 | 0.55 | 162 |
| Exeter V40 | Osteolock | 270 | 3655.1 | 16 | 0.44 | 0.24 | 0.71 | 0 |
| TwinSys cemented | RM cup | 148 | 1837.5 | 8 | 0.44 | 0.19 | 0.86 | 0 |
| Versys | Trilogy | 272 | 4605.9 | 20 | 0.43 | 0.27 | 0.67 | 0 |
| Exeter V40 | CCB | 609 | 4476.2 | 19 | 0.42 | 0.25 | 0.65 | 3 |
| Spectron | Mallory-Head | 152 | 2127.4 | 9 | 0.42 | 0.19 | 0.80 | 0 |
| Summit | Trilogy | 202 | 1912.6 | 8 | 0.42 | 0.16 | 0.82 | 8 |
| Exeter | Trilogy | 213 | 3351.9 | 14 | 0.42 | 0.23 | 0.70 | 0 |
| Exeter V40 | Pinnacle | 3694 | 22032.5 | 92 | 0.42 | 0.33 | 0.51 | 276 |
| Taperloc Complete | Delta-TT Cup | 189 | 480.6 | 2 | 0.42 | 0.05 | 1.50 | 45 |
| Exeter V40 | Trident | 14536 | 104991.1 | 431 | 0.41 | 0.37 | 0.45 | 814 |
| Taperloc Complete | Trident | 153 | 246.2 | 1 | 0.41 | 0.01 | 2.26 | 35 |
| CLS | Pinnacle | 130 | 991.9 | 4 | 0.40 | 0.11 | 1.03 | 6 |
| TwinSys cemented | RM Pressfit cup | 2504 | 15428.6 | 62 | 0.40 | 0.31 | 0.52 | 161 |
| Accolade | Trident | 1867 | 26227.7 | 105 | 0.40 | 0.33 | 0.48 | 0 |
| Summit | Duraloc | 101 | 1513.9 | 6 | 0.40 | 0.15 | 0.86 | 0 |
| Exeter V40 | Reflection cemented | 1017 | 7983.6 | 31 | 0.39 | 0.26 | 0.55 | 12 |
| Exeter V40 | PolarCup cemented | 94 | 258.6 | 1 | 0.39 | 0.01 | 2.15 | 24 |
| TwinSys uncemented | Continuum TM | 138 | 1299.8 | 5 | 0.38 | 0.12 | 0.90 | 0 |
| Stemsys | Delta-PF Cup | 626 | 3145.4 | 12 | 0.38 | 0.20 | 0.67 | 20 |
| Spectron | R3 porous | 456 | 3753.9 | 14 | 0.37 | 0.19 | 0.61 | 5 |
| Synergy Porous | Reflection porous | 1271 | 16107.1 | 59 | 0.37 | 0.28 | 0.47 | 0 |
| Exeter V40 | RM Pressfit cup | 3269 | 20571.4 | 75 | 0.36 | 0.29 | 0.46 | 118 |
| MS 30 | Muller PE cup | 504 | 5221.0 | 19 | 0.36 | 0.21 | 0.56 | 1 |
| Exeter V40 | Trilogy | 3394 | 28885.6 | 104 | 0.36 | 0.29 | 0.44 | 152 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Standard straight stem | Muller PE cup | 640 | 6446.9 | 23 | 0.36 | 0.22 | 0.53 | 2 |
| M/L Taper | Trident | 333 | 1967.3 | 7 | 0.36 | 0.14 | 0.73 | 0 |
| Corail | Trilogy | 251 | 1719.1 | 6 | 0.35 | 0.13 | 0.76 | 16 |
| Lateral straight stem | Weber | 287 | 3168.2 | 11 | 0.35 | 0.17 | 0.62 | 0 |
| C-Stem | Elite Plus Ogee | 55 | 576.4 | 2 | 0.35 | 0.04 | 1.25 | 0 |
| H-Max S | Trident | 67 | 292.2 | 1 | 0.34 | 0.01 | 1.91 | 0 |
| Corail | Reflection porous | 140 | 1761.6 | 6 | 0.34 | 0.12 | 0.74 | 0 |
| PLS | Delta-TT Cup | 52 | 299.8 | 1 | 0.33 | 0.01 | 1.86 | 0 |
| Stemsys | RM Pressfit cup | 404 | 2425.8 | 8 | 0.33 | 0.13 | 0.62 | 14 |
| Avenir Muller uncemented | Tritanium | 91 | 931.2 | 3 | 0.32 | 0.07 | 0.94 | 0 |
| Exeter V40 | Monoblock Acetabular Cup | 123 | 1897.3 | 6 | 0.32 | 0.12 | 0.69 | 0 |
| MS 30 | Continuum TM | 506 | 3210.7 | 10 | 0.31 | 0.14 | 0.55 | 29 |
| Corail | Ultima | 135 | 1310.3 | 4 | 0.31 | 0.08 | 0.78 | 0 |
| CPT | Pinnacle | 66 | 663.4 | 2 | 0.30 | 0.04 | 1.09 | 0 |
| Exeter V40 | Muller PE cup | 94 | 1023.8 | 3 | 0.29 | 0.06 | 0.86 | 0 |
| Avenir Muller uncemented | RM Pressfit cup | 53 | 343.3 | 1 | 0.29 | 0.01 | 1.62 | 0 |
| MS 30 | Fitmore | 2842 | 22118.4 | 64 | 0.29 | 0.22 | 0.37 | 130 |
| Exeter V40 | Reflection porous | 476 | 5294.4 | 15 | 0.28 | 0.15 | 0.46 | 0 |
| Standard straight stem | Weber | 134 | 1417.2 | 4 | 0.28 | 0.08 | 0.72 | 0 |
| Trabecular Metal Stem | Monoblock Acetabular Cup | 74 | 1092.5 | 3 | 0.27 | 0.04 | 0.73 | 0 |
| Corail | Tritanium | 175 | 1457.3 | 4 | 0.27 | 0.07 | 0.70 | 0 |
| Versys cemented | Trilogy | 238 | 2968.1 | 8 | 0.27 | 0.12 | 0.53 | 0 |
| Exeter V40 | CLS Expansion | 88 | 1131.2 | 3 | 0.27 | 0.05 | 0.78 | 0 |
| Exeter V40 | Polymax | 85 | 379.0 | 1 | 0.26 | 0.01 | 1.47 | 0 |
| Friendly | Delta-PF Cup | 178 | 2291.6 | 6 | 0.26 | 0.10 | 0.57 | 3 |
| Avenir Muller uncemented | Pinnacle | 99 | 1158.6 | 3 | 0.26 | 0.04 | 0.69 | 0 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Corail | Delta-PF Cup | 82 | 1159.3 | 3 | 0.26 | 0.05 | 0.76 | 0 |
| Synergy Porous | Delta-PF Cup | 118 | 1172.0 | 3 | 0.26 | 0.05 | 0.75 | 0 |
| Lateral straight stem | RM Pressfit cup | 173 | 1656.7 | 4 | 0.24 | 0.07 | 0.62 | 0 |
| Corail | G7 acetabular | 102 | 423.4 | 1 | 0.24 | 0.01 | 1.32 | 1 |
| Stemsys | DeltaMotion Cup | 541 | 4460.6 | 10 | 0.22 | 0.10 | 0.40 | 0 |
| SL modular stem | Muller PE cup | 110 | 1541.0 | 3 | 0.19 | 0.04 | 0.57 | 0 |
| MS 30 | Trilogy | 422 | 3127.9 | 6 | 0.19 | 0.06 | 0.40 | 17 |
| Echo Bi-Metric | Exceed ABT Ringloc-X | 57 | 524.9 | 1 | 0.19 | 0.00 | 1.06 | 0 |
| Accolade | Tritanium | 152 | 1593.0 | 3 | 0.19 | 0.04 | 0.55 | 0 |
| Accolade | Pinnacle | 180 | 2144.4 | 4 | 0.19 | 0.05 | 0.48 | 0 |
| MS 30 | Pinnacle | 228 | 546.0 | 1 | 0.18 | 0.00 | 1.02 | 63 |
| Basis | Reflection porous | 108 | 1097.8 | 2 | 0.18 | 0.02 | 0.66 | 0 |
| C-Stem | Marathon cemented | 94 | 602.6 | 1 | 0.17 | 0.00 | 0.92 | 0 |
| Exeter V40 | Weber | 53 | 641.1 | 1 | 0.16 | 0.00 | 0.87 | 0 |
| Exeter V40 | Fitmore | 1205 | 8753.9 | 13 | 0.15 | 0.08 | 0.25 | 41 |
| CPT | ZCA all-poly cup | 99 | 712.0 | 1 | 0.14 | 0.00 | 0.78 | 0 |
| Exeter | Trident | 84 | 1478.7 | 2 | 0.14 | 0.02 | 0.49 | 0 |
| Exeter V40 | ZCA | 103 | 758.0 | 1 | 0.13 | 0.00 | 0.74 | 0 |
| MS 30 | ZCA all-poly cup | 96 | 759.8 | 1 | 0.13 | 0.00 | 0.73 | 0 |
| Corail | DeltaMotion Cup | 78 | 822.3 | 1 | 0.12 | 0.00 | 0.68 | 0 |
| TwinSys uncemented | Delta-PF Cup | 391 | 4411.8 | 5 | 0.11 | 0.03 | 0.25 | 0 |
| Lateral straight stem | ZCA | 98 | 934.1 | 1 | 0.11 | 0.00 | 0.60 | 0 |
| Standard straight stem | RM Pressfit cup | 137 | 1347.4 | 1 | 0.07 | 0.00 | 0.41 | 0 |
| MS 30 | G7 acetabular shell | 214 | 159.0 | 0 | 0.00 | 0.00 | 2.32 | 140 |
| Std Femoral Stem | Acetabular Shell | 137 | 58.1 | 0 | 0.00 | 0.00 | 6.35 | 132 |
| Accolade II | Trident II Clusterhole HA | 81 | 22.0 | 0 | 0.00 | 0.00 | 16.74 | 81 |

| Femur Prosthesis | Acetabular Prosthesis | N | Sum comp. Yrs | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI | Ops 2022 |
|---|---|---|---|---|---|---|---|---|
| Exeter V40 | Trident PSL HA Cluster | 74 | 30.6 | 0 | 0.00 | 0.00 | 12.06 | 70 |
| Furlong Evolution Collared Ste | Delta-PF Cup | 66 | 41.8 | 0 | 0.00 | 0.00 | 8.83 | 52 |
| TwinSys stem cemented | RM Pressfit cup | 66 | 46.9 | 0 | 0.00 | 0.00 | 7.86 | 49 |
| Stemsys | Maxera Cup | 117 | 198.8 | 0 | 0.00 | 0.00 | 1.86 | 31 |
| Stemsys | Zimmer Maxera Cup | 58 | 92.6 | 0 | 0.00 | 0.00 | 3.98 | 11 |
| Exeter V40 | ZCA all-poly cup | 110 | 643.4 | 0 | 0.00 | 0.00 | 0.57 | 0 |
| Lateral straight stem | ZCA all-poly cup | 70 | 617.3 | 0 | 0.00 | 0.00 | 0.60 | 0 |
| Stemsys cemented | Delta-PF Cup | 91 | 443.4 | 0 | 0.00 | 0.00 | 0.83 | 0 |
| Stemsys cemented | RM Pressfit cup | 82 | 399.6 | 0 | 0.00 | 0.00 | 0.92 | 0 |
| Synergy Porous | Continuum TM | 55 | 340.5 | 0 | 0.00 | 0.00 | 1.08 | 0 |
| TwinSys cemented | Reflection porous | 73 | 445.9 | 0 | 0.00 | 0.00 | 0.83 | 0 |

TABLE 1.60

# KNEE ARTHROPLASTY

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## PRIMARY KNEE ARTHROPLASTY

The **twenty-four-year** report analyses data for the period January 1999 – December 2022.

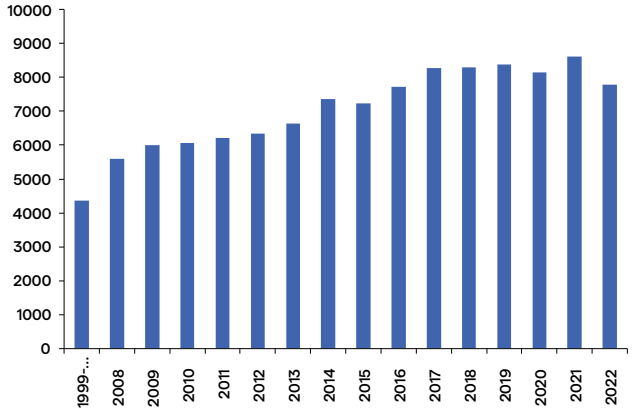
New data forms introduced in October 2020 have 3 categories of knee replacement. These are total knees with 143,007 registered, 16,891 unicompartmental knees with medial or lateral approach registered and patellofemoral knees with 887 registered.
There were 9,833 new Knee registrations in 2022.

### Primary Knee Arthroplasty by Typ

| Primary Knee Arthroplasty (PKA) Type | N |
|---|---|
| Total Knee Arthroplasty (TKR) | 143,007 |
| Unicompartmental Knee Arthroplasty (UKR) | 16,891 |
| Patellofemoral Knee Arthroplasty (PFJ) | 887 |

TABLE 2.1

### Number of operations by year




### Age of Primary Knee Arthroplasty Patients by Gender

| | Female | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Total Knee Arthroplasty (TKR) | 68.6 | 10.2 | 100.5 | 73,388 (51.1) |
| Unicompartmental Knee Arthroplasty (UKR) | 65.9 | 18.3 | 94.7 | 7502 (43.1) |
| Patellofemoral Knee Arthroplasty (PFJ) | 60.1 | 31.3 | 90.7 | 635 (71.5) |

TABLE 2.2

| | Male | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Total Knee Arthroplasty (TKR) | 67.9 | 8.2 | 98.7 | 69,619 (48.9) |
| Unicompartmental Knee Arthroplasty (UKR) | 66.2 | 19.5 | 94.6 | 9,889 (56.9) |
| Patellofemoral Knee Arthroplasty (PFJ) | 61.1 | 31.3 | 100.5 | 252 (28.4) |

TABLE 2.3

| Ethnicity | N | % |
|---|---|---|
| Asian | 4,604 | 3.3 |
| Euro/Other | 120,063 | 86.9 |
| Māori | 8,444 | 6.1 |
| Pacifica | 5,028 | 3.6 |

TABLE 2.4

Data form analysis includes new form and legacy data and is for Total Knee Arthroplasty.

### Body Mass Index

| BMI (kg/m2) | N | % |
|---|---|---|
| < 19 | 135 | 0.2 |
| 19 - 24 | 7,589 | 10.6 |
| 25 - 29 | 23,231 | 32.3 |
| 30 - 39 | 33,946 | 47.2 |
| 40+ | 7,003 | 9.7 |

TABLE 2.5

For the thirteen-year period 2010 - 2022, there were 73,254 BMI registrations for total knee replacements. The average was 31.3 with a range of 12.5 – 70.0 and a standard deviation of 5.91.

### ASA Class

| ASA Class | N | % |
|---|---|---|
| 1 | 15,316 | 11.33 |
| 2 | 85,861 | 63.51 |
| 3 | 33,512 | 24.79 |
| 4 | 513 | 0.38 |

TABLE 2.6

| Previous operation | N |
|---|---|
| None | 120,531 |
| Menisectomy | 1,215 |
| Osteotomy | 2,006 |
| Ligament reconstruction | 2,469 |
| Internal fixation | 1,262 |
| Synovectomy | 222 |
| Other | 5,123 |

TABLE 2.7

| Diagnosis | N |
|---|---|
| Osteoarthritis | 136,357 |
| Rheumatoid arthritis/other inflammatory | 4,920 |
| Post ligament-disruption/reconstruction | 1,614 |
| Post fracture | 1,607 |
| Avascular necrosis | 467 |
| Tumour | 128 |
| Other | 5,123 |

TABLE 2.8

| Approach | N |
|---|---|
| Media parapatellar | 130,027 |
| Lateral parapatellar | 1,621 |
| TTO | 3 |
| Other | 2,629 |

TABLE 2.9

| Surgical Adjuncts | N |
|---|---|
| Computer Navigation | 24,509 |
| Robotic assisted | 1,833 |
| Patient Specific Cutting Guides | 309 |

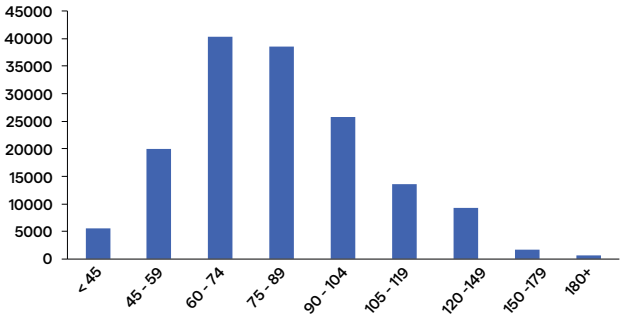
TABLE 2.10

| Surgeon attire | N |
|---|---|
| One-piece Toga | 4,341 |
| Sterile Hood and Gown | 3,101 |
| Conventional | 11,117 |
| Space Suits/Helmet Fan | 53,668 |

TABLE 2.11

### Operative time (skin to skin in minutes)

**All Primary Knee Arthroplasty**
**Number of operations by Surgical Time (Mins)**




## Surgeon grade

The updated forms introduced in 2005 have separated advanced trainee into supervised and unsupervised. The following figures are for the seventeen-year period 2005 – 2022.

| Surgeon grade | N |
|---|---|
| Consultant | 144,314 |
| Advanced trainee supervised | 10,448 |
| Advanced trainee unsupervised | 2,419 |
| Basic trainee | 2,265 |

TABLE 2.12

# Surgeon and Hospital Workload

## Surgeons

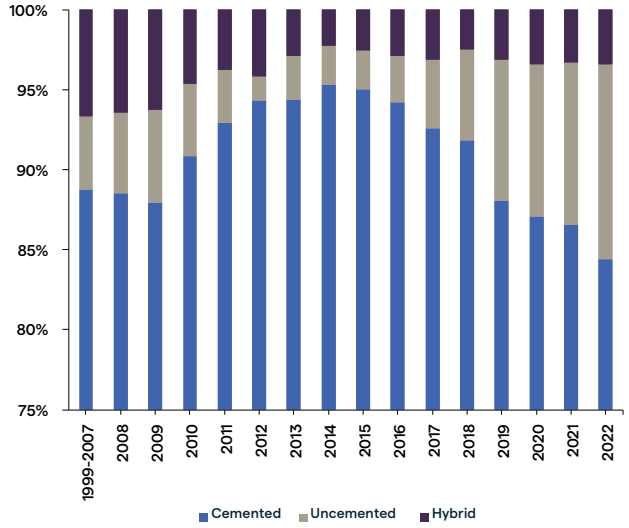
In 2022, 226 surgeons performed 8,884 total knee replacements, an average of 39 procedures per surgeon.

33 surgeons performed less than 10 procedures and 91 performed more than 40.

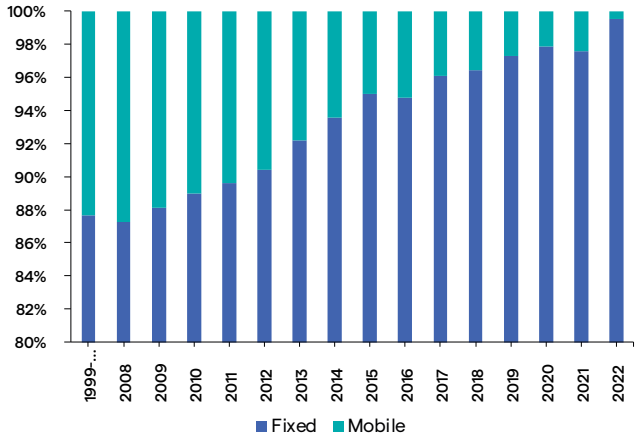
## Hospitals

In 2022, total knee replacement was performed in 52 hospitals. 27 were public hospitals and 25 were private.

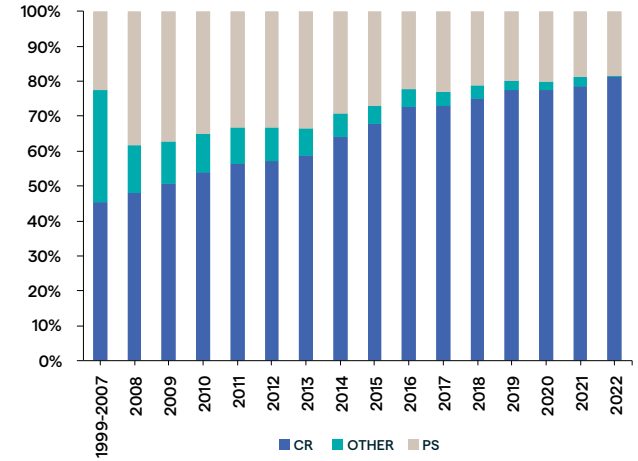
### Cementation Rates for TKR by Year




### Fixed and Mobile Bearings in TKR by Year




### Bearing Constraint in TKR by Year



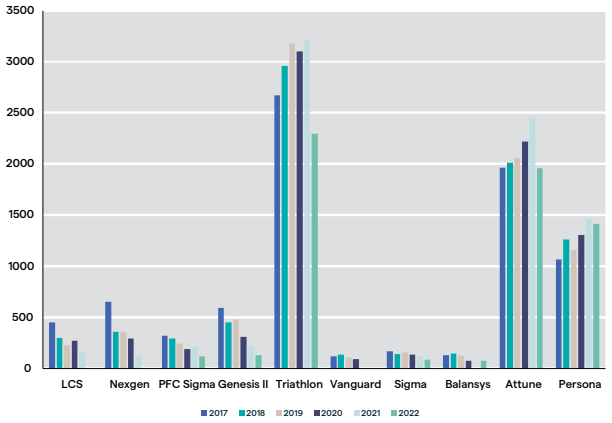

OTHER refers to minimally stabilised of which 98% are LCS.

### Top 10 Knee Femoral Components used in 2022

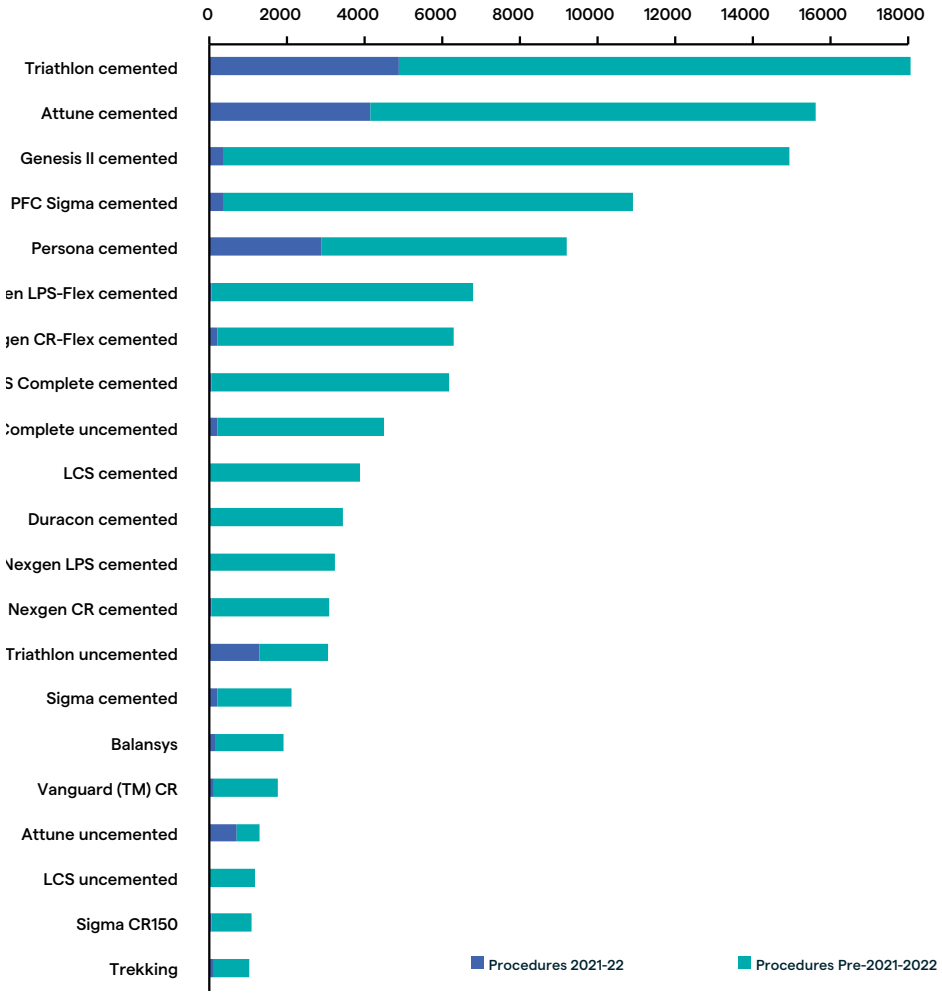
| Prostheses | N |
|---|---|
| Triathlon cemented | 2,297 |
| Attune cemented | 1,961 |
| Persona cemented | 1,417 |
| Triathlon uncemented | 661 |
| Attune uncemented | 416 |
| Genesis II cemented | 130 |
| PFC Sigma cemented | 121 |
| Sigma cemented | 86 |
| Journey II BCS | 82 |
| Balansys | 75 |

TABLE 2.13

### Most used total knee prostheses per year for five years 2017-2022



## Knee prostheses with >1000 procedures




| Prosthesis | Revision Rate/ 100-component-years | Procedures 2021-22 |
|---|---|---|
| Triathlon cemented | 0.385 | 4,882 |
| Attune cemented | 0.520 | 4,126 |
| Genesis II cemented | 0.437 | 356 |
| PFC Sigma cemented | 0.340 | 334 |
| Persona cemented | 0.623 | 2,877 |
| Nexgen LPS-Flex cemented | 0.579 | 58 |
| Nexgen CR-Flex cemented | 0.368 | 197 |
| LCS Complete cemented | 0.372 | 59 |
| LCS Complete uncemented | 0.529 | 189 |
| LCS cemented | 0.416 | 0 |
| Duracon cemented | 0.325 | 0 |
| Nexgen LPS cemented | 0.544 | 0 |
| Nexgen CR cemented | 0.382 | 42 |
| Triathlon uncemented | 0.518 | 1,292 |
| Sigma cemented | 0.398 | 204 |
| Balansys | 0.543 | 143 |
| Vanguard (TM) CR | 0.602 | 107 |
| Attune uncemented | 0.985 | 700 |
| LCS uncemented | 0.716 | 0 |
| Sigma CR150 | 0.411 | 43 |
| Trekking | 0.677 | 96 |

TABLE 2.14

# Revision Total Knee Arthroplasty

Revision is defined by the Registry as a new operation in a previously replaced knee joint, during which one or more of the components is exchanged, removed, manipulated or added.

Procedures where all components are removed are all recorded as revisions.

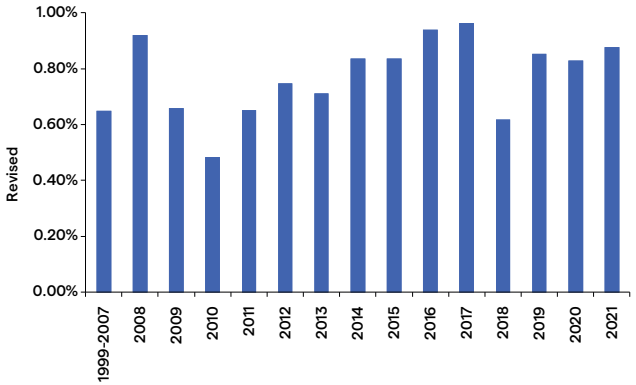
### Classification of Revision Procedures

| Revision Procedure | Category |
|---|---|
| Change of all components | Major |
| Change of femoral component | Major |
| Change of tibial component | Major |
| Change of patellar component | Minor |
| Change of modular femoral head | Minor |
| Removal of components only | Major |

TABLE 2.15

Re-operation only: no components added, exchanged or removed.

### Total Knee Arthroplasties Revised within One Year




## Data analysis

For the twenty-four-year period January 1999 – December 2022, there were 11,465 revision knee procedures registered. There were an additional 773 revisions over the past 12 months.

The average age for a revision knee replacement was 70 years, with a range of 11 – 98 years.

The following data analyses are restricted to revisions of primary registered knee arthroplasties for the twenty-four-year period.

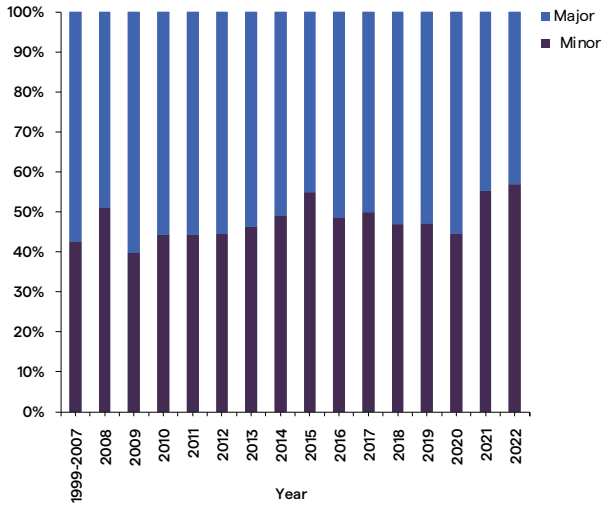
There were 5,224 revisions of the 143,501 primary total knee replacements, 110 revisions of the 887 patellofemoral knees and 1,474 revisions of the 16,891 unicompartmental knees.

Total knee replacement analysis - this includes new form and legacy reasons for revision

| Time to revision | Years |
|---|---|
| Average | 4.7 years |
| Maximum | 24.5 years |
| Minimum | 1 day |
| Standard deviation | 4.6 years |

TABLE 2.16

### Proportion of Minor and Major Revisions by Year



## All Primary Total Knee Arthroplasties

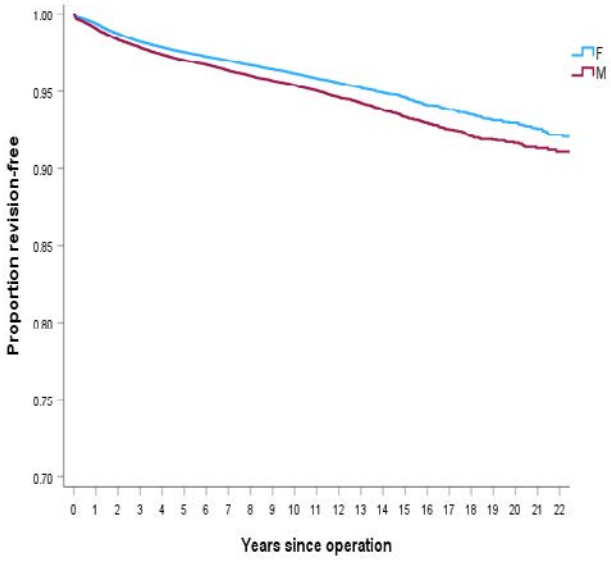
| | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| All patients | 143,501 | 1,142,507.2 | 5,224 | 0.46 (0.44 – 0.47) |

TABLE 2.17

## Survival by Gender

| Sex | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| F | 73,655 | 599,715.3 | 2,476 | 0.41 (0.40-0.43) |
| M | 69,846 | 542,791.9 | 2,748 | 0.51 (0.49-0.53) |

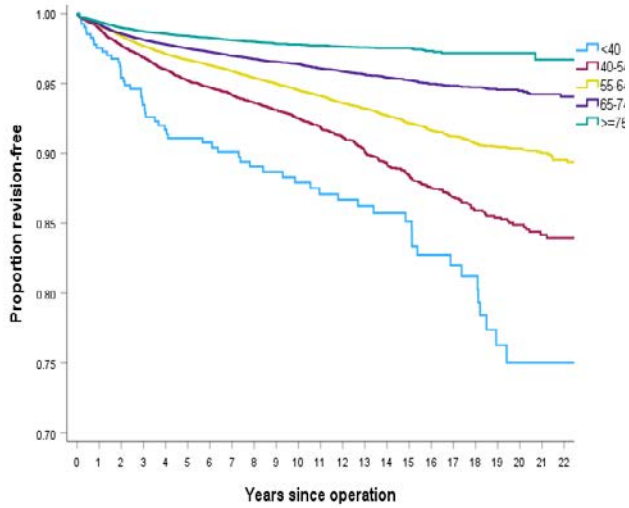
TABLE 2.18




## Survival by Age Group

| Age Groups | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| <40 | 417 | 4,537.1 | 60 | 1.32 (1.01-1.70) |
| 40-54 | 11,241 | 10,0663.9 | 842 | 0.84 (0.78-0.89) |
| 55-64 | 40,248 | 344,280.3 | 1,977 | 0.57 (0.55-0.60) |
| 65-74 | 55,601 | 445,345.0 | 1,724 | 0.39 (0.37-0.41) |
| >=75 | 35,993 | 247,680.6 | 621 | 0.25 (0.23-0.27) |

TABLE 2.19

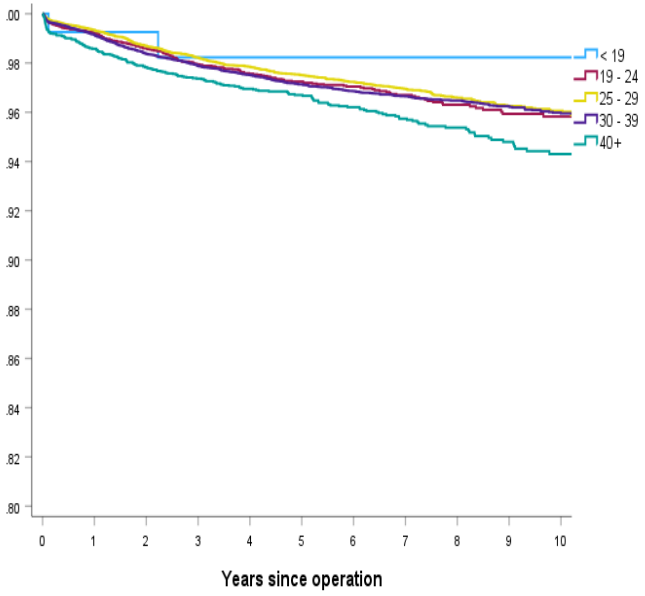



## Survival by BMI

For the twelve-year period 2010 - 2022, there were 2,520 BMI registrations for revision knee replacements. The average BMI was 31.52 kg/m2 with a range of 15-65 and a standard deviation of 6.23.

| BMI | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| < 19 | 135 | 676.2 | 3 | 0.44 (0.00-1.30) |
| 19 - 24 | 7,589 | 38,296.1 | 194 | 0.51 (0.44-0.58) |
| 25 - 29 | 23,231 | 118,682.0 | 558 | 0.47 (0.43-0.51) |
| 30 - 39 | 33,946 | 170,944.1 | 885 | 0.52 (0.48-0.55) |
| 40+ | 7,003 | 34,788.9 | 237 | 0.68 (0.60-0.77) |

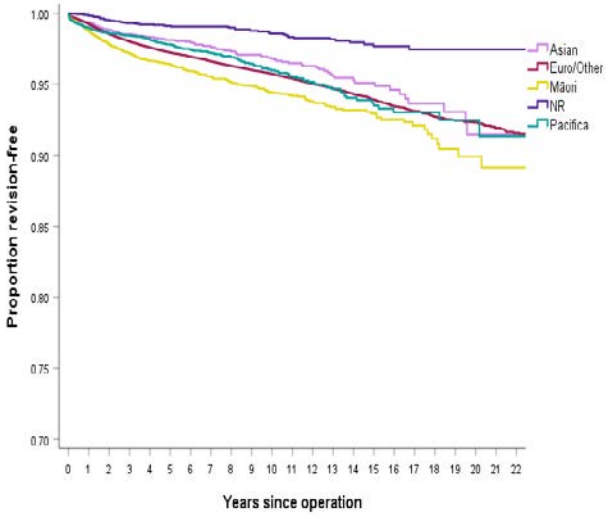
TABLE 2.20



### Revision by Ethnicity

| Ethnicity | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Asian | 4,604 | 33,909.2 | 125 | 0.37 (0.31-0.44) |
| Euro/Other | 120,063 | 973,917.4 | 4,500 | 0.46 (0.45-0.48) |
| Māori | 8,444 | 60,272.9 | 373 | 0.62 (0.56-0.68) |
| Pacifica | 5,028 | 38,108.4 | 167 | 0.44 (0.37-0.51) |

TABLE 2.21



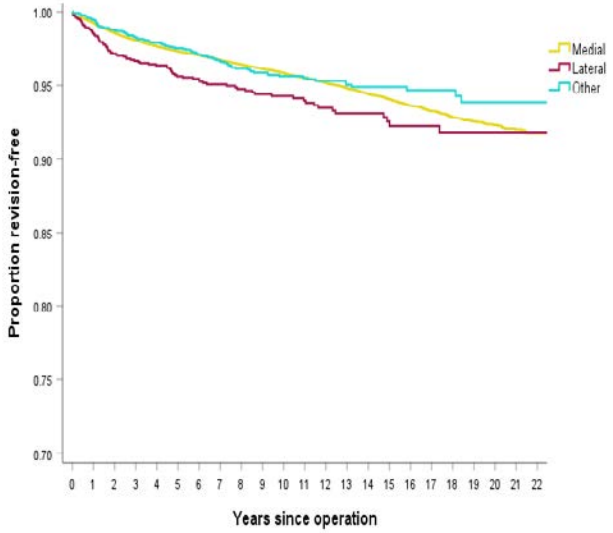

| | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Public | 70,494 | 576,993.0 | 2,566 | 0.44 (0.43-0.46) |
| Private | 73,007 | 565,514.2 | 2,658 | 0.47 (0.45-0.49) |

TABLE 2.22

### Survival by Approach

| | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Medial | 130,027 | 1,029,029.4 | 4,645 | 0.45 (0.44-0.46) |
| Lateral | 1,621 | 14,948.3 | 89 | 0.60 (0.48-0.73) |
| TTO | 3 | 3.2 | 0 | 0.00 (0.00-114.67) |
| Other | 2,629 | 25,109.2 | 101 | 0.40 (0.33-0.49) |

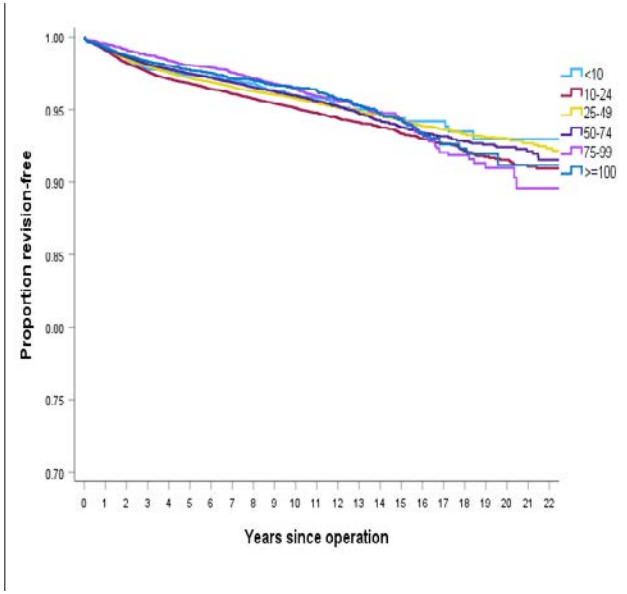
TABLE 2.23




### Survival by Number of Procedures Performed per Year

| Ops per year | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| <10 | 2,981 | 24,929.8 | 105 | 0.42 (0.34-0.51) |
| 10-24 | 27,035 | 233,951.2 | 1,201 | 0.51 (0.48-0.54) |
| 25-49 | 54,254 | 438,230.6 | 1,978 | 0.45 (0.43-0.47) |
| 50-74 | 39,048 | 296,253.6 | 1,334 | 0.45 (0.43-0.47) |
| 75-99 | 10,206 | 79,772.6 | 316 | 0.40 (0.35-0.44) |
| >=100 | 9,977 | 69,369.5 | 290 | 0.42 (0.37-0.47) |

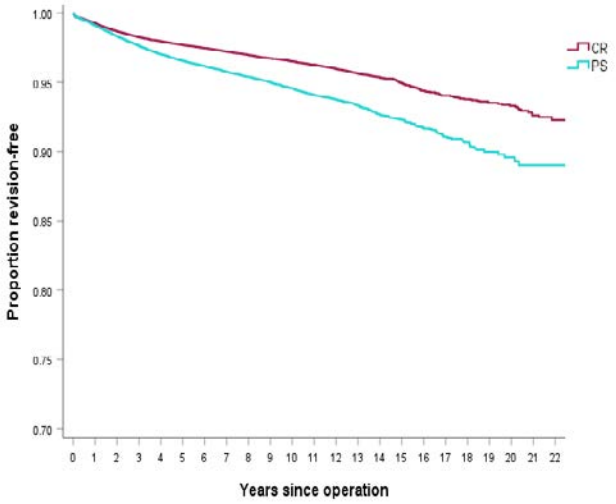
TABLE 2.24



### Survival by Bearing Constraint

| | N | Observed comp. years (ocys) | Events | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Cruciate Retaining | 85,412 | 595,237.0 | 2,372 | 0.40 (0.38-0.41) |
| Posterior Stabilising | 34,897 | 287,294.9 | 1,677 | 0.58 (0.56-0.61) |
| Other | 16,029 | 184,310.7 | 844 | 0.46 (0.43-0.49) |

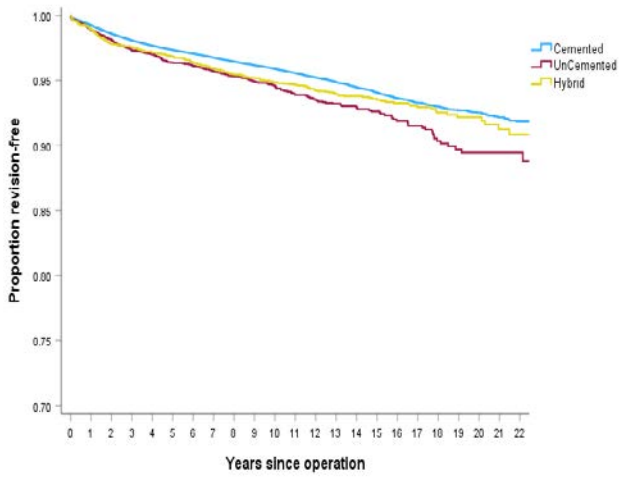
TABLE 2.25




### Survival by Cementation

| | N | Observed comp. years (ocys) | Events | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Cemented | 129,633 | 1,032,116.8 | 4,610 | 0.45 (0.43-0.46) |
| Uncemented | 7,736 | 52,029.7 | 319 | 0.61 (0.55-0.68) |
| Hybrid | 6,132 | 58,360.7 | 295 | 0.51 (0.45-0.57) |

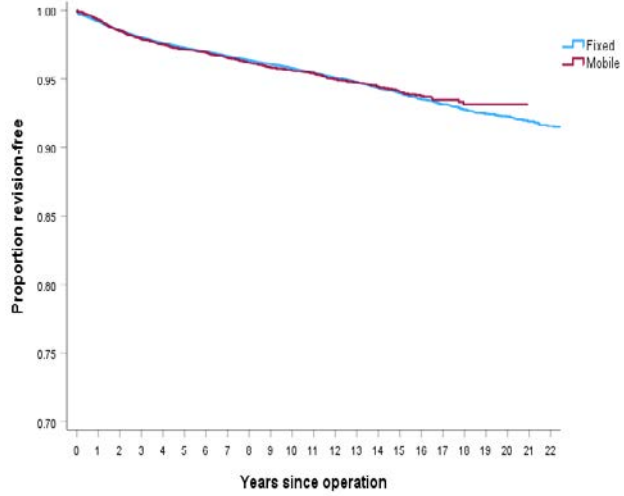
TABLE 2.26



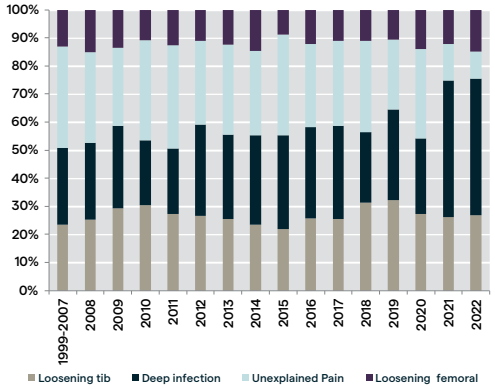

### Survival by Fixation Method

| | N | Observed comp. years (ocys) | Events | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Fixed | 27,933 | 210,092.7 | 1,052 | 0.50 (0.47-0.53) |
| Mobile | 17,052 | 190,173.9 | 883 | 0.46 (0.43-0.50) |

TABLE 2.27



## Reason for Revision

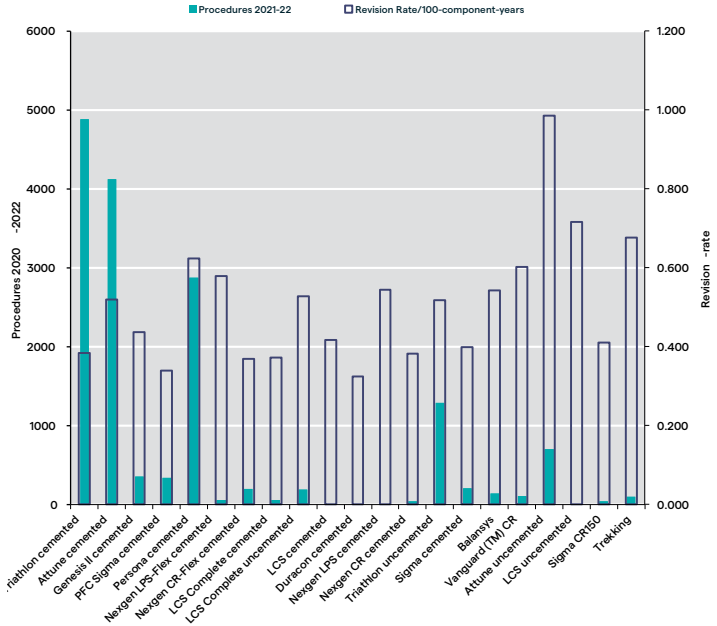



| Year | Loosening tibial component | Deep infection | Unexplained Pain | Loosening femoral component |
|---|---|---|---|---|
| | n | n | n | n |
| 1999-2007 | 147 | 171 | 227 | 82 |
| 2008 | 43 | 47 | 55 | 26 |
| 2009 | 54 | 54 | 51 | 25 |
| 2010 | 53 | 40 | 62 | 19 |
| 2011 | 52 | 44 | 70 | 24 |
| 2012 | 56 | 68 | 63 | 23 |
| 2013 | 62 | 73 | 78 | 30 |
| 2014 | 63 | 85 | 81 | 39 |
| 2015 | 59 | 91 | 97 | 24 |
| 2016 | 91 | 115 | 105 | 43 |
| 2017 | 86 | 112 | 103 | 37 |
| 2018 | 96 | 77 | 100 | 34 |
| 2019 | 109 | 110 | 84 | 36 |
| 2020 | 95 | 94 | 111 | 49 |
| 2021 | 69 | 128 | 34 | 32 |
| 2022 | 71 | 128 | 26 | 39 |

TABLE 2.28

| Years from procedure | Loosening tibial component | | Deep infection | | Unexplained Pain | | Loosening femoral component | |
|---|---|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % | Count | % |
| 0 | 58 | 4.8 | 553 | 38.5 | 166 | 12.3 | 22 | 3.9 |
| 1 | 101 | 8.4 | 239 | 16.6 | 332 | 24.6 | 44 | 7.8 |
| 2 | 135 | 11.2 | 129 | 9.0 | 203 | 15.1 | 39 | 6.9 |
| 3 | 125 | 10.4 | 110 | 7.7 | 123 | 9.1 | 42 | 7.5 |
| 4 | 102 | 8.5 | 75 | 5.2 | 92 | 6.8 | 57 | 10.1 |
| 5 | 93 | 7.7 | 57 | 4.0 | 72 | 5.3 | 43 | 7.7 |
| 6 | 99 | 8.2 | 56 | 3.9 | 59 | 4.4 | 35 | 6.2 |
| 7 | 83 | 6.9 | 40 | 2.8 | 59 | 4.4 | 37 | 6.6 |
| 8 | 58 | 4.8 | 31 | 2.2 | 49 | 3.6 | 29 | 5.2 |
| 9 | 67 | 5.6 | 31 | 2.2 | 31 | 2.3 | 28 | 5.0 |
| 10 | 53 | 4.4 | 23 | 1.6 | 38 | 2.8 | 28 | 5.0 |
| >10 | 232 | 19.2 | 93 | 6.5 | 123 | 9.1 | 158 | 28.1 |
| | 1,206 | | 1,437 | | 1,347 | | 562 | |

TABLE 2.29



# Knee Re-Revisions

Analysis was undertaken of re-revisions. There were 863 registered total knee revisions that had been revised twice, 229 that had been revised three times, 61 that had been revised four times and 18 that had been revised five times.

### Re-Revisions

| | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Re-Revisions | 5224 | 30,299.7 | 863 | 2.85 (2.66-3.04) |

TABLE 2.30

## Second revision

Time between the first and second revision for the 863 knee arthroplasties averaged 2093 days (2.4 years), with a range of 14 – 7,758 and a standard deviation of 1,619 days. This compares to an average of 1,615 days (4.4 years) between primary and first revision knee arthroplasty.

| Reason for revision | N |
|---|---|
| Deep infection | 454 |
| Pain | 158 |
| Loosening tibial component | 111 |
| Loosening femoral component | 101 |
| Loosening patellar component | 5 |
| Fracture femur | 8 |
| Fracture tibia | 2 |
| Other | 237 |

TABLE 2.31

## Third Revision

There were 229 registered

## Fourth Revision

There were 61 registered

## Fifth Revision

There were 18 registered

# Patient Recorded Outcome Measures

## Patient based questionnaire outcomes after knee arthroplasty at six months, five, ten, fifteen and twenty years

### Questionnaires at six months post-surgery

At six months post-surgery a random selection of patients are sent the Oxford-12 questionnaire in order to achieve a response rate of 20% of the total which is deemed ample to provide powerful statistical analysis.

A score of 48 is the best, indicating normal function. A score of 0 is the worst, indicating the most severe disability.

In addition, we have grouped the questionnaire responses according to the classification system published by Kalairajah et al in 2005. (See appendix 1).

**This groups each score into four categories:**

| Category | Score | Interpretation |
|---|---|---|
| 1 | < 27 | Poor |
| 2 | 27-33 | Fair |
| 3 | 34-41 | Good |
| 4 | >41 | Excellent |

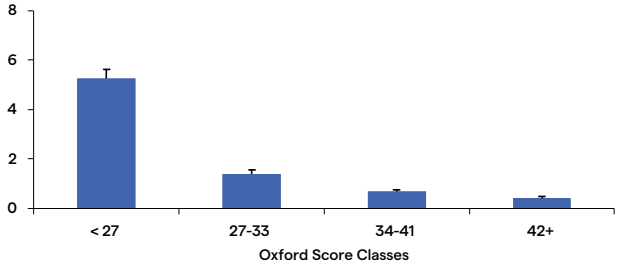
TABLE 2.32

For the twenty-four-year period, there were 37,882 primary knee questionnaire responses registered at six months post-surgery. The average score was 37.7 (standard deviation 8.0, range 0-48).

| Kalairajah Classification at 6 months | Revision to 2 Years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 3,228 | 169 | 5.24 | 0.39 |
| Fair | 4,640 | 64 | 1.38 | 0.17 |
| Good | 10,953 | 74 | 0.68 | 0.08 |
| Excellent | 12,063 | 50 | 0.41 | 0.06 |

TABLE 2.33

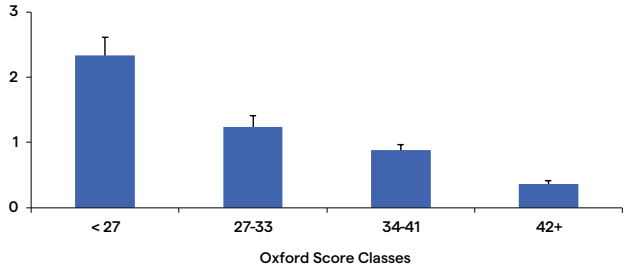
**Revision (%) to 2 years by Oxford score at 6 months**




| Kalairajah Classification at 6 months | Revision to 2 to 4 Years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 2,917 | 68 | 2.33 | 0.28 |
| Fair | 4,200 | 52 | 1.24 | 0.17 |
| Good | 9,825 | 86 | 0.88 | 0.09 |
| Excellent | 10,884 | 39 | 0.36 | 0.06 |

TABLE 2.34

**Revision (%) 2 to 4 years by Oxford score at 6 months**



| Kalairajah Classification at 6 months | Revision to 2 to 6 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 2,553 | 19 | 0.74 | 0.17 |
| Fair | 3,667 | 30 | 0.82 | 0.15 |
| Good | 8,598 | 53 | 0.62 | 0.08 |
| Excellent | 9,450 | 46 | 0.49 | 0.07 |

TABLE 2.35

## Questionnaires at five years post-surgery

All patients who had a six-month registered questionnaire, and who had not had revision surgery were sent a further questionnaire at five years post-surgery.

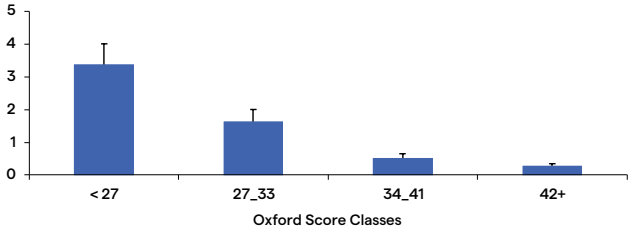
This dataset represents sequential Oxford knee scores for 14,333 individual patients.

At five years post-surgery, 74% of patients achieved an excellent or good score and had an average of 40.6 (standard deviation 7.7, range 1-48).

| Kalairajah Classification at 5 years | Revision to 2 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 830 | 28 | 3.37 | 0.63 |
| Fair | 1,111 | 18 | 1.62 | 0.38 |
| Good | 3,072 | 16 | 0.52 | 0.13 |
| Excellent | 7,481 | 21 | 0.28 | 0.06 |

TABLE 2.36

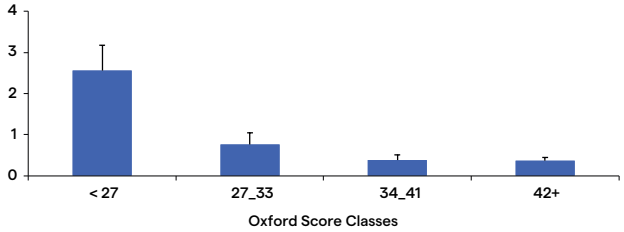
### Revison (%) to 2 years by Oxford score at 5 Years




| Kalairajah Classification at 5 years | Revision 2 to 4 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 663 | 17 | 2.56 | 0.61 |
| Fair | 919 | 7 | 0.76 | 0.29 |
| Good | 2,560 | 10 | 0.39 | 0.12 |
| Excellent | 6,197 | 23 | 0.37 | 0.08 |

TABLE 2.37

### Revison (%) to 2 to 4 years by Oxford score at 5 years




## Questionnaires at ten years post-surgery

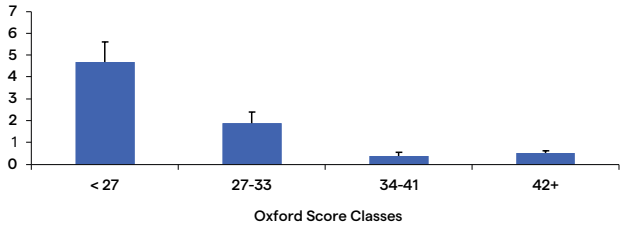
All patients who had a six-month registered questionnaire, and who had not had revision surgery were sent a further questionnaire at ten years post-surgery. This dataset represents sequential Oxford knee scores for 8,560 individual patients.

At ten years post-surgery, 83% of patients achieved an excellent or good score and had an average of 40.1 (standard deviation 8.0, range 1-48)..

| Kalairajah Classification at 10 years | Revision to 2 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 534 | 25 | 4.68 | 0.91 |
| Fair | 696 | 13 | 1.87 | 0.51 |
| Good | 1,756 | 7 | 0.40 | 0.15 |
| Excellent | 4,149 | 21 | 0.51 | 0.11 |

TABLE 2.38

### Revison (%) to 2 years by Oxford score at 10 Years



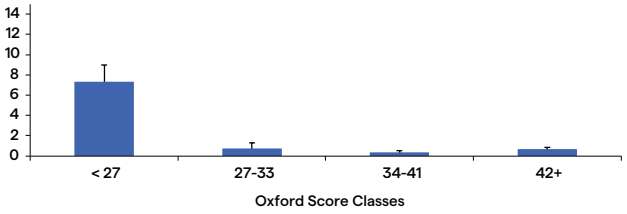

## Questionnaires at fifteen years post-surgery

All patients who had a six-month registered questionnaire, and who had not had revision surgery were sent a further questionnaire at fifteen years post-surgery. At fifteen years post-surgery, 80% of patients achieved an excellent or good score and had an average of 39.5 (standard deviation 8.6, range 0-48).

| Kalairajah Classification at 15 years | Revision to 2 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 245 | 18 | 7.35 | 1.67 |
| Fair | 270 | 2 | 0.74 | 0.52 |
| Good | 620 | 2 | 0.32 | 0.23 |
| Excellent | 1,386 | 9 | 0.65 | 0.22 |

TABLE 2.39

### Revison (%) to 2 years by Oxford score at 15 years



# Oxford 12 Score as a predictor of Knee Arthroplasty Revision

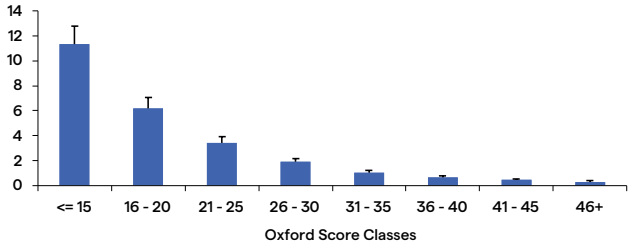
## Six-month score and revision arthroplasty

In view of the large number of six- month Oxford scores it is possible with statistical significance to further break down the score groupings to demonstrate an even more convincing relationship between score and risk of revision within two years.

| Score Group at Six Months | Revision to 2 years | N revised | % | Std error |
|---|---|---|---|---|
| <= 15 | 486 | 55 | 11.32 | 1.44 |
| 16 - 20 | 793 | 49 | 6.18 | 0.86 |
| 21 - 25 | 1,517 | 52 | 3.43 | 0.47 |
| 26 - 30 | 2,668 | 50 | 1.87 | 0.26 |
| 31 - 35 | 4,455 | 47 | 1.05 | 0.15 |
| 36 - 40 | 7,095 | 46 | 0.65 | 0.10 |
| 41 - 45 | 93,95 | 45 | 0.48 | 0.07 |
| 46+ | 4,475 | 13 | 0.29 | 0.08 |

TABLE 2.40

### Revision (%) to 2 years- by Oxford score at 6 months



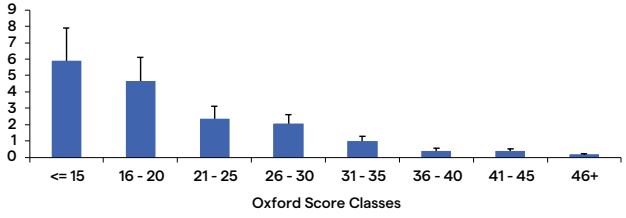

## Five-year score and revision arthroplasty

As with the six- month scores, plotting the patients' five- year scores in the Kalairajah groupings against the proportion of knees revised for that same group demonstrates that there is an incremental increase in risk during the next two years related to the Oxford score. A patient with a score below 27 has 12 times the risk of a revision within two years compared to a person with a score > 42.

| Score Group 5 years | Revision to 2 years | N revised | % | Std error |
|---|---|---|---|---|
| <= 15 | 136 | 8 | 5.88 | 2.02 |
| 16 - 20 | 214 | 10 | 4.67 | 1.44 |
| 21 - 25 | 381 | 9 | 2.36 | 0.78 |
| 26 - 30 | 631 | 13 | 2.06 | 0.57 |
| 31 - 35 | 1,106 | 11 | 0.99 | 0.30 |
| 36 - 40 | 1,921 | 8 | 0.42 | 0.15 |
| 41 - 45 | 4,168 | 17 | 0.41 | 0.10 |
| 46+ | 3,937 | 7 | 0.18 | 0.07 |

TABLE 2.41

### Revision (%) to 2 years by Oxford score at 5 years

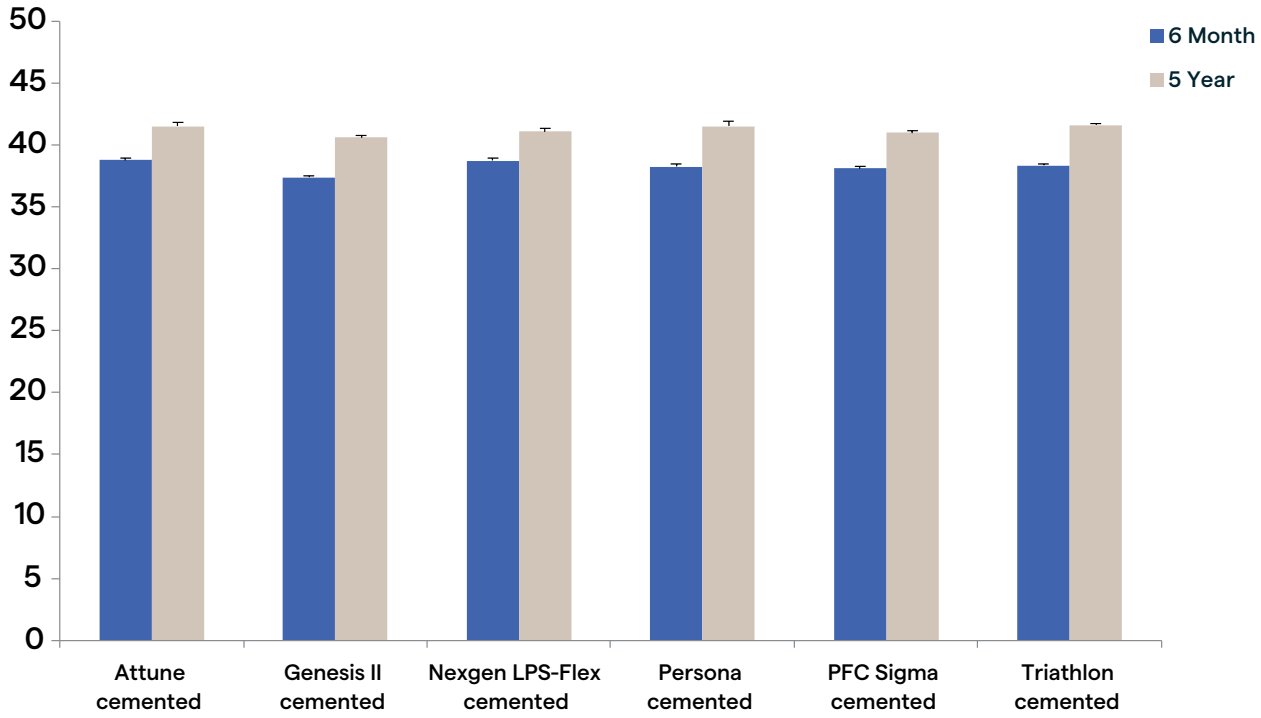


## Oxford scores for 6 most common Knees prostheses with 6m and 5 years Oxford Scores

### Prosthesis

| Oxford Score | | Attune cemented | Genesis II cemented | Nexgen LPS-Flex cemented | Persona cemented | PFC Sigma cemented | Triathlon cemented |
|---|---|---|---|---|---|---|---|
| **6 Month** | **Mean** | 38.8 | 37.4 | 38.7 | 38.3 | 38.1 | 38.4 |
| | **Std. Error of Mean** | 0.11 | 0.13 | 0.21 | 0.16 | 0.14 | 0.09 |
| | **N** | 4,376 | 3,657 | 1,372 | 2,323 | 3,041 | 6,507 |
| **5 Year** | **Mean** | 41.5 | 40.6 | 41.1 | 41.5 | 41.0 | 41.6 |
| | **Std. Error of Mean** | 0.27 | 0.17 | 0.26 | 0.43 | 0.18 | 0.15 |
| | **N** | 737 | 1,883 | 812 | 349 | 1,604 | 2,250 |

TABLE 2.42



## Revision rate of Femoral Prostheses (number of procedures >=50)

| Femur Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Nexgen cemented | 54 | 304.3 | 14 | 4.6 (2.51 - 7.72) |
| Zimmer | 53 | 202.7 | 4 | 1.97 (0.54 - 5.05) |
| Insall/Burstein | 249 | 3,215.5 | 48 | 1.49 (1.09 - 1.96) |
| Evolution cemented | 62 | 80.0 | 1 | 1.25 (0.03 - 6.96) |
| Legion PS cemented | 125 | 561.0 | 7 | 1.25 (0.5 - 2.57) |
| Optetrak cemented | 281 | 3,104.5 | 36 | 1.16 (0.8 - 1.59) |
| Journey BCS | 143 | 1,589.6 | 18 | 1.13 (0.67 - 1.79) |
| Persona uncemented | 67 | 89.9 | 1 | 1.11 (0.03 - 6.2) |
| Nexgen LCCK cemented | 329 | 2,251.7 | 24 | 1.07 (0.68 - 1.59) |
| Attune uncemented | 1,285 | 2,638.8 | 26 | 0.99 (0.64 - 1.44) |
| Optetrak uncemented | 380 | 4,158.3 | 40 | 0.96 (0.69 - 1.31) |
| Vanguard (TM) PS | 620 | 4,905.4 | 43 | 0.88 (0.63 - 1.18) |
| Journey II BCS | 450 | 1,562.2 | 13 | 0.83 (0.42 - 1.38) |
| LCS Complete RPS | 70 | 647.0 | 5 | 0.77 (0.25 - 1.8) |
| LCS uncemented | 1,169 | 17,189.0 | 123 | 0.72 (0.59 - 0.85) |
| Trekking | 1,030 | 6,054.7 | 41 | 0.68 (0.48 - 0.91) |
| Scorpio | 853 | 11,120.0 | 73 | 0.66 (0.51 - 0.82) |
| Legion Oxinium | 155 | 1,075.9 | 7 | 0.65 (0.26 - 1.34) |
| Persona cemented | 9,184 | 31,124.7 | 194 | 0.62 (0.54 - 0.72) |
| Maxim | 825 | 11,105.8 | 68 | 0.61 (0.47 - 0.77) |
| Vanguard (TM) CR | 1,747 | 13,286.2 | 80 | 0.6 (0.48 - 0.75) |
| Saiph | 194 | 686.2 | 4 | 0.58 (0.16 - 1.49) |
| Nexgen LPS-Flex cemented | 6,774 | 69,923.8 | 405 | 0.58 (0.52 - 0.64) |
| PFC Sigma uncemented | 689 | 6,043.9 | 33 | 0.55 (0.37 - 0.76) |
| Nexgen LPS cemented | 3,237 | 36766.9 | 200 | 0.54 (0.47 - 0.62) |
| Balansys | 1,902 | 12,703.1 | 69 | 0.54 (0.42 - 0.69) |
| LCS Complete uncemented | 4,481 | 42,563.5 | 225 | 0.53 (0.46 - 0.6) |
| Nexgen CR-Flex uncemented | 306 | 1,915.6 | 10 | 0.52 (0.25 - 0.96) |
| Attune cemented | 15,619 | 59,765.7 | 311 | 0.52 (0.46 - 0.58) |
| Triathlon uncemented | 3,061 | 8,885.0 | 46 | 0.52 (0.38 - 0.69) |
| MBK cemented | 247 | 3,650.0 | 18 | 0.49 (0.29 - 0.78) |
| Genesis II cemented | 14,929 | 141,923.6 | 620 | 0.44 (0.4 - 0.47) |
| LCS cemented | 3,881 | 53,557.4 | 223 | 0.42 (0.36 - 0.47) |
| Sigma CR150 | 1,071 | 9,738.2 | 40 | 0.41 (0.29 - 0.56) |
| Nexgen LPS uncemented | 164 | 1,706.8 | 7 | 0.41 (0.15 - 0.81) |
| Sigma cemented | 2,098 | 13,815.1 | 55 | 0.4 (0.3 - 0.52) |
| AGC cemented | 393 | 5,031.0 | 20 | 0.4 (0.24 - 0.6) |
| Triathlon cemented | 33,076 | 211,697.2 | 814 | 0.38 (0.36 - 0.41) |
| Nexgen CR cemented | 3,087 | 38,447.4 | 147 | 0.38 (0.32 - 0.45) |
| Nexgen CR uncemented | 488 | 6,028.4 | 23 | 0.38 (0.24 - 0.56) |
| LCS Complete cemented | 6,169 | 66,318.3 | 247 | 0.37 (0.33 - 0.42) |
| Nexgen CR-Flex cemented | 6,281 | 53,465.9 | 197 | 0.37 (0.32 - 0.42) |
| PFC Sigma cemented | 10,894 | 116,675.0 | 397 | 0.34 (0.31 - 0.37) |
| Duracon cemented | 3,445 | 45,590.9 | 148 | 0.32 (0.27 - 0.38) |
| Advance cemented | 160 | 2,022.7 | 6 | 0.3 (0.11 - 0.65) |
| Duracon uncemented | 797 | 11,352.1 | 28 | 0.25 (0.16 - 0.36) |
| AMK cemented | 95 | 1,384.9 | 2 | 0.14 (0.02 - 0.52) |

TABLE 2.43

## Revision rate of Fully Cemented Femoral Prostheses sorted by Revision Rate

| Femur Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Kinemax Rotat Hinge femoral | 4 | 7.1 | 1 | 14.09 (0.36 - 78.48) |
| Physica PS cemented | 3 | 8.8 | 1 | 11.39 (0.29 - 63.44) |
| Custom device | 2 | 13.9 | 1 | 7.22 (0.18 - 40.23) |
| LPS | 9 | 15.5 | 1 | 6.46 (0.16 - 35.97) |
| Nexgen CR-Flex uncemented | 16 | 16.8 | 1 | 5.96 (0.15 - 33.22) |
| Nexgen | 3 | 17.6 | 1 | 5.69 (0.14 - 31.73) |
| Nexgen cemented | 54 | 304.3 | 14 | 4.6 (2.51 - 7.72) |
| Genesis II Oxinium | 6 | 43.6 | 2 | 4.59 (0.56 - 16.57) |
| Persona Revision | 26 | 27.6 | 1 | 3.63 (0 - 20.21) |
| Femoral component | 99 | 190.9 | 6 | 3.14 (1 - 6.48) |
| Femoral module Vitallium | 10 | 105.9 | 3 | 2.83 (0.58 - 8.28) |
| GMRS | 27 | 116.4 | 3 | 2.58 (0.53 - 7.53) |
| Oxford Tricomp. Femoral | 38 | 508.8 | 12 | 2.36 (1.15 - 3.99) |
| Zimmer | 46 | 187.4 | 4 | 2.13 (0.58 - 5.46) |
| Nexgen PS cemented | 7 | 99.5 | 2 | 2.01 (0.24 - 7.26) |
| S-Rom Noiles Femoral | 30 | 114.4 | 2 | 1.75 (0.21 - 6.31) |
| Modular Rotating Hinge | 13 | 58.8 | 1 | 1.7 (0 - 9.47) |
| LCS Complete Modular Cemented | 7 | 59.0 | 1 | 1.7 (0.04 - 9.45) |
| Physica KR cemented | 11 | 60.0 | 1 | 1.67 (0.04 - 9.29) |
| Insall/Burstein | 249 | 3,215.5 | 48 | 1.49 (1.09 - 1.96) |
| LCS Complete Rev Fem | 10 | 67.8 | 1 | 1.48 (0 - 8.22) |
| femoral mod. Stem section | 7 | 71.3 | 1 | 1.4 (0.04 - 7.81) |
| PFC Sigma TC3 | 31 | 226.0 | 3 | 1.33 (0.27 - 3.88) |
| Evolution cemented | 62 | 80.0 | 1 | 1.25 (0.03 - 6.96) |
| Legion PS cemented | 125 | 561.0 | 7 | 1.25 (0.5 - 2.57) |
| Optetrak cemented | 281 | 3,104.5 | 36 | 1.16 (0.8 - 1.59) |
| Journey BCS | 143 | 1,589.6 | 18 | 1.13 (0.67 - 1.79) |
| Nexgen LCCK cemented | 329 | 2,251.7 | 24 | 1.07 (0.68 - 1.59) |
| Legion COCR | 16 | 103.4 | 1 | 0.97 (0.02 - 5.39) |
| Vanguard (TM) PS | 618 | 4,894.7 | 43 | 0.88 (0.64 - 1.18) |
| Journey II CR | 42 | 115.7 | 1 | 0.86 (0.02 - 4.81) |
| LCS Complete RPS | 65 | 594.6 | 5 | 0.84 (0.27 - 1.96) |
| Journey II BCS | 450 | 1,562.2 | 13 | 0.83 (0.42 - 1.38) |
| Trekking | 1,026 | 6,047.2 | 41 | 0.68 (0.48 - 0.91) |
| Scorpio | 853 | 11,120.0 | 73 | 0.66 (0.51 - 0.82) |
| Legion Oxinium | 155 | 1,075.9 | 7 | 0.65 (0.26 - 1.34) |
| Persona cemented | 9,181 | 31,123.8 | 194 | 0.62 (0.54 - 0.72) |
| Maxim | 825 | 11,105.8 | 68 | 0.61 (0.47 - 0.77) |
| Vanguard (TM) CR | 1,727 | 13,124.6 | 78 | 0.59 (0.47 - 0.74) |
| Saiph | 193 | 685.8 | 4 | 0.58 (0.16 - 1.49) |
| Nexgen LPS-Flex cemented | 6,774 | 69,923.8 | 405 | 0.58 (0.52 - 0.64) |
| Nexgen LPS cemented | 3,233 | 36,715.5 | 200 | 0.54 (0.47 - 0.62) |
| Balansys | 1,901 | 12,702.7 | 69 | 0.54 (0.42 - 0.69) |
| Attune cemented | 15,603 | 59,733.9 | 310 | 0.52 (0.46 - 0.58) |
| MBK cemented | 247 | 3,650.0 | 18 | 0.49 (0.29 - 0.78) |
| Genesis II cemented | 14,925 | 141,892.7 | 619 | 0.44 (0.4 - 0.47) |
| LCS cemented | 3,835 | 52,847.4 | 219 | 0.41 (0.36 - 0.47) |
| Sigma CR150 | 1,071 | 9,738.2 | 40 | 0.41 (0.29 - 0.56) |
| AGC cemented | 393 | 5,031.0 | 20 | 0.4 (0.24 - 0.6) |
| Triathlon cemented | 33,017 | 211,542.9 | 813 | 0.38 (0.36 - 0.41) |

| Femur Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Nexgen CR cemented | 3,081 | 38,352.4 | 147 | 0.38 (0.32 - 0.45) |
| LCS Complete cemented | 6,135 | 65,883.7 | 245 | 0.37 (0.33 - 0.42) |
| Nexgen CR-Flex cemented | 6,277 | 53,442.5 | 197 | 0.37 (0.32 - 0.42) |
| PFC Sigma cemented | 10,684 | 114,213.1 | 387 | 0.34 (0.31 - 0.37) |
| Sigma cemented | 1,689 | 11,689.6 | 39 | 0.33 (0.23 - 0.45) |
| Duracon cemented | 3,443 | 45,552.7 | 148 | 0.32 (0.27 - 0.38) |
| Advance cemented | 160 | 2,022.7 | 6 | 0.3 (0.11 - 0.65) |
| ROCC cemented | 36 | 449.3 | 1 | 0.22 (0.01 - 1.24) |
| AMK cemented | 95 | 1,384.9 | 2 | 0.14 (0.02 - 0.52) |
| Attune uncemented | 5 | 3.8 | 0 | 0 (0 - 98.35) |
| Basic Femoral Component | 2 | 24.3 | 0 | 0 (0 - 15.21) |
| Congruency PS Femoral | 1 | 22.8 | 0 | 0 (0 - 16.17) |
| Endo-Model | 2 | 25.6 | 0 | 0 (0 - 14.39) |
| Evolution | 11 | 22.2 | 0 | 0 (0 - 16.62) |
| Femoral knee | 4 | 5.7 | 0 | 0 (0 - 64.16) |
| Femoral mod. Body | 2 | 20.9 | 0 | 0 (0 - 17.69) |
| Femoral mod. Distal condyle | 2 | 5.7 | 0 | 0 (0 - 64.5) |
| Femoral module | 1 | 7.9 | 0 | 0 (0 - 46.48) |
| Finn Rotating Femoral | 3 | 9.3 | 0 | 0 (0 - 39.73) |
| Genesis II | 1 | 1.0 | 0 | 0 (0 - 379.54) |
| Genesis II Nonporous | 1 | 0.1 | 0 | 0 (0 - 5389.45) |
| Journey | 3 | 3.0 | 0 | 0 (0 - 124.41) |
| Journey II Bcs | 9 | 8.4 | 0 | 0 (0 - 43.85) |
| Journey II Cr | 3 | 0.3 | 0 | 0 (0 - 1464.53) |
| LCS Rev Fem | 1 | 1.4 | 0 | 0 (0 - 261.62) |
| Legion CR cemented | 16 | 18.7 | 0 | 0 (0 - 19.78) |

| Femur Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Legion femoral component | 4 | 0.4 | 0 | 0 (0 - 892.29) |
| Legion HK | 2 | 6.2 | 0 | 0 (0 - 59.36) |
| Legion Narrow Oxinium | 1 | 0.0 | 0 | 0 (0 - 7485.35) |
| Legion Nonporous Cemented | 4 | 2.3 | 0 | 0 (0 - 162.53) |
| Legion Pressfit Stem | 4 | 16.1 | 0 | 0 (0 - 22.98) |
| Link Sled | 2 | 4.9 | 0 | 0 (0 - 75.02) |
| Mod3 | 2 | 13.9 | 0 | 0 (0 - 26.62) |
| MRS | 3 | 21.7 | 0 | 0 (0 - 17.01) |
| Mutars | 3 | 4.7 | 0 | 0 (0 - 77.75) |
| MUTARS | 2 | 0.5 | 0 | 0 (0 - 787.93) |
| Nexgen CR uncemented | 1 | 0.5 | 0 | 0 (0 - 778.82) |
| Orthopaedic salvage system | 1 | 0.7 | 0 | 0 (0 - 538.95) |
| OSS | 23 | 106.8 | 0 | 0 (0 - 3.46) |
| Pantheon cemented | 1 | 0.1 | 0 | 0 (0 - 4210.51) |
| Persona | 3 | 1.0 | 0 | 0 (0 - 376.36) |
| Persona Cemented | 4 | 2.3 | 0 | 0 (0 - 159.26) |
| Persona Partial cemented | 2 | 1.5 | 0 | 0 (0 - 251.84) |
| Persona uncemented | 2 | 1.0 | 0 | 0 (0 - 369.14) |
| Posterior Stabilized Legion | 3 | 1.7 | 0 | 0 (0 - 221.97) |
| Restoris MCK | 3 | 1.3 | 0 | 0 (0 - 283.66) |
| S-Rom | 3 | 13.4 | 0 | 0 (0 - 27.53) |
| Straight cemented stem | 2 | 8.3 | 0 | 0 (0 - 44.67) |
| Trekking femoral | 1 | 1.4 | 0 | 0 (0 - 261.62) |
| Triathlon | 1 | 0.7 | 0 | 0 (0 - 563.75) |
| Triathlon uncemented | 10 | 9.0 | 0 | 0 (0 - 41.12) |
| Unity Knee CR Femur | 29 | 8.2 | 0 | 0 (0 - 44.91) |

| Femur Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Unity Knee PS Femur | 7 | 2.2 | 0 | 0 (0 - 165.93) |
| Vanguard | 1 | 5.1 | 0 | 0 (0 - 71.63) |
| Vanguard (TM) SSK | 27 | 139.6 | 0 | 0 (0 - 2.64) |
| Vanguard PS Open Box Femoral | 1 | 2.1 | 0 | 0 (0 - 171.86) |
| Vanguard TiNbN | 3 | 18.7 | 0 | 0 (0 - 19.73) |

TABLE 2.44

### Revision rate of Uncemented Femoral Prostheses sorted by Revision Rate

| Femur Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Genesis II uncemented | 2 | 13.4 | 1 | 7.48 (0.19 - 41.68) |
| Triathlon | 24 | 16.6 | 1 | 6.03 (0.15 - 33.6) |
| Persona uncemented | 43 | 62.7 | 1 | 1.59 (0.04 - 8.88) |
| ROCC uncemented | 29 | 323.0 | 5 | 1.55 (0.5 - 3.61) |
| LCS uncemented | 526 | 8,247.7 | 82 | 0.99 (0.79 - 1.23) |
| Attune uncemented | 1,045 | 2,314.5 | 23 | 0.99 (0.63 - 1.49) |
| Nexgen CR uncemented | 55 | 639.3 | 4 | 0.63 (0.17 - 1.6) |
| LCS Complete uncemented | 2,721 | 25,880.4 | 154 | 0.6 (0.5 - 0.69) |
| Nexgen LPS uncemented | 136 | 1424.2 | 7 | 0.49 (0.2 - 1.01) |
| Triathlon uncemented | 2,596 | 6,289.5 | 28 | 0.45 (0.3 - 0.64) |
| Duracon uncemented | 470 | 6,226.8 | 13 | 0.21 (0.11 - 0.36) |
| Attune cemented | 4 | 3.8 | 0 | 0 (0 - 97.71) |
| Balansys | 1 | 0.4 | 0 | 0 (0 - 886.42) |
| Custom device | 1 | 16.5 | 0 | 0 (0 - 22.41) |
| LCS Complete Ti N | 1 | 0.5 | 0 | 0 (0 - 736.26) |
| LCS Complete Ti N uncemented | 6 | 58.4 | 0 | 0 (0 - 6.32) |
| Mutars uncemented | 1 | 4.2 | 0 | 0 (0 - 88.12) |
| Nexgen CR-Flex cemented | 1 | 2.3 | 0 | 0 (0 - 158.7) |
| Nexgen CR-Flex uncemented | 39 | 349.8 | 0 | 0 (0 - 1.05) |
| Oxford 3 uncemented | 3 | 21.3 | 0 | 0 (0 - 17.34) |
| Persona | 2 | 0.8 | 0 | 0 (0 - 472.76) |
| Persona cemented | 3 | 0.9 | 0 | 0 (0 - 425.04) |
| Persona Trabecular Metal | 1 | 0.4 | 0 | 0 (0 - 1052.63) |
| PFC Sigma uncemented | 7 | 97.0 | 0 | 0 (0 - 3.8) |
| RBK Porous femur | 1 | 12.4 | 0 | 0 (0 - 29.7) |
| Sigma cemented | 1 | 0.3 | 0 | 0 (0 - 1192.36) |
| Triathlon cemented | 12 | 14.6 | 0 | 0 (0 - 25.31) |
| Vanguard (TM) PS | 1 | 1.9 | 0 | 0 (0 - 196.98) |

TABLE 2.45

### Revision rate of Hybrid Femoral Prostheses sorted by Revision Rate

| Femur Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Pantheon cemented | 1 | 1.9 | 1 | 53.48 (1.35 - 297.96) |
| Femoral module Vitallium | 1 | 4.2 | 1 | 23.94 (0.61 - 133.36) |
| OSS | 8 | 34.5 | 2 | 5.8 (0.7 - 20.96) |
| Attune cemented | 12 | 28.1 | 1 | 3.56 (0.09 - 19.85) |
| Genesis II cemented | 4 | 31.0 | 1 | 3.23 (0.08 - 17.99) |
| GMRS | 10 | 71.8 | 1 | 1.39 (0 - 7.76) |
| Vanguard (TM) CR | 20 | 161.6 | 2 | 1.24 (0.15 - 4.47) |
| Optetrak uncemented | 380 | 4,158.3 | 40 | 0.96 (0.69 - 1.31) |

| Femur Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Attune uncemented | 235 | 320.5 | 3 | 0.94 (0.19 - 2.74) |
| Sigma cemented | 408 | 2,125.2 | 16 | 0.75 (0.43 - 1.22) |
| Triathlon cemented | 47 | 139.7 | 1 | 0.72 (0.02 - 3.99) |
| Triathlon uncemented | 455 | 2,586.5 | 18 | 0.7 (0.4 - 1.08) |
| Genesis II uncemented | 47 | 648.8 | 4 | 0.62 (0.17 - 1.58) |
| Nexgen CR-Flex uncemented | 251 | 1,549.0 | 9 | 0.58 (0.27 - 1.1) |
| LCS cemented | 46 | 710.0 | 4 | 0.56 (0.15 - 1.44) |
| PFC Sigma uncemented | 682 | 5,946.9 | 33 | 0.55 (0.38 - 0.77) |
| LCS Complete cemented | 34 | 434.6 | 2 | 0.46 (0.06 - 1.66) |
| LCS uncemented | 643 | 8,941.3 | 41 | 0.46 (0.32 - 0.62) |
| LCS Complete uncemented | 1760 | 16,683.2 | 71 | 0.43 (0.33 - 0.53) |
| PFC Sigma cemented | 210 | 2,461.9 | 10 | 0.41 (0.19 - 0.75) |
| Nexgen CR uncemented | 432 | 5,388.6 | 19 | 0.35 (0.21 - 0.55) |
| Duracon uncemented | 327 | 5,125.3 | 15 | 0.29 (0.16 - 0.47) |
| Nexgen LPS uncemented | 28 | 282.5 | 0 | 0 (0 - 1.31) |
| Persona uncemented | 22 | 26.2 | 0 | 0 (0 - 14.1) |
| Persona | 12 | 2.9 | 0 | 0 (0 - 129.43) |
| MBK uncemented | 9 | 121.7 | 0 | 0 (0 - 3.03) |
| Zimmer | 7 | 15.2 | 0 | 0 (0 - 24.22) |
| Nexgen CR cemented | 6 | 95.0 | 0 | 0 (0 - 3.88) |
| LCS Complete RPS | 5 | 52.4 | 0 | 0 (0 - 7.04) |
| Nexgen LPS cemented | 4 | 51.5 | 0 | 0 (0 - 7.17) |
| Trekking | 4 | 7.4 | 0 | 0 (0 - 49.55) |
| Nexgen CR-Flex cemented | 3 | 21.0 | 0 | 0 (0 - 17.55) |
| Duracon cemented | 2 | 38.2 | 0 | 0 (0 - 9.66) |
| Legion Pressfit Stem | 2 | 12.3 | 0 | 0 (0 - 30.02) |
| Triathlon | 2 | 1.0 | 0 | 0 (0 - 370.15) |
| Attune | 1 | 0.4 | 0 | 0 (0 - 935.67) |
| femoral mod. Stem section | 1 | 4.0 | 0 | 0 (0 - 91.47) |
| Fluted Stem Extender | 1 | 18.1 | 0 | 0 (0 - 20.38) |
| Journey II CR | 1 | 2.6 | 0 | 0 (0 - 144.57) |
| Journey PFJ | 1 | 0.5 | 0 | 0 (0 - 783.35) |
| LCS Complete Modular Cemented | 1 | 14.1 | 0 | 0 (0 - 26.18) |
| Legion COCR | 1 | 5.9 | 0 | 0 (0 - 62.41) |
| Modular Rotating Hinge | 1 | 4.3 | 0 | 0 (0 - 85.98) |
| Persona Trabecular Metal | 1 | 0.3 | 0 | 0 (0 - 1259.22) |
| ROCC uncemented | 1 | 14.8 | 0 | 0 (0 - 25.01) |
| S-Rom Noiles Femoral | 1 | 6.4 | 0 | 0 (0 - 57.75) |
| Saiph | 1 | 0.5 | 0 | 0 (0 - 778.82) |
| Vanguard (TM) PS | 1 | 8.9 | 0 | 0 (0 - 41.52) |

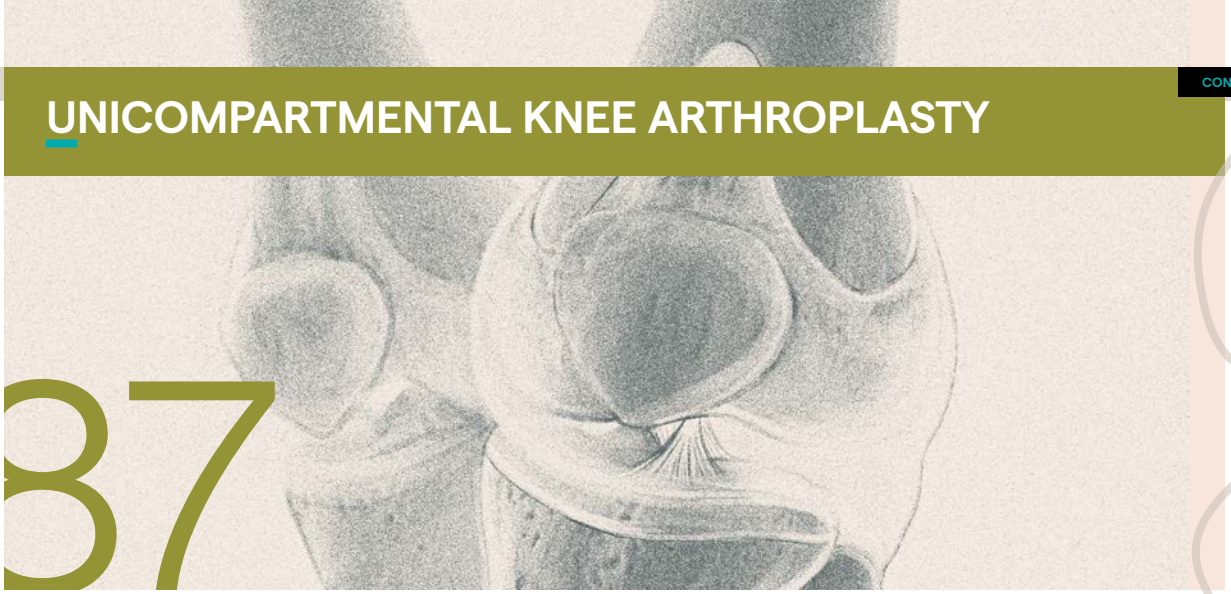
TABLE 2.46

## Revision rate of Femoral Prostheses by Bearing Constraint sorted by Revision Rate

| Femur Prosthesis | Bearing Constraint | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|---|
| Attune cemented | CR | 9,449 | 36,872.6 | 186 | 0.5 (0.43 - 0.58) |
| Attune cemented | PS | 6,110 | 22,766.4 | 124 | 0.54 (0.45 - 0.65) |
| Attune uncemented | CR | 1,003 | 2,293.9 | 22 | 0.96 (0.58 - 1.43) |
| Attune uncemented | PS | 279 | 342.2 | 4 | 1.17 (0.25 - 2.99) |
| Balansys | CR | 1,668 | 11,779.3 | 57 | 0.48 (0.36 - 0.62) |
| Balansys | PS | 113 | 780.2 | 10 | 1.28 (0.57 - 2.27) |
| Genesis II cemented | CR | 7,978 | 79,471.2 | 252 | 0.32 (0.28 - 0.36) |
| Genesis II cemented | PS | 6,944 | 62,408.9 | 368 | 0.59 (0.53 - 0.65) |
| Genesis II uncemented | CR | 38 | 547.8 | 3 | 0.55 (0.11 - 1.6) |
| Genesis II uncemented | PS | 11 | 114.4 | 2 | 1.75 (0.21 - 6.32) |
| Maxim | CR | 660 | 8,867.2 | 49 | 0.55 (0.41 - 0.73) |
| Maxim | PS | 165 | 2,238.6 | 19 | 0.85 (0.51 - 1.33) |
| Nexgen cemented | CR | 3,087 | 38,447.4 | 147 | 0.38 (0.32 - 0.45) |
| Nexgen cemented | PS | 3,237 | 36,766.9 | 200 | 0.54 (0.47 - 0.62) |
| Nexgen uncemented | CR | 488 | 6,028.4 | 23 | 0.38 (0.24 - 0.56) |
| Nexgen uncemented | PS | 164 | 1,706.8 | 7 | 0.41 (0.15 - 0.81) |
| Nexgen Flex cemented | CR | 6,281 | 53,465.9 | 197 | 0.37 (0.32 - 0.42) |
| Nexgen Flex cemented | PS | ,6769 | 69,895.5 | 405 | 0.58 (0.52 - 0.64) |
| Optetrak cemented | CR | 83 | 954.3 | 8 | 0.84 (0.33 - 1.65) |
| Optetrak cemented | PS | 198 | 2150.2 | 28 | 1.3 (0.85 - 1.85) |
| Optetrak uncemented | CR | 354 | 3873.5 | 37 | 0.96 (0.67 - 1.32) |
| Optetrak uncemented | PS | 26 | 284.9 | 3 | 1.05 (0.22 - 3.08) |
| Persona cemented | CR | 7,484 | 24,311.7 | 141 | 0.58 (0.49 - 0.68) |
| Persona cemented | PS | 1,700 | 6,813.0 | 53 | 0.78 (0.58 - 1.01) |
| PFC Sigma cemented | CR | 8,955 | 92,410.4 | 285 | 0.31 (0.27 - 0.35) |
| PFC Sigma cemented | PS | 1,890 | 23,622.3 | 112 | 0.47 (0.39 - 0.57) |
| Scorpio | CR | 740 | 9,848.8 | 62 | 0.63 (0.48 - 0.81) |
| Scorpio | PS | 111 | 1,254.8 | 11 | 0.88 (0.41 - 1.52) |
| Sigma cemented | CR | 395 | 2,359.2 | 2 | 0.08 (0 - 0.27) |
| Sigma cemented | PS | 1,703 | 11,455.9 | 53 | 0.46 (0.35 - 0.61) |
| Trekking | CR | 343 | 2,238.2 | 17 | 0.76 (0.44 - 1.22) |
| Trekking | PS | 676 | 3,765.0 | 23 | 0.61 (0.39 - 0.92) |
| Triathlon cemented | CR | 29,557 | 182,449.8 | 677 | 0.37 (0.34 - 0.4) |
| Triathlon cemented | PS | 3,514 | 29,233.1 | 137 | 0.47 (0.39 - 0.55) |
| Triathlon uncemented | CR | 2965 | 7948.4 | 43 | 0.54 (0.39 - 0.73) |
| Triathlon uncemented | PS | 94 | 934.7 | 3 | 0.32 (0.04 - 0.86) |
| Vanguard ™ | CR | 1,747 | 13,286.2 | 80 | 0.6 (0.48 - 0.75) |
| Vanguard ™ | PS | 620 | 4,905.4 | 43 | 0.88 (0.63 - 1.18) |

TABLE 2.47

# UNICOMPARTMENTAL KNEE ARTHROPLASTY



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## UNICOMPARTMENTAL KNEE ARTHROPLASTY

The data analysis is for the **twenty-two-year** period January 2000 – December 2022.

There were 16,890 unicompartmental knee procedures (UKR) registered. There were 1,012 new procedures registered in 2022.

### Data analysis

This includes new form and legacy data.

### Age and sex distribution

The average age for a unicompartmental knee replacement was 66 years, with a range of 18 – 95 years.

| | Age | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Female | 65.9 | 18.3 | 94.7 | 7,502 (44.4) |
| Male | 66.2 | 19.5 | 94.6 | 9,389 (55.6) |

TABLE 3.1

| Ethnicity | N | % |
|---|---|---|
| Asian | 205 | 1.3 |
| Euro/Other | 15,395 | 95.0 |
| Māori | 523 | 3.2 |
| Pacifica | 90 | 0.6 |

TABLE 3.2

### Body Mass Index

For the thirteen-year period 2010 - 2022, there were 9,813 BMI registrations for unicompartmental knee replacements. The average was 25.9 kg/m2 with a range of 15 – 66 and a standard deviation of 11.5.

| Previous operation | N |
|---|---|
| None | 13,861 |
| Menisectomy | 2,359 |
| Ligament reconstruction | 117 |
| Osteotomy | 69 |
| Internal fixation for juxtarticular fracture | 45 |
| Synovectomy | 5 |

TABLE 3.3

| Diagnosis | N |
|---|---|
| Osteoarthritis | 16,548 |
| Avascular necrosis | 142 |
| Post ligament- disruption/reconstruction | 87 |
| Rheumatoid arthritis/other inflammatory | 77 |
| Post fracture | 42 |
| Tumour | 2 |

TABLE 3.4

| Operation Type | N |
|---|---|
| Cemented | 9,382 |
| Uncemented | 6,781 |
| Hybrid | 727 |

TABLE 3.5

| Approach | N |
|---|---|
| Medial parapatellar | 13,045 |
| Lateral parapatellar | 363 |

TABLE 3.6

| Surgical Adjuncts | N |
|---|---|
| Not Image guided | 16,522 |
| Image guided | 368 |

TABLE 3.7

| Surgeon Attire | N |
|---|---|
| Space Suits/Helmet Fan | 3,508 |
| One-piece Toga | 195 |
| Sterile Hood and Gown | 155 |
| Conventional Gown | 880 |

TABLE 3.8

## ASA Class

For the eighteen- year period 2005 – 2022, there were 13,930 unicompartmental knee procedures with the ASA class recorded.

| ASA Class | N | % |
|---|---|---|
| 1 | 2,428 | 17 |
| 2 | 8,979 | 64 |
| 3 | 2,492 | 18 |
| 4 | 31 | 1 |

TABLE 3.9

## Surgeon grade

The updated forms introduced in 2005 have separated advanced trainee into supervised and unsupervised. The following figures are for the seventeen- year period 2005 – 2022.

| Surgeon grade | N |
|---|---|
| Consultant | 15,960 |
| Advanced trainee supervised | 660 |
| Advanced trainee unsupervised | 123 |
| Basic trainee | 20 |

TABLE 3.10

# Surgeon and hospital workload

## Surgeons

In 2022, 82 surgeons performed 1,013 unicompartmental knee replacements, an average of 12 procedures per surgeon.

52 surgeons performed less than 10 procedures and 30 surgeons performed greater or equal to 10 procedures.

## Hospitals

In 2022, unicompartmental knee replacements were performed in 43 hospitals; 22 were public and 21 were private.

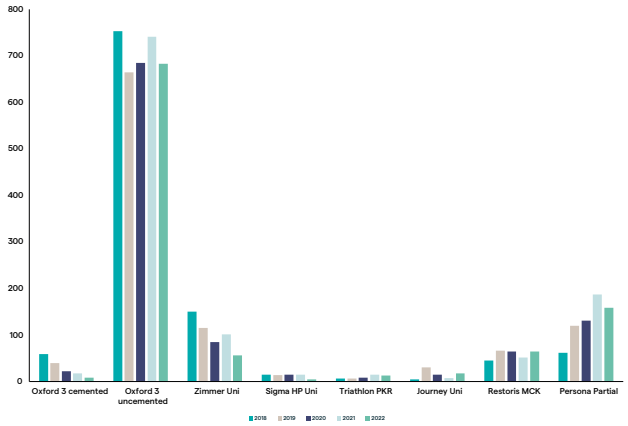
## Prosthesis Usage

Unicompartmental knee prostheses used in registry

| Prosthesis | N |
|---|---|
| Oxford 3 uncemented | 7,390 |
| Oxford 3 cemented | 4,228 |
| Zimmer Unicompartmental Knee | 1,836 |
| Miller/Galante | 710 |
| Persona Partial cemented | 659 |
| Preservation | 484 |
| Genesis Uni | 359 |
| Restoris MCK | 320 |
| Triathlon PKR | 276 |
| Sigma HP Uni | 209 |

TABLE 3.11

**Most Used Unicompartmental Prostheses for 5 years: 2018 to 2022**



# Revision of Registered Primary Unicompartmental Arthroplasties

This section analyses the data for revision of unicompartmental knee replacement over the **twenty-four-year** period.

There were 1,473 revisions of the 16,890 registered unicompartmental knee replacements.

A further 153 had a second revision, 19 a third revision and 1 a fourth revision.

1,090 of 1,358 were revised to total knee replacements and 268 a further revision to unicompartmental knees.

| Time to Revision from Primary Procedure | Days | (Equiv. years) |
|---|---|---|
| Average | 2,297 | 6.3 |
| Maximum | 7,671 | 21.0 |
| Minimum | 1 | |

TABLE 3.12

| Reason for revision | N |
|---|---|
| Unexplained Pain | 373 |
| Deep infection | 53 |
| Loosening tibial component | 218 |
| Loosening femoral component | 156 |
| Fracture tibia | 40 |
| Fracture femur | 7 |

TABLE 3.13

### All Revisions

| | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| All Revisions | 16,890 | 132,077.9 | 1,473 | 1.11 (1.06-1.17) |

TABLE 3.14

### Revision by Gender

| Sex | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| F | 7,502 | 61,489.9 | 747 | 1.21 (1.13-1.30) |
| M | 9,388 | 70,587.9 | 726 | 1.03 (0.96-1.11) |

TABLE 3.15

### Revision versus Age Bands

| Age Groups | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| <55 | 2,153 | 17,443.1 | 318 | 1.82 (1.63-2.03) |
| 55-64 | 5,722 | 47,674.0 | 654 | 1.37 (1.27-1.48) |
| 65-74 | 5,791 | 45,269.9 | 367 | 0.81 (0.73-0.90) |
| >=75 | 3,224 | 21,690.9 | 134 | 0.62 (0.52-0.73) |

TABLE 3.16

### Revision by Ethnicity

| Ethnicity | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Asian | 205 | 1,436.4 | 10 | 0.70 (0.33-1.28) |
| Euro/Other | 15,395 | 122,339.0 | 1,390 | 1.14 (1.08-1.20) |
| Māori | 523 | 3,770.1 | 47 | 1.25 (0.90-1.64) |
| Pacifica | 90 | 685.8 | 5 | 0.73 (0.20-1.60) |

TABLE 3.17

### Revision by Surgeon Annual Workload

| Consultant No. of ops/ year | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| <10 | 6,494 | 58,491.2 | 749 | 1.28 (1.19-1.38) |
| >=10 | 10,394 | 73,571.2 | 723 | 0.98 (0.91-1.06) |

TABLE 3.18

### Revision by Arthroplasty Fixation

| Fixation | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Cemented | 9,382 | 90,694.4 | 1,106 | 1.22 (1.15-1.29) |
| Un-cemented | 6,781 | 36,805.8 | 304 | 0.83 (0.74-0.92) |
| Hybrid | 727 | 4,577.6 | 63 | 1.38 (1.05-1.75) |

TABLE 3.19

### Revision vs. Surgical Approach

| Surgical Approach | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Medial parapatellar | 13,045 | 99,869.1 | 1,152 | 1.15 (1.09-1.22) |
| Lateral parapatellar | 363 | 2,859.7 | 48 | 1.68 (1.24-2.23) |

TABLE 3.20

### Revision versus Adjunct

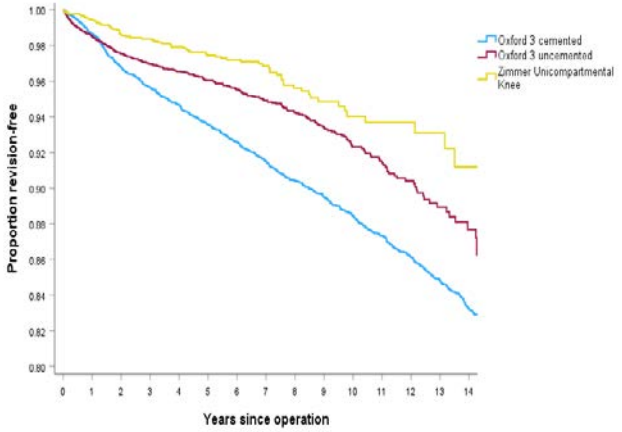
| Adjunct | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Conventional | 16,522 | 130,430.2 | 1,455 | 1.12 (1.06-1.17) |
| Image guided | 368 | 1,647.6 | 18 | 1.09 (0.00-1.69) |

TABLE 3.21

| Oxford 3 uncemented Femur | N | Observed comp. years (ocys) | Events | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| All | 7,382 | 40,525.0 | 357 | 0.88 (0.79-0.98) |
| Not Lateral Domed | 6,924 | 37,802.8 | 313 | 0.83 (0.74-0.92) |
| Oxford 3 Lateral Domed | 458 | 2,722.2 | 44 | 1.62 (1.17-2.17) |

TABLE 3.22

### Survival curves for the top 3 Unicompartmental knee prostheses excluding lateral domed Oxford 3 uncemented



## Revision Rate of Individual Unicompartmental Knee Prostheses Sorted Alphabetically

| Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| EIUS Uni Knee | 22 | 288.9 | 4 | 1.38 (0.38-3.55) |
| Freedom Active Uni | 36 | 274.3 | 8 | 2.92 (1.26-5.75) |
| Genesis Uni | 359 | 4,489.9 | 57 | 1.27 (0.95-1.63) |
| HLS Uni Evolution | 1 | 0.5 | 1 | 193.25 (4.89-1076.74) |
| Journey Uni | 84 | 219.3 | 8 | 3.65 (1.43-6.88) |
| LCS Uni | 6 | 64.0 | 2 | 3.12 (0.38-11.29) |
| Link Sled | 8 | 19.4 | 0 | 0.00 (0.00-19.00) |
| Miller/Galante | 710 | 9,570.4 | 91 | 0.95 (0.77-1.17) |
| Moto Partial Knee | 3 | 3.8 | 1 | 26.22 (0.66-146.09) |
| Nexgen CR-Flex cemented | 1 | 1.9 | 0 | 0.00 (0.00-191.12) |
| Optetrak Unicondylar Cemented | 101 | 1,125.8 | 12 | 1.07 (0.55-1.86) |
| Oxford 3 cemented | 4,228 | 49,992.4 | 672 | 1.34 (1.24-1.45) |
| Oxford 3 uncemented | 7,390 | 40,628.3 | 357 | 0.88 (0.79-0.97) |
| Oxford TiNbN coated | 2 | 13.9 | 0 | 0.00 (0.00-26.63) |
| Oxinium Uni | 33 | 349.9 | 12 | 3.43 (1.77-5.99) |
| Persona cemented | 1 | 0.9 | 0 | 0.00 (0.00-414.57) |
| Persona Partial cemented | 659 | 1,336.1 | 13 | 0.97 (0.49-1.62) |
| Preservation | 484 | 6,091.7 | 105 | 1.72 (1.41-2.09) |
| Repicci II | 97 | 1,263.0 | 26 | 2.06 (1.34-3.02) |
| Restoris MCK | 320 | 810.0 | 9 | 1.11 (0.51-2.11) |
| Sigma cemented | 1 | 1.2 | 0 | 0.00 (0.00-302.10) |
| Sigma HP Uni | 209 | 1,342.4 | 10 | 0.74 (0.36-1.37) |
| Triathlon cemented | 4 | 3.6 | 0 | 0.00 (0.00-102.23) |
| Triathlon PKR | 276 | 1,913.2 | 15 | 0.78 (0.44-1.29) |
| Triathlon uncemented | 1 | 1.9 | 0 | 0.00 (0.00-197.85) |
| Unix Uni | 14 | 119.6 | 3 | 2.51 (0.52-7.33) |
| Zimmer Unicom- partmental Knee | 1,836 | 12,148.5 | 67 | 0.55 (0.43-0.70) |

TABLE 3.23

## Analysis of the three main reasons for revision by year after the primary procedure

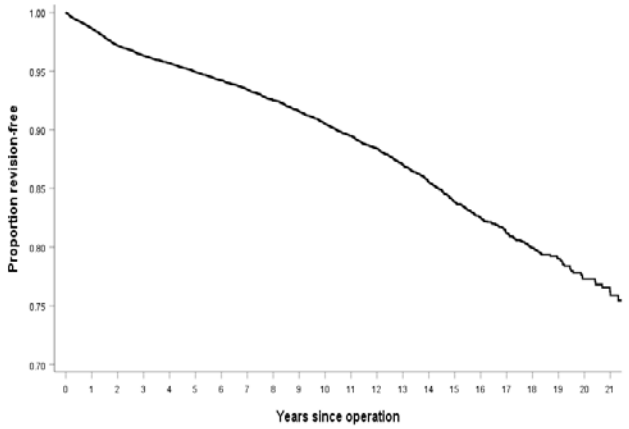
| Years from procedure | Loosening Femur | | Loosening Tibia | | Unexplained Pain | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| 0 | 13 | 8.2 | 38 | 16.5 | 50 | 13.2 |
| 1 | 26 | 16.4 | 46 | 19.9 | 84 | 22.2 |
| 2 | 10 | 6.3 | 22 | 9.5 | 42 | 11.1 |
| 3 | 18 | 11.3 | 18 | 7.8 | 18 | 4.7 |
| 4 | 5 | 3.1 | 10 | 4.3 | 36 | 9.5 |
| 5 | 11 | 6.9 | 9 | 3.9 | 18 | 4.7 |
| 6 | 5 | 3.1 | 13 | 5.6 | 21 | 5.5 |
| 7 | 11 | 6.9 | 9 | 3.9 | 19 | 5.0 |
| 8 | 9 | 5.7 | 8 | 3.5 | 14 | 3.7 |
| 9 | 9 | 5.7 | 13 | 5.6 | 15 | 4.0 |
| 10 | 8 | 5.0 | 6 | 2.6 | 15 | 4.0 |
| 11+ | 34 | 21.4 | 39 | 16.9 | 47 | 12.4 |
| **Total** | **159** | | **231** | | **379** | |

TABLE 3.24

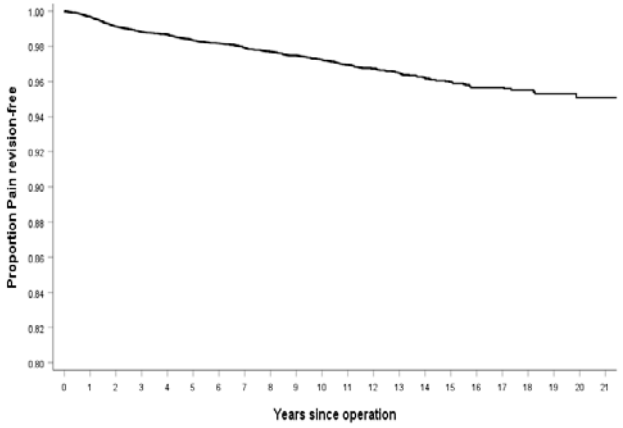
# Kaplan Meier Curves Hips

The following Kaplan Meier survival analyses are for the **23 years** from 2000 to 2022, with deceased patients censored at time of death.

### Unicompartmental Knees




### Proportion Pain Revision -Free




| Years | % Revision-free | N |
|---|---|---|
| 1 | 98.6 | 15,589 |
| 2 | 97.2 | 14,146 |
| 3 | 96.3 | 12,886 |
| 4 | 95.7 | 11,613 |
| 5 | 94.9 | 10362 |
| 6 | 94.2 | 9,165 |
| 7 | 93.4 | 8,165 |
| 8 | 92.5 | 7,202 |
| 9 | 91.6 | 6,350 |
| 10 | 90.5 | 5,497 |
| 11 | 89.5 | 4,707 |
| 12 | 88.4 | 4,070 |
| 13 | 87.0 | 3,418 |
| 14 | 85.5 | 2,820 |
| 15 | 83.8 | 2,315 |
| 16 | 82.5 | 1,832 |
| 17 | 81.2 | 1,383 |
| 18 | 79.9 | 1,029 |
| 19 | 79.0 | 695 |
| 20 | 77.3 | 418 |
| 21 | 76.2 | 225 |

TABLE 3.25

# Patient Recorded Outcome Measures

Patient based questionnaire outcomes at six months, five years, ten years, fifteen and twenty years post-surgery.

## Questionnaires at six months post-surgery

At six months post-surgery a random selection of patients are sent the Oxford-12 questionnaire in order to achieve a response rate of 20% of the total which is ample to provide powerful statistical analysis.

A score of 48 is the best, indicating normal function. A score of 0 is the worst, indicating the most severe disability.

In addition, we have grouped the questionnaire responses according to the classification system published by Kalairajah et al in 2005. (See appendix 1).

This groups each score into four categories:

| Category | Score | Interpretation |
|---|---|---|
| 1 | < 27 | Poor |
| 2 | 27-33 | Fair |
| 3 | 34-41 | Good |
| 4 | >41 | Excellent |

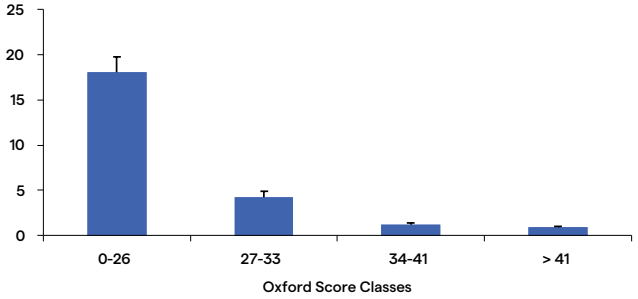
TABLE 3.26

For the twenty-four-year period, there were 8,924 unicompartmental knee questionnaire responses registered at six months post-surgery. At 6 months post-surgery, 84% of patients achieved an excellent or good score. The average was 39.9, range 3 to 48, and the standard deviation was 7.12.

| Kalairajah Classification at 6 months | Revision to 2 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 525 | 95 | 18.10 | 1.68 |
| Fair | 921 | 39 | 4.23 | 0.66 |
| Good | 2,831 | 33 | 1.17 | 0.20 |
| Excellent | 4,647 | 41 | 0.88 | 0.14 |

TABLE 3.27

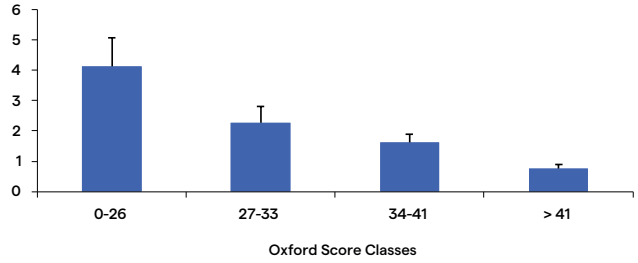
### Revision (%) to 2 years by Oxford score at 6 months




| Kalairajah Classification at 6 months | Revision 2 to 4 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 437 | 18 | 4.12 | 0.95 |
| Fair | 791 | 18 | 2.28 | 0.53 |
| Good | 2,394 | 39 | 1.63 | 0.26 |
| Excellent | 3,892 | 29 | 0.75 | 0.14 |

TABLE 3.28

### Revision (%) 2 to 4 years - by Oxford score at 6 months



## Questionnaires at five years post-surgery

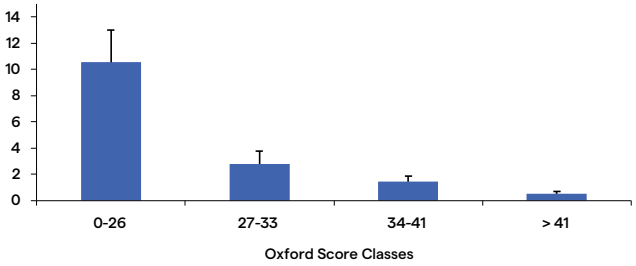
All patients who had a six-month registered questionnaire, and who had not had revision surgery were sent a further questionnaire at five years post-surgery. There were 3,365 unicompartmental knee questionnaire responses registered at five years post-surgery.

At five years post-surgery, 89% of patients achieved an excellent or good score. The average was 41.74, range 5 to 48, and the standard deviation was 6.79.

| Kalairajah Classification at 5 years | Revision to 2 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 152 | 16 | 10.53 | 2.49 |
| Fair | 254 | 7 | 2.76 | 1.03 |
| Good | 830 | 12 | 1.45 | 0.41 |
| Excellent | 2,356 | 12 | 0.51 | 0.15 |

TABLE 3.29

### Revision (%) to 2 years by Oxford score at 5 Years




## Questionnaires at ten years post-surgery

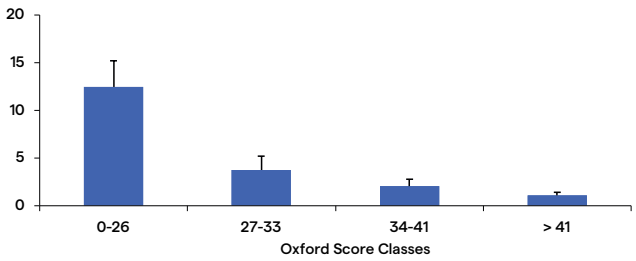
All patients who had a six-month registered questionnaire, and who had not had revision surgery were sent a further questionnaire at ten years post-surgery. There were 1,748 unicompartmental knee questionnaire responses registered at ten years post-surgery.

At ten years post-surgery, 84% of patients achieved an excellent or good score. The average was 41.82, range 5 to 48, and the standard deviation was 7.85.

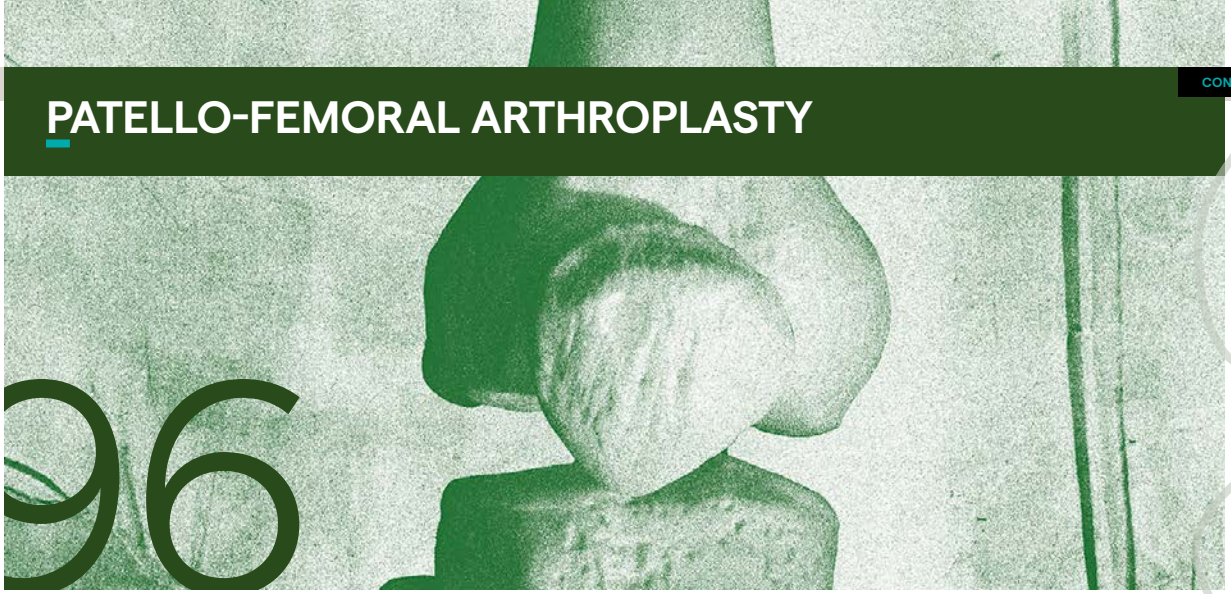
| Kalairajah Classification at 10 years | Revision to 2 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 137 | 17 | 12.41 | 2.82 |
| Fair | 161 | 6 | 3.73 | 1.49 |
| Good | 432 | 9 | 2.08 | 0.69 |
| Excellent | 1,194 | 13 | 1.09 | 0.30 |

TABLE 3.30

### Revision (%) to 2 years by Oxford score at 10 Years



# PATELLO-FEMORAL ARTHROPLASTY




| | Age | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Female | 60.1 | 31.3 | 90.7 | 635 (71.5) |
| Male | 61.1 | 31.3 | 100.5 | 252 (28.4) |

TABLE 4.1

### Patellofemoral prostheses used in 2022

| Prostheses | N |
|---|---|
| Gender patellofemoral | 62 |
| Journey PFJ | 5 |
| Restoris Patellofemoral | 5 |
| Custom device | 2 |
| Triathlon cemented | 1 |
| Restoris MCK | 1 |

TABLE 4.2

| N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|
| 887 | 5,512.9 | 110 | 2.00 (1.64-2.40) |

TABLE 4.3

The revision rate is four times that for total knee arthroplasty.

| Re-revisions | N |
|---|---|
| Revised to Total | 79 |
| Revised to Uniknee | 3 |
| Revised to Patellofemoral | 3 |

TABLE 4.4

## Revision of Patellofemoral knees

Of the 887 registered, n = 110 have been revised.

| Time to Revision from Primary Procedure | Days | (Equiv. years) |
|---|---|---|
| Average | 2,004 | 5.5 |
| Maximum | 5,718 | 15.6 |
| Minimum | 108 | |

TABLE 4.5

| Reason for revision | N |
|---|---|
| Pain | 30 |
| Deep infection | 7 |
| Loosening patellar | 5 |
| Loosening femoral | 1 |
| Wear in non-replaced compartment | 13 |
| Instability | 2 |
| Polywear | 2 |

TABLE 4.6

More than one reason for revision can be listed and all are registered.

# ANKLE ARTHROPLASTY

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## PRIMARY ANKLE ARTHROPLASTY

The **twenty-four-year** report analyses data for the period January 2000 – December 2022. There are 2,183 primary ankle procedures registered. This is an addition of 166 compared to last year's report.

### Data analysis

Data analysis includes data collected from January 2000 onwards and relates to all 2,183 registered primary ankle arthroplasties and smaller data sets collected from subsequent dates when the data forms have been revised. With data form modifications occurred in 2005, 2010 and November 2020 onwards.

- The 2005 form additionally collected ASA and registrar primary surgeon supervision data.
- The 2010 form additionally collected BMI.
- The November 2020 significantly revised forms were introduced for primary and revision procedures. They can be found in the appendices. The primary form added new categories for previous operations, diagnosis, X-ray alignment, concurrent surgery, approach including technologies assisting implant insertion and surgeon attire. The revision form added a wider range of categories for diagnosis.

  Pain was replaced with 'pain without obvious cause'. Further categories were added for revision procedure and re-operation procedure. There have been 312 new ankles registered using the new form.

In this report data from the new and the legacy forms have been grouped together for analysis.

### Age, sex and ethnicity distribution

The average age for an ankle replacement was 66.8 years, with a range of 32 – 96 years.

| | Age | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Female | 66.8 | 32 | 96 | 852 (39) |
| Male | 66.8 | 33 | 92 | 1,331 (61) |

TABLE 5.1

| Age Groups (years) | N | % |
|---|---|---|
| <40 | 14 | 0.6 |
| 40-55 | 191 | 8.7 |
| 55-64 | 663 | 30.4 |
| 65-74 | 913 | 41.8 |
| >=75 | 402 | 18.4 |
| **Total** | **2,183** | **100.0** |

TABLE 5.2

Patient ethnicity data was obtained from the national NHI dataset by matching to the registry form information rather than the registry forms themselves. Individuals for whom ethnicity was not recorded have not been included.

| Ethnicity | N | % |
|---|---|---|
| Asian | 23 | 1.1 |
| Euro/Other | 2,022 | 94.4 |
| Māori | 71 | 3.3 |
| Pacifica | 27 | 1.3 |

TABLE 5.3

## Body Mass Index

For the thirteen-year period 2010 - 2022, there were 1,105 BMI registrations for primary ankle replacements. The average was 29 kg/m2 with a range of 17 – 54.

| BMI | N | % |
|---|---|---|
| <19 | 5 | 0.5 |
| 19-24.9 | 191 | 17.3 |
| 25.0-29.9 | 489 | 44.3 |
| 30.0-39.9 | 387 | 35.0 |
| >=40 | 33 | 3.0 |

TABLE 5.4

| Previous operation | N=2,025 |
|---|---|
| None | 1,729 |
| Internal fixation for juxta- articular fracture | 219 |
| Arthrodesis | 52 |
| Osteotomy | 25 |
| Total in data set | 2,025 |
| Not recorded | 158 |

TABLE 5.5

| Diagnosis | N=1,860 |
|---|---|
| Osteoarthritis | 1,645 |
| Rheumatoid arthritis/other inflammatory | 171 |
| Avascular necrosis | 12 |
| Post fracture | 32 |
| Total in data set | 1860 |
| Not recorded | 323 |

TABLE 5.6

| X-Ray | N=260 |
|---|---|
| Concentric or mild deformity | 168 |
| >10 degrees varus | 62 |
| >10 degrees valgus | 30 |
| Total in data set | 260 |
| Not recorded | 52 |
| Not recorded | 323 |

TABLE 5.7

| Concurrent surgery | N=166 |
|---|---|
| Achilles or calf lengthening | 83 |
| Ligament reconstruction – lateral | 38 |
| Hindfoot fusion or osteotomy | 33 |
| Midfoot fusion or osteotomy | 12 |
| Total in data set | 166 |
| Not recorded | 166 |

TABLE 5.8

With a view to the future the 2020 data form update included recording data about modern surgical adjuncts (Patient specific instrumentation/Navigation/Robotics). 24 primary procedures are recorded as using Patient specific instrumentation. There are no procedures recorded using navigation or robotics.

Data regarding operating theatre air flow types (laminar flow or similar/conventional) have been removed since last year's report. This information will be sought from each hospital contributing to the registry.

## ASA Class

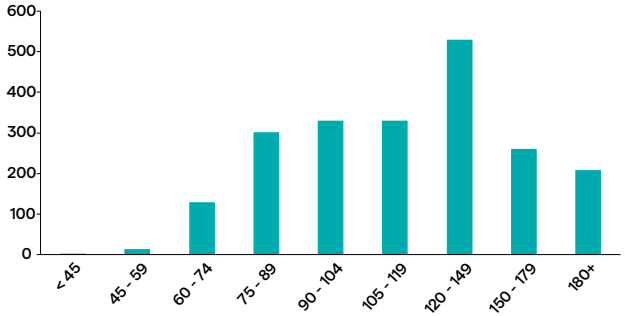
For the eighteen- year period 2005 -2022, there were 1,899 primary ankle procedures with the ASA class recorded.

| ASA Class | ASA Definition | N |
|---|---|---|
| 1 | 318 | 16.7 |
| 2 | 1,199 | 63.1 |
| 3 | 381 | 20.1 |
| 4 | 7 | 0.4 |

TABLE 5.9

### Operative time (skin to skin minutes)

### Ankles
### Number of operations by Surgical Time (Mins)




## Surgeon grade

The updated forms introduced in 2005 have separated advanced trainee into supervised and unsupervised. However, there have not been any unsupervised advanced trainees recorded since 2005. The following figures are for the eighteen-year period 2005 -2022.

Surgeon and hospital workload

| Surgeon grade | N |
|---|---|
| Consultant | 2,166 |
| Advanced trainee supervised | 15 |

TABLE 5.10

## Surgeons

In 2022, 24 surgeons performed 167 primary ankle procedures. 7 surgeons performed 10 or more procedures and 17 performed less than 10 procedures.

## Hospitals

In 2021, primary ankle replacement was performed in 24 hospitals. 9 were public and 15 were private.

### Ankle Prostheses used in 2022

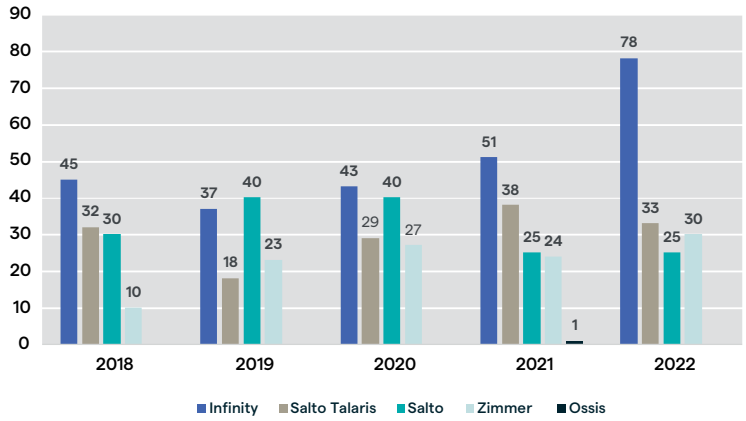
| Prosthesis | N |
|---|---|
| Infinity | 78 |
| Salto Talaris | 33 |
| Salto | 25 |
| Zimmer TM | 30 |

TABLE 5.11

There were four different implants used in 2022. The Salto is the oldest design remaining in use and has a mobile bearing. It has been in use in New Zealand since 2005. The Salto Talaris is based on the Salto but has a fixed bearing and has been in use in NZ since 2014. The Zimmer TM is a fixed bearing implant with highly crosslinked polyethylene implanted through a lateral approach with fibular osteotomy and has been in use in NZ since 2014. The Infinity is a fixed bearing implant used in NZ since 2015.

The only other implant used since the start of 2017 has been one custom made Ossis implant.

### Ankle Prostheses Used for the five years 2018-2022



# Revision Ankle Arthroplasty

Revision is defined by the Registry as a new operation in a previously replaced ankle joint, during which one or more of the components are exchanged, removed, manipulated or added.

Procedures where all components are removed are recorded as revisions (e.g., ankle fusion post failed ankle replacement, removal of components and insertion of a cement spacer for infection, or amputation). It does not include soft tissue procedures or bony debridement without component changes. These procedures are included in the category referred to as reoperation.

## Data analysis

For the twenty-three-year period January 2000–December 2022, there were 308 revision ankle procedures registered. The average age for an ankle revision was 66 years, with a range of 35 – 85.

## Revision of registered Primary Ankle Arthroplasties

## All Primary Ankle Arthroplasties

This section analyses data for revisions of primary ankle procedures for the twenty-three-year period 2000 – 2022. There were 241 revisions of the 2,183 primary total ankle procedures registered.

There was no difference in average age at revision, compared to the average age at primary arthroplasty.

| | N | Observed comp. years (ocys) | Events | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| All patients | 2,183 | 15,708.7 | 241 | 1.53 | 1.35 | 1.74 |

TABLE 5.12

| Sex | N | Observed comp. years (ocys) | Events | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| Females | 852 | 6,293.0 | 98 | 1.56 | 1.26 | 1.90 |
| Males | 1,331 | 9,415.7 | 143 | 1.52 | 1.28 | 1.79 |

TABLE 5.13

| Age Groups | N | Observed comp. years (ocys) | Events | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| <55 | 205 | 1,699.0 | 43 | 2.53 | 1.81 | 3.38 |
| 55-64 | 663 | 5,239.2 | 112 | 2.14 | 1.76 | 2.57 |
| 65-74 | 913 | 6,404.8 | 76 | 1.19 | 0.93 | 1.48 |
| >=75 | 402 | 2,365.7 | 10 | 0.42 | 0.20 | 0.78 |

TABLE 5.14

| Ethnicity | N | Observed comp. years (ocys) | Events | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| Asian | 23 | 161.7 | 4 | 2.47 | 0.67 | 6.33 |
| Euro/Other | 2,022 | 14,553.2 | 221 | 1.52 | 1.32 | 1.73 |
| Māori | 71 | 418.7 | 5 | 1.19 | 0.39 | 2.79 |
| Pacifica | 27 | 177.2 | 7 | 3.95 | 1.59 | 8.14 |

TABLE 5.15

## Ankle re-revisions

There were 35 registered primary ankle procedures that were revised twice and 2 procedures that were revised three times

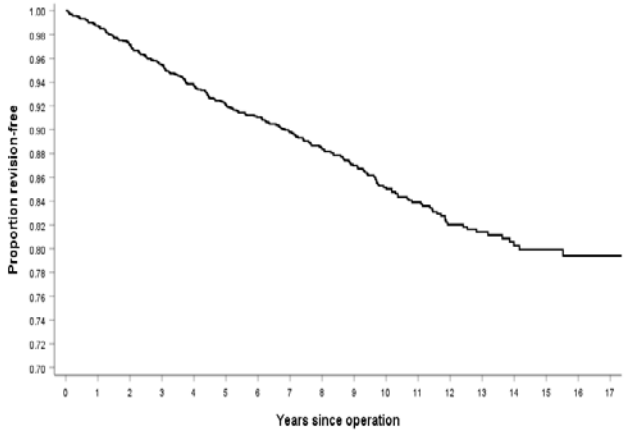
| Years from procedure | Loosening Talar Component | | Loosening Tibial Component | | Deep Infection | |
|---|---|---|---|---|---|---|
| 0 | 3 | 4.9 | 3 | 6.7 | 11 | 45.8 |
| 1 | 7 | 11.5 | 13 | 28.9 | 3 | 12.5 |
| 2 | 8 | 13.1 | 3 | 6.7 | 2 | 8.3 |
| 3 | 9 | 14.8 | 3 | 6.7 | 3 | 12.5 |
| 4 | 9 | 14.8 | 5 | 11.1 | 1 | 4.2 |
| 5 | 5 | 8.2 | 2 | 4.4 | 0 | 0.0 |
| 6 | 4 | 6.6 | 3 | 6.7 | 0 | 0.0 |
| 7 | 3 | 4.9 | 2 | 4.4 | 1 | 4.2 |
| 8 | 2 | 3.3 | 4 | 8.9 | 0 | 0.0 |
| 9 | 4 | 6.6 | 2 | 4.4 | 0 | 0.0 |
| 10 | 2 | 3.3 | 2 | 4.4 | 0 | 0.0 |
| 11+ | 5 | 8.2 | 3 | 6.7 | 3 | 12.5 |
| **Total** | **61** | | **45** | | **24** | |

TABLE 5.16

The November 2020 form update removed the pain' category from the 'diagnosis options on the revision ankle arthroplasty data form and replaced it with 'pain with no obvious cause'.
For this reason, the column of the table above relating to pain seen in previous reports has been removed.

# Kaplan Meier Curves Ankles

The following Kaplan Meier survival analyses are for the **23 years** from 2000 to 2022, with deceased patients censored at time of death.




| Years | % Revision-free | N |
|---|---|---|
| 1 | 98.8 | 1,978 |
| 2 | 97.2 | 1,799 |
| 3 | 95.5 | 1,610 |
| 4 | 93.7 | 1,447 |
| 5 | 92.1 | 1,287 |
| 6 | 91.1 | 1,143 |
| 7 | 89.8 | 998 |
| 8 | 88.5 | 887 |
| 9 | 87.0 | 769 |
| 10 | 85.2 | 652 |
| 11 | 83.9 | 549 |
| 12 | 82.0 | 449 |
| 13 | 81.4 | 349 |
| 14 | 80.2 | 256 |
| 15 | 79.9 | 175 |
| 16 | 79.4 | 127 |
| 17 | 79.4 | 82 |
| 18 | 77.9 | 45 |
| 19 | 77.9 | 26 |

TABLE 5.17

**Revision by Prosthesis Type**

| Prosthesis | N | Obs. comp years | Events | Rate/100-comp. years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| Box | 6 | 50.8 | 3 | 5.90 | 1.22 | 17.25 |
| Ramses | 11 | 117.7 | 5 | 4.25 | 1.38 | 9.91 |
| Hintegra | 22 | 164.8 | 5 | 3.03 | 0.98 | 7.08 |
| Agility | 119 | 1,462.7 | 37 | 2.53 | 1.78 | 3.49 |
| STAR | 47 | 519.0 | 12 | 2.31 | 1.19 | 4.04 |
| Mobility | 450 | 4,834.9 | 73 | 1.51 | 1.18 | 1.90 |
| Salto | 854 | 6,518.0 | 92 | 1.41 | 1.14 | 1.73 |
| Infinity | 313 | 893.9 | 9 | 1.01 | 0.42 | 1.84 |
| Zimmer TM | 139 | 365.2 | 2 | 0.55 | 0.07 | 1.98 |
| Salto Talaris | 216 | 769.3 | 2 | 0.26 | 0.03 | 0.94 |

TABLE 5.18

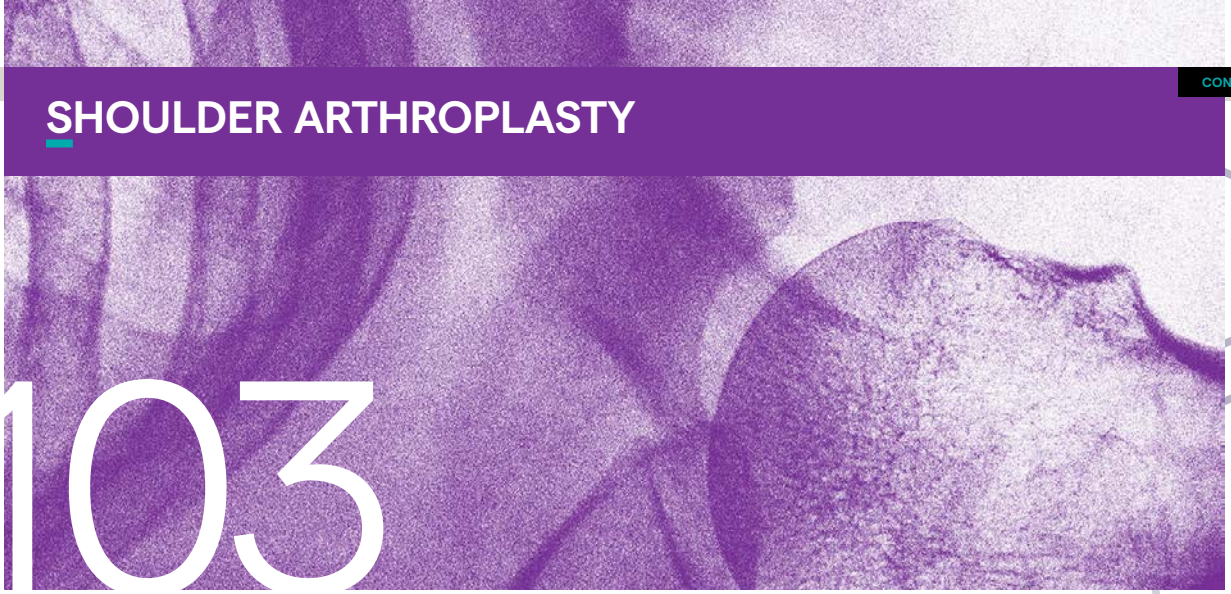
## Patient based questionnaire outcomes at six months post-surgery

At six months post-surgery patients are sent an outcome questionnaire.

The non -validated ankle questionnaire used previously by the Registry was replaced by the validated Manchester-Oxford Foot Questionnaire towards the end of 2015.

This has 16 questions answered on a 5- point Likert scale, with each item scoring from 0 – 4, with 4 denoting “most severe”. Total score ranges from 0-64, 0 is best possible, 64 is worst possible outcome.

# SHOULDER ARTHROPLASTY



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## PRIMARY SHOULDER ARTHROPLASTY

The **twenty-four-year** report analyses data for the period January 2000 – December 2022.

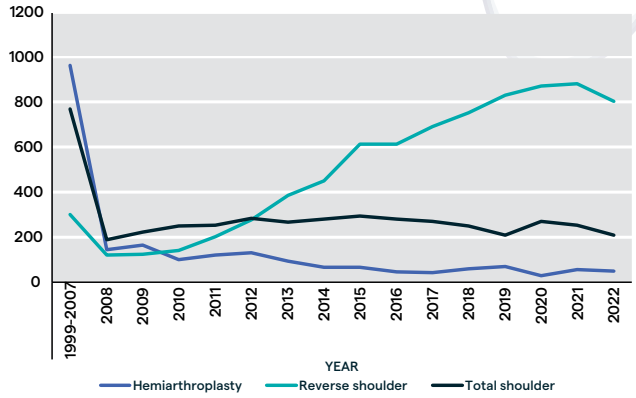
There were 14,888 shoulder procedures registered with 1,072 added in 2022.

New data forms introduced in October 2020 now have 3 categories of shoulder replacement.

These are total shoulder with 4,574 registered, reverse with 8,084 registered and hemiarthroplasty with 2,221 registered.

The previous category of resurfacing head has been updated to total shoulder, and partial resurfacing has been updated to hemiarthroplasty. A single humeral sphere has been updated to hemiarthroplasty.

**Shoulder Arthroplasty Type by Year**




### Data analysis

Data form analysis includes new form and legacy data.

### Age and sex distribution

The average age for all patients with a shoulder arthroplasty was 71 years, with a range of 13 – 99 years.

| | Female | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Total shoulder | 69.9 | 26.6 | 95.4 | 2717 (59) |
| Reverse shoulder | 74.9 | 15.7 | 96.9 | 4995 (62) |
| Hemiarthroplasty | 70.0 | 19.1 | 97.7 | 1339 (60) |

TABLE 6.1

| | Male | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Total shoulder | 65.3 | 13.3 | 89.1 | 1857 (41) |
| Reverse shoulder | 71.9 | 20.6 | 94.3 | 3092 (38) |
| Hemiarthroplasty | 61.6 | 15.7 | 99.4 | 882 (40) |

TABLE 6.2

**Data analysis by Shoulder Arthroplasty Type**

| Previous operation | Total Shoulder | Reverse Shoulder | Hemi-arthroplasty |
|---|---|---|---|
| None | 4,109 | 6,437 | 1,772 |
| Rotator cuff repair | 83 | 1,084 | 73 |
| Internal fixation for Juxta articular fracture | 54 | 186 | 97 |
| Previous stabilisation | 115 | 115 | 83 |
| Arthroscopic debridement | 53 | 71 | 16 |

TABLE 6.3

| Diagnosis | Total Shoulder | Reverse Shoulder | Hemi-arthroplasty |
|---|---|---|---|
| Osteoarthritis | 3,962 | 2,922 | 870 |
| Rheumatoid arthritis/other inflammatory | 272 | 392 | 224 |
| Cuff tear arthropathy | 30 | 3,560 | 216 |
| Acute fracture proximal humerus | 16 | 843 | 492 |
| Post old trauma | 149 | 166 | 218 |
| Avascular necrosis | 103 | 153 | 147 |
| Post recurrent dislocation | 85 | 87 | 75 |

TABLE 6.4

| Approach | Total Shoulder | Reverse Shoulder | Hemi-arthroplasty |
|---|---|---|---|
| Deltopectoral | 4,159 | 7,033 | 1,975 |
| Other including patient specific instrumentation | 39 | 331 | 34 |

TABLE 6.5

| Humeral stem type | Total Shoulder | Reverse Shoulder | Hemi-arthroplasty |
|---|---|---|---|
| Standard | 143 | 1355 | 12 |
| Stemless | 212 | 31 | 12 |
| Short/metaphyseal stem | 106 | 273 | 55 |

TABLE 6.6

| Glenoid Morphology | Total Shoulder | Reverse Shoulder | Hemi-arthroplasty |
|---|---|---|---|
| A1 | 118 | 761 | 41 |
| A2 | 118 | 379 | 17 |
| B1 | 72 | 104 | 4 |
| B2 | 58 | 200 | 13 |
| B3 | 19 | 90 | 5 |
| C | 6 | 31 | 5 |
| D | 8 | 27 | 1 |

TABLE 6.7

| Operating theatre | Total Shoulder | Reverse Shoulder | Hemi-arthroplasty |
|---|---|---|---|
| Conventional | 2,895 | 4,667 | 1,547 |
| Laminar flow | 1,614 | 3,310 | 644 |

TABLE 6.8

| Surgeon Attire | Total Shoulder | Reverse Shoulder | Hemi-arthroplasty |
|---|---|---|---|
| Space suits/Helmet Fan | 805 | 1,404 | 244 |
| One-piece Toga | 31 | 131 | 11 |
| Sterile Hood and Gown | 41 | 149 | 9 |
| Conventional Gown | 395 | 1,399 | 88 |

TABLE 6.9

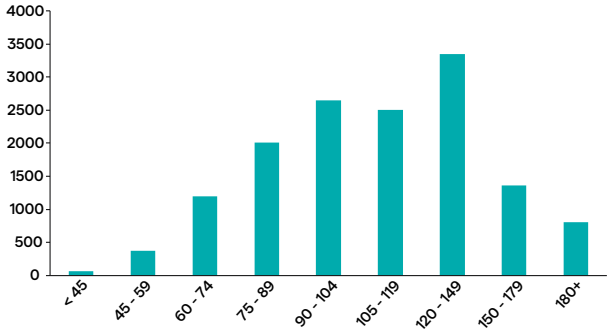
| ASA Class | Total Shoulder | Reverse Shoulder | Hemi-arthroplasty |
|---|---|---|---|
| | Number (%) | Number (%) | Number (%) |
| 1 | 453 (11.1) | 424 (5.4) | 1,357 (46.8) |
| 2 | 2,499 (61.4) | 4,370 (55.4) | 804 (27.7) |
| 3 | 1,094 (26.9) | 2,988 (37.9) | 534 (18.4) |
| 4 | 21 (0.5) | 104 (1.3) | 205 (7.1) |

TABLE 6.10

| Mean Operative Time (skin to skin in minutes) | Mean (SD) |
|---|---|
| Total shoulder | 124.4 (33.7) |
| Reverse shoulder | 108.7 (40.5) |
| Hemiarthroplasty | 108.4 (41.0) |

TABLE 6.11

**Shoulders**
**Number of operations by Surgical Time (Mins)**




## Surgeon grade

The updated forms introduced in 2005 have separated advanced trainee into supervised and unsupervised.

The following figures are for the eighteen-year period 2005 – 2022.

| Surgeon grade | Total Shoulder | Reverse Shoulder | Hemi-arthroplasty |
|---|---|---|---|
| Consultant | 4,396 | 7,663 | 2,105 |
| Advanced trainee supervised | 178 | 445 | 69 |
| Advanced trainee unsupervised | 6 | 17 | 14 |

TABLE 6.12

## Prostheses

| Surgeon and Hospital Workload | Total Shoulder | Reverse Shoulder | Hemi-arthroplasty |
|---|---|---|---|
| Hospitals | 40 | 48 | 23 |
| Operations | 211 | 807 | 50 |
| Public/Private | 18/22 | 24/24 | 14/9 |
| Consultants | 54 | 79 | 25 |
| Surgeons performing >=10 procedures | 4 | 27 | 0 |

TABLE 6.13

| Reverse Shoulder Prostheses | N |
|---|---|
| SMR | 383 |
| Delta Xtend Reverse | 162 |
| Aequalis Reversed | 92 |
| Comprehensive | 48 |
| Equinoxe Reverse | 18 |
| Equinoxe Glenoid | 14 |
| Arthrex Univers Revers | 13 |
| Aequalis Perform | 10 |
| Arthrex | 9 |
| Univers Revers | 9 |

TABLE 6.14

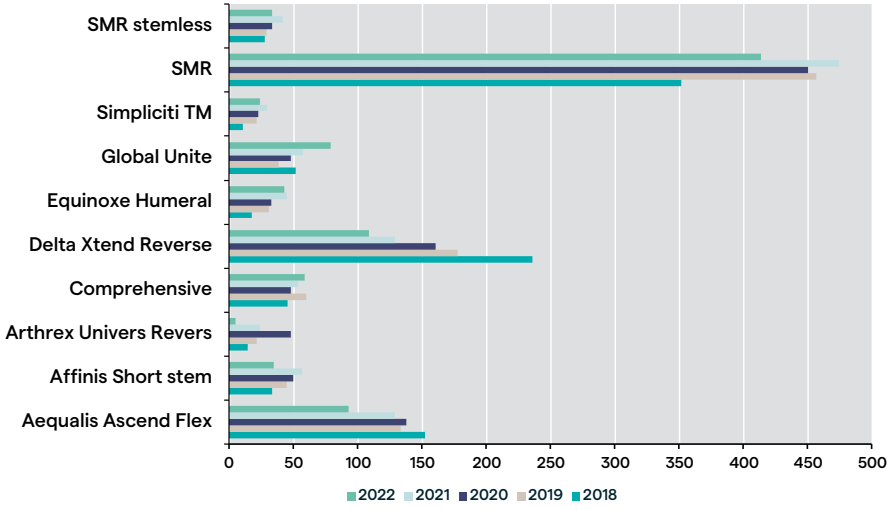
| Total Shoulder Prostheses | N |
|---|---|
| SMR | 31 |
| Affinis Short stem | 30 |
| Global Unite | 25 |
| SMR stemless | 25 |
| Simpliciti TM | 24 |
| Equinoxe Humeral | 12 |
| Comprehensive | 11 |
| Aequalis Ascend Flex | 10 |
| Mirai Humeral Core | 9 |

TABLE 6.15

| Hemiarthroplasty Prosthesis | N |
|---|---|
| Aequalis Ascend Flex | 27 |
| SMR | 6 |
| Affinis Short stem | 5 |
| Humeral stem | 2 |
| Aequalis Reversed Fracture | 2 |
| SMR stemless | 1 |
| Global Unite | 1 |
| Aequalis Fracture | 1 |
| Aequalis Flex Revive | 1 |

TABLE 6.16

### Top 10 Shoulder Prostheses for the five years 2018 – 2022



# Revision of Registered Primary Shoulder Arthroplasty

Revision is defined by the Registry as a new operation in a previously replaced shoulder joint during which one or more of the components are exchanged, removed, manipulated or added.

Procedures where all components are removed (e.g., Girdlestone, or removal of components and insertion of a cement spacer for infection) are all recorded as revisions.

## Data analysis

For the twenty-three-year period January 2000 – December 2022 there were 803 revisions of shoulder procedures registered.

There were 317 revisions of the total shoulder group of 4,574, 252 revisions of the reverse shoulder group of 8,084 and 234 revisions of the hemiarthroplasty group of 2,221.

The average age for a shoulder revision was 69 years with a range of 33-91 years.

### Age at Shoulder Revision

| | Female | Male |
|---|---|---|
| Number | 445 | 358 |
| Percentage | 55 | 45 |
| Mean | 69.2 | 69.1 |
| Maximum age | 91.3 | 88.5 |
| Minimum age | 33.2 | 36.7 |
| Standard dev. | 10.3 | 10.2 |

TABLE 6.17

This section analyses data for revisions of shoulder primary procedures for the twenty-three-year period January 2000 – December 2022.

For all primary shoulder procedures, there 114 procedures that had been revised twice and 28 procedures that had been revised three times.

### Time to revision- all shoulders

| | Time |
|---|---|
| Average | 1,405 days (3.8 years) |
| Maximum | 7,016 days (19.2 years) |
| Minimum | 0 days |
| Standard deviation | 1,451 days (3.9 years) |

TABLE 6.18

### Analysis of the main reasons for revision by year after primary procedure for all shoulder types

| Reason for revision | Loosening glenoid | | Dislocation | | Deep infection | | Rotator Cuff Impingement/ Failure | | Loosening Humeral | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 27 | 19.4 | 68 | 60.2 | 28 | 29.8 | 22 | 20.4 | 10 | 30.3 |
| 1 | 19 | 13.7 | 15 | 13.3 | 20 | 21.3 | 27 | 25.0 | 4 | 12.1 |
| 2 | 14 | 10.1 | 4 | 3.5 | 17 | 18.1 | 15 | 13.9 | 4 | 12.1 |
| 3 | 10 | 7.2 | 5 | 4.4 | 7 | 7.4 | 4 | 3.7 | 4 | 12.1 |
| 4 | 9 | 6.5 | 4 | 3.5 | 6 | 6.4 | 7 | 6.5 | 4 | 12.1 |
| 5 | 5 | 3.6 | 6 | 5.3 | 2 | 2.1 | 8 | 7.4 | 4 | 12.1 |
| 6 | 8 | 5.8 | 2 | 1.8 | 3 | 3.2 | 6 | 5.6 | 0 | 0.0 |
| 7 | 2 | 1.4 | 3 | 2.7 | 2 | 2.1 | 6 | 5.6 | 0 | 0.0 |
| 8 | 3 | 2.2 | 3 | 2.7 | 3 | 3.2 | 2 | 1.9 | 2 | 6.1 |
| 9 | 13 | 9.4 | 0 | 0.0 | 2 | 2.1 | 4 | 3.7 | 3 | 9.1 |
| 10 | 7 | 5.0 | 1 | 0.9 | 0 | 0.0 | 3 | 2.8 | 2 | 6.1 |
| 11+ | 22 | 15.8 | 2 | 1.8 | 4 | 4.3 | 4 | 3.7 | 4 | 12.1 |
| **Total** | **139** | | **113** | | **94** | | **108** | | **33** | |

TABLE 6.19

Two years ago, the cause for revision in all those represented by pain (n=122) was re-examined and reason for revision was re-coded as necessary. For six cases the reason for revision remained “unexplained pain”.

### All Total Arthroplasties

| | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| All patients | 14,888 | 91,980.5 | 803 | 0.873 | 0.81 | 0.94 |

TABLE 6.20

### Revision rate by Sex

| Sex | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| F | 9,053 | 57,515.2 | 445 | 0.77 | 0.70 | 0.85 |
| M | 5,835 | 34,465.3 | 358 | 1.04 | 0.93 | 1.15 |

TABLE 6.21

### Revision rate by Age groups

| Age Group | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| <55 | 904 | 6,276.4 | 113 | 1.80 | 1.48 | 2.16 |
| 55-64 | 2,705 | 18,039.1 | 252 | 1.40 | 1.23 | 1.58 |
| 65-74 | 5,789 | 36,863.5 | 290 | 0.79 | 0.70 | 0.88 |
| >=75 | 5,490 | 30,801.6 | 148 | 0.48 | 0.40 | 0.56 |

TABLE 6.22

### Revision rate by Ethnicity

| Ethnicity | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| Asian | 242 | 1415.3 | 7 | 0.49 | 0.20 | 1.02 |
| Euro/Other | 13,578 | 84,882.7 | 745 | 0.88 | 0.82 | 0.94 |
| Māori | 587 | 3,183.3 | 37 | 1.16 | 0.82 | 1.60 |
| Pacifica | 156 | 1,006.7 | 6 | 0.60 | 0.22 | 1.30 |

TABLE 6.23

### Revision rate by Arthroplasty Type

| Operation Type | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| Hemiarthroplasty | 2,221 | 19,870.2 | 234 | 1.18 | 1.03 | 1.34 |
| Reverse shoulder | 8,084 | 37,850.3 | 252 | 0.67 | 0.59 | 0.75 |
| Total shoulder | 4,574 | 34,251.2 | 317 | 0.93 | 0.83 | 1.03 |

TABLE 6.24

### Revision rate by Age Group and Arthroplasty Type

| Shoulder Type | Age Groups | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Hemiarthroplasty | <55 | 413 | 3,606.8 | 64 | 1.77 | 1.37 | 2.27 |
| | 55-64 | 498 | 4,804.0 | 81 | 1.69 | 1.34 | 2.10 |
| | 65-74 | 623 | 6,080.7 | 59 | 0.97 | 0.74 | 1.25 |
| | >=75 | 687 | 5,378.8 | 30 | 0.56 | 0.38 | 0.80 |
| Reverse shoulder | <55 | 122 | 444.1 | 6 | 1.35 | 0.50 | 2.94 |
| | 55-64 | 1,003 | 4,443.9 | 58 | 1.31 | 0.98 | 1.67 |
| | 65-74 | 3,196 | 15,341.7 | 107 | 0.70 | 0.57 | 0.84 |
| | >=75 | 3,763 | 17,620.6 | 81 | 0.46 | 0.37 | 0.57 |
| Total shoulder | <55 | 369 | 2,225.5 | 43 | 1.93 | 1.40 | 2.60 |
| | 55-64 | 1,201 | 8,788.3 | 113 | 1.29 | 1.05 | 1.54 |
| | 65-74 | 1,968 | 15,437.1 | 124 | 0.80 | 0.67 | 0.96 |
| | >=75 | 1,036 | 7,800.3 | 37 | 0.47 | 0.33 | 0.65 |

TABLE 6.25

### Revision by Number of Operations per year

| Number of operations per year | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| <10 | 4,448 | 29,148.5 | 267 | 0.92 | 0.81 | 1.03 |
| >=10 | 10,440 | 62,832.1 | 536 | 0.85 | 0.78 | 0.93 |

TABLE 6.26

### Revision by cementation of Glenoids (from total shoulders)

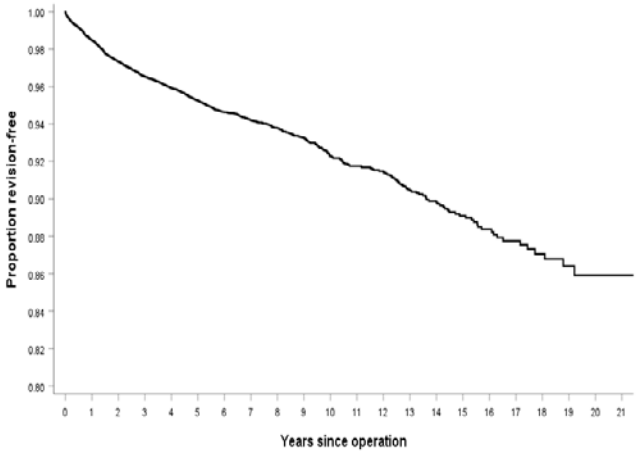
| | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| UnCemented | 1,281 | 9,643.6 | 172 | 1.78 | 1.53 | 2.07 |
| Cemented | 3,293 | 24,607.6 | 145 | 0.59 | 0.50 | 0.69 |

TABLE 6.27

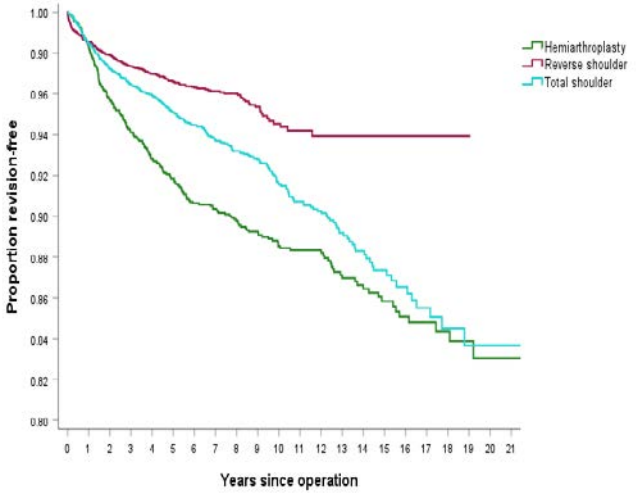
# Kaplan Meier Curves Shoulders

The following Kaplan Meier survival analyses are for the **23 years** from 2000 to 2022, with deceased patients censored at time of death.

**All Shoulders**




**Survival Curves for different Arthroplasty Types**




| Years | % Revision-free | N |
|---|---|---|
| 1 | 98.5 | 13,431 |
| 2 | 97.3 | 11,895 |
| 3 | 96.5 | 10,399 |
| 4 | 95.9 | 9,008 |
| 5 | 95.2 | 7,702 |
| 6 | 94.6 | 6,526 |
| 7 | 94.2 | 5,467 |
| 8 | 93.8 | 4,465 |
| 9 | 93.3 | 3,626 |
| 10 | 92.3 | 2,907 |
| 11 | 91.8 | 2,289 |
| 12 | 91.5 | 1,857 |
| 13 | 90.4 | 1,466 |
| 14 | 89.8 | 1,131 |
| 15 | 89.1 | 849 |
| 16 | 88.4 | 618 |
| 17 | 87.8 | 435 |
| 18 | 87.1 | 317 |
| 19 | 86.4 | 199 |
| 20 | 85.9 | 116 |
| 21 | 85.9 | 61 |

TABLE 6.28

## Revision Rate of Individual Shoulder Prostheses Sorted by Alphabetical Order

### Hemiarthroplasty

| Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Aequalis | 142 | 1,489.9 | 16 | 1.07 (0.61 - 1.74) |
| Aequalis Ascend | 2 | 2.0 | 0 | 0 (0 - 181.34) |
| Aequalis Ascend Flex | 211 | 808.8 | 6 | 0.74 (0.27 - 1.61) |
| Aequalis Flex | 1 | 0.6 | 0 | 0 (0 - 654.06) |
| Aequalis Flex Revive | 1 | 0.6 | 0 | 0 (0 - 654.06) |
| Aequalis Fracture | 3 | 3.7 | 0 | 0 (0 - 100.1) |
| Aequalis Reverse II | 1 | 2.4 | 0 | 0 (0 - 153.46) |
| Aequalis Reversed Fracture | 2 | 1.4 | 0 | 0 (0 - 268.4) |
| Affinis | 1 | 3.7 | 0 | 0 (0 - 99.51) |
| Affinis Short stem | 22 | 80.4 | 1 | 1.24 (0 - 6.93) |
| Anatomical | 19 | 281.0 | 0 | 0 (0 - 1.31) |
| Arthrex Eclipse | 3 | 32.3 | 0 | 0 (0 - 11.42) |
| Arthrex Univers | 1 | 2.5 | 0 | 0 (0 - 148.55) |
| Arthrex Univers Revers | 1 | 2.2 | 0 | 0 (0 - 165.12) |
| Ascend TM | 1 | 6.9 | 0 | 0 (0 - 53.62) |
| Bi-Angular | 19 | 237.8 | 2 | 0.84 (0.1 - 3.04) |
| Bigliani/Flatow | 137 | 1,557.0 | 15 | 0.96 (0.52 - 1.55) |
| Bio-modular | 1 | 7.1 | 1 | 14 (0.35 - 78.03) |
| Cofield 2 | 50 | 642.5 | 2 | 0.31 (0.04 - 1.12) |
| Comprehensive | 5 | 15.9 | 0 | 0 (0 - 23.16) |
| Delta | 1 | 8.8 | 0 | 0 (0 - 42.08) |
| Epoca Humeral stem | 1 | 6.8 | 0 | 0 (0 - 54.39) |
| Equinox Humeral | 1 | 2.0 | 0 | 0 (0 - 188.44) |
| Global | 723 | 7,656.5 | 63 | 0.82 (0.63 - 1.05) |

| Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Global AP | 97 | 717.3 | 7 | 0.98 (0.35 - 1.92) |
| Global Icon | 1 | 4.8 | 0 | 0 (0 - 76.51) |
| Global Unite | 68 | 325.6 | 16 | 4.91 (2.81 - 7.98) |
| Hemicap Resurfacing | 4 | 6.1 | 0 | 0 (0 - 60.04) |
| Humeral stem | 2 | 0.3 | 0 | 0 (0 - 1320.94) |
| Latitude | 1 | 2.1 | 0 | 0 (0 - 176.59) |
| MRS Humeral | 4 | 22.9 | 0 | 0 (0 - 16.08) |
| Neer II | 24 | 257.2 | 0 | 0 (0 - 1.43) |
| Osteonics humeral component | 42 | 411.2 | 2 | 0.49 (0.06 - 1.76) |
| Randelli | 1 | 8.2 | 0 | 0 (0 - 44.82) |
| Simpliciti TM | 3 | 13.5 | 0 | 0 (0 - 27.41) |
| SMR | 360 | 2,797.3 | 52 | 1.86 (1.37 - 2.42) |
| SMR Resurfacing | 52 | 474.2 | 14 | 2.95 (1.61 - 4.95) |
| SMR stemless | 2 | 5.7 | 0 | 0 (0 - 64.44) |
| Univers 3D | 1 | 3.8 | 0 | 0 (0 - 96.59) |
| Univers Apex | 1 | 1.4 | 0 | 0 (0 - 262.13) |

TABLE 6.29

### Reverse shoulder

| Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Aequalis Ascend | 1 | 2.1 | 0 | 0 (0 - 177.28) |
| Aequalis Ascend Flex | 642 | 2,571.1 | 25 | 0.97 (0.61 - 1.41) |
| Aequalis Flex | 1 | 0.1 | 0 | 0 (0 - 4210.51) |
| Aequalis Flex Revive | 10 | 13.08966461 | 0 | 0 (0 - 28.18) |
| Aequalis Reverse II | 234 | 1,180.4 | 6 | 0.51 (0.19 - 1.11) |

| Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Aequalis Reversed | 3 | 11.7 | 0 | 0 (0 - 31.41) |
| Aequalis Reversed Fracture | 104 | 345.0 | 2 | 0.58 (0.07 - 2.09) |
| Affinis Fracture stem | 4 | 14.0 | 1 | 7.17 (0.18 - 39.93) |
| Affinis Inverse Stem | 53 | 151.7 | 4 | 2.64 (0.72 - 6.75) |
| Arthrex Univers | 14 | 29.3 | 1 | 3.41 (0.09 - 18.99) |
| Arthrex Univers Revers | 112 | 283.3 | 2 | 0.71 (0.09 - 2.55) |
| Comprehensive | 332 | 1,148.6 | 5 | 0.44 (0.14 - 1.02) |
| Custom device | 2 | 2.0 | 0 | 0 (0 - 180.37) |
| Delta | 55 | 539.3 | 2 | 0.37 (0.04 - 1.34) |
| Delta Xtend Modular | 2 | 0.6 | 0 | 0.00 (0.00 -604.20) |
| Delta Xtend Reverse | 2243 | 12,214.6 | 96 | 0.79 (0.63 - 0.96) |
| Equinoxe Reverse | 135 | 274.9 | 4 | 1.45 (039-3.72) |
| Global Unite | 111 | 165.5 | 2 | 1.21 (0.15 – 4.37) |
| Humeral stem | 14 | 5.3 | 1 | 18.73 (0.47-104.36) |
| MD Prima | 1 | 0.3 | 0 | 0 (0 – 1161.52) |
| MD Prima Stem | 4 | 0.7 | 0 | 0 (0 - 554.47) |
| Mirai Humeral Core | 14 | 16.7 | 0 | 0 (0 – 22.15) |
| Mirai Humeral Stem | 7 | 10.3 | 0 | 0 (0 – 35.87) |
| Mutars | 1 | 4.6 | 0 | 0 (0 – 80.97) |
| Perform Hum Stem Plus Short | 5 | 0.7 | 0 | 0 (0 – 504.63) |
| Perform Hum Stem Std Short | 2 | 0.8 | 0 | 0(0 – 438.88) |
| RSP | 2 | 7.8 | 0 | 0 (0 – 47.03) |
| SMR | 3,798 | 18,358.6 | 100 | 0.54 (0.44 – 0.66) |
| SMR stemless | 66 | 250.0 | 3 | 1.20 (0.17 – 3.20) |
| Trabecular Metal Reverse | 60 | 302.6 | 2 | 0.66 (0.08 – 2.39) |
| Univers Revers | 96 | 113.3 | 0 | 0.00 (0.00 – 3.26) |
| Vaios | 1 | 11.2 | 0 | 0.00 (0.00 – 32.86) |
| Zimmer Trabecular Metal Should | 4 | 7.5 | 0 | 0.00 (0.0 – 49.48) |

TABLE 6.30

## Total Shoulder

| Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Aequalis | 290 | 3,133.2 | 17 | 0.54 (0.32 - 0.87) |
| Aequalis Ascend Flex | 370 | 1,989.0 | 9 | 0.45 (0.19 - 0.83) |
| Affinis | 8 | 32.4 | 0 | 0 (0 - 11.38) |
| Affinis Fracture stem | 1 | 3.6 | 0 | 0 (0 - 103.72) |
| Affinis Short stem | 243 | 723.3 | 3 | 0.41 (0.09 - 1.21) |
| Anatomical | 35 | 505.2 | 2 | 0.4 (0.05 - 1.43) |
| Arthrex Eclipse | 22 | 63.9 | 1 | 1.57 (0 - 8.72) |
| Arthrex Univers | 6 | 15.4 | 0 | 0 (0 - 23.93) |
| Arthrex Univers Revers | 1 | 2.2 | 0 | 0 (0 - 169.69) |
| Ascend TM | 2 | 12.9 | 0 | 0 (0 - 28.67) |
| Bi-Angular | 8 | 53.9 | 0 | 0 (0 - 6.85) |
| Bigliani/Flatow | 310 | 3,494.3 | 13 | 0.37 (0.2 - 0.64) |
| Cofield 2 | 21 | 265.3 | 0 | 0 (0 - 1.39) |
| Comprehensive | 80 | 308.9 | 4 | 1.29 (0.35 - 3.32) |
| Custom device | 1 | 2.9 | 0 | 0 (0 - 128.81) |
| Epoca Humeral stem | 4 | 43.5 | 0 | 0 (0 - 8.47) |
| Equinoxe Humeral | 36 | 61.8 | 1 | 1.62 (0.04 - 9.02) |
| Global | 519 | 5,817.5 | 36 | 0.62 (0.43 - 0.86) |
| Global AP | 537 | 4,351.3 | 18 | 0.41 (0.25 - 0.65) |
| Global Icon | 13 | 39.0 | 2 | 5.12 (0.28 - 18.51) |
| Global Unite | 303 | 1,320.6 | 10 | 0.76 (0.36 - 1.39) |
| Humeral stem | 8 | 9.9 | 0 | 0 (0 - 37.36) |
| MD Prima | 1 | 0.3 | 0 | 0 (0 - 1320.94) |
| MD Prima Stem | 1 | 0.2 | 0 | 0 (0 - 1820.76) |
| Mirai Humeral Core | 37 | 61.0 | 0 | 0 (0 - 6.04) |

| Prosthesis | N | Observed comp. years (ocys) | N. Revised | Rate/100-component-years (95% CI) |
|---|---|---|---|---|
| Mirai Humeral Stem | 4 | 4.3 | 0 | 0 (0 - 86.48) |
| MUTARS | 1 | 2.2 | 0 | 0 (0 - 166.96) |
| Neer 3 | 2 | 32.4 | 0 | 0 (0 - 11.38) |
| Neer II | 12 | 164.7 | 1 | 0.61 (0.02 - 3.38) |
| Osteonics humeral component | 49 | 571.7 | 8 | 1.4 (0.6 - 2.76) |
| Perform Hum Stem Plus Short | 2 | 0.1 | 0 | 0 (0 - 2591.08) |
| Perform Hum Stem Std Short | 1 | 0.3 | 0 | 0 (0 - 1320.94) |
| Sidus | 1 | 8.3 | 0 | 0 (0 - 44.31) |
| Simpliciti TM | 138 | 432.3 | 3 | 0.69 (0.14 - 2.03) |
| SMR | 1,096 | 8,524.2 | 168 | 1.97 (1.68 - 2.29) |
| SMR Resurfacing | 3 | 23.6 | 2 | 8.46 (1.02 - 30.56) |
| SMR stemless | 176 | 546.7 | 11 | 2.01 (0.94 - 3.48) |
| Trabecular Metal Reverse | 1 | 10.5 | 0 | 0 (0 - 35.23) |
| Univers 3D | 5 | 28.2 | 0 | 0 (0 - 13.09) |
| Univers Apex | 27 | 60.1 | 0 | 0 (0 - 6.14) |
| Univers II | 1 | 1.6 | 1 | 62.87 (1.59 - 350.27) |
| Univers Revers | 1 | 1.1 | 0 | 0 (0 - 322.34) |

TABLE 6.31

### Analysis of the main reasons for revision by year after primary procedure for all shoulder types

| Reason for revision | Loosening glenoid | | Dislocation | | Deep infection | | Rotator cuff impingement/failure | | Loosening Humeral | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** |
| 0 | 27 | 19.4 | 68 | 60.2 | 28 | 29.8 | 22 | 20.4 | 10 | 30.3 |
| 1 | 19 | 13.7 | 15 | 13.3 | 20 | 21.3 | 27 | 25.0 | 4 | 12.1 |
| 2 | 14 | 10.1 | 4 | 3.5 | 17 | 18.1 | 15 | 13.9 | 4 | 12.1 |
| 3 | 10 | 7.2 | 5 | 4.4 | 7 | 7.4 | 4 | 3.7 | 4 | 12.1 |
| 4 | 9 | 6.5 | 4 | 3.5 | 6 | 6.4 | 7 | 6.5 | 4 | 12.1 |
| 5 | 5 | 3.6 | 6 | 5.3 | 2 | 2.1 | 8 | 7.4 | 4 | 12.1 |
| 6 | 8 | 5.8 | 2 | 1.8 | 3 | 3.2 | 6 | 5.6 | 0 | 0.0 |
| 7 | 2 | 1.4 | 3 | 2.7 | 2 | 2.1 | 6 | 5.6 | 0 | 0.0 |
| 8 | 3 | 2.2 | 3 | 2.7 | 3 | 3.2 | 2 | 1.9 | 2 | 6.1 |
| 9 | 13 | 9.4 | 0 | 0.0 | 2 | 2.1 | 4 | 3.7 | 3 | 9.1 |
| 10 | 7 | 5.0 | 1 | 0.9 | 0 | 0.0 | 3 | 2.8 | 2 | 6.1 |
| 11+ | 22 | 15.8 | 2 | 1.8 | 4 | 4.3 | 4 | 3.7 | 4 | 12.1 |
| **Total** | **139** | | **113** | | **94** | | **108** | | **33** | |

TABLE 6.32

Two years ago, the cause for revision in all those represented by pain (n=122) was re-examined and reason for revision was re-coded as necessary. For six cases the reason for revision remained “unexplained pain”.

# Patient Recorded Outcome Measures

Patient based questionnaire outcomes at six month, five years, ten years and fifteen years post-surgery

## Questionnaires at six months post-surgery

At six months post-surgery patients are sent the Oxford-12 questionnaire.

The scores now range from 4 to 0. A score of 48 is the best, indicating normal function. A score of 0 is the worst, indicating the most severe disability.

We have grouped the questionnaire responses based on the scoring system as published by Kalairajah et al, in 2005 (See appendix 1). This groups each score into four categories:

| Category | Score | Interpretation |
|---|---|---|
| 1 | < 27 | Poor |
| 2 | 27-33 | Fair |
| 3 | 34-41 | Good |
| 4 | >41 | Excellent |

TABLE 6.33

For the twenty-three-year period and as 31 December 2022, there were 8,684 shoulder questionnaire responses registered at six months post-surgery.

The average shoulder score was 36.5 (standard error 0.1, range 0 – 48)

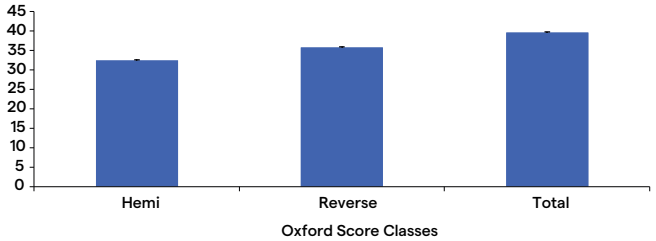
At six months post-surgery, 70% had an excellent or good score.

### 6-month Oxford Scores

| Operation types | N | Mean | Std Error | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|
| Hemi | 1,261 | 32.4 | 0.3 | 31.8 | 32.9 |
| Reverse | 4,512 | 35.7 | 0.1 | 35.4 | 36.0 |
| Total | 2,911 | 39.6 | 0.1 | 39.3 | 39.9 |
| **Total Procedures** | **8,684** | **36.5** | **0.1** | **36.3** | **36.7** |

TABLE 6.34

### Oxford score at 6 months by shoulder operation




## Questionnaires at five years post-surgery

All patients who had a six- month registered questionnaire, and who had not had revision surgery, were sent a further questionnaire at five years post-surgery.

This dataset represents sequential Oxford shoulder scores for 3,008 individual patients.

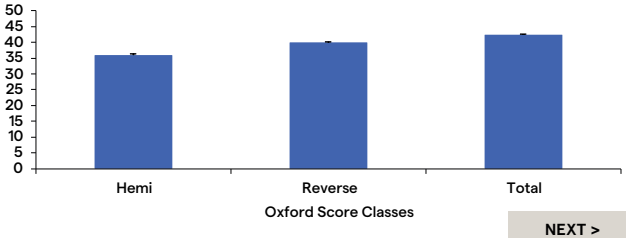
At five years post-surgery, 81% of these patients achieved an excellent or good score and had an average of 40.2.

### 5 Year Oxford Scores

| Operation types | N | Mean | Std Error | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|
| Hemi | 551 | 36.0 | 0.4 | 35.2 | 36.8 |
| Reverse | 1,183 | 39.8 | 0.2 | 39.3 | 40.3 |
| Total | 1,274 | 42.4 | 0.2 | 42.0 | 42.8 |
| **Total Procedures** | **3,008** | **40.2** | **0.2** | **39.9** | **40.5** |

TABLE 6.35

### Oxford score at 5 Years by shoulder operation



## Questionnaires at ten years post-surgery

All patients who had a six- month registered questionnaire, and who had not had revision surgery, were sent a further questionnaire at ten years post-surgery.

This dataset represents sequential Oxford shoulder scores for 1,062 individual patients.

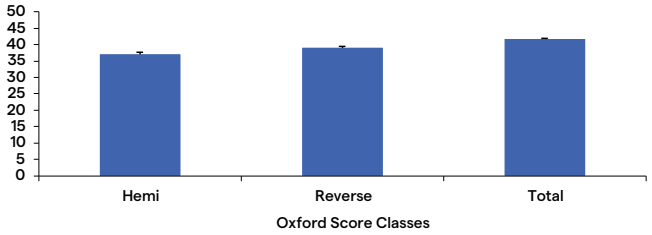
At ten years post-surgery, 79% of these patients achieved an excellent or good score and had an average of 39.8.

### Ten Year Oxford Scores

| Operation types | N | Mean | Std Error | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|
| Hemi | 292 | 37.0 | 0.6 | 35.9 | 38.1 |
| Reverse | 218 | 39.0 | 0.6 | 37.8 | 40.1 |
| Total | 552 | 41.6 | 0.3 | 41.0 | 42.3 |
| **Total Procedures** | **1,062** | **39.8** | **0.3** | **39.3** | **40.3** |

TABLE 6.37

### Oxford score at 10 Years by shoulder operation




## Questionnaires at fifteen years post-surgery

All patients who had a six- month registered questionnaire, and who had not had revision surgery, were sent a further questionnaire at fifteen years post-surgery.

This dataset represents sequential Oxford shoulder scores for 281 individual patients.

At fifteen years post-surgery, 74% of these patients achieved an excellent or good score and had an average of 38.1.

### Fifteen Year Oxford Scores

| Operation types | N | Mean | Std Error | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|
| Hemi | 115 | 37.1 | 0.9 | 35.4 | 38.8 |
| Reverse | 27 | 35.6 | 2.4 | 30.9 | 40.3 |
| Total | 139 | 39.3 | 0.7 | 37.9 | 40.7 |
| **Total** | **281** | **38.1** | **0.5** | **37.0** | **39.2** |

TABLE 6.38

# Oxford 12 Score as a predictor of Shoulder Arthroplasty Revision

A statistically significant relationship has been confirmed between the Oxford scores at six months and five years and arthroplasty revision within two years of the Oxford 12 questionnaire date.

## Six- month score and revision arthroplasty

Plotting the patients' six-month scores in the Kalairajah groupings against the proportion of shoulders revised for that same group demonstrates that there is an incremental increase in risk during the next two years related to the Oxford score. A patient with a score below 27 has 6 times the risk of a revision within two years compared to a person with a score of >41.

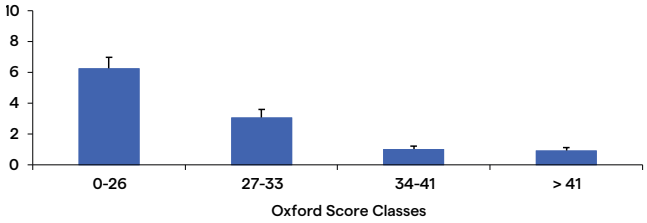
**Revision risk versus Kalairajah groupings of Oxford scores within two years of the six- month score date**

### 6 months

| Kalairajah Classification at 6 months | Revision to 2 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 1,103 | 69 | 6.26 | 0.73 |
| Fair | 1,069 | 33 | 3.09 | 0.53 |
| Good | 2,364 | 24 | 1.02 | 0.21 |
| Excellent | 2,735 | 26 | 0.95 | 0.19 |

TABLE 6.39

**Revision (%) to 2 years by Oxford score at 6 months**

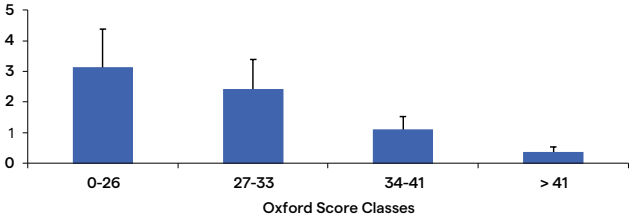



### 5 years

| Kalairajah Classification at 5 years | Revision to 2 years | N revised | % | Std error |
|---|---|---|---|---|
| Poor | 192 | 6 | 3.13 | 1.26 |
| Fair | 248 | 6 | 2.42 | 0.98 |
| Good | 548 | 6 | 1.09 | 0.44 |
| Excellent | 1,356 | 5 | 0.37 | 0.16 |

TABLE 6.40

**Revision (%) to 2 years by Oxford score at 5 Years**



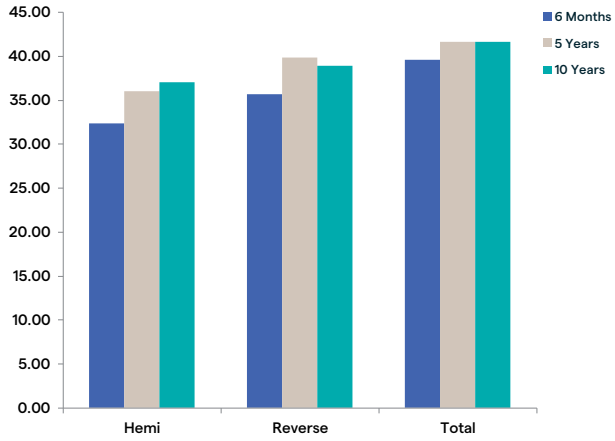
## Six Month, Five and Ten- Year Oxford Scores by Arthroplasty Type

### Header

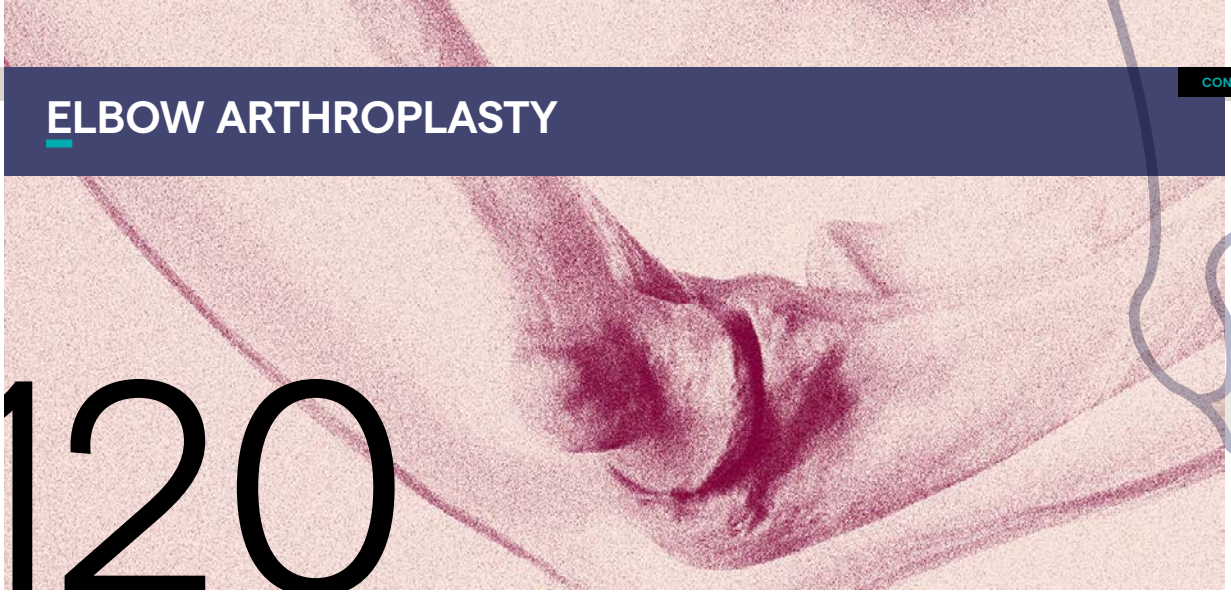
| Arthroplasty Type | Time from Surgery | Mean | Std Error | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|
| Hemi | 6 Months | 32.35 | 0.28 | 31.81 | 32.90 |
| | 5 Years | 35.99 | 0.42 | 35.17 | 36.81 |
| | 10 Years | 37.03 | 0.55 | 35.95 | 38.11 |
| Reverse | 6 Months | 35.72 | 0.14 | 35.45 | 35.99 |
| | 5 Years | 39.84 | 0.25 | 39.35 | 40.33 |
| | 10 Years | 38.96 | 0.59 | 37.79 | 40.13 |
| Total | 6 Months | 39.62 | 0.15 | 39.33 | 39.91 |
| | 5 Years | 42.36 | 0.20 | 41.96 | 42.76 |
| | 10 Years | 41.64 | 0.34 | 40.98 | 42.30 |

TABLE 6.41

## Six Month, Five and Ten- Year Oxford Scores by Arthroplasty Type



# ELBOW ARTHROPLASTY



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## PRIMARY ELBOW ARTHROPLASTY

The **twenty-four-year** report analyses data for the period January 2000 – December 2022. There were 782 primary elbow procedures registered.

### Data analysis

#### Age and sex distribution

The average age for an elbow replacement was 67 years, with a range of 14 – 94 years.

| | Age | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Female | 68.8 | 26.9 | 92.4 | 592 (75.6) |
| Male | 66.9 | 13.9 | 91.9 | 190 (24.3) |

TABLE 7.1

| Previous operation | N |
|---|---|
| None | 645 |
| Internal fixation for juxta articular fracture | 46 |
| Synovectomy+-removal radial head | 25 |
| Debridement | 24 |
| Osteotomy | 3 |
| Ligament reconstruction | 7 |

TABLE 7.2

| Diagnosis | N |
|---|---|
| Rheumatoid arthritis/other inflammatory | 333 |
| Post fracture | 319 |
| Osteoarthritis | 106 |
| Post dislocation | 17 |
| Post ligament disruption | 13 |
| Post dysplasia | 13 |
| Tumour | 3 |
| Other | 57 |

TABLE 7.3

| Approach | N |
|---|---|
| Posterior | 484 |
| Medial | 112 |
| Lateral | 66 |

TABLE 7.4

| Surgeon Attire | N |
|---|---|
| Space Suits/Helmet Fan | 88 |
| Conventional gown | 113 |

TABLE 7.5

#### ASA Class

For the sixteen- year period 2005 – 2022, there were 625 primary elbow procedures with the ASA class recorded.

| ASA Class | N | % |
|---|---|---|
| 1 | 42 | 6.7 |
| 2 | 290 | 46.4 |
| 3 | 281 | 45.0 |
| 4 | 12 | 1.92 |

TABLE 7.6

| Operative time (skin to skin) | N |
|---|---|
| Average | 145 minutes, 29-417 minutes, Standard Deviation 50.2 |

TABLE 7.7

## Surgeon grade

The updated forms introduced in 2005 have separated advanced trainee into supervised and unsupervised. The following figures are for the sixteen- year period 2005 – 2022.

| Surgeon grade | N |
|---|---|
| Consultant | 738 |
| Advanced trainee supervised | 18 |
| Advanced trainee unsupervised | 14 |

TABLE 7.8

## Surgeon and hospital workload

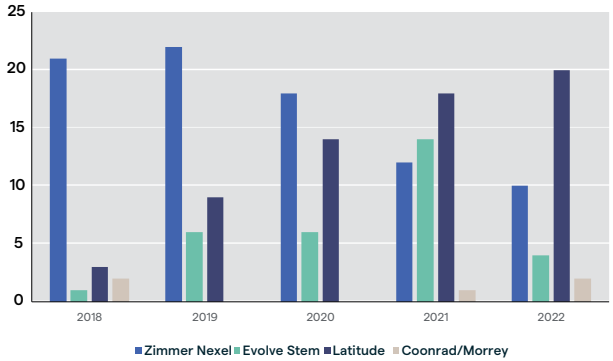
In 2022, 27 surgeons performed 61 primary elbow procedures. These ranged from 1 (n=12), 2-5 (n=12) and >5 (n=3) procedures performed per surgeon.

## Hospitals

In 2022, primary elbow replacement was performed in 21 hospitals, of which 13 were public and 8 were private.

## Prostheses

Most Used Elbow Prostheses for Five Years 2018-2022



# Revision Elbow Arthroplasty

Revision is defined by the Registry as a new operation in a previously replaced elbow joint during which one or more of the components are exchanged, removed, manipulated or added.

Procedures where all components are removed (e.g., Girdlestone, or removal of components and insertion of a cement spacer for infection) are all recorded as revisions.

## Data analysis

For the twenty-three-year period January 2000 – December 2022, there were 136 revision elbow procedures registered.

The average age for a revision elbow replacement was 65 years, with a range of 30 – 91 years.

| | Female | Male |
|---|---|---|
| Number | 97 | 39 |
| Percentage | 71.3 | 28.7 |
| Mean | 66.1 | 65.1 |
| Maximum age | 89.1 | 90.5 |
| Minimum age | 31.5 | 30.3 |
| Standard dev. | 10.2 | 14.1 |

TABLE 7.9

## Revision of Registered Primary Elbow Arthroplasties

This section analyses data for revisions of primary elbow procedures for the twenty-three-year period January 2000 – December 2022.

There were 59 revisions of the primary group of 782.

**All Primary Total Elbow Replacements**

| | N | Observed comp. years (ocys) | Events | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| All patients | 782 | 5,430.1 | 59 | 1.09 | 0.82 | 1.39 |

TABLE 7.10

| Sex | N | Observed comp. years (ocys) | Events | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| Females | 592 | 4,315.9 | 40 | 0.93 | 0.65 | 1.25 |
| Males | 190 | 1,114.1 | 19 | 1.71 | 0.99 | 2.61 |

TABLE 7.11

| Age Groups | N | Observed comp. years (ocys) | Events | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| <55 | 142 | 1,131.9 | 18 | 1.59 | 0.94 | 2.51 |
| 55-64 | 181 | 1,538.4 | 15 | 0.98 | 0.55 | 1.61 |
| 65-74 | 232 | 1,560.0 | 18 | 1.15 | 0.68 | 1.82 |
| >=75 | 227 | 1,199.7 | 8 | 0.67 | 0.29 | 1.31 |

TABLE 7.12

| Ethnicity | N | Observed comp. years (ocys) | Events | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| Asian | 27 | 225.0 | 1 | 0.44 | 0.01 | 2.48 |
| Euro/Other | 680 | 4,673.6 | 48 | 1.03 | 0.76 | 1.36 |
| Māori | 49 | 307.9 | 8 | 2.60 | 1.12 | 5.12 |
| Pacifica | 16 | 165.1 | 1 | 0.61 | 0.02 | 3.38 |

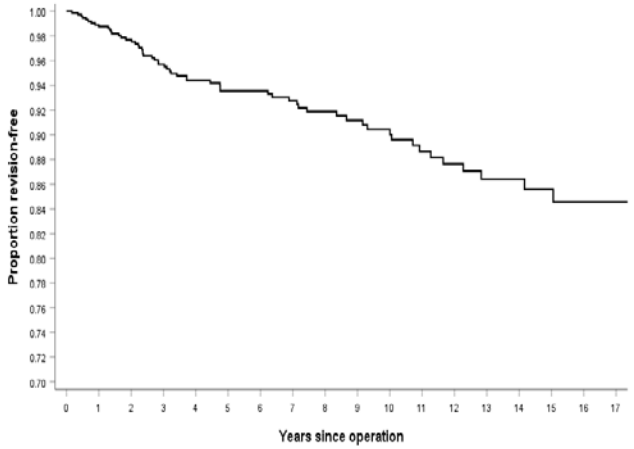
TABLE 7.13

| Prosthesis | N | Observed comp. years (ocys) | Events | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|
| Acclaim | 16 | 178.4 | 7 | 3.92 | 1.58 | 8.09 |
| Align Radial Stem | 2 | 1.2 | 0 | 0.00 | 0.00 | 298.09 |
| Anatomic radial head | 1 | 2.0 | 0 | 0.00 | 0.00 | 188.44 |
| Coonrad/Morrey | 350 | 3,275.2 | 21 | 0.64 | 0.40 | 0.98 |
| Custom Cem Stem | 1 | 1.1 | 0 | 0.00 | 0.00 | 346.37 |
| Evolve Proline Stem | 1 | 0.2 | 0 | 0.00 | 0.00 | 2208.79 |
| Evolve Stem | 50 | 231.7 | 2 | 0.86 | 0.10 | 3.12 |
| Humeral stem | 3 | 3.2 | 0 | 0.00 | 0.00 | 114.38 |
| Kudo | 18 | 189.9 | 4 | 2.11 | 0.57 | 5.39 |
| Latitude | 155 | 919.1 | 17 | 1.85 | 1.08 | 2.96 |
| Latitude EV | 2 | 1.4 | 0 | 0.00 | 0.00 | 272.75 |
| Mutars | 1 | 6.9 | 0 | 0.00 | 0.00 | 53.83 |
| Sorbie Questor | 1 | 6.8 | 0 | 0.00 | 0.00 | 54.09 |
| Stanmore custom implant | 1 | 12.4 | 0 | 0.00 | 0.00 | 29.67 |
| Zimmer Nexel | 149 | 572.24 | 8 | 1.40 | 0.60 | 2.75 |

TABLE 7.14

# Kaplan Meier Curves Elbows

The following Kaplan Meier survival analyses are for the **23 years** from 2000 to 2022 with deceased patients censored at time of death.




| Years | % Revision-free | N |
|---|---|---|
| 1 | 98.8 | 688 |
| 2 | 97.7 | 612 |
| 3 | 95.7 | 535 |
| 4 | 94.4 | 470 |
| 5 | 93.5 | 425 |
| 6 | 93.5 | 379 |
| 7 | 92.8 | 331 |
| 8 | 91.9 | 274 |
| 9 | 91.2 | 251 |
| 10 | 90.4 | 217 |
| 11 | 88.7 | 186 |
| 12 | 87.6 | 156 |
| 13 | 86.4 | 132 |
| 14 | 86.4 | 108 |
| 15 | 85.6 | 84 |
| 16 | 84.6 | 60 |
| 17 | 84.6 | 46 |
| 18 | 84.6 | 37 |

TABLE 7.15

| Reason for revision | Loosening humeral | | Loosening Ulna | | Deep Infection | |
|---|---|---|---|---|---|---|
| Years since operation | **N** | **%** | **N** | **%** | **N** | **%** |
| 0 | 1 | 5.0 | 2 | 10.5 | 4 | 23.5 |
| 1 | 2 | 10.0 | 0 | 0.0 | 4 | 23.5 |
| 2 | 5 | 25.0 | 6 | 31.6 | 3 | 17.6 |
| 3 | 3 | 15.0 | 3 | 15.8 | 1 | 5.9 |
| 4 | 2 | 10.0 | 0 | 0.0 | 1 | 5.9 |
| 5 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 6 | 1 | 5.0 | 1 | 5.3 | 1 | 5.9 |
| 7 | 1 | 5.0 | 1 | 5.3 | 0 | 0.0 |
| 8 | 1 | 5.0 | 1 | 5.3 | 1 | 5.9 |
| 9 | 1 | 5.0 | 2 | 10.5 | 0 | 0.0 |
| 10 | 1 | 5.0 | 2 | 10.5 | 0 | 0.0 |
| 11+ | 2 | 10.0 | 1 | 5.3 | 2 | 11.8 |
| **Total** | **20** | | **19** | | **17** | |

TABLE 7.16

# Patient Recorded Outcome Measures

## Patient based questionnaire outcomes at six months post-surgery

### Questionnaires at six months post-surgery

At six months post-surgery patients are sent an outcome questionnaire.

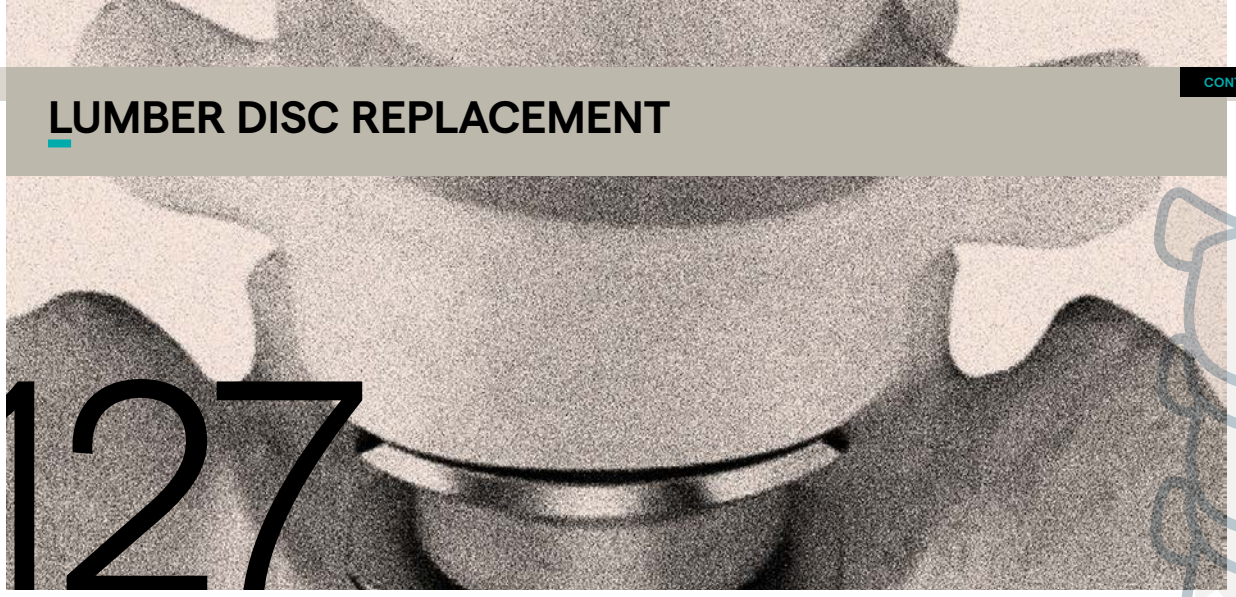
This was replaced by the validated Oxford Elbow score at the end of 2015.

There are 12 questions and each response scores from 4-0 with 0 representing the greatest severity.

Total score range 0-48

For the 7-year period 2016 – 2022 there were n = 424 responses. The average score was 38.3, the range was 7-48 and the standard deviation was 9.0.

# LUMBER DISC REPLACEMENT





## PRIMARY LUMBAR DISC REPLACEMENT

This report analyses data for the **nineteen-year** period January 2002 – December 2022.

There were 248 lumbar disc replacements registered.

### Data analysis

The average age for a lumbar disc replacement was 39 years, with a range of 22 – 61 years.

| | Age | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Female | 39.6 | 23.8 | 62.2 | 107 (43) |
| Male | 38.6 | 20.9 | 60.7 | 141 (57) |

TABLE 8.1

| Disc replacement levels | N |
|---|---|
| L3/4 | 15 |
| L4/5 | 82 |
| L5/S1 | 49 |

TABLE 8.2

| Fusion levels | N |
|---|---|
| L3/4 | 4 |
| L4/5 | 16 |
| L5/S1 | 76 |
| | |

TABLE 8.3

| Fusion levels | N |
|---|---|
| L3/4 | 4 |
| L4/5 | 16 |
| L5/S1 | 76 |

TABLE 8.4

| Previous operation | N |
|---|---|
| Discectomy | 32 |
| L3/4 | 0 |
| L4/5 | 19 |
| L5/S1 | 28 |

TABLE 8.5

| Degenerative disc disease | N |
|---|---|
| L3/4 | 16 |
| L4/5 | 78 |
| L5/S1 | 132 |

TABLE 8.6

| Annular tear MRI scan | N |
|---|---|
| L3/4 | 14 |
| L4/5 | 73 |
| L5/S1 | 39 |

TABLE 8.7

| Discogenic pain on discography | N |
|---|---|
| L3/4 | 21 |
| L4/5 | 91 |
| L5/S1 | 68 |

TABLE 8.8

| Approach | N |
|---|---|
| Retroperitoneal midline | 203 |
| Retroperitoneal lateral | 4 |
| Transperitoneal | 21 |

TABLE 8.9

| Intraoperative complications | N |
|---|---|
| Damage to major veins | 13 |
| Subsidence | 1 |

TABLE 8.10

| Operative time (skin to skin) | N |
|---|---|
| Mean | 120 minutes |
| Range | 40-284 minutes. |
| Standard deviation | 51 minutes |

TABLE 8.11

| Surgeon grade | N |
|---|---|
| Consultant | 248 |

TABLE 8.12

# Revision of registered Primary Lumbar Disc Replacements

There has been no change in the number of revisions.

There were 5 revisions of the primary group of 248 lumbar disc replacements.

| Time to revision | Days |
|---|---|
| Mean | 1,841 days (5.0 years) |
| Maximum | 4,528 days (12.4 years) |
| Minimum | 242 days |

TABLE 8.13

| Reason for revision | N |
|---|---|
| Pain | 2 |
| Loss of spinal alignment | 1 |

TABLE 8.14

# CERVICAL DISC REPLACEMENT

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## CERVICAL DISC REPLACEMENT

This report analyses data for the **eighteen-year** period January 2004 – December 2022.

There were 814 primary cervical disc replacements.

### Data analysis

The average age for a cervical disc replacement was 46 years, with a range of 21 – 73 years

| | Age | | | |
|---|---|---|---|---|
| | Mean | Minimum | Maximum | N (%) |
| Female | 47.3 | 19.3 | 73.3 | 407 (43) |
| Male | 45.6 | 22.1 | 73.2 | 507 (57) |

TABLE 9.1

| Disc replacement levels | N |
|---|---|
| C3/4 | 24 |
| C4/5 | 103 |
| C5/6 | 479 |
| C6/7 | 428 |
| C7T1 | 18 |

TABLE 9.2

| Previous operation | N |
|---|---|
| Foraminotomy | 27 |
| Adjacent level fusion | 47 |
| Adjacent level disc arthroplasty | 11 |

TABLE 9.3

| Diagnosis | N |
|---|---|
| Acute disc prolapse | 629 |
| Chronic spondylosis | 151 |
| Neck pain | 41 |

TABLE 9.4

| Approach | N |
|---|---|
| Anterior right | 556 |
| Anterior left | 205 |

TABLE 9.5

| Intra operative complications | N |
|---|---|
| Equipment failure | 1 |
| Removal of implant | 1 |
| Tear jugular vein | 1 |
| Misplaced prosthesis removed and new device placed | |

TABLE 9.6

| Operative time (skin to skin) | N |
|---|---|
| Average | 105 minutes |
| Range | 70-168 minutes |
| Standard Deviation | 38 minutes |

TABLE 9.7

| Surgeon grade | N |
|---|---|
| Consultant | 908 |
| Advanced trainee supervised | 2 |

TABLE 9.8

## Revision Cervical disc replacement

There were 6 revisions registered.

## Neck Disability Index Scoring

There are 10 sections. For each section, the total score is 5: if the first statement is marked the score = 0; if the last statement is marked, the score = 5. Intervening statements are scored according to rank.

If more than one box is marked in each section, take the highest score.

If all 10 sections are completed, the score is calculated as follows:

***Example:***
16 (total scored)/50(total possible score) x 100 = 32%

If one section is missed (or not applicable) the score is calculated:

***Example:***
16 (total scored)/45(total possible score) x 100 = 35.5%

0 is the best score and 100 is the worst score.

| Post-operative score | N |
|---|---|
| Neck Disability Index | 2139 |
| Mean | 19.07 |

TABLE 9.9

# APPENDIX 1

## REFERENCES

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J Bone Joint Surg (Br) 2007; 89-B: 1010-14

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Kalairajah, Y et al, *Health outcome measures in the evaluation of total hip arthroplasties: a comparison between the Harris hip score and the Oxford hip score.*
J Arthroplasty 2005; 20: 1037-41

NEW ZEALAND JOINT REGISTRY
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**Christchurch Hospital**
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**Christchurch 8140**

**E-mail: jinny.willis3@cdhb.health.nz**

**CONSENT FORM**

**TO BE FILED IN PATIENT NOTES**

| REQUEST FOR INTERPRETER | | | |
|---|---|---|---|
| English | I wish to have an interpreter | Yes | No |
| Maori | E hiahia ana ahau ki tetahi kaiwhakamaori/kaiwhaka pakeha korero | Ae | Kao |
| Samoan | Oute mana'o ia iai se fa'amatala upu | Ioe | Leai |
| Tongan | Oku ou fiema'u ha fakatonulea | Io | Ikai |
| Cook Island | Ka inangaro au I tetai tangata uri reo | Ae | Kare |
| Niuean | Fia manako au ke fakaaoga e taha tagata fakahokohoko kupu | E | Nakai |

The New Zealand Orthopaedic Association has a New Zealand Joint Registry which records the technical data on all artificial joint replacement surgery performed in New Zealand, eg, the different types of artificial joints implanted, whether cemented or not, how long the operation took, the need to use antibiotics. The Register will provide independent data on the performance of these artificial joints over many years. The data will be used in the future for an audit of joint replacement outcomes and will identify the factors which will provide the best long term surgical results for New Zealanders.

You are asked for your consent to allow your name, address, date of birth, national health index number along with the technical data on your joint surgery to be forwarded to the Registry.

We need this information in order to track the outcome over many years of your artificial joint replacement.

No other personal information will be entered without your written consent and it will not be possible to identify your name from any information taken from the data base for audit purposes.

If you wish to withdraw from the Register, you may do so by writing to the New Zealand Joint Registry, Department of Orthopaedic Surgery and Musculoskeletal Medicine, Christchurch Hospital. Withdrawing from the Register will not affect your current or future health care in any way.

Mr John McKie
**Registry Supervisor**

I consent to my name, address, date of birth, national health index number along with the technical data on my joint surgery being forwarded to the New Zealand Joint Registry.

Signed: ..... Name: .....
Date: .....



**NEW ZEALAND JOINT REGISTRY**
Established by the New Zealand Orthopaedic Association

**PRIMARY JOINT REPLACEMENT QUESTIONNAIRE**

Dear

The New Zealand Orthopaedic Association has a National Joint Replacement Register which records technical information about all artificial hip, knee, shoulder, elbow and ankle replacements carried out in New Zealand. This Register will provide very important data on the performance of these artificial joints over many years and enable identification of the factors which produce the best long-term results for New Zealanders like you.

In order to enhance the value of the research results, it will be extremely helpful to have your opinion as to the success of your artificial joint replacement. Therefore, you are invited to answer a few written questions at regular intervals on how you feel about your joint replacement. This questionnaire refers to the left knee surgery you had approximately six months ago.

Enclosed is more information regarding the New Zealand Joint Registry and I hope you will take the time to read it and complete the questionnaire.

Please note that your Regional Ethics Committee has approved the project.

Yours sincerely

Mr John McKie
Supervisor
New Zealand Joint Registry
Please fill out the details below and answer the questions overleaf and return in the enclosed envelope.
If you prefer, you may answer your questionnaire online at **www.nzoa.org.nz/nzjr-patient-questionnaires**.

**PATIENT NAME** _____

**DATE OF BIRTH** _____

**EMAIL** _____

**MOBILE** _____

Mailing address: Department of Orthopaedic Surgery and Musculoskeletal Medicine, Christchurch Hospital, Private Bag 4710, Christchurch 8140. Or scan/email to: jinny.willis3@cdhb.health.nz

## PRIMARY ANKLE REPLACEMENT

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE | THEATRE NO. | HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

○ LEFT - SIDE - RIGHT ○
IF BILATERAL THEN DO SEPARATE FORMS

STICK PATIENT LABEL HERE
PLEASE PLACE IMPLANT LABELS ON THE REVERSE

SURGEON TO CHECK & SIGN PLEASE ⟶ Surgeon to sign here: X

FUNDING ○ ACC ○ Private ○ DHB ○ DHB Outsourced

**PREVIOUS OPERATION ON INDEX JOINT** [TICK ALL THAT APPLY]
- ○ None
- ○ Internal fixation for juxtarticular fracture
- ○ Arthrodesis
- ○ Ligament reconstruction
- ○ Subjacent fusion
- ○ Other [SPECIFY]...

**DIAGNOSIS**
- ○ Post fracture
- ○ Osteoarthritis
- ○ Rheumatoid arthritis / other inflammatory
- ○ AVN
- ○ Instability
- ○ Other [SPECIFY]...

**X-RAY**
- ○ Concentric or mild deformity
- ○ >10 degrees varus
- ○ >10 degrees valgus

**CONCURRENT SURGERY** [TICK ALL THAT APPLY]
- ○ Achilles or calf lengthening
- ○ Ligament reconstruction: medial ☐ or lateral ☐
- ○ Hindfoot fusion or osteotomy
- ○ Midfoot fusion or osteotomy

**APPROACH** [TICK ALL THAT APPLY]
- ○ Anterior
- ○ Lateral
- ○ Patient specific instrument
- ○ Computer Navigation
- ○ Robotic

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**
- ○ Cephazolin
- ○ Other [SPECIFY]...

**OPERATING THEATRE**
- ○ Conventional
- ○ Laminar Flow or similar

**OPERATING TIME**
- Start Skin Time:
- Finish Skin Time:

**SURGEON ATTIRE**
- ○ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ○ Conventional Gown

**PRIMARY SURGEON**
- ○ Consultant
- ○ Advanced trainee supervised
- ○ Advanced trainee unsupervised

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

**Cement** [IF MORE THAN ONE MIX IS USED ONLY ONE CEMENT STICKER IS REQUIRED]

Tibia ○ Yes ○ No

Talus ○ Yes ○ No

PLACE CEMENT STICKER OR COMPLETE
Cement Name:
Cement Antibiotic (if present):

**Tibia**
Please do not fold placed stickers bar coded label

**Talus**
Please do not fold placed stickers bar coded label

**Bearing**
Please do not fold placed stickers bar coded label

**IMPORTANT**
IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

## PRIMARY CERVICAL DISC REPLACEMENT

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE THEATRE NO.

HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE

PLEASE PLACE IMPLANT LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯

IF BILATERAL THEN DO SEPARATE FORMS

SURGEON TO CHECK & SIGN PLEASE ⟶

Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

### LEVELS OF DISC REPLACEMENT

- ◯ C 3/4
- ◯ C 4/5
- ◯ C 5/6
- ◯ C 6/7
- ◯ C 7/T1
- ◯ Other [SPECIFY]...

### PREVIOUS OPERATION

- ◯ Foreminotomy
- ◯ Adjacent Level Fusion
- ◯ Adjacent Level Disc Arthroplasty
- ◯ Other [SPECIFY]...

### DIAGNOSIS

- ◯ Acute Disc Prolapse
- ◯ Chronic Spondylosis
- ◯ Neck Pain
- ◯ Other [SPECIFY]...

### APPROACH [TICK ALL THAT APPLY]

- ◯ Anterior - Right
- ◯ Anterior - Left
- ◯ Other [SPECIFY]...

### INTRAOPERATIVE COMPLICATIONS

### SYSTEMIC ANTIBIOTIC PROPHYLAXIS

NAME:

### OPERATING THEATRE

- ◯ Conventional
- ◯ Laminar Flow or similar

### OPERATING TIME

Start Skin Time:

Finish Skin Time:

### SURGEON ATTIRE

- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

### PRIMARY SURGEON

◯ Consultant ◯ Adv Trainee Unsupervised ◯ Adv Trainee Supervised ◯ Basic Trainee

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

| Implants | Implants |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |
| **Implants** | **Implants** |
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**

**IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED**

## PRIMARY ELBOW REPLACEMENT

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE | THEATRE NO. | HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE

PLEASE PLACE IMPLANT LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯

IF BILATERAL THEN DO SEPARATE FORMS

SURGEON TO CHECK & SIGN PLEASE ⟶ Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

**PREVIOUS OPERATION ON INDEX JOINT** [TICK ALL THAT APPLY]

- ◯ None
- ◯ Internal fixation for juxtarticular fracture
- ◯ Ligament reconstruction
- ◯ Interposition arthroplasty
- ◯ Debridement
- ◯ Synovectomy + removal radial head
- ◯ Osteotomy
- ◯ Other [SPECIFY]...

**DIAGNOSIS**

- ◯ Osteoarthritis
- ◯ Rheumatoid arthritis / other inflammatory
- ◯ Tumour
- ◯ Post fracture
- ◯ Post ligament disruption
- ◯ Post dislocation
- ◯ Other [SPECIFY]...

**CLASS**

- ◯ Hemiathroplasty (distal humerus replacement)
- ◯ Radial head replacement
- ◯ Radiocapitellar replacement
- ◯ Total Ulnohumeral replacement (unconstrained/linked)
- ◯ Total Ulnohumeral replacement (semiconstrained/linked)

**APPROACH** [TICK ALL THAT APPLY]

- ◯ Medial
- ◯ Lateral
- ◯ Posterior

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**

NAME:

**OPERATING THEATRE**

- ◯ Conventional
- ◯ Laminar Flow or similar

**OPERATING TIME**

Start Skin Time:

Finish Skin Time:

**SURGEON ATTIRE**

- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

**PRIMARY SURGEON**

◯ Consultant ◯ Adv Trainee Unsupervised ◯ Adv Trainee Supervised ◯ Basic Trainee

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

**Cement** [IF MORE THAN ONE MIX IS USED ONLY ONE CEMENT STICKER IS REQUIRED]

Humerus ◯ Yes ◯ No

Ulna ◯ Yes ◯ No

Radial ◯ Yes ◯ No

PLACE CEMENT STICKER OR COMPLETE

Cement Name:

Cement Antibiotic (if present):

| Humerus | Ulna |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

| Radial Head | Augments |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**

IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

## PRIMARY REPLACEMENT HAND
## (THUMB OR FINGER: CMCJ, MCPJ, PIPJ)

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE THEATRE NO.

HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE

PLEASE PLACE IMPLANT LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯

IF BILATERAL THEN DO SEPARATE FORMS

FOR SIMULTANEOUS REPLACEMENT OF MULTIPLE JOINTS WITH THE SAME IMPLANT AND TECHNIQUE IN THE SAME HAND, 1 FORM CAN BE COMPLETED, OTHERWISE SEPARATE FORMS REQUIRED.

SURGEON TO CHECK & SIGN PLEASE ⟶

Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

### JOINT REPLACED HAND

FINGER - MCPJ
- ◯ Index
- ◯ Middle
- ◯ Ring
- ◯ Little

FINGER - PIPJ
- ◯ Index
- ◯ Middle
- ◯ Ring
- ◯ Little

THUMB
- ◯ CMCJ
- ◯ MCPJ

### PREVIOUS OPERATION ON INDEX JOINT
- ◯ None
- ◯ ORIF
- ◯ Ligament reconstruction
- ◯ Interposition arthroplasty
- ◯ Debridement
- ◯ Synvectomy
- ◯ Osteotomy
- ◯ Other [SPECIFY]...

### DIAGNOSIS
- ◯ Osteoarthritis
- ◯ Rheumatoid arthritis
- ◯ Other inflammatory
- ◯ Post fracture
- ◯ Post ligament disruption
- ◯ Other [SPECIFY]...

### PRIMARY SURGEON
- ◯ Consultant
- ◯ Adv Trainee Unsupervised
- ◯ Adv Trainee Supervised
- ◯ Basic Trainee

### APPROACH [TICK ALL THAT APPLY]
- ◯ Volar
- ◯ Dorsal
- ◯ Lateral

### PROSTHESIS TYPE
- ◯ Silicone
- ◯ Surface replacement
- ◯ Pyrocarbon
- ◯ Other [SPECIFY]...

### FIXATION

PROXIMAL IMPLANT
- ◯ Cemented
- ◯ Uncemented

DISTAL IMPLANT
- ◯ Cemented
- ◯ Uncemented

### SYSTEMIC ANTIBIOTIC PROPHYLAXIS

NAME:

### OPERATING THEATRE
- ◯ Conventional
- ◯ Laminar Flow or similar

### OPERATING TIME

Start Skin Time:

Finish Skin Time:

### SURGEON ATTIRE
- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

Hand - Implant information stickers

Please do not fold placed stickers
bar coded label

**IMPORTANT**

**IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED**

# APPENDIX 3

## THEATRE FORMS

### PRIMARY HIP REPLACEMENT

○ TOTAL HIP ARTHROPLASTY ○ RESURFACING ARTHROPLASTY ○ HEMIARTHROPLASTY

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE THEATRE NO.

HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE

PLEASE PLACE IMPLANT LABELS ON THE REVERSE

○ LEFT - SIDE - RIGHT ○

IF BILATERAL THEN DO SEPARATE FORMS

SURGEON TO CHECK & SIGN PLEASE ⟶

Surgeon to sign here: X

FUNDING ○ ACC ○ Private ○ DHB ○ DHB Outsourced

**PREVIOUS OPERATION ON INDEX JOINT** [TICK ALL THAT APPLY]

- ○ None
- ○ Hip Arthroscopy
- ○ Internal fixation for juxtarticular fracture
- ○ Osteotomy
- ○ Other [SPECIFY]...

**DIAGNOSIS**

- ○ Osteoarthritis
- ○ Rheumatoid arthritis/other inflammatory
- ○ Acute fracture NOF
- ○ Old fracture NOF
- ○ Avascular necrosis
- ○ Developmental dysplasia / Congenital dislocation
- ○ Tumour
- ○ Other [SPECIFY]...

**APPROACH** [TICK ALL THAT APPLY]

- ○ Posterior
- ○ Anterior
- ○ Superior
- ○ Lateral
- ○ Trans-trochanteric (osteotomy)

**SURGICAL ADJUNCTS** [TICK IF USED]

- ○ Computer Navigation
- ○ Robotic assisted

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**

NAME:

**OPERATING THEATRE**

- ○ Conventional
- ○ Laminar Flow or similar

**OPERATING TIME**

Start Skin Time:

Finish Skin Time:

**SURGEON ATTIRE**

- ○ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ○ Conventional Gown

**PRIMARY SURGEON**

○ Consultant ○ Adv Trainee Unsupervised ○ Adv Trainee Supervised ○ Basic Trainee

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

**Cement** [IF MORE THAN ONE MIX IS USED ONLY ONE CEMENT STICKER IS REQUIRED]

Femur ○ Yes ○ No

Acetabulum ○ Yes ○ No

PLACE CEMENT STICKER OR COMPLETE

Cement Name:

Cement Antibiotic (if present):

| Femur | Acetabulum |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

| Femoral head | Augments |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**

**IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED**

# APPENDIX 3

## THEATRE FORMS

### PRIMARY KNEE REPLACEMENT

○ TOTAL KNEE ○ UNICOMPARTMENTAL - ☐ MEDIAL OR ☐ LATERAL ○ PATELLOFEMORAL

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE THEATRE NO.

HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT
[IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE
PLEASE PLACE IMPLANT
LABELS ON THE REVERSE

○ LEFT - SIDE - RIGHT ○
IF BILATERAL THEN DO SEPARATE FORMS

SURGEON TO CHECK & SIGN PLEASE ⟶

Surgeon to sign here: X

FUNDING ○ ACC ○ Private ○ DHB ○ DHB Outsourced

**PREVIOUS OPERATION ON INDEX JOINT** [TICK ALL THAT APPLY]

- ○ None
- ○ Osteotomy
- ○ Ligament reconstruction
- ○ Menisectomy
- ○ Internal fixation for juxtarticular fracture
- ○ Synovectomy
- ○ Other [SPECIFY]...

**DIAGNOSIS**

- ○ Osteoarthritis
- ○ Rheumatoid arthritis/other inflammatory
- ○ Post ligament - disruption/reconstruction
- ○ Post fracture
- ○ Avascular necrosis
- ○ Tumour
- ○ Other [SPECIFY]...

**APPROACH** [TICK ALL THAT APPLY]

- ○ Medial parapatellar
- ○ Lateral parapatellar
- ○ Tibial tubercle osteotomy
- ○ Other [EG EXTENSILE MEASURES]...

**SURGICAL ADJUNCTS** [TICK IF USED]

- ○ Computer Navigation
- ○ Robotic assisted
- ○ Patient specific cutting guides

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**

NAME:

**OPERATING THEATRE**

- ○ Conventional
- ○ Laminar Flow or similar

**OPERATING TIME**

Start Skin Time:

Finish Skin Time:

**SURGEON ATTIRE**

- ○ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ○ Conventional Gown

**PRIMARY SURGEON**

○ Consultant ○ Adv Trainee Unsupervised ○ Adv Trainee Supervised ○ Basic Trainee

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

**Cement** [IF MORE THAN ONE MIX IS USED ONLY ONE CEMENT STICKER IS REQUIRED]

Femur ○ Yes ○ No
Tibia ○ Yes ○ No
Patella ○ Yes ○ No

PLACE CEMENT STICKER OR COMPLETE
Cement Name:
Cement Antibiotic (if present):

| Femur | Tibia |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |
| **Patella** | **Augments** |
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**
IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

# APPENDIX 3

## THEATRE FORMS

### PRIMARY LUMBAR DISC REPLACEMENT

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE THEATRE NO.

HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT
[IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE
PLEASE PLACE IMPLANT
LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯
IF BILATERAL THEN DO SEPARATE FORMS

SURGEON TO CHECK & SIGN PLEASE ⟶

Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

**LEVELS OF DISC REPLACEMENT**

◯ L 3/4
◯ L 4/5
◯ L 5/S1

**LEVELS OF FUSION**

◯ L 3/4
◯ L 4/5
◯ L 5/S1

**PREVIOUS OPERATION**

◯ Discectomy L 3/4 ☐ L 4/5 ☐ L 5/S1 ☐
◯ Other L 3/4 ☐ L 4/5 ☐ L 5/S1 ☐ [SPECIFY]...
◯ Other [SPECIFY]...

**DIAGNOSIS**

◯ Degenerative Disc disease
L 3/4 ☐ L 4/5 ☐ L 5/S1 ☐ [PLAIN X-RAY CHANGES PRESENT]
Other [SPECIFY]...
◯ Annular tear MRI scan
L 3/4 ☐ L 4/5 ☐ L 5/S1 ☐ [NORMAL PLAIN X-RAY]
Other [SPECIFY]...
◯ Discogenic pain on discography
L 3/4 ☐ L 4/5 ☐ L 5/S1 ☐
Other [SPECIFY]...

**PRIMARY SURGEON**

◯ Consultant ◯ Adv Trainee Unsupervised ◯ Adv Trainee Supervised ◯ Basic Trainee

**APPROACH** [TICK ALL THAT APPLY]

◯ Retroperitoneal midline abdominal wall incision
◯ Retroperitoneal lateral abdominal wall incision
◯ Transperitoneal
◯ Other [SPECIFY]...

**INTRAOPERATIVE COMPLICATIONS**

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**

NAME:

**OPERATING THEATRE**

◯ Conventional
◯ Laminar Flow or similar

**OPERATING TIME**

Start Skin Time:
Finish Skin Time:

**SURGEON ATTIRE**

◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
◯ Conventional Gown

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

| Implants | Implants |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |
| **Implants** | **Implants** |
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**
IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

# APPENDIX 3

## THEATRE FORMS

### PRIMARY SHOULDER REPLACEMENT

◯ TOTAL SHOULDER ARTHROPLASTY ◯ HEMIARTHROPLASTY ◯ REVERSE SHOULDER

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE THEATRE NO.

HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

◯ LEFT - SIDE - RIGHT ◯
IF BILATERAL THEN DO SEPARATE FORMS

STICK PATIENT LABEL HERE
PLEASE PLACE IMPLANT LABELS ON THE REVERSE

SURGEON TO CHECK & SIGN PLEASE ⟶ Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

**PREVIOUS OPERATION ON INDEX JOINT** [TICK ALL THAT APPLY]

- ◯ None
- ◯ Rotator Cuff Repair
- ◯ Previous stabilisation
- ◯ Internal fixation for juxtarticular fracture
- ◯ Superior capsular reconstruction
- ◯ Arthroscopic debridement/decompression
- ◯ Other [SPECIFY]..

**DIAGNOSIS**

- ◯ Osteoarthritis
- ◯ Rheumatoid arthritis/other inflammatory
- ◯ Cuff tear arthropathy
- ◯ Massive cuff tear without arthritis
- ◯ Acute fracture proximal humerus
- ◯ Post old trauma
- ◯ Avascular necrosis
- ◯ Post recurrent dislocation
- ◯ Tumour
- ◯ Other [SPECIFY]..

**APPROACH** [TICK ALL THAT APPLY]

- ◯ Deltopectoral
- ◯ Navigation
- ◯ Patient specific instrumentation
- ◯ Other [SPECIFY]..

**PRIMARY SURGEON**

◯ Consultant ◯ Adv Trainee Unsupervised ◯ Adv Trainee Supervised ◯ Basic Trainee

**HUMERAL STEM TYPE**

- ◯ Standard
- ◯ Stemless
- ◯ Short/metaphyseal stem

**STRUCTURAL BONE GRAFT GLENOID**

◯ Allograft ◯ Autograft

**GLENOID MORPHOLOGY**

◯ A1 ◯ A2 ◯ B1 ◯ B2 ◯ B3 ◯ C ◯ D

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**

NAME:

**OPERATING THEATRE**

- ◯ Conventional
- ◯ Laminar Flow or similar

**OPERATING TIME**

Start Skin Time:
Finish Skin Time:

**SURGEON ATTIRE**

- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

**Cement** [IF MORE THAN ONE MIX IS USED ONLY ONE CEMENT STICKER IS REQUIRED]

Humerus ◯ Yes ◯ No
Glenoid ◯ Yes ◯ No

PLACE CEMENT STICKER OR COMPLETE
Cement Name:
Cement Antibiotic (if present):

| Humerus | Glenoid |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

| Humeral Head | Augments |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**
IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

## PRIMARY REPLACEMENT WRIST (WRIST, DRUJ)

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE | THEATRE NO. | HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE

PLEASE PLACE IMPLANT LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯

IF BILATERAL THEN DO SEPARATE FORMS

SURGEON TO CHECK & SIGN PLEASE ⟶ Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

### JOINT REPLACED WRIST

— WRIST
- ◯ Partial
- ◯ Total

— DRUJ
- ◯ Partial / Ulna Head
- ◯ Total

### PREVIOUS OPERATION ON INDEX JOINT

- ◯ None
- ◯ ORIF
- ◯ Ligament reconstruction
- ◯ Interposition arthroplasty
- ◯ Debridement
- ◯ Synvectomy
- ◯ Osteotomy
- ◯ Other [SPECIFY]...

### DIAGNOSIS

- ◯ Osteoarthritis
- ◯ Rheumatoid arthritis
- ◯ Other inflammatory
- ◯ Post fracture
- ◯ Post ligament disruption
- ◯ Other [SPECIFY]...

### PRIMARY SURGEON

◯ Consultant ◯ Adv Trainee Unsupervised ◯ Adv Trainee Supervised ◯ Basic Trainee

### ASSOCIATED PROCEDURES [SOFT TISSUE OR BONE]

◯ Yes [SPECIFY]...

### FIXATION

PROXIMAL IMPLANT
- ◯ Cemented
- ◯ Uncemented

DISTAL IMPLANT
- ◯ Cemented
- ◯ Uncemented

### SYSTEMIC ANTIBIOTIC PROPHYLAXIS

NAME:

### OPERATING THEATRE

- ◯ Conventional
- ◯ Laminar Flow or similar

### OPERATING TIME

Start Skin Time:

Finish Skin Time:

### SURGEON ATTIRE

- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

Wrist - Implant information stickers

Please do not fold placed stickers
bar coded label

**IMPORTANT**

**IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED**

## REVISION / RE-OPERATION ANKLE JOINT REPLACEMENT

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE | THEATRE NO. | HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE
PLEASE PLACE IMPLANT LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯
IF BILATERAL THEN DO SEPARATE FORMS

DATE OF INDEX OPERATION / /

IF RE-REVISION PREVIOUS DATE / /

SURGEON TO CHECK & SIGN PLEASE ⟶ Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

### DIAGNOSIS [TICK ALL THAT APPLY]

- ◯ Impingement
- ◯ Osteolysis: Talus ☐ or Tibia ☐
- ◯ Pain with no obvious cause
- ◯ Subjacent arthritis
- ◯ Bearing failure: wear ☐ or fracture ☐
- ◯ Failure to osseointergrate
- ◯ Periprosthetic #
- ◯ Deep infection
- ◯ Malalignment
- ◯ Subsidence: Talus ☐ or Tibia ☐
- ◯ Other [SPECIFY]..

### REVISION PROCEDURE [TICK ALL THAT APPLY]

- ◯ Bearing exchange only
- ◯ Amputation
- ◯ Extraction +/- cement spacer
- ◯ Fusion: TT ☐ or TTC ☐
- ◯ Tibia: standard ☐ revision ☐ custom ☐ allograft composite ☐
- ◯ Talus: standard ☐ revision ☐ custom ☐ allograft composite ☐
- ◯ Additional procedures [SPECIFY]..

### RE-OPERATION PROCEDURE [TICK ALL THAT APPLY]

- ◯ Tendon surgery
- ◯ Subjacent Fusions [SPECIFY]..
- ◯ Debridement for infection +/- bearing exchange for access
- ◯ Debridement for impingement: open ☐ or arthroscopic ☐
- ◯ Ligament reconstruction: medial ☐ or lateral ☐
- ◯ ORIF Peri prosthetic #
- ◯ Grafting of cysts: with bearing exchange ☐
- ◯ Osteotomy [SPECIFY]..
- ◯ Other [SPECIFY]..

### SYSTEMIC ANTIBIOTIC PROPHYLAXIS

- ◯ Cephazolin
- ◯ Other [SPECIFY]...

### OPERATING THEATRE

- ◯ Conventional
- ◯ Laminar Flow or similar

### OPERATING TIME

Start Skin Time:

Finish Skin Time:

### SURGEON ATTIRE

- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

### PRIMARY SURGEON

◯ Consultant ◯ Advanced trainee supervised ◯ Advanced trainee unsupervised

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

**Cement** [IF MORE THAN ONE MIX IS USED ONLY ONE CEMENT STICKER IS REQUIRED]

Tibia ◯ Yes ◯ No

Talus ◯ Yes ◯ No

PLACE CEMENT STICKER OR COMPLETE

Cement Name:

Cement Antibiotic (if present):

**Tibia**

Please do not fold placed stickers bar coded label

**Talus**

Please do not fold placed stickers bar coded label

**Bearing**

Please do not fold placed stickers bar coded label

**IMPORTANT**
IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

# APPENDIX 3

## THEATRE FORMS

### REVISION / RE-OPERATION CERVICAL DISC REPLACEMENT

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE THEATRE NO.

HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT
[IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE
PLEASE PLACE IMPLANT
LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯
IF BILATERAL THEN DO SEPARATE FORMS

DATE OF INDEX OPERATION / /

IF RE-REVISION PREVIOUS DATE / /

SURGEON TO CHECK & SIGN PLEASE ⟶

Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

**LEVELS OF REVISION**

- ◯ C 3/4
- ◯ C 4/5
- ◯ C 5/6
- ◯ C 6/7
- ◯ C 7/T1
- ◯ Other [SPECIFY]...

**REASON FOR REVISION**

- ◯ Dislocation of component
- ◯ Failure of component
- ◯ Adjacent level surgery
- ◯ Additional decompression required
- ◯ Heterotopic calcification
- ◯ Infection
- ◯ Pain (neck)
- ◯ Other [SPECIFY]...

**REVISION**

- ◯ Replace disc prosthesis (same)
- ◯ Replace disc prosthesis (different)
- ◯ Removal only
- ◯ Fuse
- ◯ Other [SPECIFY]...

**APPROACH** [TICK ALL THAT APPLY]

- ◯ Computer Navigation
- ◯ Trans-trochanteric
- ◯ Minimally invasive surgery
- ◯ Anterior
- ◯ Posterior
- ◯ Lateral

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**

NAME:

**OPERATING THEATRE**

- ◯ Conventional
- ◯ Laminar Flow or similar

**OPERATING TIME**

Start Skin Time:

Finish Skin Time:

**SURGEON ATTIRE**

- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

**PRIMARY SURGEON**

◯ Consultant ◯ Adv Trainee Unsupervised ◯ Adv Trainee Supervised ◯ Basic Trainee

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

| Implants | Implants |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |
| **Implants** | **Implants** |
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**
IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

# APPENDIX 3

## THEATRE FORMS

### REVISION / RE-OPERATION ELBOW JOINT

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE THEATRE NO.

HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE
PLEASE PLACE IMPLANT LABELS ON THE REVERSE

○ LEFT - SIDE - RIGHT ○
IF BILATERAL THEN DO SEPARATE FORMS

DATE OF INDEX OPERATION / /

IF RE-REVISION PREVIOUS DATE / /

SURGEON TO CHECK & SIGN PLEASE ⟶

Surgeon to sign here: X

FUNDING ○ ACC ○ Private ○ DHB ○ DHB Outsourced

**REVISION PROCEDURE** [TICK ALL THAT APPLY]
- ○ Change of humeral component
- ○ Change of ulnar component
- ○ Change of radial head component
- ○ Change of all components
- ○ Removal of components
- ○ Other [SPECIFY]...

**REASON FOR REVISION**
- ○ Loosening humeral component
- ○ Loosening ulnar component
- ○ Loosening radial head component
- ○ Unexplained pain
- ○ Deep infection
- ○ Fracture humerus
- ○ Fracture ulna
- ○ Dislocations
- ○ Other [SPECIFY]...

**IF RE-OPERATION ONLY**
[NO COMPONENT ADDED, CHANGED OR REMOVED - SPECIFY PROCEDURE]
- ○ Closed reduction of dislocation
- ○ Open reduction of dislocation
- ○ Treatment deep infection
- ○ Superficial wound procedure
- ○ MUA

**PRIMARY SURGEON**
- ○ Consultant
- ○ Adv Trainee Unsupervised
- ○ Adv Trainee Supervised
- ○ Basic Trainee

**CLASS**
- ○ Hemiathroplasty (distal humerus replacement)
- ○ Radial head replacement
- ○ Radiocapitellar replacement
- ○ Total Ulnohumeral replacement (unconstrained/linked)
- ○ Total Ulnohumeral replacement (semiconstrained/linked)

**APPROACH** [TICK ALL THAT APPLY]
- ○ Medial
- ○ Lateral
- ○ Posterior

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**

NAME:

**OPERATING THEATRE**
- ○ Conventional
- ○ Laminar Flow or similar

**OPERATING TIME**
- Start Skin Time:
- Finish Skin Time:

**SURGEON ATTIRE**
- ○ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ○ Conventional Gown

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

**Cement** [IF MORE THAN ONE MIX IS USED ONLY ONE CEMENT STICKER IS REQUIRED]

Humerus ○ Yes ○ No
Ulna ○ Yes ○ No
Radial ○ Yes ○ No

PLACE CEMENT STICKER OR COMPLETE
Cement Name:
Cement Antibiotic (if present):

| Humerus | Ulna |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

| Radial Head | Augments |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**
**IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED**

## REVISION / REOPERATION REPLACEMENT HAND
## (THUMB OR FINGER: CMCJ, MCPJ, PIPJ)

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE | THEATRE NO. | HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE

PLEASE PLACE IMPLANT LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯

IF BILATERAL THEN DO SEPARATE FORMS
AN INDIVIDUAL FORM IS REQUIRED FOR EACH JOINT REVISED

DATE OF INDEX OPERATION / /

IF RE-REVISION PREVIOUS DATE / /

SURGEON TO CHECK & SIGN PLEASE ⟶

Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

### JOINT REVISED - HAND [INCLUDING IF JOINT FUSED]

FINGER - MCPJ
- ◯ Index
- ◯ Middle
- ◯ Ring
- ◯ Little

FINGER - PIPJ
- ◯ Index
- ◯ Middle
- ◯ Ring
- ◯ Little

THUMB
- ◯ CMCJ
- ◯ MCPJ

### REASON FOR REVISION
- ◯ Infection
- ◯ Aseptic loosening
- ◯ Trauma - Fracture
- ◯ Dislocation
- ◯ Pain
- ◯ Implant fracture
- ◯ Other [SPECIFY]...

### ASSOCIATED PROCEDURES [SOFT TISSUE OR BONE]
- ◯ Yes [SPECIFY]...

### PRIMARY SURGEON
- ◯ Consultant
- ◯ Adv Trainee Unsupervised
- ◯ Adv Trainee Supervised
- ◯ Basic Trainee

### APPROACH [TICK ALL THAT APPLY]
- ◯ Volar
- ◯ Dorsal
- ◯ Lateral

### PROSTHESIS TYPE
- ◯ Silicone
- ◯ Surface replacement
- ◯ Pyrocarbon
- ◯ Other [SPECIFY]...

### FIXATION

PROXIMAL IMPLANT
- ◯ Cemented
- ◯ Uncemented

DISTAL IMPLANT
- ◯ Cemented
- ◯ Uncemented

### SYSTEMIC ANTIBIOTIC PROPHYLAXIS

NAME:

### OPERATING THEATRE
- ◯ Conventional
- ◯ Laminar Flow or similar

### OPERATING TIME

Start Skin Time:

Finish Skin Time:

### SURGEON ATTIRE
- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

Hand - Implant information stickers

Please do not fold placed stickers
bar coded label

**IMPORTANT**

IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

# APPENDIX 3

## THEATRE FORMS

### REVISION / RE-OPERATION HIP

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE | THEATRE NO. | HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE
PLEASE PLACE IMPLANT LABELS ON THE REVERSE

○ LEFT - SIDE - RIGHT ○
IF BILATERAL THEN DO SEPARATE FORMS

DATE OF INDEX OPERATION / /
IF RE-REVISION PREVIOUS DATE / /

SURGEON TO CHECK & SIGN PLEASE ⟶ Surgeon to sign here: X

FUNDING ○ ACC ○ Private ○ DHB ○ DHB Outsourced

**PROCEDURE PERFORMED** [TICK ALL THAT APPLY]
- ○ Change of all components
- ○ Change of femoral component
- ○ Change of acetabular shell
- ○ Change of liner
- ○ Change of head
- ○ Removal of components only (Girdlestone)
- ○ No components added, exchanged, or removed - re-operation only

**REASON FOR THIS REVISION**
[TICK ALL THAT APPLY] [REVISION = COMPONENT ADDED, CHANGED, OR REMOVED]
- ○ Deep Infection
- ○ Loosening acetabular component
- ○ Loosening femoral component
- ○ Dislocation/instability
- ○ Fracture femur
- ○ Failed hemiarthroplasty
- ○ Poly wear
- ○ Unexplained pain
- ○ Other [SPECIFY]...

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**

NAME:

**IF RE-OPERATION ONLY**
[NO COMPONENT ADDED, CHANGED OR REMOVED - SPECIFY PROCEDURE]
- ○ Debridement / Lavage for deep infection
- ○ Closed reduction of dislocation
- ○ Open reduction of dislocation
- ○ Haematoma Evacuation
- ○ Superficial wound procedure
- ○ Bone Grafting lytic lesion only
- ○ ORIF of periprosthetic fracture
- ○ Other [SPECIFY]...

**APPROACH** [TICK ALL THAT APPLY]
- ○ Posterior
- ○ Anterior
- ○ Lateral
- ○ Trans-trochanteric (osteotomy)

**SURGICAL ADJUNCTS** [TICK IF USED]
- ○ Computer Navigation
- ○ Robotic assisted

**OPERATING THEATRE**
- ○ Conventional
- ○ Laminar Flow or similar

**OPERATING TIME**
- Start Skin Time:
- Finish Skin Time:

**SURGEON ATTIRE**
- ○ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ○ Conventional Gown

**PRIMARY SURGEON**
- ○ Consultant
- ○ Adv Trainee Unsupervised
- ○ Adv Trainee Supervised
- ○ Basic Trainee

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

**Cement** [IF MORE THAN ONE MIX IS USED ONLY ONE CEMENT STICKER IS REQUIRED]

Femur ○ Yes ○ No
Acetabulum ○ Yes ○ No

PLACE CEMENT STICKER OR COMPLETE
Cement Name:
Cement Antibiotic (if present):

| Femur | Acetabulum |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

| Femoral head | Augments |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**
IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

# APPENDIX 3

## THEATRE FORMS

### REVISION / RE-OPERATION KNEE JOINT

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE | THEATRE NO. | HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE
PLEASE PLACE IMPLANT LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯
IF BILATERAL THEN DO SEPARATE FORMS

DATE OF INDEX OPERATION / /
IF RE-REVISION PREVIOUS DATE / /

SURGEON TO CHECK & SIGN PLEASE ⟶ Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

**REVISION PROCEDURE PERFORMED** [MORE THAN ONE MAY APPLY]

- ◯ Change of all components
- ◯ Change of femoral component
- ◯ Change of tibial component
- ◯ Change of tibial polyethylene only
- ◯ Change of patellar component
- ◯ Addition of patellar component
- ◯ Removal of all components only
- ◯ No components added or changed - re-operation only
- ◯ Other [SPECIFY]...

**REASON FOR THIS REVISION** [TICK ALL THAT APPLY]

- ◯ Deep infection
- ◯ Loosening femoral component
- ◯ Loosening patellar component
- ◯ Loosening tibial component
- ◯ Failed unicompartmental
- ◯ Wear in non-replaced compartment
- ◯ Periprosthetic Fracture ☐ Femur ☐ Tibia
- ◯ Poly wear
- ◯ Stiffness/Arthrofibrosis
- ◯ Instability
- ◯ Unexplained pain
- ◯ Other [SPECIFY]...

**PRIMARY SURGEON**

◯ Consultant ◯ Adv Trainee Unsupervised ◯ Adv Trainee Supervised ◯ Basic Trainee

**IF RE-OPERATION ONLY** [NO COMPONENT ADDED, CHANGED OR REMOVED]

- ◯ Debridement / Lavage for deep infection
- ◯ Manipulation under anaesthetic
- ◯ Superficial wound procedure
- ◯ ORIF Periprosthetic Fracture
- ◯ Other [SPECIFY]...

**APPROACH** [TICK ALL THAT APPLY]

- ◯ Medial parapatellar
- ◯ Lateral parapatellar
- ◯ Tibial tubercle osteotomy
- ◯ Other [EG EXTENSILE MEASURES]...

**SURGICAL ADJUNCTS** [TICK IF USED]

- ◯ Computer Navigation
- ◯ Robotic assisted
- ◯ Patient specific cutting guides

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**

NAME:

**OPERATING THEATRE**

- ◯ Conventional
- ◯ Laminar Flow or similar

**OPERATING TIME**

Start Skin Time:
Finish Skin Time:

**SURGEON ATTIRE**

- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

**Cement** [IF MORE THAN ONE MIX IS USED ONLY ONE CEMENT STICKER IS REQUIRED]

Femur ◯ Yes ◯ No
Tibia ◯ Yes ◯ No
Patella ◯ Yes ◯ No

PLACE CEMENT STICKER OR COMPLETE
Cement Name:
Cement Antibiotic (if present):

| Femur | Tibia |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |
| **Patella** | **Augments** |
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**
IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

## REVISION / RE-OPERATION LUMBAR DISC REPLACEMENT

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE | THEATRE NO. | HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE

PLEASE PLACE IMPLANT LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯

IF BILATERAL THEN DO SEPARATE FORMS

DATE OF INDEX OPERATION / /

IF RE-REVISION PREVIOUS DATE / /

SURGEON TO CHECK & SIGN PLEASE ⟶

Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

### REASON FOR REVISION

- ◯ Loosening of components
- ◯ Dislocation of articulating core
- ◯ Loss of spinal alignment
- ◯ Fracture of vertebra
- ◯ Deep infection
- ◯ Removal of components
- ◯ Pain
- ◯ Other [SPECIFY]...

### REVISION

- ◯ Change of TDR components
- ◯ Change to Anterior Fusion
- ◯ Change of articulating core
- ◯ In-situ posterior instrumented fusion

### LEVELS OF DISC REPLACEMENT

- ◯ L 3/4
- ◯ L 4/5
- ◯ L 5/S1

### LEVELS OF FUSION

- ◯ L 3/4
- ◯ L 4/5
- ◯ L 5/S1

### PRIMARY SURGEON

◯ Consultant ◯ Adv Trainee Unsupervised ◯ Adv Trainee Supervised ◯ Basic Trainee

### APPROACH [TICK ALL THAT APPLY]

- ◯ Retroperitoneal midline abdominal wall incision
- ◯ Retroperitoneal lateral abdominal wall incision
- ◯ Posterior Approach for in-situ fusion
- ◯ Transperitoneal
- ◯ Other [SPECIFY]...

### INTRAOPERATIVE COMPLICATIONS

### SYSTEMIC ANTIBIOTIC PROPHYLAXIS

NAME:

### OPERATING THEATRE

- ◯ Conventional
- ◯ Laminar Flow or similar

### OPERATING TIME

Start Skin Time:

Finish Skin Time:

### SURGEON ATTIRE

- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

| Implants | Implants |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |
| **Implants** | **Implants** |
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**

**IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED**

# APPENDIX 3

## THEATRE FORMS

### REVISION / RE-OPERATION SHOULDER

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE | THEATRE NO. | HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE
PLEASE PLACE IMPLANT LABELS ON THE REVERSE

◯ LEFT - SIDE - RIGHT ◯
IF BILATERAL THEN DO SEPARATE FORMS

DATE OF INDEX OPERATION / /
IF RE-REVISION PREVIOUS DATE / /

SURGEON TO CHECK & SIGN PLEASE ⟶ Surgeon to sign here: X

FUNDING ◯ ACC ◯ Private ◯ DHB ◯ DHB Outsourced

**REVISION PROCEDURE** [TICK ALL THAT APPLY]
- ◯ Change of all components
- ◯ Change of glenoid component
- ◯ Change of humeral component
- ◯ Change of liner
- ◯ Change of head only
- ◯ Removal of components only (with or without spacer insertion)
- ◯ Removal only humerus component
- ◯ Removal only glenoid component
- ◯ Conversion procedure [SPECIFY]...
- ◯ No components added or changed - re-operation only
- ◯ Other [SPECIFY]...

**REASON FOR THIS REVISION** [TICK ALL THAT APPLY]
- ◯ Deep infection
- ◯ Loosening glenoid component
- ◯ Loosening humeral component
- ◯ Dislocation/instability anterior
- ◯ Instability posterior
- ◯ Rotator cuff impingement/failure
- ◯ Fracture humerus
- ◯ Implant breakage/dissociation
- ◯ Glenoid erosion
- ◯ Other [SPECIFY]...

**PRIMARY SURGEON**
◯ Consultant ◯ Adv Trainee Unsupervised ◯ Adv Trainee Supervised ◯ Basic Trainee

**IF RE-OPERATION ONLY**
[NO COMPONENT ADDED, CHANGED OR REMOVED - SPECIFY PROCEDURE]
- ◯ Closed reduction of dislocation
- ◯ Debridement / Lavage for deep infection
- ◯ MUA
- ◯ Open reduction of dislocation
- ◯ Superficial wound procedure
- ◯ Subscapular repair

**APPROACH** [TICK ALL THAT APPLY]
- ◯ Deltopectoral
- ◯ Patient specific instrument
- ◯ Other [SPECIFY]...

**BONE GRAFT**
◯ Allograft ◯ Autograft

**SYSTEMIC ANTIBIOTIC PROPHYLAXIS**
NAME:

**OPERATING THEATRE**
- ◯ Conventional
- ◯ Laminar Flow or similar

**OPERATING TIME**
Start Skin Time:
Finish Skin Time:

**SURGEON ATTIRE**
- ◯ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ◯ Conventional Gown

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

**Cement** [IF MORE THAN ONE MIX IS USED ONLY ONE CEMENT STICKER IS REQUIRED]

Humerus ◯ Yes ◯ No
Glenoid ◯ Yes ◯ No

PLACE CEMENT STICKER OR COMPLETE
Cement Name:
Cement Antibiotic (if present):

| Humerus | Glenoid |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

| Humeral Head | Augments |
|---|---|
| Please do not fold placed stickers bar coded label | Please do not fold placed stickers bar coded label |

**IMPORTANT**
IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED

## REVISION / REOPERATION REPLACEMENT WRIST (WRIST, DRUJ)

**NEW ZEALAND JOINT REGISTRY - DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

DATE | THEATRE NO. | HOSPITAL NAME

ASA CLASS 1 2 3 4 [PLEASE CIRCLE]

BMI

CONSULTANT [IF DIFFERENT FROM PATIENT LABEL]

STICK PATIENT LABEL HERE

PLEASE PLACE IMPLANT LABELS ON THE REVERSE

○ LEFT - SIDE - RIGHT ○

IF BILATERAL THEN DO SEPARATE FORMS

DATE OF INDEX OPERATION / /

IF RE-REVISION PREVIOUS DATE / /

SURGEON TO CHECK & SIGN PLEASE ⟶

Surgeon to sign here: X

FUNDING ○ ACC ○ Private ○ DHB ○ DHB Outsourced

### JOINT REVISED WRIST

— WRIST

- ○ Partial
- ○ Total
- ○ Fusion [SPECIFY]...
- ○ Other [SPECIFY]...

— DRUJ

- ○ Partial / Ulna Head
- ○ Total
- ○ Excision
- ○ Other [SPECIFY]...

### REASON FOR REVISION

- ○ Infection
- ○ Aseptic loosening
- ○ Trauma - Fracture
- ○ Dislocation
- ○ Pain
- ○ Implant fracture
- ○ Other [SPECIFY]...

### ASSOCIATED PROCEDURES [SOFT TISSUE OR BONE]

- ○ Yes [SPECIFY]...

### FIXATION

PROXIMAL IMPLANT

- ○ Cemented
- ○ Uncemented

DISTAL IMPLANT

- ○ Cemented
- ○ Uncemented

### SYSTEMIC ANTIBIOTIC PROPHYLAXIS

NAME:

### OPERATING THEATRE

- ○ Conventional
- ○ Laminar Flow or similar

### OPERATING TIME

Start Skin Time:

Finish Skin Time:

### SURGEON ATTIRE

- ○ Space Suits/Helmet Fan: ☐ One-piece Toga or ☐ Sterile Hood and Gown
- ○ Conventional Gown

### PRIMARY SURGEON

○ Consultant ○ Adv Trainee Unsupervised ○ Adv Trainee Supervised ○ Basic Trainee

**DO NOT PLACE IN PATIENT NOTES - TO BE RETAINED IN THEATRE SUITE**

Wrist - Implant information stickers

Please do not fold placed stickers
bar coded label

**IMPORTANT**

**IF A BILATERAL PROCEDURE TWO COMPLETED FORMS ARE REQUIRED**

# APPENDIX 4

## NZJR QUESTIONNAIRES

### Manchester-Oxford Foot Questionnaire (MOxFQ)

Circle as appropriate **Right / Left** **Full Name**_____

Please tick (√ ) one for each statement

1. **During the past 4 weeks** this has applied to me:
   I have pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

2. **During the past 4 weeks** this has applied to me:
   I avoid walking long distances because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

3. **During the past 4 weeks** this has applied to me:
   I change the way I walk due to pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

4. **During the past 4 weeks** this has applied to me:
   I walk slowly because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

5. **During the past 4 weeks** this has applied to me:
   I have to stop and rest my foot/ankle because of pain

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

6. **During the past 4 weeks** this has applied to me:
   I avoid some hard or rough surfaces because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

7. **During the past 4 weeks** this has applied to me:
   I avoid standing for a long time because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

8. **During the past 4 weeks** this has applied to me:
   I catch the bus or use the car instead of walking, because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

### PRIMARY KNEE REPLACEMENT QUESTIONNAIRE

**Please circle the answer which best describes yourself OVER THE LAST 4 WEEKS**

NB: If there are reasons other than the operation which would stop you doing one of the tasks listed; try to answer the question from the joint replacement aspect alone.

LEFT ← PLEASE CIRCLE THE SIDE YOUR SURGERY WAS ON IN July 2021 → RIGHT
If your surgery was bilateral, you will need to complete a questionnaire for each side

1. How would you describe the pain you usually have from your operated on knee?

| (4) None | (3) Very mild | (2) Mild | (1) Moderate | (0) Severe |
|---|---|---|---|---|

2. For how long have you been able to walk before the pain from your operated on knee becomes severe? (with or without a stick)

| (4) No pain/over 30 minutes | (3) 16 to 30 minutes | (2) 5 to 15 minutes | (1) Around the house only | (0) Unable, severe pain |
|---|---|---|---|---|

3. Have you had any trouble getting in and out of a car or using public transport because of your operated on knee?

| (4) No trouble at all | (3) Very little trouble | (2) Moderate trouble | (1) Extreme difficulty | (0) Impossible to do |
|---|---|---|---|---|

4. Could you kneel down and get up again afterwards on your operated knee?

| (4) Yes, easily | (3) With little difficulty | (2) With moderate difficulty | (1) With extreme difficulty | (0) No, impossible |
|---|---|---|---|---|

5. Could you do the household shopping on your own?

| (4) Yes, easily | (3) With little difficulty | (2) With moderate difficulty | (1) With extreme difficulty | (0) No, impossible |
|---|---|---|---|---|

6. Have you had any trouble with washing and drying yourself (all over) because of your operated on knee?

| (4) No trouble at all | (3) Very little trouble | (2) Moderate trouble | (1) Extreme difficulty | (0) Impossible to do |
|---|---|---|---|---|

7. How much has pain from your operated on knee interfered with your usual work (including housework)?

| (4) Not at all | (3) A little bit | (2) Moderately | (1) Greatly | (0) Totally |
|---|---|---|---|---|

8. After a meal (sat at a table), how painful has it been for you to stand up from a chair because of your operated on knee?

| (4) Not at all painful | (3) Slightly painful | (2) Moderately painful | (1) Very painful | (0) Unbearable |
|---|---|---|---|---|

9. Have you felt that your operated on knee might suddenly "give way" or let you down?

| (4) Rarely/never | (3) Sometimes, or just at first | (2) Often, not just at first | (1) Most of the time | (0) All of the time |
|---|---|---|---|---|

10. Have you been limping when walking, because of your operated on knee?

| (4) Rarely/never | (3) Sometimes, or just at first | (2) Often, not just at first | (1) Most of the time | (0) All of the time |
|---|---|---|---|---|

11. Could you walk down one flight of stairs?

| (4) Yes, easily | (3) With little difficulty | (2) With moderate difficulty | (1) With extreme difficulty | (0) No, impossible |
|---|---|---|---|---|

12. Have you been troubled by pain from your operated on knee in bed at night?

| (4) No nights | (3) Only 1 or 2 nights | (2) Some nights | (1) Most nights | (0) Every night |
|---|---|---|---|---|

Overall, how satisfied are you with the outcome of your knee surgery?

| (4) Very satisfied | (3) Somewhat satisfied | (2) Neutral | (1) Somewhat dissatisfied | (0) Dissatisfied |
|---|---|---|---|---|

# APPENDIX 4

## NZJR QUESTIONNAIRES

### REVISION KNEE REPLACEMENT QUESTIONNAIRE

**Please circle the answer which best describes yourself OVER THE LAST 4 WEEKS**

NB: If there are reasons other than the operation which would stop you doing one of the tasks listed; try to answer the question from the joint replacement aspect alone.

LEFT ← PLEASE CIRCLE THE SIDE YOUR SURGERY WAS ON IN July 2021 → RIGHT
If your surgery was bilateral, you will need to complete a questionnaire for each side

**1. How would you describe the pain you usually have from your operated on knee?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| None | Very mild | Mild | Moderate | Severe |

**2. For how long have you been able to walk before the pain from your operated on knee becomes severe? (with or without a stick)**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| No pain/over 30 minutes | 16 to 30 minutes | 5 to 15 minutes | Around the house only | Unable, severe pain |

**3. Have you had any trouble getting in and out of a car or using public transport because of your operated on knee?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| No trouble at all | Very little trouble | Moderate trouble | Extreme difficulty | Impossible to do |

**4. Could you kneel down and get up again afterwards on your operated knee?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

**5. Could you do the household shopping on your own?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

**6. Have you had any trouble with washing and drying yourself (all over) because of your operated on knee?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| No trouble at all | Very little trouble | Moderate trouble | Extreme difficulty | Impossible to do |

**7. How much has pain from your operated on knee interfered with your usual work (including housework)?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Not at all | A little bit | Moderately | Greatly | Totally |

**8. After a meal (sat at a table), how painful has it been for you to stand up from a chair because of your operated on knee?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Not at all painful | Slightly painful | Moderately painful | Very painful | Unbearable |

**9. Have you felt that your operated on knee might suddenly "give way" or let you down?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Rarely/never | Sometimes, or just at first | Often, not just at first | Most of the time | All of the time |

**10. Have you been limping when walking, because of your operated on knee?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Rarely/never | Sometimes, or just at first | Often, not just at first | Most of the time | All of the time |

**11. Could you walk down one flight of stairs?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

**12. Have you been troubled by pain from your operated on knee in bed at night?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| No nights | Only 1 or 2 nights | Some nights | Most nights | Every night |

**Overall, how satisfied are you with the outcome of your knee surgery?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Very satisfied | Somewhat satisfied | Neutral | Somewhat dissatisfied | Dissatisfied |

### PRIMARY SHOULDER REPLACEMENT QUESTIONNAIRE

**Please circle the answer which best describes yourself OVER THE LAST 4 WEEKS**

NB: If there are reasons other than the operation which would stop you doing one of the tasks listed; try to answer the question from the joint replacement aspect alone.

LEFT ← PLEASE CIRCLE THE SIDE YOUR SURGERY WAS ON IN July 2021 → RIGHT
If your surgery was bilateral, you will need to complete a questionnaire for each side

**1. How would you describe the worst pain you have had from your operated on shoulder?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| None | Mild | Moderate | Severe | Unbearable |

**2. How would you describe the pain you usually have from your operated on shoulder?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| None | Mild | Moderate | Severe | Unbearable |

**3. Have you had any trouble getting in and out of a car or using public transport because of your operated on shoulder?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| No trouble at all | Very little trouble | Moderate trouble | Extreme difficulty | Impossible to do |

**4. Have you been able to use a knife and fork at the same time?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

**5. Could you do the household shopping on your own?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

**6. Could you carry a tray containing a plate of food across a room?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

**7. Could you brush/comb your hair with the operated on arm?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

**8. Have you had any trouble dressing yourself because of your operated on shoulder?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| No trouble at all | Very little trouble | Moderate trouble | Extreme difficulty | Impossible to do |

**9. Could you hang your clothes up in a wardrobe – using the operated on arm?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

**10. Have you been able to wash and dry yourself under both arms?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

**11. How much has pain from your operated on shoulder interfered with your usual work hobbies/recreational activities (including housework)?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Not at all | A little bit | Moderately | Greatly | Totally |

**12. Have you been troubled by pain from your operated on shoulder in bed at night?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| No nights | Only 1 or 2 nights | Some nights | Most nights | Every night |

**Overall, how satisfied are you with the outcome of your shoulder surgery?**

| 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|
| Very satisfied | Somewhat satisfied | Neutral | Somewhat dissatisfied | Dissatisfied |

## REVISION SHOULDER REPLACEMENT QUESTIONNAIRE

**Please circle the answer which best describes yourself OVER THE LAST 4 WEEKS**

NB: If there are reasons other than the operation which would stop you doing one of the tasks listed; try to answer the question from the joint replacement aspect alone.

LEFT ← PLEASE CIRCLE THE SIDE YOUR SURGERY WAS ON IN July 2021 → RIGHT

If your surgery was bilateral, you will need to complete a questionnaire for each side

**1. How would you describe the worst pain you have had from your operated on shoulder?**

| ④ None | ③ Mild | ② Moderate | ① Severe | ⓪ Unbearable |
|---|---|---|---|---|

**2. How would you describe the pain you usually have from your operated on shoulder?**

| ④ None | ③ Mild | ② Moderate | ① Severe | ⓪ Unbearable |
|---|---|---|---|---|

**3. Have you had any trouble getting in and out of a car or using public transport because of your operated on shoulder?**

| ④ No trouble at all | ③ Very little trouble | ② Moderate trouble | ① Extreme difficulty | ⓪ Impossible to do |
|---|---|---|---|---|

**4. Have you been able to use a knife and fork at the same time?**

| ④ Yes, easily | ③ With little difficulty | ② With moderate difficulty | ① With extreme difficulty | ⓪ No, impossible |
|---|---|---|---|---|

**5. Could you do the household shopping on your own?**

| ④ Yes, easily | ③ With little difficulty | ② With moderate difficulty | ① With extreme difficulty | ⓪ No, impossible |
|---|---|---|---|---|

**6. Could you carry a tray containing a plate of food across a room?**

| ④ Yes, easily | ③ With little difficulty | ② With moderate difficulty | ① With extreme difficulty | ⓪ No, impossible |
|---|---|---|---|---|

**7. Could you brush/comb your hair with the operated on arm?**

| ④ Yes, easily | ③ With little difficulty | ② With moderate difficulty | ① With extreme difficulty | ⓪ No, impossible |
|---|---|---|---|---|

**8. Have you had any trouble dressing yourself because of your operated on shoulder?**

| ④ No trouble at all | ③ Very little trouble | ② Moderate trouble | ① Extreme difficulty | ⓪ Impossible to do |
|---|---|---|---|---|

**9. Could you hang your clothes up in a wardrobe -- using the operated on arm?**

| ④ Yes, easily | ③ With little difficulty | ② With moderate difficulty | ① With extreme difficulty | ⓪ No, impossible |
|---|---|---|---|---|

**10. Have you been able to wash and dry yourself under both arms?**

| ④ Yes, easily | ③ With little difficulty | ② With moderate difficulty | ① With extreme difficulty | ⓪ No, impossible |
|---|---|---|---|---|

**11. How much has pain from your operated on shoulder interfered with your usual work hobbies/recreational activities (including housework)?**

| ④ Not at all | ③ A little bit | ② Moderately | ① Greatly | ⓪ Totally |
|---|---|---|---|---|

**12. Have you been troubled by pain from your operated on shoulder in bed at night?**

| ④ No nights | ③ Only 1 or 2 nights | ② Some nights | ① Most nights | ⓪ Every night |
|---|---|---|---|---|

**Overall, how satisfied are you with the outcome of your shoulder surgery?**

| ④ Very satisfied | ③ Somewhat satisfied | ② Neutral | ① Somewhat dissatisfied | ⓪ Dissatisfied |
|---|---|---|---|---|

## Hand Rehab — Patient Rated Wrist/Hand Evaluation Form

| | |
|---|---|
| Full Name: | |
| ACC Number: | |
| Today's Date: | |

The questions below will help us understand how much difficulty you have had with your wrist/hand in the past week

- You will be describing your **average** wrist/hand symptoms **over the past week** on a scale of 0-10
- Please provide an answer for **all** questions
- If you did not perform an activity, please **estimate** the pain or difficulty you would expect

### 1. Pain

Rate the average amount of pain in your wrist/hand over the past week by selecting the number that best describes your pain on a scale from 0-10

- A zero (0) means that you did not have any pain
- A ten (10) means that the pain is the worst possible (i.e. worst you have ever experienced or that you could not do the activity because of pain)
- If you are unable to use your hand because it is immobilised or movement is prohibited, score 10

Please rate your pain on the scale below (0 = none, 10 = worst)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| At rest | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| When doing a task with a repeated wrist/hand movement | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| When lifting a heavy object | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| When it is at its worst | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| How often do you have pain? (0 = never, 10 = always) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Please turn over...

# APPENDIX 4

## NZJR QUESTIONNAIRES

Hand Rehab

### Patient Rated Wrist/Hand Evaluation Form

**2. Function**

Rate the **amount of difficulty** you experienced performing each of the items below – over the past week

- A zero (0) means that you did not experience any difficulty
- A ten (10) means it was so difficult you were unable to do it at all

Rate your difficulty (0 = no difficulty, 10 = unable to do)

A. Specific Activities

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn a door knob using my affected hand | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Cut food using a knife in my affected hand | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Fasten buttons on my shirt | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Use my affected hand to push up from a chair | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Carry a 5kg object in my affected hand | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Use toilet tissue with my affected hand | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

B. Usual Activities

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Personal care activities (dressing, washing) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Household work (cleaning, maintenance) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Work (your job or usual everyday work) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Recreational activities | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Any other comments?

9. **During the past 4 weeks this has applied to me:**
I feel self-conscious about my foot/ankle
None of the Time ☐ | Rarely ☐ | Some of the time ☐ | Most of the time ☐ | All of the time ☐

10. **During the past 4 weeks this has applied to me:**
I feel self-conscious about the shoes I have to wear
None of the Time ☐ | Rarely ☐ | Some of the time ☐ | Most of the time ☐ | All of the time ☐

11. **During the past 4 weeks this has applied to me:**
The pain in my foot/ankle is more painful in the evening
None of the Time ☐ | Rarely ☐ | Some of the time ☐ | Most of the time ☐ | All of the time ☐

12. **During the past 4 weeks this has applied to me:**
I get shooting pains in my foot/ankle
None of the Time ☐ | Rarely ☐ | Some of the time ☐ | Most of the time ☐ | All of the time ☐

13. **During the past 4 weeks this has applied to me:**
The pain in my foot/ankle prevents me from carrying out my work/everyday activities
None of the Time ☐ | Rarely ☐ | Some of the time ☐ | Most of the time ☐ | All of the time ☐

14. **During the past 4 weeks this has applied to me:**
I am unable to do all my social or recreational activities because of pain in my foot/ankle
None of the Time ☐ | Rarely ☐ | Some of the time ☐ | Most of the time ☐ | All of the time ☐

15. **During the past 4 weeks.....**
How would you describe the pain you usually have in your foot/ankle?
None ☐ | Very mild ☐ | Mild ☐ | Moderate ☐ | Severe ☐

16. **During the past 4 weeks....**
Have you been troubled by pain from your foot/ankle in bed at night?
No nights ☐ | Only 1 or 2 nights ☐ | Some nights ☐ | Most nights ☐ | Every night ☐

**Finally, please check that you have answered every question.**
**Thank you very much.**

## Revision Manchester-Oxford Foot Questionnaire (MOxFQ)

**Circle as appropriate Right / Left** **Full Name**_____

**Please tick (✓) one for each statement**

1. **During the past 4 weeks this has applied to me:**
I have pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

2. **During the past 4 weeks this has applied to me:**
I avoid walking long distances because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

3. **During the past 4 weeks this has applied to me:**
I change the way I walk due to pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

4. **During the past 4 weeks this has applied to me:**
I walk slowly because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

5. **During the past 4 weeks this has applied to me:**
I have to stop and rest my foot/ankle because of pain

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

6. **During the past 4 weeks this has applied to me:**
I avoid some hard or rough surfaces because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

7. **During the past 4 weeks this has applied to me:**
I avoid standing for a long time because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

8. **During the past 4 weeks this has applied to me:**
I catch the bus or use the car instead of walking, because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

9. **During the past 4 weeks this has applied to me:**
I feel self-conscious about my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

10. **During the past 4 weeks this has applied to me:**
I feel self-conscious about the shoes I have to wear

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

11. **During the past 4 weeks this has applied to me:**
The pain in my foot/ankle is more painful in the evening

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

12. **During the past 4 weeks this has applied to me:**
I get shooting pains in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

13. **During the past 4 weeks this has applied to me:**
The pain in my foot/ankle prevents me from carrying out my work/everyday activities

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

14. **During the past 4 weeks this has applied to me:**
I am unable to do all my social or recreational activities because of pain in my foot/ankle

| None of the Time | Rarely | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

15. **During the past 4 weeks**.....
How would you describe the pain you usually have in your foot/ankle?

| None | Very mild | Mild | Moderate | Severe |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

16. **During the past 4 weeks**....
Have you been troubled by pain from your foot/ankle in bed at night?

| No nights | Only 1 or 2 nights | Some nights | Most nights | Every night |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

**Finally, please check that you have answered every question.**
**Thank you very much.**

# APPENDIX 4

## NZJR QUESTIONNAIRES

### NECK DISABILITY INDEX (NDI) QUESTIONNAIRE

Patient Name: ..... Date of Birth: .....

Patient Address: ..... Operating Surgeon: .....

..... Date of Surgery: .....

Please answer every section. Mark one box only in each section that most closely describes you today.

**Section 1: Pain Intensity**
- ☐ I have no pain at the moment.
- ☐ The pain is very mild at the moment.
- ☐ The pain is moderate at the moment.
- ☐ The pain is fairly severe at the moment.
- ☐ The pain is very severe at the moment.
- ☐ The pain is the worst imaginable at the moment.

**Section 2: Personal Care (Washing, Dressing, etc)**
- ☐ I can look after myself normally, without causing extra pain.
- ☐ I can look after myself normally, but it causes extra pain.
- ☐ It is painful to look after myself and I am slow and careful.
- ☐ I need some help, but manage most of my personal care.
- ☐ I need help every day in most aspects of self care.
- ☐ I do not get dressed, I wash with difficulty and stay in bed.

**Section 3: Lifting**
- ☐ I can lift heavy weights without extra pain.
- ☐ I can lift heavy weights, but it gives extra pain.
- ☐ Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned, for example, on a table.
- ☐ Pain prevents me from lifting heavy weights off the floor, but I can manage light to medium weights if they are conveniently positioned.
- ☐ I can lift very light weights.
- ☐ I cannot lift or carry anything at all.

**Section 4: Reading**
- ☐ I can read as much as I want to with no pain in my neck.
- ☐ I can read as much as I want to with slight pain in my neck.
- ☐ I can read as much as I want to with moderate pain in my neck.
- ☐ I can't read as much as I want because of moderate pain in my neck.
- ☐ I can hardly read at all because of severe pain in my neck.
- ☐ I cannot read at all.

**Section 5: Headaches**
- ☐ I have no headaches at all.
- ☐ I have slight headaches which come infrequently.
- ☐ I have moderate headaches which come infrequently.
- ☐ I have moderate headaches which come frequently.
- ☐ I have severe headaches which come frequently.
- ☐ I have headaches almost all the time.

**Section 6: Concentration**
- ☐ I can concentrate fully when I want to, with no difficulty.
- ☐ I can concentrate fully when I want to, with slight difficulty.
- ☐ I have a fair degree of difficulty in concentrating when I want to.
- ☐ I have a lot of difficulty in concentrating when I want to.
- ☐ I have a great deal of difficulty in concentrating when I want to.
- ☐ I cannot concentrate at all.

**Section 7: Work**
- ☐ I can do as much work as I want to.
- ☐ I can only do my usual work, but no more.
- ☐ I can do most of my usual work, but no more.
- ☐ I cannot do my usual work.
- ☐ I can hardly do any work at all.
- ☐ I can't do any work at all.

**Section 8: Driving**
- ☐ I can drive my car without any neck pain.
- ☐ I can drive my car as long as I want, but with slight neck pain.
- ☐ I can drive my car as long as I want, but with moderate neck pain.
- ☐ I can't drive my car as long as I want because of moderate pain in my neck.
- ☐ I can hardly drive at all because of severe pain in my neck.
- ☐ I can't drive my car at all.

**Section 9: Sleeping**
- ☐ I have no trouble sleeping.
- ☐ My sleep is slightly disturbed (less than 1 hour sleepless).
- ☐ My sleep is mildly disturbed (1-2 hours sleepless).
- ☐ My sleep is moderately disturbed (2-3 hours sleepless).
- ☐ My sleep is greatly disturbed (3-5 hours sleepless).
- ☐ My sleep is completely disturbed (5-7 hours sleepless).

**Section 10: Recreation**
- ☐ I am able to engage in all my recreation activities, with no neck pain at all.
- ☐ I am able to engage in all my recreation activities, with some pain in my neck.
- ☐ I am able to engage in most, but not all, of my usual recreation activities because of pain in my neck.
- ☐ I am able to engage in only a few of my usual recreation activities because of pain in my neck.
- ☐ I can hardly do any recreation activities because of pain in my neck.
- ☐ I can't do any recreation activities at all.

### PRIMARY ELBOW REPLACEMENT QUESTIONNAIRE

**Please circle the answer which best describes yourself OVER THE LAST 4 WEEKS**

NB: If there are reasons other than the operation which would stop you doing one of the tasks listed; try to answer the question from the joint replacement aspect alone.

LEFT ← PLEASE CIRCLE THE SIDE YOUR SURGERY WAS ON IN July 2021 → RIGHT

If your surgery was bilateral, you will need to complete a questionnaire for each side

1. Have you had difficulty lifting things in your home, such as putting out the rubbish, because of your elbow problem?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| No difficulty | A little bit of difficulty | Moderate difficulty | Extreme difficulty | Impossible to do |

2. Have you had difficulty carrying bags of shopping, because of your elbow problem?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| No difficulty | A little bit of difficulty | Moderate difficulty | Extreme difficulty | Impossible to do |

3. Have you had any difficulty washing yourself all over, because of your elbow problem?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| No difficulty | A little bit of difficulty | Moderate difficulty | Extreme difficulty | Impossible to do |

4. Have you had any difficulty dressing yourself, because of your elbow problem?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| No difficulty | A little bit of difficulty | Moderate difficulty | Extreme difficulty | Impossible to do |

5. Have you felt that your elbow problem is "controlling your life"?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| No, not at all | Occasionally | Some days | Most days | Every day |

6. How much has your elbow problem "been on your mind"?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| Not at all | A little of the time | Some of the time | Most of the time | All of the time |

7. Have you been troubled by pain from your elbow in bed at night?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| Not at all | 1-2 nights | Some nights | Most nights | Every night |

8. How often has your elbow pain interfered with your sleeping?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| Not at all | Occasionally | Some of the time | Most of the time | All of the time |

9. How much has your elbow problem interfered with your usual work or everyday activities?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| Not at all | A little | Moderately | Greatly | Totally |

10. Has your elbow problem limited your ability to take part in leisure activities that you enjoy doing?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| No, not at all | Occasionally | Some of the time | Most of the time | All of the time |

11. How would you describe the worst pain you have from your elbow?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| No pain | Mild pain | Moderate pain | Severe pain | Unbearable |

12. How would you describe the pain you usually have from your elbow?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| No pain | Mild pain | Moderate pain | Severe pain | Unbearable |

Overall, how satisfied are you with the outcome of your elbow surgery?

| (4) | (3) | (2) | (1) | (0) |
|---|---|---|---|---|
| Very satisfied | Somewhat satisfied | Neutral | Somewhat dissatisfied | Dissatisfied |

# APPENDIX 4

## NZJR QUESTIONNAIRES

### REVISION ELBOW REPLACEMENT QUESTIONNAIRE

**Please circle the answer which best describes yourself OVER THE LAST 4 WEEKS**

NB: If there are reasons other than the operation which would stop you doing one of the tasks listed; try to answer the question from the joint replacement aspect alone.

LEFT ← PLEASE CIRCLE THE SIDE YOUR SURGERY WAS ON IN July 2021 → RIGHT

If your surgery was bilateral, you will need to complete a questionnaire for each side

1. Have you had difficulty lifting things in your home, such as putting out the rubbish, because of your elbow problem?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No difficulty | A little bit of difficulty | Moderate difficulty | Extreme difficulty | Impossible to do |

2. Have you had difficulty carrying bags of shopping, because of your elbow problem?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No difficulty | A little bit of difficulty | Moderate difficulty | Extreme difficulty | Impossible to do |

3. Have you had any difficulty washing yourself all over, because of your elbow problem?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No difficulty | A little bit of difficulty | Moderate difficulty | Extreme difficulty | Impossible to do |

4. Have you had any difficulty dressing yourself, because of your elbow problem?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No difficulty | A little bit of difficulty | Moderate difficulty | Extreme difficulty | Impossible to do |

5. Have you felt that your elbow problem is "controlling your life"?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No, not at all | Occasionally | Some days | Most days | Every day |

6. How much has your elbow problem "been on your mind"?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Not at all | A little of the time | Some of the time | Most of the time | All of the time |

7. Have you been troubled by pain from your elbow in bed at night?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Not at all | 1-2 nights | Some nights | Most nights | Every night |

8. How often has your elbow pain interfered with your sleeping?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Not at all | Occasionally | Some of the time | Most of the time | All of the time |

9. How much has your elbow problem interfered with your usual work or everyday activities?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Not at all | A little | Moderately | Greatly | Totally |

10. Has your elbow problem limited your ability to take part in leisure activities that you enjoy doing?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No, not at all | Occasionally | Some of the time | Most of the time | All of the time |

11. How would you describe the worst pain you have from your elbow?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No pain | Mild pain | Moderate pain | Severe pain | Unbearable |

12. How would you describe the pain you usually have from your elbow?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No pain | Mild pain | Moderate pain | Severe pain | Unbearable |

Overall, how satisfied are you with the outcome of your elbow surgery?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Very satisfied | Somewhat satisfied | Neutral | Somewhat dissatisfied | Dissatisfied |

### PRIMARY HIP REPLACEMENT QUESTIONNAIRE

**Please circle the answer which best describes yourself OVER THE LAST 4 WEEKS**

NB: If there are reasons other than the operation which would stop you doing one of the tasks listed; try to answer the question from the joint replacement aspect alone.

LEFT ← PLEASE CIRCLE THE SIDE YOUR SURGERY WAS ON IN July 2021 → RIGHT

If your surgery was bilateral, you will need to complete a questionnaire for each side

1. How would you describe the pain you usually have from your operated on hip?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| None | Very mild | Mild | Moderate | Severe |

2. For how long have you been able to walk before the pain from your operated on hip becomes severe? (with or without a stick)

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No pain/over 30 minutes | 16 to 30 minutes | 5 to 15 minutes | Around the house only | Unable, severe pain |

3. Have you had any trouble getting in and out of a car or using public transport because of your operated on hip?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No trouble at all | Very little trouble | Moderate trouble | Extreme difficulty | Impossible to do |

4. Have you been able to put on a pair of socks, stockings or tights?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

5. Could you do the household shopping on your own?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

6. Have you had any trouble with washing and drying yourself (all over) because of your operated on hip?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No trouble at all | Very little trouble | Moderate trouble | Extreme difficulty | Impossible to do |

7. How much has pain from your operated on hip interfered with your usual work (including housework)?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Not at all | A little bit | Moderately | Greatly | Totally |

8. After a meal (sat at a table), how painful has it been for you to stand up from a chair because of your operated on hip?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Not at all painful | Slightly painful | Moderately painful | Very painful | Unbearable |

9. Have you had any sudden, severe pain - 'shooting', 'stabbing' or 'spasms' - from the affected operated on hip?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No days | Only 1 or 2 days | Some days | Most days | Every day |

10. Have you been limping when walking, because of your operated on hip?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Rarely/never | Sometimes, or just at first | Often, not just at first | Most of the time | All of the time |

11. Have you been able to climb a flight of stairs?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Yes, easily | With little difficulty | With moderate difficulty | With extreme difficulty | No, impossible |

12. Have you been troubled by pain from your operated on hip in bed at night?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| No nights | Only 1 or 2 nights | Some nights | Most nights | Every night |

Overall, how satisfied are you with the outcome of your hip surgery?

| ④ | ③ | ② | ① | ⓪ |
|---|---|---|---|---|
| Very satisfied | Somewhat satisfied | Neutral | Somewhat dissatisfied | Dissatisfied |

## REVISION HIP REPLACEMENT QUESTIONNAIRE

**Please circle the answer which best describes yourself OVER THE LAST 4 WEEKS**

NB: If there are reasons other than the operation which would stop you doing one of the tasks listed; try to answer the question from the joint replacement aspect alone.

LEFT ← PLEASE CIRCLE THE SIDE YOUR SURGERY WAS ON IN July 2021 → RIGHT

If your surgery was bilateral, you will need to complete a questionnaire for each side

**1. How would you describe the pain you usually have from your operated on hip?**

| ④ None | ③ Very mild | ② Mild | ① Moderate | ⓪ Severe |
|---|---|---|---|---|

**2. For how long have you been able to walk before the pain from your operated on hip becomes severe? (with or without a stick)**

| ④ No pain/over 30 minutes | ③ 16 to 30 minutes | ② 5 to 15 minutes | ① Around the house only | ⓪ Unable, severe pain |
|---|---|---|---|---|

**3. Have you had any trouble getting in and out of a car or using public transport because of your operated on hip?**

| ④ No trouble at all | ③ Very little trouble | ② Moderate trouble | ① Extreme difficulty | ⓪ Impossible to do |
|---|---|---|---|---|

**4. Have you been able to put on a pair of socks, stockings or tights?**

| ④ Yes, easily | ③ With little difficulty | ② With moderate difficulty | ① With extreme difficulty | ⓪ No, impossible |
|---|---|---|---|---|

**5. Could you do the household shopping on your own?**

| ④ Yes, easily | ③ With little difficulty | ② With moderate difficulty | ① With extreme difficulty | ⓪ No, impossible |
|---|---|---|---|---|

**6. Have you had any trouble with washing and drying yourself (all over) because of your operated on hip?**

| ④ No trouble at all | ③ Very little trouble | ② Moderate trouble | ① Extreme difficulty | ⓪ Impossible to do |
|---|---|---|---|---|

**7. How much has pain from your operated on hip interfered with your usual work (including housework)?**

| ④ Not at all | ③ A little bit | ② Moderately | ① Greatly | ⓪ Totally |
|---|---|---|---|---|

**8. After a meal (sat at a table), how painful has it been for you to stand up from a chair because of your operated on hip?**

| ④ Not at all painful | ③ Slightly painful | ② Moderately painful | ① Very painful | ⓪ Unbearable |
|---|---|---|---|---|

**9. Have you had any sudden, severe pain - 'shooting', 'stabbing' or 'spasms' - from the affected operated on hip?**

| ④ No days | ③ Only 1 or 2 days | ② Some days | ① Most days | ⓪ Every day |
|---|---|---|---|---|

**10. Have you been limping when walking, because of your operated on hip?**

| ④ Rarely/never | ③ Sometimes, or just at first | ② Often, not just at first | ① Most of the time | ⓪ All of the time |
|---|---|---|---|---|

**11. Have you been able to climb a flight of stairs?**

| ④ Yes, easily | ③ With little difficulty | ② With moderate difficulty | ① With extreme difficulty | ⓪ No, impossible |
|---|---|---|---|---|

**12. Have you been troubled by pain from your operated on hip in bed at night?**

| ④ No nights | ③ Only 1 or 2 nights | ② Some nights | ① Most nights | ⓪ Every night |
|---|---|---|---|---|

**Overall, how satisfied are you with the outcome of your hip surgery?**

| ④ Very satisfied | ③ Somewhat satisfied | ② Neutral | ① Somewhat dissatisfied | ⓪ Dissatisfied |
|---|---|---|---|---|

## Revision Rate Versus Hip Prosthesis Combinations Sorted by Cementation

**Cemented**

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| C-stem AMT | Pinnacle | 1 | 0.0 | 1 | 36525.00 | 924.73 | 203504.27 |
| Exeter V40 | Polymax | 1 | 0.1 | 1 | 1043.57 | 26.42 | 5814.41 |
| Exeter V40 | Trabecular Metal Rev shell | 1 | 0.2 | 1 | 474.35 | 12.01 | 2642.91 |
| C-Stem AMT | ZCA all-poly cup | 1 | 1.4 | 1 | 71.76 | 1.82 | 399.81 |
| Zimmer Segmental | Avantage cemented | 2 | 3.1 | 1 | 31.93 | 0.81 | 177.89 |
| C-Stem AMT | Pinnacle | 9 | 3.5 | 1 | 28.54 | 0.72 | 158.99 |
| Exeter V40 | G7 acetabular | 4 | 3.6 | 1 | 27.40 | 0.69 | 152.67 |
| MS 30 | Weber | 2 | 5.6 | 1 | 17.94 | 0.45 | 99.95 |
| Spectron | CCE Acet . Roof Reinforce Ring | 1 | 7.2 | 1 | 13.85 | 0.35 | 77.14 |
| Exeter V40 | PolarCup Cemented | 11 | 10.8 | 1 | 9.24 | 0.00 | 51.45 |
| Versys Revision Femoral Stem | Contemporary | 6 | 12.0 | 1 | 8.33 | 0.21 | 46.43 |
| MS 30 | Fitmore | 13 | 14.0 | 1 | 7.14 | 0.00 | 39.79 |
| Omnifit | Exeter | 2 | 31.0 | 2 | 6.45 | 0.78 | 23.30 |
| Charnley | Contemporary | 1 | 15.8 | 1 | 6.34 | 0.16 | 35.34 |
| Versys cemented | Charnley Cup Ogee | 3 | 18.6 | 1 | 5.37 | 0.14 | 29.93 |
| Spectron | BHR Acetabular Cup | 3 | 22.7 | 1 | 4.40 | 0.11 | 24.49 |
| CPCS | BHR Acetabular Cup | 4 | 47.7 | 2 | 4.19 | 0.51 | 15.14 |
| Friendly | Elevated Rim Cemented | 6 | 48.2 | 2 | 4.15 | 0.50 | 14.99 |
| CPT | Reflection cemented | 11 | 76.2 | 3 | 3.94 | 0.81 | 11.51 |
| C-Stem | Charnley | 8 | 86.4 | 3 | 3.47 | 0.72 | 10.15 |
| Charnley | Elite Plus Ogee | 2 | 30.3 | 1 | 3.30 | 0.08 | 18.37 |
| Basis | CCB | 7 | 34.8 | 1 | 2.87 | 0.07 | 16.00 |
| SL modular stem | Contemporary | 4 | 38.7 | 1 | 2.58 | 0.07 | 14.40 |
| MS 30 | Reflection cemented | 6 | 44.8 | 1 | 2.23 | 0.06 | 12.42 |

# SUPPLEMENTARY DATA

## HIPS

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Charnley Modular | Charnley Cup Ogee | 9 | 99.4 | 2 | 2.01 | 0.24 | 7.27 |
| Exeter V40 | Marathon cemented | 7 | 56.0 | 1 | 1.79 | 0.05 | 9.96 |
| Exeter V40 | Avantage cemented | 46 | 112.3 | 2 | 1.78 | 0.22 | 6.43 |
| Spectron | Spectron | 19 | 113.2 | 2 | 1.77 | 0.21 | 6.38 |
| Elite plus | Charnley Cup Ogee | 43 | 627.1 | 11 | 1.75 | 0.88 | 3.14 |
| MS 30 | Avantage cemented | 43 | 125.8 | 2 | 1.59 | 0.19 | 5.74 |
| Basis | Reflection cemented | 22 | 129.3 | 2 | 1.55 | 0.08 | 5.59 |
| Charnley Rev | Charnley | 9 | 66.5 | 1 | 1.50 | 0.04 | 8.37 |
| Charnley Modular | Charnley | 15 | 147.2 | 2 | 1.36 | 0.16 | 4.91 |
| Exeter | ZCA | 21 | 221.4 | 3 | 1.36 | 0.28 | 3.96 |
| CCA SS | Muller PE cup | 24 | 221.8 | 3 | 1.35 | 0.28 | 3.95 |
| Exeter V40 | Charnley | 7 | 75.8 | 1 | 1.32 | 0.03 | 7.35 |
| TwinSys cemented | Contemporary | 9 | 76.9 | 1 | 1.30 | 0.03 | 7.25 |
| CCA SS | Bio-clad poly | 11 | 81.5 | 1 | 1.23 | 0.00 | 6.84 |
| Spectron | Reflection cemented | 2984 | 32252.5 | 395 | 1.22 | 1.11 | 1.35 |
| Contemporary | Contemporary | 71 | 979.9 | 12 | 1.22 | 0.63 | 2.14 |
| CCA SS | Contemporary | 78 | 853.1 | 10 | 1.17 | 0.56 | 2.16 |
| Spectron | Muller PE cup | 67 | 701.0 | 8 | 1.14 | 0.49 | 2.25 |
| Exeter | Elite Plus Ogee | 5 | 91.0 | 1 | 1.10 | 0.03 | 6.12 |
| Exeter | Contemporary | 1625 | 20342.5 | 208 | 1.02 | 0.89 | 1.17 |
| Exeter | Charnley | 6 | 98.1 | 1 | 1.02 | 0.03 | 5.68 |
| MS 30 | Contemporary | 128 | 1342.0 | 12 | 0.89 | 0.46 | 1.56 |
| C-Stem | Charnley Cup Ogee | 10 | 113.2 | 1 | 0.88 | 0.00 | 4.92 |
| MS 30 | Durasul | 47 | 233.4 | 2 | 0.86 | 0.10 | 3.10 |
| TwinSys cemented | CCB | 466 | 3175.3 | 26 | 0.82 | 0.52 | 1.18 |
| Friendly | Mueller Cup | 48 | 250.1 | 2 | 0.80 | 0.10 | 2.89 |
| Charnley Rev | Charnley Cup Ogee | 8 | 126.9 | 1 | 0.79 | 0.02 | 4.39 |
| C-Stem AMT | Elite Plus LPW | 23 | 255.8 | 2 | 0.78 | 0.04 | 2.51 |
| Exeter | Exeter | 1376 | 17045.7 | 133 | 0.78 | 0.65 | 0.92 |

# SUPPLEMENTARY DATA

## HIPS

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Charnley | Charnley Cup Ogee | 303 | 4250.2 | 33 | 0.78 | 0.53 | 1.09 |
| Versys cemented | ZCA | 391 | 4652.2 | 34 | 0.73 | 0.50 | 1.01 |
| Omnifit | Contemporary | 15 | 144.9 | 1 | 0.69 | 0.02 | 3.85 |
| C-Stem | Elite Plus LPW | 12 | 146.9 | 1 | 0.68 | 0.02 | 3.79 |
| CPT | ZCA | 563 | 6279.6 | 42 | 0.67 | 0.48 | 0.90 |
| C-Stem AMT | Marathon cemented | 368 | 2619.7 | 17 | 0.65 | 0.38 | 1.04 |
| Elite plus | Charnley | 302 | 4022.2 | 26 | 0.65 | 0.42 | 0.95 |
| Exeter V40 | Bio-clad poly | 140 | 1263.5 | 8 | 0.63 | 0.27 | 1.25 |
| Exeter | Muller PE cup | 132 | 1776.8 | 11 | 0.62 | 0.31 | 1.11 |
| CCA SS | Reflection cemented | 20 | 169.1 | 1 | 0.59 | 0.00 | 3.29 |
| Exeter V40 | Exeter | 1636 | 17732.8 | 102 | 0.58 | 0.47 | 0.70 |
| CPCS | Reflection cemented | 25 | 180.5 | 1 | 0.55 | 0.01 | 3.09 |
| Lateral straight stem | Muller PE cup | 770 | 7968.6 | 44 | 0.55 | 0.40 | 0.74 |
| CCA SS | CCB | 784 | 7064.6 | 39 | 0.55 | 0.39 | 0.75 |
| Exeter | Bio-clad poly | 113 | 1298.6 | 7 | 0.54 | 0.22 | 1.11 |
| Elite plus | Elite Plus LPW | 284 | 3410.9 | 18 | 0.53 | 0.31 | 0.83 |
| Elite plus | Elite Plus Ogee | 111 | 1151.7 | 6 | 0.52 | 0.19 | 1.13 |
| Stanmore | Stanmore | 36 | 390.3 | 2 | 0.51 | 0.06 | 1.85 |
| Standard straight stem | Durasul | 49 | 209.8 | 1 | 0.48 | 0.01 | 2.66 |
| Exeter V40 | Contemporary | 6676 | 62304.8 | 297 | 0.48 | 0.42 | 0.53 |
| Charnley | Charnley | 461 | 5982.4 | 28 | 0.47 | 0.31 | 0.68 |
| SL monoblock | Muller PE cup | 560 | 6861.1 | 32 | 0.47 | 0.31 | 0.65 |
| Omnifit | Polyethylene Acetabular cup | 27 | 441.8 | 2 | 0.45 | 0.05 | 1.64 |
| Exeter | Reflection cemented | 43 | 446.0 | 2 | 0.45 | 0.05 | 1.62 |
| Exeter V40 | Exeter X3 | 3143 | 16430.5 | 70 | 0.43 | 0.33 | 0.54 |
| Exeter V40 | CCB | 609 | 4476.2 | 19 | 0.42 | 0.25 | 0.65 |
| CCA SS | Weber | 27 | 241.1 | 1 | 0.41 | 0.01 | 2.31 |
| Exeter V40 | PolarCup cemented | 89 | 253.3 | 1 | 0.39 | 0.01 | 2.20 |
| Exeter V40 | Reflection cemented | 1015 | 7982.5 | 31 | 0.39 | 0.26 | 0.55 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| MS 30 | ZCA | 34 | 259.8 | 1 | 0.38 | 0.01 | 2.14 |
| MS 30 | Muller PE cup | 504 | 5221.0 | 19 | 0.36 | 0.21 | 0.56 |
| Standard straight stem | Muller PE cup | 639 | 6445.4 | 23 | 0.36 | 0.22 | 0.53 |
| Lateral straight stem | Weber | 287 | 3168.2 | 11 | 0.35 | 0.17 | 0.62 |
| C-Stem | Elite Plus Ogee | 55 | 576.4 | 2 | 0.35 | 0.04 | 1.25 |
| Exeter | Weber | 21 | 298.7 | 1 | 0.33 | 0.01 | 1.87 |
| C-Stem | Muller PE cup | 27 | 300.4 | 1 | 0.33 | 0.01 | 1.85 |
| Exeter V40 | Muller PE cup | 94 | 1023.8 | 3 | 0.29 | 0.06 | 0.86 |
| Standard straight stem | Weber | 134 | 1417.2 | 4 | 0.28 | 0.08 | 0.72 |
| C-Stem AMT | Ultima | 38 | 382.9 | 1 | 0.26 | 0.01 | 1.46 |
| Standard straight stem | ZCA | 41 | 387.4 | 1 | 0.26 | 0.01 | 1.44 |
| Standard straight stem | ZCA all-poly cup | 50 | 429.9 | 1 | 0.23 | 0.00 | 1.30 |
| SL modular stem | Muller PE cup | 110 | 1541.0 | 3 | 0.19 | 0.04 | 0.57 |
| C-Stem | Marathon cemented | 94 | 602.6 | 1 | 0.17 | 0.00 | 0.92 |
| Exeter V40 | Weber | 53 | 641.1 | 1 | 0.16 | 0.00 | 0.87 |
| CPT | ZCA all-poly cup | 99 | 712.0 | 1 | 0.14 | 0.00 | 0.78 |
| Exeter V40 | ZCA | 102 | 756.2 | 1 | 0.13 | 0.00 | 0.74 |
| MS 30 | ZCA all-poly cup | 96 | 759.8 | 1 | 0.13 | 0.00 | 0.73 |
| Lateral straight stem | ZCA | 98 | 934.1 | 1 | 0.11 | 0.00 | 0.60 |
| Accolade II | Trident | 1 | 1.5 | 0 | 0.00 | 0.00 | 252.32 |
| C-Stem | Contemporary | 3 | 32.3 | 0 | 0.00 | 0.00 | 11.41 |
| C-Stem | Exeter | 1 | 15.7 | 0 | 0.00 | 0.00 | 23.53 |
| C-Stem | ZCA | 1 | 0.3 | 0 | 0.00 | 0.00 | 1320.94 |
| C-Stem AMT | Bi-Mentum Cemented Cup | 5 | 9.9 | 0 | 0.00 | 0.00 | 37.34 |
| C-Stem AMT | Bi-Mentum Cemented Cup 51 | 1 | 0.3 | 0 | 0.00 | 0.00 | 1095.42 |
| C-Stem AMT | Contemporary | 3 | 19.1 | 0 | 0.00 | 0.00 | 19.30 |
| C-Stem AMT | Durasul | 2 | 13.5 | 0 | 0.00 | 0.00 | 27.23 |
| C-Stem AMT | Elite Plus Ogee | 13 | 114.1 | 0 | 0.00 | 0.00 | 3.23 |
| C-Stem AMT | Fixa Duplex Cem Cup | 1 | 1.1 | 0 | 0.00 | 0.00 | 323.11 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| C-Stem AMT | G7 acetabular shell | 1 | 0.4 | 0 | 0.00 | 0.00 | 1052.63 |
| C-Stem AMT | MUTARS | 1 | 0.7 | 0 | 0.00 | 0.00 | 543.29 |
| C-Stem AMT | Protrusio Cage | 1 | 0.6 | 0 | 0.00 | 0.00 | 615.23 |
| C-Stem AMT | Trabecular Metal Rev shell | 1 | 0.6 | 0 | 0.00 | 0.00 | 590.95 |
| CCA SS | DS Evolution | 1 | 3.1 | 0 | 0.00 | 0.00 | 117.57 |
| CCA SS | Kasselt Cup | 1 | 5.9 | 0 | 0.00 | 0.00 | 62.81 |
| CCA SS | ZCA | 1 | 4.3 | 0 | 0.00 | 0.00 | 85.17 |
| CCA SS | ZCA all-poly cup | 2 | 8.7 | 0 | 0.00 | 0.00 | 42.40 |
| Charnley | Marathon cemented | 8 | 80.5 | 0 | 0.00 | 0.00 | 4.58 |
| Charnley | Wroblewski | 11 | 96.8 | 0 | 0.00 | 0.00 | 3.81 |
| Charnley | ZCA | 1 | 11.5 | 0 | 0.00 | 0.00 | 32.15 |
| Charnley Modular | Elite Plus LPW | 11 | 121.6 | 0 | 0.00 | 0.00 | 3.03 |
| Charnley Modular | Elite Plus Ogee | 29 | 317.3 | 0 | 0.00 | 0.00 | 1.16 |
| Charnley Modular | Marathon cemented | 8 | 85.1 | 0 | 0.00 | 0.00 | 4.33 |
| Charnley Rev | Elite Plus LPW | 1 | 0.6 | 0 | 0.00 | 0.00 | 580.76 |
| CLS | Trilogy | 2 | 0.8 | 0 | 0.00 | 0.00 | 486.41 |
| Corail | Pinnacle | 1 | 0.4 | 0 | 0.00 | 0.00 | 852.76 |
| CPCS | Exeter X3 | 1 | 8.5 | 0 | 0.00 | 0.00 | 43.63 |
| CPCS | R3 porous | 1 | 0.7 | 0 | 0.00 | 0.00 | 512.31 |
| CPT | Avantage cemented | 1 | 1.6 | 0 | 0.00 | 0.00 | 233.92 |
| CPT | Bio-clad poly | 1 | 1.7 | 0 | 0.00 | 0.00 | 223.07 |
| CPT | CCB | 1 | 6.4 | 0 | 0.00 | 0.00 | 57.70 |
| CPT | Contemporary | 1 | 5.4 | 0 | 0.00 | 0.00 | 68.32 |
| CPT | Continuum TM | 3 | 3.9 | 0 | 0.00 | 0.00 | 94.29 |
| CPT | Elite Plus LPW | 1 | 22.8 | 0 | 0.00 | 0.00 | 16.21 |
| CPT | Exeter | 1 | 11.2 | 0 | 0.00 | 0.00 | 33.04 |
| CPT | Exeter X3 | 2 | 15.8 | 0 | 0.00 | 0.00 | 23.39 |
| CPT | G7 acetabular | 1 | 2.9 | 0 | 0.00 | 0.00 | 128.81 |
| CPT | G7 acetabular shell | 1 | 0.1 | 0 | 0.00 | 0.00 | 5389.45 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| CPT | G7 Osseo Ti Multihole | 1 | 1.4 | 0 | 0.00 | 0.00 | 261.62 |
| CPT | G7 OsseoTi Cementless | 1 | 1.2 | 0 | 0.00 | 0.00 | 298.09 |
| CPT | Marathon cemented | 1 | 13.6 | 0 | 0.00 | 0.00 | 27.12 |
| CPT | Muller PE cup | 3 | 37.9 | 0 | 0.00 | 0.00 | 9.73 |
| CPT Femoral Stem | G7 acetabular shell | 1 | 0.2 | 0 | 0.00 | 0.00 | 1513.89 |
| Echelon cemented | Reflection cemented | 2 | 6.0 | 0 | 0.00 | 0.00 | 61.66 |
| Echo Bi-Metric | G7 acetabular shell | 1 | 1.1 | 0 | 0.00 | 0.00 | 323.11 |
| Elite plus | Contemporary | 1 | 4.0 | 0 | 0.00 | 0.00 | 92.60 |
| Elite plus | Exeter | 1 | 8.9 | 0 | 0.00 | 0.00 | 41.65 |
| Elite plus | Kasselt Cup | 1 | 12.1 | 0 | 0.00 | 0.00 | 30.49 |
| Elite Plus Rev | Contemporary | 1 | 1.1 | 0 | 0.00 | 0.00 | 331.05 |
| Elite Plus Rev | Elite Plus LPW | 1 | 7.0 | 0 | 0.00 | 0.00 | 53.07 |
| Elite Plus Rev | Elite Plus Ogee | 1 | 2.6 | 0 | 0.00 | 0.00 | 143.80 |
| Exeter | Charnley Cup Ogee | 1 | 13.0 | 0 | 0.00 | 0.00 | 28.38 |
| Exeter | Elite Plus LPW | 1 | 6.2 | 0 | 0.00 | 0.00 | 59.75 |
| Exeter | Kasselt Cup | 21 | 156.5 | 0 | 0.00 | 0.00 | 2.36 |
| Exeter Cemented Stem | Exeter X3 | 2 | 0.8 | 0 | 0.00 | 0.00 | 449.12 |
| Exeter Cemented Stem | Trident II Tritanium | 1 | 0.1 | 0 | 0.00 | 0.00 | 3742.68 |
| Exeter V40 | Avantage | 14 | 11.4 | 0 | 0.00 | 0.00 | 32.32 |
| Exeter V40 | Avantage Cem Acet Cup | 15 | 6.5 | 0 | 0.00 | 0.00 | 56.90 |
| Exeter V40 | Bi-Mentum Cemented Cup | 1 | 0.2 | 0 | 0.00 | 0.00 | 2208.79 |
| Exeter V40 | Bi-Mentum Cemented Cup 51 | 1 | 0.0 | 0 | 0.00 | 0.00 | 8982.42 |
| Exeter V40 | CCB Low Profile Cup | 2 | 2.2 | 0 | 0.00 | 0.00 | 170.99 |
| Exeter V40 | Continuum TM | 8 | 6.3 | 0 | 0.00 | 0.00 | 58.20 |
| Exeter V40 | Custom device | 2 | 4.5 | 0 | 0.00 | 0.00 | 81.86 |
| Exeter V40 | Delta-One-TT Cup | 1 | 0.3 | 0 | 0.00 | 0.00 | 1104.40 |
| Exeter V40 | DS Evolution | 11 | 36.0 | 0 | 0.00 | 0.00 | 10.26 |
| Exeter V40 | Elite Plus Ogee | 10 | 100.8 | 0 | 0.00 | 0.00 | 3.66 |
| Exeter V40 | Exeter Rimfit Cup | 1 | 1.3 | 0 | 0.00 | 0.00 | 286.67 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Exeter V40 | Fitmore | 15 | 31.3 | 0 | 0.00 | 0.00 | 11.78 |
| Exeter V40 | G7 acetabular shell | 10 | 6.5 | 0 | 0.00 | 0.00 | 56.68 |
| Exeter V40 | Kasselt Cup | 5 | 30.3 | 0 | 0.00 | 0.00 | 12.16 |
| Exeter V40 | Low-profile cup PE | 3 | 2.7 | 0 | 0.00 | 0.00 | 137.63 |
| Exeter V40 | Mueller Cup | 5 | 10.9 | 0 | 0.00 | 0.00 | 33.77 |
| Exeter V40 | Pinnacle | 7 | 7.6 | 0 | 0.00 | 0.00 | 48.64 |
| Exeter V40 | R3 porous | 2 | 1.6 | 0 | 0.00 | 0.00 | 227.98 |
| Exeter V40 | Redapt Modular Shell | 1 | 1.3 | 0 | 0.00 | 0.00 | 294.18 |
| Exeter V40 | Restoration | 5 | 10.2 | 0 | 0.00 | 0.00 | 36.11 |
| Exeter V40 | RM Pressfit cup | 3 | 4.0 | 0 | 0.00 | 0.00 | 92.86 |
| Exeter V40 | Stanmore | 6 | 76.0 | 0 | 0.00 | 0.00 | 4.85 |
| Exeter V40 | Trabecular Metal Shell | 2 | 1.3 | 0 | 0.00 | 0.00 | 284.25 |
| Exeter V40 | Trident | 48 | 51.8 | 0 | 0.00 | 0.00 | 7.12 |
| Exeter V40 | Trident All Poly | 25 | 57.8 | 0 | 0.00 | 0.00 | 6.38 |
| Exeter V40 | Trident II Clusterhole HA | 3 | 0.6 | 0 | 0.00 | 0.00 | 641.60 |
| Exeter V40 | Trident II Tritanium | 15 | 13.3 | 0 | 0.00 | 0.00 | 27.63 |
| Exeter V40 | Trilogy | 10 | 12.7 | 0 | 0.00 | 0.00 | 28.94 |
| Exeter V40 | Tritanium | 2 | 2.7 | 0 | 0.00 | 0.00 | 138.05 |
| Exeter V40 | Ultima | 1 | 5.1 | 0 | 0.00 | 0.00 | 72.28 |
| Exeter V40 | ZCA all-poly cup | 110 | 643.4 | 0 | 0.00 | 0.00 | 0.57 |
| Exeter V40 | ZCA Reconstruction cage | 2 | 3.4 | 0 | 0.00 | 0.00 | 108.48 |
| Femoral taper titanium alloy | Kasselt Cup | 1 | 1.2 | 0 | 0.00 | 0.00 | 296.78 |
| Friendly | 54mm dia | 1 | 0.2 | 0 | 0.00 | 0.00 | 2041.46 |
| Friendly | Contemporary | 2 | 12.4 | 0 | 0.00 | 0.00 | 29.87 |
| Friendly | Exeter X3 | 2 | 0.8 | 0 | 0.00 | 0.00 | 434.63 |
| Friendly | Mueller cup | 2 | 29.7 | 0 | 0.00 | 0.00 | 12.44 |
| Friendly | ZCA | 4 | 28.2 | 0 | 0.00 | 0.00 | 13.09 |
| Friendly | ZCA all-poly cup | 2 | 23.1 | 0 | 0.00 | 0.00 | 15.98 |
| GMRS | Contemporary | 1 | 1.3 | 0 | 0.00 | 0.00 | 282.47 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| H-Max C | Delta-TT Cup | 3 | 1.2 | 0 | 0.00 | 0.00 | 319.28 |
| H-Max C | Exeter X3 | 1 | 3.4 | 0 | 0.00 | 0.00 | 107.36 |
| H-Max C | Mueller Cup | 9 | 45.1 | 0 | 0.00 | 0.00 | 8.18 |
| Hydra-Fix Cemented Cone | Fixa Duplex | 1 | 0.1 | 0 | 0.00 | 0.00 | 2929.05 |
| Lat Femoral Stem | Acetabular Shell | 2 | 0.6 | 0 | 0.00 | 0.00 | 647.77 |
| Lateral straight stem | Avantage cemented | 4 | 13.3 | 0 | 0.00 | 0.00 | 27.82 |
| Lateral straight stem | CCB | 5 | 50.9 | 0 | 0.00 | 0.00 | 7.25 |
| Lateral straight stem | Contemporary | 3 | 21.2 | 0 | 0.00 | 0.00 | 17.41 |
| Lateral straight stem | Durasul | 24 | 122.4 | 0 | 0.00 | 0.00 | 3.01 |
| Lateral straight stem | Marathon cemented | 1 | 7.9 | 0 | 0.00 | 0.00 | 46.48 |
| Lateral straight stem | Reinforcement cage | 1 | 0.3 | 0 | 0.00 | 0.00 | 1360.97 |
| Lateral straight stem | ZCA all-poly cup | 70 | 617.3 | 0 | 0.00 | 0.00 | 0.60 |
| Modular lateral stem | Muller PE cup | 1 | 11.2 | 0 | 0.00 | 0.00 | 33.06 |
| MRS straight cemented stem | Trident All Poly | 2 | 2.2 | 0 | 0.00 | 0.00 | 167.79 |
| MS 30 | Avantage | 1 | 0.1 | 0 | 0.00 | 0.00 | 5389.45 |
| MS 30 | CCB | 2 | 17.1 | 0 | 0.00 | 0.00 | 21.57 |
| MS 30 | Continuum TM | 1 | 1.0 | 0 | 0.00 | 0.00 | 360.26 |
| MS 30 | Exeter | 2 | 13.6 | 0 | 0.00 | 0.00 | 27.18 |
| MS 30 | Exeter X3 | 1 | 5.1 | 0 | 0.00 | 0.00 | 72.99 |
| MS 30 | G7 acetabular | 2 | 1.9 | 0 | 0.00 | 0.00 | 194.99 |
| MS 30 | G7 acetabular shell | 4 | 1.4 | 0 | 0.00 | 0.00 | 264.71 |
| MS 30 | Marathon cemented | 16 | 95.2 | 0 | 0.00 | 0.00 | 3.88 |
| MS 30 | Trabecular Metal Shell | 1 | 1.1 | 0 | 0.00 | 0.00 | 336.00 |
| MS 30 | Trilogy | 2 | 1.4 | 0 | 0.00 | 0.00 | 272.19 |
| Optimys | RM Pressfit cup | 1 | 1.0 | 0 | 0.00 | 0.00 | 359.30 |
| Orthopaedic salvage system | Avantage cemented | 1 | 2.2 | 0 | 0.00 | 0.00 | 170.99 |
| Pantheon cemented | Fixa Duplex | 1 | 2.8 | 0 | 0.00 | 0.00 | 132.88 |
| Pantheon Salvage Cem Stem | Fixa Duplex | 1 | 1.2 | 0 | 0.00 | 0.00 | 307.62 |
| Quadra-C | Acetabular Shell | 3 | 7.0 | 0 | 0.00 | 0.00 | 52.49 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Quadra-C | Contemporary | 1 | 3.1 | 0 | 0.00 | 0.00 | 118.40 |
| Quadra-C | Exeter X3 | 7 | 23.4 | 0 | 0.00 | 0.00 | 15.73 |
| SL monoblock | CCB | 1 | 9.7 | 0 | 0.00 | 0.00 | 37.84 |
| SL monoblock | Weber | 9 | 121.4 | 0 | 0.00 | 0.00 | 3.04 |
| Spectron | Acetabular Reconstruction Ring | 1 | 21.5 | 0 | 0.00 | 0.00 | 17.14 |
| Spectron | CCB | 4 | 55.6 | 0 | 0.00 | 0.00 | 6.63 |
| Spectron | Charnley | 1 | 18.1 | 0 | 0.00 | 0.00 | 20.37 |
| Spectron | Contemporary | 2 | 8.9 | 0 | 0.00 | 0.00 | 41.36 |
| Spectron | Exeter | 4 | 29.7 | 0 | 0.00 | 0.00 | 12.41 |
| Spectron | Opera Cup | 1 | 17.0 | 0 | 0.00 | 0.00 | 21.71 |
| Spectron | PolarCup cemented | 4 | 9.6 | 0 | 0.00 | 0.00 | 38.27 |
| Spectron | Weber | 18 | 191.3 | 0 | 0.00 | 0.00 | 1.93 |
| Standard straight stem | Avantage | 1 | 1.1 | 0 | 0.00 | 0.00 | 346.37 |
| Standard straight stem | Avantage cemented | 5 | 14.9 | 0 | 0.00 | 0.00 | 24.77 |
| Standard straight stem | CCB | 1 | 8.4 | 0 | 0.00 | 0.00 | 43.87 |
| Standard straight stem | Contemporary | 5 | 47.9 | 0 | 0.00 | 0.00 | 7.70 |
| Standard straight stem | Marathon cemented | 3 | 20.5 | 0 | 0.00 | 0.00 | 18.01 |
| Standard straight stem | Reflection cemented | 1 | 11.6 | 0 | 0.00 | 0.00 | 31.67 |
| Standard straight stem | Stanmore | 1 | 6.6 | 0 | 0.00 | 0.00 | 56.19 |
| Std Femoral Stem | Acetabular Shell | 1 | 0.3 | 0 | 0.00 | 0.00 | 1347.36 |
| Stemsys cemented | Elevated Rim Cemented | 1 | 2.0 | 0 | 0.00 | 0.00 | 188.18 |
| Stemsys cemented | Fixa Duplex | 2 | 4.2 | 0 | 0.00 | 0.00 | 87.04 |
| Stemsys cemented | Polymax | 1 | 2.3 | 0 | 0.00 | 0.00 | 157.96 |
| TwinSys cemented | CCB Low Profile Cup | 1 | 0.8 | 0 | 0.00 | 0.00 | 450.62 |
| TwinSys cemented | DS Evolution | 7 | 11.8 | 0 | 0.00 | 0.00 | 31.36 |
| TwinSys cemented | Low-profile cup PE | 1 | 0.5 | 0 | 0.00 | 0.00 | 778.82 |
| TwinSys cemented | Muller PE cup | 10 | 73.9 | 0 | 0.00 | 0.00 | 4.99 |
| TwinSys cemented | Pinnacle | 2 | 0.8 | 0 | 0.00 | 0.00 | 466.22 |
| TwinSys cemented | Redapt | 1 | 0.2 | 0 | 0.00 | 0.00 | 1981.42 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| TwinSys cemented | Reflection cemented | 2 | 14.5 | 0 | 0.00 | 0.00 | 25.51 |
| TwinSys cemented | RM Pressfit cup | 6 | 3.7 | 0 | 0.00 | 0.00 | 98.64 |
| TwinSys cemented | ZCA all-poly cup | 1 | 10.5 | 0 | 0.00 | 0.00 | 35.27 |
| TwinSys stem cemented | CCB | 2 | 1.3 | 0 | 0.00 | 0.00 | 283.06 |
| TwinSys stem cemented | DS Evolution | 2 | 1.2 | 0 | 0.00 | 0.00 | 298.75 |
| TwinSys stem cemented | Pinnacle | 1 | 0.4 | 0 | 0.00 | 0.00 | 983.48 |
| Versys cemented | Charnley | 2 | 6.8 | 0 | 0.00 | 0.00 | 54.09 |
| Versys cemented | Contemporary | 7 | 45.7 | 0 | 0.00 | 0.00 | 8.07 |
| Versys cemented | Exeter | 1 | 8.9 | 0 | 0.00 | 0.00 | 41.48 |
| Versys cemented | Muller PE cup | 1 | 9.8 | 0 | 0.00 | 0.00 | 37.73 |
| Versys cemented | Reflection cemented | 3 | 12.8 | 0 | 0.00 | 0.00 | 28.85 |
| Versys cemented | ZCA all-poly cup | 31 | 271.4 | 0 | 0.00 | 0.00 | 1.36 |
| Versys Revision Femoral Stem | Avantage cemented | 1 | 0.5 | 0 | 0.00 | 0.00 | 705.43 |
| Versys Revision Femoral Stem | Marathon cemented | 4 | 7.1 | 0 | 0.00 | 0.00 | 51.92 |
| Versys Revision Femoral Stem | Max-Ti acetabular reconstructi | 1 | 1.0 | 0 | 0.00 | 0.00 | 381.69 |
| Versys Revision Femoral Stem | Muller PE cup | 1 | 11.7 | 0 | 0.00 | 0.00 | 31.41 |
| Versys Revision Femoral Stem | MUTARS | 2 | 0.5 | 0 | 0.00 | 0.00 | 778.82 |
| Versys Revision Femoral Stem | Reflection cemented | 3 | 7.9 | 0 | 0.00 | 0.00 | 46.72 |
| Versys Revision Femoral Stem | ZCA | 11 | 14.5 | 0 | 0.00 | 0.00 | 25.42 |
| Versys Revision Femoral Stem | ZCA all-poly cup | 13 | 26.1 | 0 | 0.00 | 0.00 | 14.14 |
| Zimmer Segmental | Avantage Cem Acet Cup | 1 | 0.8 | 0 | 0.00 | 0.00 | 489.95 |
| Zimmer Segmental | G7 acetabular | 1 | 2.1 | 0 | 0.00 | 0.00 | 174.08 |
| Zimmer Sheehan fem stem | ZCA | 1 | 23.9 | 0 | 0.00 | 0.00 | 15.44 |

TABLE: SUP 1

## Revision Rate Versus Hip Prosthesis Combinations Sorted by Cementation

**Uncemented**

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| PFM distal | Fitmore | 1 | 0.0 | 1 | 2282.81 | 57.80 | 12719.02 |
| Bi-metric | Continuum TM | 1 | 0.1 | 1 | 1304.46 | 33.03 | 7268.01 |
| Alloclassic SL | Trabecular Metal Shell | 1 | 0.2 | 1 | 468.27 | 11.86 | 2609.03 |
| M/L Taper | Delta-One-TT Cup | 1 | 0.5 | 1 | 184.47 | 4.67 | 1027.80 |
| Furlong | Trident | 1 | 1.0 | 1 | 100.62 | 2.55 | 560.62 |
| ARCOS modular | G7 acetabular shell | 6 | 3.8 | 2 | 53.24 | 6.45 | 192.33 |
| FTS | DeltaMotion Cup | 1 | 2.4 | 1 | 41.70 | 1.06 | 232.31 |
| Polarstem uncemented | Trabecular Metal Rev shell | 1 | 3.0 | 1 | 32.99 | 0.84 | 183.83 |
| Echo Bi-Metric Std | G7 acetabular shell | 7 | 3.9 | 1 | 25.56 | 0.65 | 142.41 |
| Accolade | Continuum TM | 2 | 4.0 | 1 | 24.76 | 0.63 | 137.97 |
| Multilock hip prosthesis | HGP 2 acetabular comp. | 2 | 8.5 | 2 | 23.56 | 2.85 | 85.12 |
| ARCOS modular | Trident | 3 | 10.2 | 2 | 19.66 | 2.38 | 71.01 |
| Revision uncemented stem | Trident | 2 | 5.5 | 1 | 18.23 | 0.46 | 101.55 |
| Echo Bi-Metric | Recap Resurfacing Acetabular S | 1 | 5.6 | 1 | 17.76 | 0.45 | 98.93 |
| CBC | Trabecular Metal Shell | 1 | 5.8 | 1 | 17.24 | 0.44 | 96.04 |
| Echo Bi-Metric | Trabecular Metal Shell | 18 | 25.2 | 4 | 15.89 | 4.33 | 40.69 |
| Synergy Porous | BHR dysplasia cup | 1 | 6.8 | 1 | 14.79 | 0.37 | 82.39 |
| Cone Prosthesis | Fitmore | 1 | 7.5 | 1 | 13.35 | 0.34 | 74.38 |
| Corail | Mallory-Head | 1 | 7.6 | 1 | 13.18 | 0.33 | 73.41 |
| Metafix | Trinity Cluster Shell | 13 | 8.1 | 1 | 12.40 | 0.31 | 69.08 |
| Nanos | R3 porous | 2 | 8.3 | 1 | 12.05 | 0.31 | 67.14 |
| S-Rom | ASR | 130 | 927.3 | 97 | 10.46 | 8.48 | 12.76 |
| CLS | G7 acetabular | 5 | 9.7 | 1 | 10.32 | 0.26 | 57.49 |
| ABGII | Delta-TT Cup | 1 | 11.0 | 1 | 9.05 | 0.23 | 50.43 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| TwinSys uncemented | Reflection porous | 2 | 11.8 | 1 | 8.47 | 0.21 | 47.17 |
| Restoration | Trabecular Metal Shell | 2 | 11.9 | 1 | 8.42 | 0.21 | 46.89 |
| Taperloc Complete | Acetabular Shell | 6 | 12.2 | 1 | 8.20 | 0.21 | 45.70 |
| Replica | Pinnacle | 1 | 13.1 | 1 | 7.66 | 0.19 | 42.66 |
| Anthology Porous | BHR Acetabular Cup | 91 | 860.4 | 56 | 6.51 | 4.87 | 8.39 |
| S-Rom | Osteolock | 6 | 64.4 | 4 | 6.21 | 1.69 | 15.91 |
| Wagner cone stem | RM cup | 4 | 48.5 | 3 | 6.19 | 1.28 | 18.09 |
| Corail | ASR | 156 | 1435.8 | 87 | 6.06 | 4.85 | 7.47 |
| Anthology Porous | R3 porous | 68 | 605.0 | 35 | 5.79 | 3.96 | 7.95 |
| Versys | Hedrocel Acetabular Cup | 3 | 17.5 | 1 | 5.71 | 0.14 | 31.82 |
| Accolade | CLS Expansion | 2 | 17.9 | 1 | 5.58 | 0.14 | 31.10 |
| Avenir Complete uncemented | G7 acetabular shell | 25 | 18.1 | 1 | 5.52 | 0.00 | 30.78 |
| Trabecular Metal Stem | Durom | 2 | 18.1 | 1 | 5.51 | 0.14 | 30.70 |
| CLS | Osteolock | 2 | 19.1 | 1 | 5.22 | 0.13 | 29.11 |
| ABGII | Continuum TM | 3 | 19.3 | 1 | 5.18 | 0.13 | 28.85 |
| Echelon | Reflection porous | 8 | 78.9 | 4 | 5.07 | 1.38 | 12.99 |
| CLS | Hedrocel Acetabular Cup | 2 | 21.7 | 1 | 4.60 | 0.12 | 25.64 |
| Wagner cone stem | Duraloc | 15 | 201.4 | 9 | 4.47 | 2.04 | 8.48 |
| Wagner cone stem | Artek | 10 | 113.5 | 5 | 4.41 | 1.43 | 10.28 |
| Summit | ASR | 88 | 912.5 | 40 | 4.38 | 3.09 | 5.91 |
| ZMR Fem Stem Rev Nitrided | Allofit | 2 | 25.0 | 1 | 4.00 | 0.10 | 22.31 |
| CBC | Delta-One-TT Cup | 4 | 25.3 | 1 | 3.96 | 0.10 | 22.05 |
| Accolade | Mitch TRH | 42 | 443.1 | 17 | 3.84 | 2.23 | 6.14 |
| H-Max S | Delta-One-TT Cup | 7 | 26.7 | 1 | 3.75 | 0.09 | 20.87 |
| ARCOS modular | Trabecular Metal Shell | 17 | 27.2 | 1 | 3.68 | 0.09 | 20.51 |
| CBC | Delta-TT Cup | 4 | 28.2 | 1 | 3.54 | 0.09 | 19.73 |
| CLS | Artek | 59 | 807.2 | 28 | 3.47 | 2.31 | 5.01 |
| Synergy Porous | BHR Acetabular Cup | 114 | 1282.0 | 44 | 3.43 | 2.46 | 4.56 |
| ABGII | Mitch TRH | 14 | 147.0 | 5 | 3.40 | 0.92 | 7.46 |

# SUPPLEMENTARY DATA

## HIPS

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Cone Prosthesis | RM cup | 2 | 29.6 | 1 | 3.38 | 0.09 | 18.83 |
| CBC | Reflection porous | 3 | 29.8 | 1 | 3.36 | 0.09 | 18.73 |
| Wagner cone stem | CLS Expansion | 13 | 149.9 | 5 | 3.34 | 1.08 | 7.79 |
| Taperloc Complete | Fitmore | 13 | 64.9 | 2 | 3.08 | 0.17 | 11.13 |
| Wagner cone stem | Weill ring | 2 | 33.3 | 1 | 3.00 | 0.08 | 16.73 |
| CLS | Durom | 198 | 2408.1 | 71 | 2.95 | 2.28 | 3.70 |
| CBC | Durom | 4 | 34.1 | 1 | 2.93 | 0.07 | 16.32 |
| Platform | BHR Acetabular Cup | 8 | 105.1 | 3 | 2.86 | 0.59 | 8.35 |
| Furlong | Acetabular Cup | 9 | 70.3 | 2 | 2.84 | 0.34 | 10.27 |
| Echo Bi-Metric | G7 acetabular shell | 343 | 283.0 | 8 | 2.83 | 1.11 | 5.33 |
| S-Rom | Morscher | 2 | 36.3 | 1 | 2.75 | 0.07 | 15.35 |
| Polarstem uncemented | PolarCup uncemented | 34 | 182.0 | 5 | 2.75 | 0.89 | 6.41 |
| Actis Duofix | Pinnacle | 105 | 109.4 | 3 | 2.74 | 0.57 | 8.01 |
| CLS | PolarCup uncemented | 4 | 37.1 | 1 | 2.69 | 0.07 | 15.02 |
| Modular Taperloc | Mallory-Head | 3 | 37.7 | 1 | 2.65 | 0.07 | 14.77 |
| Polarstem uncemented | BHR Acetabular Cup | 11 | 113.9 | 3 | 2.63 | 0.54 | 7.70 |
| Taperloc Complete | G7 acetabular shell | 190 | 154.8 | 4 | 2.58 | 0.70 | 6.62 |
| M/L Taper | Durom | 38 | 480.6 | 12 | 2.50 | 1.29 | 4.36 |
| ABGII | Duraloc | 139 | 2223.7 | 55 | 2.47 | 1.84 | 3.19 |
| CLS | BHR Acetabular Cup | 14 | 167.2 | 4 | 2.39 | 0.65 | 6.12 |
| ABG | Duraloc | 135 | 2411.2 | 57 | 2.36 | 1.79 | 3.06 |
| Mallory-Head | Exceed ABT Acetabular Porous | 4 | 43.9 | 1 | 2.28 | 0.06 | 12.70 |
| Accolade II | Trident II Tritanium | 445 | 421.9 | 9 | 2.13 | 0.98 | 4.05 |
| Revision uncemented stem | Delta-PF Cup | 4 | 49.8 | 1 | 2.01 | 0.05 | 11.18 |
| Avenir Muller uncemented | G7 acetabular | 20 | 50.4 | 1 | 1.99 | 0.00 | 11.06 |
| CBC | CLS Expansion | 4 | 51.4 | 1 | 1.94 | 0.05 | 10.83 |
| Reclaim | Pinnacle | 11 | 52.5 | 1 | 1.90 | 0.05 | 10.60 |
| ZMR Fem Stem Rev Nitrided | Trilogy | 5 | 52.9 | 1 | 1.89 | 0.05 | 10.53 |
| Corail | PolarCup uncemented | 24 | 107.7 | 2 | 1.86 | 0.22 | 6.71 |

# SUPPLEMENTARY DATA

## HIPS

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Wagner cone stem | Durom | 7 | 112.7 | 2 | 1.77 | 0.21 | 6.41 |
| ARCOS modular | G7 acetabular | 16 | 57.5 | 1 | 1.74 | 0.04 | 9.69 |
| Furlong H-AC Stem | Pinnacle | 6 | 59.9 | 1 | 1.67 | 0.04 | 9.30 |
| MasterSL | Delta-TT Cup | 131 | 479.6 | 8 | 1.67 | 0.72 | 3.29 |
| ABGII | RM Pressfit cup | 91 | 541.1 | 9 | 1.66 | 0.76 | 3.16 |
| Accolade II | Continuum TM | 342 | 666.1 | 11 | 1.65 | 0.82 | 2.96 |
| SL-Plus | EP-Fit Plus | 5 | 60.7 | 1 | 1.65 | 0.04 | 9.18 |
| Prodigy | Duraloc | 129 | 1909.5 | 31 | 1.62 | 1.08 | 2.27 |
| Metafix | Trinity | 143 | 308.2 | 5 | 1.62 | 0.53 | 3.79 |
| ABG | ABGII | 79 | 1356.6 | 22 | 1.62 | 0.99 | 2.41 |
| Furlong | Pinnacle | 6 | 62.3 | 1 | 1.60 | 0.04 | 8.94 |
| Accolade | Duraloc | 17 | 251.7 | 4 | 1.59 | 0.43 | 4.07 |
| Hip stem | Ceramic on ceramic shell | 10 | 190.6 | 3 | 1.57 | 0.32 | 4.60 |
| DSP Thrust Plate | CLS Expansion | 24 | 381.3 | 6 | 1.57 | 0.58 | 3.43 |
| DSP Thrust Plate | Fitek | 17 | 318.2 | 5 | 1.57 | 0.51 | 3.67 |
| Secur-Fit Max | Trident | 14 | 129.0 | 2 | 1.55 | 0.19 | 5.60 |
| CLS | ABGII | 33 | 518.7 | 8 | 1.54 | 0.67 | 3.04 |
| DSP Thrust Plate | Fitmore | 48 | 911.9 | 14 | 1.54 | 0.80 | 2.51 |
| ABGII | Reflection porous | 4 | 66.2 | 1 | 1.51 | 0.04 | 8.42 |
| Quadra-H | Acetabular Shell | 410 | 807.8 | 12 | 1.49 | 0.77 | 2.59 |
| Accolade II | RM Pressfit cup | 298 | 742.8 | 11 | 1.48 | 0.74 | 2.65 |
| TwinSys uncemented | PolarCup uncemented | 13 | 68.7 | 1 | 1.46 | 0.04 | 8.11 |
| Mallory-Head | Biomex acet shell porous | 42 | 757.2 | 11 | 1.45 | 0.73 | 2.60 |
| CBC | Expansys shell | 183 | 2204.3 | 31 | 1.41 | 0.96 | 2.00 |
| TPP Thrust Plate | Fitmore | 26 | 430.6 | 6 | 1.39 | 0.51 | 3.03 |
| Synergy Porous | Trabecular Metal Shell | 11 | 72.0 | 1 | 1.39 | 0.04 | 7.74 |
| H-Max M | Delta-PF Cup | 71 | 724.9 | 10 | 1.38 | 0.66 | 2.54 |
| ABGII | ABGII | 30 | 436.5 | 6 | 1.37 | 0.50 | 2.99 |
| CLS | RM cup | 114 | 1472.0 | 20 | 1.36 | 0.83 | 2.10 |

# SUPPLEMENTARY DATA

## HIPS

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Wagner cone stem | Trabecular Metal Shell | 11 | 73.6 | 1 | 1.36 | 0.03 | 7.57 |
| Mallory-Head | Vision Ring Loc | 4 | 74.5 | 1 | 1.34 | 0.03 | 7.48 |
| ABGII | Tritanium | 31 | 299.8 | 4 | 1.33 | 0.36 | 3.42 |
| Margron Hip | Transcend Quadrant Shell | 10 | 151.0 | 2 | 1.32 | 0.16 | 4.79 |
| Bi-metric | Recap Resurfacing Acetabular S | 24 | 302.9 | 4 | 1.32 | 0.36 | 3.38 |
| Wagner cone stem | Pinnacle | 12 | 77.8 | 1 | 1.29 | 0.03 | 7.16 |
| Prodigy | Pinnacle | 36 | 545.1 | 7 | 1.28 | 0.52 | 2.65 |
| Modular Taperloc | Recap Resurfacing Acetabular S | 16 | 235.8 | 3 | 1.27 | 0.18 | 3.39 |
| S-Rom | Trilogy | 16 | 237.7 | 3 | 1.26 | 0.26 | 3.69 |
| CLS | Duraloc | 714 | 10864.1 | 134 | 1.23 | 1.03 | 1.46 |
| TwinSys uncemented | Duraloc | 13 | 163.4 | 2 | 1.22 | 0.15 | 4.42 |
| S-Rom | Duraloc | 35 | 574.4 | 7 | 1.22 | 0.49 | 2.51 |
| CLS | Selexys TPS | 9 | 83.4 | 1 | 1.20 | 0.03 | 6.68 |
| AML MMA | Duraloc | 77 | 1264.7 | 15 | 1.19 | 0.66 | 1.96 |
| Mallory-Head | M2A | 105 | 1531.3 | 18 | 1.18 | 0.70 | 1.86 |
| Proxima | Pinnacle | 6 | 85.5 | 1 | 1.17 | 0.03 | 6.52 |
| Collarless Opti-Fix Femoral | Reflection porous | 6 | 85.7 | 1 | 1.17 | 0.03 | 6.50 |
| CBC | Trident | 6 | 86.7 | 1 | 1.15 | 0.03 | 6.43 |
| Quadra-P | Acetabular Shell | 65 | 88.0 | 1 | 1.14 | 0.03 | 6.33 |
| TwinSys uncemented | Selexys TPS | 1231 | 14320.1 | 162 | 1.13 | 0.96 | 1.32 |
| M/L Taper | Delta-TT Cup | 64 | 533.8 | 6 | 1.12 | 0.41 | 2.45 |
| AML | Duraloc | 54 | 894.0 | 10 | 1.12 | 0.54 | 2.06 |
| Corail | Trident II Tritanium | 51 | 93.7 | 1 | 1.07 | 0.00 | 4.99 |
| F2L Multineck | Delta-PF Cup | 6 | 94.7 | 1 | 1.06 | 0.03 | 5.88 |
| Modular Taperloc | M2A | 38 | 477.4 | 5 | 1.05 | 0.34 | 2.44 |
| Wagner cone stem | Trilogy | 13 | 98.3 | 1 | 1.02 | 0.03 | 5.67 |
| CLS | Allofit | 192 | 2462.5 | 25 | 1.02 | 0.66 | 1.50 |
| S-Rom | Ultima | 78 | 1492.8 | 15 | 1.00 | 0.56 | 1.66 |
| Synergy Porous | Duraloc | 22 | 400.1 | 4 | 1.00 | 0.27 | 2.56 |

# SUPPLEMENTARY DATA

## HIPS

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Corail | Duraloc | 464 | 6238.3 | 62 | 0.99 | 0.76 | 1.27 |
| Synergy Porous | Morscher | 12 | 202.5 | 2 | 0.99 | 0.12 | 3.57 |
| Emperion | R3 porous | 38 | 409.4 | 4 | 0.98 | 0.27 | 2.50 |
| Emperion | Continuum TM | 31 | 308.3 | 3 | 0.97 | 0.20 | 2.84 |
| Mallory-Head | Mallory-Head | 38 | 620.3 | 6 | 0.97 | 0.35 | 2.11 |
| Furlong H-AC Stem | Acetabular Cup | 13 | 105.2 | 1 | 0.95 | 0.02 | 5.30 |
| CLS | M2A | 21 | 320.0 | 3 | 0.94 | 0.19 | 2.74 |
| CLS | Fitek | 66 | 1388.3 | 13 | 0.94 | 0.50 | 1.60 |
| Avenir Muller uncemented | Continuum TM | 182 | 1609.7 | 15 | 0.93 | 0.52 | 1.54 |
| TwinSys uncemented | RM cup | 122 | 1400.1 | 13 | 0.93 | 0.49 | 1.59 |
| ABGII | Trident | 342 | 5042.0 | 46 | 0.91 | 0.67 | 1.22 |
| Corail | Fitmore | 365 | 2125.5 | 19 | 0.89 | 0.52 | 1.37 |
| CBC | Selexys TPS | 45 | 470.4 | 4 | 0.85 | 0.23 | 2.18 |
| Polarstem uncemented | RM Pressfit cup | 197 | 471.3 | 4 | 0.85 | 0.23 | 2.17 |
| CLS | CLS Expansion | 1263 | 18717.7 | 156 | 0.83 | 0.71 | 0.97 |
| Corail | RM Pressfit cup | 176 | 1086.4 | 9 | 0.83 | 0.35 | 1.51 |
| S-Rom | Pinnacle | 403 | 4951.5 | 41 | 0.83 | 0.59 | 1.12 |
| Echo Bi-Metric | Continuum TM | 190 | 731.8 | 6 | 0.82 | 0.30 | 1.78 |
| ABGII | Delta-PF Cup | 107 | 1603.4 | 13 | 0.81 | 0.43 | 1.39 |
| TwinSys uncemented | Tritanium | 11 | 124.0 | 1 | 0.81 | 0.02 | 4.49 |
| Accolade II | Fitmore | 136 | 375.1 | 3 | 0.80 | 0.16 | 2.34 |
| Corail | Trident | 120 | 881.2 | 7 | 0.79 | 0.32 | 1.64 |
| CLS | Weill ring | 118 | 2150.7 | 17 | 0.79 | 0.44 | 1.24 |
| Versys | Duraloc | 9 | 130.0 | 1 | 0.77 | 0.02 | 4.29 |
| Taperloc Complete | RM Pressfit cup | 459 | 1480.6 | 11 | 0.74 | 0.35 | 1.29 |
| Optimys | RM Pressfit cup | 641 | 1370.4 | 10 | 0.73 | 0.32 | 1.29 |
| Corail | Monoblock Acetabular Cup | 95 | 1244.1 | 9 | 0.72 | 0.33 | 1.37 |
| H-Max S | Delta-PF Cup | 315 | 1534.1 | 11 | 0.72 | 0.36 | 1.28 |
| Furlong | Furlong | 66 | 979.2 | 7 | 0.71 | 0.29 | 1.47 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Taperloc Complete | G7 acetabular | 523 | 1966.2 | 14 | 0.71 | 0.39 | 1.19 |
| Accolade II | Tritanium | 1578 | 7271.2 | 51 | 0.70 | 0.52 | 0.92 |
| H-Max S | Delta-TT Cup | 1036 | 6165.2 | 43 | 0.70 | 0.50 | 0.93 |
| ABGII | Pinnacle | 67 | 875.7 | 6 | 0.69 | 0.25 | 1.49 |
| Corail | R3 porous | 16 | 147.5 | 1 | 0.68 | 0.02 | 3.78 |
| Omnifit | Trident | 126 | 1924.0 | 13 | 0.68 | 0.34 | 1.12 |
| S-Rom | Continuum TM | 21 | 149.3 | 1 | 0.67 | 0.02 | 3.73 |
| Trabecular Metal Stem | Duraloc | 13 | 150.3 | 1 | 0.67 | 0.00 | 3.71 |
| Stemsys | Agilis Ti-por | 545 | 3485.3 | 23 | 0.66 | 0.42 | 0.99 |
| CBC | RM Pressfit cup | 445 | 4124.2 | 27 | 0.65 | 0.43 | 0.95 |
| TwinSys uncemented | Delta-TT Cup | 29 | 308.3 | 2 | 0.65 | 0.08 | 2.34 |
| CLS | Monoblock Acetabular Cup | 80 | 1090.4 | 7 | 0.64 | 0.26 | 1.32 |
| TwinSys uncemented | RM Pressfit cup | 5372 | 44554.4 | 286 | 0.64 | 0.57 | 0.72 |
| CLS | RM Pressfit cup | 667 | 5940.5 | 38 | 0.64 | 0.45 | 0.87 |
| Synergy Porous | Delta-TT Cup | 15 | 157.6 | 1 | 0.63 | 0.02 | 3.53 |
| S-Rom | Trabecular Metal Shell | 18 | 158.3 | 1 | 0.63 | 0.02 | 3.52 |
| Accolade II | Trident | 1693 | 7127.1 | 45 | 0.63 | 0.46 | 0.84 |
| Taperloc Complete | Continuum TM | 284 | 967.5 | 6 | 0.62 | 0.20 | 1.28 |
| CBC | Fitmore | 59 | 807.0 | 5 | 0.62 | 0.20 | 1.45 |
| CLS | Trident | 165 | 2274.9 | 14 | 0.62 | 0.32 | 1.00 |
| Summit | Pinnacle | 2947 | 22702.7 | 139 | 0.61 | 0.51 | 0.72 |
| Secur-Fit Max | Tritanium | 32 | 329.8 | 2 | 0.61 | 0.07 | 2.19 |
| Wagner cone stem | Morscher | 35 | 664.8 | 4 | 0.60 | 0.16 | 1.54 |
| Bi-metric | Exceed ABT Acetabular Porous | 33 | 336.6 | 2 | 0.59 | 0.07 | 2.15 |
| CLS | Tritanium | 89 | 682.3 | 4 | 0.59 | 0.16 | 1.50 |
| H-Max S | DeltaMotion Cup | 16 | 172.0 | 1 | 0.58 | 0.01 | 3.24 |
| Corail | Pinnacle | 16665 | 96969.9 | 559 | 0.58 | 0.53 | 0.63 |
| Echo Bi-Metric | G7 acetabular | 1000 | 3670.1 | 21 | 0.57 | 0.35 | 0.87 |
| Accolade | Trabecular Metal Shell | 15 | 175.5 | 1 | 0.57 | 0.01 | 3.17 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Wagner cone stem | Continuum TM | 67 | 352.1 | 2 | 0.57 | 0.07 | 2.05 |
| Profemur | Procotyl Acetabular | 15 | 178.0 | 1 | 0.56 | 0.01 | 3.13 |
| Trabecular Metal Stem | Continuum TM | 521 | 3925.7 | 22 | 0.56 | 0.34 | 0.83 |
| Polarstem uncemented | Reflection porous | 335 | 3097.4 | 17 | 0.55 | 0.32 | 0.88 |
| CLS | Trilogy | 764 | 6569.0 | 36 | 0.55 | 0.38 | 0.76 |
| M/L Taper | Continuum TM | 1047 | 8042.9 | 44 | 0.55 | 0.40 | 0.73 |
| Hip stem | Trident | 20 | 366.0 | 2 | 0.55 | 0.03 | 1.97 |
| M/L Taper | Trilogy | 215 | 2573.6 | 14 | 0.54 | 0.30 | 0.91 |
| Alloclassic SL | Trilogy | 15 | 184.5 | 1 | 0.54 | 0.01 | 3.02 |
| CLS | Reflection porous | 403 | 4269.6 | 23 | 0.54 | 0.34 | 0.81 |
| H-Max M | Delta-TT Cup | 86 | 934.4 | 5 | 0.54 | 0.17 | 1.25 |
| Summit | Continuum TM | 21 | 188.6 | 1 | 0.53 | 0.01 | 2.95 |
| TwinSys uncemented | Trilogy | 209 | 2475.7 | 13 | 0.53 | 0.28 | 0.90 |
| Corail | Trabecular Metal Shell | 23 | 191.7 | 1 | 0.52 | 0.01 | 2.91 |
| Corail | Continuum TM | 337 | 2309.6 | 12 | 0.52 | 0.27 | 0.91 |
| Accolade II | Delta-TT Cup | 91 | 389.9 | 2 | 0.51 | 0.06 | 1.85 |
| CLS | Continuum TM | 1060 | 6261.0 | 32 | 0.51 | 0.35 | 0.72 |
| Tri-Lock BPS | Pinnacle | 160 | 783.4 | 4 | 0.51 | 0.14 | 1.31 |
| CLS | Trabecular Metal Shell | 59 | 588.1 | 3 | 0.51 | 0.11 | 1.49 |
| Stemsys | Fixa Ti Por | 962 | 5964.4 | 30 | 0.50 | 0.34 | 0.72 |
| Polarstem uncemented | R3 porous | 2391 | 11999.0 | 60 | 0.50 | 0.38 | 0.64 |
| Avenir Muller uncemented | Trabecular Metal Shell | 38 | 403.8 | 2 | 0.50 | 0.06 | 1.79 |
| CLS | Fitmore | 2447 | 31465.8 | 153 | 0.49 | 0.41 | 0.57 |
| CLS | Morscher | 1701 | 28211.3 | 137 | 0.49 | 0.41 | 0.57 |
| Anato Hip stem | Trident | 37 | 207.5 | 1 | 0.48 | 0.01 | 2.68 |
| Synergy Porous | R3 porous | 1855 | 14439.4 | 68 | 0.47 | 0.37 | 0.60 |
| Accolade | RM Pressfit cup | 18 | 213.4 | 1 | 0.47 | 0.01 | 2.61 |
| Wagner cone stem | Fitmore | 79 | 1069.8 | 5 | 0.47 | 0.13 | 1.02 |
| Stemsys | Polymax | 192 | 862.6 | 4 | 0.46 | 0.13 | 1.19 |

# SUPPLEMENTARY DATA

## HIPS

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Modulus Hip | Delta-TT Cup | 33 | 220.4 | 1 | 0.45 | 0.01 | 2.53 |
| Avenir Muller uncemented | RM cup | 105 | 1127.6 | 5 | 0.44 | 0.12 | 0.97 |
| Avenir Muller uncemented | Fitmore | 70 | 451.7 | 2 | 0.44 | 0.05 | 1.60 |
| Versys | Trilogy | 272 | 4605.9 | 20 | 0.43 | 0.27 | 0.67 |
| Mallory-Head | Recap Resurfacing Acetabular S | 47 | 694.3 | 3 | 0.43 | 0.06 | 1.15 |
| Synergy Porous | RM Pressfit cup | 44 | 235.1 | 1 | 0.43 | 0.01 | 2.37 |
| Summit | Trilogy | 202 | 1912.6 | 8 | 0.42 | 0.16 | 0.82 |
| Accolade | Monoblock Acetabular Cup | 20 | 239.7 | 1 | 0.42 | 0.00 | 2.32 |
| Taperloc Complete | Delta-TT Cup | 189 | 480.6 | 2 | 0.42 | 0.05 | 1.50 |
| Taperloc Complete | Trident | 153 | 246.2 | 1 | 0.41 | 0.01 | 2.26 |
| CLS | Pinnacle | 130 | 991.9 | 4 | 0.40 | 0.11 | 1.03 |
| Accolade | Trident | 1867 | 26227.7 | 105 | 0.40 | 0.33 | 0.48 |
| ABGII | Morscher | 42 | 749.7 | 3 | 0.40 | 0.08 | 1.17 |
| Summit | Duraloc | 101 | 1513.9 | 6 | 0.40 | 0.15 | 0.86 |
| TwinSys uncemented | Continuum TM | 138 | 1299.8 | 5 | 0.38 | 0.12 | 0.90 |
| Stemsys | Delta-PF Cup | 625 | 3143.3 | 12 | 0.38 | 0.20 | 0.67 |
| Trabecular Metal Stem | Trabecular Metal Shell | 41 | 529.9 | 2 | 0.38 | 0.05 | 1.36 |
| Synergy Porous | Reflection porous | 1271 | 16107.1 | 59 | 0.37 | 0.28 | 0.47 |
| M/L Taper | Trident | 333 | 1967.3 | 7 | 0.36 | 0.14 | 0.73 |
| CBC | Morscher | 22 | 286.4 | 1 | 0.35 | 0.01 | 1.95 |
| Corail | Trilogy | 251 | 1719.1 | 6 | 0.35 | 0.13 | 0.76 |
| H-Max S | Trident | 67 | 292.2 | 1 | 0.34 | 0.01 | 1.91 |
| Corail | Reflection porous | 140 | 1761.6 | 6 | 0.34 | 0.12 | 0.74 |
| Modulus Hip | Delta-PF Cup | 40 | 594.5 | 2 | 0.34 | 0.04 | 1.22 |
| PLS | Delta-TT Cup | 52 | 299.8 | 1 | 0.33 | 0.01 | 1.86 |
| TwinSys uncemented | Trident | 30 | 300.0 | 1 | 0.33 | 0.01 | 1.86 |
| Stemsys | RM Pressfit cup | 404 | 2425.8 | 8 | 0.33 | 0.13 | 0.62 |
| Avenir Muller uncemented | Tritanium | 91 | 931.2 | 3 | 0.32 | 0.07 | 0.94 |
| Avenir Muller uncemented | RM Pressfit cup | 53 | 343.3 | 1 | 0.29 | 0.01 | 1.62 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| CLS | Delta-PF Cup | 23 | 343.4 | 1 | 0.29 | 0.01 | 1.62 |
| TwinSys uncemented | Pinnacle | 44 | 358.4 | 1 | 0.28 | 0.01 | 1.55 |
| Trabecular Metal Stem | Monoblock Acetabular Cup | 74 | 1092.5 | 3 | 0.27 | 0.04 | 0.73 |
| Corail | Tritanium | 175 | 1457.3 | 4 | 0.27 | 0.07 | 0.70 |
| Avenir Muller uncemented | Pinnacle | 99 | 1158.6 | 3 | 0.26 | 0.04 | 0.69 |
| Corail | Delta-PF Cup | 82 | 1159.3 | 3 | 0.26 | 0.05 | 0.76 |
| Synergy Porous | Delta-PF Cup | 118 | 1172.0 | 3 | 0.26 | 0.05 | 0.75 |
| Corail | G7 acetabular | 102 | 423.4 | 1 | 0.24 | 0.01 | 1.32 |
| Stemsys | DeltaMotion Cup | 541 | 4460.6 | 10 | 0.22 | 0.10 | 0.40 |
| Echo Bi-Metric | Exceed ABT Ringloc-X | 57 | 524.9 | 1 | 0.19 | 0.00 | 1.06 |
| Accolade | Tritanium | 152 | 1593.0 | 3 | 0.19 | 0.04 | 0.55 |
| Accolade | Pinnacle | 180 | 2144.4 | 4 | 0.19 | 0.05 | 0.48 |
| Corail | DeltaMotion Cup | 78 | 822.3 | 1 | 0.12 | 0.00 | 0.68 |
| TwinSys uncemented | Delta-PF Cup | 391 | 4411.8 | 5 | 0.11 | 0.03 | 0.25 |
| GMRS | Acetabular Revision | 1 | 17.1 | 0 | 0.00 | 0.00 | 21.57 |
| Mallory-Head | Acetabular Revision | 1 | 0.3 | 0 | 0.00 | 0.00 | 1161.52 |
| Wagner cone stem | Acetabular Revision | 1 | 16.4 | 0 | 0.00 | 0.00 | 22.53 |
| Corail | Acetabular Shell | 1 | 1.5 | 0 | 0.00 | 0.00 | 249.97 |
| Hip stem | Acetabular shell | 1 | 22.4 | 0 | 0.00 | 0.00 | 16.46 |
| Lat Femoral Stem | Acetabular Shell | 13 | 6.5 | 0 | 0.00 | 0.00 | 56.56 |
| Quadra-C | Acetabular Shell | 4 | 5.2 | 0 | 0.00 | 0.00 | 71.21 |
| Standard stem uncemented | Acetabular Shell | 10 | 9.1 | 0 | 0.00 | 0.00 | 40.38 |
| Std Femoral Stem | Acetabular Shell | 61 | 28.3 | 0 | 0.00 | 0.00 | 13.05 |
| Femoral stem | Adaptive cup | 8 | 38.3 | 0 | 0.00 | 0.00 | 9.63 |
| Filler 3ND | Adaptive cup | 5 | 22.8 | 0 | 0.00 | 0.00 | 16.15 |
| Fortress ND | Adaptive cup | 10 | 47.9 | 0 | 0.00 | 0.00 | 7.70 |
| Parva | Agilis Ti-por | 1 | 8.2 | 0 | 0.00 | 0.00 | 45.03 |
| Stemsys | Agilis Ti-Por | 1 | 8.1 | 0 | 0.00 | 0.00 | 45.75 |
| S-Rom | Allofit | 1 | 14.2 | 0 | 0.00 | 0.00 | 26.04 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| TwinSys uncemented | Allofit | 4 | 36.9 | 0 | 0.00 | 0.00 | 9.99 |
| PFM distal | Artek | 1 | 21.2 | 0 | 0.00 | 0.00 | 17.42 |
| Proxima | ASR | 1 | 15.9 | 0 | 0.00 | 0.00 | 23.23 |
| Modulus Hip | Atlas MS | 1 | 17.7 | 0 | 0.00 | 0.00 | 20.85 |
| Anthology Porous | BHR dysplasia cup | 1 | 12.0 | 0 | 0.00 | 0.00 | 30.86 |
| Bowed Interlocking Distal Stem | Bi-Mentum Pressfit cup | 1 | 1.0 | 0 | 0.00 | 0.00 | 379.54 |
| Corail | Bi-Mentum Pressfit cup | 18 | 31.4 | 0 | 0.00 | 0.00 | 11.73 |
| Replica | Biomex acet shell porous | 1 | 22.7 | 0 | 0.00 | 0.00 | 16.23 |
| M/L Taper | CLS Expansion | 2 | 26.8 | 0 | 0.00 | 0.00 | 13.78 |
| PFM distal | CLS Expansion | 2 | 28.7 | 0 | 0.00 | 0.00 | 12.87 |
| Revitan | CLS Expansion | 1 | 16.3 | 0 | 0.00 | 0.00 | 22.67 |
| TPP Thrust Plate | CLS Expansion | 1 | 21.9 | 0 | 0.00 | 0.00 | 16.86 |
| TwinSys uncemented | CLS Expansion | 8 | 82.3 | 0 | 0.00 | 0.00 | 4.48 |
| ZMR Fem Stem Rev Taper | CLS Expansion | 1 | 21.0 | 0 | 0.00 | 0.00 | 17.59 |
| Metafix | Cluster Shell Cementless | 4 | 3.5 | 0 | 0.00 | 0.00 | 106.68 |
| Profemur | Conserve Plus | 1 | 14.1 | 0 | 0.00 | 0.00 | 26.11 |
| ARCOS modular | Continuum TM | 5 | 31.9 | 0 | 0.00 | 0.00 | 11.56 |
| CPT | Continuum TM | 2 | 1.1 | 0 | 0.00 | 0.00 | 341.10 |
| Modulus Hip | Continuum TM | 4 | 41.0 | 0 | 0.00 | 0.00 | 8.99 |
| Optimys | Continuum TM | 2 | 14.0 | 0 | 0.00 | 0.00 | 26.37 |
| Polarstem uncemented | Continuum TM | 3 | 23.1 | 0 | 0.00 | 0.00 | 15.94 |
| Redapt | Continuum TM | 1 | 2.5 | 0 | 0.00 | 0.00 | 148.55 |
| Revision uncemented stem | Continuum TM | 1 | 7.7 | 0 | 0.00 | 0.00 | 48.17 |
| Revitan | Continuum TM | 2 | 18.4 | 0 | 0.00 | 0.00 | 20.09 |
| Synergy Porous | Continuum TM | 55 | 340.5 | 0 | 0.00 | 0.00 | 1.08 |
| Versys | Continuum TM | 1 | 7.7 | 0 | 0.00 | 0.00 | 47.71 |
| Zimmer M/L Taper | Continuum TM | 5 | 22.7 | 0 | 0.00 | 0.00 | 16.23 |
| ZMR Fem Stem Rev Nitrided | Continuum TM | 5 | 38.5 | 0 | 0.00 | 0.00 | 9.57 |
| Stemsys | Custom device | 1 | 8.0 | 0 | 0.00 | 0.00 | 45.89 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Taperloc Complete | Custom device | 1 | 0.2 | 0 | 0.00 | 0.00 | 1981.42 |
| Accolade II | Delta Multihole TT | 1 | 0.7 | 0 | 0.00 | 0.00 | 556.76 |
| Accolade | Delta Revision TT Cup | 2 | 21.3 | 0 | 0.00 | 0.00 | 17.31 |
| Accolade II | Delta Revision TT Cup | 2 | 5.4 | 0 | 0.00 | 0.00 | 67.95 |
| CBC | Delta Revision TT Cup | 1 | 5.0 | 0 | 0.00 | 0.00 | 73.63 |
| Revision uncemented stem | Delta Revision TT Cup | 1 | 1.3 | 0 | 0.00 | 0.00 | 294.83 |
| Furlong Evolution Collared Ste | Delta TT Cup | 1 | 0.0 | 0 | 0.00 | 0.00 | 7485.35 |
| Modulus Hip | Delta TT Cup | 1 | 0.3 | 0 | 0.00 | 0.00 | 1224.88 |
| CLS | DeltaMotion Cup | 1 | 13.7 | 0 | 0.00 | 0.00 | 26.97 |
| H-Max M | DeltaMotion Cup | 1 | 11.5 | 0 | 0.00 | 0.00 | 31.99 |
| Mistral | DeltaMotion Cup | 1 | 10.8 | 0 | 0.00 | 0.00 | 34.02 |
| S-Rom | DeltaMotion Cup | 1 | 10.4 | 0 | 0.00 | 0.00 | 35.35 |
| Tri-Lock BPS | DeltaMotion Cup | 15 | 172.9 | 0 | 0.00 | 0.00 | 2.13 |
| TwinSys uncemented | DeltaMotion Cup | 6 | 71.4 | 0 | 0.00 | 0.00 | 5.16 |
| Wagner cone stem | DeltaMotion Cup | 2 | 12.9 | 0 | 0.00 | 0.00 | 28.69 |
| Accolade II | Delta-One-TT Cup | 6 | 24.9 | 0 | 0.00 | 0.00 | 14.81 |
| Corail | Delta-One-TT Cup | 3 | 14.1 | 0 | 0.00 | 0.00 | 26.22 |
| Modulus Hip | Delta-One-TT Cup | 6 | 51.7 | 0 | 0.00 | 0.00 | 7.14 |
| Taperloc Complete | Delta-One-TT Cup | 5 | 10.5 | 0 | 0.00 | 0.00 | 35.09 |
| TwinSys uncemented | Delta-One-TT Cup | 1 | 8.8 | 0 | 0.00 | 0.00 | 41.96 |
| Accolade | Delta-PF Cup | 2 | 35.5 | 0 | 0.00 | 0.00 | 10.39 |
| Accolade II | Delta-PF Cup | 1 | 4.5 | 0 | 0.00 | 0.00 | 81.26 |
| Aura II | Delta-PF Cup | 1 | 15.0 | 0 | 0.00 | 0.00 | 24.65 |
| C2 Femoral Stem | Delta-PF Cup | 1 | 17.1 | 0 | 0.00 | 0.00 | 21.52 |
| Furlong | Delta-PF Cup | 6 | 47.7 | 0 | 0.00 | 0.00 | 7.74 |
| Furlong Evolution Collared Ste | Delta-PF Cup | 66 | 41.8 | 0 | 0.00 | 0.00 | 8.83 |
| MasterSL | Delta-PF Cup | 21 | 123.5 | 0 | 0.00 | 0.00 | 2.99 |
| PLS | Delta-PF Cup | 1 | 1.8 | 0 | 0.00 | 0.00 | 202.00 |
| Stemsys HAC | Delta-PF Cup | 1 | 1.3 | 0 | 0.00 | 0.00 | 280.70 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Taperloc Complete | Delta-PF Cup | 3 | 11.1 | 0 | 0.00 | 0.00 | 33.13 |
| Thira | Delta-PF Cup | 1 | 17.3 | 0 | 0.00 | 0.00 | 21.35 |
| CLS | Delta-TT Cup | 11 | 93.3 | 0 | 0.00 | 0.00 | 3.95 |
| Collo-Mis | Delta-TT Cup | 1 | 2.7 | 0 | 0.00 | 0.00 | 135.01 |
| Corail | Delta-TT Cup | 8 | 65.8 | 0 | 0.00 | 0.00 | 5.61 |
| Furlong Evolution Collared Ste | Delta-TT Cup | 1 | 1.0 | 0 | 0.00 | 0.00 | 352.71 |
| Revision Hip Stem | Delta-TT Cup | 1 | 1.5 | 0 | 0.00 | 0.00 | 243.21 |
| Revision uncemented stem | Delta-TT Cup | 5 | 28.7 | 0 | 0.00 | 0.00 | 12.86 |
| S-Rom | Delta-TT Cup | 2 | 27.2 | 0 | 0.00 | 0.00 | 13.58 |
| Secur-Fit Max | Delta-TT Cup | 1 | 10.7 | 0 | 0.00 | 0.00 | 34.57 |
| Stemsys | Delta-TT Cup | 18 | 89.4 | 0 | 0.00 | 0.00 | 4.13 |
| Metafix | DS Evolution | 1 | 3.7 | 0 | 0.00 | 0.00 | 99.44 |
| CBC | Duraloc | 10 | 151.1 | 0 | 0.00 | 0.00 | 2.44 |
| KAR | Duraloc | 1 | 21.1 | 0 | 0.00 | 0.00 | 17.44 |
| Link stem with microporous | Duraloc | 1 | 6.9 | 0 | 0.00 | 0.00 | 53.53 |
| Meridian TMZF | Duraloc | 1 | 20.8 | 0 | 0.00 | 0.00 | 17.77 |
| Modular Taperloc | Duraloc | 2 | 34.3 | 0 | 0.00 | 0.00 | 10.75 |
| PFM distal | Duraloc | 1 | 17.6 | 0 | 0.00 | 0.00 | 20.95 |
| Replica | Duraloc | 1 | 23.1 | 0 | 0.00 | 0.00 | 15.94 |
| RT Solution Bowed | Duraloc | 1 | 4.3 | 0 | 0.00 | 0.00 | 86.59 |
| Solution | Duraloc | 5 | 41.8 | 0 | 0.00 | 0.00 | 8.83 |
| Solution Bow | Duraloc | 1 | 0.5 | 0 | 0.00 | 0.00 | 752.72 |
| ZMR Fem Stem Rev Nitrided | Duraloc | 1 | 12.8 | 0 | 0.00 | 0.00 | 28.86 |
| ZMR Fem Stem Rev Taper | Duraloc | 2 | 18.9 | 0 | 0.00 | 0.00 | 19.54 |
| Alloclassic SL | Durom | 1 | 11.2 | 0 | 0.00 | 0.00 | 33.06 |
| Corail | EP-Fit Plus | 1 | 13.9 | 0 | 0.00 | 0.00 | 26.61 |
| Synergy Porous | EP-Fit Plus | 1 | 9.5 | 0 | 0.00 | 0.00 | 38.81 |
| TwinSys uncemented | EP-Fit Plus | 2 | 26.3 | 0 | 0.00 | 0.00 | 14.03 |
| CDH Total Hip | Exceed ABT Acetabular Porous | 1 | 12.6 | 0 | 0.00 | 0.00 | 29.27 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Echo Bi-Metric | Exceed ABT Acetabular Porous | 15 | 140.2 | 0 | 0.00 | 0.00 | 2.63 |
| Mallory proximal femoral | Exceed ABT Acetabular Porous | 1 | 13.1 | 0 | 0.00 | 0.00 | 28.10 |
| Synergy Porous | Exceed ABT Acetabular Porous | 8 | 123.4 | 0 | 0.00 | 0.00 | 2.99 |
| Bi-metric | Exceed ABT Ringloc-X | 17 | 165.9 | 0 | 0.00 | 0.00 | 2.22 |
| Corail | Exceed ABT Ringloc-X | 12 | 111.3 | 0 | 0.00 | 0.00 | 3.31 |
| Mallory proximal femoral | Exceed ABT Ringloc-X | 2 | 18.3 | 0 | 0.00 | 0.00 | 20.13 |
| Mallory-Head | Exceed ABT Ringloc-X | 4 | 18.9 | 0 | 0.00 | 0.00 | 19.47 |
| CLS | Expansys shell | 1 | 17.8 | 0 | 0.00 | 0.00 | 20.76 |
| TwinSys uncemented | Expansys shell | 8 | 95.1 | 0 | 0.00 | 0.00 | 3.88 |
| Cone Prosthesis | Fitek | 1 | 20.1 | 0 | 0.00 | 0.00 | 18.38 |
| Wagner cone stem | Fitek | 3 | 71.8 | 0 | 0.00 | 0.00 | 5.14 |
| ABGII | Fitmore | 1 | 21.1 | 0 | 0.00 | 0.00 | 17.46 |
| H-Max M | Fitmore | 3 | 40.3 | 0 | 0.00 | 0.00 | 9.15 |
| M/L Taper | Fitmore | 6 | 66.9 | 0 | 0.00 | 0.00 | 5.51 |
| Modulus Hip | Fitmore | 3 | 54.3 | 0 | 0.00 | 0.00 | 6.79 |
| MS 30 | Fitmore | 7 | 11.1 | 0 | 0.00 | 0.00 | 33.26 |
| Revitan | Fitmore | 2 | 13.9 | 0 | 0.00 | 0.00 | 26.46 |
| S-Rom | Fitmore | 2 | 28.5 | 0 | 0.00 | 0.00 | 12.96 |
| Silent | Fitmore | 5 | 51.2 | 0 | 0.00 | 0.00 | 7.21 |
| Synergy Porous | Fitmore | 1 | 17.2 | 0 | 0.00 | 0.00 | 21.42 |
| Trabecular Metal Stem | Fitmore | 1 | 15.0 | 0 | 0.00 | 0.00 | 24.67 |
| Tri-Lock BPS | Fitmore | 1 | 11.8 | 0 | 0.00 | 0.00 | 31.21 |
| TwinSys uncemented | Fitmore | 12 | 101.5 | 0 | 0.00 | 0.00 | 3.63 |
| Versys | Fitmore | 1 | 12.4 | 0 | 0.00 | 0.00 | 29.75 |
| Corail | Fixa Ti Por | 1 | 1.2 | 0 | 0.00 | 0.00 | 320.04 |
| Fem Stem HAC Std Collarless | Fixa Ti Por | 2 | 0.6 | 0 | 0.00 | 0.00 | 641.60 |
| HA Std Collarless Fem Stem | Fixa Ti Por | 2 | 0.5 | 0 | 0.00 | 0.00 | 806.80 |
| Hydra-Fix | Fixa Ti Por | 2 | 2.9 | 0 | 0.00 | 0.00 | 125.92 |
| Hydra-Fix Cementless Stem | Fixa Ti Por | 7 | 2.0 | 0 | 0.00 | 0.00 | 184.82 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Stemsys HAC | Fixa Ti Por | 3 | 2.1 | 0 | 0.00 | 0.00 | 177.52 |
| Stemsys | Freeliner | 15 | 2.9 | 0 | 0.00 | 0.00 | 126.75 |
| Stemsys HAC Collarless | Freeliner | 2 | 0.3 | 0 | 0.00 | 0.00 | 1141.83 |
| Furlong H-AC Stem | Furlong | 14 | 182.6 | 0 | 0.00 | 0.00 | 2.02 |
| Accolade II | G7 acetabular | 1 | 2.1 | 0 | 0.00 | 0.00 | 176.13 |
| Avenir Complete uncemented | G7 acetabular | 3 | 4.8 | 0 | 0.00 | 0.00 | 77.30 |
| CPT | G7 acetabular | 2 | 3.4 | 0 | 0.00 | 0.00 | 109.90 |
| Echo Bi-Metric Lat Fem Stem | G7 acetabular | 2 | 0.2 | 0 | 0.00 | 0.00 | 2173.17 |
| Exeter V40 | G7 acetabular | 1 | 1.4 | 0 | 0.00 | 0.00 | 254.70 |
| M/L Taper | G7 acetabular | 1 | 3.4 | 0 | 0.00 | 0.00 | 108.31 |
| MS 30 | G7 acetabular | 1 | 1.8 | 0 | 0.00 | 0.00 | 209.87 |
| S-Rom | G7 acetabular | 5 | 22.7 | 0 | 0.00 | 0.00 | 16.22 |
| Synergy Porous | G7 acetabular | 37 | 111.1 | 0 | 0.00 | 0.00 | 3.32 |
| TwinSys uncemented | G7 acetabular | 1 | 0.2 | 0 | 0.00 | 0.00 | 1663.41 |
| Wagner cone stem | G7 acetabular | 5 | 11.5 | 0 | 0.00 | 0.00 | 32.01 |
| Arcos Modular | G7 acetabular shell | 2 | 2.8 | 0 | 0.00 | 0.00 | 131.45 |
| Avenir Complete | G7 acetabular shell | 22 | 19.9 | 0 | 0.00 | 0.00 | 18.54 |
| Avenir Muller uncemented | G7 acetabular shell | 2 | 1.9 | 0 | 0.00 | 0.00 | 193.87 |
| C-Stem AMT | G7 acetabular shell | 1 | 0.1 | 0 | 0.00 | 0.00 | 3062.19 |
| CLS | G7 acetabular shell | 1 | 1.5 | 0 | 0.00 | 0.00 | 248.13 |
| Corail | G7 acetabular shell | 24 | 20.2 | 0 | 0.00 | 0.00 | 18.24 |
| CPT | G7 acetabular shell | 4 | 1.6 | 0 | 0.00 | 0.00 | 233.92 |
| Echo Bi-Metric Lat Fem Stem | G7 acetabular shell | 2 | 1.0 | 0 | 0.00 | 0.00 | 379.54 |
| Echo Press-Fit | G7 acetabular shell | 4 | 3.7 | 0 | 0.00 | 0.00 | 100.93 |
| Exeter V40 | G7 acetabular shell | 1 | 1.1 | 0 | 0.00 | 0.00 | 342.84 |
| MS 30 | G7 acetabular shell | 5 | 7.3 | 0 | 0.00 | 0.00 | 50.82 |
| S-Rom | G7 acetabular shell | 1 | 1.0 | 0 | 0.00 | 0.00 | 351.79 |
| Synergy Porous | G7 acetabular shell | 19 | 14.7 | 0 | 0.00 | 0.00 | 25.14 |
| Synergy Porous Femoral comp. | G7 acetabular shell | 1 | 1.3 | 0 | 0.00 | 0.00 | 284.25 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Taperloc Complete Micro | G7 acetabular shell | 12 | 7.1 | 0 | 0.00 | 0.00 | 52.06 |
| TwinSys uncemented | G7 acetabular shell | 1 | 0.2 | 0 | 0.00 | 0.00 | 1663.41 |
| Wagner cone stem | G7 acetabular shell | 7 | 5.3 | 0 | 0.00 | 0.00 | 69.74 |
| ZMR Fem Stem Rev Nitrided | G7 acetabular shell | 1 | 1.8 | 0 | 0.00 | 0.00 | 208.25 |
| Redapt Fem Std Offset | G7 Osseo Ti Multihole | 1 | 0.1 | 0 | 0.00 | 0.00 | 5389.45 |
| Taperloc Complete | G7 Osseo Ti Multihole | 10 | 5.6 | 0 | 0.00 | 0.00 | 65.82 |
| Echo Bi-Metric | G7 OsseoTi Cementless | 3 | 3.3 | 0 | 0.00 | 0.00 | 111.17 |
| S-Rom | G7 OsseoTi Cementless | 2 | 1.1 | 0 | 0.00 | 0.00 | 345.48 |
| Taperloc Complete | G7 OsseoTi Cementless | 1 | 0.3 | 0 | 0.00 | 0.00 | 1224.88 |
| Margron Hip | Interseal acet shell quadrant | 2 | 27.0 | 0 | 0.00 | 0.00 | 13.69 |
| Synergy Porous | M2A | 1 | 18.3 | 0 | 0.00 | 0.00 | 20.18 |
| ABGII | Mallory-Head | 1 | 18.6 | 0 | 0.00 | 0.00 | 19.79 |
| Mallory proximal femoral | Mallory-Head | 1 | 15.4 | 0 | 0.00 | 0.00 | 23.94 |
| Taperloc Complete | Mallory-Head | 2 | 19.8 | 0 | 0.00 | 0.00 | 18.63 |
| Stemsys | Maxera Cup | 117 | 198.8 | 0 | 0.00 | 0.00 | 1.86 |
| Stemsys HAC | Maxera Cup | 3 | 2.7 | 0 | 0.00 | 0.00 | 137.35 |
| Stemsys HAC Collared Stem | Maxera Cup | 1 | 0.2 | 0 | 0.00 | 0.00 | 1796.48 |
| Wagner cone stem | Maxera Cup | 1 | 2.6 | 0 | 0.00 | 0.00 | 141.09 |
| CLS | Metasul Low Profile Cup | 1 | 20.1 | 0 | 0.00 | 0.00 | 18.32 |
| Wagner cone stem | Metasul Low Profile Cup | 1 | 20.4 | 0 | 0.00 | 0.00 | 18.10 |
| Accolade HFx | Monoblock Acetabular Cup | 1 | 4.4 | 0 | 0.00 | 0.00 | 83.95 |
| Avenir Muller uncemented | Monoblock Acetabular Cup | 11 | 124.9 | 0 | 0.00 | 0.00 | 2.95 |
| CBC | Monoblock Acetabular Cup | 2 | 10.8 | 0 | 0.00 | 0.00 | 34.27 |
| H-Max M | Monoblock Acetabular Cup | 12 | 146.4 | 0 | 0.00 | 0.00 | 2.52 |
| M/L Taper | Monoblock Acetabular Cup | 1 | 17.2 | 0 | 0.00 | 0.00 | 21.45 |
| Summit | Monoblock Acetabular Cup | 22 | 351.6 | 0 | 0.00 | 0.00 | 1.05 |
| TwinSys uncemented | Monoblock Acetabular Cup | 5 | 42.4 | 0 | 0.00 | 0.00 | 8.71 |
| Versys | Monoblock Acetabular Cup | 1 | 12.2 | 0 | 0.00 | 0.00 | 30.20 |
| ABG | Morscher | 1 | 21.2 | 0 | 0.00 | 0.00 | 17.38 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Accolade | Morscher | 3 | 31.8 | 0 | 0.00 | 0.00 | 11.59 |
| Cone Prosthesis | Morscher | 1 | 23.5 | 0 | 0.00 | 0.00 | 15.67 |
| Corail | Morscher | 3 | 45.3 | 0 | 0.00 | 0.00 | 8.15 |
| DSP Thrust Plate | Morscher | 15 | 349.6 | 0 | 0.00 | 0.00 | 1.06 |
| PFM distal | Morscher | 3 | 40.9 | 0 | 0.00 | 0.00 | 9.02 |
| TwinSys uncemented | Morscher | 2 | 29.2 | 0 | 0.00 | 0.00 | 12.62 |
| Quadra-H | Mpact | 1 | 2.5 | 0 | 0.00 | 0.00 | 145.35 |
| ARCOS modular | Multipolar Bipolar | 1 | 0.3 | 0 | 0.00 | 0.00 | 1360.97 |
| Versys | Multipolar Bipolar | 2 | 11.3 | 0 | 0.00 | 0.00 | 32.66 |
| ZMR Fem Stem Rev Nitrided | Multipolar Bipolar | 1 | 6.5 | 0 | 0.00 | 0.00 | 57.00 |
| Pantheon Salvage Cem Stem | Multipolar Bipolar cup | 1 | 1.2 | 0 | 0.00 | 0.00 | 317.77 |
| Avenir Muller uncemented | Natural | 10 | 83.4 | 0 | 0.00 | 0.00 | 4.42 |
| Accolade | Osteolock | 2 | 26.9 | 0 | 0.00 | 0.00 | 13.69 |
| Hip stem | Osteolock | 1 | 18.4 | 0 | 0.00 | 0.00 | 20.01 |
| M/L Taper | Osteolock | 1 | 0.1 | 0 | 0.00 | 0.00 | 2807.01 |
| Secur-Fit | Osteolock | 3 | 64.3 | 0 | 0.00 | 0.00 | 5.73 |
| Accolade II | Pinnacle | 9 | 29.3 | 0 | 0.00 | 0.00 | 12.59 |
| ARCOS modular | Pinnacle | 2 | 6.0 | 0 | 0.00 | 0.00 | 61.98 |
| C-Stem AMT | Pinnacle | 20 | 27.6 | 0 | 0.00 | 0.00 | 13.36 |
| Corail Cementless Stem | Pinnacle | 13 | 8.5 | 0 | 0.00 | 0.00 | 43.63 |
| Exeter V40 | Pinnacle | 5 | 4.7 | 0 | 0.00 | 0.00 | 79.02 |
| KAR | Pinnacle | 1 | 16.2 | 0 | 0.00 | 0.00 | 22.71 |
| Polarstem uncemented | Pinnacle | 7 | 28.8 | 0 | 0.00 | 0.00 | 12.80 |
| Quadra-H | Pinnacle | 1 | 1.4 | 0 | 0.00 | 0.00 | 258.61 |
| Reef | Pinnacle | 1 | 2.1 | 0 | 0.00 | 0.00 | 179.65 |
| Restoration | Pinnacle | 2 | 7.1 | 0 | 0.00 | 0.00 | 51.90 |
| Restoration Modular | Pinnacle | 1 | 2.6 | 0 | 0.00 | 0.00 | 143.03 |
| Revision uncemented stem | Pinnacle | 2 | 28.3 | 0 | 0.00 | 0.00 | 13.04 |
| S-Rom Femoral Stem | Pinnacle | 1 | 1.1 | 0 | 0.00 | 0.00 | 334.33 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Silent | Pinnacle | 5 | 59.7 | 0 | 0.00 | 0.00 | 6.18 |
| Solution Bow | Pinnacle | 1 | 3.3 | 0 | 0.00 | 0.00 | 111.91 |
| Stellaris | Pinnacle | 3 | 24.1 | 0 | 0.00 | 0.00 | 15.32 |
| Stemsys | Pinnacle | 5 | 28.0 | 0 | 0.00 | 0.00 | 13.16 |
| Taperloc Complete | Pinnacle | 1 | 1.1 | 0 | 0.00 | 0.00 | 340.24 |
| Trabecular Metal Stem | Pinnacle | 5 | 47.9 | 0 | 0.00 | 0.00 | 7.70 |
| ZMR Fem Stem Rev Nitrided | Pinnacle | 1 | 11.3 | 0 | 0.00 | 0.00 | 32.60 |
| Corail | Pinnacle Gription | 1 | 0.8 | 0 | 0.00 | 0.00 | 466.22 |
| Exeter V40 | PolarCup cemented | 1 | 1.3 | 0 | 0.00 | 0.00 | 277.24 |
| Echelon | PolarCup uncemented | 1 | 6.2 | 0 | 0.00 | 0.00 | 59.22 |
| Synergy Porous | PolarCup uncemented | 1 | 9.8 | 0 | 0.00 | 0.00 | 37.72 |
| Hydra-Fix | Polymax | 2 | 3.0 | 0 | 0.00 | 0.00 | 124.30 |
| Wagner cone stem | Polymax | 1 | 4.1 | 0 | 0.00 | 0.00 | 90.25 |
| Stemsys | Press-fit cup | 7 | 0.9 | 0 | 0.00 | 0.00 | 429.10 |
| Stemsys HAC Collared Stem | Press-fit cup | 3 | 0.5 | 0 | 0.00 | 0.00 | 687.43 |
| Stemsys HAC Collarless | Press-fit cup | 1 | 0.2 | 0 | 0.00 | 0.00 | 1845.70 |
| Polarstem uncemented | R3 liner | 2 | 2.6 | 0 | 0.00 | 0.00 | 139.48 |
| Accolade II | R3 porous | 1 | 5.1 | 0 | 0.00 | 0.00 | 72.48 |
| ARCOS modular | R3 porous | 11 | 46.7 | 0 | 0.00 | 0.00 | 7.91 |
| CLS | R3 porous | 4 | 29.7 | 0 | 0.00 | 0.00 | 12.44 |
| Corail Cementless Stem | R3 porous | 1 | 1.4 | 0 | 0.00 | 0.00 | 261.62 |
| Echelon | R3 porous | 4 | 23.9 | 0 | 0.00 | 0.00 | 15.44 |
| Exeter V40 | R3 porous | 1 | 1.4 | 0 | 0.00 | 0.00 | 266.80 |
| Reclaim Distal Tapered Stem | R3 porous | 1 | 0.2 | 0 | 0.00 | 0.00 | 2245.61 |
| S-Rom | R3 porous | 3 | 21.4 | 0 | 0.00 | 0.00 | 17.21 |
| Spectron | R3 porous | 1 | 0.4 | 0 | 0.00 | 0.00 | 821.56 |
| Synergy Porous Femoral comp. | R3 porous | 1 | 1.5 | 0 | 0.00 | 0.00 | 241.90 |
| Trabecular Metal Stem | R3 porous | 1 | 13.3 | 0 | 0.00 | 0.00 | 27.84 |
| TwinSys uncemented | R3 porous | 14 | 130.6 | 0 | 0.00 | 0.00 | 2.82 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| ZMR Fem Stem Rev Taper | R3 porous | 1 | 0.0 | 0 | 0.00 | 0.00 | 22456.05 |
| CLS | RD Asian hip acetab. Cup | 1 | 22.7 | 0 | 0.00 | 0.00 | 16.22 |
| Aura II | Recap Resurfacing Acetabular S | 1 | 14.8 | 0 | 0.00 | 0.00 | 24.88 |
| Echo Bi-Metric | Recap/Magnum Acetabular Shell | 2 | 14.8 | 0 | 0.00 | 0.00 | 24.90 |
| Redapt Fem High Offset | Redapt Modular Shell | 1 | 0.9 | 0 | 0.00 | 0.00 | 396.28 |
| Exeter V40 | Reflection cemented | 1 | 0.2 | 0 | 0.00 | 0.00 | 1871.34 |
| Anthology Porous | Reflection porous | 1 | 14.7 | 0 | 0.00 | 0.00 | 25.09 |
| Emperion | Reflection porous | 1 | 11.5 | 0 | 0.00 | 0.00 | 32.19 |
| GMRS | Reflection porous | 1 | 3.3 | 0 | 0.00 | 0.00 | 112.66 |
| Opti-Fix Fem component | Reflection porous | 3 | 56.0 | 0 | 0.00 | 0.00 | 6.59 |
| S-Rom | Reflection porous | 5 | 96.4 | 0 | 0.00 | 0.00 | 3.82 |
| Solution Bow | Reflection porous | 1 | 0.4 | 0 | 0.00 | 0.00 | 852.76 |
| Solution Rev Stem | Reflection porous | 1 | 11.2 | 0 | 0.00 | 0.00 | 33.02 |
| Wagner cone stem | Reflection porous | 1 | 4.8 | 0 | 0.00 | 0.00 | 77.52 |
| Echo Bi-Metric | Regenerex Ringloc | 1 | 7.5 | 0 | 0.00 | 0.00 | 49.28 |
| PFM distal | RM cup | 2 | 34.0 | 0 | 0.00 | 0.00 | 10.84 |
| Reef | RM cup | 2 | 4.2 | 0 | 0.00 | 0.00 | 88.12 |
| Revitan | RM cup | 2 | 28.7 | 0 | 0.00 | 0.00 | 12.87 |
| Actis Duofix | RM Pressfit cup | 4 | 7.5 | 0 | 0.00 | 0.00 | 49.48 |
| Corail Cementless Stem | RM Pressfit cup | 1 | 0.6 | 0 | 0.00 | 0.00 | 598.83 |
| Echo Bi-Metric | RM Pressfit cup | 2 | 11.5 | 0 | 0.00 | 0.00 | 31.97 |
| H-Max S | RM Pressfit cup | 5 | 30.0 | 0 | 0.00 | 0.00 | 12.31 |
| Mod revision | RM Pressfit cup | 1 | 7.1 | 0 | 0.00 | 0.00 | 51.68 |
| Modulus Hip | RM Pressfit cup | 5 | 38.6 | 0 | 0.00 | 0.00 | 9.57 |
| Optimys Stem Lat | RM Pressfit cup | 1 | 0.0 | 0 | 0.00 | 0.00 | 12248.76 |
| PLS | RM Pressfit cup | 7 | 45.3 | 0 | 0.00 | 0.00 | 8.14 |
| Redapt | RM Pressfit cup | 1 | 2.6 | 0 | 0.00 | 0.00 | 140.94 |
| Restoration Modular | RM Pressfit cup | 1 | 0.1 | 0 | 0.00 | 0.00 | 4082.92 |
| Revision uncemented stem | RM Pressfit cup | 2 | 13.4 | 0 | 0.00 | 0.00 | 27.44 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| S-Rom | RM Pressfit cup | 2 | 12.4 | 0 | 0.00 | 0.00 | 29.76 |
| Solution | RM Pressfit cup | 1 | 14.3 | 0 | 0.00 | 0.00 | 25.75 |
| Stellaris | RM Pressfit cup | 1 | 8.7 | 0 | 0.00 | 0.00 | 42.36 |
| Taperloc Complete Micro | RM Pressfit cup | 9 | 5.3 | 0 | 0.00 | 0.00 | 69.85 |
| Trabecular Metal Stem | RM Pressfit cup | 1 | 16.1 | 0 | 0.00 | 0.00 | 22.87 |
| TwinSys cemented | RM Pressfit cup | 6 | 6.4 | 0 | 0.00 | 0.00 | 57.26 |
| Twinsys HA stem uncem | RM Pressfit cup | 21 | 14.2 | 0 | 0.00 | 0.00 | 25.93 |
| TwinSys stem | RM Pressfit cup | 3 | 0.7 | 0 | 0.00 | 0.00 | 530.46 |
| TwinSys stem cemented | RM Pressfit cup | 1 | 1.1 | 0 | 0.00 | 0.00 | 346.37 |
| Wagner cone stem | RM Pressfit cup | 1 | 7.3 | 0 | 0.00 | 0.00 | 50.35 |
| TwinSys uncemented | RM Pressfit Cup Hooded | 4 | 2.5 | 0 | 0.00 | 0.00 | 150.04 |
| Corail | Selexys TPS | 1 | 13.1 | 0 | 0.00 | 0.00 | 28.21 |
| Restoration | Selexys TPS | 1 | 1.5 | 0 | 0.00 | 0.00 | 243.21 |
| Stellaris | Selexys TPS | 7 | 74.6 | 0 | 0.00 | 0.00 | 4.95 |
| Wagner cone stem | Selexys TPS | 1 | 13.6 | 0 | 0.00 | 0.00 | 27.08 |
| ABGII | SPH Acetabular cup | 1 | 18.7 | 0 | 0.00 | 0.00 | 19.77 |
| F2L Multineck | SPH Acetabular cup | 2 | 26.8 | 0 | 0.00 | 0.00 | 13.78 |
| Revision uncemented stem | SPH Acetabular cup | 1 | 16.4 | 0 | 0.00 | 0.00 | 22.54 |
| PFM distal | SPH Revision Bicom. | 1 | 0.7 | 0 | 0.00 | 0.00 | 516.23 |
| Link stem with microporous | S-ROM ZTT2 Acet. Shell | 1 | 14.6 | 0 | 0.00 | 0.00 | 25.32 |
| ZMR Fem Stem Rev Nitrided | S-ROM ZTT2 Acet. Shell | 1 | 22.2 | 0 | 0.00 | 0.00 | 16.61 |
| Corail | Sunfit | 1 | 5.8 | 0 | 0.00 | 0.00 | 63.83 |
| Accolade II | Trabecular Metal Rev shell | 1 | 4.7 | 0 | 0.00 | 0.00 | 78.98 |
| Corail | Trabecular Metal Rev shell | 4 | 18.2 | 0 | 0.00 | 0.00 | 20.24 |
| Echo Bi-Metric | Trabecular Metal Rev shell | 3 | 9.1 | 0 | 0.00 | 0.00 | 40.52 |
| Mallory proximal femoral | Trabecular Metal Rev shell | 1 | 0.2 | 0 | 0.00 | 0.00 | 2072.87 |
| Modulus Hip | Trabecular Metal Rev shell | 1 | 10.6 | 0 | 0.00 | 0.00 | 34.72 |
| S-Rom | Trabecular Metal Rev shell | 2 | 10.6 | 0 | 0.00 | 0.00 | 34.93 |
| Wagner cone stem | Trabecular Metal Rev shell | 1 | 14.7 | 0 | 0.00 | 0.00 | 25.14 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Accolade II | Trabecular Metal Shell | 2 | 3.6 | 0 | 0.00 | 0.00 | 103.48 |
| Acumatch | Trabecular Metal Shell | 1 | 17.8 | 0 | 0.00 | 0.00 | 20.75 |
| Emperion | Trabecular Metal Shell | 1 | 1.2 | 0 | 0.00 | 0.00 | 309.03 |
| Exeter V40 | Trabecular Metal Shell | 1 | 0.3 | 0 | 0.00 | 0.00 | 1308.12 |
| GMRS | Trabecular Metal Shell | 1 | 11.6 | 0 | 0.00 | 0.00 | 31.85 |
| M/L Taper | Trabecular Metal Shell | 6 | 47.2 | 0 | 0.00 | 0.00 | 7.81 |
| Mallory-Head | Trabecular Metal Shell | 3 | 6.7 | 0 | 0.00 | 0.00 | 55.40 |
| Modulus Hip | Trabecular Metal Shell | 1 | 10.3 | 0 | 0.00 | 0.00 | 35.94 |
| Restoration Modular | Trabecular Metal Shell | 1 | 2.7 | 0 | 0.00 | 0.00 | 138.19 |
| Revision uncemented stem | Trabecular Metal Shell | 1 | 14.4 | 0 | 0.00 | 0.00 | 25.69 |
| Revitan | Trabecular Metal Shell | 1 | 8.1 | 0 | 0.00 | 0.00 | 45.72 |
| Solution | Trabecular Metal Shell | 1 | 0.9 | 0 | 0.00 | 0.00 | 401.00 |
| Summit | Trabecular Metal Shell | 1 | 11.5 | 0 | 0.00 | 0.00 | 32.06 |
| Taperloc Complete | Trabecular Metal Shell | 1 | 7.3 | 0 | 0.00 | 0.00 | 50.29 |
| TwinSys uncemented | Trabecular Metal Shell | 3 | 30.0 | 0 | 0.00 | 0.00 | 12.31 |
| Versys | Trabecular Metal Shell | 4 | 72.9 | 0 | 0.00 | 0.00 | 5.06 |
| ZMR Fem Stem Rev Nitrided | Trabecular Metal Shell | 5 | 43.5 | 0 | 0.00 | 0.00 | 8.49 |
| ZMR Fem Stem Rev Taper | Trabecular Metal Shell | 2 | 19.3 | 0 | 0.00 | 0.00 | 19.15 |
| Accolade HFx | Trident | 2 | 13.5 | 0 | 0.00 | 0.00 | 27.29 |
| Anthology Porous | Trident | 2 | 21.9 | 0 | 0.00 | 0.00 | 16.84 |
| Echo Bi-Metric | Trident | 2 | 3.4 | 0 | 0.00 | 0.00 | 107.02 |
| Exeter V40 | Trident | 1 | 0.3 | 0 | 0.00 | 0.00 | 1389.03 |
| GMRS | Trident | 1 | 0.3 | 0 | 0.00 | 0.00 | 1271.10 |
| Meridian | Trident | 1 | 21.1 | 0 | 0.00 | 0.00 | 17.51 |
| Meridian TMZF | Trident | 1 | 19.1 | 0 | 0.00 | 0.00 | 19.36 |
| Modulus Hip | Trident | 2 | 12.3 | 0 | 0.00 | 0.00 | 30.06 |
| Omnifit M-HA Hip Stem | Trident | 1 | 18.5 | 0 | 0.00 | 0.00 | 19.98 |
| Restoration | Trident | 9 | 70.2 | 0 | 0.00 | 0.00 | 5.26 |
| Restoration Modular | Trident | 12 | 48.7 | 0 | 0.00 | 0.00 | 7.58 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| S-Rom | Trident | 6 | 69.0 | 0 | 0.00 | 0.00 | 5.35 |
| Secur-Fit | Trident | 14 | 238.4 | 0 | 0.00 | 0.00 | 1.55 |
| Synergy Porous | Trident | 15 | 81.5 | 0 | 0.00 | 0.00 | 4.53 |
| Tri-Lock BPS | Trident | 3 | 8.4 | 0 | 0.00 | 0.00 | 44.18 |
| Versys | Trident | 3 | 63.2 | 0 | 0.00 | 0.00 | 5.84 |
| Wagner cone stem | Trident | 5 | 64.2 | 0 | 0.00 | 0.00 | 5.75 |
| Zimmer femoral component | Trident | 1 | 2.9 | 0 | 0.00 | 0.00 | 128.57 |
| Zimmer M/L Taper | Trident | 4 | 16.9 | 0 | 0.00 | 0.00 | 21.88 |
| Accolade II | Trident II Clusterhole HA | 81 | 22.0 | 0 | 0.00 | 0.00 | 16.74 |
| Taperloc Complete | Trident II Clusterhole HA | 3 | 0.9 | 0 | 0.00 | 0.00 | 396.28 |
| Arcos Modular | Trident II Tritanium | 1 | 0.4 | 0 | 0.00 | 0.00 | 869.27 |
| CLS | Trident II Tritanium | 2 | 1.9 | 0 | 0.00 | 0.00 | 196.41 |
| Exeter V40 | Trident II Tritanium | 2 | 2.3 | 0 | 0.00 | 0.00 | 157.77 |
| Polarstem uncemented | Trident II Tritanium | 7 | 11.0 | 0 | 0.00 | 0.00 | 33.60 |
| Restoration Modular | Trident II Tritanium | 5 | 6.6 | 0 | 0.00 | 0.00 | 56.02 |
| S-Rom | Trident II Tritanium | 2 | 2.8 | 0 | 0.00 | 0.00 | 130.05 |
| TwinSys uncemented | Trident II Tritanium | 6 | 11.1 | 0 | 0.00 | 0.00 | 33.31 |
| Accolade II | Trident II Tritanium Solidback | 10 | 4.1 | 0 | 0.00 | 0.00 | 89.11 |
| Corail | Trident PSL HA Solid Back | 2 | 2.5 | 0 | 0.00 | 0.00 | 149.38 |
| Accolade | Trident tritanium | 7 | 86.9 | 0 | 0.00 | 0.00 | 4.25 |
| Accolade II | Trident tritanium | 2 | 4.8 | 0 | 0.00 | 0.00 | 77.04 |
| CBC | Trident tritanium | 1 | 7.5 | 0 | 0.00 | 0.00 | 49.16 |
| Corail | Trident tritanium | 1 | 8.4 | 0 | 0.00 | 0.00 | 44.03 |
| GMRS | Trident tritanium | 1 | 13.7 | 0 | 0.00 | 0.00 | 26.93 |
| Restoration | Trident tritanium | 3 | 6.5 | 0 | 0.00 | 0.00 | 57.02 |
| Restoration Modular | Trident tritanium | 2 | 9.8 | 0 | 0.00 | 0.00 | 37.53 |
| ABGII | Trilogy | 1 | 11.7 | 0 | 0.00 | 0.00 | 31.59 |
| Accolade | Trilogy | 5 | 60.4 | 0 | 0.00 | 0.00 | 6.10 |
| Accolade II | Trilogy | 44 | 141.0 | 0 | 0.00 | 0.00 | 2.62 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Avenir Muller uncemented | Trilogy | 2 | 14.5 | 0 | 0.00 | 0.00 | 25.42 |
| Emperion | Trilogy | 1 | 10.7 | 0 | 0.00 | 0.00 | 34.60 |
| Fiber Metal | Trilogy | 2 | 40.0 | 0 | 0.00 | 0.00 | 9.22 |
| Mallory proximal femoral | Trilogy | 1 | 13.9 | 0 | 0.00 | 0.00 | 26.45 |
| Multilock hip prosthesis | Trilogy | 1 | 23.8 | 0 | 0.00 | 0.00 | 15.50 |
| Restoration | Trilogy | 1 | 14.9 | 0 | 0.00 | 0.00 | 24.70 |
| Stellaris | Trilogy | 1 | 10.3 | 0 | 0.00 | 0.00 | 35.93 |
| Taperloc Complete | Trilogy | 1 | 6.1 | 0 | 0.00 | 0.00 | 60.02 |
| Trabecular Metal Stem | Trilogy | 20 | 245.0 | 0 | 0.00 | 0.00 | 1.51 |
| Tri-Lock BPS | Trilogy | 1 | 11.3 | 0 | 0.00 | 0.00 | 32.53 |
| ZMR Fem Stem Rev Taper | Trilogy | 1 | 4.2 | 0 | 0.00 | 0.00 | 88.82 |
| Metafix Std Hip Stem | Trinity | 1 | 0.7 | 0 | 0.00 | 0.00 | 556.76 |
| Taperfit | Trinity | 2 | 11.5 | 0 | 0.00 | 0.00 | 32.04 |
| Metafix | Trinity 5 Hole Shell | 1 | 0.1 | 0 | 0.00 | 0.00 | 2929.05 |
| Metafix | Trinity 7 hole shell | 2 | 0.4 | 0 | 0.00 | 0.00 | 948.85 |
| ARCOS modular | Tritanium | 2 | 10.2 | 0 | 0.00 | 0.00 | 36.05 |
| CBC | Tritanium | 1 | 6.0 | 0 | 0.00 | 0.00 | 61.16 |
| GMRS | Tritanium | 1 | 0.4 | 0 | 0.00 | 0.00 | 904.27 |
| M/L Taper | Tritanium | 3 | 39.6 | 0 | 0.00 | 0.00 | 9.32 |
| Polarstem uncemented | Tritanium | 4 | 13.2 | 0 | 0.00 | 0.00 | 28.04 |
| Restoration | Tritanium | 6 | 32.3 | 0 | 0.00 | 0.00 | 11.41 |
| Restoration Modular | Tritanium | 3 | 10.5 | 0 | 0.00 | 0.00 | 35.14 |
| Summit | Tritanium | 1 | 4.1 | 0 | 0.00 | 0.00 | 90.67 |
| Wagner cone stem | Tritanium | 1 | 7.2 | 0 | 0.00 | 0.00 | 51.11 |
| Accolade II | Tritanium Hemi Solid Back | 1 | 0.9 | 0 | 0.00 | 0.00 | 426.38 |
| Corail | Ultima | 1 | 9.2 | 0 | 0.00 | 0.00 | 40.04 |
| S-Rom | Vitalock | 1 | 23.7 | 0 | 0.00 | 0.00 | 15.59 |
| Stemsys | Zimmer Maxera Cup | 58 | 92.6 | 0 | 0.00 | 0.00 | 3.98 |
| Stemsys HAC | Zimmer Maxera Cup | 5 | 3.5 | 0 | 0.00 | 0.00 | 105.84 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Stemsys HAC Collared Stem | Zimmer Maxera Cup | 3 | 0.8 | 0 | 0.00 | 0.00 | 437.46 |
| Wagner cone stem | Zimmer Maxera Cup | 1 | 1.1 | 0 | 0.00 | 0.00 | 339.39 |

TABLE: SUP 2

## Revision Rate Versus Hip Prosthesis Combinations Sorted by Cementation

**Hybrid**

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Modulus Hip | Custom device | 1 | 0.0 | 1 | 5217.86 | 132.10 | 29072.04 |
| Standard straight stem | G7 Osseo Ti Multihole | 1 | 0.1 | 1 | 1043.57 | 26.42 | 5814.41 |
| C-Stem AMT | Marathon cemented | 1 | 0.2 | 1 | 652.23 | 16.51 | 3634.00 |
| ARCOS modular | Continuum TM | 1 | 0.2 | 1 | 640.79 | 16.22 | 3570.25 |
| Corail | ZCA all-poly cup | 1 | 0.4 | 1 | 278.82 | 7.06 | 1553.47 |
| PFM distal | Weber | 2 | 0.4 | 1 | 222.71 | 5.64 | 1240.88 |
| Echo Bi-Metric | Trabecular Metal Shell | 2 | 0.5 | 1 | 211.13 | 5.35 | 1176.33 |
| Perfecta stem | Interseal acet shell quadrant | 1 | 0.7 | 1 | 145.52 | 3.68 | 810.77 |
| MS 30 | Durom | 1 | 0.7 | 1 | 141.02 | 3.57 | 785.73 |
| Exeter V40 | G7 Osseo Ti Multihole | 4 | 1.3 | 1 | 79.75 | 2.02 | 444.33 |
| Echelon | Reflection cemented | 1 | 1.4 | 1 | 72.47 | 1.83 | 403.78 |
| Versys | Reflection cemented | 2 | 2.8 | 2 | 71.83 | 8.70 | 259.47 |
| ABGII | Weber | 1 | 1.4 | 1 | 71.62 | 1.81 | 399.03 |
| Customized V40 | Duraloc | 1 | 2.2 | 1 | 46.47 | 1.18 | 258.91 |
| C-stem AMT | Pinnacle | 4 | 2.5 | 1 | 40.23 | 1.02 | 224.12 |
| Exeter Cemented Stem | G7 acetabular shell | 3 | 2.7 | 1 | 37.08 | 0.94 | 206.60 |
| Accolade II | Reflection cemented | 1 | 2.8 | 1 | 35.67 | 0.90 | 198.73 |
| TwinSys cemented | Polymax | 3 | 3.1 | 1 | 32.44 | 0.82 | 180.73 |
| Taperloc Complete | ZCA all-poly cup | 4 | 4.0 | 1 | 25.26 | 0.64 | 140.74 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Summit | ZCA | 1 | 4.1 | 1 | 24.32 | 0.62 | 135.49 |
| C-Stem | RM cup | 1 | 4.4 | 1 | 22.59 | 0.57 | 125.85 |
| Zimmer Segmental | Avantage cemented | 2 | 5.3 | 1 | 19.00 | 0.48 | 105.88 |
| C-Stem AMT | G7 acetabular shell | 18 | 6.2 | 1 | 16.01 | 0.41 | 89.22 |
| Exeter V40 | Exeter X3 | 18 | 13.0 | 2 | 15.38 | 1.86 | 55.57 |
| Mallory proximal femoral | Exeter | 1 | 6.5 | 1 | 15.30 | 0.39 | 85.22 |
| CPCS | Trabecular Metal Shell | 6 | 14.9 | 2 | 13.46 | 1.63 | 48.61 |
| Exeter V40 | Trident X3 Poly Insert | 21 | 7.5 | 1 | 13.39 | 0.34 | 74.63 |
| Exeter V40 | Trident II Clusterhole HA | 102 | 23.5 | 3 | 12.78 | 2.64 | 37.35 |
| CCA SS | CLS Expansion | 1 | 9.0 | 1 | 11.07 | 0.28 | 61.71 |
| H-Max C | Delta-One-TT Cup | 8 | 9.8 | 1 | 10.23 | 0.26 | 57.00 |
| TwinSys cemented | Trabecular Metal Shell | 5 | 11.6 | 1 | 8.62 | 0.22 | 48.05 |
| Wagner cone stem | Exeter | 1 | 12.7 | 1 | 7.85 | 0.20 | 43.72 |
| C-Stem AMT | Trident | 4 | 13.0 | 1 | 7.68 | 0.19 | 42.80 |
| MS 30 | Custom device | 2 | 13.3 | 1 | 7.49 | 0.19 | 41.74 |
| Anthology Porous | BHR Acetabular Cup | 2 | 16.4 | 1 | 6.09 | 0.15 | 33.94 |
| Exeter V40 | SPH Acetabular cup | 3 | 34.5 | 2 | 5.80 | 0.70 | 20.95 |
| Corail | Muller PE cup | 2 | 17.5 | 1 | 5.71 | 0.14 | 31.83 |
| Spectron | Vitalock | 1 | 17.8 | 1 | 5.62 | 0.14 | 31.34 |
| CPT | G7 acetabular shell | 31 | 20.2 | 1 | 4.95 | 0.13 | 27.59 |
| Solution Bow | Elite Plus LPW | 2 | 22.1 | 1 | 4.52 | 0.11 | 25.17 |
| Exeter V40 | Trabecular Metal Rev shell | 22 | 70.7 | 3 | 4.24 | 0.87 | 12.39 |
| Elite plus | Trilogy | 2 | 25.1 | 1 | 3.98 | 0.10 | 22.16 |
| TwinSys cemented | Trident | 7 | 25.2 | 1 | 3.97 | 0.10 | 22.11 |
| Friendly | Trident | 11 | 51.6 | 2 | 3.88 | 0.47 | 14.00 |
| Exeter V40 | Delta Revision TT Cup | 6 | 25.9 | 1 | 3.85 | 0.10 | 21.47 |
| CCA SS | M2A | 5 | 52.3 | 2 | 3.82 | 0.46 | 13.81 |
| Lateral straight stem | M2A | 2 | 27.8 | 1 | 3.60 | 0.09 | 20.05 |
| Versys | Exeter | 2 | 29.1 | 1 | 3.44 | 0.09 | 19.16 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Accolade II | Exeter X3 | 7 | 29.3 | 1 | 3.41 | 0.09 | 18.98 |
| Friendly | SPH Acetabular cup | 2 | 31.3 | 1 | 3.20 | 0.08 | 17.81 |
| CCA SS | Duraloc | 46 | 599.3 | 19 | 3.17 | 1.91 | 4.95 |
| CPCS | BHR Acetabular Cup | 6 | 63.5 | 2 | 3.15 | 0.38 | 11.37 |
| Lateral straight stem | Trident | 34 | 399.2 | 12 | 3.01 | 1.55 | 5.25 |
| Charnley | Duraloc | 34 | 467.3 | 14 | 3.00 | 1.64 | 5.03 |
| Standard straight stem | SPH Acetabular cup | 3 | 33.6 | 1 | 2.98 | 0.08 | 16.58 |
| Spectron | BHR Acetabular Cup | 31 | 333.7 | 9 | 2.70 | 1.23 | 5.12 |
| Versys cemented | Trident | 6 | 39.4 | 1 | 2.54 | 0.06 | 14.13 |
| Exeter V40 | Mitch TRH | 35 | 410.4 | 10 | 2.44 | 1.17 | 4.48 |
| Lateral straight stem | SPH Acetabular cup | 3 | 41.1 | 1 | 2.43 | 0.06 | 13.55 |
| CLS | Muller PE cup | 24 | 291.6 | 7 | 2.40 | 0.97 | 4.95 |
| Lateral straight stem | Duraloc | 28 | 313.8 | 7 | 2.23 | 0.90 | 4.60 |
| C-Stem AMT | Tritanium | 16 | 45.0 | 1 | 2.22 | 0.06 | 12.38 |
| C-Stem AMT | Bi-Mentum Pressfit cup | 29 | 45.5 | 1 | 2.20 | 0.06 | 12.25 |
| CLS | Reflection cemented | 6 | 92.1 | 2 | 2.17 | 0.26 | 7.84 |
| Omnifit | Acetabular shell | 5 | 92.3 | 2 | 2.17 | 0.26 | 7.83 |
| Standard straight stem | Duraloc | 8 | 140.1 | 3 | 2.14 | 0.44 | 6.26 |
| Spectron | Trilogy | 36 | 375.6 | 8 | 2.13 | 0.92 | 4.20 |
| CPT | G7 acetabular | 115 | 425.9 | 9 | 2.11 | 0.89 | 3.86 |
| Charnley | Trilogy | 11 | 196.7 | 4 | 2.03 | 0.55 | 5.21 |
| Synergy Porous | Reflection cemented | 5 | 49.4 | 1 | 2.03 | 0.05 | 11.29 |
| TwinSys cemented | Morscher | 9 | 101.3 | 2 | 1.97 | 0.24 | 7.13 |
| Accolade | CCB | 5 | 50.7 | 1 | 1.97 | 0.05 | 10.99 |
| Exeter V40 | G7 acetabular shell | 183 | 156.7 | 3 | 1.91 | 0.39 | 5.59 |
| Lateral straight stem | Trilogy | 69 | 689.7 | 13 | 1.88 | 1.00 | 3.22 |
| Elite plus | Monoblock Acetabular Cup | 3 | 54.1 | 1 | 1.85 | 0.05 | 10.31 |
| CCA SS | ABGII | 12 | 176.6 | 3 | 1.70 | 0.35 | 4.96 |
| MS 30 | G7 acetabular | 176 | 361.8 | 6 | 1.66 | 0.61 | 3.61 |

# SUPPLEMENTARY DATA

## HIPS

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Spectron | Osteolock | 7 | 121.7 | 2 | 1.64 | 0.20 | 5.93 |
| Elite plus | Duraloc | 614 | 8157.4 | 129 | 1.58 | 1.31 | 1.87 |
| Spectron | Fitek | 3 | 63.2 | 1 | 1.58 | 0.04 | 8.81 |
| Charnley Modular | Pinnacle | 14 | 128.0 | 2 | 1.56 | 0.19 | 5.65 |
| SL monoblock | Duraloc | 22 | 320.8 | 5 | 1.56 | 0.51 | 3.64 |
| Summit | Elite Plus Ogee | 6 | 64.6 | 1 | 1.55 | 0.04 | 8.63 |
| Exeter | Vitalock | 41 | 462.3 | 7 | 1.51 | 0.61 | 3.12 |
| Versys | Charnley Cup Ogee | 4 | 68.5 | 1 | 1.46 | 0.04 | 8.13 |
| TwinSys cemented | Pinnacle | 158 | 686.7 | 10 | 1.46 | 0.65 | 2.58 |
| H-Max C | Delta-TT Cup | 134 | 481.0 | 7 | 1.46 | 0.59 | 3.00 |
| Basis | R3 porous | 20 | 141.3 | 2 | 1.42 | 0.17 | 5.11 |
| Lateral straight stem | CLS Expansion | 32 | 354.8 | 5 | 1.41 | 0.46 | 3.29 |
| Exeter | Duraloc | 619 | 9816.2 | 138 | 1.41 | 1.18 | 1.66 |
| Spectron | Duraloc | 1179 | 15645.3 | 215 | 1.37 | 1.20 | 1.57 |
| Standard straight stem | Trilogy | 47 | 529.1 | 7 | 1.32 | 0.53 | 2.73 |
| MS 30 | Weill ring | 4 | 75.7 | 1 | 1.32 | 0.03 | 7.36 |
| C-Stem | Morscher | 31 | 389.2 | 5 | 1.28 | 0.42 | 3.00 |
| Metabloc | RM cup | 12 | 155.7 | 2 | 1.28 | 0.16 | 4.64 |
| SL modular stem | Duraloc | 41 | 640.4 | 8 | 1.25 | 0.54 | 2.46 |
| TwinSys cemented | Delta-TT Cup | 15 | 81.3 | 1 | 1.23 | 0.03 | 6.86 |
| CLS | Contemporary | 13 | 163.8 | 2 | 1.22 | 0.15 | 4.41 |
| S-Rom | Reflection cemented | 4 | 82.4 | 1 | 1.21 | 0.03 | 6.76 |
| Omnifit | Screwless Acetabular Shell | 10 | 166.0 | 2 | 1.21 | 0.07 | 4.35 |
| Standard straight stem | Trident | 42 | 592.5 | 7 | 1.18 | 0.47 | 2.43 |
| Exeter | Reflection porous | 18 | 259.9 | 3 | 1.15 | 0.24 | 3.37 |
| Lateral straight stem | Morscher | 43 | 613.5 | 7 | 1.14 | 0.46 | 2.35 |
| Exeter V40 | Trabecular Metal Shell | 269 | 1676.7 | 19 | 1.13 | 0.68 | 1.77 |
| CPT | Trabecular Metal Shell | 44 | 265.3 | 3 | 1.13 | 0.23 | 3.30 |
| Spectron | Morscher | 211 | 3132.5 | 35 | 1.12 | 0.78 | 1.55 |

# SUPPLEMENTARY DATA

## HIPS

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Spectron | RM cup | 35 | 359.8 | 4 | 1.11 | 0.30 | 2.85 |
| Accolade | Contemporary | 41 | 360.9 | 4 | 1.11 | 0.30 | 2.84 |
| CPCS | Reflection porous | 41 | 566.5 | 6 | 1.06 | 0.39 | 2.31 |
| Standard straight stem | CLS Expansion | 32 | 381.5 | 4 | 1.05 | 0.29 | 2.68 |
| MS 30 | Trident | 10 | 97.0 | 1 | 1.03 | 0.00 | 5.74 |
| Exeter V40 | Duraloc | 987 | 12725.7 | 131 | 1.03 | 0.86 | 1.22 |
| TwinSys uncemented | CCB | 37 | 297.5 | 3 | 1.01 | 0.21 | 2.95 |
| C-Stem | RM Pressfit cup | 17 | 207.1 | 2 | 0.97 | 0.12 | 3.49 |
| Friendly | Delta-TT Cup | 69 | 622.9 | 6 | 0.96 | 0.35 | 2.10 |
| TwinSys cemented | Selexys TPS | 65 | 634.2 | 6 | 0.95 | 0.35 | 2.06 |
| CPT | CLS Expansion | 43 | 539.8 | 5 | 0.93 | 0.30 | 2.16 |
| CPT | RM Pressfit cup | 22 | 108.4 | 1 | 0.92 | 0.00 | 5.14 |
| CPT | Tritanium | 85 | 899.9 | 8 | 0.89 | 0.38 | 1.75 |
| Spectron | Reflection porous | 2755 | 32783.4 | 291 | 0.89 | 0.79 | 1.00 |
| MS 30 | Duraloc | 88 | 1466.2 | 13 | 0.89 | 0.47 | 1.52 |
| Elite plus | RM cup | 11 | 114.6 | 1 | 0.87 | 0.00 | 4.86 |
| H-Max C | Delta-PF Cup | 25 | 116.3 | 1 | 0.86 | 0.02 | 4.79 |
| SL modular stem | RM cup | 322 | 5142.0 | 44 | 0.86 | 0.61 | 1.14 |
| CPT | Fitmore | 195 | 1637.6 | 14 | 0.85 | 0.44 | 1.40 |
| Exeter | RM cup | 12 | 117.5 | 1 | 0.85 | 0.02 | 4.74 |
| Quadra-C | Acetabular Shell | 304 | 592.4 | 5 | 0.84 | 0.27 | 1.97 |
| C-Stem | Duraloc | 53 | 717.6 | 6 | 0.84 | 0.31 | 1.82 |
| Lateral straight stem | RM cup | 534 | 6329.7 | 51 | 0.81 | 0.60 | 1.06 |
| Accolade | Muller PE cup | 114 | 1370.5 | 11 | 0.80 | 0.40 | 1.44 |
| CPT | Trilogy | 850 | 8392.8 | 67 | 0.80 | 0.62 | 1.01 |
| C-Stem AMT | RM Pressfit cup | 137 | 882.0 | 7 | 0.79 | 0.32 | 1.64 |
| MS 30 | Fitek | 6 | 126.9 | 1 | 0.79 | 0.02 | 4.39 |
| Standard straight stem | RM cup | 138 | 1799.5 | 14 | 0.78 | 0.43 | 1.31 |
| MS 30 | Trabecular Metal Shell | 42 | 261.9 | 2 | 0.76 | 0.09 | 2.76 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Corail | Elite Plus Ogee | 12 | 132.9 | 1 | 0.75 | 0.02 | 4.19 |
| C-Stem | Pinnacle | 85 | 540.3 | 4 | 0.74 | 0.20 | 1.90 |
| CPT | Duraloc | 212 | 2722.6 | 20 | 0.73 | 0.43 | 1.11 |
| C-Stem AMT | Pinnacle | 3521 | 17872.1 | 124 | 0.69 | 0.58 | 0.83 |
| Corail | Marathon cemented | 31 | 288.9 | 2 | 0.69 | 0.08 | 2.50 |
| CPT | Monoblock Acetabular Cup | 84 | 1156.2 | 8 | 0.69 | 0.27 | 1.31 |
| Exeter | Osteolock | 836 | 12344.1 | 85 | 0.69 | 0.55 | 0.85 |
| CPT | Continuum TM | 1861 | 10913.9 | 73 | 0.67 | 0.52 | 0.84 |
| Exeter | ABGII | 28 | 456.9 | 3 | 0.66 | 0.14 | 1.92 |
| C-Stem AMT | Duraloc | 43 | 460.2 | 3 | 0.65 | 0.13 | 1.91 |
| Exeter V40 | Continuum TM | 3147 | 20061.4 | 128 | 0.64 | 0.53 | 0.76 |
| CPT | Trident | 145 | 2052.0 | 13 | 0.63 | 0.34 | 1.08 |
| MS 30 | Morscher | 804 | 11455.6 | 72 | 0.63 | 0.49 | 0.79 |
| CCA SS | Morscher | 17 | 166.5 | 1 | 0.60 | 0.02 | 3.35 |
| Exeter | CLS Expansion | 129 | 1715.9 | 10 | 0.58 | 0.28 | 1.07 |
| Spectron | Trident | 78 | 1042.1 | 6 | 0.58 | 0.18 | 1.19 |
| Lateral straight stem | Continuum TM | 78 | 705.0 | 4 | 0.57 | 0.12 | 1.35 |
| Exeter | Monoblock Acetabular Cup | 13 | 180.1 | 1 | 0.56 | 0.01 | 3.09 |
| Exeter V40 | Trident tritanium | 40 | 361.0 | 2 | 0.55 | 0.03 | 2.00 |
| Exeter V40 | Trident II Tritanium | 1916 | 2551.2 | 14 | 0.55 | 0.30 | 0.92 |
| CCA SS | RM Pressfit cup | 135 | 1458.3 | 8 | 0.55 | 0.24 | 1.08 |
| MS 30 | Allofit | 48 | 556.4 | 3 | 0.54 | 0.11 | 1.58 |
| Exeter V40 | R3 porous | 895 | 4677.1 | 25 | 0.53 | 0.35 | 0.79 |
| MS 30 | RM Pressfit cup | 90 | 936.4 | 5 | 0.53 | 0.14 | 1.17 |
| Standard straight stem | Fitmore | 35 | 381.3 | 2 | 0.52 | 0.06 | 1.89 |
| Spectron | Biomex acet shell porous | 68 | 1174.2 | 6 | 0.51 | 0.19 | 1.11 |
| CPT | Delta-TT Cup | 143 | 598.8 | 3 | 0.50 | 0.10 | 1.46 |
| Exeter V40 | Delta-TT Cup | 356 | 1812.7 | 9 | 0.50 | 0.23 | 0.94 |
| Exeter | Morscher | 579 | 9800.2 | 48 | 0.49 | 0.36 | 0.64 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Exeter V40 | Tritanium | 3931 | 23909.2 | 116 | 0.49 | 0.40 | 0.58 |
| Exeter V40 | G7 acetabular | 365 | 1244.8 | 6 | 0.48 | 0.15 | 0.99 |
| Exeter V40 | Morscher | 630 | 8734.9 | 42 | 0.48 | 0.35 | 0.65 |
| Spectron | Fitmore | 78 | 1062.4 | 5 | 0.47 | 0.13 | 1.03 |
| Exeter | Fitmore | 25 | 428.7 | 2 | 0.47 | 0.06 | 1.69 |
| Standard straight stem | Continuum TM | 49 | 440.9 | 2 | 0.45 | 0.05 | 1.64 |
| CPCS | R3 porous | 380 | 2004.4 | 9 | 0.45 | 0.21 | 0.85 |
| TwinSys cemented | Continuum TM | 154 | 893.0 | 4 | 0.45 | 0.12 | 1.15 |
| Exeter V40 | Osteolock | 270 | 3655.1 | 16 | 0.44 | 0.24 | 0.71 |
| TwinSys cemented | RM cup | 148 | 1837.5 | 8 | 0.44 | 0.19 | 0.86 |
| Spectron | Mallory-Head | 152 | 2127.4 | 9 | 0.42 | 0.19 | 0.80 |
| Exeter V40 | Pinnacle | 3682 | 22020.3 | 92 | 0.42 | 0.33 | 0.51 |
| Exeter | Trilogy | 213 | 3351.9 | 14 | 0.42 | 0.23 | 0.70 |
| Exeter V40 | Trident | 14487 | 104939.0 | 431 | 0.41 | 0.37 | 0.45 |
| TwinSys cemented | RM Pressfit cup | 2492 | 15418.4 | 62 | 0.40 | 0.31 | 0.52 |
| Spectron | RM Pressfit cup | 25 | 260.8 | 1 | 0.38 | 0.01 | 2.14 |
| Spectron | R3 porous | 455 | 3753.5 | 14 | 0.37 | 0.19 | 0.61 |
| Exeter V40 | RM Pressfit cup | 3266 | 20567.4 | 75 | 0.36 | 0.29 | 0.46 |
| Exeter V40 | Trilogy | 3384 | 28872.8 | 104 | 0.36 | 0.29 | 0.44 |
| Omnifit | Trident | 23 | 289.2 | 1 | 0.35 | 0.01 | 1.93 |
| Exeter V40 | Delta-PF Cup | 26 | 298.1 | 1 | 0.34 | 0.01 | 1.87 |
| Exeter V40 | Monoblock Acetabular Cup | 123 | 1897.3 | 6 | 0.32 | 0.12 | 0.69 |
| MS 30 | Continuum TM | 505 | 3209.6 | 10 | 0.31 | 0.14 | 0.55 |
| Corail | Ultima | 134 | 1301.1 | 4 | 0.31 | 0.08 | 0.79 |
| CPT | Pinnacle | 66 | 663.4 | 2 | 0.30 | 0.04 | 1.09 |
| MS 30 | Fitmore | 2822 | 22093.3 | 63 | 0.29 | 0.22 | 0.36 |
| Exeter V40 | Reflection porous | 476 | 5294.4 | 15 | 0.28 | 0.15 | 0.46 |
| Versys cemented | Trilogy | 238 | 2968.1 | 8 | 0.27 | 0.12 | 0.53 |
| Exeter V40 | CLS Expansion | 88 | 1131.2 | 3 | 0.27 | 0.05 | 0.78 |

# SUPPLEMENTARY DATA

## HIPS

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Friendly | Delta-PF Cup | 178 | 2291.6 | 6 | 0.26 | 0.10 | 0.57 |
| Lateral straight stem | RM Pressfit cup | 173 | 1656.7 | 4 | 0.24 | 0.07 | 0.62 |
| SL monoblock | RM cup | 43 | 429.7 | 1 | 0.23 | 0.01 | 1.30 |
| Standard straight stem | Morscher | 36 | 498.0 | 1 | 0.20 | 0.01 | 1.12 |
| MS 30 | Trilogy | 420 | 3126.6 | 6 | 0.19 | 0.06 | 0.40 |
| MS 30 | Pinnacle | 228 | 546.0 | 1 | 0.18 | 0.00 | 1.02 |
| Basis | Reflection porous | 108 | 1097.8 | 2 | 0.18 | 0.02 | 0.66 |
| Exeter V40 | Fitmore | 1190 | 8722.6 | 13 | 0.15 | 0.08 | 0.25 |
| Exeter | Trident | 84 | 1478.7 | 2 | 0.14 | 0.02 | 0.49 |
| Standard straight stem | RM Pressfit cup | 137 | 1347.4 | 1 | 0.07 | 0.00 | 0.41 |
| C-Stem | ABGII | 3 | 39.1 | 0 | 0.00 | 0.00 | 9.44 |
| Versys | Acetabular Reconstruction Ring | 1 | 2.4 | 0 | 0.00 | 0.00 | 151.39 |
| Elite plus | Acetabular Revision | 1 | 18.8 | 0 | 0.00 | 0.00 | 19.61 |
| AML | Acetabular Shell | 8 | 3.5 | 0 | 0.00 | 0.00 | 104.29 |
| Lat Femoral Stem | Acetabular Shell | 20 | 8.7 | 0 | 0.00 | 0.00 | 42.24 |
| Std Femoral Stem | Acetabular Shell | 75 | 29.5 | 0 | 0.00 | 0.00 | 12.48 |
| Exeter V40 | ADM | 19 | 192.8 | 0 | 0.00 | 0.00 | 1.91 |
| Stemsys cemented | Agilis Ti-por | 1 | 8.2 | 0 | 0.00 | 0.00 | 44.82 |
| CPT | Allofit | 1 | 10.1 | 0 | 0.00 | 0.00 | 36.63 |
| Standard straight stem | Allofit | 1 | 16.8 | 0 | 0.00 | 0.00 | 22.01 |
| MS 30 | Artek | 2 | 9.1 | 0 | 0.00 | 0.00 | 40.69 |
| Exeter V40 | Avantage | 1 | 1.1 | 0 | 0.00 | 0.00 | 325.45 |
| Accolade II | Avantage Cem Acet Cup | 1 | 0.3 | 0 | 0.00 | 0.00 | 1247.56 |
| Corail | Avantage Cem Acet Cup | 1 | 0.4 | 0 | 0.00 | 0.00 | 983.48 |
| Exeter V40 | Avantage Cem Acet Cup | 1 | 0.2 | 0 | 0.00 | 0.00 | 1871.34 |
| Exeter V40 | Avantage cemented | 1 | 1.9 | 0 | 0.00 | 0.00 | 193.03 |
| Taperloc Complete | Avantage cemented | 1 | 2.8 | 0 | 0.00 | 0.00 | 131.45 |
| ZMR Fem Stem Rev Nitrided | Avantage cemented | 1 | 4.6 | 0 | 0.00 | 0.00 | 79.96 |
| CPT | BHR Acetabular Cup | 1 | 4.0 | 0 | 0.00 | 0.00 | 91.28 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| C-Stem AMT | Bi-Mentum Cemented Cup | 1 | 1.1 | 0 | 0.00 | 0.00 | 340.24 |
| Mallory proximal femoral | Bio-clad poly | 1 | 2.4 | 0 | 0.00 | 0.00 | 154.34 |
| Mallory-Head | Bio-clad poly | 2 | 11.6 | 0 | 0.00 | 0.00 | 31.85 |
| Finn Rot. Hinge KNEE | Biomex acet shell porous | 1 | 0.2 | 0 | 0.00 | 0.00 | 2323.04 |
| Stemsys cemented | BIS Dual Mobility | 1 | 2.0 | 0 | 0.00 | 0.00 | 182.32 |
| CLS | CCB | 1 | 15.1 | 0 | 0.00 | 0.00 | 24.44 |
| Corail | CCB | 14 | 91.0 | 0 | 0.00 | 0.00 | 4.06 |
| Optimys | CCB | 3 | 12.9 | 0 | 0.00 | 0.00 | 28.64 |
| Reef | CCB | 1 | 0.1 | 0 | 0.00 | 0.00 | 5389.45 |
| TwinSys stem cemented | CCB | 1 | 1.4 | 0 | 0.00 | 0.00 | 268.40 |
| AML | Charnley | 1 | 13.4 | 0 | 0.00 | 0.00 | 27.44 |
| Corail | Charnley | 1 | 14.5 | 0 | 0.00 | 0.00 | 25.45 |
| Summit | Charnley | 1 | 15.1 | 0 | 0.00 | 0.00 | 24.48 |
| Corail | Charnley Cup Ogee | 2 | 27.9 | 0 | 0.00 | 0.00 | 13.23 |
| MS 30 | CLS Expansion | 14 | 179.5 | 0 | 0.00 | 0.00 | 2.05 |
| Spectron | CLS Expansion | 4 | 46.9 | 0 | 0.00 | 0.00 | 7.87 |
| TwinSys cemented | CLS Expansion | 1 | 12.5 | 0 | 0.00 | 0.00 | 29.50 |
| Accolade HFx | Contemporary | 1 | 3.6 | 0 | 0.00 | 0.00 | 102.85 |
| Accolade II | Contemporary | 14 | 86.8 | 0 | 0.00 | 0.00 | 4.25 |
| Corail | Contemporary | 16 | 108.5 | 0 | 0.00 | 0.00 | 3.40 |
| Exeter V40 | Contemporary | 2 | 1.6 | 0 | 0.00 | 0.00 | 234.73 |
| Mallory proximal femoral | Contemporary | 1 | 0.2 | 0 | 0.00 | 0.00 | 1772.85 |
| PFM distal | Contemporary | 1 | 9.8 | 0 | 0.00 | 0.00 | 37.47 |
| Polarstem uncemented | Contemporary | 3 | 22.1 | 0 | 0.00 | 0.00 | 16.73 |
| Porous coated prox fem body | Contemporary | 1 | 3.8 | 0 | 0.00 | 0.00 | 97.14 |
| Restoration | Contemporary | 3 | 17.4 | 0 | 0.00 | 0.00 | 21.23 |
| Revision uncemented stem | Contemporary | 1 | 16.3 | 0 | 0.00 | 0.00 | 22.61 |
| TPP Thrust Plate | Contemporary | 1 | 14.6 | 0 | 0.00 | 0.00 | 25.20 |
| Trabecular Metal Stem | Contemporary | 3 | 23.3 | 0 | 0.00 | 0.00 | 15.86 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Versys | Contemporary | 1 | 12.7 | 0 | 0.00 | 0.00 | 29.13 |
| ZMR Fem Stem Rev Nitrided | Contemporary | 2 | 5.9 | 0 | 0.00 | 0.00 | 62.67 |
| ZMR Fem Stem Rev Taper | Contemporary | 1 | 0.3 | 0 | 0.00 | 0.00 | 1403.50 |
| Accolade II | Continuum TM | 2 | 5.1 | 0 | 0.00 | 0.00 | 72.71 |
| Basis | Continuum TM | 1 | 2.5 | 0 | 0.00 | 0.00 | 145.03 |
| S-Rom | Continuum TM | 1 | 0.1 | 0 | 0.00 | 0.00 | 2641.89 |
| Spectron | Continuum TM | 3 | 13.3 | 0 | 0.00 | 0.00 | 27.82 |
| TwinSys stem cemented | Continuum TM | 3 | 3.6 | 0 | 0.00 | 0.00 | 102.00 |
| Versys cemented | Continuum TM | 2 | 23.5 | 0 | 0.00 | 0.00 | 15.72 |
| Versys Revision Femoral Stem | Continuum TM | 15 | 34.9 | 0 | 0.00 | 0.00 | 10.58 |
| Corail | Custom device | 1 | 6.5 | 0 | 0.00 | 0.00 | 56.38 |
| Trabecular Metal Stem | Custom device | 1 | 3.7 | 0 | 0.00 | 0.00 | 100.03 |
| TwinSys cemented | Custom device | 1 | 4.5 | 0 | 0.00 | 0.00 | 82.31 |
| TwinSys cemented | Delta Revision TT Cup | 3 | 12.0 | 0 | 0.00 | 0.00 | 30.83 |
| C-Stem AMT | DeltaMotion Cup | 1 | 11.7 | 0 | 0.00 | 0.00 | 31.47 |
| Spectron | DeltaMotion Cup | 1 | 11.6 | 0 | 0.00 | 0.00 | 31.74 |
| TwinSys cemented | DeltaMotion Cup | 2 | 16.2 | 0 | 0.00 | 0.00 | 22.80 |
| CPT | Delta-One-TT Cup | 1 | 1.8 | 0 | 0.00 | 0.00 | 199.61 |
| Exeter V40 | Delta-One-TT Cup | 16 | 76.5 | 0 | 0.00 | 0.00 | 4.82 |
| Friendly | Delta-One-TT Cup | 3 | 7.7 | 0 | 0.00 | 0.00 | 47.88 |
| TwinSys cemented | Delta-One-TT Cup | 2 | 5.7 | 0 | 0.00 | 0.00 | 64.53 |
| Basis | Delta-PF Cup | 1 | 5.9 | 0 | 0.00 | 0.00 | 62.21 |
| Cem lateralized collarless | Delta-PF Cup | 1 | 0.1 | 0 | 0.00 | 0.00 | 3368.41 |
| Cemtiv | Delta-PF Cup | 1 | 8.7 | 0 | 0.00 | 0.00 | 42.46 |
| MS 30 | Delta-PF Cup | 1 | 11.1 | 0 | 0.00 | 0.00 | 33.09 |
| Spectron | Delta-PF Cup | 1 | 15.1 | 0 | 0.00 | 0.00 | 24.47 |
| Stemsys | Delta-PF Cup | 1 | 2.1 | 0 | 0.00 | 0.00 | 175.44 |
| Stemsys Cem Lateralized | Delta-PF Cup | 7 | 4.3 | 0 | 0.00 | 0.00 | 84.90 |
| Stemsys cemented | Delta-PF Cup | 91 | 443.4 | 0 | 0.00 | 0.00 | 0.83 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Stemsys Cemented | Delta-PF Cup | 11 | 7.5 | 0 | 0.00 | 0.00 | 49.35 |
| TwinSys cemented | Delta-PF Cup | 21 | 154.6 | 0 | 0.00 | 0.00 | 2.39 |
| Basis | Delta-TT Cup | 1 | 11.5 | 0 | 0.00 | 0.00 | 32.20 |
| Lateral straight stem | Delta-TT Cup | 8 | 51.3 | 0 | 0.00 | 0.00 | 7.19 |
| Spectron | Delta-TT Cup | 3 | 24.4 | 0 | 0.00 | 0.00 | 15.14 |
| Standard straight stem | Delta-TT Cup | 8 | 78.7 | 0 | 0.00 | 0.00 | 4.69 |
| Stemsys cemented | Delta-TT Cup | 3 | 13.0 | 0 | 0.00 | 0.00 | 28.34 |
| Exeter V40 | DS Evolution | 2 | 7.3 | 0 | 0.00 | 0.00 | 50.48 |
| TwinSys cemented | DS Evolution | 1 | 0.4 | 0 | 0.00 | 0.00 | 847.40 |
| Basis | Duraloc | 3 | 40.5 | 0 | 0.00 | 0.00 | 9.11 |
| Charnley Modular | Duraloc | 7 | 94.6 | 0 | 0.00 | 0.00 | 3.90 |
| Charnley Rev | Duraloc | 2 | 20.9 | 0 | 0.00 | 0.00 | 17.64 |
| TwinSys cemented | Duraloc | 1 | 2.0 | 0 | 0.00 | 0.00 | 187.92 |
| Versys cemented | Duraloc | 1 | 20.1 | 0 | 0.00 | 0.00 | 18.34 |
| Corail | Durasul | 1 | 5.4 | 0 | 0.00 | 0.00 | 68.32 |
| CCA SS | Durom | 1 | 12.0 | 0 | 0.00 | 0.00 | 30.76 |
| Actinia | EcoFit | 1 | 7.4 | 0 | 0.00 | 0.00 | 49.66 |
| Corail | Elite Cup Ogee | 2 | 7.6 | 0 | 0.00 | 0.00 | 48.48 |
| CLS | Elite Plus LPW | 1 | 14.9 | 0 | 0.00 | 0.00 | 24.81 |
| Corail | Elite Plus LPW | 4 | 48.0 | 0 | 0.00 | 0.00 | 7.68 |
| Reef | Elite Plus LPW | 1 | 5.7 | 0 | 0.00 | 0.00 | 64.47 |
| Summit | Elite Plus LPW | 1 | 19.3 | 0 | 0.00 | 0.00 | 19.08 |
| CLS | Elite Plus Ogee | 2 | 40.2 | 0 | 0.00 | 0.00 | 9.18 |
| Exeter V40 | EP-Fit Plus | 8 | 114.7 | 0 | 0.00 | 0.00 | 3.22 |
| CPT | Exceed ABT Ringloc-X | 9 | 73.1 | 0 | 0.00 | 0.00 | 5.05 |
| Exeter V40 | Exceed ABT Ringloc-X | 24 | 194.3 | 0 | 0.00 | 0.00 | 1.90 |
| Spectron | Exceed ABT Ringloc-X | 12 | 121.3 | 0 | 0.00 | 0.00 | 3.04 |
| AML | Exeter | 1 | 3.1 | 0 | 0.00 | 0.00 | 117.26 |
| AML MMA | Exeter | 1 | 7.9 | 0 | 0.00 | 0.00 | 46.75 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| CLS | Exeter | 3 | 35.0 | 0 | 0.00 | 0.00 | 10.55 |
| Corail | Exeter | 1 | 5.9 | 0 | 0.00 | 0.00 | 62.81 |
| PFM distal | Exeter | 1 | 1.4 | 0 | 0.00 | 0.00 | 270.55 |
| TwinSys uncemented | Exeter | 1 | 8.2 | 0 | 0.00 | 0.00 | 44.94 |
| Exeter V40 | Exeter Rimfit Cup | 1 | 1.0 | 0 | 0.00 | 0.00 | 353.64 |
| Accolade | Exeter X3 | 1 | 9.2 | 0 | 0.00 | 0.00 | 40.23 |
| ARCOS modular | Exeter X3 | 1 | 0.3 | 0 | 0.00 | 0.00 | 1347.36 |
| Exeter Cemented Stem | Exeter X3 | 1 | 0.2 | 0 | 0.00 | 0.00 | 1684.20 |
| Quadra-C | Exeter X3 | 1 | 1.2 | 0 | 0.00 | 0.00 | 309.03 |
| Quadra-H | Exeter X3 | 1 | 3.6 | 0 | 0.00 | 0.00 | 103.25 |
| Revision uncemented stem | Exeter X3 | 3 | 7.7 | 0 | 0.00 | 0.00 | 48.15 |
| CCA SS | Expansys shell | 3 | 39.5 | 0 | 0.00 | 0.00 | 9.35 |
| TwinSys cemented | Expansys shell | 2 | 6.6 | 0 | 0.00 | 0.00 | 55.75 |
| Exeter | Fitek | 2 | 45.5 | 0 | 0.00 | 0.00 | 8.11 |
| Lateral straight stem | Fitek | 2 | 16.9 | 0 | 0.00 | 0.00 | 21.83 |
| SL modular stem | Fitek | 1 | 22.9 | 0 | 0.00 | 0.00 | 16.09 |
| SL monoblock | Fitek | 1 | 1.7 | 0 | 0.00 | 0.00 | 213.53 |
| Standard straight stem | Fitek | 1 | 21.9 | 0 | 0.00 | 0.00 | 16.88 |
| C-Stem AMT | Fitmore | 3 | 15.3 | 0 | 0.00 | 0.00 | 24.09 |
| CCA SS | Fitmore | 2 | 32.7 | 0 | 0.00 | 0.00 | 11.28 |
| Lateral straight stem | Fitmore | 37 | 297.3 | 0 | 0.00 | 0.00 | 1.24 |
| Femoral stem | Fixa Duplex | 1 | 3.3 | 0 | 0.00 | 0.00 | 112.28 |
| Hydra-Fix Cementless Stem | Fixa Duplex Cem Cup | 2 | 1.7 | 0 | 0.00 | 0.00 | 213.87 |
| Hydra-Fix Cementless Stem | Fixa Duplex Cross-Linked | 1 | 0.2 | 0 | 0.00 | 0.00 | 1531.09 |
| Cemtiv | Fixa Ti Por | 1 | 9.9 | 0 | 0.00 | 0.00 | 37.41 |
| Exeter V40 | Fixa Ti Por | 15 | 25.0 | 0 | 0.00 | 0.00 | 14.78 |
| Hydra-Fix Cemented Cone | Fixa Ti Por | 2 | 1.4 | 0 | 0.00 | 0.00 | 271.65 |
| Stemsys cemented | Fixa Ti Por | 6 | 27.1 | 0 | 0.00 | 0.00 | 13.63 |
| ARCOS modular | G7 acetabular | 1 | 2.3 | 0 | 0.00 | 0.00 | 157.59 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| C-Stem AMT | G7 acetabular | 2 | 2.5 | 0 | 0.00 | 0.00 | 150.04 |
| CPCS | G7 acetabular | 2 | 7.5 | 0 | 0.00 | 0.00 | 49.19 |
| TwinSys cemented | G7 acetabular | 1 | 1.6 | 0 | 0.00 | 0.00 | 231.51 |
| Versys Revision Femoral Stem | G7 acetabular | 11 | 18.4 | 0 | 0.00 | 0.00 | 20.02 |
| Corail | G7 acetabular shell | 1 | 0.3 | 0 | 0.00 | 0.00 | 1247.56 |
| MS 30 | G7 acetabular shell | 205 | 150.3 | 0 | 0.00 | 0.00 | 2.45 |
| Standard straight stem | G7 acetabular shell | 2 | 1.5 | 0 | 0.00 | 0.00 | 239.74 |
| Taperloc Complete | G7 acetabular shell | 1 | 1.5 | 0 | 0.00 | 0.00 | 252.79 |
| Versys Revision Femoral Stem | G7 Osseo Ti 3 Hole | 1 | 0.7 | 0 | 0.00 | 0.00 | 545.49 |
| CPT | G7 Osseo Ti Multihole | 2 | 1.4 | 0 | 0.00 | 0.00 | 260.61 |
| Exeter Cemented Stem | G7 Osseo Ti Multihole | 1 | 0.4 | 0 | 0.00 | 0.00 | 929.22 |
| MS 30 | G7 Osseo Ti Multihole | 1 | 0.9 | 0 | 0.00 | 0.00 | 431.85 |
| Versys Revision Femoral Stem | G7 Osseo Ti Multihole | 1 | 1.4 | 0 | 0.00 | 0.00 | 268.40 |
| CPT | G7 OsseoTi Cementless | 1 | 0.4 | 0 | 0.00 | 0.00 | 904.27 |
| MS 30 | G7 OsseoTi Cementless | 1 | 0.3 | 0 | 0.00 | 0.00 | 1360.97 |
| Elite plus | Hedrocel Acetabular Cup | 1 | 19.6 | 0 | 0.00 | 0.00 | 18.80 |
| Exeter | Hedrocel Acetabular Cup | 15 | 257.7 | 0 | 0.00 | 0.00 | 1.43 |
| CPT | HGP 2 acetabular comp. | 1 | 3.8 | 0 | 0.00 | 0.00 | 97.85 |
| Quadra-C | Impact Multi-Hole | 1 | 0.7 | 0 | 0.00 | 0.00 | 530.46 |
| CLS | Kasselt Cup | 1 | 18.3 | 0 | 0.00 | 0.00 | 20.13 |
| TwinSys cemented | Logical TM | 1 | 4.3 | 0 | 0.00 | 0.00 | 85.06 |
| MS 30 | LOR cup | 2 | 13.4 | 0 | 0.00 | 0.00 | 27.56 |
| Standard straight stem | M2A | 1 | 5.8 | 0 | 0.00 | 0.00 | 63.61 |
| Finn Rot. Hinge KNEE | Mallory-Head | 1 | 0.3 | 0 | 0.00 | 0.00 | 1389.03 |
| Avenir Muller uncemented | Marathon cemented | 1 | 2.0 | 0 | 0.00 | 0.00 | 187.39 |
| Mod revision | Marathon cemented | 1 | 0.1 | 0 | 0.00 | 0.00 | 5389.45 |
| Summit | Marathon cemented | 5 | 62.0 | 0 | 0.00 | 0.00 | 5.95 |
| TwinSys uncemented | Marathon cemented | 3 | 33.4 | 0 | 0.00 | 0.00 | 11.04 |
| CPT | Max-Ti acetabular reconstructi | 1 | 0.6 | 0 | 0.00 | 0.00 | 601.50 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| MS 30 | Metasul Low Profile Cup | 1 | 19.2 | 0 | 0.00 | 0.00 | 19.26 |
| C-Stem | Monoblock Acetabular Cup | 2 | 39.0 | 0 | 0.00 | 0.00 | 9.46 |
| MS 30 | Monoblock Acetabular Cup | 1 | 12.6 | 0 | 0.00 | 0.00 | 29.20 |
| Spectron | Monoblock Acetabular Cup | 1 | 1.3 | 0 | 0.00 | 0.00 | 273.30 |
| Versys cemented | Monoblock Acetabular Cup | 2 | 30.9 | 0 | 0.00 | 0.00 | 11.93 |
| Pantheon cemented | Moonstone | 1 | 2.2 | 0 | 0.00 | 0.00 | 166.75 |
| CPT | Morscher | 3 | 36.3 | 0 | 0.00 | 0.00 | 10.16 |
| SL modular stem | Morscher | 1 | 24.4 | 0 | 0.00 | 0.00 | 15.14 |
| SL monoblock | Morscher | 1 | 23.4 | 0 | 0.00 | 0.00 | 15.80 |
| Corail | Mueller Cup | 1 | 6.6 | 0 | 0.00 | 0.00 | 55.91 |
| Thira | Mueller Cup | 1 | 1.5 | 0 | 0.00 | 0.00 | 246.32 |
| ABGII | Muller PE cup | 1 | 14.5 | 0 | 0.00 | 0.00 | 25.52 |
| Anatomical stem | Muller PE cup | 1 | 17.5 | 0 | 0.00 | 0.00 | 21.10 |
| PFM distal | Muller PE cup | 2 | 10.1 | 0 | 0.00 | 0.00 | 36.59 |
| Reef | Muller PE cup | 1 | 1.2 | 0 | 0.00 | 0.00 | 309.74 |
| S-Rom | Muller PE cup | 1 | 13.8 | 0 | 0.00 | 0.00 | 26.72 |
| Solution Bow | Muller PE cup | 2 | 3.8 | 0 | 0.00 | 0.00 | 97.71 |
| Standard straight stem | Muller PE cup | 1 | 1.5 | 0 | 0.00 | 0.00 | 245.87 |
| TwinSys uncemented | Muller PE cup | 2 | 17.9 | 0 | 0.00 | 0.00 | 20.62 |
| Versys | Muller PE cup | 1 | 19.9 | 0 | 0.00 | 0.00 | 18.56 |
| Wagner cone stem | Muller PE cup | 1 | 11.6 | 0 | 0.00 | 0.00 | 31.86 |
| Versys cemented | Multipolar Bipolar | 2 | 8.7 | 0 | 0.00 | 0.00 | 42.56 |
| Versys Revision Femoral Stem | Multipolar Bipolar | 2 | 2.7 | 0 | 0.00 | 0.00 | 136.65 |
| Zimmer Segmental | Multipolar Bipolar | 1 | 0.4 | 0 | 0.00 | 0.00 | 826.60 |
| MS 30 | Multipolar Bipolar cup | 2 | 0.4 | 0 | 0.00 | 0.00 | 969.33 |
| Pantheon cemented | Multipolar Bipolar cup | 1 | 0.1 | 0 | 0.00 | 0.00 | 5389.45 |
| Pantheon Salvage Cem Stem | Multipolar Bipolar cup | 1 | 0.2 | 0 | 0.00 | 0.00 | 2138.67 |
| Exeter V40 | MUTARS | 2 | 0.9 | 0 | 0.00 | 0.00 | 415.85 |
| Lateral straight stem | Osteolock | 1 | 11.3 | 0 | 0.00 | 0.00 | 32.58 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| MS 30 | Osteolock | 1 | 12.4 | 0 | 0.00 | 0.00 | 29.82 |
| Standard straight stem | Osteolock | 1 | 15.0 | 0 | 0.00 | 0.00 | 24.60 |
| Corail | Pinnacle | 5 | 3.2 | 0 | 0.00 | 0.00 | 115.95 |
| Echelon cemented | Pinnacle | 1 | 0.8 | 0 | 0.00 | 0.00 | 479.49 |
| Exeter | Pinnacle | 1 | 13.5 | 0 | 0.00 | 0.00 | 27.25 |
| Lateral straight stem | Pinnacle | 2 | 19.9 | 0 | 0.00 | 0.00 | 18.57 |
| Spectron | Pinnacle | 11 | 95.2 | 0 | 0.00 | 0.00 | 3.87 |
| Standard straight stem | Pinnacle | 1 | 11.2 | 0 | 0.00 | 0.00 | 32.87 |
| Twinsys SS Stem | Pinnacle | 1 | 0.2 | 0 | 0.00 | 0.00 | 2010.99 |
| TwinSys stem cemented | Pinnacle | 10 | 6.0 | 0 | 0.00 | 0.00 | 61.44 |
| Zimmer Segmental | Pinnacle | 1 | 0.8 | 0 | 0.00 | 0.00 | 472.76 |
| C-Stem AMT | Pinnacle Gripton | 1 | 0.9 | 0 | 0.00 | 0.00 | 422.37 |
| C-Stem AMT | Pinnacle Porocoat Acet Shell | 1 | 0.6 | 0 | 0.00 | 0.00 | 609.67 |
| Corail | PolarCup cemented | 6 | 25.4 | 0 | 0.00 | 0.00 | 14.51 |
| Exeter V40 | PolarCup cemented | 4 | 3.9 | 0 | 0.00 | 0.00 | 94.35 |
| Polarstem uncemented | PolarCup cemented | 5 | 13.4 | 0 | 0.00 | 0.00 | 27.46 |
| Reef | PolarCup cemented | 1 | 3.3 | 0 | 0.00 | 0.00 | 113.03 |
| Exeter V40 | PolarCup uncemented | 18 | 104.5 | 0 | 0.00 | 0.00 | 3.53 |
| Spectron | PolarCup uncemented | 11 | 51.2 | 0 | 0.00 | 0.00 | 7.21 |
| Hip stem | Polyethylene Acetabular cup | 1 | 3.1 | 0 | 0.00 | 0.00 | 119.03 |
| Exeter V40 | Polymax | 84 | 378.9 | 0 | 0.00 | 0.00 | 0.97 |
| Stemsys cemented | Polymax | 28 | 109.5 | 0 | 0.00 | 0.00 | 3.37 |
| Stemsys Cemented | Polymax | 1 | 1.2 | 0 | 0.00 | 0.00 | 303.46 |
| Stemsys Cem Lateralized | Press-fit cup | 1 | 0.3 | 0 | 0.00 | 0.00 | 1247.56 |
| Stemsys Cemented | Press-fit cup | 1 | 0.1 | 0 | 0.00 | 0.00 | 2495.12 |
| Echelon cemented | R3 porous | 1 | 2.1 | 0 | 0.00 | 0.00 | 172.96 |
| Lateral straight stem | R3 porous | 1 | 6.2 | 0 | 0.00 | 0.00 | 59.25 |
| TwinSys cemented | R3 porous | 1 | 7.8 | 0 | 0.00 | 0.00 | 47.38 |
| Versys Revision Femoral Stem | R3 porous | 1 | 3.7 | 0 | 0.00 | 0.00 | 99.00 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Exeter | RD Asian hip acetab. Cup | 2 | 48.4 | 0 | 0.00 | 0.00 | 7.62 |
| Bi-metric cemented | Recap Resurfacing Acetabular S | 1 | 17.3 | 0 | 0.00 | 0.00 | 21.28 |
| Spectron | Recovery Protrusio Cage | 1 | 0.2 | 0 | 0.00 | 0.00 | 2072.87 |
| Exeter V40 | Redapt | 1 | 0.8 | 0 | 0.00 | 0.00 | 443.21 |
| Accolade | Reflection cemented | 1 | 2.0 | 0 | 0.00 | 0.00 | 188.97 |
| ARCOS modular | Reflection cemented | 2 | 7.1 | 0 | 0.00 | 0.00 | 51.90 |
| Corail | Reflection cemented | 18 | 133.0 | 0 | 0.00 | 0.00 | 2.77 |
| Emperion | Reflection cemented | 1 | 2.7 | 0 | 0.00 | 0.00 | 138.76 |
| Exeter V40 | Reflection cemented | 1 | 0.8 | 0 | 0.00 | 0.00 | 434.63 |
| Friendly | Reflection cemented | 1 | 1.5 | 0 | 0.00 | 0.00 | 248.13 |
| Mallory-Head | Reflection cemented | 1 | 2.5 | 0 | 0.00 | 0.00 | 149.87 |
| PFM distal | Reflection cemented | 1 | 7.8 | 0 | 0.00 | 0.00 | 47.43 |
| Polarstem uncemented | Reflection cemented | 9 | 66.6 | 0 | 0.00 | 0.00 | 5.54 |
| Proximal femoral porous | Reflection cemented | 1 | 4.6 | 0 | 0.00 | 0.00 | 80.78 |
| Revitan | Reflection cemented | 1 | 4.1 | 0 | 0.00 | 0.00 | 90.61 |
| Solution | Reflection cemented | 1 | 8.8 | 0 | 0.00 | 0.00 | 41.70 |
| Solution Bow | Reflection cemented | 2 | 5.0 | 0 | 0.00 | 0.00 | 73.71 |
| Stemsys | Reflection cemented | 1 | 3.4 | 0 | 0.00 | 0.00 | 108.92 |
| Trabecular Metal Stem | Reflection cemented | 1 | 12.3 | 0 | 0.00 | 0.00 | 30.03 |
| TwinSys uncemented | Reflection cemented | 2 | 22.4 | 0 | 0.00 | 0.00 | 16.50 |
| Wagner cone stem | Reflection cemented | 1 | 8.3 | 0 | 0.00 | 0.00 | 44.32 |
| CCA SS | Reflection porous | 5 | 62.2 | 0 | 0.00 | 0.00 | 5.93 |
| Lateral straight stem | Reflection porous | 2 | 7.2 | 0 | 0.00 | 0.00 | 51.47 |
| TwinSys cemented | Reflection porous | 73 | 445.9 | 0 | 0.00 | 0.00 | 0.83 |
| Versys cemented | Reflection porous | 1 | 7.6 | 0 | 0.00 | 0.00 | 48.34 |
| Exeter V40 | Restoration | 3 | 2.5 | 0 | 0.00 | 0.00 | 145.82 |
| Exeter V40 | Restoration Anatomic | 2 | 8.2 | 0 | 0.00 | 0.00 | 45.08 |
| Basis | RM cup | 1 | 17.4 | 0 | 0.00 | 0.00 | 21.23 |
| CCA SS | RM cup | 1 | 17.7 | 0 | 0.00 | 0.00 | 20.80 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Exeter V40 | RM cup | 1 | 19.0 | 0 | 0.00 | 0.00 | 19.43 |
| MS 30 | RM cup | 1 | 13.6 | 0 | 0.00 | 0.00 | 27.08 |
| Versys Revision Femoral Stem | RM cup | 1 | 0.1 | 0 | 0.00 | 0.00 | 2694.73 |
| Basis | RM Pressfit cup | 23 | 258.0 | 0 | 0.00 | 0.00 | 1.43 |
| Centris cemented | RM Pressfit cup | 1 | 3.8 | 0 | 0.00 | 0.00 | 97.92 |
| Charnley Modular | RM Pressfit cup | 1 | 7.0 | 0 | 0.00 | 0.00 | 52.80 |
| Exeter Cemented Stem | RM Pressfit cup | 1 | 0.1 | 0 | 0.00 | 0.00 | 5858.10 |
| H-Max C | RM Pressfit cup | 3 | 17.8 | 0 | 0.00 | 0.00 | 20.74 |
| Stemsys cemented | RM Pressfit cup | 82 | 399.6 | 0 | 0.00 | 0.00 | 0.92 |
| TwinSys stem | RM Pressfit cup | 3 | 1.3 | 0 | 0.00 | 0.00 | 273.30 |
| TwinSys stem cemented | RM Pressfit cup | 65 | 45.9 | 0 | 0.00 | 0.00 | 8.04 |
| Versys cemented | RM Pressfit cup | 11 | 105.5 | 0 | 0.00 | 0.00 | 3.50 |
| Versys Revision Femoral Stem | RM Pressfit cup | 1 | 2.0 | 0 | 0.00 | 0.00 | 187.92 |
| Exeter V40 | Roof Reinforcem.ring | 1 | 0.4 | 0 | 0.00 | 0.00 | 826.60 |
| Exeter V40 | Selexys TPS | 1 | 11.0 | 0 | 0.00 | 0.00 | 33.40 |
| Spectron | Selexys TPS | 1 | 8.4 | 0 | 0.00 | 0.00 | 43.67 |
| SL monoblock | SPH Acetabular cup | 1 | 4.2 | 0 | 0.00 | 0.00 | 88.58 |
| Trabecular Metal Stem | Stanmore | 1 | 13.3 | 0 | 0.00 | 0.00 | 27.75 |
| Corail | Trabecular Metal Rev shell | 2 | 0.8 | 0 | 0.00 | 0.00 | 474.42 |
| CPCS | Trabecular Metal Rev shell | 1 | 0.1 | 0 | 0.00 | 0.00 | 6736.82 |
| CPT | Trabecular Metal Rev shell | 6 | 28.1 | 0 | 0.00 | 0.00 | 13.11 |
| MS 30 | Trabecular Metal Rev shell | 2 | 2.1 | 0 | 0.00 | 0.00 | 173.18 |
| TwinSys cemented | Trabecular Metal Rev shell | 1 | 4.1 | 0 | 0.00 | 0.00 | 90.12 |
| Basis | Trabecular Metal Shell | 1 | 13.9 | 0 | 0.00 | 0.00 | 26.51 |
| C-Stem AMT | Trabecular Metal Shell | 5 | 26.2 | 0 | 0.00 | 0.00 | 14.06 |
| Spectron | Trabecular Metal Shell | 14 | 83.1 | 0 | 0.00 | 0.00 | 4.44 |
| Versys cemented | Trabecular Metal Shell | 6 | 58.0 | 0 | 0.00 | 0.00 | 6.36 |
| Versys Revision Femoral Stem | Trabecular Metal Shell | 4 | 20.9 | 0 | 0.00 | 0.00 | 17.66 |
| Accolade II | Trident | 7 | 17.4 | 0 | 0.00 | 0.00 | 21.21 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| Exeter Cemented Stem | Trident | 8 | 6.3 | 0 | 0.00 | 0.00 | 58.30 |
| Friendly Short Hip | Trident | 1 | 0.1 | 0 | 0.00 | 0.00 | 5389.45 |
| H-Max C | Trident | 1 | 6.8 | 0 | 0.00 | 0.00 | 53.96 |
| Porous coated prox fem body | Trident | 1 | 3.6 | 0 | 0.00 | 0.00 | 103.40 |
| TwinSys stem cemented | Trident | 1 | 0.9 | 0 | 0.00 | 0.00 | 421.05 |
| Exeter Cemented Stem | Trident Hemisp Acet Shell | 1 | 0.6 | 0 | 0.00 | 0.00 | 578.27 |
| Exeter V40 | Trident Hemisp Acet Shell | 1 | 1.3 | 0 | 0.00 | 0.00 | 286.67 |
| Exeter V40 | Trident II PSL Clusterhole HA | 8 | 1.7 | 0 | 0.00 | 0.00 | 217.67 |
| Exeter V40 | Trident II Titanium Multihole | 1 | 0.2 | 0 | 0.00 | 0.00 | 1663.41 |
| Accolade II | Trident II Tritanium | 1 | 2.2 | 0 | 0.00 | 0.00 | 170.99 |
| C-Stem AMT | Trident II Tritanium | 1 | 0.0 | 0 | 0.00 | 0.00 | 12248.76 |
| Exeter Cemented Stem | Trident II Tritanium | 4 | 2.5 | 0 | 0.00 | 0.00 | 150.04 |
| Femoral Integral | Trident II Tritanium | 1 | 1.4 | 0 | 0.00 | 0.00 | 254.70 |
| MS 30 | Trident II Tritanium | 1 | 0.2 | 0 | 0.00 | 0.00 | 2363.80 |
| Quadra-C | Trident II Tritanium | 2 | 2.6 | 0 | 0.00 | 0.00 | 140.50 |
| TwinSys cemented | Trident II Tritanium | 5 | 7.5 | 0 | 0.00 | 0.00 | 49.07 |
| TwinSys stem cemented | Trident II Tritanium | 1 | 0.2 | 0 | 0.00 | 0.00 | 2323.04 |
| Exeter V40 | Trident II Tritanium Solidback | 3 | 1.0 | 0 | 0.00 | 0.00 | 364.15 |
| Exeter V40 | Trident PSL HA Cluster | 74 | 30.6 | 0 | 0.00 | 0.00 | 12.06 |
| Exeter V40 | Trident PSL HA Solid Back | 1 | 0.8 | 0 | 0.00 | 0.00 | 453.66 |
| C-Stem AMT | Trident tritanium | 1 | 3.7 | 0 | 0.00 | 0.00 | 99.44 |
| GMRS | Trident tritanium | 1 | 3.7 | 0 | 0.00 | 0.00 | 98.64 |
| TwinSys cemented | Triflanged Acetabulum | 1 | 2.5 | 0 | 0.00 | 0.00 | 147.58 |
| C-Stem | Trilogy | 1 | 10.3 | 0 | 0.00 | 0.00 | 35.94 |
| Charnley Modular | Trilogy | 1 | 14.2 | 0 | 0.00 | 0.00 | 25.94 |
| MRS straight cemented stem | Trilogy | 1 | 0.1 | 0 | 0.00 | 0.00 | 4491.21 |
| TwinSys cemented | Trilogy | 4 | 38.8 | 0 | 0.00 | 0.00 | 9.52 |
| Versys Revision Femoral Stem | Trilogy | 4 | 29.6 | 0 | 0.00 | 0.00 | 12.47 |
| Quadra-C | Trinity | 1 | 2.5 | 0 | 0.00 | 0.00 | 147.41 |

| Prothesis | Match | N | Observed comp. years (ocys) | N Revised | Rate/100-component-years | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| TwinSys cemented | Trinity | 1 | 3.7 | 0 | 0.00 | 0.00 | 99.51 |
| Accolade II | Tritanium | 1 | 1.6 | 0 | 0.00 | 0.00 | 225.69 |
| Lateral straight stem | Tritanium | 1 | 2.8 | 0 | 0.00 | 0.00 | 131.32 |
| TwinSys cemented | Tritanium | 1 | 8.4 | 0 | 0.00 | 0.00 | 44.18 |
| Versys cemented | Tritanium | 8 | 74.7 | 0 | 0.00 | 0.00 | 4.94 |
| C-Stem AMT | Ultima | 1 | 14.4 | 0 | 0.00 | 0.00 | 25.64 |
| Solution Bow | Ultima | 1 | 4.9 | 0 | 0.00 | 0.00 | 76.04 |
| Revitan | Weber | 1 | 15.1 | 0 | 0.00 | 0.00 | 24.44 |
| Spectron | Weill ring | 1 | 23.5 | 0 | 0.00 | 0.00 | 15.68 |
| Accolade | ZCA | 1 | 5.6 | 0 | 0.00 | 0.00 | 65.79 |
| CLS | ZCA | 2 | 11.5 | 0 | 0.00 | 0.00 | 32.19 |
| Corail | ZCA | 3 | 28.9 | 0 | 0.00 | 0.00 | 12.75 |
| Exeter V40 | ZCA | 1 | 1.8 | 0 | 0.00 | 0.00 | 203.22 |
| Revitan | ZCA | 1 | 8.2 | 0 | 0.00 | 0.00 | 44.91 |
| Versys | ZCA | 3 | 40.0 | 0 | 0.00 | 0.00 | 9.22 |
| ZMR Fem Stem Rev Taper | ZCA | 1 | 22.5 | 0 | 0.00 | 0.00 | 16.39 |
| ARCOS modular | ZCA all-poly cup | 1 | 0.1 | 0 | 0.00 | 0.00 | 4346.33 |
| CLS | ZCA all-poly cup | 3 | 19.9 | 0 | 0.00 | 0.00 | 18.51 |
| Echo Bi-Metric | ZCA all-poly cup | 1 | 10.3 | 0 | 0.00 | 0.00 | 35.70 |
| Restoration | ZCA all-poly cup | 1 | 2.8 | 0 | 0.00 | 0.00 | 131.84 |

TABLE: SUP 3

NEW ZEALAND
**JOINT REGISTRY**

www.nzoa.org.nz/nzoa-joint-registry