REPORT
June 2016

Norwegian National Advisory Unit on Arthroplasty and Hip Fractures

Norwegian Arthroplasty Register
Norwegian Cruciate Ligament Register
Norwegian Hip Fracture Register
Norwegian Paediatric Hip Register

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http://nrlweb.ihelse.net

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This annual report presents results and descriptive statistics from our five registers. The Paediatric Hip Register has now received national status and its finances are ensured through funding from Helse Vest.

National medical quality registers must have a general manager employed by the hospital where the register is located; in the case of our registers, this is Helse Bergen. Knut Fjeldsgaard is now the general manager of the Cruciate Ligament Register and Trude Gundersen is the general manager of the Paediatric Hip Register.

As required by the Interregional Steering Committee for the National Service Centre for Medical Quality Registers, the results at hospital level must be published. These will be published on the website of the National Service Centre this autumn and in next year’s report. http://www.kvalitetsregistre.no/resultater/

Norwegian orthopaedic surgeons have long been requesting a system of electronic reporting to the registers. The National Service Centre for Medical Quality Registers is dealing with this, but it has proved difficult to develop a system that is legal and as easy for surgeons to use as the paper forms, and which enables reporting of implant data at the catalogue number level. The Cruciate Ligament Register has tried out this system (MRS, a medical registration system) at Haukeland University Hospital (HUS), and is now ready to test it at other hospitals. There is also ongoing work on a system of electronic recording and transmission of patient-reported outcome measures (PROM) for the joint replacement registers and the Cruciate Ligament Register. We are currently testing reporting of hip arthroplasty at HUS. It remains uncertain when these tools will be ready for use nationwide.

This annual report is sent electronically to all Norwegian orthopaedic surgeons. Paper copies can be obtained by contacting us. The Norwegian Arthroplasty Register website http://nrlweb.helse.net/ contains all our annual reports and references to all our scientific papers and presentations. Most of the papers are also available electronically from our website. Since we mainly publish results on implants and surgical methods in scientific journals where we can account for materials and methods and discuss strengths and weaknesses and the significance of the findings, these are to be found in the reference lists at the end of this annual report.

The Nordic Arthroplasty Register Association (NARA) has published a report, which is available on our website.

Hospital-based annual reports, with data from each hospital, will as before be sent to our contact persons at the hospitals and to the general manager of the hospital. We encourage our contacts to pass on the reports to the hospital administration and their colleagues, and to check that the figures recorded from the hospital are correct. The reports should be used for local improvement work.
Please remember that the Norwegian Data Protection Authority requires declarations of consent to be signed by patients before operations are reported to the registers, and these declarations must be stored in the patient record.

We would like to thank all orthopaedic surgeons in Norway for good reporting. We are also grateful for good cooperation with Helse Bergen, Helse Vest, SKDE, the prostheses suppliers, the University of Bergen, the Norwegian Patient Register, the Norwegian Knowledge Centre for the Health Services, the Norwegian Institute of Public Health, the Office of the Auditor General, the Norwegian Board of Health Supervision, the Directorate of Health and the Ministry of Health and Care Services.

Bergen, 17.06.2016.

Leif I. Havelin
Chief Physician/Professor
Head of National Advisory Unit on Arthroplasty and Hip Fractures (currently on leave)

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Trude Gundersen
Chief Physician

The National Advisory Unit now has its own Facebook page, which we hope you will visit. You can find us at www.facebook.com/leddregisteret/ or by using the QR code below.
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This year’s annual report contains data from 200,796 hip arthroplasty operations. In 2015, there were 8402 primary operations and 1376 revisions. This represented a slight increase from 2014.

**TRENDS AND RISK OF REVISION**

Overall, there has been a positive development with improved results over time. However, the risk of early reoperation has increased in recent years, when we have also seen considerable changes in surgeons’ choice of fixation methods and operation techniques.

In recent years, uncemented implants have been far more frequently used in elderly patients than previously. This change in practice is not supported by the literature, since the annual reports from the registers and many publications show that uncemented prostheses may be detrimental in elderly patients, especially women (Dale et al. 2012; Mäkelä et al. 2014; Jämsen et al. 2014; Thien et al. 2014). In Figure 8c in this year’s report, we see that the use of uncemented femoral stems in elderly patients has not increased in the past two years, but the use of this fixation method in elderly patients has not declined either.

In Table 26 and Figure 13 in this year’s report, we now see a clear reduction in the use of 22 and 28 mm femoral heads, and increased use of 32 mm. This is probably highly beneficial, since 32 mm heads give a lower risk of dislocation than the smaller heads. The reduction seen in the use of >36 mm heads is probably also beneficial, since prostheses with such a large head diameter are liable to increased risk of corrosion in the artificial joint.

The use of minimally invasive anterior and anterolateral approaches has been increasing for several years, but this has now levelled off. The use of posterior approaches has increased considerably in recent years and increased further in 2015, to a number of about 1000 operations. The use of direct lateral approaches decreased accordingly. This change is probably beneficial, since Amlie et al. (2014) showed that with a direct lateral approach about 25% of patients experienced limping and pain after surgery, about twice as many as for patients who underwent surgery with other surgical approaches. To gain a better overview of the problem of limping and post-operative muscle rupture, we ask all surgeons to report all reoperations involving muscle transposition or sewing of the gluteus medius to the Hip Arthroplasty Register (see the relevant column in the form).

**METAL ON METAL (MoM) PROSTHESES**

Please remember that hospitals have a duty to monitor all patients with MoM prostheses with a diameter of >32 mm for the rest of their lives, as recommended by the Norwegian National Advisory Unit on Arthroplasty and Hip Fractures (http://nrlweb.ihelse.net/ or http://www.haukeland.no/nrl/) and in line with similar recommendations in other countries.

**PUBLICATIONS:**

From 1 January 2015 to date, the Register has published 17 papers dealing with total hip arthroplasty. See the publication list later in the annual report and on the website of the Register (http://www.haukeland.no/nrl/ or http://nrlweb.ihelse.net/).
SUMMARY OF SIGNIFICANT SCIENTIFIC FINDINGS LAST YEAR:

Johnsen MB et al. showed in a study (HUNT) that increased recreational activity was associated with a greater risk of hip arthroplasty in women and men aged 45-59. The risk of knee arthroplasty was greater for young women with considerable leisure-time activity, but not for men.

Busch VJ et al. found that bone packing with cement was more cost-effective than the use of an uncemented cup in primary surgery on young patients with bone defects in the acetabulum.

Blågestad T et al. documented that the post-operative use of analgesics, hypnotics and anxiolytics showed a significant decrease in patients undergoing total hip arthroplasty.

Langvatn H et al. showed that coagulase-negative staphylococci are the most common bacteria in prosthetic infections and that there had been only minor changes in the bacteriology over time.

Glassou EN et al. found a relationship between low hospital procedure volume of hip replacements and increased risk of revision.

Nystad TW et al. demonstrated a reduction in orthopaedic surgical treatment of patients with arthritis, and that this may be related to the improved effects of modern pharmaceutical treatment of arthritis.

Schrama JC et al. showed that rheumatoid arthritis patients had a slightly higher risk of prosthetic infection than patients with osteoarthritis.

Varnum C et al. found a higher risk of revision of uncemented prostheses with metal-on-metal articulation than alternative types of hip prostheses.

Løwer HL et al. showed that most SSIs (surgical site infections) are detected within 90 days and that passive PDS (post-discharge surveillance) after 30 days seems to be able to replace active PDS (patient questionnaire).

Bergen, 18.06.2016

Leif I. Havelin
Chief Physician/Professor

Anne Marie Fenstad
Biostatistician/researcher

Irina Kvinnesland
IT Consultant

Christoffer Bartz-Johannessen
Biostatistician/researcher
Survival of total hip prostheses 1987-2015

The Norwegian Arthroplasty Register

Kaplan-Meier survival curves. Rate ratio (RR) is adjusted for age, gender and diagnosis. Survival estimate is given as long as more than 50 prostheses remain in the risk set.
Survival of total hip prostheses 2005-2015

Kaplan-Meier survival curves. Rate ratio (RR) is adjusted for age, gender and diagnosis. Survival estimate is given as long as more than 50 prostheses remains in the risk set.
Survival of total hip prostheses 2005-2015

The Norwegian Arthroplasty Register

Kaplan-Meier survival curves. Rate ratio (RR) is adjusted for age, gender and diagnosis.

Survival estimate is given as long as more than 50 prostheses remains in the risk set.
Last 10 years survival curves for all hospitals individually

Endpoint all revisions
- Mean all hospitals
- All hospitals individually in the period 2006–2015

Endpoint revision due to infection
- Mean all hospitals
- All hospitals individually in the period 2006–2015

Endpoint revision due to dislocation
- Mean all hospitals
- All hospitals individually in the period 2006–2015

Years after primary operation

Percent prostheses intact
One stage bilateral hip prosthesis operations

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
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<td>Number of patients</td>
<td>136</td>
<td>12</td>
<td>12</td>
<td>15</td>
<td>13</td>
<td>19</td>
<td>15</td>
<td>15</td>
<td>18</td>
<td>26</td>
<td>23</td>
<td>22</td>
<td>27</td>
<td>353</td>
</tr>
</tbody>
</table>

A one stage bilateral operation is an operation where the patient is operated on both hips during the same operation or on the same day. Only primary operations are included.
TOTAL HIP ARTHROPLASTY

Table 1: Annual numbers of operations (Hemi prosthesis operations for hip fracture are not included here. These are found in tables of The Norwegian Hip Fracture Register)

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary operations *</th>
<th>Reoperations **</th>
<th>Revisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>8 402 (85.8%)</td>
<td>16 (0.2%)</td>
<td>1 376 (14.0%)</td>
<td>9 794</td>
</tr>
<tr>
<td>2014</td>
<td>8 128 (86.3%)</td>
<td>23 (0.2%)</td>
<td>1 269 (13.5%)</td>
<td>9 420</td>
</tr>
<tr>
<td>2013</td>
<td>8 092 (86.1%)</td>
<td>23 (0.2%)</td>
<td>1 290 (13.7%)</td>
<td>9 397</td>
</tr>
<tr>
<td>2012</td>
<td>7 843 (85.7%)</td>
<td>24 (0.3%)</td>
<td>1 282 (14.0%)</td>
<td>9 149</td>
</tr>
<tr>
<td>2011</td>
<td>7 359 (85.1%)</td>
<td>13 (0.2%)</td>
<td>1 271 (14.7%)</td>
<td>8 643</td>
</tr>
<tr>
<td>2010</td>
<td>7 330 (85.4%)</td>
<td>1 (0.0%)</td>
<td>1 257 (14.6%)</td>
<td>8 588</td>
</tr>
<tr>
<td>2009</td>
<td>7 115 (85.5%)</td>
<td>1 (0.0%)</td>
<td>1 210 (14.5%)</td>
<td>8 325</td>
</tr>
<tr>
<td>2008</td>
<td>6 849 (85.9%)</td>
<td>1 122 (14.1%)</td>
<td>7 971</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>6 660 (86.4%)</td>
<td>1 051 (13.6%)</td>
<td>7 711</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>6 319 (86.3%)</td>
<td>1 007 (13.7%)</td>
<td>7 326</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>6 597 (86.2%)</td>
<td>1 (0.0%)</td>
<td>1 057 (13.8%)</td>
<td>7 655</td>
</tr>
<tr>
<td>2004</td>
<td>6 218 (86.9%)</td>
<td>940 (13.1%)</td>
<td>7 158</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>7 040 (87.7%)</td>
<td>990 (12.3%)</td>
<td>8 030</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>6 174 (86.6%)</td>
<td>956 (13.4%)</td>
<td>7 130</td>
<td></td>
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<tr>
<td>1997-01</td>
<td>27 985 (85.1%)</td>
<td>1 (0.0%)</td>
<td>4 899 (14.9%)</td>
<td>32 885</td>
</tr>
<tr>
<td>1992-96</td>
<td>24 231 (84.3%)</td>
<td>1 (0.0%)</td>
<td>4 512 (15.7%)</td>
<td>28 744</td>
</tr>
<tr>
<td>1987-91</td>
<td>19 784 (86.5%)</td>
<td>3 086 (13.5%)</td>
<td>22 870</td>
<td></td>
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</tbody>
</table>

Total: 172 126 (85.7%) 28 575 (0.0%) 28 575 (14.2%) 200 796

* In addition, there were reports' & [Antall1] & ' primary hemi prostheses done for other reasons than hip fractures.

** Reoperations where prosthetic parts are not changed or removed (soft tissue debridements for infected prosthesis, soft tissue procedures for gluteal insufficiency etc.)

Figure 1: Annual numbers of operations

55% of all operations were performed on the right side. 67.3% performed in women.

Mean age at primary surgery was 69.0 years, 69.9 years for women and 67.1 years for men.

Figure 2: Incidence of primary hip prostheses
Reasons for primary operations

Table 2:

<table>
<thead>
<tr>
<th>Year</th>
<th>Osteoarthritis</th>
<th>Primary</th>
<th>Primary</th>
<th>Rheumatoid</th>
<th>Arthritis</th>
<th>Sequelae after femoral neck fracture</th>
<th>Congenital dysplasia</th>
<th>Congenital dysplasia with dislocation</th>
<th>Epiphysiol/Perthes' disease</th>
<th>Bechterew</th>
<th>Acute fracture of the femoral neck</th>
<th>Avascular necrosis of the femoral head</th>
<th>Sequelae after acetabular fracture</th>
<th>Sequelae after femoral neck fracture</th>
<th>Congenital dysplasia</th>
<th>Other</th>
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<td>6737</td>
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Total 127949 | 4507 | 14902 | 12815 | 1040 | 2249 | 694 | 2731 | 2634 | 456 | 3441 | 978

Diseases are not mutually exclusive. More than one reason for operation is possible

Figure 3: Age by year of operation

![Age by year of operation graph](image-url)
Reasons for revisions

Table 3:

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<th>Pain</th>
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Revision causes are not mutually exclusive. More than one reason of revision is possible.

Figure 4:

The graph is hierarchical, i.e. if a revision is marked both "Deep infection" and "Loosening", only "Deep infection" is counted.
Type of revision

Table 4a: Age 75 years old or younger

| Year | Removal of prosthesis and insertion of cement spacer | Exchange of stem, PE liner, head | Exchange of acetabular cup | Exchange of femoral head and acetabular cup | Exchange of all components | Exchange of PE liner only |  | Soft tissue debridement of infected prosthesis (after Girdlestone) |  | Insertion of new prosthesis (after Girdlestone) |  | Removal of prosthesis or cement spacer |  | Removal of prosthesis and insertion of cement spacer |  | Insertion of new prosthesis |  | Soft tissue debridement of infected prosthesis |  | Other operation |  | Missing information |  | Total |
|------|----------------------------------|-------------------------------|---------------------------|-------------------------------|-----------------------------------|--------------------------|---|-----------------------------|---|-----------------------------|---|-----------------------------|---|-----------------------------|---|-----------------------------|---|-----------------------------|---|-----------------------------|---|-----------------------------|---|-----------------------------|---|
| 2015 | 91                               | 13                            | 110                        | 33                            | 160                               | 3                        | 58         | 5                           | 20                           | 65                          | 4                           | 55                          | 59  | 39                          | 4                           | 797                      |   |                             |    |                             |    |                             |    |
| 2014 | 68                               | 20                            | 114                        | 34                            | 140                               | 3                        | 49         | 6                           | 14                           | 74                          | 1                           | 42                          | 19  | 3                           |                           | 709                      |   |                             |    |                             |    |                             |    |
| 2013 | 77                               | 8                             | 90                         | 42                            | 166                               | 2                        | 43         | 5                           | 15                           | 73                          | 2                           | 46                          | 14  | 4                           |                           | 725                      |   |                             |    |                             |    |                             |    |
| 2012 | 88                               | 8                             | 89                         | 29                            | 156                               | 6                        | 38         | 5                           | 17                           | 70                          | 1                           | 43                          | 13  | 5                           |                           | 733                      |   |                             |    |                             |    |                             |    |
| 2011 | 83                               | 6                             | 102                        | 47                            | 157                               | 3                        | 48         | 9                           | 29                           | 25                          | 1                           | 36                          | 19  | 2                           |                           | 734                      |   |                             |    |                             |    |                             |    |
| 2010 | 89                               | 8                             | 114                        | 60                            | 173                               | 1                        | 37         | 4                           | 32                           | 15                          | 8                           | 5                           | 4               | 11                          |                           | 742                      |   |                             |    |                             |    |                             |    |
| 2009 | 85                               | 6                             | 46                         | 58                            | 239                               | 176                      | 6           | 54                          | 5                           | 30                          | 10                          | 7                           | 2                  | 2                           |                           | 726                      |   |                             |    |                             |    |                             |    |
| 2008 | 83                               | 6                             | 53                         | 35                            | 188                               | 160                      | 1           | 37                          | 5                           | 33                          | 18                          | 6                           | 1               | 5                           |                           | 635                      |   |                             |    |                             |    |                             |    |
| 2002-07 | 439                         | 55                           | 554                        | 131                           | 811                               | 902                      | 40           | 262                         | 28                           | 196                         | 17                          | 57                          | 20  | 25                          |                           | 3537                     |   |                             |    |                             |    |                             |    |
| 1997-01 | 530                         | 56                           | 317                        | 51                            | 610                               | 1003                     | 24           | 219                         | 10                           | 122                         | 0                           | 119                         | 1               | 9                           |                           | 3080                     |   |                             |    |                             |    |                             |    |
| 1992-96 | 747                         | 6                            | 464                        | 21                            | 170                               | 1322                     | 10           | 28                          | 3                            | 132                         | 0                           | 73                          | 1               | 12                          |                           | 2991                     |   |                             |    |                             |    |                             |    |
| 1987-91 | 509                         | 267                          | 4                          | 12                            | 1220                              | 1                        | 2           | 80                          | 0                            | 12                          | 6                           | 28                          | 1                  | 4                           |                           | 2141                     |   |                             |    |                             |    |                             |    |
| Total | 2889                          | 192                           | 2320                        | 545                           | 2982                               | 5652                     | 100          | 873                         | 87                           | 720                         | 367                         | 291                         | 230  | 162                         | 99                          | 17550                    |   |                             |    |                             |    |                             |    |

Figure 5a: Age 75 years old or younger
Table 4b: Age over 75 years old

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Figure 5b: Age over 75 years old
**Bone transplant in revisions**

### Table 5: Acetabular cup

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**Total** | 4 986 (17.4 %) | 18 222 (63.6 %) | 3 093 (10.8 %) | 2 369 (8.3 %) | 28 670

### Table 6: Femoral stem

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<td>869 (66.6 %)</td>
<td>8 (0.6 %)</td>
<td>345 (26.4 %)</td>
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<td>81 (6.2 %)</td>
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<td>2011</td>
<td>114 (8.9 %)</td>
<td>818 (63.7 %)</td>
<td>29 (2.3 %)</td>
<td>323 (25.2 %)</td>
<td>1 284</td>
</tr>
<tr>
<td>2010</td>
<td>119 (9.5 %)</td>
<td>798 (63.4 %)</td>
<td>44 (3.5 %)</td>
<td>297 (23.6 %)</td>
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<tr>
<td>2009</td>
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<td>45 (3.7 %)</td>
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<tr>
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<td>144 (12.8 %)</td>
<td>677 (50.3 %)</td>
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<td>232 (20.7 %)</td>
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<td>70 (6.7 %)</td>
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<tr>
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<td>181 (17.1 %)</td>
<td>571 (54 %)</td>
<td>86 (8.1 %)</td>
<td>220 (20.8 %)</td>
<td>1 058</td>
</tr>
<tr>
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<td>119 (12.7 %)</td>
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<td>30 (3 %)</td>
<td>990</td>
</tr>
<tr>
<td>2002</td>
<td>173 (18.1 %)</td>
<td>646 (67.6 %)</td>
<td>99 (10.4 %)</td>
<td>38 (4 %)</td>
<td>956</td>
</tr>
<tr>
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<td>898 (18.3 %)</td>
<td>115 (2.3 %)</td>
<td>4 900</td>
</tr>
<tr>
<td>1992-96</td>
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<td>3 035 (67.3 %)</td>
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<td>4 513</td>
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<tr>
<td>1987-91</td>
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<td>0 (0 %)</td>
<td>49 (1.6 %)</td>
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</table>

**Total** | 4 407 (15.4 %) | 18 858 (65.8 %) | 1 809 (6.3 %) | 3 596 (12.5 %) | 28 670

¹ Registration of "Bone impaction" started in 1996.
# Bone loss in revisions

## Table 7: Acetabular cup

<table>
<thead>
<tr>
<th>Year</th>
<th>Type I</th>
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<th>Type IIB</th>
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<th>Type IIIB</th>
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<td>58</td>
<td>20</td>
<td>740</td>
<td>1392</td>
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<td>197</td>
<td>171</td>
<td>93</td>
<td>69</td>
<td>41</td>
<td>31</td>
<td>690</td>
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<td>235</td>
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<td>87</td>
<td>73</td>
<td>18</td>
<td>575</td>
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<td>115</td>
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<td>77</td>
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<td>585</td>
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<td>2009</td>
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<td>165</td>
<td>92</td>
<td>78</td>
<td>76</td>
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<td>562</td>
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<td>96</td>
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<td>73</td>
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<td>478</td>
<td>1051</td>
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<td>2006</td>
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<td>24</td>
<td>435</td>
<td>1007</td>
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<td>2005</td>
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<td>137</td>
<td>87</td>
<td>74</td>
<td>59</td>
<td>23</td>
<td>438</td>
<td>1058</td>
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### Bone loss in revision - acetabulum (Paprosky Classification):

- **Type I:** Hemispheric acetabulum without edge defects. Intact posterior and anterior column. Defects in anchoring holes that do not destroy the subchondral bone plate.
- **Type IIA:** Hemispheric acetabulum without major edge defects, intact posterior and anterior column, but with small metaphyseal fractures again.
- **Type IIB:** Hemispheric acetabulum without major edge defects, intact posterior and anterior column, but with small metaphyseal fractures again and some lack of support superior.
- **Type IIC:** Hemispheric acetabulum without major edge defects, intact posterior and anterior column, but with defect in medial wall.
- **Type IIIA:** Significant component migration, osteolysis and bone loss. Bone loss from 10 o'clock until 2.
- **Type IIIB:** Significant component migration, osteolysis and bone loss. Bone loss from 9 o'clock until 5.

## Table 8: Femoral stem

<table>
<thead>
<tr>
<th>Year</th>
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<td>1305</td>
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<td>18</td>
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<td>1306</td>
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<td>2011</td>
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<td>1284</td>
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<td>1258</td>
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<td>2009</td>
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<td>141</td>
<td>68</td>
<td>20</td>
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<td>817</td>
<td>1210</td>
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### Bone loss in revision - acetabulum (Paprosky Classification):

- **Type I:** Hemispheric acetabulum without edge defects. Intact posterior and anterior column. Defects in anchoring holes that do not destroy the subchondral bone plate.
- **Type IIA:** Hemispheric acetabulum without major edge defects, intact posterior and anterior column, but with small metaphyseal fractures again.
- **Type IIB:** Hemispheric acetabulum without major edge defects, intact posterior and anterior column, but with small metaphyseal fractures again and some lack of support superior.
- **Type IIC:** Hemispheric acetabulum without major edge defects, intact posterior and anterior column, but with defect in medial wall.
- **Type IIIA:** Significant component migration, osteolysis and bone loss. Bone loss from 10 o'clock until 2.
- **Type IIIB:** Significant component migration, osteolysis and bone loss. Bone loss from 9 o'clock until 5.

Registration of bone loss started in 2005
Surgical approach

Table 9: In primary operations *

<table>
<thead>
<tr>
<th>Year</th>
<th>Anterior</th>
<th>Anterolateral</th>
<th>Direct lateral</th>
<th>Posterior</th>
<th>Other</th>
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<tbody>
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<td>516 (6.1%)</td>
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<td>2 222 (26.4%)</td>
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<td>454 (5.4%)</td>
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<tr>
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<tr>
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<td>342 (4.2%)</td>
<td>1 080 (13.3%)</td>
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<td>8 092</td>
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<td>3 096 (52.9%)</td>
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<tr>
<td>2010</td>
<td>625 (8.5%)</td>
<td>470 (6.4%)</td>
<td>3 910 (53.3%)</td>
<td>2 154 (29.4%)</td>
<td>56 (0.8%)</td>
<td>115 (1.6%)</td>
<td>7 300</td>
</tr>
<tr>
<td>2009</td>
<td>326 (4.6%)</td>
<td>340 (4.8%)</td>
<td>4 357 (61.2%)</td>
<td>1 963 (27.6%)</td>
<td>11 (0.2%)</td>
<td>118 (1.7%)</td>
<td>7 115</td>
</tr>
<tr>
<td>2008</td>
<td>68 (1%)</td>
<td>387 (5.7%)</td>
<td>4 360 (63.7%)</td>
<td>1 928 (28.2%)</td>
<td>8 (0.1%)</td>
<td>98 (1.4%)</td>
<td>6 849</td>
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<tr>
<td>2007</td>
<td>14 (0.2%)</td>
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<td>4 419 (67%)</td>
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<td>20 (0.3%)</td>
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<td>6 174</td>
</tr>
<tr>
<td>1997-01</td>
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<td>9 182 (68.5%)</td>
<td>6 585 (23.5%)</td>
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<td>34 (0.1%)</td>
<td>117 (0.5%)</td>
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<td>1 344 (6.8%)</td>
<td>2 821 (64.8%)</td>
<td>5 422 (27.4%)</td>
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<td>165 (0.8%)</td>
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<td>47 074 (27.3%)</td>
<td>262 (0.2%)</td>
<td>3 087 (1.8%)</td>
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Table 10: Mini invasive surgery in primary surgery

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<td>7 115</td>
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<td>28 (0.4%)</td>
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<td>88 (1.3%)</td>
<td>6 660</td>
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<td>5 814 (88.1%)</td>
<td>639 (9.7%)</td>
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* Anterior: Operative approach between sartorius and tensor
Anterolateral: Operative approach between glut. medius and tensor
Direct lateral: Operative approach transgluteal
Posterior: Operative approach behind gluteus medius

Figure 6: In primary operations *
Table 11: In revisions *

<table>
<thead>
<tr>
<th>Year</th>
<th>Anterior</th>
<th>Anterolateral</th>
<th>Direct lateral</th>
<th>Posterior</th>
<th>Other</th>
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<td>24 (1.7 %)</td>
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<td>650 (46.7 %)</td>
<td>572 (41.1 %)</td>
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<td>19 (1.7 %)</td>
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<tr>
<td>1987-91</td>
<td>12 (0.4 %)</td>
<td>204 (6.6 %)</td>
<td>1 850 (59.9 %)</td>
<td>1 000 (32.4 %)</td>
<td>2 (0.1 %)</td>
<td>18 (0.6 %)</td>
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<tr>
<td>Total</td>
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<td>1 474 (5.1 %)</td>
<td>19 557 (68.2 %)</td>
<td>6 676 (23.3 %)</td>
<td>316 (1.1 %)</td>
<td>496 (1.7 %)</td>
<td>28 670</td>
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</table>

Figure 7: In revisions *

- Anterior: Operative approach between sartorius and tensor
- Anterolateral: Operative approach between glut. medius and tensor
- Direct lateral: Operative approach transgluteal
- Posterior: Operative approach behind gluteus medius

* Anterior: Operative approach between sartorius and tensor
Anterolateral: Operative approach between glut. medius and tensor
Direct lateral: Operative approach transgluteal
Posterior: Operative approach behind gluteus medius
### Trochanteric Osteotomy

#### Table 12:

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<td>21</td>
<td>717</td>
<td>9 420</td>
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<td>58</td>
<td>812</td>
<td>9 397</td>
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<td>37</td>
<td>766</td>
<td>9 149</td>
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<td>707</td>
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<td>541</td>
<td>7 971</td>
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<tr>
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<td>7 326</td>
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<td>194</td>
<td>89</td>
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<td>240</td>
<td>32 885</td>
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<tr>
<td>1987-91</td>
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<td>4 356</td>
<td>257</td>
<td>22 870</td>
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</table>

**Total**: 155 154 (90.1 %) 9 055 (5.3 %) 7 917 (4.6 %) 24 031 (83.8 %) 3 371 (11.8 %) 1 268 (4.4 %) 200 796

### Antibiotic Prophylaxis

#### Table 13:

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<th>Missing</th>
<th>Total</th>
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<td>39 (0.5 %)</td>
<td>9 (0.6 %) 1 364 (98 %) 19 (1.4 %) 9 794</td>
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<tr>
<td>2014</td>
<td>1 (0 %)</td>
<td>8 089</td>
<td>38 (0.5 %)</td>
<td>8 (0.6 %) 1 276 (98.8 %) 8 (0.6 %) 9 420</td>
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<td>2 (0 %)</td>
<td>8 053</td>
<td>37 (0.5 %)</td>
<td>7 (0.5 %) 1 280 (98.1 %) 18 (1.4 %) 9 397</td>
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<tr>
<td>2012</td>
<td>2 (0 %)</td>
<td>7 807</td>
<td>34 (0.4 %)</td>
<td>11 (0.8 %) 1 282 (98.2 %) 13 (1 %) 9 149</td>
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<tr>
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<td>38 (3.4 %) 1 077 (96 %) 7 (0.6 %) 7 971</td>
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<tr>
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<td>24 (0.5 %) 4 870 (99.4 %) 6 (0.1 %) 32 885</td>
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<td>53 (1.2 %) 4 451 (98.6 %) 9 (0.2 %) 28 744</td>
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<tr>
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<td>18 148</td>
<td>37 (0.2 %)</td>
<td>136 (4.4 %) 2 935 (95.1 %) 15 (0.5 %) 22 870</td>
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</tbody>
</table>

**Total**: 2 036 (1.2 %) 169 825 (98.7 %) 265 (0.2 %) 511 (1.8 %) 28 021 (97.7 %) 138 (0.5 %) 200 796
Fixation in primary operations

Figure 8a: Patients under 65 years old

Figure 8b: Patients 65 years or older and under 75 years old

Figure 8c: Patients over 75 years old

- Cemented acetabulum and femur without antibiotic
- Cemented acetabulum and femur with antibiotic
- Uncemented acetabulum and femur
- Reverse hybrid (cemented acetabulum)
- Hybrid (cemented femur)
- Missing information / Other

Hip
Fixation in revisions

Figure 9: Acetabular cup - All patients

Figure 10: Femoral stem - All patients
## Type of fixation and bone transplantation in revisions

### Table 14: Acetabular cup

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<th>Cemented Bone transpl.</th>
<th>Cemented No</th>
<th>Cemented Missing</th>
<th>Cemented Total</th>
<th>Uncemented Bone impaction</th>
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<td>12%</td>
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<td>4%</td>
<td>11%</td>
<td>71%</td>
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### Table 15: Femoral stem

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Registration of “Bone impaction” started in 1996.
Cements used in the acetabulum

Figure 11: In primary- and revision surgeries

Cements used in the femur

Figure 12: In primary- and revision surgeries
## Cemented primary prostheses

Table 16: (The 45 most common combinations of cup and stem)

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## Uncemented primary prostheses

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## Hybrid primary prostheses

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## Acetabular cups in primary operations

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Acetabular cups in revisions

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## Femoral stems in primary operations

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### Femoral stems in revisions

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Monoblock and modular femoral head

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# Femoral head diameter

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## Figure 13: In primary operations and revisions

![Graph showing modular prostheses with modular femoral head by year of operation](image-url)
## Femoral head prostheses

Table 27: In primary operations and revisions (The 50 most common)

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### Dual Mobility articulation

#### Table 28 In primary operation

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### ASA classification

#### Figure 14: Primary operations

ASA 1 = Healthy patients who smoke less than 5 cigarettes a day.
ASA 2 = Patients with an asymptomatic condition who are kept under medical control (f. ex. hypertension), or with diet (f. ex. diabetes mellitus type 2), and otherwise healthy patients who smoke five cigarettes or more daily.
ASA 3 = Patients having a condition that can cause symptoms. However, patients are kept under medical control (f. ex. moderate angina pectoris and mild asthma).
ASA 4 = Patients with a condition that is out of control (f. ex. heart failure and asthma).
ASA 5 = A moribund patient who is not expected to survive the operation.

Registration of ASA classification started in 2005
Thrombosis prophylaxis

Table 30: Primary operations *

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Figure 16: Primary operations

Figure 17: Revisions

* 1 = Yes - Medication started preoperatively
   2 = Yes - Medication started postoperatively
   3 = Yes - Missing information on medication start
   4 = No

Registration of thrombosis prophylaxis started in 2005
Thrombosis prophylaxis

Table 32: All operations

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<td>2,9 %</td>
<td>2,0 %</td>
<td>2,3 %</td>
<td>2,2 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warfarin (Marevan)</td>
<td>0,1 %</td>
<td>0,1 %</td>
<td>0,1 %</td>
<td>0,1 %</td>
<td>0,1 %</td>
<td></td>
<td></td>
<td>0,1 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ximelagatran (Exanta, Malagatran)</td>
<td>1,1 %</td>
<td>0,1 %</td>
<td>0,1 %</td>
<td>0,1 %</td>
<td>0,1 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,1 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination of 2 drugs</td>
<td>1,2 %</td>
<td>1,0 %</td>
<td>1,2 %</td>
<td>3,3 %</td>
<td>3,9 %</td>
<td>5,2 %</td>
<td>8,4 %</td>
<td>10,8 %</td>
<td>10,6 %</td>
<td>11,5 %</td>
</tr>
<tr>
<td>Clinical study</td>
<td>1,1 %</td>
<td>0,3 %</td>
<td>1,1 %</td>
<td>0,7 %</td>
<td>0,1 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,1 %</td>
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<td></td>
</tr>
<tr>
<td>No drugs</td>
<td>0,1 %</td>
<td>0,1 %</td>
<td>0,9 %</td>
<td>0,7 %</td>
<td>0,7 %</td>
<td>0,9 %</td>
<td>1,5 %</td>
<td>1,4 %</td>
<td>2,0 %</td>
<td>2,2 %</td>
</tr>
<tr>
<td>Missing</td>
<td>5,0 %</td>
<td>2,2 %</td>
<td>0,9 %</td>
<td>0,7 %</td>
<td>0,7 %</td>
<td>0,9 %</td>
<td>1,5 %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>14981</td>
<td>7711</td>
<td>7971</td>
<td>8325</td>
<td>8591</td>
<td>8660</td>
<td>9177</td>
<td>9448</td>
<td>9442</td>
<td>9809</td>
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</table>

Figure 18: Drugs - All operations

Table 33: Duration - All operations

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<th>Year</th>
<th>Days:</th>
<th>1-7</th>
<th>8-14</th>
<th>15-21</th>
<th>22-28</th>
<th>29-35</th>
<th>&gt;35</th>
<th>No drugs</th>
<th>Missing</th>
<th>Total</th>
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<tr>
<td>2015</td>
<td>1425</td>
<td>2864</td>
<td>720</td>
<td>937</td>
<td>2325</td>
<td>26</td>
<td>0</td>
<td>1512</td>
<td>9809</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>1396</td>
<td>2276</td>
<td>576</td>
<td>903</td>
<td>2943</td>
<td>45</td>
<td>0</td>
<td>1303</td>
<td>9442</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>1428</td>
<td>1402</td>
<td>597</td>
<td>1480</td>
<td>3228</td>
<td>63</td>
<td>0</td>
<td>1250</td>
<td>9448</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>1163</td>
<td>1595</td>
<td>702</td>
<td>1496</td>
<td>3091</td>
<td>34</td>
<td>0</td>
<td>1096</td>
<td>9177</td>
<td></td>
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<tr>
<td>2011</td>
<td>700</td>
<td>1744</td>
<td>695</td>
<td>1397</td>
<td>3197</td>
<td>40</td>
<td>1</td>
<td>886</td>
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<tr>
<td>2010</td>
<td>758</td>
<td>2172</td>
<td>636</td>
<td>1078</td>
<td>3154</td>
<td>44</td>
<td>2</td>
<td>747</td>
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<td>2009</td>
<td>881</td>
<td>2404</td>
<td>668</td>
<td>785</td>
<td>2637</td>
<td>37</td>
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<td>907</td>
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<td>787</td>
<td>701</td>
<td>2166</td>
<td>124</td>
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<td>2042</td>
<td>44</td>
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<td>7711</td>
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<td>2006</td>
<td>978</td>
<td>2096</td>
<td>1093</td>
<td>276</td>
<td>1738</td>
<td>111</td>
<td>0</td>
<td>1034</td>
<td>7326</td>
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<tr>
<td>2005</td>
<td>1036</td>
<td>2073</td>
<td>1203</td>
<td>363</td>
<td>1417</td>
<td>231</td>
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Registration of thrombosis prophylaxis started in 2005
Articulations

Table 34: In primary operations - All patients

<table>
<thead>
<tr>
<th>Cup + Femoral head</th>
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<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>UHMWPE + Steel</td>
<td>64316</td>
<td>2256</td>
<td>1909</td>
<td>1450</td>
<td>747</td>
<td>341</td>
<td>153</td>
<td>69</td>
<td>5</td>
<td>71246</td>
</tr>
<tr>
<td>UHMWPE + Cobalt-chrome</td>
<td>26628</td>
<td>1741</td>
<td>1356</td>
<td>1267</td>
<td>1013</td>
<td>638</td>
<td>526</td>
<td>236</td>
<td>108</td>
<td>33513</td>
</tr>
<tr>
<td>Highly crosslinked PE + Cobalt-chrome</td>
<td>383</td>
<td>595</td>
<td>905</td>
<td>1157</td>
<td>1886</td>
<td>2741</td>
<td>3556</td>
<td>4151</td>
<td>4740</td>
<td>20114</td>
</tr>
<tr>
<td>Highly crosslinked PE + Alumina</td>
<td>572</td>
<td>855</td>
<td>1000</td>
<td>1508</td>
<td>1511</td>
<td>2010</td>
<td>1916</td>
<td>1768</td>
<td>1508</td>
<td>12648</td>
</tr>
<tr>
<td>UHMWPE + Alumina</td>
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<td>516</td>
<td>602</td>
<td>354</td>
<td>293</td>
<td>146</td>
<td>44</td>
<td>8</td>
<td>4</td>
<td>10914</td>
</tr>
<tr>
<td>Highly crosslinked PE + Steel</td>
<td>15</td>
<td>13</td>
<td>157</td>
<td>278</td>
<td>532</td>
<td>651</td>
<td>726</td>
<td>713</td>
<td>800</td>
<td>3885</td>
</tr>
<tr>
<td>Alumina + Alumina</td>
<td>2107</td>
<td>202</td>
<td>227</td>
<td>322</td>
<td>368</td>
<td>246</td>
<td>201</td>
<td>108</td>
<td>7</td>
<td>3788</td>
</tr>
<tr>
<td>Highly crosslinked PE + Alumina/Zirconium¹</td>
<td>48</td>
<td>34</td>
<td>292</td>
<td>368</td>
<td>512</td>
<td>478</td>
<td>419</td>
<td>549</td>
<td>627</td>
<td>3327</td>
</tr>
<tr>
<td>UHMWPE + Titanium</td>
<td>1945</td>
<td>15</td>
<td>19</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1991</td>
</tr>
<tr>
<td>UHMWPE + Missing</td>
<td>1693</td>
<td>23</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1729</td>
</tr>
<tr>
<td>Alumina/Zirconium + Alumina/Zirconium¹</td>
<td>112</td>
<td>95</td>
<td>70</td>
<td>92</td>
<td>145</td>
<td>226</td>
<td>196</td>
<td>189</td>
<td>318</td>
<td>1443</td>
</tr>
<tr>
<td>UHMWPE + Zirconium</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1402</td>
</tr>
<tr>
<td>Cobalt-chrome + Cobalt-chrome</td>
<td>593</td>
<td>159</td>
<td>127</td>
<td>98</td>
<td>46</td>
<td>37</td>
<td>17</td>
<td>15</td>
<td>14</td>
<td>1106</td>
</tr>
<tr>
<td>Steel + Cobalt-Chrome</td>
<td>126</td>
<td>34</td>
<td>44</td>
<td>58</td>
<td>90</td>
<td>95</td>
<td>106</td>
<td>127</td>
<td>99</td>
<td>779</td>
</tr>
<tr>
<td>Highly crosslinked PE + Oxinium</td>
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<td>101</td>
<td>185</td>
<td>149</td>
<td>56</td>
<td>61</td>
<td>51</td>
<td>39</td>
<td>3</td>
<td>769</td>
</tr>
<tr>
<td>Missing + Cobalt-chrome</td>
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<td>10</td>
<td>24</td>
<td>50</td>
<td>39</td>
<td>41</td>
<td>30</td>
<td>35</td>
<td>739</td>
</tr>
<tr>
<td>Missing + Missing</td>
<td>542</td>
<td>19</td>
<td>9</td>
<td>10</td>
<td>8</td>
<td>9</td>
<td>15</td>
<td>15</td>
<td>10</td>
<td>637</td>
</tr>
<tr>
<td>Missing + Steel</td>
<td>277</td>
<td>9</td>
<td>11</td>
<td>10</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>332</td>
</tr>
<tr>
<td>UHMWPE + Alumina/Zirconium¹</td>
<td>59</td>
<td>78</td>
<td>81</td>
<td>40</td>
<td>18</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>280</td>
</tr>
<tr>
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<td>26</td>
<td>23</td>
<td>37</td>
<td>39</td>
<td>30</td>
<td>37</td>
<td>24</td>
<td>20</td>
<td>34</td>
<td>270</td>
</tr>
<tr>
<td>Missing + Alumina</td>
<td>151</td>
<td>31</td>
<td>9</td>
<td>19</td>
<td>8</td>
<td>13</td>
<td>12</td>
<td>7</td>
<td>4</td>
<td>254</td>
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<tr>
<td>Missing + Titanium</td>
<td>160</td>
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<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>0</td>
<td>177</td>
</tr>
<tr>
<td>Missing + Alumina/Zirconium¹</td>
<td>16</td>
<td>5</td>
<td>10</td>
<td>17</td>
<td>3</td>
<td>19</td>
<td>28</td>
<td>15</td>
<td>25</td>
<td>138</td>
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<tr>
<td>Highly crosslinked PE + Titanium</td>
<td>6</td>
<td>6</td>
<td>13</td>
<td>18</td>
<td>2</td>
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<td>15</td>
<td>116</td>
</tr>
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<td>4</td>
<td>10</td>
<td>19</td>
<td>8</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>77</td>
</tr>
<tr>
<td>UHMWPE + Oxinium</td>
<td>74</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>76</td>
</tr>
<tr>
<td>Other (n&lt;50)</td>
<td>178</td>
<td>14</td>
<td>21</td>
<td>25</td>
<td>23</td>
<td>22</td>
<td>27</td>
<td>33</td>
<td>28</td>
<td>371</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>111008</td>
<td>6849</td>
<td>7115</td>
<td>7330</td>
<td>7359</td>
<td>7843</td>
<td>8092</td>
<td>8128</td>
<td>8397</td>
<td>172121</td>
</tr>
</tbody>
</table>

Figure 19: In primary operations

1Alumina/Zirconium = Aluminum oxide and zirconium oxide composite.
Completeness analysis for the Norwegian Arthroplasty Register, 2013-2014

A completeness analysis for the Norwegian Arthroplasty Register (NAR) has been conducted by combining the data in the Register with data from the Norwegian Patient Register (NPR). The report and analysis were prepared by the NPR in collaboration with the NAR. A report on the implementation and results will be published on www.helsedirektoratet.no. There are separate statistics on primary operations and revisions. Here we only present the completeness analysis for primary operations, as the compilation work on revisions has not been completed.

### NCSP codes for combining data from NPR hospital stays and the Norwegian Arthroplasty Register

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary operation</td>
<td>NFB 20</td>
<td>Primary total prosthetic replacement of hip joint not using cement</td>
</tr>
<tr>
<td></td>
<td>NFB 30</td>
<td>Primary total prosthetic replacement of hip joint using hybrid technique</td>
</tr>
<tr>
<td></td>
<td>NFB 40</td>
<td>Primary total prosthetic replacement of hip joint using cement</td>
</tr>
<tr>
<td></td>
<td>NFB 99</td>
<td>Other primary prosthetic replacement of hip joint</td>
</tr>
</tbody>
</table>

The completeness rate for the Norwegian Arthroplasty Register was calculated as follows:

\[
\frac{(O_{NAR} + I_{both})}{(O_{NAR} + O_{NPR} + I_{both})}
\]

Completeness for the NPR was calculated in a similar way:

\[
\frac{(O_{NPR} + I_{both})}{(O_{NPR} + O_{NAR} + I_{both})}
\]

**Primary operations.** From 2013 to 2014, 16,681 primary hip replacements were reported to one or both of the registers. 96.7% of these were reported to the NAR while 97.2% were reported to the NPR. Completeness by hospital is divided into health regions; these show a completeness rate for the Norwegian Arthroplasty Register ranging from 79.1% to 100% between the different hospitals. For hospitals with a low completeness rate for the Norwegian Arthroplasty Register, either the form was not sent to the NAR or other interventions than hip arthroplasties were incorrectly coded with NFB 20/30/40/99 (There were only 7 operations in the category NFB 99 during the period).

**Procedure codes to be used for primary operations:** NFB 20 - NFB 30 - NFB 40 - NFB 99
Table: Completeness of reporting for primary hip prosthesis operations, 2013-2014.

<table>
<thead>
<tr>
<th>Helse Sør-Øst:</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vestre Viken HF - Kongsberg</td>
<td>472</td>
<td>99,8</td>
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</tr>
<tr>
<td>Martina Hansens Hospital</td>
<td>1 115</td>
<td>99,6</td>
<td>98,7</td>
</tr>
<tr>
<td>Lovisenberg Diakonale Sykehus</td>
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<td>99,6</td>
<td>98,5</td>
</tr>
<tr>
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<td>143</td>
<td>99,3</td>
<td>99,3</td>
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<td>682</td>
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</tr>
<tr>
<td>Sykehuset Telemark HF - Rjukan</td>
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<td>98,8</td>
<td>100</td>
</tr>
<tr>
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<td>98,5</td>
</tr>
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<td>98,8</td>
</tr>
<tr>
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<td>97,8</td>
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</tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>Vestre Viken HF - Ringerike</td>
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</tr>
<tr>
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<td>98,9</td>
</tr>
<tr>
<td>Vestre Viken HF - Drammen</td>
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</tr>
<tr>
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</tr>
<tr>
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<td>98,1</td>
</tr>
<tr>
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<td>92</td>
<td>97,9</td>
</tr>
<tr>
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<td>91,7</td>
<td>98,9</td>
</tr>
<tr>
<td>Oslo universitetssykehus HF</td>
<td>362</td>
<td>85,1</td>
<td>94,5</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary hip prosthesis operations, 2013-2014.
**Helse Vest**

Table: Completeness of reporting for primary hip prosthesis operations, 2013-2014.

<table>
<thead>
<tr>
<th>Helse Vest:</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helse Fonna HF - Stord</td>
<td>133</td>
<td>99,2</td>
<td>98,5</td>
<td></td>
</tr>
<tr>
<td>Helse Bergen HF - Kysthospitalitalet i Hagevik</td>
<td>788</td>
<td>99</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Haraldsplass Diakonale Sykehus</td>
<td>360</td>
<td>98,9</td>
<td>98,1</td>
<td></td>
</tr>
<tr>
<td>Helse Fonna HF - Haugesund</td>
<td>236</td>
<td>98,3</td>
<td>99,2</td>
<td></td>
</tr>
<tr>
<td>Helse Stavanger HF - Stavanger univ.sykehus</td>
<td>718</td>
<td>97,2</td>
<td>99,4</td>
<td></td>
</tr>
<tr>
<td>Helse Bergen HF - Haukeland univ.sjukehus</td>
<td>211</td>
<td>96,7</td>
<td>92,9</td>
<td></td>
</tr>
<tr>
<td>Helse Bergen HF - Voss sjukehus</td>
<td>144</td>
<td>93,1</td>
<td>95,8</td>
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</tr>
<tr>
<td>Helse Førde HF - Førde</td>
<td>225</td>
<td>88,4</td>
<td>98,7</td>
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</tr>
<tr>
<td>Helse Førde HF - Lærdal</td>
<td>137</td>
<td>82,5</td>
<td>93,4</td>
<td></td>
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<tr>
<td>Haugesund san.for. revmatismesykehus</td>
<td>64</td>
<td>81,3</td>
<td>96,9</td>
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</tr>
</tbody>
</table>

**Figure:** Completeness of reporting for primary hip prosthesis operations, 2013-2014.
### Helse Midt-Norge

**Table: Completeness of reporting for primary hip prosthesis operations, 2013-2014.**

<table>
<thead>
<tr>
<th>Helse Midt-Norge:</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helse Møre og Romsdal HF - Ålesund</td>
<td>304</td>
<td>99,7</td>
<td>98,4</td>
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</tr>
<tr>
<td>Helse Møre og Romsdal HF - Volda</td>
<td>186</td>
<td>99,5</td>
<td>99,5</td>
<td></td>
</tr>
<tr>
<td>St. Olavs hospital HF - Orkdal</td>
<td>295</td>
<td>99</td>
<td>98,6</td>
<td></td>
</tr>
<tr>
<td>Helse Nord-Trøndelag HF - Levanger</td>
<td>267</td>
<td>98,5</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>Helse Nord-Trøndelag HF - Namsos</td>
<td>275</td>
<td>98,2</td>
<td>99,6</td>
<td></td>
</tr>
<tr>
<td>St. Olavs hospital HF - Trondheim</td>
<td>703</td>
<td>96</td>
<td>98,3</td>
<td></td>
</tr>
<tr>
<td>Helse Møre og Romsdal HF - Kristiansund</td>
<td>277</td>
<td>95,7</td>
<td>99,6</td>
<td></td>
</tr>
<tr>
<td>Helse Møre og Romsdal HF - Molde</td>
<td>91</td>
<td>93,4</td>
<td>98,9</td>
<td></td>
</tr>
</tbody>
</table>

**NCSP-codes:** NFB 20 / NFB 30 / NFB 40 / NFB 99

---

**Figure: Completeness of reporting for primary hip prosthesis operations, 2013-2014.**
**Helse Nord**

**Table: Completeness of reporting for primary hip prosthesis operations, 2013-2014.**

<table>
<thead>
<tr>
<th>Helse Nord:</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Harstad</td>
<td>89</td>
<td>100</td>
<td>92,1</td>
<td></td>
</tr>
<tr>
<td>Nordlandssykehuset HF - Lofoten</td>
<td>47</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Tromsø</td>
<td>313</td>
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<td>97,8</td>
<td></td>
</tr>
<tr>
<td>Helse Finnmark HF - Hammerfest</td>
<td>121</td>
<td>97,5</td>
<td>98,3</td>
<td></td>
</tr>
<tr>
<td>Nordlandssykehuset HF - Bodø</td>
<td>235</td>
<td>93,6</td>
<td>97,9</td>
<td></td>
</tr>
<tr>
<td>Nordlandssykehuset HF - Vesterålen</td>
<td>92</td>
<td>92,4</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Narvik</td>
<td>48</td>
<td>91,7</td>
<td>97,9</td>
<td></td>
</tr>
<tr>
<td>Helgelandssykehuset - Rana</td>
<td>183</td>
<td>85,2</td>
<td>98,9</td>
<td></td>
</tr>
<tr>
<td>Helse Finnmark HF - Kirkenes</td>
<td>67</td>
<td>79,1</td>
<td>97</td>
<td></td>
</tr>
</tbody>
</table>

**Figure: Completeness of reporting for primary hip prosthesis operations, 2013-2014.**
Private hospitals with agreement with RHF

Table: Completeness of reporting for primary hip prosthesis operations, 2013-2014.

<table>
<thead>
<tr>
<th>Private hospitals with agreement with RHF:</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norsk idrettsmedisinsk institutt</td>
<td>26</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Volvat Medisinske Senter</td>
<td>51</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Privatsykehuset i Haugesund</td>
<td>23</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Teres - Drammen</td>
<td>117</td>
<td>97,4</td>
<td>42,7</td>
</tr>
<tr>
<td>Aleris Helse - Oslo</td>
<td>217</td>
<td>96,3</td>
<td>81,1</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary hip prosthesis operations, 2013-2014.
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In the period 1994-2015, a total of 75,012 knee replacements and 16,170 replacements of other joints than the hip and knee were recorded. There has been an increase of 9% in primary knee replacements since 2014. The number of unicondylar knee replacements has also risen in the past year. Osteoarthritis is the dominant cause of knee arthroplasties. The number of shoulder prostheses has increased by 8% since 2014. A comparative study of the incidence of knee arthroplasty in the Nordic countries and Australia showed that Norway still has the lowest proportion of knee arthroplasties (abstract Ackerman IN 2016).

NEW TABLES FOR KNEE AND SHOULDER PROSTHESES
We have created new tables for knee prostheses with more detailed information on prosthesis design (Table 6) and age (Figure i-l). There are a particularly large number of reoperations in patients under the age of 60. In collaboration with NARA (Nordic Arthroplasty Register Association), we have created a new classification for shoulder prostheses.

QUALITY OF ARTHROPLASTY IN NORWAY
Survival curves show a gradual improvement since 1994 in results of total knee prostheses, when the endpoint is revision surgery. In a study based on our register data, hospitals that performed more than 100 knee arthroplasties per year had fewer reoperations than hospitals with a lower number of such operations (Badawy M 2013). Unicondylar knee replacements should be concentrated at a smaller number of hospitals (Badawy 2014) to decrease the number of reoperations. Since 2012, there appears to have been a reduction in reoperations for unicondylar knee prostheses.

For ankle prostheses, recent results are poorer. More ankle arthroplasties are being performed on patients with osteoarthritis and after injuries. These patients are younger and more often male than rheumatic patients, who dominated previously. There is a need for randomised trials to clarify which patients should have ankle prostheses and which patients should have arthrodesis.

KNEE ARTHROPLASTY REVISIONS
There were 545 knee arthroplasty revisions reported to the Register in 2015. PhD candidate Tesfaye Leta is conducting a study of aseptic knee arthroplasty revisions. The first article was published in Acta 2015 (Leta T 2015). We found no statistically significant improvement in knee arthroplasty revisions in recent years, but a tendency towards better results with longer follow-up. Revision of the whole prosthesis gave better results than revision of individual components. 22% of the revisions are operated again after 10 years, and half of the revisions take place within two years. Most early revisions are due to infection and instability. Results for revision operations are significantly worse than for primary operations.

We find that the use of a stem is often not checked on the form. When a stem is used, it must be indicated whether it was a tibial or femoral stem, and a sticker must be attached to the back of the form. Some prostheses-stems can be used both on the femoral and tibial side, and if this is not checked on the reporting form, we have no way of knowing where the stem was used.

In knee arthroplasty revisions involving only insertion of the patellar component due to pain, patients’ quality of life improved significantly. The effect was most pronounced in the patients with the most pain before the revision. In one-third of patients, the surgery had no effect (Leta T 2015).
Total arthroplasty revision was technically more challenging than revision of unicondylar knee prostheses, demanding more bone packing and stems, and with a higher infection rate. However, no difference was found in pain, quality of life, function or survival of the prostheses between revision of a total knee arthroplasty and revision of a unicondylar knee arthroplasty (Leta T 2016).

**COMPLETENESS ANALYSIS**
In this report, we only show completeness of reporting for primary operations. We are working on new coverage analyses for revision arthroplasty of the knee and other joints. These will be published in the reports for each hospital.

**SUMMARY OF SIGNIFICANT SCIENTIFIC FINDINGS LAST YEAR**
We have published an article on shoulder prostheses (Fevang BT 2015) showing that the durability of shoulder prostheses has improved in recent years, particularly for anatomic total prostheses. The results were generally somewhat better for cemented than for uncemented prostheses. Results for cup prostheses (resurfacing) have deteriorated in recent years, and were especially poor for uncemented prostheses.

Several RCTs have shown that the outcomes of conservative treatment and hemiarthroplasties are equally good for dislocated three or four part shoulder fractures. However, the use of reverse shoulder prostheses in acute fractures is increasing, which may be due to an ongoing RCT. There is a need for RCTs to study the efficacy of this type of prosthesis in comparison with non-operative treatment.

The four Nordic countries (Nordic Arthroplasty Register Association) have begun to collaborate on shoulder prosthesis studies, and the first study has now been published (Rasmussen J 2016). Shoulder arthroplasty has increased in all the countries, mostly due to osteoarthritis (34%) and fractures (34%). Especially arthroplasty for osteoarthritis has increased. The incidence of shoulder prostheses was lower in Norway than in Denmark and Sweden. Results for the Delta Xtend reverse prosthesis were significantly better than for the Delta III, but the surgery took place in different time periods.

With previous tibial osteotomy, knee arthroplasty took 13 minutes longer, but prosthesis survival was the same as with knee arthroplasty without previous osteotomy (Badawy M 2015).

We found a reduction in arthroplasty, arthrodesis and synovectomy for due to the diagnosis of rheumatoid arthritis from 1994 to 2012. This is linked to improvements in the pharmacological treatment of rheumatoid arthritis (Nystad T 2015).

Hybrid fixation (uncemented femur and cemented tibia) of total knee prosthesis gave equally good survival results, or better, depending on the type of prosthesis, with 11 years of follow-up. Operating time was shorter with hybrid fixation (Petursson G 2015).

We now have an interesting partnership with Oslo University Hospital, with a link between HUNT (the Nord-Trøndelag Health Study) and the Hip and Knee Arthroplasty Registers. Marianne Bakke Johnsen and Alf Inge Hellevik are the PhD candidates involved. The first article has been published (Johnson MB 2016) and examines physical activity in leisure time. High levels of physical activity in leisure time increased the risk of total hip arthroplasty in both men and women, but for knee arthroplasty, this effect was only seen in women.
Thank you for good reporting and we welcome suggestions for research projects.

Bergen, 17.06.2016

Ove Furnes
Chief Physician/Professor
Surgery of Knees and Other Joints

Anne Marie Fenstad
Biostatistician/Researcher

Yngvar Krukhaug
Chief Physician
Hand and Finger Surgery

Irina A Kvinnesland
IT Consultant

Christoffer Bartz-Johannessen
Biostatistician/Researcher
Survival curves for knee prostheses

Survival curves estimated by the Kaplan-Meier method. Survival estimate is given as long as > 50 prostheses are in the risk set. Risk ratio (RR) estimates adjusted for age, sex and diagnosis.
Survival curves for knee prostheses - Fixation

1994 - 2015

Survival curves for knee prostheses - Fixation

Kaplan-Meier survival curves. Survival estimate is given as long as > 50 prostheses are in the risk set. Risk ratio (RR) estimates adjusted for age, sex and diagnosis.
Survival curves for knee prostheses - Age
1994 - 2015

Survival curves estimated by the Kaplan-Meier method. Survival estimate is given as long as > 50 prostheses are in the risk set.
Risk ratio (RR) estimates adjusted for age, sex and diagnosis.
Last 10 years survival curves for all hospitals individually

Endpoint all revisions
- Mean all hospitals
- All hospitals individually in the period 2006–2015

Endpoint revision due to infection
- Mean all hospitals
- All hospitals individually in the period 2006–2015
One stage bilateral knee prosthesis operations

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>34</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>21</td>
<td>21</td>
<td>40</td>
<td>48</td>
<td>211</td>
</tr>
</tbody>
</table>

A one stage bilateral operation is an operation where the patient is operated in both knees during the same operation or on the same day. Only primary operations are included.
KNEE PROSTHESES

Table 1: Annual numbers of operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary operations</th>
<th>Reoperations *</th>
<th>Revisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>6 093 (91.7%)</td>
<td>9 (0.1%)</td>
<td>545 (8.2%)</td>
<td>6 647</td>
</tr>
<tr>
<td>2014</td>
<td>5 589 (91.8%)</td>
<td>7 (0.1%)</td>
<td>490 (8.1%)</td>
<td>6 086</td>
</tr>
<tr>
<td>2013</td>
<td>5 004 (91.3%)</td>
<td>6 (0.1%)</td>
<td>473 (8.6%)</td>
<td>5 483</td>
</tr>
<tr>
<td>2012</td>
<td>4 915 (90.9%)</td>
<td>7 (0.1%)</td>
<td>486 (9.0%)</td>
<td>5 408</td>
</tr>
<tr>
<td>2011</td>
<td>4 544 (91.3%)</td>
<td>2 (0.0%)</td>
<td>429 (8.6%)</td>
<td>4 975</td>
</tr>
<tr>
<td>2010</td>
<td>4 400 (91.5%)</td>
<td>(0.0%)</td>
<td>411 (8.5%)</td>
<td>4 811</td>
</tr>
<tr>
<td>2009</td>
<td>4 468 (91.1%)</td>
<td>(0.0%)</td>
<td>438 (8.9%)</td>
<td>4 906</td>
</tr>
<tr>
<td>2008</td>
<td>3 990 (91.6%)</td>
<td>(0.0%)</td>
<td>367 (8.4%)</td>
<td>4 357</td>
</tr>
<tr>
<td>2007</td>
<td>3 588 (92.3%)</td>
<td>(0.0%)</td>
<td>301 (7.7%)</td>
<td>3 889</td>
</tr>
<tr>
<td>2006</td>
<td>3 109 (92.1%)</td>
<td>(0.0%)</td>
<td>267 (7.9%)</td>
<td>3 376</td>
</tr>
<tr>
<td>2005</td>
<td>3 254 (92.8%)</td>
<td>(0.0%)</td>
<td>251 (7.2%)</td>
<td>3 505</td>
</tr>
<tr>
<td>2004</td>
<td>2 906 (90.2%)</td>
<td>(0.0%)</td>
<td>317 (9.8%)</td>
<td>3 223</td>
</tr>
<tr>
<td>2003</td>
<td>3 037 (92.4%)</td>
<td>(0.0%)</td>
<td>250 (7.6%)</td>
<td>3 287</td>
</tr>
<tr>
<td>2002</td>
<td>2 274 (91.9%)</td>
<td>(0.0%)</td>
<td>218 (8.7%)</td>
<td>2 492</td>
</tr>
<tr>
<td>2001</td>
<td>2 237 (91.8%)</td>
<td>(0.0%)</td>
<td>200 (8.2%)</td>
<td>2 437</td>
</tr>
<tr>
<td>2000</td>
<td>1 874 (91.7%)</td>
<td>(0.0%)</td>
<td>169 (8.3%)</td>
<td>2 043</td>
</tr>
<tr>
<td>1994-99</td>
<td>7 412 (91.7%)</td>
<td>(0.0%)</td>
<td>675 (8.3%)</td>
<td>8 087</td>
</tr>
<tr>
<td>Total</td>
<td>68 694 (91.6%)</td>
<td>31 (0.0%)</td>
<td>6 287 (8.4%)</td>
<td>75 012</td>
</tr>
</tbody>
</table>

* Reoperation where prosthetic parts were not changed or removed (soft tissue debridements for infected prosthesis, prosthetic parts were not changed)

Figure 1: Annual numbers of operations

53.4 % of all operations were performed on the right side. 64.1 % performed in women.

Mean age at primary surgery was 68.6 years, 69.3 years for women and 67.4 years for men

Figure 2: Incidence of primary knee prostheses

53.4 % of all operations were performed on the right side. 64.1 % performed in women.

Mean age at primary surgery was 68.6 years, 69.3 years for women and 67.4 years for men
Figure 3: Age at the insertion of primary total knee prostheses

Figure 4: Age at the insertion of primary unicondylar knee prostheses
The Norwegian Arthroplasty Register

Types of knee prostheses

Table 2: Primary operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Total with patella</th>
<th>Total without patella</th>
<th>Unicondylar</th>
<th>Patello-femoral</th>
<th>Bicompartmental</th>
<th>Hinged prostheses</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>157 (2.6%)</td>
<td>5 119 (84.0%)</td>
<td>747 (12.3%)</td>
<td>39 (0.6%)</td>
<td>31 (0.5%)</td>
<td>7 (0.1%)</td>
<td>2 (0.0%)</td>
<td>6 093</td>
</tr>
<tr>
<td>2014</td>
<td>111 (2.0%)</td>
<td>4 847 (86.7%)</td>
<td>586 (10.5%)</td>
<td>38 (0.7%)</td>
<td>7 (0.1%)</td>
<td>2 (0.0%)</td>
<td>5 589</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>87 (1.7%)</td>
<td>4 403 (88.0%)</td>
<td>468 (9.4%)</td>
<td>38 (0.8%)</td>
<td>6 (0.1%)</td>
<td>2 (0.0%)</td>
<td>5 004</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>99 (2.0%)</td>
<td>4 296 (87.4%)</td>
<td>473 (9.6%)</td>
<td>33 (0.7%)</td>
<td>12 (0.2%)</td>
<td>2 (0.0%)</td>
<td>4 915</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>88 (1.9%)</td>
<td>3 976 (87.5%)</td>
<td>439 (9.7%)</td>
<td>29 (0.6%)</td>
<td>12 (0.3%)</td>
<td>4 544</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>88 (2.0%)</td>
<td>3 867 (87.9%)</td>
<td>414 (9.4%)</td>
<td>23 (0.5%)</td>
<td>8 (0.2%)</td>
<td>4 400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>96 (2.1%)</td>
<td>3 887 (87.0%)</td>
<td>463 (10.4%)</td>
<td>19 (0.4%)</td>
<td>1 (0.0%)</td>
<td>2 (0.0%)</td>
<td>4 468</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>115 (2.9%)</td>
<td>3 413 (85.5%)</td>
<td>440 (11.0%)</td>
<td>21 (0.5%)</td>
<td>1 (0.0%)</td>
<td>3 990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>141 (3.9%)</td>
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* Indicated by the surgeon on the report form

Figure 5: Primary operations

Table 3: Classification of stability and modularity in primary total prostheses

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MS = Minimally stabilized = Posterior cruciate retaining prosthesis and deep dish
PS = Posterior cruciate stabilizing prostheses
CCK = Constrained Condylar Knee = high level stabilized
MBT = Metal backed tibia
All poly = All polyethylene tibial component

* Information taken from the catalogue number of prostheses
Reasons for primary operations - Total knee prostheses

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<th>Mb. Bechterew</th>
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Diseases are not mutually exclusive. More than one reason for operation is possible.

Figure 6:

- **Idiopathic osteoarthritis**
- **Rheumatoid arthritis**
- **Sequelae after fracture**
- **Mb. Bechterew**
- **Sequelae, ligament tear**
- **Sequelae, meniscal tear**
- **Acute fracture**
- **Sequelae, infection**
- **Psoriasis arthritis**
- **Osteonecrosis**
- **Other**
- **Missing**
Reasons for primary operations - Unicondylar knee prosthesis

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Diseases are not mutually exclusive. More than one reason for operation is possible.

Figure 7:
Use of cement - Primary total knee prostheses

Figure 8: Femur

Figure 9: Tibia

Figure 10: Patella
Use of cement in total knee prostheses

Figure 11: Primary operations

Use of cement in unicondylar knee prostheses

Figure 13: Primary operations
The 7 most common primary total prostheses without patella component in 2013-2015

Table 6:

<table>
<thead>
<tr>
<th>Product</th>
<th>Cemented *</th>
<th>Uncemented *</th>
<th>Hybrid</th>
<th>All poly</th>
<th>Rotating platform</th>
<th>HXLPE</th>
<th>Stabilization</th>
<th>Total</th>
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<tbody>
<tr>
<td>NexGen</td>
<td>5 911</td>
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<td>6 688</td>
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<td>1 799</td>
<td>58</td>
<td>327</td>
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<td>0</td>
<td>2184</td>
<td>2 187</td>
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<td>PFC-Sigma</td>
<td>1 140</td>
<td>614</td>
<td>131</td>
<td>0</td>
<td>1 882</td>
<td>0</td>
<td>1879</td>
<td>1 887</td>
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<td>Legion</td>
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<td>946</td>
<td>0</td>
<td>0</td>
<td>48</td>
<td>1509</td>
<td>1 557</td>
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<td>147</td>
<td>317</td>
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<td>0</td>
<td>1146</td>
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<td>1 146</td>
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<td>0</td>
<td>752</td>
<td>744</td>
<td>1 769</td>
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<td>0</td>
<td>0</td>
<td>260</td>
<td>17</td>
<td>261</td>
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Hybrid = Uncemented femur and cemented tibia
All poly = All polyethylene tibial component
HXLPE = Highly cross linked polyethylene
MS = Minimally stabilized = Posterior cruciate retaining prostheses and deep dish
PS = Posterior cruciate stabilizing prostheses
CCK = Constrained Condylar Knee = high level stabilized
* Surgeon’s report for fixation

Table 6 A: Femur component

Product: NexGen (31)

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Cemented *</th>
<th>Uncemented</th>
<th>Stabilization</th>
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<tbody>
<tr>
<td>CR Option</td>
<td>4 428</td>
<td>2</td>
<td>0</td>
<td>4 432</td>
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<tr>
<td>CR-flex Option</td>
<td>608</td>
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<td>0</td>
<td>608</td>
</tr>
<tr>
<td>CR-flex porous uncemented</td>
<td>25</td>
<td>379</td>
<td>404</td>
<td>404</td>
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<tr>
<td>CR-flex gender</td>
<td>373</td>
<td>0</td>
<td>0</td>
<td>373</td>
</tr>
<tr>
<td>CR Porous uncemented</td>
<td>34</td>
<td>261</td>
<td>295</td>
<td>295</td>
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<tr>
<td>LPS Option</td>
<td>142</td>
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<td>142</td>
<td>142</td>
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<tr>
<td>CR Precoat</td>
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<td>1</td>
<td>122</td>
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<td>LPS-flex porous standard</td>
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<td>109</td>
<td>111</td>
<td>111</td>
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<tr>
<td>LCCK Option</td>
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<td>90</td>
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<tr>
<td>LPS-flex Option</td>
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<td>83</td>
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<tr>
<td>CR-flex porous</td>
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<td>10</td>
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<td>Other</td>
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Product: PROFIX (35)

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<th>Stabilization</th>
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<tbody>
<tr>
<td>CR non-porous cemented</td>
<td>576</td>
<td>2</td>
<td>0</td>
<td>578</td>
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<tr>
<td>CR porous uncemented</td>
<td>98</td>
<td>457</td>
<td>555</td>
<td>555</td>
</tr>
<tr>
<td>CR Oxinium</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
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Product: LCS Complete (48)

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<thead>
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<th>Uncemented</th>
<th>Stabilization</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cemented</td>
<td>1 764</td>
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<td>0</td>
<td>1 765</td>
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<tr>
<td>Uncemented</td>
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<td>417</td>
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<tr>
<td>Other</td>
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<tr>
<td>Unknown</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
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</tbody>
</table>
### Product: PFC-Sigma (49)

<table>
<thead>
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<th>Cemented *</th>
<th>Uncemented *</th>
<th>Stabilization</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR cemented</td>
<td>1 131</td>
<td>0</td>
<td>1132 MS 0 PS 0 CCK 0</td>
<td>1 132</td>
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<tr>
<td>CR uncemented</td>
<td>5</td>
<td>742</td>
<td>747 MS 0 PS 0 CCK 5</td>
<td>747</td>
</tr>
<tr>
<td>PS</td>
<td>5</td>
<td>0</td>
<td>0 PS 5 CCK 0</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
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<td>0</td>
<td>0 PS 0 CCK 0</td>
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<td>Unknown</td>
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<td>0</td>
<td>0 PS 0 CCK 0</td>
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</table>

### Product: Triathlon (58)

<table>
<thead>
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<th>Cemented *</th>
<th>Uncemented *</th>
<th>Stabilization</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR cemented</td>
<td>601</td>
<td>3</td>
<td>605 MS 0 PS 0 CCK 0</td>
<td>605</td>
</tr>
<tr>
<td>Beaded CR uncemented</td>
<td>3 132</td>
<td>135 MS 0 PS 0 CCK 12</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>TS cemented</td>
<td>12</td>
<td>0</td>
<td>0 PS 10 CCK 12</td>
<td>12</td>
</tr>
<tr>
<td>PS cemented</td>
<td>10</td>
<td>0</td>
<td>0 PS 10 CCK 0</td>
<td>10</td>
</tr>
<tr>
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<td>0 PS 0 CCK 0</td>
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### Product: Legion (62)

<table>
<thead>
<tr>
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<th>Cemented *</th>
<th>Uncemented *</th>
<th>Stabilization</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR uncemented</td>
<td>10</td>
<td>942</td>
<td>953 MS 0 PS 0 CCK 0</td>
<td>953</td>
</tr>
<tr>
<td>CR cemented</td>
<td>545</td>
<td>0</td>
<td>545 MS 0 PS 0 CCK 0</td>
<td>545</td>
</tr>
<tr>
<td>PS cemented</td>
<td>46</td>
<td>5</td>
<td>51 PS 0 CCK 51</td>
<td>51</td>
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<tr>
<td>CR Oxinium cemented</td>
<td>8 0</td>
<td>8 MS 0 PS 0 CCK 8</td>
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</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>1</td>
<td>1 PS 1 CCK 3</td>
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<tr>
<td>Unknown</td>
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<td>0</td>
<td>0 PS 0 CCK 0</td>
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</table>

### Product: Vanguard TM (67)

<table>
<thead>
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<th>Cemented *</th>
<th>Uncemented *</th>
<th>Stabilization</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR Anatomic interlok cemented</td>
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<td>0</td>
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<td>258</td>
</tr>
<tr>
<td>PS Anatomic interlok cemented</td>
<td>15</td>
<td>0</td>
<td>15 PS 0 CCK 0</td>
<td>15</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>0</td>
<td>2 PS 1 CCK 3</td>
<td>3</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>0</td>
<td>0 PS 0 CCK 0</td>
<td>1</td>
</tr>
</tbody>
</table>

MS = Minimally stabilized = Posterior cruciate retaining prostheses and deep dish
PS = Posterior cruciate stabilizing prostheses
CCK = Constrained Condylar Knee = high level stabilized
* Surgeon's report for fixation

### Table 6 B: Tibia

### Product: NexGen (31)

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Cemented *</th>
<th>Uncemented *</th>
<th>All poly</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option cemented</td>
<td>4 339</td>
<td>8</td>
<td>0</td>
<td>4 347</td>
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<tr>
<td>Precoat PMMA stemmed cemented</td>
<td>1 922</td>
<td>1</td>
<td>0</td>
<td>1 924</td>
</tr>
<tr>
<td>Trabecular metal uncemented</td>
<td>6</td>
<td>301</td>
<td>0</td>
<td>307</td>
</tr>
<tr>
<td>Precoat AP wedge stemmed</td>
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<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Unknown</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>8</td>
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</table>

### Product: PROFIX (35)

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Cemented *</th>
<th>Uncemented *</th>
<th>All poly</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non porous cemented</td>
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<td>3</td>
<td>0</td>
<td>961</td>
</tr>
<tr>
<td>Porous w/o hole uncemented</td>
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<td>0</td>
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<tr>
<td>Porous uncemented</td>
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<td>0</td>
<td>0</td>
<td>31</td>
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<tr>
<td>Other</td>
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<tr>
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<td>3</td>
<td>0</td>
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</table>
### Table 6 B: Tibia

**Product: LCS Complete (48)**

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Cemented *</th>
<th>Uncemented *</th>
<th>All poly</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1</td>
<td>0</td>
<td>2 112</td>
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<td>No keel MBT* uncemented</td>
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<td>56</td>
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<td>57</td>
</tr>
<tr>
<td>MBT* revision</td>
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<td>0</td>
<td>13</td>
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<td>3</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
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</tbody>
</table>

* MBT = Mobile bearing tray

**Product: PFC-Sigma (49)**

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Cemented *</th>
<th>Uncemented *</th>
<th>All poly</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>With keel MBT* cemented</td>
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<td>1 239</td>
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<tr>
<td>With keel MBT* uncemented</td>
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<td>0</td>
<td>615</td>
</tr>
<tr>
<td>No keel MBT* cemented</td>
<td>13</td>
<td>1</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>MBT* revision</td>
<td>6</td>
<td>7</td>
<td>0</td>
<td>13</td>
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<tr>
<td>Unknown</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
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</tbody>
</table>

* MBT = Mobile bearing tray

**Product: Triathlon (58)**

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Cemented *</th>
<th>Uncemented *</th>
<th>All poly</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<td>Cemented</td>
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<td>0</td>
<td>720</td>
</tr>
<tr>
<td>PA uncemented</td>
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<td>20</td>
<td>0</td>
<td>23</td>
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<tr>
<td>Universal cemented</td>
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<td>0</td>
<td>21</td>
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<td>5</td>
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**Product: Legion (62)**

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Cemented *</th>
<th>Uncemented *</th>
<th>All poly</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Male tapered cemented</td>
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<td>1 552</td>
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<tr>
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<td>0</td>
<td>4</td>
<td>4</td>
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**Product: Vanguard TM (67)**

<table>
<thead>
<tr>
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<th>Uncemented *</th>
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<th>Total</th>
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</thead>
<tbody>
<tr>
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<td>0</td>
<td>257</td>
</tr>
<tr>
<td>Interlok Monobloc PCR cemented</td>
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<td>0</td>
<td>15</td>
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<tr>
<td>Other</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

All poly = All polyethylene tibial component
MS = Minimally stabilized = Posterior cruciate retaining prostheses and deep dish
PS = Posterior cruciate stabilizing prostheses
CCK = Constrained Condylar Knee = high level stabilized
* Surgeon’s report for fixation
### Table 6 C: Foring Tibia Insert

#### Product: NexGen (31)

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Rotating platform</th>
<th>HXLPE</th>
<th>Stabilization</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>MS</td>
<td>PS</td>
</tr>
<tr>
<td>CR-Flex</td>
<td>0</td>
<td>0</td>
<td>5880</td>
<td>0</td>
</tr>
<tr>
<td>LPS-Flex Fixed</td>
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<td>0</td>
<td>398</td>
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<td>CR-Prolong</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LCCK</td>
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<td>0</td>
<td>61</td>
<td>0</td>
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<tr>
<td>Other</td>
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</table>

#### Product: PROFIX (35)

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<th>HXLPE</th>
<th>Stabilization</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>MS</td>
<td>PS</td>
</tr>
<tr>
<td>Conforming PCR</td>
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<td>0</td>
<td>1002</td>
<td>0</td>
</tr>
<tr>
<td>Conforming+</td>
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<td>0</td>
<td>136</td>
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<td>Unknown</td>
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<td>0</td>
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#### Product: LCS Complete (48)

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<tr>
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<th>Stabilization</th>
<th>Total</th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td>MS</td>
<td>PS</td>
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<tr>
<td>Rotating platform RP</td>
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#### Product: PFC-Sigma (49)

<table>
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<th>HXLPE</th>
<th>Stabilization</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>MS</td>
<td>PS</td>
</tr>
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HXLPE = Highly cross linked polyethylene  
MS = Minimally stabilized = Posterior cruciate retaining prostheses and deep dish  
PS = Posterior cruciate stabilizing prostheses  
CCK = Constrained Condylar Knee = high level stabilized
### Table 7: Femoral prostheses in primary operations

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### Unicondylar knee prostheses

**Table 11: Femoral prostheses in primary operations**

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### Patellofemoral prostheses

**Table 13: Femoral prostheses in primary operations**

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**Table 14: Patella prostheses in primary operations**

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Reasons for revisions

Table 15: Reasons for revisions of total knee prostheses with patella

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Revision causes are not mutually exclusive. More than one reason for revision is possible

Figure 14: Reasons for revisions of total knee prostheses with patella
Reasons for revisions

Table 16: Reasons for revisions of total knee prostheses without patella

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Revision causes are not mutually exclusive. More than one reason for revision is possible.

Figure 15: Reasons for revisions of total knee prostheses without patella

- Missing
- Other
- Progression of osteoarthritis
- Defect polyethylene
- Pain
- Fracture (near implant)
- Deep infection
- Malalignment
- Instability
- Dislocation (not patella)
- Dislocation of patella
- Loose distal component
- Loose proximal component
### Table 17: Reasons for revisions of unicondylar knee prostheses

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Revision causes are not mutually exclusive. More than one reason for revision is possible.

### Figure 16: Reasons for revisions of unicondylar knee prostheses

![Diagram showing reasons for revisions of unicondylar knee prostheses over time](image-url)
Type of revision

Table 18: Total knee prostheses with patella

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Figure 17: Total knee prostheses with patella
Type of revision

Table 19: Total knee prostheses without patella

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Figure 18: Total knee prostheses without patella
Type of revision

Table 20: Unicondylar prostheses

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Figure 19: Unicondylar prostheses
ASA classification all knee prostheses

Table 21: Primary operations all knee prostheses

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</table>

ASA 1 = Healthy patients who smoke less than 5 cigarettes a day.
ASA 2 = Patients with an asymptomatic condition who are kept under medical control (f. ex. hypertension), or with diet (f. ex. diabetes mellitus type 2), and otherwise healthy patients who smoke five cigarettes or more daily.
ASA 3 = Patients having a condition that can cause symptoms. However, patients are kept under medical control (f. ex. moderate angina pectoris and mild asthma).
ASA 4 = Patients with a condition that is out of control (f. ex. heart failure and asthma).
ASA 5 = A moribund patient who is not expected to survive the operation.

Registration of ASA classification started in 2005

Table 22: Revisions

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ASA 1 = Healthy patients who smoke less than 5 cigarettes a day.
ASA 2 = Patients with an asymptomatic condition who are kept under medical control (f. ex. hypertension), or with diet (f. ex. diabetes mellitus type 2), and otherwise healthy patients who smoke five cigarettes or more daily.
ASA 3 = Patients having a condition that can cause symptoms. However, patients are kept under medical control (f. ex. moderate angina pectoris and mild asthma).
ASA 4 = Patients with a condition that is out of control (f. ex. heart failure and asthma).
ASA 5 = A moribund patient who is not expected to survive the operation.
**Thrombosis prophylaxis**

Table 23: Primary operations

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*Missing information on medication start

Table 24: Revisions

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Figure 22: Primary operations

Figure 23: Revisions

Registration of thrombosis prophylaxis started in 2005
Thrombosis prophylaxis

Table 25: Drugs - All operations

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<td>64.4%</td>
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<td>32.8%</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ximelagatran (Exanta, Malagatran)</td>
<td>2.5%</td>
<td>1.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No drugs</td>
<td>0.3%</td>
<td>0.5%</td>
<td>0.2%</td>
<td>0.5%</td>
<td>0.3%</td>
<td>0.3%</td>
<td>0.2%</td>
<td>0.3%</td>
<td>0.5%</td>
<td>0.6%</td>
<td></td>
</tr>
<tr>
<td>Clinical study</td>
<td>0.3%</td>
<td>0.7%</td>
<td>1.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination of 2 drugs</td>
<td>1.7%</td>
<td>1.6%</td>
<td>1.3%</td>
<td>1.2%</td>
<td>2.1%</td>
<td>3.1%</td>
<td>3.5%</td>
<td>7.3%</td>
<td>10.1%</td>
<td>12.3%</td>
<td>12.2%</td>
</tr>
<tr>
<td>Other</td>
<td>0.6%</td>
<td>0.4%</td>
<td>0.2%</td>
<td>0.3%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.6%</td>
<td>0.5%</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>4.6%</td>
<td>2.1%</td>
<td>1.9%</td>
<td>1.7%</td>
<td>1.5%</td>
<td>1.1%</td>
<td>1.4%</td>
<td>1.3%</td>
<td>1.6%</td>
<td>1.2%</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

Figure 24: Drugs

Table 26: Duration - All operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Days:</th>
<th>1-7</th>
<th>8-14</th>
<th>15-21</th>
<th>22-28</th>
<th>29-35</th>
<th>&gt;35</th>
<th>No drugs</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1 005</td>
<td>2 382</td>
<td>977</td>
<td>327</td>
<td>865</td>
<td>143</td>
<td>40</td>
<td>908</td>
<td>6 647</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>949</td>
<td>1 775</td>
<td>1 017</td>
<td>373</td>
<td>1 064</td>
<td>158</td>
<td>32</td>
<td>721</td>
<td>6 089</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>702</td>
<td>1 580</td>
<td>997</td>
<td>408</td>
<td>994</td>
<td>131</td>
<td>16</td>
<td>655</td>
<td>5 483</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>564</td>
<td>1 632</td>
<td>1 202</td>
<td>346</td>
<td>890</td>
<td>105</td>
<td>13</td>
<td>656</td>
<td>5 408</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>285</td>
<td>1 343</td>
<td>1 370</td>
<td>412</td>
<td>795</td>
<td>107</td>
<td>10</td>
<td>653</td>
<td>4 975</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>347</td>
<td>1 346</td>
<td>1 319</td>
<td>242</td>
<td>776</td>
<td>57</td>
<td>14</td>
<td>710</td>
<td>4 811</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>398</td>
<td>1 586</td>
<td>1 164</td>
<td>229</td>
<td>760</td>
<td>10</td>
<td>14</td>
<td>745</td>
<td>4 906</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>423</td>
<td>1 454</td>
<td>827</td>
<td>171</td>
<td>749</td>
<td>38</td>
<td>20</td>
<td>675</td>
<td>4 357</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>489</td>
<td>1 175</td>
<td>793</td>
<td>122</td>
<td>740</td>
<td>16</td>
<td>9</td>
<td>545</td>
<td>3 889</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>440</td>
<td>1 035</td>
<td>572</td>
<td>115</td>
<td>540</td>
<td>20</td>
<td>17</td>
<td>637</td>
<td>3 376</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>546</td>
<td>1 059</td>
<td>618</td>
<td>116</td>
<td>526</td>
<td>73</td>
<td>12</td>
<td>555</td>
<td>3 505</td>
<td></td>
</tr>
</tbody>
</table>

Registration of thrombosis prophylaxis started in 2005
### Fibrinolysis Inhibitor

Table 27: Drugs - Primary operations

<table>
<thead>
<tr>
<th>Drugs</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclokapron (Tranexamic acid)</td>
<td>2</td>
<td>1371</td>
<td>3482</td>
<td>3912</td>
<td>4682</td>
<td>5309</td>
</tr>
<tr>
<td>Missing</td>
<td>74</td>
<td>153</td>
<td>116</td>
<td>112</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2</td>
<td>1445</td>
<td>3635</td>
<td>4028</td>
<td>4794</td>
<td>5377</td>
</tr>
</tbody>
</table>

Registration of fibrinolysis inhibitor started in 2011

### Perioperative complications

Table 28: For primary total prostheses (the 10 most common complications)

<table>
<thead>
<tr>
<th>Type</th>
<th>1994-06</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th><strong>Total</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patella tendon rupture / Avulsion fractures /</td>
<td>1</td>
<td>13</td>
<td>12</td>
<td>10</td>
<td>20</td>
<td>17</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ligament rupture / tendon injury</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical problem with cement</td>
<td>12</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>10</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rupture / damage MCL (medial collateral ligament)</td>
<td>1</td>
<td>7</td>
<td>14</td>
<td>5</td>
<td>12</td>
<td>5</td>
<td>5</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fracture of distal bone</td>
<td>22</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>Failure of instruments</td>
<td>11</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>49</td>
</tr>
<tr>
<td>Blood torniquet failing</td>
<td>20</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Fissure in the distal bone</td>
<td>16</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>45</td>
</tr>
<tr>
<td>Fracture of proximal bone</td>
<td>12</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>41</td>
</tr>
<tr>
<td>Adm. failure (missing comp. etc.)</td>
<td>15</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>7</td>
<td>2</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem due to difficult anatomy</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>39</td>
</tr>
<tr>
<td>Other periop. compl.</td>
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<td>21</td>
<td>25</td>
<td>29</td>
<td>32</td>
<td>29</td>
<td>36</td>
<td>41</td>
<td>44</td>
<td>355</td>
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</table>

### Previous operation in relevant joint

Table 29: For primary total prostheses

<table>
<thead>
<tr>
<th>Type</th>
<th>1994-06</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th><strong>Total</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Meniscus</td>
<td>2048</td>
<td>336</td>
<td>321</td>
<td>411</td>
<td>511</td>
<td>582</td>
<td>706</td>
<td>699</td>
<td>767</td>
<td>755</td>
<td>7136</td>
</tr>
<tr>
<td>Osteotomy</td>
<td>1371</td>
<td>109</td>
<td>114</td>
<td>122</td>
<td>121</td>
<td>109</td>
<td>116</td>
<td>110</td>
<td>134</td>
<td>119</td>
<td>2425</td>
</tr>
<tr>
<td>Synovectomy</td>
<td>698</td>
<td>72</td>
<td>72</td>
<td>100</td>
<td>58</td>
<td>68</td>
<td>65</td>
<td>64</td>
<td>66</td>
<td>66</td>
<td>1329</td>
</tr>
<tr>
<td>Osteosynthesis of intraarticular joint fracture</td>
<td>523</td>
<td>54</td>
<td>76</td>
<td>89</td>
<td>77</td>
<td>84</td>
<td>74</td>
<td>62</td>
<td>95</td>
<td>93</td>
<td>1227</td>
</tr>
<tr>
<td>Ligament</td>
<td>110</td>
<td>9</td>
<td>18</td>
<td>13</td>
<td>16</td>
<td>18</td>
<td>23</td>
<td>24</td>
<td>64</td>
<td>86</td>
<td>381</td>
</tr>
<tr>
<td>Arthrodesis</td>
<td>19</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>28</td>
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<tr>
<td>Other previous op.</td>
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<td>167</td>
<td>123</td>
<td>163</td>
<td>217</td>
<td>227</td>
<td>283</td>
<td>266</td>
<td>307</td>
<td>321</td>
<td>3113</td>
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</table>
Mini-invasive surgery

Table 30: Primary operations - Total knee prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>5 (0%)</td>
<td>4 615 (87%)</td>
<td>656 (12%)</td>
<td>5 276</td>
</tr>
<tr>
<td>2014</td>
<td>4 (0%)</td>
<td>4 310 (87%)</td>
<td>644 (13%)</td>
<td>4 958</td>
</tr>
<tr>
<td>2013</td>
<td>11 (0%)</td>
<td>3 764 (84%)</td>
<td>715 (16%)</td>
<td>4 490</td>
</tr>
<tr>
<td>2012</td>
<td>16 (0%)</td>
<td>3 694 (84%)</td>
<td>685 (16%)</td>
<td>4 395</td>
</tr>
<tr>
<td>2011</td>
<td>15 (0%)</td>
<td>3 585 (88%)</td>
<td>464 (11%)</td>
<td>4 064</td>
</tr>
<tr>
<td>2010</td>
<td>21 (1%)</td>
<td>3 749 (95%)</td>
<td>185 (5%)</td>
<td>3 955</td>
</tr>
<tr>
<td>2009</td>
<td>25 (1%)</td>
<td>3 793 (95%)</td>
<td>165 (4%)</td>
<td>3 963</td>
</tr>
<tr>
<td>2008</td>
<td>14 (0%)</td>
<td>3 357 (95%)</td>
<td>157 (4%)</td>
<td>3 528</td>
</tr>
<tr>
<td>2007</td>
<td>22 (1%)</td>
<td>2 961 (95%)</td>
<td>129 (4%)</td>
<td>3 112</td>
</tr>
<tr>
<td>2006</td>
<td>3 (0%)</td>
<td>2 580 (96%)</td>
<td>115 (4%)</td>
<td>2 698</td>
</tr>
<tr>
<td>2005</td>
<td>5 (0%)</td>
<td>2 484 (89%)</td>
<td>300 (11%)</td>
<td>2 789</td>
</tr>
</tbody>
</table>

Table 31: Primary operations - Unicondylar knee prostheses

<table>
<thead>
<tr>
<th>År</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>283 (38%)</td>
<td>395 (53%)</td>
<td>69 (9%)</td>
<td>747</td>
</tr>
<tr>
<td>2014</td>
<td>237 (40%)</td>
<td>264 (45%)</td>
<td>85 (15%)</td>
<td>586</td>
</tr>
<tr>
<td>2013</td>
<td>223 (48%)</td>
<td>161 (34%)</td>
<td>84 (18%)</td>
<td>468</td>
</tr>
<tr>
<td>2012</td>
<td>199 (42%)</td>
<td>220 (47%)</td>
<td>54 (11%)</td>
<td>473</td>
</tr>
<tr>
<td>2011</td>
<td>196 (45%)</td>
<td>191 (44%)</td>
<td>52 (12%)</td>
<td>439</td>
</tr>
<tr>
<td>2010</td>
<td>196 (47%)</td>
<td>205 (50%)</td>
<td>13 (3%)</td>
<td>414</td>
</tr>
<tr>
<td>2009</td>
<td>293 (63%)</td>
<td>161 (35%)</td>
<td>9 (2%)</td>
<td>463</td>
</tr>
<tr>
<td>2008</td>
<td>230 (52%)</td>
<td>204 (46%)</td>
<td>6 (1%)</td>
<td>440</td>
</tr>
<tr>
<td>2007</td>
<td>155 (33%)</td>
<td>299 (64%)</td>
<td>12 (3%)</td>
<td>466</td>
</tr>
<tr>
<td>2006</td>
<td>104 (26%)</td>
<td>276 (69%)</td>
<td>19 (5%)</td>
<td>399</td>
</tr>
<tr>
<td>2005</td>
<td>179 (39%)</td>
<td>244 (54%)</td>
<td>33 (7%)</td>
<td>456</td>
</tr>
</tbody>
</table>

Figure 25: Primary operations - Unicondylar knee prostheses

Registration of MIS started in 2005
Computernavigation

Table 32: Primary operations - Total knee prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>467 (9%)</td>
<td>4 159 (79%)</td>
<td>650 (12%)</td>
<td>5 276</td>
</tr>
<tr>
<td>2014</td>
<td>433 (9%)</td>
<td>3 880 (78%)</td>
<td>645 (13%)</td>
<td>4 958</td>
</tr>
<tr>
<td>2013</td>
<td>381 (8%)</td>
<td>3 387 (75%)</td>
<td>722 (16%)</td>
<td>4 490</td>
</tr>
<tr>
<td>2012</td>
<td>416 (9%)</td>
<td>3 297 (75%)</td>
<td>682 (16%)</td>
<td>4 395</td>
</tr>
<tr>
<td>2011</td>
<td>443 (11%)</td>
<td>3 175 (78%)</td>
<td>446 (11%)</td>
<td>4 064</td>
</tr>
<tr>
<td>2010</td>
<td>659 (17%)</td>
<td>3 111 (79%)</td>
<td>185 (5%)</td>
<td>3 955</td>
</tr>
<tr>
<td>2009</td>
<td>761 (19%)</td>
<td>3 062 (77%)</td>
<td>160 (4%)</td>
<td>3 983</td>
</tr>
<tr>
<td>2008</td>
<td>742 (21%)</td>
<td>2 640 (75%)</td>
<td>146 (4%)</td>
<td>3 528</td>
</tr>
<tr>
<td>2007</td>
<td>374 (12%)</td>
<td>2 619 (84%)</td>
<td>119 (4%)</td>
<td>3 112</td>
</tr>
<tr>
<td>2006</td>
<td>254 (9%)</td>
<td>2 335 (87%)</td>
<td>109 (4%)</td>
<td>2 698</td>
</tr>
<tr>
<td>2005</td>
<td>185 (7%)</td>
<td>2 332 (84%)</td>
<td>272 (10%)</td>
<td>2 789</td>
</tr>
</tbody>
</table>

Figure 25: Primary operations - Total knee protheses

![Graph showing percentage of Yes, No, and Missing for each year from 2005 to 2015]

Table 33: Primary operations - Unicondylar knee prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3 (0%)</td>
<td>676 (90%)</td>
<td>68 (9%)</td>
<td>747</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
<td>500 (85%)</td>
<td>86 (15%)</td>
<td>586</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>382 (82%)</td>
<td>86 (18%)</td>
<td>468</td>
</tr>
<tr>
<td>2012</td>
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Registration of CAOS started in 2005
## Cements used in total knee prostheses

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### Table 35: Primary operations - Tibia

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## Cements used in unicondylar knee prostheses

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### Table 37: Primary operations - Tibia

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# Antibiotic prophylaxis

## Table 38: Primary operations

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## Table 39: Revisions

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<td>431</td>
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<td>479</td>
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### Patient specific instruments

**Table 40:**

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<td>2014</td>
<td>22</td>
<td>5462</td>
<td>1 564</td>
<td>7 048</td>
</tr>
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<td>2013</td>
<td>25</td>
<td>4647</td>
<td>1 778</td>
<td>6 450</td>
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<td>2012</td>
<td>88</td>
<td>4240</td>
<td>1 959</td>
<td>6 287</td>
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<td>2011</td>
<td>65</td>
<td>1693</td>
<td>4 141</td>
<td>5 899</td>
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</table>

Registration started in 2011

### Drain

**Table 41:**

<table>
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<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
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</thead>
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<td>2015</td>
<td>2 274</td>
<td>4674</td>
<td>779</td>
<td>7 727</td>
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<tr>
<td>2014</td>
<td>2 242</td>
<td>3889</td>
<td>917</td>
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<td>2013</td>
<td>2 070</td>
<td>3326</td>
<td>1 054</td>
<td>6 450</td>
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<td>2840</td>
<td>1 240</td>
<td>6 287</td>
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<tr>
<td>2011</td>
<td>1 095</td>
<td>1127</td>
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<td>5 899</td>
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</table>

Registration started in 2011
Completeness analysis for the Knee Arthroplasty Register, 2013-2014

A completeness analysis for the Knee Arthroplasty Register has been conducted by combining the data in the Register with data from the Norwegian Patient Register (NPR). The report and analysis were prepared by the NPR in collaboration with the Knee Arthroplasty Register (NRL). A report on the implementation and further results will be published on www.helsedirektoratet.no. There are separate statistics on primary operations and revisions. Here we only present the analysis for primary operations, as the compilation work on revisions has not been completed. Some hospitals have few knee arthroplasty operations and the completeness rate must be seen in this light.

NCSP codes for combined data from NPR hospital stays and the Norwegian Arthroplasty Register (NAR) (Knee)

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary operation</td>
<td>NGB 0*</td>
<td>Primary partial prosthetic replacement of knee joint not using cement</td>
</tr>
<tr>
<td></td>
<td>NGB 1*</td>
<td>Primary partial prosthetic replacement of knee joint using cement</td>
</tr>
<tr>
<td></td>
<td>NGB 20</td>
<td>Primary total prosthetic replacement of knee joint not using cement</td>
</tr>
<tr>
<td></td>
<td>NGB 30</td>
<td>Primary total prosthetic replacement of knee joint using hybrid technique</td>
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<td></td>
<td>NGB 40</td>
<td>Primary total prosthetic replacement of knee joint using cement</td>
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<tr>
<td></td>
<td>NGB 99</td>
<td>Other primary prosthetic replacement of knee joint</td>
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</table>

The completeness rate for the The Norwegian Arthroplasty Register (NAR) for Knee was follows:

\[
\frac{(Only\ NAR + Inclusion\ in\ both\ registers)}{(Only\ NPR + Only\ NAR + Inclusion\ in\ both\ registers)}
\]

Coverage for the NPR was calculated in a similar way:

\[
\frac{(Only\ NAR + Inclusion\ in\ both\ registers)}{(Only\ NAR + Only\ NPR + Inclusion\ in\ both\ registers)}
\]

**Primary operations.** From 2013 to 2014, 11 011 primary knee replacements were reported to one or both of the registers. 95.3% of these were reported to the NRL, while 97.9% were reported to the NPR. The analysis by hospital, divided into health regions, shows a completeness rate for the Knee Arthroplasty Register ranging from 77.1% to 100% between the different hospitals. For hospitals with a low completeness rate for the Knee Arthroplasty Register, either the form was not sent in or other interventions than knee arthroplasties were incorrectly coded with NGB 0*/NGB 1*/NGB 20/NGB 30/NGB 40 (There were only 9 operations in the category NFB 99 during the period).

**Procedure codes to be used for primary operations:**

NGB 0* - NGB 1* - NGB 20 - NGB 30 - NGB 40
### Helse Sør-Øst

#### Table: Completeness of reporting for primary knee prosthesis operations, 2013-2014.

<table>
<thead>
<tr>
<th>Helse Sør-Øst:</th>
<th>Primary operations NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sykehuset Telemark HF - Rjukan</td>
<td>49</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Sørlandet sykehus HF - Flekkefjord</td>
<td>59</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Sykehuset i Vestfold HF</td>
<td>487</td>
<td>99,6</td>
<td>99,8</td>
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<tr>
<td>Vestre Viken HF - Ringerike</td>
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<td>99,5</td>
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<tr>
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<td>976</td>
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<td>99,7</td>
</tr>
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<td>98,9</td>
<td>98,9</td>
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<td>Vestre Viken HF - Kongsberg</td>
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<td>100</td>
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<tr>
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<td>99,7</td>
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<td>98,4</td>
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<td>100</td>
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<tr>
<td>Sykehuset Innlandet HF - Gjøvik</td>
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<td>95</td>
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<td>Diakonhjemmets sykehus</td>
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#### Figure: Completeness of reporting for primary knee prosthesis operations, 2013-2014.
Helse Vest

Table: Completeness of reporting for primary knee prosthesis operations, 2013-2014.

<table>
<thead>
<tr>
<th>Helse Vest:</th>
<th>Total number</th>
<th>NAR (%)</th>
<th>NPR (%)</th>
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<tbody>
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<td>Helse Fonna HF - Stord</td>
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Figure: Completeness of reporting for primary knee prosthesis operations, 2013-2014.
Table: Completeness of reporting for primary knee prosthesis operations, 2013-2014.

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<th>NPR(%)</th>
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</table>

Figure: Completeness of reporting for primary knee prosthesis operations, 2013-2014.
Table: Completeness of reporting for primary knee prosthesis operations, 2013-2014.

<table>
<thead>
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<th>NAR(%)</th>
<th>NPR(%)</th>
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<tr>
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<td>95,8</td>
</tr>
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<td>96,2</td>
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<td>100</td>
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</tbody>
</table>

Figure: Completeness of reporting for primary knee prosthesis operations, 2013-2014.
Private hospitals with agreement with RHF

Table: Completeness of reporting for primary knee prosthesis operations, 2013-2014.

<table>
<thead>
<tr>
<th>Private hospitals with agreement with RHF:</th>
<th>Total number</th>
<th>Primary operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NAR+NPR</td>
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</tr>
<tr>
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<td>100</td>
</tr>
<tr>
<td>Volvat Medisinske Senter</td>
<td>27</td>
<td>100</td>
</tr>
<tr>
<td>Ringvollklinikken</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Privatsykehuset i Haugesund</td>
<td>14</td>
<td>100</td>
</tr>
<tr>
<td>Teres - Drammen</td>
<td>77</td>
<td>98,7</td>
</tr>
<tr>
<td>Aleris Helse - Oslo</td>
<td>127</td>
<td>96,1</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary knee prosthesis operations, 2013-2014.
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Survival curves for joint prostheses

a) Total prosthesis in elbow*

b) Ankle

c) Wrist

d) Carpometacarpal (CMC I)

e) Finger (MCP)

f) Toe

*Caput radii prosthesis for acute fracture is not included.

Kaplan-Meier survival curves. Survival estimate is given as long as > 50 prostheses are in the risk set.
Table 1: Annual number of prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Hemi prosthesis</th>
<th>Primary operations</th>
<th>Radius head</th>
<th>Revisions</th>
<th>Total</th>
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<tr>
<td></td>
<td></td>
<td>Total prosthesis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>26 (38,2%)</td>
<td>23 (33,8%)</td>
<td>19 (27,9%)</td>
<td>68</td>
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</tr>
<tr>
<td>2014</td>
<td>2 (3,2%)</td>
<td>19 (30,6%)</td>
<td>16 (25,8%)</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>4 (5,4%)</td>
<td>24 (32,4%)</td>
<td>19 (25,7%)</td>
<td>74</td>
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</tr>
<tr>
<td>2012</td>
<td>26 (42,6%)</td>
<td>17 (27,9%)</td>
<td>18 (29,5%)</td>
<td>61</td>
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</tr>
<tr>
<td>2011</td>
<td>29 (50,0%)</td>
<td>17 (29,3%)</td>
<td>12 (20,7%)</td>
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<tr>
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<td>34 (47,9%)</td>
<td>15 (21,1%)</td>
<td>22 (31,0%)</td>
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</tr>
<tr>
<td>2009</td>
<td>34 (45,3%)</td>
<td>11 (14,7%)</td>
<td>30 (40,0%)</td>
<td>75</td>
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<tr>
<td>2008</td>
<td>28 (49,1%)</td>
<td>7 (12,3%)</td>
<td>22 (38,6%)</td>
<td>57</td>
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<tr>
<td>2007</td>
<td>35 (44,9%)</td>
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<td>32 (41,0%)</td>
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<td>11 (14,9%)</td>
<td>31 (41,9%)</td>
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<td>2004</td>
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<td>23 (38,3%)</td>
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<td>44 (74,6%)</td>
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<td>9 (15,3%)</td>
<td>59</td>
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<tr>
<td>2002</td>
<td>26 (48,1%)</td>
<td>7 (13,0%)</td>
<td>21 (38,9%)</td>
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<tr>
<td>2001</td>
<td>37 (71,2%)</td>
<td>2 (3,8%)</td>
<td>13 (25,0%)</td>
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<tr>
<td>2000</td>
<td>36 (73,5%)</td>
<td>1 (2,0%)</td>
<td>12 (24,5%)</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>1994-99</td>
<td>317 (80,3%)</td>
<td>19 (4,8%)</td>
<td>59 (14,9%)</td>
<td>395</td>
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</tr>
<tr>
<td>Total</td>
<td>6 (0,4%)</td>
<td>819 (57,5%)</td>
<td>198 (13,9%)</td>
<td>402 (28,2%)</td>
<td>1425</td>
</tr>
</tbody>
</table>

52,9 % of all operations were performed on the right side. 75,4 % performed in women. Mean age: 62,1 years.
Table 2: Elbow disease in primary operations - Total prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelae after fracture</th>
<th>Mb. Bechterew</th>
<th>Sequelae ligament tear</th>
<th>Acute fracture</th>
<th>Sequelae after infection</th>
<th>Other</th>
<th>Missing</th>
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<tbody>
<tr>
<td>2015</td>
<td>1</td>
<td>13</td>
<td>4</td>
<td>8</td>
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<td>2014</td>
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<td>5</td>
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<tr>
<td>2012</td>
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<td>1</td>
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<td></td>
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</tr>
<tr>
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<td>6</td>
<td>19</td>
<td>5</td>
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<td>4</td>
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<td></td>
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</tr>
<tr>
<td>2009</td>
<td>1</td>
<td>18</td>
<td>6</td>
<td>1</td>
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<td>1</td>
<td>6</td>
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</tr>
<tr>
<td>2008</td>
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<td>19</td>
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<tr>
<td>2002</td>
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<td>81</td>
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<td>53</td>
<td>3</td>
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</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.

Table 3: Elbow disease in primary operations - Hemiprostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelae after fracture</th>
<th>Mb. Bechterew</th>
<th>Sequelae ligament tear</th>
<th>Acute fracture</th>
<th>Sequelae after infection</th>
<th>Other</th>
<th>Missing</th>
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<td>2014</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>1</td>
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<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.

Table 4: Elbow disease in primary operations - Radius head prostheses (Caput radii)

<table>
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<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelae after fracture</th>
<th>Mb. Bechterew</th>
<th>Sequelae ligament tear</th>
<th>Acute fracture</th>
<th>Sequelae after infection</th>
<th>Other</th>
<th>Missing</th>
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<tbody>
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<td>20</td>
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<td>0</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>2014</td>
<td>1</td>
<td>3</td>
<td>12</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>1</td>
<td>3</td>
<td>19</td>
<td></td>
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<td>2010</td>
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</tr>
<tr>
<td>2009</td>
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</tr>
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</tr>
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</tr>
<tr>
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<td>142</td>
<td>0</td>
<td>6</td>
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</tbody>
</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.
### Use of cement in elbow prostheses

#### Table 5: Primary operations - Humerus

<table>
<thead>
<tr>
<th>Year</th>
<th>Cement with antibiotics</th>
<th>Cement without antibiotics</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>25 (96.2%)</td>
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<td></td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>2014</td>
<td>18 (85.7%)</td>
<td></td>
<td></td>
<td>3 (14.3%)</td>
<td>21</td>
</tr>
<tr>
<td>2013</td>
<td>26 (92.9%)</td>
<td>2 (7.1%)</td>
<td></td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>2012</td>
<td>23 (88.5%)</td>
<td>3 (11.5%)</td>
<td></td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>2011</td>
<td>26 (89.7%)</td>
<td>1 (3.4%)</td>
<td>2 (6.9%)</td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>2010</td>
<td>30 (88.2%)</td>
<td>4 (11.8%)</td>
<td></td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>2009</td>
<td>29 (85.3%)</td>
<td>4 (11.8%)</td>
<td>1 (2.9%)</td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>2008</td>
<td>24 (88.7%)</td>
<td>2 (7.1%)</td>
<td>2 (7.1%)</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>2007</td>
<td>31 (88.6%)</td>
<td>4 (11.4%)</td>
<td></td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>2006</td>
<td>24 (75.0%)</td>
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<td></td>
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<td>2003</td>
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## Prostheses used in elbow prostheses - Total prostheses

### Table 7: Primary operations - Humerus

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## Prostheses used in elbow prostheses - Hemiprostheses

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Prostheses used in elbow prostheses - Radius head prostheses

Table 10: Primary operations - Radius

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More than one reason for revision is possible

Reasons for revisions in elbow prostheses

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ANCKLE PROSTHESSES

Table 1: Annual number of operations

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56.7% of all operations were performed on the right side. 55.2% performed in women. Mean age: 59.6 years.

Table 2: Ankle disease in primary operations

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<th>Sequelae after fracture</th>
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<th>Bechterew Mb.</th>
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Diseases are not mutually exclusive. More than one reason for operation is possible.
### Use of cement in ankle prostheses

#### Table 3: Primary operations - Tibia

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#### Table 4: Primary operations - Talus

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Prostheses used in ankle prostheses

Table 5: Primary operations - Tibia

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Table 6: Primary operations - Talus

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More than one reason for revision is possible
FINGER JOINT PROSTHESES

Table 1: Annual number of operations - MCP

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Table 2: Annual number of operations - PIP

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Figure 1: Annual number of operations

61,3 % of all operations were performed on the right side. 87,7 % performed in women. Mean age: 61,3 years.
## Reasons for primary operations

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More than one reason for primary operation is possible

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More than one reason for primary operation is possible
## Use of cement in MCP prostheses

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# Use of cement in PIP prostheses

## Table 7: Primary operations - Proximal

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## Table 8: Primary operations - Distal

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Finger prostheses

Table 9: MCP prostheses in primary operations - Proximal

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## Finger prostheses - Reasons for revisions

### Table 13: MCP prostheses - Reasons for revisions

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Revision reasons are not mutually exclusive. More than one reason for revision is possible.

### Table 14: PIP prostheses - Reasons for revisions

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Revision reasons are not mutually exclusive. More than one reason for revision is possible.
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<td>1994-99</td>
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<td>78 (19.8%)</td>
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*57.1% of all operations were performed on the right side. 65% performed in women. Mean age: 55.8 years.*

**Table 2: Wrist disease in primary operations**

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<th>Mb. Bechterew</th>
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<th>Acute fracture</th>
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*Diseases are not mutually exclusive. More than one reason for operation is possible.*
# Use of cement in wrist prostheses

## Table 3: Primary operations - Proximal

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<th>Cement without antibiotics</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
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## Table 4: Primary operations - Distal

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Wrist prostheses

Table 5: Primary operations - Proximal

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Table 6: Primary operations - Distal

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Table 7: Reasons for revisions

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Revision reasons are not mutually exclusive. More than one reason for revision is possible.

¹Elos are 3 different development models of Motec Wrist. Motec Wrist was previously sold under the name Gibbon.
Table 1: Annual number of operations

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<th>Primary operations</th>
<th>Revisions</th>
<th>Total</th>
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<td>2008</td>
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<tr>
<td>2005</td>
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<td>1994-99</td>
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<td>12 (7,3%)</td>
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<tr>
<td>Total</td>
<td>599 (86,3%)</td>
<td>95 (13,7%)</td>
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Diseases are not mutually exclusive. More than one reason for operation is possible.

Figure 1: Annual number of operations

48 % of all operations were performed on the right side. 83.3 % performed in women. Mean age: 62.9 years.

Table 2: Carpometacarpal disease in primary operations

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<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequela fracture</th>
<th>Sequela Bechterew</th>
<th>MA. Ligament tear</th>
<th>Sequela acute fracture</th>
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Diseases are not mutually exclusive. More than one reason for operation is possible.
Use of cement in carpometacarpal prostheses

Table 3: Primary operations - Proximal (Single-component)

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Carpometacarpal prostheses - Prosthesis brand

Table 4: Primary operations - Proximal (Single-component)

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Reasons for revisions

Table 5:

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<th>Dislocation</th>
<th>Instability</th>
<th>Malalignment</th>
<th>Deep infection</th>
<th>Peri implant fracture</th>
<th>Polyethylene defect</th>
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Revision reasons are not mutually exclusive. More than one reason for revision is possible.
LUMBAR DISC PROSTHESSES

Table 1: Annual number of operations

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Figure 1: Annual number of operations

60,1 % performed in women. Mean age: 43,5 years.

Table 2: Back disease - Primary operations

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<th>Spondylitis</th>
<th>Sequelae after prolapse surgery</th>
<th>Degeneration</th>
<th>Disc degeneration</th>
<th>Sequelae of infection</th>
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Diseases are not mutually exclusive. More than one reason for operation is possible.
Use of cement in lumbar disc prostheses

Table 3: Primary operations - Proximal

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<th>Uncemented</th>
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Table 4: Primary operations - Distal

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<th>Uncemented</th>
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Lumbar disc prostheses - Prosthesis brand

Table 5: Primary operations - Proximal

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Table 6: Primary operations - Distal

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SHOULDER PROSTHESES

Table 1: Annual number of operations in shoulder prostheses

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<td>517 (91,2%)</td>
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<td>6301 (91,4%)</td>
<td>596 (8,6%)</td>
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Figure 1: Annual number of operations - All prostheses

53.1% of all operations were performed on the right side. 72.2% performed in women. Mean age: 69.7 years.

Table 2: Annual number of operations - Stemmed shoulder hemiprostheses

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<td>2008</td>
<td>137 (94,5%)</td>
<td>8 (5,5%)</td>
<td>145</td>
</tr>
<tr>
<td>2007</td>
<td>148 (88,1%)</td>
<td>20 (11,9%)</td>
<td>168</td>
</tr>
<tr>
<td>1994-06</td>
<td>1550 (93,4%)</td>
<td>110 (6,6%)</td>
<td>1660</td>
</tr>
<tr>
<td>Total</td>
<td>2857 (92,2%)</td>
<td>242 (7,8%)</td>
<td>3099</td>
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</table>

Table 3: Annual number of operations - Anatomic stemmed total shoulder prostheses

<table>
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<tr>
<th>Year</th>
<th>Primary operations</th>
<th>Revisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>139 (96,5%)</td>
<td>5 (3,5%)</td>
<td>144</td>
</tr>
<tr>
<td>2014</td>
<td>120 (93,8%)</td>
<td>8 (6,3%)</td>
<td>128</td>
</tr>
<tr>
<td>2013</td>
<td>99 (96,1%)</td>
<td>4 (3,9%)</td>
<td>103</td>
</tr>
<tr>
<td>2012</td>
<td>61 (95,3%)</td>
<td>3 (4,7%)</td>
<td>64</td>
</tr>
<tr>
<td>2011</td>
<td>79 (94,0%)</td>
<td>5 (6,0%)</td>
<td>84</td>
</tr>
<tr>
<td>2010</td>
<td>69 (90,8%)</td>
<td>7 (9,2%)</td>
<td>76</td>
</tr>
<tr>
<td>2009</td>
<td>56 (99,2%)</td>
<td>1 (0,8%)</td>
<td>57</td>
</tr>
<tr>
<td>2008</td>
<td>37 (97,4%)</td>
<td>1 (2,6%)</td>
<td>38</td>
</tr>
<tr>
<td>2007</td>
<td>31 (100,0%)</td>
<td>1 (0,0%)</td>
<td>31</td>
</tr>
<tr>
<td>1994-06</td>
<td>68 (76,4%)</td>
<td>21 (23,6%)</td>
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<tr>
<td>Total</td>
<td>759 (93,2%)</td>
<td>55 (6,8%)</td>
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</table>
### Table 4: Annual number of operations - Resurfacing shoulder hemiprostheses

<table>
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<th>Year</th>
<th>Primary operations</th>
<th>Revisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>2 (28.6%)</td>
<td>5 (71.4%)</td>
<td>7</td>
</tr>
<tr>
<td>2014</td>
<td>11 (100.0%)</td>
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<td>11</td>
</tr>
<tr>
<td>2013</td>
<td>9 (52.9%)</td>
<td>8 (47.1%)</td>
<td>17</td>
</tr>
<tr>
<td>2012</td>
<td>10 (43.5%)</td>
<td>13 (56.5%)</td>
<td>23</td>
</tr>
<tr>
<td>2011</td>
<td>20 (71.4%)</td>
<td>8 (28.6%)</td>
<td>28</td>
</tr>
<tr>
<td>2010</td>
<td>25 (71.4%)</td>
<td>10 (28.6%)</td>
<td>35</td>
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<tr>
<td>2009</td>
<td>53 (84.1%)</td>
<td>10 (15.9%)</td>
<td>63</td>
</tr>
<tr>
<td>2008</td>
<td>43 (81.1%)</td>
<td>10 (18.9%)</td>
<td>53</td>
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<tr>
<td>2007</td>
<td>66 (94.3%)</td>
<td>4 (5.7%)</td>
<td>70</td>
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<tr>
<td>1994-06</td>
<td>200 (98.0%)</td>
<td>4 (2.0%)</td>
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</tr>
<tr>
<td>Total</td>
<td>428 (83.8%)</td>
<td>83 (16.2%)</td>
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</table>

### Table 5: Annual number of operations - Resurfacing total shoulder prostheses

<table>
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<th>Year</th>
<th>Primary operations</th>
<th>Revisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1 (100.0%)</td>
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</tr>
<tr>
<td>2011</td>
<td>1 (100.0%)</td>
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</tr>
<tr>
<td>2009</td>
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<td>2</td>
</tr>
<tr>
<td>2008</td>
<td>1 (50.0%)</td>
<td>1 (50.0%)</td>
<td>2</td>
</tr>
<tr>
<td>1994-06</td>
<td>5 (83.3%)</td>
<td>1 (16.7%)</td>
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</tr>
<tr>
<td>Total</td>
<td>10 (83.3%)</td>
<td>2 (16.7%)</td>
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</table>

### Table 6: Annual number of operations - Reversed stemmed total shoulder prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary operations</th>
<th>Revisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>348 (92.3%)</td>
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<td>377</td>
</tr>
<tr>
<td>2014</td>
<td>304 (94.1%)</td>
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<td>2013</td>
<td>252 (85.1%)</td>
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</tr>
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<td>2012</td>
<td>216 (90.4%)</td>
<td>23 (9.6%)</td>
<td>239</td>
</tr>
<tr>
<td>2011</td>
<td>161 (95.8%)</td>
<td>7 (4.2%)</td>
<td>168</td>
</tr>
<tr>
<td>2010</td>
<td>131 (93.6%)</td>
<td>9 (6.4%)</td>
<td>140</td>
</tr>
<tr>
<td>2009</td>
<td>100 (92.6%)</td>
<td>8 (7.4%)</td>
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</tr>
<tr>
<td>2008</td>
<td>75 (92.6%)</td>
<td>6 (7.4%)</td>
<td>81</td>
</tr>
<tr>
<td>2007</td>
<td>61 (85.9%)</td>
<td>10 (14.1%)</td>
<td>71</td>
</tr>
<tr>
<td>1994-06</td>
<td>268 (89.0%)</td>
<td>33 (11.0%)</td>
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</tr>
<tr>
<td>Total</td>
<td>1916 (92.4%)</td>
<td>157 (7.6%)</td>
<td>2073</td>
</tr>
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</table>

### Table 7: Annual number of operations - Non stemmed hemiprostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary operations</th>
<th>Revisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>16 (72.7%)</td>
<td>6 (27.3%)</td>
<td>22</td>
</tr>
<tr>
<td>2014</td>
<td>23 (82.1%)</td>
<td>5 (17.9%)</td>
<td>28</td>
</tr>
<tr>
<td>2013</td>
<td>26 (100.0%)</td>
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<td>26</td>
</tr>
<tr>
<td>2012</td>
<td>23 (82.1%)</td>
<td>5 (17.9%)</td>
<td>28</td>
</tr>
<tr>
<td>2011</td>
<td>21 (95.5%)</td>
<td>1 (4.5%)</td>
<td>22</td>
</tr>
<tr>
<td>2010</td>
<td>33 (100.0%)</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>2009</td>
<td>5 (100.0%)</td>
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<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>147 (89.6%)</td>
<td>17 (10.4%)</td>
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</tbody>
</table>

### Table 8: Annual number of operations - Non stemmed total shoulder prostheses

<table>
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<tr>
<th>Year</th>
<th>Primary operations</th>
<th>Revisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>15 (75.0%)</td>
<td>5 (25.0%)</td>
<td>20</td>
</tr>
<tr>
<td>2014</td>
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</tr>
<tr>
<td>2013</td>
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<tr>
<td>2010</td>
<td>8 (100.0%)</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>2009</td>
<td>8 (100.0%)</td>
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<td>8</td>
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<tr>
<td>2008</td>
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<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>108 (90.8%)</td>
<td>11 (9.2%)</td>
<td>119</td>
</tr>
</tbody>
</table>
Table 9: Annual number of operations - Reversed non stemmed total shoulder prostheses

<table>
<thead>
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<th>Year</th>
<th>Primary operations</th>
<th>Revisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3 (100,0%)</td>
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<tr>
<td>2014</td>
<td>1 (100,0%)</td>
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</tr>
<tr>
<td>Total</td>
<td>4 (100,0%)</td>
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<td>4</td>
</tr>
</tbody>
</table>

Reasons for primary operations

Table 10: Shoulder disease in primary operations - Stemmed shoulder hemiprostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelae after fracture</th>
<th>Mb. Bechterew</th>
<th>Sequelae ligament tear</th>
<th>Acute fracture</th>
<th>Sequelae after infection</th>
<th>Rotar cuff arthropathy</th>
<th>Other</th>
<th>Missing</th>
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<tbody>
<tr>
<td>2015</td>
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<td>1</td>
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<td>81</td>
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<td>1</td>
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<td>6</td>
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<td>2012</td>
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</tr>
</tbody>
</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.

Table 11: Shoulder disease in primary operations - Anatomic stemmed total shoulder prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelae after fracture</th>
<th>Mb. Bechterew</th>
<th>Sequelae ligament tear</th>
<th>Acute fracture</th>
<th>Sequelae after infection</th>
<th>Rotar cuff arthropathy</th>
<th>Other</th>
<th>Missing</th>
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<td>6</td>
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</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.
### Table 12: Shoulder disease in primary operations - Resurfacing shoulder hemiprostheses

<table>
<thead>
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<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelea after fracture</th>
<th>Mb. Bechterew</th>
<th>Sequelea ligament tear</th>
<th>Acute fracture</th>
<th>Sequelea after infection</th>
<th>Rotacuff arthropathy</th>
<th>Other</th>
<th>Missing</th>
</tr>
</thead>
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</tr>
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<td>3</td>
<td>3</td>
<td>10</td>
<td>2</td>
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<td><strong>Total</strong></td>
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<td><strong>3</strong></td>
<td><strong>5</strong></td>
<td><strong>17</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.

### Table 13: Shoulder disease in primary operations - Resurfacing total shoulder prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelea after fracture</th>
<th>Mb. Bechterew</th>
<th>Sequelea ligament tear</th>
<th>Acute fracture</th>
<th>Sequelea after infection</th>
<th>Rotacuff arthropathy</th>
<th>Other</th>
<th>Missing</th>
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<td></td>
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<tr>
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<td></td>
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</tr>
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<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>1994-06</td>
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<td></td>
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<td></td>
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<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
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<td><strong>0</strong></td>
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</tr>
</tbody>
</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.

### Table 14: Shoulder disease in primary operations - Reversed stemmed total shoulder prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelea after fracture</th>
<th>Mb. Bechterew</th>
<th>Sequelea ligament tear</th>
<th>Acute fracture</th>
<th>Sequelea after infection</th>
<th>Rotacuff arthropathy</th>
<th>Other</th>
<th>Missing</th>
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<tbody>
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<td>2015</td>
<td>123</td>
<td>30</td>
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<td>17</td>
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</tr>
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<td>116</td>
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<td>2013</td>
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<td>13</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>22</td>
<td>19</td>
<td>19</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>7</td>
<td>4</td>
<td></td>
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<tr>
<td>2007</td>
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<td>16</td>
<td>2</td>
<td>1</td>
<td></td>
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<td>1994-06</td>
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<td>4</td>
<td>2</td>
<td>15</td>
<td>20</td>
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<td><strong>Total</strong></td>
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<td><strong>352</strong></td>
<td><strong>7</strong></td>
<td><strong>91</strong></td>
<td><strong>344</strong></td>
<td><strong>21</strong></td>
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</tbody>
</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.
### Table 15: Shoulder disease in primary operations - Non stemmed shoulder hemiprostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelae after fracture</th>
<th>Mb. Bechtermann</th>
<th>Sequelae after infection</th>
<th>Acute fracture</th>
<th>Sequelae after infection</th>
<th>Rotarcuff arthropathy</th>
<th>Other Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>13</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>2</td>
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<td>4</td>
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<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>13</td>
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<td>1</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
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<td>2010</td>
<td>23</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>105</strong></td>
<td><strong>13</strong></td>
<td><strong>20</strong></td>
<td><strong>2</strong></td>
<td><strong>2</strong></td>
<td><strong>2</strong></td>
<td><strong>0</strong></td>
<td><strong>2</strong></td>
<td><strong>11</strong></td>
</tr>
</tbody>
</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.

### Table 16: Shoulder disease in primary operations - Non stemmed total shoulder prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelae after fracture</th>
<th>Mb. Bechtermann</th>
<th>Sequelae after infection</th>
<th>Acute fracture</th>
<th>Sequelae after infection</th>
<th>Rotarcuff arthropathy</th>
<th>Other Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>13</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>18</td>
<td>3</td>
<td>3</td>
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<td>2</td>
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<td></td>
</tr>
<tr>
<td>2013</td>
<td>15</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>17</td>
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<td>2010</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
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<td>2</td>
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<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>89</strong></td>
<td><strong>6</strong></td>
<td><strong>6</strong></td>
<td><strong>1</strong></td>
<td><strong>3</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.

### Table 17: Shoulder disease in primary operations - Reversed non stemmed total shoulder prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Sequelae after fracture</th>
<th>Mb. Bechtermann</th>
<th>Sequelae after infection</th>
<th>Acute fracture</th>
<th>Sequelae after infection</th>
<th>Rotarcuff arthropathy</th>
<th>Other Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
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<td><strong>2</strong></td>
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<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>2</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>

Diseases are not mutually exclusive. More than one reason for operation is possible.
# Use of cement in shoulder prostheses

## Table 18: Stemmed shoulder hemiprostheses - Primary operations - Humerus

<table>
<thead>
<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>68 (61,3%)</td>
<td>41 (36,9%)</td>
<td>2 (1,8%)</td>
<td></td>
<td>111</td>
</tr>
<tr>
<td>2014</td>
<td>84 (68,3%)</td>
<td>36 (29,3%)</td>
<td>3 (2,4%)</td>
<td></td>
<td>123</td>
</tr>
<tr>
<td>2013</td>
<td>80 (74,1%)</td>
<td>28 (25,9%)</td>
<td></td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>2012</td>
<td>140 (84,3%)</td>
<td>26 (15,7%)</td>
<td></td>
<td></td>
<td>166</td>
</tr>
<tr>
<td>2011</td>
<td>130 (73,4%)</td>
<td>37 (20,9%)</td>
<td>9 (5,1%)</td>
<td></td>
<td>177</td>
</tr>
<tr>
<td>2010</td>
<td>135 (76,7%)</td>
<td>36 (20,5%)</td>
<td>5 (2,8%)</td>
<td></td>
<td>176</td>
</tr>
<tr>
<td>2009</td>
<td>117 (72,7%)</td>
<td>33 (20,5%)</td>
<td>11 (6,8%)</td>
<td></td>
<td>161</td>
</tr>
<tr>
<td>2008</td>
<td>87 (63,5%)</td>
<td>36 (26,3%)</td>
<td>12 (8,8%)</td>
<td></td>
<td>137</td>
</tr>
<tr>
<td>2007</td>
<td>118 (79,7%)</td>
<td>30 (20,3%)</td>
<td></td>
<td></td>
<td>148</td>
</tr>
<tr>
<td>1994-06</td>
<td>922 (59,5%)</td>
<td>587 (37,9%)</td>
<td>2 (0,1%)</td>
<td></td>
<td>1 550</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1 881</strong> (65,8%)</td>
<td><strong>890</strong> (31,2%)</td>
<td><strong>42</strong> (1,5%)</td>
<td><strong>2 857</strong></td>
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</tr>
</tbody>
</table>

## Table 19: Anatomic stemmed total shoulder prostheses - Primary operations - Glenoid

<table>
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<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>125 (89,9%)</td>
<td>14 (10,1%)</td>
<td></td>
<td></td>
<td>139</td>
</tr>
<tr>
<td>2014</td>
<td>99 (62,5%)</td>
<td>18 (15,0%)</td>
<td>3 (2,5%)</td>
<td></td>
<td>120</td>
</tr>
<tr>
<td>2013</td>
<td>77 (79,4%)</td>
<td>20 (20,6%)</td>
<td></td>
<td></td>
<td>97</td>
</tr>
<tr>
<td>2012</td>
<td>50 (83,3%)</td>
<td>10 (16,7%)</td>
<td></td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>2011</td>
<td>65 (82,3%)</td>
<td>14 (17,7%)</td>
<td></td>
<td></td>
<td>79</td>
</tr>
<tr>
<td>2010</td>
<td>57 (62,6%)</td>
<td>11 (15,9%)</td>
<td>1 (1,4%)</td>
<td></td>
<td>69</td>
</tr>
<tr>
<td>2009</td>
<td>40 (71,4%)</td>
<td>15 (26,8%)</td>
<td>1 (1,8%)</td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>2008</td>
<td>30 (81,1%)</td>
<td>2 (5,4%)</td>
<td>5 (13,5%)</td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>2007</td>
<td>22 (73,3%)</td>
<td>7 (23,3%)</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>1994-06</td>
<td>21 (31,3%)</td>
<td>4 (65,7%)</td>
<td></td>
<td></td>
<td>67</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>586</strong> (77,7%)</td>
<td><strong>3</strong> (0,4%)</td>
<td><strong>155</strong> (20,6%)</td>
<td><strong>10</strong> (1,3%)</td>
<td><strong>754</strong></td>
</tr>
</tbody>
</table>

## Table 20: Anatomic stemmed total shoulder prostheses - Primary operations - Humerus

<table>
<thead>
<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>24 (17,3%)</td>
<td>115 (82,7%)</td>
<td></td>
<td></td>
<td>139</td>
</tr>
<tr>
<td>2014</td>
<td>24 (20,2%)</td>
<td>93 (78,2%)</td>
<td>2 (1,7%)</td>
<td></td>
<td>119</td>
</tr>
<tr>
<td>2013</td>
<td>58 (58,6%)</td>
<td>41 (41,4%)</td>
<td></td>
<td></td>
<td>99</td>
</tr>
<tr>
<td>2012</td>
<td>45 (73,8%)</td>
<td>15 (24,6%)</td>
<td>1 (1,6%)</td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>2011</td>
<td>58 (74,4%)</td>
<td>20 (25,6%)</td>
<td></td>
<td></td>
<td>78</td>
</tr>
<tr>
<td>2010</td>
<td>54 (61,8%)</td>
<td>11 (16,7%)</td>
<td>1 (1,5%)</td>
<td></td>
<td>66</td>
</tr>
<tr>
<td>2009</td>
<td>38 (69,1%)</td>
<td>16 (29,1%)</td>
<td>1 (1,8%)</td>
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<td>55</td>
</tr>
<tr>
<td>2008</td>
<td>28 (75,7%)</td>
<td>3 (8,1%)</td>
<td>6 (16,2%)</td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>2007</td>
<td>18 (58,1%)</td>
<td>13 (41,9%)</td>
<td></td>
<td></td>
<td>31</td>
</tr>
<tr>
<td>1994-06</td>
<td>25 (45,5%)</td>
<td>29 (52,7%)</td>
<td></td>
<td></td>
<td>55</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>372</strong> (50,3%)</td>
<td><strong>1</strong> (0,1%)</td>
<td><strong>356</strong> (48,1%)</td>
<td><strong>11</strong> (1,5%)</td>
<td><strong>740</strong></td>
</tr>
</tbody>
</table>

## Table 21: Resurfacing shoulder hemiprostheses - Primary operations - Humerus

<table>
<thead>
<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>2 (100,0)</td>
<td>2 (100,0)</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2013</td>
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<td>9 (100,0)</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>2012</td>
<td>10 (100,0)</td>
<td>10 (100,0)</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>2011</td>
<td>2 (10,0%)</td>
<td>17 (85,0%)</td>
<td>1 (5,0%)</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>2010</td>
<td>1 (4,0%)</td>
<td>2 (8,0%)</td>
<td>22 (88,0%)</td>
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<td>25</td>
</tr>
<tr>
<td>2009</td>
<td>44 (83,0%)</td>
<td>9 (17,0%)</td>
<td></td>
<td></td>
<td>53</td>
</tr>
<tr>
<td>2008</td>
<td>13 (30,2%)</td>
<td>30 (69,8%)</td>
<td></td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>2007</td>
<td>19 (28,8%)</td>
<td>47 (71,2%)</td>
<td></td>
<td></td>
<td>66</td>
</tr>
<tr>
<td>1994-06</td>
<td>27 (13,5%)</td>
<td>173 (86,5%)</td>
<td></td>
<td></td>
<td>200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1</strong> (0,2%)</td>
<td><strong>4</strong> (0,9%)</td>
<td><strong>163</strong> (38,1%)</td>
<td><strong>260</strong> (60,7%)</td>
<td><strong>428</strong></td>
</tr>
</tbody>
</table>
Table 22: Resurfacing total shoulder prostheses - Primary operations - Glenoid

<table>
<thead>
<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>1 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1994-06</td>
<td>2 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>1 (33,3%)</td>
<td>2 (66,7%)</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Table 23: Resurfacing total shoulder prostheses - Primary operations - Humerus

<table>
<thead>
<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2011</td>
<td>1 (100,0)</td>
<td>2 (100,0)</td>
<td></td>
<td></td>
<td>3</td>
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<td>2009</td>
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</tr>
<tr>
<td>2008</td>
<td>1 (100,0)</td>
<td>5 (100,0)</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>1994-06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>2 (20,0%)</td>
<td>8 (80,0%)</td>
<td></td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

Table 24: Reversed stemmed total shoulder prostheses - Primary operations - Glenoid

<table>
<thead>
<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3 (0,9%)</td>
<td>344 (98,9%)</td>
<td>1 (0,3%)</td>
<td></td>
<td>348</td>
</tr>
<tr>
<td>2014</td>
<td>9 (3,0%)</td>
<td>295 (87,0%)</td>
<td></td>
<td></td>
<td>304</td>
</tr>
<tr>
<td>2013</td>
<td>2 (0,8%)</td>
<td>250 (99,2%)</td>
<td></td>
<td></td>
<td>252</td>
</tr>
<tr>
<td>2012</td>
<td>1 (0,5%)</td>
<td>1 (0,5%)</td>
<td>213 (98,6%)</td>
<td>1 (0,5%)</td>
<td>216</td>
</tr>
<tr>
<td>2011</td>
<td>1 (0,6%)</td>
<td>1 (0,6%)</td>
<td>158 (98,1%)</td>
<td>1 (0,6%)</td>
<td>161</td>
</tr>
<tr>
<td>2010</td>
<td>6 (4,6%)</td>
<td>1 (0,8%)</td>
<td>122 (93,1%)</td>
<td>2 (1,5%)</td>
<td>131</td>
</tr>
<tr>
<td>2009</td>
<td>2 (2,0%)</td>
<td>97 (97,0%)</td>
<td>1 (1,0%)</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>2008</td>
<td>1 (1,3%)</td>
<td>65 (99,7%)</td>
<td>9 (12,0%)</td>
<td></td>
<td>75</td>
</tr>
<tr>
<td>2007</td>
<td>5 (8,2%)</td>
<td>56 (91,8%)</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>1994-06</td>
<td>21 (7,9%)</td>
<td>1 (0,4%)</td>
<td>245 (91,8%)</td>
<td></td>
<td>267</td>
</tr>
<tr>
<td>Total</td>
<td>51 (2,7%)</td>
<td>4 (0,2%)</td>
<td>1 845 (96,3%)</td>
<td>15 (0,8%)</td>
<td>1 915</td>
</tr>
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</table>

Table 25: Reversed stemmed total shoulder prostheses - Primary operations - Humerus

<table>
<thead>
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<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>214 (61,5%)</td>
<td>134 (38,5%)</td>
<td></td>
<td></td>
<td>348</td>
</tr>
<tr>
<td>2014</td>
<td>180 (59,2%)</td>
<td>119 (39,1%)</td>
<td>5 (1,6%)</td>
<td></td>
<td>304</td>
</tr>
<tr>
<td>2013</td>
<td>143 (56,7%)</td>
<td>107 (42,5%)</td>
<td>2 (0,8%)</td>
<td></td>
<td>252</td>
</tr>
<tr>
<td>2012</td>
<td>140 (64,8%)</td>
<td>76 (35,2%)</td>
<td></td>
<td></td>
<td>216</td>
</tr>
<tr>
<td>2011</td>
<td>99 (61,5%)</td>
<td>60 (37,3%)</td>
<td>2 (1,2%)</td>
<td></td>
<td>161</td>
</tr>
<tr>
<td>2010</td>
<td>72 (55,0%)</td>
<td>57 (43,5%)</td>
<td>2 (1,5%)</td>
<td></td>
<td>131</td>
</tr>
<tr>
<td>2009</td>
<td>50 (50,0%)</td>
<td>49 (49,0%)</td>
<td>1 (1,0%)</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>2008</td>
<td>51 (68,0%)</td>
<td>16 (21,3%)</td>
<td>8 (10,7%)</td>
<td></td>
<td>75</td>
</tr>
<tr>
<td>2007</td>
<td>44 (72,1%)</td>
<td>17 (27,9%)</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>1994-06</td>
<td>82 (30,6%)</td>
<td>1 (0,4%)</td>
<td>184 (68,7%)</td>
<td>1 (0,4%)</td>
<td>268</td>
</tr>
<tr>
<td>Total</td>
<td>1 075 (56,1%)</td>
<td>1 (0,1%)</td>
<td>819 (42,7%)</td>
<td>21 (1,1%)</td>
<td>1 916</td>
</tr>
</tbody>
</table>

Table 26: Non stemmed shoulder hemiprostheses - Primary operations - Humerus

<table>
<thead>
<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>5 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>2014</td>
<td>12 (92,3%)</td>
<td>1 (7,7%)</td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>2013</td>
<td>11 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>2012</td>
<td>1 (7,1%)</td>
<td>13 (92,9%)</td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td>16 (100,0)</td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>2010</td>
<td>1 (3,3%)</td>
<td>29 (96,7%)</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>2009</td>
<td>5 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>1 (1,1%)</td>
<td>91 (96,8%)</td>
<td>1 (1,1%)</td>
<td></td>
<td>94</td>
</tr>
</tbody>
</table>
### Table 27: Non stemmed total shoulder prostheses - Primary operations - Glenoid

<table>
<thead>
<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>15 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>2014</td>
<td>21 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>2013</td>
<td>14 (77,8%)</td>
<td>4 (22,2%)</td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>2012</td>
<td>18 (90,0%)</td>
<td>1 (5,0%)</td>
<td>1 (5,0%)</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>2011</td>
<td>14 (83,3%)</td>
<td></td>
<td>1 (6,7%)</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>2010</td>
<td>6 (75,0%)</td>
<td>2 (25,0%)</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>2009</td>
<td>3 (42,9%)</td>
<td>4 (57,1%)</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>2008</td>
<td>3 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>91 (85,0%)</td>
<td>14 (13,1%)</td>
<td>2 (1,9%)</td>
<td></td>
<td>107</td>
</tr>
</tbody>
</table>

### Table 28: Non stemmed total shoulder prostheses - Primary operations - Humerus

<table>
<thead>
<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1 (10,0%)</td>
<td>9 (90,0%)</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>2014</td>
<td>1 (5,9%)</td>
<td>16 (94,1%)</td>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>2013</td>
<td>2 (12,5%)</td>
<td>13 (81,3%)</td>
<td>1 (6,3%)</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>2012</td>
<td>2 (11,8%)</td>
<td>15 (88,2%)</td>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>2011</td>
<td>1 (7,1%)</td>
<td>13 (92,9%)</td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>2010</td>
<td>1 (12,5%)</td>
<td>7 (87,5%)</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>2009</td>
<td>8 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>2008</td>
<td>3 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>8 (8,6%)</td>
<td>84 (90,3%)</td>
<td>1 (1,1%)</td>
<td></td>
<td>93</td>
</tr>
</tbody>
</table>

### Table 29: Reversed non stemmed total shoulder prostheses - Primary operations - Glenoid

<table>
<thead>
<tr>
<th>Year</th>
<th>Cem. with antib.</th>
<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>4 (100,0%)</td>
<td></td>
<td></td>
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<td>4</td>
</tr>
</tbody>
</table>

### Table 30: Reversed non stemmed total shoulder prostheses - Primary operations - Humerus

<table>
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<th>Year</th>
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<th>Cem. without antib.</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3 (100,0)</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>3 (75,0%)</td>
<td></td>
<td>1 (25,0%)</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>
## Prosthesis brand

### Stemmed hemiprostheses shoulder

### Table 31: Primary operations - Caput humeri

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
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<tr>
<td>Bio - Modular</td>
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<td>18</td>
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<td>1</td>
<td>2</td>
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<td>55</td>
<td>53</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>Bigliani/Flatow</td>
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<td>8</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
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<td></td>
<td></td>
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<td>1</td>
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<td></td>
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</tr>
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<td>Other (n &lt; 10)</td>
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<td>2</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1408</strong></td>
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Anatomic stemmed total shoulder prostheses

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### Resurfacing shoulder hemiprosthesis

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### Resurfacing total shoulder prostheses

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**Table 38: Primary operations - Humerus**

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### Reversed stemmed total shoulder prostheses

**Table 39: Primary operations - Glenoid**

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### Non stemmed shoulder hemiprosthesis

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### Table 43: Primary operations - Humerus

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Non stemmed total shoulder prostheses

Table 44: Primary operations - Glenoid

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Table 45: Primary operations - Cap humeri

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Table 46: Primary operations - Humerus

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Reversed stemmed total shoulder prostheses

Table 47: Primary operations - Glenoid

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Table 48: Primary operations - Cap humeri

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Table 49: Primary operations - Humerus

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### Reasons for revisions

Table 50: Stemmed shoulder hemiprostheses

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Revision reasons are not mutually exclusive. More than one reason for revision is possible. All revisions were included.

### Table 51: Anatomic stemmed total shoulder prostheses

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Revision reasons are not mutually exclusive. More than one reason for revision is possible. All revisions were included.
Table 52: Resurfacing shoulder hemiprostheses

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<th>Polyethylene defect</th>
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Revision reasons are not mutually exclusive. More than one reason for revision is possible. All revisions were included.

Table 53: Resurfacing total shoulder prostheses

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Total 0 0 1 1 0 0 0 1 0 0 0

Revision reasons are not mutually exclusive. More than one reason for revision is possible. All revisions were included.

Table 54: Reversed stemmed total shoulder prostheses

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<th>Year</th>
<th>Loose proximal</th>
<th>Loose distal comp</th>
<th>Dislocation</th>
<th>Instability</th>
<th>Malalignment</th>
<th>Fracture (near implant)</th>
<th>Polyethylene defect</th>
<th>Pain</th>
<th>Other</th>
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</tr>
</tbody>
</table>

Total 38 22 31 12 2 54 7 10 6 21 1

Revision reasons are not mutually exclusive. More than one reason for revision is possible. All revisions were included.
### Table 55: Non stemmed shoulder hemiprostheses

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<thead>
<tr>
<th>Year</th>
<th>Loose proximal</th>
<th>Loose distal comp</th>
<th>Dislocation</th>
<th>Instability</th>
<th>Malalignment</th>
<th>Deep infection</th>
<th>Fracture (near implant)</th>
<th>Pain</th>
<th>Defect polyethylene</th>
<th>Other</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>4</td>
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</table>

Total: 0 1 1 0 0 2 0 8 0 7 0

Revision reasons are not mutually exclusive. More than one reason for revision is possible. All revisions were included.

### Table 56: Non stemmed total shoulder prostheses

<table>
<thead>
<tr>
<th>Year</th>
<th>Loose proximal</th>
<th>Loose distal comp</th>
<th>Dislocation</th>
<th>Instability</th>
<th>Malalignment</th>
<th>Deep infection</th>
<th>Fracture (near implant)</th>
<th>Pain</th>
<th>Defect polyethylene</th>
<th>Other</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
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<td>1</td>
<td>3</td>
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<td></td>
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</table>

Total: 7 0 0 1 0 6 0 3 0 0 0

Revision reasons are not mutually exclusive. More than one reason for revision is possible. All revisions were included.
TOE JOINT PROSTHESES

Table 1: Annual number of operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary operations</th>
<th>Revisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>33 (70,2%)</td>
<td>14 (29,8%)</td>
<td>47</td>
</tr>
<tr>
<td>2014</td>
<td>19 (70,4%)</td>
<td>8 (29,6%)</td>
<td>27</td>
</tr>
<tr>
<td>2013</td>
<td>24 (82,8%)</td>
<td>5 (17,2%)</td>
<td>29</td>
</tr>
<tr>
<td>2012</td>
<td>24 (82,8%)</td>
<td>5 (17,2%)</td>
<td>29</td>
</tr>
<tr>
<td>2011</td>
<td>38 (76,0%)</td>
<td>12 (24,0%)</td>
<td>50</td>
</tr>
<tr>
<td>2010</td>
<td>34 (75,6%)</td>
<td>11 (24,4%)</td>
<td>45</td>
</tr>
<tr>
<td>2009</td>
<td>35 (67,3%)</td>
<td>17 (32,7%)</td>
<td>52</td>
</tr>
<tr>
<td>2008</td>
<td>37 (61,7%)</td>
<td>23 (38,3%)</td>
<td>60</td>
</tr>
<tr>
<td>2007</td>
<td>47 (70,1%)</td>
<td>20 (29,9%)</td>
<td>67</td>
</tr>
<tr>
<td>2006</td>
<td>75 (79,8%)</td>
<td>19 (20,2%)</td>
<td>94</td>
</tr>
<tr>
<td>2005</td>
<td>64 (79,0%)</td>
<td>17 (21,0%)</td>
<td>81</td>
</tr>
<tr>
<td>2004</td>
<td>54 (84,4%)</td>
<td>10 (15,6%)</td>
<td>64</td>
</tr>
<tr>
<td>2003</td>
<td>48 (71,6%)</td>
<td>19 (28,4%)</td>
<td>67</td>
</tr>
<tr>
<td>2002</td>
<td>67 (79,8%)</td>
<td>17 (20,2%)</td>
<td>84</td>
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<tr>
<td>2001</td>
<td>61 (83,6%)</td>
<td>12 (16,4%)</td>
<td>73</td>
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<tr>
<td>2000</td>
<td>66 (76,7%)</td>
<td>20 (23,3%)</td>
<td>86</td>
</tr>
<tr>
<td>1994-99</td>
<td>442 (79,2%)</td>
<td>65 (12,8%)</td>
<td>507</td>
</tr>
<tr>
<td>Total</td>
<td>1168 (79,9%)</td>
<td>294 (20,1%)</td>
<td>1462</td>
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52.3 % of all operations were performed on the right side. 83.9 % performed in women. Mean age: 60,3 years.

Table 2: Toe disease in primary operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Idiopathic osteoarthritis</th>
<th>Rheumatoid arthritis</th>
<th>Post fracture sequelae</th>
<th>Bectherew Mb</th>
<th>Ligament tear sequelae</th>
<th>Acute fracture</th>
<th>Sequence of infection</th>
<th>Other</th>
<th>Missing</th>
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<tr>
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<td>1</td>
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Diseases are not mutually exclusive. More than one reason for operation is possible.
## Use of cement in toe joint prostheses

### Table 3: Primary operations - Proximal

<table>
<thead>
<tr>
<th>Year</th>
<th>Cement with antibiotics</th>
<th>Cement without antibiotics</th>
<th>Uncemented</th>
<th>Missing</th>
<th>Total</th>
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<tbody>
<tr>
<td>2015</td>
<td>32 (97.0%)</td>
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<tr>
<td>2014</td>
<td>19 (100.0%)</td>
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<td></td>
<td>19</td>
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<td>2013</td>
<td>24 (100.0%)</td>
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<td>24</td>
</tr>
<tr>
<td>2012</td>
<td>24 (100.0%)</td>
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<td>24</td>
</tr>
<tr>
<td>2011</td>
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<td></td>
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<td>2008</td>
<td>37 (100.0%)</td>
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<td>8 (0.7%)</td>
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</table>

### Table 4: Primary operations - Distal

<table>
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<tr>
<th>Year</th>
<th>Cement with antibiotics</th>
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## Toe joint prostheses

### Table 5: Primary operations - Proximal

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## Reasons for revisions

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Revision reasons are not mutually exclusive. More than one reason for revision is possible.
Completeness analysis for the Norwegian Arthroplasty Register, prostheses in other joints, 2008-2014

A completeness analysis for the Norwegian Arthroplasty Register, prostheses in other joints, has for the first time been conducted by combining the data in the Register with data from the Norwegian Patient Register (NPR). The report and analysis were prepared by the NPR in collaboration with the Norwegian Arthroplasty Register (NRL). A report on the implementation and further results will be published on www.helsedirektoratet.no. There are separate statistics on primary operations and revisions. Some hospitals have few arthroplasties and the coverage rate must be seen in this light. Here we only present the completeness analysis for primary operations, as the compilation work on revisions has not been completed.

Elbow prostheses
NCSP codes for combining data from NPR hospital stays and the National Arthroplasty Register (NAR) for partial and total elbow prostheses

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<th>Description</th>
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<td>Primary partial prosthetic replacement of elbow joint using cement</td>
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<td>NCB 20</td>
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<td>NCB 30</td>
<td>Primary total prosthetic replacement of elbow joint using hybrid technique</td>
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<tr>
<td></td>
<td>NCB 99</td>
<td>Other primary prosthetic replacement of elbow joint</td>
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</table>

The coverage rate for elbow prostheses in the National Arthroplasty Register (NAR) was calculated as follows:

\[
\frac{(\text{Only NAR} + \text{Inclusion in both registers})}{(\text{Only NPR} + \text{Only NAR} + \text{Inclusion in both registers})}
\]

Coverage for the NPR was calculated in a similar way:

\[
\frac{(\text{Only NPR} + \text{Inclusion in both registers})}{(\text{Only NAR} + \text{Only NPR} + \text{Inclusion in both registers})}
\]

**Primary operations.** From 2008 to 2014, 222 primary partial elbow arthroplasties and 223 primary total elbow arthroplasties were reported to one or both of the registers. For partial prostheses, 47.3% were reported to the NRL while 84.7% were reported to the NPR. For total prostheses, the corresponding figures were 87.9% and 93.7%. Completeness by hospital, divided into health regions, shows a rate for the NAR ranging from 0% to 100% between the different hospitals. For hospitals with a low completeness rate for elbow prostheses, either the form was not sent, or other interventions than elbow arthroplasties were incorrectly coded with NCB 0y/NCB 1y/NCB 20/NCB 30/NCB 40. (There were only 18 partial elbow arthroplasties and 34 total elbow arthroplasties in the category NCB 99 during the period).

**Procedure codes to be used for primary operations:**
NCB 0y - NCB 1y - NCB 20 - NCB 30 - NCB 40
### Ankle prostheses

**NCSP codes for combining data from NPR hospital stays and the National Arthroplasty Register (NAR) for ankle prostheses**

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<td>NHB 99</td>
<td>Other primary prosthetic replacement of joint of ankle or foot</td>
</tr>
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</table>

The coverage rate for ankle prostheses in the National Arthroplasty Register was calculated as follows:

\[
\text{(Only NAR + Inclusion in both registers)}
\]

Coverage for the NPR was calculated in a similar way:

\[
\text{(Only NPR + Inclusion in both registers)}
\]

**Primary operations.** From 2008 to 2014, 625 primary ankle arthroplasties were reported to one or both of the registers. 92.5% of these were reported to the NAR while 97.1% were reported to the NPR. Completeness by hospital, divided into health regions, shows a rate for the NAR ranging from 0% to 100% between the different hospitals. For hospitals with a low completeness rate for ankle prostheses, either the form was not sent, or other interventions than ankle arthroplasties were incorrectly coded with NHB 0y/NHB 1y/NHB 20/NHB 30/NHB 40. (There were only 13 additional arthroplasties in the category NHB 99 during the period).

### Finger prostheses

**NCSP codes for combining data from NPR hospital stays and the National Arthroplasty Register (NAR) for finger prostheses**

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<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary operation</td>
<td>NDB 8y</td>
<td>Primary prosthetic replacement of joint of finger or metacarpal</td>
</tr>
<tr>
<td></td>
<td>NDB 99</td>
<td>Other primary prosthetic replacement of joint of wrist or hand</td>
</tr>
</tbody>
</table>

The completeness rate for finger prostheses in the National Arthroplasty Register was calculated as follows:

\[
\text{(Only NAR + Inclusion in both registers)}
\]

Completeness for the NPR was calculated in a similar way:

\[
\text{(Only NPR + Inclusion in both registers)}
\]

**Primary operations.** From 2008 to 2014, 329 primary finger arthroplasties were reported to one or both of the registers. 57.4% of these were reported to the NAR while 94.5% were
reported to the NPR. Completeness by hospital, divided into health regions, shows a rate for the NAR ranging from 0% to 100% between the different hospitals. For hospitals with a low completeness rate for finger prostheses, either the form was not sent, or other interventions than finger arthroplasties were incorrectly coded with NDB 8y. (There were 84 arthroplasties in the category NDB 99 during the period).

**Procedure code to be used for primary operations: NDB 8y**

### Wrist/carpus/distal radioulnar joint (DRUJ)

**NCSP codes for combining data from NPR hospital stays and the National Arthroplasty Register (NAR) for wrist/carpal/DRUJ prostheses**

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary operation</td>
<td>NDB 0y</td>
<td>Primary partial prosthetic replacement of joint of wrist not using cement</td>
</tr>
<tr>
<td></td>
<td>NDB 1y</td>
<td>Primary partial prosthetic replacement of joint of wrist using cement</td>
</tr>
<tr>
<td></td>
<td>NDB 2y</td>
<td>Primary total prosthetic replacement of joint of wrist not using cement</td>
</tr>
<tr>
<td></td>
<td>NDB 3y</td>
<td>Primary total prosthetic replacement of joint of wrist using hybrid technique</td>
</tr>
<tr>
<td></td>
<td>NDB 4y</td>
<td>Primary total prosthetic replacement of joint of wrist using cement</td>
</tr>
<tr>
<td></td>
<td>NDB 5y</td>
<td>Primary prosthetic interposition arthroplasty of joint of wrist</td>
</tr>
<tr>
<td></td>
<td>NDB 99</td>
<td>Other primary prosthetic replacement of joint of wrist or hand</td>
</tr>
</tbody>
</table>

The completeness rate for wrist/carpal/DRUJ prostheses in the National Arthroplasty Register (NAR) was calculated as follows:

\[
\frac{(Only \ NAR + Inclusion \ in \ both \ registers)}{(Only \ NPR + Only \ NAR + Inclusion \ in \ both \ registers)}
\]

Coverage for the NPR was calculated in a similar way:

\[
\frac{(Only \ NPR + Inclusion \ in \ both \ registers)}{(Only \ NAR + Only \ NPR + Inclusion \ in \ both \ registers)}
\]

**Primary operations.** From 2008 to 2014, 425 primary wrist/carpal/DRUJ arthroplasties were reported to one or both of the registers. 75.1% of these were reported to the NRL, while 61.2% were reported to the NPR. Coverage by hospital, divided into health regions, shows a rate for the NRL ranging from 0% to 100% between the different hospitals. For hospitals with a low coverage rate for wrist/carpal/DRUJ prostheses, either the form was not sent, or other interventions than wrist/carpal/DRUJ arthroplasties were incorrectly coded with NDB 0y/NDB 1y/NDB 2y/NDB 3y/NDB 4y/NDB 5y. (There were 29 partial and 34 total arthroplasties in the category NDB 99 during the period).

**Procedure codes to be used for primary operations:**

NDB 0y - NDB 1y - NDB 2y - NDB 3y - NDB 4y

### Spinal prostheses

**NCSP codes for combining data from NPR hospital stays and the National Arthroplasty Register (NAR) for spinal prostheses**

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary operation</td>
<td>NAB 9y</td>
<td>Primary prosthetic replacement of joint of cervical spine</td>
</tr>
</tbody>
</table>

The completeness rate for spinal prostheses in the National Arthroplasty Register was calculated as follows:
Primary operations. From 2008 to 2014, 169 primary spinal arthroplasties were reported to one or both of the registers. 40.8% of these were reported to the NRL while 100% were reported to the NPR. Coverage by hospital, divided into health regions, shows a rate for the NRL ranging from 0% to 100% between the different hospitals. For hospitals with a low coverage rate for spinal prostheses, either the form was not sent, or other interventions than spinal arthroplasties were incorrectly coded with NAB 9y.

Procedure code to be used for primary operations: NAB 9y

Shoulder prostheses

NCSP codes for combining data from NPR hospital stays and the National Arthroplasty Register (NAR) for shoulder prostheses

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Operation</td>
<td>NBB 0y</td>
<td>Primary partial prosthetic replacement of humero-scapular joint not using cement</td>
</tr>
<tr>
<td>NBB 1y</td>
<td></td>
<td>Primary partial prosthetic replacement of humero-scapular joint using cement</td>
</tr>
<tr>
<td>NBB 20</td>
<td></td>
<td>Primary total prosthetic replacement of humero-scapular joint not using cement</td>
</tr>
<tr>
<td>NBB 30</td>
<td></td>
<td>Primary total prosthetic replacement of humero-scapular joint using hybrid technique</td>
</tr>
<tr>
<td>NBB 40</td>
<td></td>
<td>Primary total prosthetic replacement of humero-scapular joint using cement</td>
</tr>
<tr>
<td>NBB 99</td>
<td></td>
<td>Other primary prosthetic replacement of joint of shoulder</td>
</tr>
</tbody>
</table>

The completeness rate for shoulder prostheses in the National Arthroplasty Register was calculated as follows:

Coverage for the NPR was calculated in a similar way:

Primary operations. From 2008 to 2014, 3552 primary shoulder arthroplasties were reported to one or both of the registers. 90.7% of these were reported to the NRL while 96.2% were reported to the NPR. Completeness by hospital, divided into health regions, shows a rate for the NRL ranging from 0% to 100% between the different hospitals. For hospitals with a low completeness rate for shoulder prostheses, either the form was not sent, or other interventions than shoulder arthroplasties were incorrectly coded with NBB 0y/NBB 1y/NBB 20/NBB 30/NBB 40. (There were only an additional 10 arthroplasties in the category NBB 99 during the period).

Procedure codes to be used for primary operations:
NBB 0y - NBB 1y - NBB 20 - NBB 30 - NBB 40
**Toe joint prostheses**

NCSP codes for combining data from NPR hospital stays and the National Arthroplasty Register (NAR) for toe joint prostheses

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary operation</td>
<td>NHB 6y</td>
<td>Primary prosthetic replacement of first metatarsophalangeal joint</td>
</tr>
<tr>
<td></td>
<td>NHB 7y</td>
<td>Primary prosthetic replacement of other metatarsophalangeal joint</td>
</tr>
<tr>
<td></td>
<td>NHB 8y</td>
<td>Primary prosthetic replacement of other joint of foot</td>
</tr>
<tr>
<td></td>
<td>NHB 99</td>
<td>Other primary prosthetic replacement of joint of ankle or foot</td>
</tr>
</tbody>
</table>

**Primary operations.** From 2008 to 2014, 251 primary toe joint arthroplasties were reported to one or both of the registers. 79.3% of these were reported to the NRL while 94.8% were reported to the NPR. Completeness by hospital, divided into health regions, shows a rate for the NRL ranging from 0% to 100% between the different hospitals. For hospitals with a low completeness rate for toe joint prostheses, either the form was not sent, or other interventions than toe joint arthroplasties were incorrectly coded with NHB 6y/NHB 7y/NHB 8y.

**Procedure codes to be used for primary operations:**

NHB 6y - NHB 7y - NHB 8y
**Helse Sør-Øst: total prosthesis in elbow**

Table: Completeness of reporting for primary total prosthesis operations in elbow, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Sør-Øst:</th>
<th>Primary operations</th>
<th>NCSP-codes: NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</th>
<th>Total number</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sykehuset Innlandet HF - Kongsvinger</td>
<td></td>
<td>NAR+PBR</td>
<td>7</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Martina Hansens hospital</td>
<td></td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>5</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Akershus universitetssykehus HF</td>
<td></td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>1</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Diakonhjemmets sykehus</td>
<td></td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>119</td>
<td>94,1</td>
<td>94,1</td>
</tr>
<tr>
<td>Betanien hospital Telemark</td>
<td></td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>9</td>
<td>88,9</td>
<td>88,9</td>
</tr>
<tr>
<td>Oslo universitetssykehus HF</td>
<td></td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>12</td>
<td>66,7</td>
<td>83,3</td>
</tr>
<tr>
<td>Vestre Viken HF - Ringerike</td>
<td></td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Sykehuset Østfold HF</td>
<td></td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>2</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary total prosthesis operations in elbow, 2008-2014.
Helse Vest: total prosthesis in elbow

Table: Completeness of reporting for primary total prosthesis operations in elbow, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Vest:</th>
<th>Primary operations</th>
<th>NCSP-codes:</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haugesund san.for.revmatismesykehus</td>
<td></td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>5</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Helse Førde HF - Lærdal</td>
<td></td>
<td></td>
<td>1</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Helse Bergen HF - Haukeland univ.sjukehus</td>
<td></td>
<td></td>
<td>22</td>
<td>90,9</td>
<td>95,5</td>
<td></td>
</tr>
<tr>
<td>Helse Førde HF - Førde</td>
<td></td>
<td></td>
<td>8</td>
<td>42,9</td>
<td>85,7</td>
<td></td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary total prosthesis operations in elbow, 2008-2014.

Helse Midt-Norge: total prosthesis in elbow

Table: Completeness of reporting for primary total prosthesis operations in elbow, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Midt-Norge:</th>
<th>Primary operations</th>
<th>NCSP-codes:</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Olavs hospital HF - Trondheim</td>
<td></td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>10</td>
<td>90</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Helse Møre og Romsdal HF- Ålesund</td>
<td></td>
<td></td>
<td>18</td>
<td>88,9</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary total prosthesis operations in elbow, 2008-2014.
Helse Nord: total prosthesis in elbow

Table: Completeness of reporting for primary total prosthesis operations in elbow, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Nord:</th>
<th>NCSP-codes:</th>
<th>Primary operations</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Tromsø</td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td></td>
<td></td>
<td>3</td>
<td>33,3</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary total prosthesis operations in elbow, 2008-2014.
Helse Sør-Øst: partial prosthesis in elbow

Table: Completeness of reporting for primary partial prosthesis operations in elbow, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Sør-Øst:</th>
<th>Primary operations</th>
<th>NCGS-codes: NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sykehuset Telemark HF - Skien</td>
<td>2</td>
<td>NAR 100 NPR 50</td>
</tr>
<tr>
<td>Sykehuset Østfold HF</td>
<td>1</td>
<td>NAR 100 NPR 100</td>
</tr>
<tr>
<td>Oslo universitetssykehus HF</td>
<td>59</td>
<td>NAR 76,3 NPR 59,3</td>
</tr>
<tr>
<td>Vestre Viken HF - Bærum</td>
<td>6</td>
<td>NAR 50 NPR 100</td>
</tr>
<tr>
<td>Diakonhjemmets sykehus</td>
<td>6</td>
<td>NAR 50 NPR 83,3</td>
</tr>
<tr>
<td>Sykehuset Østfold HF</td>
<td>28</td>
<td>NAR 32,1 NPR 100</td>
</tr>
<tr>
<td>Akershus universitetssykehus HF</td>
<td>20</td>
<td>NAR 30 NPR 100</td>
</tr>
<tr>
<td>Sørlandet sykehus HF - Kristiansand</td>
<td>7</td>
<td>NAR 28,6 NPR 100</td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Lillehammer</td>
<td>14</td>
<td>NAR 7,1 NPR 100</td>
</tr>
<tr>
<td>Vestre Viken HF - Drammen</td>
<td>1</td>
<td>NAR 0 NPR 100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary partial prosthesis operations in elbow, 2008-2014.
**Helse Vest: partial prosthesis in elbow**

Table: Completeness of reporting for primary partial prosthesis operations in elbow, 2008-2014.

<table>
<thead>
<tr>
<th>NCSP-codes: NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</th>
<th>Primary operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number</td>
<td>NAR+NPR</td>
</tr>
<tr>
<td>Helse Bergen HF - Voss sjukehus</td>
<td>1</td>
</tr>
<tr>
<td>Helse Førde HF - Førde</td>
<td>12</td>
</tr>
<tr>
<td>Helse Bergen HF - Haukeland univ.sjukehus</td>
<td>22</td>
</tr>
<tr>
<td>Helse Stavanger HF - Stavanger univ.sykehus</td>
<td>21</td>
</tr>
<tr>
<td>Helse Fonna HF - Haugesund</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary partial prosthesis operations in elbow, 2008-2014.

**Helse Midt-Norge: partial prosthesis in elbow**

Table: Completeness of reporting for primary partial prosthesis operations in elbow, 2008-2014.

<table>
<thead>
<tr>
<th>NCSP-codes: NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</th>
<th>Primary operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number</td>
<td>NAR+NPR</td>
</tr>
<tr>
<td>St. Olavs hospital HF - Trondheim</td>
<td>14</td>
</tr>
<tr>
<td>Helse Nord-Trøndelag HF - Levanger</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary partial prosthesis operations in elbow, 2008-2014.
Helse Nord: partial prosthesis in elbow

Table: Completeness of reporting for primary partial prosthesis operations in elbow, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Nord:</th>
<th>Primary operations</th>
<th>NCSP-codes:</th>
<th>Total number</th>
<th>NAR NAR(%)</th>
<th>NPR NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univ. sykehuset i Nord-Norge HF - Harstad</td>
<td></td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>1</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Nordlandssykehuset HF - Bodø</td>
<td></td>
<td></td>
<td>3</td>
<td>33,3</td>
<td>100</td>
</tr>
<tr>
<td>Univ. sykehuset i Nord-Norge HF - Tromsø</td>
<td></td>
<td></td>
<td>2</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary partial prosthesis operations in elbow, 2008-2014.
# Helse Sør-Øst: ankle

## Table: Completeness of reporting for primary operations in ankle, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Sør-Øst:</th>
<th>Total number</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betanien hospital Telemark</td>
<td>45</td>
<td>100</td>
<td>91,1</td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Kongsvinger</td>
<td>9</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Sykehuset i Vestfold HF</td>
<td>5</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Diakonhjemmets sykehus</td>
<td>322</td>
<td>98,4</td>
<td>99,4</td>
</tr>
<tr>
<td>Oslo universitetssykehus HF</td>
<td>5</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Akershus universitetssykehus HF</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Tynset</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Lillehammer</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Sykehuset Østfold HF</td>
<td>2</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

## Figure: Completeness of reporting for primary operations in ankle, 2008-2014.

![Completeness of reporting graph](image-url)
Helse Vest: ankle

Table: Completeness of reporting for primary operations in ankle, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Vest:</th>
<th>Primary operations NCSP-codes:</th>
<th>Total number NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haugesund san.for. revmatismesykehus</td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>4</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Helse Bergen HF - Haukeland univ.sjukehus</td>
<td></td>
<td>29</td>
<td>96,6</td>
<td>96,6</td>
</tr>
<tr>
<td>Helse Bergen HF - Voss sjukehus</td>
<td></td>
<td>81</td>
<td>95,1</td>
<td>97,5</td>
</tr>
<tr>
<td>Helse Stavanger HF - Stavanger univ.sykehus</td>
<td></td>
<td>2</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Haraldsplass Diakonale Sykehus</td>
<td></td>
<td>2</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Helse Førde HF - Førde</td>
<td></td>
<td>2</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Helse Førde HF - Lærdal</td>
<td></td>
<td>11</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in ankle, 2008-2014.
Table: Completeness of reporting for primary operations in ankle, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Midt-Norge:</th>
<th>Primary operations</th>
<th>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total number</td>
<td>NAR+ NPR NAR(%) NPR(%)</td>
</tr>
<tr>
<td>Helse Møre og Romsdal HF - Kristiansund</td>
<td>1</td>
<td>100 100</td>
</tr>
<tr>
<td>St. Olavs hospital HF - Orkdal</td>
<td>9</td>
<td>100 100</td>
</tr>
<tr>
<td>St. Olavs hospital HF - Røros</td>
<td>13</td>
<td>92,3 100</td>
</tr>
<tr>
<td>St. Olavs hospital HF - Trondheim</td>
<td>61</td>
<td>90,2 100</td>
</tr>
<tr>
<td>Helse Møre og Romsdal HF - Ålesund</td>
<td>7</td>
<td>85,7 100</td>
</tr>
<tr>
<td>Helse Nord-Trøndelag HF - Levanger</td>
<td>1</td>
<td>0 100</td>
</tr>
<tr>
<td>Helse Møre og Romsdal HF - Volda</td>
<td>1</td>
<td>0 100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in ankle, 2008-2014.
Helse Nord: ankle

Table: Completeness of reporting for primary operations in ankle, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Nord:</th>
<th>NCSP-codes:</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Tromsø</td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>1</td>
<td>0</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Private hospitals with agreement with RHF: ankle

Table: Completeness of reporting for primary operations in ankle, 2008-2014.

<table>
<thead>
<tr>
<th>Private hospitals with agreement with RHF:</th>
<th>NCSP-codes:</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norsk idrettsmedisinsk institutt</td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>9</td>
<td>100</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in ankle, 2008-2014.
Helse Sør-Øst: finger

Table: Completeness of reporting for primary operations in finger, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Sør-Øst:</th>
<th>NAR+P R</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sørlandet sykehus HF - Kristiansand</td>
<td>1</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Martina Hansens hospital</td>
<td>17</td>
<td>94,1</td>
<td>94,1</td>
</tr>
<tr>
<td>Diakonhjemmets sykehus</td>
<td>86</td>
<td>91,9</td>
<td>93</td>
</tr>
<tr>
<td>Betanien hospital Telemark</td>
<td>18</td>
<td>83,3</td>
<td>94,4</td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Kongsvinger</td>
<td>14</td>
<td>78,6</td>
<td>85,7</td>
</tr>
<tr>
<td>Sykehuset Telemark HF - Skien</td>
<td>2</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Oslo universitetssykehus HF</td>
<td>34</td>
<td>35,3</td>
<td>97,1</td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Lillehammer</td>
<td>6</td>
<td>33,3</td>
<td>83,3</td>
</tr>
<tr>
<td>Sykehuset Østfold HF</td>
<td>72</td>
<td>19,4</td>
<td>97,2</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in finger, 2008-2014.
Helse Vest: finger

Table: Completeness of reporting for primary operations in finger, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Vest:</th>
<th>Total number</th>
<th>NAR (%)</th>
<th>NPR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haugesund san.for. revmatismesykehus</td>
<td>19</td>
<td>94,7</td>
<td>100</td>
</tr>
<tr>
<td>Helse Førde HF - Førde</td>
<td>8</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Helse Bergen HF - Haukeland univ.sjukehus</td>
<td>12</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in finger, 2008-2014.

Helse Midt-Norge: finger

Table: Completeness of reporting for primary operations in finger, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Midt-Norge:</th>
<th>Total number</th>
<th>NAR (%)</th>
<th>NPR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helse Nord-Trøndelag HF - Levanger</td>
<td>2</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Helse Møre og Romsdal HF - Ålesund</td>
<td>5</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>St. Olavs hospital HF - Trondheim</td>
<td>25</td>
<td>44</td>
<td>92</td>
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</tbody>
</table>

Figure: Completeness of reporting for primary operations in finger, 2008-2014.
Helse Nord: finger

Table: Completeness of reporting for primary operations in finger, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Nord:</th>
<th>Total number</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordlandssykehuset HF - Bodø</td>
<td>3</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Tromsø</td>
<td>5</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in finger, 2008-2014.
Helse Sør-Øst: wrist

Table: Completeness of reporting for primary operations in wrist, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Sør-Øst:</th>
<th>Primary operations</th>
<th>NCB-values:</th>
<th>Total number</th>
<th>NAR (%)</th>
<th>NPR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sykehuset Telemark HF - Notodden</td>
<td>1</td>
<td>100</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Kongsvinger</td>
<td>1</td>
<td>100</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Martina Hansens Hospital</td>
<td>7</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Østfold HF</td>
<td>108</td>
<td>88</td>
<td>41,7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oslo universitetssykehus HF</td>
<td>131</td>
<td>79,4</td>
<td>67,2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diakonhjemmets sykehus</td>
<td>23</td>
<td>78,3</td>
<td>73,9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Betanien hospital Telemark</td>
<td>54</td>
<td>61,1</td>
<td>40,7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vestre Viken HF - Bærum</td>
<td>1</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vestre Viken HF - Ringerike</td>
<td>2</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akershus universitetssykehus HF</td>
<td>1</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sørlandet sykehus HF - Kristiansand</td>
<td>2</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Lillehammer</td>
<td>2</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Telemark HF - Skien</td>
<td>3</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lovisenberg Diakonale Sykehus</td>
<td>5</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in wrist, 2008-2014.
Helse Vest: wrist

Table: Completeness of reporting for primary operations in wrist, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Vest:</th>
<th>Primary operations NCSP-codes:</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helse Bergen HF - Haukeland univ.sjukehus</td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>13</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Helse Førde HF - Førde</td>
<td></td>
<td>49</td>
<td>71.4</td>
<td>67.3</td>
<td></td>
</tr>
<tr>
<td>Helse Stavanger HF - Stavanger univ.sykehus</td>
<td></td>
<td>2</td>
<td>0</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Haraldsplass Diakonale Sykehus</td>
<td></td>
<td>1</td>
<td>0</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Haugesund san.for. revmatismesykehus</td>
<td></td>
<td>1</td>
<td>0</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Helse Bergen HF - Kysthospital i Hagevik</td>
<td></td>
<td>1</td>
<td>0</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in wrist, 2008-2014.
Helse Midt-Norge: wrist

Table: Completeness of reporting for primary operations in wrist, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Midt-Norge:</th>
<th>Primary operations</th>
<th>NCSP-codes:</th>
<th>Total number</th>
<th>NAR+PDR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Olavs hospital HF - Trondheim</td>
<td>7</td>
<td>57,1</td>
<td>71,4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helse Nord-Trøndelag HF - Levanger</td>
<td>1</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in wrist, 2008-2014.

Helse Nord: wrist

Table: Completeness of reporting for primary operations in wrist, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Nord:</th>
<th>Primary operations</th>
<th>NCSP-codes:</th>
<th>Total number</th>
<th>NAR+PDR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordlandssykehuset HF - Bodø</td>
<td>5</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Tromsø</td>
<td>3</td>
<td>66,7</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in wrist, 2008-2014.
Private hospitals with agreement with RHF: wrist

Table: Completeness of reporting for primary operations in wrist, 2008-2014.

<table>
<thead>
<tr>
<th>Private hospitals with agreement with RHF:</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volvat Medisinske Senter</td>
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<td>100</td>
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</table>

Figure: Completeness of reporting for primary operations in wrist, 2008-2014.
The entire country: lumbar disc

Table: Completeness of reporting for primary operations in lumbar disc, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Sør-Øst:</th>
<th>Primary operations NCSP-codes: NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</th>
<th>Total number NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oslo universitetssykehus HF</td>
<td></td>
<td>68</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Vestre Viken HF - Drammen</td>
<td></td>
<td>2</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Elverum</td>
<td></td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Helse Vest:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helse Stavanger HF - Stavanger univ.sykehus</td>
<td></td>
<td>1</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Helse Bergen HF - Haukeland univ.sjukehus</td>
<td></td>
<td>10</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Helse Midt-Norge:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helse Møre og Romsdal HF - Ålesund sjukehus</td>
<td></td>
<td>69</td>
<td>95,7</td>
<td>100</td>
</tr>
<tr>
<td>St. Olavs hospital HF - Trondheim</td>
<td></td>
<td>4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Helse Nord:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Tromsø</td>
<td></td>
<td>10</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Private hospitals with agreement with RHF:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ulriksdal sykehus</td>
<td></td>
<td>4</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>
**Helse Sør-Øst: shoulder**

**Table: Completeness of reporting for primary operations in shoulder, 2008-2014.**

<table>
<thead>
<tr>
<th>Helse Sør-Øst:</th>
<th>Primary operations</th>
<th>NCSP-codes:</th>
<th>Total number</th>
<th>NAR+NPR</th>
<th>NAR (%)</th>
<th>NPR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vestre Viken HF - Ringerike</td>
<td>8</td>
<td>NFB 20 / NFB 30 / NFB 40 / NFB 99</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Sykehuset Telemark HF - Skien</td>
<td>26</td>
<td></td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Kongsvinger</td>
<td>176</td>
<td></td>
<td>98,9</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Martina Hansens Hospital</td>
<td>158</td>
<td></td>
<td>98,1</td>
<td>99,4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lovisenberg Diakonale Sykehus</td>
<td>448</td>
<td></td>
<td>97,1</td>
<td>96,7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Betanien hospital Telemark</td>
<td>119</td>
<td></td>
<td>94,1</td>
<td>85,7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diakonhjemmets sykehus</td>
<td>304</td>
<td></td>
<td>94,1</td>
<td>99,3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vestre Viken HF - Drammen</td>
<td>108</td>
<td></td>
<td>91,7</td>
<td>97,2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Tynset</td>
<td>34</td>
<td></td>
<td>91,2</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Telemark HF - Gjøvik</td>
<td>46</td>
<td></td>
<td>89,1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sørlandet sykehus HF - Kristiansand</td>
<td>143</td>
<td></td>
<td>89</td>
<td>95,3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akershus universitetssykehus HF</td>
<td>112</td>
<td></td>
<td>86,6</td>
<td>99,1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sørlandet sykehus HF - Arendal</td>
<td>14</td>
<td></td>
<td>85,7</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vestre Viken HF - Bærum</td>
<td>109</td>
<td></td>
<td>85,3</td>
<td>90,8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Lillehammer</td>
<td>63</td>
<td></td>
<td>84,1</td>
<td>98,4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Telemark HF - Notodden</td>
<td>6</td>
<td></td>
<td>83,3</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oslo universitetssykehus HF</td>
<td>151</td>
<td></td>
<td>82,1</td>
<td>97,4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Østfold HF</td>
<td>125</td>
<td></td>
<td>81,6</td>
<td>90,4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Elverum</td>
<td>13</td>
<td></td>
<td>76,9</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sykehuset i Vestfold HF</td>
<td>78</td>
<td></td>
<td>73,1</td>
<td>98,7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vestre Viken HF - Kongsberg</td>
<td>8</td>
<td></td>
<td>50</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sørlandet sykehus HF - Flekkefjord</td>
<td>1</td>
<td></td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure: Completeness of reporting for primary operations in shoulder, 2008-2014.**
Helse Vest: shoulder

Table: Completeness of reporting for primary operations in shoulder, 2008-2014.

<table>
<thead>
<tr>
<th>Primary operations</th>
<th>Total number</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helse Førde HF - Nordfjord</td>
<td>3</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Helse Bergen HF - Voss sjukehus</td>
<td>2</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Helse Bergen HF - Kysthospital i Hagevik</td>
<td>91</td>
<td>97,8</td>
<td>96,7</td>
</tr>
<tr>
<td>Haugesund san.for. revmatismesykehus</td>
<td>53</td>
<td>96,2</td>
<td>98,1</td>
</tr>
<tr>
<td>Helse Fonna HF - Haugesund</td>
<td>39</td>
<td>94,9</td>
<td>97,4</td>
</tr>
<tr>
<td>Haraldsplass Diakonale Sykehus</td>
<td>84</td>
<td>90,5</td>
<td>97,6</td>
</tr>
<tr>
<td>Helse Bergen HF - Haukeland univ.sjukehus</td>
<td>320</td>
<td>90</td>
<td>98,1</td>
</tr>
<tr>
<td>Helse Førde HF - Førde</td>
<td>41</td>
<td>87,5</td>
<td>54,2</td>
</tr>
<tr>
<td>Helse Førde HF - Lærdal</td>
<td>6</td>
<td>83,3</td>
<td>83,3</td>
</tr>
<tr>
<td>Helse Stavanger HF - Stavanger univ.sjukehus</td>
<td>36</td>
<td>58,3</td>
<td>80,6</td>
</tr>
<tr>
<td>Helse Fonna HF - Odda</td>
<td>2</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in shoulder, 2008-2014.
Helse Midt-Norge: shoulder

Table: Completeness of reporting for primary operations in shoulder, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Midt-Norge:</th>
<th>Total number</th>
<th>NAR + NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Olavs hospital HF - Røros</td>
<td>2</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Helse Nord-Trøndelag HF - Levanger</td>
<td>52</td>
<td>98,1</td>
<td>98,1</td>
<td></td>
</tr>
<tr>
<td>St. Olavs hospital HF - Orkdal</td>
<td>56</td>
<td>96,4</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Helse Nord-Trøndelag HF - Namsos</td>
<td>43</td>
<td>93</td>
<td>95,3</td>
<td></td>
</tr>
<tr>
<td>Helse Møre og Romsdal HF - Ålesund</td>
<td>104</td>
<td>91,3</td>
<td>96,2</td>
<td></td>
</tr>
<tr>
<td>St. Olavs hospital HF - Trondheim</td>
<td>142</td>
<td>81</td>
<td>97,2</td>
<td></td>
</tr>
<tr>
<td>Helse Møre og Romsdal HF - Kristiansund</td>
<td>37</td>
<td>64,9</td>
<td>94,6</td>
<td></td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in shoulder, 2008-2014.
Helse Nord: shoulder

Table: Completeness of reporting for primary operations in shoulder, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Nord:</th>
<th>Total number</th>
<th>NAR+ NPR</th>
<th>NAR (%)</th>
<th>NPR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordlandssykehuset HF - Bodø</td>
<td>84</td>
<td>95,2</td>
<td>98,8</td>
<td></td>
</tr>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Tromsø</td>
<td>78</td>
<td>93,1</td>
<td>98,6</td>
<td></td>
</tr>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Harstad</td>
<td>5</td>
<td>80</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Helse Finnmark HF - Klinikk Hammerfest</td>
<td>9</td>
<td>77,8</td>
<td>88,9</td>
<td></td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in shoulder, 2008-2014.
Private hospitals with agreement with RHF: shoulder

Table: Completeness of reporting for primary operations in shoulder, 2008-2014.

<table>
<thead>
<tr>
<th>Private hospitals with agreement with RHF:</th>
<th>Total number NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norsk idrettsmedisinsk institutt</td>
<td>9</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Rongvollklinikken</td>
<td>2</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Teres - Drammen</td>
<td>2</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in shoulder, 2008-2014.
Helse Sør-Øst: toe

Table: Completeness of reporting for primary operations in toe, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Sør-Øst:</th>
<th>NCSP-codes:</th>
<th>Total number NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sørlandet sykehus HF - Kristiansand</td>
<td>NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</td>
<td>8</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Vestre Viken HF - Kongsberg</td>
<td></td>
<td>6</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Diakonhjemmets sykehus</td>
<td></td>
<td>57</td>
<td>91,2</td>
<td>93</td>
</tr>
<tr>
<td>Sykehuset Innlandet HF - Kongsvinger</td>
<td></td>
<td>10</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Sykehuset Østfold HF</td>
<td></td>
<td>67</td>
<td>86,6</td>
<td>95,5</td>
</tr>
<tr>
<td>Martina Hansens Hospital</td>
<td></td>
<td>7</td>
<td>85,7</td>
<td>100</td>
</tr>
<tr>
<td>Oslo universitetssykehus HF</td>
<td></td>
<td>3</td>
<td>66,7</td>
<td>100</td>
</tr>
<tr>
<td>Vestre Viken HF - Drammen</td>
<td></td>
<td>2</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Sykehuset Telemark HF - Notodden</td>
<td></td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Akershus universitetssykehus HF</td>
<td></td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Lovisenberg Diakonale Sykehus</td>
<td></td>
<td>3</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in toe, 2008-2014.
## Helse Vest: toe

### Table: Completeness of reporting for primary operations in toe, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Vest:</th>
<th>Total number</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helse Bergen HF - Voss sjukehus</td>
<td>33</td>
<td>87,9</td>
<td>90,9</td>
</tr>
<tr>
<td>Haraldsplass Diakonale Sykehus</td>
<td>5</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Helse Fonna HF - Stord</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Helse Førde HF - Førde</td>
<td>2</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Helse Bergen HF - Haukeland univ.sjukehus</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Helse Førde HF - Nordfjord</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

### Figure: Completeness of reporting for primary operations in toe, 2008-2014.
Helse Midt-Norge: toe

Table: Completeness of reporting for primary operations in toe, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Midt-Norge:</th>
<th>Total number NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helse Møre og Romsdal HF - Ålesund</td>
<td>16</td>
<td>93,8</td>
<td>93,8</td>
</tr>
<tr>
<td>St. Olavs hospital HF - Røros</td>
<td>13</td>
<td>76,9</td>
<td>100</td>
</tr>
<tr>
<td>St. Olavs hospital HF - Trondheim</td>
<td>8</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>St. Olavs hospital HF - Orkdal</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in toe, 2008-2014.

Helse Nord: toe

Table: Completeness of reporting for primary operations in toe, 2008-2014.

<table>
<thead>
<tr>
<th>Helse Nord:</th>
<th>Total number NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univ.sykehuset i Nord-Norge HF - Tromsø</td>
<td>1</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Nordlandssykehuset HF - Vesterålen</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure: Completeness of reporting for primary operations in toe, 2008-2014.
Table: Completeness of reporting for primary operations in toe, 2008-2014.

<table>
<thead>
<tr>
<th>Private hospitals with agreement with RHF:</th>
<th>Primary operations NCSP-codes: NGB 0 / NGB 1 / NGB 20 / NGB 30 / NGB 40</th>
<th>Total number NAR+NPR</th>
<th>NAR(%)</th>
<th>NPR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medi3</td>
<td></td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Teres - Tromsø</td>
<td></td>
<td>2</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>
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Norwegian Hip Fracture Register

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The number of primary hip fracture operations reported for 2015 has risen by over 200 to 8400, compared with 2014. This is somewhat surprising, as the number has been declining since the peak year of 2011 (8599 primary operations) (Table 1). The reason is unclear, but improved reporting in 2015 may be an explanation.

Completeness analyses (i.e. validation) of reporting to the Norwegian Hip Fracture Register (NHBR), compared to the Norwegian Patient Register (NPR) for 2013-2014, which have just been completed (at the end of this hip fracture report), also indicate poorer reporting compared to the NPR than for the period 2008-2012. Reporting to the NHBR of primary hemiprostheses is now 92%, compared to 94% before, and for primary osteosynthesis it is 80%, compared to 86% previously. This is worrying, and we urge you all to continue to report both primary operations for hip fracture and reoperations after hip fracture to the Register. We are working on validation of reoperations in the Register compared to NPR data, but the results are as yet uncertain, partly because of the difficulty of clear identification of reoperations in the NPR.

The Hip Fracture Register is asked to publish data at hospital level. The figure below shows the number of hip fractures reported to the Hip Fracture Register from 46 different hospitals in 2015 (grouped according to health region).
Patients with hip fractures have an average age of 80 years, and many have comorbidities that increase the risk of death associated with the surgery. The one-year mortality rate for this group is about 24% and the five-year rate is 60%. It is therefore important that these patients get the attention they deserve, to enable the number of complications and mortality to be reduced to a minimum. The figure below presents 30-day survival rates of hip fracture patients operated in 2013-2015 by hospital (95% confidence interval). The number of primary fractures for each hospital during this period is shown in brackets.

The year 2015 was successful from an operational and scientific point of view. Marit Bakken successfully defended her thesis in 2015, partly with data from the Hip Fracture Register. Sabine Ruths published an article with data from the Hip Fracture Register, which showed a reduced risk of hip fracture associated with the use of most antihypertensive medications, but a higher risk of hip fracture for patients taking loop diuretics and ACE inhibitors.

The surgeons are still jointly in charge of the data in the Hip Fracture Register, and we encourage anyone interested in research to contact us at the Register.

We would like to thank you all for good reporting and we look forward to continued fruitful cooperation!
Due to minor fixes in the database, there are differences in numbers in the Norwegian report and this English version.

Bergen, 16 June 2016

Lars B. Engesæter
Professor, Consultant orthopaedic surgeon
Head of the National Hip Fracture Register

Jan-Erik Gjertsen
Consultant orthopaedic surgeon, Associate Professor

Irina Kvinnesland
IT Consultant

Lise B. Kvamsdal
Advisor

Eva Dybvik
Statistician/Researcher
HIP FRACTURES

Numbers of operations

Table 1: Annual numbers of operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary operation</th>
<th>Reoperation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>8400 (90.4%)</td>
<td>895 (9.6%)</td>
<td>9295</td>
</tr>
<tr>
<td>2014</td>
<td>8173 (91.4%)</td>
<td>772 (8.6%)</td>
<td>8945</td>
</tr>
<tr>
<td>2013</td>
<td>8306 (90.4%)</td>
<td>792 (9.6%)</td>
<td>9190</td>
</tr>
<tr>
<td>2012</td>
<td>8434 (90.5%)</td>
<td>882 (9.5%)</td>
<td>9316</td>
</tr>
<tr>
<td>2011</td>
<td>8599 (90.5%)</td>
<td>908 (9.6%)</td>
<td>9507</td>
</tr>
<tr>
<td>2010</td>
<td>8362 (90.8%)</td>
<td>852 (9.3%)</td>
<td>9214</td>
</tr>
<tr>
<td>2009</td>
<td>8256 (89.6%)</td>
<td>792 (10.4%)</td>
<td>9218</td>
</tr>
<tr>
<td>2008</td>
<td>8362 (90.0%)</td>
<td>929 (10.0%)</td>
<td>9291</td>
</tr>
<tr>
<td>2007</td>
<td>8070 (89.4%)</td>
<td>930 (10.6%)</td>
<td>8800</td>
</tr>
<tr>
<td>2006</td>
<td>7577 (89.4%)</td>
<td>890 (10.6%)</td>
<td>8407</td>
</tr>
<tr>
<td>2005</td>
<td>5879 (89.9%)</td>
<td>661 (10.1%)</td>
<td>6540</td>
</tr>
<tr>
<td>Total</td>
<td>88158 (90.2%) *</td>
<td>9565 (9.8%) *</td>
<td>97723</td>
</tr>
</tbody>
</table>

49% of primary operations were on the right side. 70% of primary operations were performed on women. Mean age at primary surgery was 80 years: 82 years for women and 77 years for men.

* 2181 (2%) were primary operations with total hip prostheses from the Norwegian Arthroplasty Register.

** 3065 (32%) were reoperations with total hip prostheses from the Norwegian Arthroplasty Register.

Figure 1: Annual numbers of operations

Figure 2: Age by primary operation (in 2007, 2011 and 2015)
Time from fracture to operation in hours - primary operations

Table 2: Time from fracture to operation in hours*

<table>
<thead>
<tr>
<th></th>
<th>0 - 6</th>
<th>&gt;6 - 12</th>
<th>&gt;12 - 24</th>
<th>&gt;24 - 48</th>
<th>&gt;48</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>308 (3.8%)</td>
<td>1082 (13.4%)</td>
<td>3051 (37.8%)</td>
<td>2328 (28.8%)</td>
<td>1104 (13.7%)</td>
<td>203 (2.5%)</td>
<td>8076</td>
</tr>
<tr>
<td>2014</td>
<td>325 (4.1%)</td>
<td>1155 (14.6%)</td>
<td>2994 (38.0%)</td>
<td>2187 (27.7%)</td>
<td>1045 (13.3%)</td>
<td>178 (2.3%)</td>
<td>7884</td>
</tr>
<tr>
<td>2013</td>
<td>314 (3.9%)</td>
<td>1129 (14.1%)</td>
<td>2932 (36.6%)</td>
<td>2261 (28.2%)</td>
<td>1198 (15.0%)</td>
<td>177 (2.2%)</td>
<td>8011</td>
</tr>
<tr>
<td>2012</td>
<td>316 (3.8%)</td>
<td>1167 (14.2%)</td>
<td>2937 (35.7%)</td>
<td>2309 (28.1%)</td>
<td>1326 (16.1%)</td>
<td>170 (2.1%)</td>
<td>8225</td>
</tr>
<tr>
<td>2011</td>
<td>313 (3.7%)</td>
<td>1206 (14.3%)</td>
<td>2843 (33.8%)</td>
<td>2419 (28.8%)</td>
<td>1421 (16.9%)</td>
<td>205 (2.4%)</td>
<td>8407</td>
</tr>
<tr>
<td>2010</td>
<td>355 (4.3%)</td>
<td>1217 (14.8%)</td>
<td>2882 (35.2%)</td>
<td>2216 (27.0%)</td>
<td>1340 (16.3%)</td>
<td>189 (2.3%)</td>
<td>8199</td>
</tr>
<tr>
<td>2009</td>
<td>353 (4.4%)</td>
<td>1290 (15.9%)</td>
<td>2857 (35.3%)</td>
<td>2128 (26.3%)</td>
<td>1306 (16.1%)</td>
<td>164 (2.0%)</td>
<td>8098</td>
</tr>
<tr>
<td>2008</td>
<td>385 (4.7%)</td>
<td>1320 (16.1%)</td>
<td>2835 (34.5%)</td>
<td>2201 (26.8%)</td>
<td>1292 (15.7%)</td>
<td>178 (2.2%)</td>
<td>8211</td>
</tr>
<tr>
<td>2007</td>
<td>452 (5.9%)</td>
<td>1434 (18.6%)</td>
<td>2610 (33.8%)</td>
<td>1872 (24.3%)</td>
<td>1188 (15.4%)</td>
<td>155 (2.0%)</td>
<td>7711</td>
</tr>
<tr>
<td>2006</td>
<td>465 (6.3%)</td>
<td>1488 (20.2%)</td>
<td>2647 (35.9%)</td>
<td>1683 (22.8%)</td>
<td>983 (13.3%)</td>
<td>115 (1.6%)</td>
<td>7381</td>
</tr>
<tr>
<td>2005</td>
<td>445 (7.7%)</td>
<td>1294 (22.4%)</td>
<td>1974 (34.2%)</td>
<td>1147 (19.9%)</td>
<td>809 (14.0%)</td>
<td>105 (1.8%)</td>
<td>5774</td>
</tr>
<tr>
<td>Total</td>
<td>4031 (4.7%)</td>
<td>13782 (16.0%)</td>
<td>30562 (35.5%)</td>
<td>22751 (26.5%)</td>
<td>13012 (15.1%)</td>
<td>1839 (2.1%)</td>
<td>85977</td>
</tr>
</tbody>
</table>

* Total hip prostheses are not included

Figure 3: Time from fracture to operation - grouped in hours  (n=85977)

Figure 4: Time from fracture to operation - continuous  (n=42669)

Mean time from fracture to operation was 23 hours (median 20 hours).
Cognitive impairment

Table 3: Cognitive impairment - primary operations*

<table>
<thead>
<tr>
<th>Year</th>
<th>No</th>
<th>Yes</th>
<th>Uncertain</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>5378 (66.6%)</td>
<td>1917 (23.7%)</td>
<td>600 (7.4%)</td>
<td>181 (2.2%)</td>
<td>8076</td>
</tr>
<tr>
<td>2014</td>
<td>5129 (65.1%)</td>
<td>1933 (24.5%)</td>
<td>642 (8.1%)</td>
<td>180 (2.3%)</td>
<td>7884</td>
</tr>
<tr>
<td>2013</td>
<td>5235 (65.3%)</td>
<td>1938 (24.2%)</td>
<td>675 (8.4%)</td>
<td>163 (2.0%)</td>
<td>8011</td>
</tr>
<tr>
<td>2012</td>
<td>5222 (63.5%)</td>
<td>2007 (24.4%)</td>
<td>821 (10.0%)</td>
<td>175 (2.1%)</td>
<td>8225</td>
</tr>
<tr>
<td>2011</td>
<td>5347 (63.6%)</td>
<td>1990 (23.7%)</td>
<td>901 (10.7%)</td>
<td>169 (2.0%)</td>
<td>8407</td>
</tr>
<tr>
<td>2010</td>
<td>5219 (63.7%)</td>
<td>1917 (23.4%)</td>
<td>834 (10.2%)</td>
<td>229 (2.8%)</td>
<td>8199</td>
</tr>
<tr>
<td>2009</td>
<td>5155 (63.7%)</td>
<td>1890 (23.3%)</td>
<td>832 (10.3%)</td>
<td>221 (2.7%)</td>
<td>8098</td>
</tr>
<tr>
<td>2008</td>
<td>5186 (63.2%)</td>
<td>2026 (24.7%)</td>
<td>794 (9.7%)</td>
<td>205 (2.5%)</td>
<td>8211</td>
</tr>
<tr>
<td>2007</td>
<td>4834 (62.7%)</td>
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<td>836 (10.8%)</td>
<td>168 (2.2%)</td>
<td>7711</td>
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<tr>
<td>2006</td>
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<tr>
<td>2005</td>
<td>3610 (62.5%)</td>
<td>1384 (24.0%)</td>
<td>649 (11.2%)</td>
<td>131 (2.3%)</td>
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<td><strong>20550 (23.9%)</strong></td>
<td><strong>8304 (9.7%)</strong></td>
<td><strong>1963 (2.3%)</strong></td>
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Type of anaesthesia

Table 4: Type of anaesthesia - primary operations*

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Figure 6: Type of anaesthesia - primary operations*
ASA classification (ASA = American Society of Anaesthesiologists)

Table 5: ASA classification - all operations

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</table>

Figure 7: ASA classification - all operations

ASA 1: Healthy patients who smoke less than 5 cigarettes a day.
ASA 2: Patients with an asymptomatic condition who are kept under medical control (f. ex. hypertension), or with diet (f. ex. diabetes mellitus type 2), and otherwise healthy patients who smoke five cigarettes or more daily.
ASA 3: Patients having a condition that can cause symptoms. However, patients are kept under medical control (f. ex moderate angina pectoris and mild asthma).
ASA 4: Patients with a condition that is out of control (f. ex. heart failure and asthma).
ASA 5: A moribund patient who is not expected to survive the operation.
## Primary operations

### Table 6: Fracture type (reason for primary operation)

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<th>Year</th>
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<th>Type 4</th>
<th>Type 5</th>
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**Type 1:** Intracapsular fracture, undisplaced  
**Type 2:** Intracapsular fracture, displaced  
**Type 3:** Basocervical fracture  
**Type 4:** Trochanteric fracture (2 fragments)  
**Type 5:** Trochanteric fracture (multifragment)  
**Type 6:** Subtrochanteric fracture  
**Type 7:** Intracapsular fracture unspecified (from the Norwegian Arthroplasty Register)  
**Type 8:** Trochanteric fracture unspecified (from the Norwegian Arthroplasty Register)  
**Type 9:** Intertrochanteric fracture (The registration started in 2008)
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<th>Basocervical fracture</th>
<th>Trochanteric fracture</th>
<th>Intertrochanteric fracture</th>
<th>Hip compression screw and plate</th>
<th>Hip compression screw with lateral support plate</th>
<th>Angle plate</th>
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<th>Short intramedullary nail with distal locking</th>
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<th>Long intramedullary nail with distal locking</th>
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* Total hip prostheses reported to the Norwegian Arthroplasty Register

** The registration started in 2008
Table 8: Type of primary operations - all fractures

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21.3% 0.6% 32.3% 0.4% 20.9% 9.0% 0.0% 0.4% 7.0% 0.1% 3.5% 2.5% 2.0% 0.0%

Figure 8: Type of primary operations - all fractures

- T1: Two screws or pins
- T2: Three screws or pins
- T3: Bipolar hemiprosthesis
- T4: Unipolar hemiprosthesis
- T5: Hip compression screw and plate
- T6: Hip compression screw with lateral support plate
- T7: Angle plate
- T8: Short intramedullary nail without distal locking
- T9: Short intramedullary nail with distal locking
- T10: Long intramedullary nail without distal locking
- T11: Long intramedullary nail with distal locking
- T12: Total hip prosthesis
- T13: Other*
- T14: Missing

* Proportion (%) of operations with combination: Hip compression screw system and additional anti-rotational screw is 1.3 %
Figure 9a: Time trend for treatment of displaced femoral neck fractures

- Total hip prostheses for femoral neck fracture were reported to the Norwegian Arthroplasty Register without information about displacement of fracture.

Figure 9b: Time trend for treatment of trochanteric fractures

Figure 9c: Time trend for treatment of inter- and subtrochanteric fractures

* Intertrochanteric fracture = (AO OTA type A3)
Figure 10a: Quality of life (EQ-5D) among patients with hip fractures

Figure 10b: Quality of life (EQ-5D) among patients with displaced femoral neck fracture

The numbers in each column indicate the numbers of patients who had answered the quality of life questionnaire at each follow up.
Reoperations

Table 9: Reasons for reoperation (more than one reason is possible)

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R1: Osteosynthesis failure
R2: Nonunion
R3: Avascular necrosis (segmental collapse)
R4: Local pain due to osteosynthesis material
R5: Malunion
R6: Infection - superficial
R7: Infection - deep
R8: Haematoma
R9: Dislocation of hemiprosthesis
R10: Cut out of osteosynthesis material through caput
R11: New fracture around implant
R12: Loosening of hemiprosthesis
R13: Other
R14: Reported reoperations to the Arthroplasty Register except “Deep infection” which is included in R7: Infection – deep.
Table 10: Numbers of reoperation for each fracture type

In patients where both primary operation and the related reoperation are registered. Multiple causes for each reoperation can be registered.

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<tr>
<th>Fracture type</th>
<th>Intracapsular fracture, undisplaced</th>
<th>Intracapsular fracture, displaced</th>
<th>Basocervical fracture</th>
<th>Trochanteric fracture</th>
<th>Trochanteric fracture, (multi-fragment)</th>
<th>Subtrochanteric fracture</th>
<th>Intertrochanteric fracture*</th>
<th>Other</th>
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* The registration started in 2008
Table 11: Type of reoperation (more than one reason is possible)

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<th>R4</th>
<th>R5</th>
<th>R6</th>
<th>R7</th>
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R1: Removal of implant (when only procedure)
R2: Girdlestone (= Removal of implant/hemiprosthesis and caput)
R3: Bipolar hemiprosthesis
R4: Unipolar hemiprosthesis
R5: Re-osteosynthesis
R6: Drainage of haematoma or infection
R7: Closed reduction of dislocated hemiprosthesis
R8: Open reduction of dislocated hemiprosthesis
R9: Other
R10: Total hip prosthesis
Table 12: Reoperation with primary uni/bipolar hemiprosthesis (reasons are not mutually exclusive)

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R1: Removal of implant (when only procedure)
R2: Girdlestone (= Removal of implant/hemiprosthesis and caput)
R3: Bipolar hemiprosthesis
R4: Unipolar hemiprosthesis
R5: Re-osteosynthesis
R6: Drainage of haematoma or infection
R7: Closed reduction of dislocated hemiprosthesis
R8: Open reduction of dislocated hemiprosthesis
R9: Other
R10: Total hip prosthesis

Table 13: Specification of R9 - Others

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The Norwegian Hip Fracture Register

Hip Fractures
Table 14: Reoperation with primary screw osteosynthesis (reasons are not mutually exclusive)

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**R1:** Removal of implant (when only procedure)  
**R2:** Girdlestone (= Removal of implant/hemiprosthesis and caput)  
**R3:** Bipolar hemiprosthesis  
**R4:** Unipolar hemiprosthesis  
**R5:** Re-osteosynthesis  
**R6:** Drainage of haematoma or infection  
**R7:** Closed reduction of dislocated hemiprosthesis  
**R8:** Open reduction of dislocated hemiprosthesis  
**R9:** Other  
**R10:** Total hip prosthesis
### Implants

#### Table 15: Cemented hemiprostheses - primary operations

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*Other includes combinations of implants with less than 10 occurrences.
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*Other includes combinations of implants with less than 5 occurrences.
Table 18: Uncemented hemiprostheses - reoperations

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*Other includes combinations of implants with less than 5 occurrences.
Table 19: Screws - primary operations

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Table 20: Hip compression screws - primary operations

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Table 21: Intramedullary nails - primary operations

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Fixation of hemiprostheses

Table 22: Primary operations

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*Other includes implants with less than 10 occurrences.
Table 23: Type of cement - primary operations

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<td>714</td>
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<td>869</td>
<td>879</td>
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Table 24: Hydroxyapatite (HA) - uncemented prostheses

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<td>5 (0.7%)</td>
<td>270 (40.5%)</td>
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<td>2014</td>
<td>537 (66.2%)</td>
<td>9 (1.1%)</td>
<td>265 (32.7%)</td>
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<td>624 (67.8%)</td>
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<td>297 (32.2%)</td>
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<td>775 (72.8%)</td>
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<td>785 (79.5%)</td>
<td>4 (0.4%)</td>
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<td>666 (79.6%)</td>
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<td>152 (18.2%)</td>
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<td>440 (77.5%)</td>
<td>47 (8.3%)</td>
<td>81 (14.3%)</td>
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<td>300 (75.2%)</td>
<td>38 (9.5%)</td>
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<td>294 (76.0%)</td>
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<td>212 (65.6%)</td>
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<tr>
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<td>5168 (71.8%)</td>
<td>222 (3.1%)</td>
<td>1807 (25.1%)</td>
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### Pathological fractures

**Table 25: Pathological fracture (osteoporotic fracture not included) - primary operations *

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<td>117 (1.4%)</td>
<td>889 (11.0%)</td>
<td>8076</td>
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<td>2014</td>
<td>6914 (87.7%)</td>
<td>80 (1.0%)</td>
<td>890 (11.3%)</td>
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<td>6986 (87.2%)</td>
<td>133 (1.7%)</td>
<td>892 (11.1%)</td>
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<td>7190 (87.4%)</td>
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<td>928 (11.3%)</td>
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<td>7485 (89.0%)</td>
<td>135 (1.6%)</td>
<td>787 (9.4%)</td>
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<td>7610 (92.8%)</td>
<td>93 (1.1%)</td>
<td>496 (6.0%)</td>
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<td>7305 (90.2%)</td>
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<td>102 (1.2%)</td>
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<td>6958 (90.2%)</td>
<td>93 (1.2%)</td>
<td>660 (8.6%)</td>
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<td>6653 (90.1%)</td>
<td>91 (1.2%)</td>
<td>637 (8.6%)</td>
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<td>2005</td>
<td>5135 (88.9%)</td>
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<td>574 (9.9%)</td>
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<td><strong>Total</strong></td>
<td><strong>76694 (89.2%)</strong></td>
<td><strong>1122 (1.3%)</strong></td>
<td><strong>8160 (9.5%)</strong></td>
<td><strong>85976</strong></td>
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* Patients operated with total hip prostheses were excluded.

### Surgical approach used in hemiarthroplasty

**Table 26: Surgical approach used in hemiarthroplasty**

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<td>57 (1.8%)</td>
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<td>3 (0.1%)</td>
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<td>2559 (80.2%)</td>
<td>291 (9.1%)</td>
<td>1 (0.0%)</td>
<td>83 (2.6%)</td>
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<tr>
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<td>0 (0.0%)</td>
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</tr>
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<td>6 (0.2%)</td>
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<td>278 (8.8%)</td>
<td>1 (0.0%)</td>
<td>86 (2.7%)</td>
<td>3144</td>
</tr>
<tr>
<td>2011</td>
<td>11 (0.4%)</td>
<td>228 (7.5%)</td>
<td>2443 (80.8%)</td>
<td>290 (9.6%)</td>
<td>0 (0.0%)</td>
<td>51 (1.7%)</td>
<td>3023</td>
</tr>
<tr>
<td>2010</td>
<td>14 (0.5%)</td>
<td>142 (5.1%)</td>
<td>2391 (85.1%)</td>
<td>230 (8.2%)</td>
<td>0 (0.0%)</td>
<td>34 (1.2%)</td>
<td>2811</td>
</tr>
<tr>
<td>2009</td>
<td>14 (0.5%)</td>
<td>147 (5.2%)</td>
<td>2441 (86.0%)</td>
<td>200 (7.0%)</td>
<td>0 (0.0%)</td>
<td>35 (1.2%)</td>
<td>2837</td>
</tr>
<tr>
<td>2008</td>
<td>1 (0.0%)</td>
<td>155 (6.2%)</td>
<td>2143 (85.4%)</td>
<td>176 (7.0%)</td>
<td>0 (0.0%)</td>
<td>34 (1.4%)</td>
<td>2509</td>
</tr>
<tr>
<td>2007</td>
<td>0 (0.0%)</td>
<td>162 (7.5%)</td>
<td>1777 (82.2%)</td>
<td>201 (9.3%)</td>
<td>0 (0.0%)</td>
<td>23 (1.1%)</td>
<td>2163</td>
</tr>
<tr>
<td>2006</td>
<td>1 (0.1%)</td>
<td>244 (14.5%)</td>
<td>1224 (73.0%)</td>
<td>189 (11.3%)</td>
<td>0 (0.0%)</td>
<td>19 (1.1%)</td>
<td>1677</td>
</tr>
<tr>
<td>2005</td>
<td>0 (0.0%)</td>
<td>131 (11.5%)</td>
<td>864 (76.1%)</td>
<td>136 (12.0%)</td>
<td>0 (0.0%)</td>
<td>5 (0.4%)</td>
<td>1136</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>72 (0.2%)</strong></td>
<td><strong>2186 (7.6%)</strong></td>
<td><strong>23457 (81.4%)</strong></td>
<td><strong>2602 (9.0%)</strong></td>
<td>3 (0.0%)</td>
<td><strong>505 (1.8%)</strong></td>
<td><strong>28825</strong></td>
</tr>
</tbody>
</table>

**Figure 12: Surgical approach used in hemiarthroplasty**

Definition of operative approach:
- **Anterior** (between sartorius and tensor)
- **Anterolateral** (between gluteus medius and tensor)
- **Direct lateral** (transgluteal)
- **Posterior** (behind the gluteus medius)
### Intraoperative complications

Table 27: Intraoperative complications - primary operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>305</td>
<td>7802</td>
<td>293</td>
<td>8400</td>
</tr>
<tr>
<td>2014</td>
<td>308</td>
<td>7578</td>
<td>287</td>
<td>8173</td>
</tr>
<tr>
<td>2013</td>
<td>306</td>
<td>7743</td>
<td>257</td>
<td>8306</td>
</tr>
<tr>
<td>2012</td>
<td>340</td>
<td>7770</td>
<td>324</td>
<td>8434</td>
</tr>
<tr>
<td>2011</td>
<td>353</td>
<td>7959</td>
<td>287</td>
<td>8599</td>
</tr>
<tr>
<td>2010</td>
<td>322</td>
<td>7761</td>
<td>279</td>
<td>8362</td>
</tr>
<tr>
<td>2009</td>
<td>302</td>
<td>7683</td>
<td>271</td>
<td>8256</td>
</tr>
<tr>
<td>2008</td>
<td>365</td>
<td>7706</td>
<td>271</td>
<td>8362</td>
</tr>
<tr>
<td>2007</td>
<td>273</td>
<td>7359</td>
<td>238</td>
<td>7870</td>
</tr>
<tr>
<td>2006</td>
<td>244</td>
<td>7020</td>
<td>253</td>
<td>7517</td>
</tr>
<tr>
<td>2005</td>
<td>188</td>
<td>5557</td>
<td>134</td>
<td>5679</td>
</tr>
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</table>

**Total**

- Yes: 3306 (3.8%)
- No: 81958 (93.0%)
- Missing: 2894 (3.3%)
- Total: 88158

### Antibiotic prophylaxis

Table 28: Screw - primary operations

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<td>102</td>
<td>9</td>
<td>1275</td>
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<tr>
<td>2014</td>
<td>988</td>
<td>162</td>
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<tr>
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<td>307</td>
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<td>2012</td>
<td>1016</td>
<td>455</td>
<td>11</td>
<td>1482</td>
</tr>
<tr>
<td>2011</td>
<td>1000</td>
<td>682</td>
<td>17</td>
<td>1699</td>
</tr>
<tr>
<td>2010</td>
<td>952</td>
<td>721</td>
<td>26</td>
<td>1699</td>
</tr>
<tr>
<td>2009</td>
<td>884</td>
<td>858</td>
<td>25</td>
<td>1767</td>
</tr>
<tr>
<td>2008</td>
<td>930</td>
<td>1050</td>
<td>27</td>
<td>2007</td>
</tr>
<tr>
<td>2007</td>
<td>905</td>
<td>1300</td>
<td>26</td>
<td>2231</td>
</tr>
<tr>
<td>2006</td>
<td>812</td>
<td>1663</td>
<td>51</td>
<td>2526</td>
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<tr>
<td>2005</td>
<td>533</td>
<td>1626</td>
<td>47</td>
<td>2206</td>
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</tbody>
</table>

**Total**

- Yes: 10192 (52.6%)
- No: 8926 (46.1%)
- Missing: 253 (1.3%)
- Total: 19371

### Hemiprosthesis - primary operations

Table 29: Hemiprosthesis - primary operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
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</thead>
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<td>3232</td>
</tr>
<tr>
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<td>3182</td>
<td>0</td>
<td>6</td>
<td>3188</td>
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<tr>
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<tr>
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<td>6</td>
<td>2</td>
<td>3142</td>
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<td>4</td>
<td>9</td>
<td>3022</td>
</tr>
<tr>
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<td>4</td>
<td>3</td>
<td>2810</td>
</tr>
<tr>
<td>2009</td>
<td>2826</td>
<td>8</td>
<td>3</td>
<td>2837</td>
</tr>
<tr>
<td>2008</td>
<td>2487</td>
<td>13</td>
<td>9</td>
<td>2509</td>
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<tr>
<td>2007</td>
<td>2150</td>
<td>7</td>
<td>6</td>
<td>2163</td>
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<tr>
<td>2006</td>
<td>1665</td>
<td>9</td>
<td>3</td>
<td>1677</td>
</tr>
<tr>
<td>2005</td>
<td>1129</td>
<td>2</td>
<td>5</td>
<td>1136</td>
</tr>
</tbody>
</table>

**Total**

- Yes: 28700 (99.6%)
- No: 59 (0.2%)
- Missing: 60 (0.2%)
- Total: 28819
Table 30: Hip compression screw and plate (including angle plate) - primary operations

<table>
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<tr>
<th>Year</th>
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</thead>
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<td>14</td>
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<td>28</td>
<td>12</td>
<td>2567</td>
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<td>2010</td>
<td>2584</td>
<td>37</td>
<td>12</td>
<td>2633</td>
</tr>
<tr>
<td>2009</td>
<td>2490</td>
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<td>2553</td>
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<tr>
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<td>2007</td>
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<td>138</td>
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<td>2512</td>
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<td>2006</td>
<td>2343</td>
<td>161</td>
<td>16</td>
<td>2520</td>
</tr>
<tr>
<td>2005</td>
<td>1824</td>
<td>121</td>
<td>18</td>
<td>1963</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>25587</strong></td>
<td><strong>649</strong></td>
<td><strong>115</strong></td>
<td><strong>26351</strong></td>
</tr>
</tbody>
</table>

Table 31: Intramedullary nail - primary operations

<table>
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<td>4</td>
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<td>1170</td>
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<tr>
<td>2013</td>
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<td>5</td>
<td>1200</td>
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<td>2012</td>
<td>935</td>
<td>53</td>
<td>6</td>
<td>994</td>
</tr>
<tr>
<td>2011</td>
<td>864</td>
<td>96</td>
<td>5</td>
<td>965</td>
</tr>
<tr>
<td>2010</td>
<td>796</td>
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<td>8</td>
<td>872</td>
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<tr>
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<td>58</td>
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<td>775</td>
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<tr>
<td>2008</td>
<td>914</td>
<td>105</td>
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<td>1026</td>
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<td>2007</td>
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<tr>
<td>2005</td>
<td>236</td>
<td>56</td>
<td>5</td>
<td>297</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9638</strong></td>
<td><strong>564</strong></td>
<td><strong>59</strong></td>
<td><strong>9661</strong></td>
</tr>
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</table>

Table 32: All reoperations

<table>
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<tr>
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<th>Missing</th>
<th>Total</th>
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<td>56</td>
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<td>893</td>
</tr>
<tr>
<td>2014</td>
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<td>772</td>
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<td>10</td>
<td>884</td>
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<td>800</td>
<td>76</td>
<td>6</td>
<td>882</td>
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<td>2011</td>
<td>803</td>
<td>91</td>
<td>14</td>
<td>908</td>
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<td>852</td>
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<td>2009</td>
<td>793</td>
<td>151</td>
<td>18</td>
<td>962</td>
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<tr>
<td>2008</td>
<td>782</td>
<td>131</td>
<td>16</td>
<td>929</td>
</tr>
<tr>
<td>2007</td>
<td>797</td>
<td>125</td>
<td>8</td>
<td>930</td>
</tr>
<tr>
<td>2006</td>
<td>753</td>
<td>120</td>
<td>17</td>
<td>880</td>
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<tr>
<td>2005</td>
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<td>108</td>
<td>8</td>
<td>661</td>
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<td><strong>8365</strong></td>
<td><strong>1077</strong></td>
<td><strong>121</strong></td>
<td><strong>9563</strong></td>
</tr>
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</table>
Table 33: Antibiotics used in primary operations (n=78269)

<table>
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<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampicillin (Pentrexyl, Pondocillin, Doktacin)</td>
<td>0.33%</td>
<td>0.47%</td>
<td>0.28%</td>
<td>0.16%</td>
<td>0.25%</td>
<td>0.21%</td>
<td>0.16%</td>
<td>0.19%</td>
<td>0.22%</td>
<td>0.10%</td>
</tr>
<tr>
<td>Benzylpenicillin (Penicillin G)</td>
<td>0.15%</td>
<td>0.15%</td>
<td>0.13%</td>
<td>0.17%</td>
<td>0.05%</td>
<td>0.23%</td>
<td>0.28%</td>
<td>0.30%</td>
<td>0.28%</td>
<td>0.35%</td>
</tr>
<tr>
<td>Cefaleksin (Keflex, Cefalexin)</td>
<td>0.24%</td>
<td>0.08%</td>
<td>0.03%</td>
<td>0.01%</td>
<td>0.01%</td>
<td>0.03%</td>
<td>0.02%</td>
<td>0.02%</td>
<td>0.02%</td>
<td>0.08%</td>
</tr>
<tr>
<td>Cefalotin (Keflin)</td>
<td>72.98%</td>
<td>74.04%</td>
<td>75.38%</td>
<td>76.46%</td>
<td>77.41%</td>
<td>73.47%</td>
<td>73.29%</td>
<td>74.73%</td>
<td>77.72%</td>
<td>78.04%</td>
</tr>
<tr>
<td>Cefotaksim (Claforan)</td>
<td>0.26%</td>
<td>0.17%</td>
<td>0.14%</td>
<td>0.22%</td>
<td>0.20%</td>
<td>0.33%</td>
<td>0.31%</td>
<td>0.30%</td>
<td>0.26%</td>
<td>0.19%</td>
</tr>
<tr>
<td>Cefuroksim (Zinacef, Cefuroxim, Lifurox)</td>
<td>5.16%</td>
<td>4.80%</td>
<td>4.55%</td>
<td>3.80%</td>
<td>3.61%</td>
<td>3.67%</td>
<td>4.31%</td>
<td>2.14%</td>
<td>0.97%</td>
<td>0.32%</td>
</tr>
<tr>
<td>Ciprofloksasin (Ciproxin)</td>
<td>0.05%</td>
<td>0.15%</td>
<td>0.05%</td>
<td>0.14%</td>
<td>0.19%</td>
<td>0.18%</td>
<td>0.07%</td>
<td>0.10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dikloksacillin (Diclocil, Dicillin)</td>
<td>74.04%</td>
<td>72.98%</td>
<td>75.38%</td>
<td>76.46%</td>
<td>77.41%</td>
<td>73.47%</td>
<td>73.29%</td>
<td>74.73%</td>
<td>77.72%</td>
<td>78.04%</td>
</tr>
<tr>
<td>Gentamicin (Garamycin, Gensumycin)</td>
<td>0.14%</td>
<td>0.30%</td>
<td>0.15%</td>
<td>0.06%</td>
<td>0.08%</td>
<td>0.13%</td>
<td>0.12%</td>
<td>0.04%</td>
<td>0.12%</td>
<td>0.13%</td>
</tr>
<tr>
<td>Klindamycin (Dalacin, Clindamycin)</td>
<td>1.59%</td>
<td>1.90%</td>
<td>2.23%</td>
<td>2.28%</td>
<td>2.49%</td>
<td>3.08%</td>
<td>3.23%</td>
<td>3.60%</td>
<td>3.79%</td>
<td>3.91%</td>
</tr>
<tr>
<td>Kloksacillin (Ekvacillin)</td>
<td>0.58%</td>
<td>0.65%</td>
<td>1.14%</td>
<td>2.13%</td>
<td>4.31%</td>
<td>5.69%</td>
<td>4.73%</td>
<td>5.68%</td>
<td>5.96%</td>
<td>5.46%</td>
</tr>
<tr>
<td>Mecillinam (Selexid)</td>
<td>0.05%</td>
<td>0.03%</td>
<td>0.03%</td>
<td>0.04%</td>
<td>0.02%</td>
<td>0.14%</td>
<td>0.09%</td>
<td>0.12%</td>
<td>0.12%</td>
<td>0.12%</td>
</tr>
<tr>
<td>Metronidasol (Flagyl, Metronidazol, Elyzol)</td>
<td>0.05%</td>
<td>0.03%</td>
<td>0.06%</td>
<td>0.06%</td>
<td>0.07%</td>
<td>0.10%</td>
<td>0.13%</td>
<td>0.09%</td>
<td>0.03%</td>
<td>0.06%</td>
</tr>
<tr>
<td>Other</td>
<td>0.24%</td>
<td>0.29%</td>
<td>0.14%</td>
<td>0.17%</td>
<td>0.20%</td>
<td>0.30%</td>
<td>0.36%</td>
<td>0.30%</td>
<td>0.31%</td>
<td>0.25%</td>
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<td>Missing</td>
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<td>0.39%</td>
<td>0.34%</td>
<td>0.28%</td>
<td>0.31%</td>
<td>0.25%</td>
<td>0.21%</td>
<td>0.45%</td>
<td>0.43%</td>
<td>0.36%</td>
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</table>

Pharmacological antithrombotic prophylaxis

Table 34: Primary operation

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes (n)</th>
<th>No (n)</th>
<th>Missing (n)</th>
<th>Total (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>8196 (97.6%)</td>
<td>168 (1.8%)</td>
<td>34 (0.6%)</td>
<td>8400</td>
</tr>
<tr>
<td>2014</td>
<td>7958 (97.4%)</td>
<td>191 (1.9%)</td>
<td>24 (0.7%)</td>
<td>8173</td>
</tr>
<tr>
<td>2013</td>
<td>8159 (98.2%)</td>
<td>139 (1.3%)</td>
<td>8 (0.4%)</td>
<td>8306</td>
</tr>
<tr>
<td>2012</td>
<td>8307 (98.5%)</td>
<td>125 (1.1%)</td>
<td>2 (0.4%)</td>
<td>8434</td>
</tr>
<tr>
<td>2011</td>
<td>8488 (98.7%)</td>
<td>92 (1.0%)</td>
<td>19 (0.3%)</td>
<td>8599</td>
</tr>
<tr>
<td>2010</td>
<td>8237 (96.5%)</td>
<td>94 (1.1%)</td>
<td>31 (0.4%)</td>
<td>8362</td>
</tr>
<tr>
<td>2009</td>
<td>8148 (96.7%)</td>
<td>78 (0.9%)</td>
<td>30 (0.4%)</td>
<td>8256</td>
</tr>
<tr>
<td>2008</td>
<td>8218 (98.3%)</td>
<td>112 (1.3%)</td>
<td>32 (0.4%)</td>
<td>8362</td>
</tr>
<tr>
<td>2007</td>
<td>7707 (97.9%)</td>
<td>135 (1.7%)</td>
<td>28 (0.4%)</td>
<td>7870</td>
</tr>
<tr>
<td>2006</td>
<td>7274 (96.8%)</td>
<td>197 (2.6%)</td>
<td>46 (0.6%)</td>
<td>7517</td>
</tr>
<tr>
<td>2005</td>
<td>5736 (97.6%)</td>
<td>117 (2.0%)</td>
<td>26 (0.4%)</td>
<td>5879</td>
</tr>
<tr>
<td>Total</td>
<td>86428 (98.0%)</td>
<td>1448 (1.6%)</td>
<td>280 (0.3%)</td>
<td>88158</td>
</tr>
</tbody>
</table>

Table 35: Number of drugs in antithrombotic prophylaxis

<table>
<thead>
<tr>
<th>Year</th>
<th>One drug (n)</th>
<th>Two drugs (n)</th>
<th>Total (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>7950 (97.0%)</td>
<td>246 (3.0%)</td>
<td>8196</td>
</tr>
<tr>
<td>2014</td>
<td>7741 (97.3%)</td>
<td>217 (2.7%)</td>
<td>7958</td>
</tr>
<tr>
<td>2013</td>
<td>7899 (96.8%)</td>
<td>260 (3.2%)</td>
<td>8159</td>
</tr>
<tr>
<td>2012</td>
<td>8133 (97.9%)</td>
<td>174 (2.1%)</td>
<td>8307</td>
</tr>
<tr>
<td>2011</td>
<td>8402 (99.0%)</td>
<td>86 (1.0%)</td>
<td>8488</td>
</tr>
<tr>
<td>2010</td>
<td>8203 (99.6%)</td>
<td>34 (0.4%)</td>
<td>8237</td>
</tr>
<tr>
<td>2009</td>
<td>8130 (99.8%)</td>
<td>18 (0.2%)</td>
<td>8148</td>
</tr>
<tr>
<td>2008</td>
<td>8202 (99.8%)</td>
<td>16 (0.2%)</td>
<td>8218</td>
</tr>
<tr>
<td>2007</td>
<td>7692 (99.8%)</td>
<td>15 (0.2%)</td>
<td>7707</td>
</tr>
<tr>
<td>2006</td>
<td>7259 (99.8%)</td>
<td>15 (0.2%)</td>
<td>7274</td>
</tr>
<tr>
<td>2005</td>
<td>5715 (99.8%)</td>
<td>21 (0.4%)</td>
<td>5736</td>
</tr>
<tr>
<td>Total</td>
<td>85326 (98.7%)</td>
<td>1102 (1.3%)</td>
<td>86428</td>
</tr>
</tbody>
</table>
Table 37: Time of first dose in antithrombotic prophylaxis - primary operation

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dalteparin (Fragmin)</td>
<td>51,10%</td>
<td>53,00%</td>
<td>63,72%</td>
<td>51,93%</td>
<td>61,32%</td>
<td>62,97%</td>
<td>62,94%</td>
<td>53,35%</td>
<td>51,03%</td>
<td>59,85%</td>
</tr>
<tr>
<td>Enoksaparin (Klexane)</td>
<td>48,54%</td>
<td>46,88%</td>
<td>35,98%</td>
<td>47,71%</td>
<td>38,38%</td>
<td>36,62%</td>
<td>36,32%</td>
<td>45,69%</td>
<td>48,04%</td>
<td>39,09%</td>
</tr>
<tr>
<td>Other</td>
<td>0,11%</td>
<td>0,04%</td>
<td>0,13%</td>
<td>0,18%</td>
<td>0,18%</td>
<td>0,09%</td>
<td>0,05%</td>
<td>0,26%</td>
<td>0,37%</td>
<td>0,45%</td>
</tr>
<tr>
<td>Missing</td>
<td>0,24%</td>
<td>0,12%</td>
<td>0,17%</td>
<td>0,12%</td>
<td>0,31%</td>
<td>0,70%</td>
<td>0,68%</td>
<td>0,56%</td>
<td>0,62%</td>
<td></td>
</tr>
</tbody>
</table>

Table 36: Antithrombotic prophylaxis - one drug - primary operation (n=85326)

<table>
<thead>
<tr>
<th>Year</th>
<th>Dalteparin (Fragmin)</th>
<th>Enoksaparin (Klexane)</th>
<th>Other</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-06</td>
<td>51,10%</td>
<td>48,54%</td>
<td>0,11%</td>
<td>0,24%</td>
</tr>
<tr>
<td>2007</td>
<td>53,00%</td>
<td>46,88%</td>
<td>0,04%</td>
<td>0,12%</td>
</tr>
<tr>
<td>2008</td>
<td>63,72%</td>
<td>35,98%</td>
<td>0,13%</td>
<td>0,17%</td>
</tr>
<tr>
<td>2009</td>
<td>51,93%</td>
<td>47,71%</td>
<td>0,18%</td>
<td>0,12%</td>
</tr>
<tr>
<td>2010</td>
<td>61,32%</td>
<td>38,38%</td>
<td>0,18%</td>
<td>0,31%</td>
</tr>
<tr>
<td>2011</td>
<td>62,97%</td>
<td>36,62%</td>
<td>0,09%</td>
<td>0,70%</td>
</tr>
<tr>
<td>2012</td>
<td>62,94%</td>
<td>36,32%</td>
<td>0,05%</td>
<td>0,68%</td>
</tr>
<tr>
<td>2013</td>
<td>53,35%</td>
<td>45,69%</td>
<td>0,26%</td>
<td>0,56%</td>
</tr>
<tr>
<td>2014</td>
<td>51,03%</td>
<td>48,04%</td>
<td>0,37%</td>
<td>0,62%</td>
</tr>
<tr>
<td>2015</td>
<td>59,85%</td>
<td>39,09%</td>
<td>0,45%</td>
<td></td>
</tr>
</tbody>
</table>
DURATION OF SURGERY

Figure 13: Duration of surgery for the different types of operations

![Graph showing duration of surgery for different types of operations]

Table 38: Duration of surgery for the different types of operations

<table>
<thead>
<tr>
<th>Type of operations</th>
<th>Total</th>
<th>Mean duration of operations (minutes)</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two screws or pins</td>
<td>17918</td>
<td>26</td>
<td>13</td>
</tr>
<tr>
<td>Bipolar hemiprosthesis</td>
<td>27428</td>
<td>76</td>
<td>25</td>
</tr>
<tr>
<td>Hip compression screw and plate</td>
<td>17560</td>
<td>56</td>
<td>28</td>
</tr>
<tr>
<td>Hip compression screw with lateral support plate</td>
<td>7616</td>
<td>75</td>
<td>34</td>
</tr>
<tr>
<td>Short intramedullary nail with distal locking</td>
<td>5895</td>
<td>51</td>
<td>25</td>
</tr>
<tr>
<td>Long intramedullary nail with distal locking</td>
<td>2922</td>
<td>95</td>
<td>46</td>
</tr>
<tr>
<td>Total hip prosthesis</td>
<td>2122</td>
<td>97</td>
<td>32</td>
</tr>
</tbody>
</table>
Completeness analysis for the Hip Fracture Register, 2013-2014

A completeness analysis for the Norwegian Hip Fracture Register (NHFR) has been conducted by combining the data in the Register with data from the Norwegian Patient Register (NPR). The report and analysis were prepared by the NPR in collaboration with the NHFR. A report on the implementation and results will be published on www.helsedirektoratet.no. There are separate statistics for primary hemiarthroplasty and osteosynthesis, and for the total number of revisions. Here we only present the completeness analysis for primary operations, as the compilation work on revisions has not been completed.

NCSP codes for combining data from NPR hospital stays and the Norwegian Hip Fracture Register, primary operations

<table>
<thead>
<tr>
<th>Type/level/coding system</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-10, both types</td>
<td>S72.0*</td>
<td>Fracture of head and neck of femur</td>
</tr>
<tr>
<td></td>
<td>S72.1*</td>
<td>Pertrochanteric fracture (fractura pertrochanterica)</td>
</tr>
<tr>
<td></td>
<td>S72.2*</td>
<td>Subtrochanteric fracture of femur (fractura subtrochanterica femoris)</td>
</tr>
<tr>
<td>Hemiarthroplasty, NCSP, Level 1</td>
<td>NFB 00</td>
<td>Primary partial prosthetic replacement of hip joint not using cement; all parts</td>
</tr>
<tr>
<td></td>
<td>NFB 02</td>
<td>Primary partial prosthetic replacement of hip joint not using cement; single part - distal</td>
</tr>
<tr>
<td></td>
<td>NFB 09</td>
<td>Primary partial prosthetic replacement of hip joint not using cement; other or unspecified</td>
</tr>
<tr>
<td></td>
<td>NFB 10</td>
<td>Primary partial prosthetic replacement of hip joint using cement; all parts</td>
</tr>
<tr>
<td></td>
<td>NFB 12</td>
<td>Primary partial prosthetic replacement of hip joint using cement; single part - distal</td>
</tr>
<tr>
<td></td>
<td>NFB 19</td>
<td>Primary partial prosthetic replacement of hip joint using cement; other or unspecified</td>
</tr>
<tr>
<td>Osteosynthesis, NCSP, Level 1</td>
<td>NFJ 0 (0,1,2,3)</td>
<td>Closed reduction of fracture of femur</td>
</tr>
<tr>
<td></td>
<td>NFJ 1 (0,1,2,3)</td>
<td>Open reduction of fracture of femur</td>
</tr>
<tr>
<td></td>
<td>NFJ 2 (0,1,2,3)</td>
<td>External fixation of fracture of femur</td>
</tr>
<tr>
<td></td>
<td>NFJ 3 (0,1,2,3)</td>
<td>Internal fixation of fracture of femur using bioimplant</td>
</tr>
<tr>
<td></td>
<td>NFJ 4 (0,1,2,3)</td>
<td>Internal fixation of fracture of femur using wire, rod, cerclage or pin</td>
</tr>
<tr>
<td></td>
<td>NFJ 5 (0,1,2,3)</td>
<td>Internal fixation of fracture of femur using intramedullary nail</td>
</tr>
<tr>
<td></td>
<td>NFJ 6 (0,1,2,3)</td>
<td>Internal fixation of fracture of femur using plate and screws</td>
</tr>
<tr>
<td></td>
<td>NFJ 7 (0,1,2,3)</td>
<td>Internal fixation of fracture of femur using screws alone</td>
</tr>
<tr>
<td></td>
<td>NFJ 8 (0,1,2,3)</td>
<td>Internal fixation of fracture of femur using other or combined methods</td>
</tr>
<tr>
<td></td>
<td>NFJ 9 (0,1,2,3)</td>
<td>Other fracture surgery of femur</td>
</tr>
<tr>
<td>NCSP, Level 2, both types</td>
<td>NFB 01</td>
<td>Primary partial prosthetic replacement of hip joint, not using cement, single part - proximal</td>
</tr>
<tr>
<td></td>
<td>NFB 11</td>
<td>Primary partial prosthetic replacement of hip joint using cement, single part - proximal</td>
</tr>
<tr>
<td></td>
<td>NFB 20</td>
<td>Primary total prosthetic replacement of hip joint not using cement</td>
</tr>
<tr>
<td></td>
<td>NFB 30</td>
<td>Primary total prosthetic replacement of hip joint using hybrid technique</td>
</tr>
<tr>
<td></td>
<td>NFB 40</td>
<td>Primary total prosthetic replacement of hip joint using cement</td>
</tr>
<tr>
<td></td>
<td>NFB 59</td>
<td>Primary prosthetic interposition arthroplasty of hip joint</td>
</tr>
<tr>
<td></td>
<td>NFB 62</td>
<td>Primary prosthetic replacement of joint surface of femoral head</td>
</tr>
<tr>
<td></td>
<td>NFB 99</td>
<td>Other primary prosthetic replacement of hip joint</td>
</tr>
</tbody>
</table>

The completeness rate for the Norwegian Hip Fracture Register was calculated as follows:

\[
\text{Completeness} = \frac{O\times N + I}{O\times N + I + C}
\]

(Only NHFR + inclusion in both registers)

(Only NPR + Only NHFR + inclusion in both registers)

Completeness for the NPR was calculated in a similar way:

\[
\text{Completeness} = \frac{O\times N + I}{O\times N + I + C}
\]

(Only NPR + inclusion in both registers)

(Only NHFR + Only NPR + inclusion in both registers)
Primary hip fracture surgery should be reported to the NPR with the NCSP procedure codes and ICD-10 codes shown in the table.

From 2013 to 2014, 6 859 hemiarthroplasties were reported to one or both of the registers. 91.3% of these were reported to the NHFR, while 91.8% of these were reported to the NPR (Level 1).

In the same period, there were 11 671 reports of internal fixation for hip fracture; 79.7% of these were to the NHFR and 98.0% to the NPR (Level 1).

Completeness for primary operations is indicated in the tables below, for each health region of Norway and in total.

<table>
<thead>
<tr>
<th>Type of operation</th>
<th>Only NHFR</th>
<th>Only NPR</th>
<th>Both</th>
<th>Total</th>
<th>Completeness NHFR (%)</th>
<th>Completeness NPR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemiprostheses, Level 1</td>
<td>563</td>
<td>596</td>
<td>5 700</td>
<td>6 859</td>
<td>91.3</td>
<td>91.8</td>
</tr>
<tr>
<td>Hemiprostheses, Levels 1+2</td>
<td>197</td>
<td>596</td>
<td>6 066</td>
<td>6 859</td>
<td>91.3</td>
<td>97.1</td>
</tr>
<tr>
<td>Osteosynthesis, Level 1</td>
<td>238</td>
<td>2 374</td>
<td>9 059</td>
<td>11 671</td>
<td>79.7</td>
<td>98.0</td>
</tr>
<tr>
<td>Osteosynthesis, Levels 1+2</td>
<td>238</td>
<td>2 374</td>
<td>9 059</td>
<td>11 671</td>
<td>79.7</td>
<td>98.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of operation</th>
<th>Register</th>
<th>South-East</th>
<th>West</th>
<th>Central</th>
<th>North</th>
<th>Private hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemiprostheses, Level 1</td>
<td>NHFR</td>
<td>91.1</td>
<td>91.6</td>
<td>91.3</td>
<td>92.1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>NPR</td>
<td>92.4</td>
<td>95.0</td>
<td>90.4</td>
<td>82.6</td>
<td>-</td>
</tr>
<tr>
<td>Hemiprostheses, Levels 1+2</td>
<td>NHFR</td>
<td>91.1</td>
<td>91.6</td>
<td>91.3</td>
<td>92.1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>NPR</td>
<td>97.5</td>
<td>97.1</td>
<td>97.4</td>
<td>93.8</td>
<td>-</td>
</tr>
<tr>
<td>Osteosynthesis, Level 1</td>
<td>NHFR</td>
<td>80.3</td>
<td>83.4</td>
<td>77.8</td>
<td>71.9</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>NPR</td>
<td>98.1</td>
<td>98.7</td>
<td>97.5</td>
<td>97.9</td>
<td>-</td>
</tr>
<tr>
<td>Osteosynthesis, Levels 1+2</td>
<td>NHFR</td>
<td>80.3</td>
<td>83.4</td>
<td>77.8</td>
<td>71.9</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>NPR</td>
<td>98.1</td>
<td>98.7</td>
<td>97.5</td>
<td>97.9</td>
<td>-</td>
</tr>
</tbody>
</table>
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Fixation .................................................................................................................. 236
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2015 was the year when the Interregional Steering Committee of the National Service Centre for Medical Quality Registers became more strongly involved in the Register, both with regard to funding and with a requirement for an annual report to be published on its website, with an overview of the results from the different hospitals. The Centre for Clinical Documentation and Evaluation (SKDE) is in charge of this work.

There has been a great deal of discussion about whether or not to publish results. Opinions have been divided, but the Steering Committee requires an annual report to be made public, together with an overview by hospital. There is as yet no agreement on the level of detail, but all indications are that the revision ratio, infection ratio and even the KOOS scores will need to be published.

At Haukeland University Hospital, we have begun electronic registration of the ACL form that is filled out by doctors. In order to enter the correct fixation devices, we use a scanning system that works very well. Authentication is also somewhat easier than we first thought. The person recording the data must always carry his/her mobile phone, and when logging in, a four-digit code appears which enables the data to be entered. This works well. When the data have been entered, they are collated, and the forms can be submitted to the database. We hope that electronic reporting can now be used in other hospitals.

We believe in hurrying slowly - we feel it would be a big disappointment if problems arise in entering the data.

In future, we would like to be authenticated in the same way as for e-prescriptions, with an ID card.

An extensive new research project being planned will compare non-operated and operated ACL ruptures. Guri Eikås of Oslo University Hospital Ullevål and Lars Engebretsen are the researchers involved. We will use the ACL form for data on the non-operated ACL ruptures and monitor them as we do for the operated ruptures. Using the electronic form, it is not difficult to include those who do not undergo surgery. This will be a multicentre study, with agreements primarily with various Norwegian institutions.

Lars-Petter Granan has left his 20% secretarial post. Helse Sør-Øst would not fund this position, and he had more than enough to do in another position in physical medicine. We would like to thank Lars-Petter for a brilliant job, and for having played a vital role with Professor Lars Engebretsen since we started in 2004.

Andreas Persson is cooperating with Tone Gifstad at St. Olav’s Hospital in Trondheim. We are continuing our cross-border cooperation, especially with the Scandinavian registers and Kaiser Permanente in the US. Professor Lars Engebretsen is heavily involved in a project run by ESSKA on paediatric ACL injuries.

In 2015, a total of 1743 primary ACL reconstructions and 223 revisions were performed. So-called “other procedures” are treatments after a primary reconstruction; there were 157 of these. There has obviously been underreporting here. The explanation is probably that this is
mostly simple post-operative surgery performed anywhere in the country, and those involved are not so dedicated in submitting the form. We do not believe this indicates ill will, but the importance of sending in the forms is not a high priority.

We are still waiting for the completeness analyses.

I believe that in future the forms will be linked to the operating system in such a way that “ACL form” will appear for certain procedure codes, and that it will be impossible to complete registration until the form has been filled out.

The requirement for consent to participate in this kind of research is important. The patient must complete the consent form, and the form must be kept in the patient record in the hospital. There is now an additional requirement that the operation forms must be submitted to the Register. Please refer to “bestillingsdokumentet” (ordering document) from the Ministry of Health and Care Services.

The Norwegian Orthopaedic Association has now acquired professional ownership of the registers - but the Association cannot own the registers.

This year we have seen how the data in the Register are becoming ever more important; an increasing number of patellar tendon ACL reconstructions are now being performed, and our data provide a basis for this. At the same time, certain fixation methods are clearly worse than others; please consult the articles from the Register in 2015.

We would like to thank all of you who submit forms regularly. Within a few years, it will all be computerised. Many thanks to Lars-Petter Granan for a brilliant job with the Cruciate Ligament Register.
Survival for cruciate ligament operations

**ACL reconstruction without additional injuries**

Survival estimate is given as long as >20 reconstructions remain at risk.

**ACL reconstruction with additional injuries**

Survival estimate is given as long as >20 reconstructions remain at risk.
KOOS with primary ACL reconstruction without additional injury

KOOS with primary ACL reconstruction with additional injury

KOOS with revision reconstructions

KOOS = Knee Injury and Osteoarthritis Outcome Score, ADL = Function in daily living, QOL = Quality of life.
Number of patients included in the calculations may vary over time. CI = confidence interval.
Cruciate Ligament

All categories of operations

Table 1: Annual numbers of operations

<table>
<thead>
<tr>
<th></th>
<th>Primary reconstruction</th>
<th>Revision reconstruction</th>
<th>Only other procedures</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1743 (82,1%)</td>
<td>223 (10,5%)</td>
<td>157 (7,4%)</td>
<td>2123</td>
</tr>
<tr>
<td>2014</td>
<td>1732 (81,3%)</td>
<td>251 (11,8%)</td>
<td>147 (6,9%)</td>
<td>2130</td>
</tr>
<tr>
<td>2013</td>
<td>1769 (84,0%)</td>
<td>207 (9,8%)</td>
<td>129 (6,1%)</td>
<td>2105</td>
</tr>
<tr>
<td>2012</td>
<td>1783 (83,6%)</td>
<td>220 (10,3%)</td>
<td>130 (6,1%)</td>
<td>2133</td>
</tr>
<tr>
<td>2011</td>
<td>1859 (85,2%)</td>
<td>176 (8,1%)</td>
<td>148 (6,6%)</td>
<td>2183</td>
</tr>
<tr>
<td>2004-10</td>
<td>10696 (88,2%)</td>
<td>797 (6,6%)</td>
<td>635 (5,2%)</td>
<td>12128</td>
</tr>
<tr>
<td>Total</td>
<td>19582 (85,9%)</td>
<td>1874 (8,2%)</td>
<td>1346 (5,9%)</td>
<td>22802</td>
</tr>
</tbody>
</table>

Registration complete from 2005. 49,3% of the operations were performed on the right side. 43,7% of the operations were performed on females. 7,2% of the patients had a previous ACL/PCL-injury in the opposite knee. (12,5% was missing). Mean age was 28,7 years, 27,2 years for women and 29,8 years for men. Standard deviation of age was 10,5 years, 11,2 years for women and 9,9 years for men. Median value for duration of primary ACL reconstruction was 71 minutes.

Figure 1: Distribution of hospitals by surgery volume, primary ACL reconstructions

![Distribution of hospitals by surgery volume, primary ACL reconstructions](image1)

Figure 2: Distribution of hospitals by surgery volumes, revision reconstructions ACL

![Distribution of hospitals by surgery volumes, revision reconstructions ACL](image2)
Figure 3: Incidence of primary reconstruction of cruciate ligament for 2005, 2010 and 2015

Distribution of other procedures

Table 2: The number of other procedures for all categories of surgeries

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
</tr>
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<tbody>
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<td>Meniscus surgery</td>
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<td>878</td>
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<td>920</td>
<td>5048</td>
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<td>77</td>
<td>77</td>
<td>527</td>
<td>927</td>
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<td>Synovectomy</td>
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<td>49</td>
<td>41</td>
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<td>412</td>
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<td>Arthroscopic debridement</td>
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<td>8</td>
<td>6</td>
<td>9</td>
<td>10</td>
<td>39</td>
<td>708</td>
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<td>Mobilizing in narcosis</td>
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<td>12</td>
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<td>23</td>
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<td>Surgery due to infection</td>
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<td>Removal of implants</td>
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### Table 3: Distribution of other procedures in combination with primary reconstruction of cruciate ligament

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<th>155</th>
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<th>76</th>
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<th>53</th>
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<th>18</th>
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</tr>
<tr>
<td>Bone resection (Notch plasty)</td>
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</tbody>
</table>

X indicates applied procedure and each row gives the number of operations that is carried out with this combination of procedures. The table shows only combinations that have a number of ten or more.

### Table 4: Distribution of other procedures in combination with primary reconstruction of cruciate ligament

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<td>Cartilage surgery</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Bone resection (Notch plasty)</td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

X indicates applied procedure and each row gives the number of operations that is carried out with this combination of procedures. The table shows only combinations that have a number of ten or more.
Table 5: Distribution of other procedures when this is the only procedure

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
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<tbody>
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<td>Meniscal surgery</td>
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</tr>
<tr>
<td>Cartilage surgery</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Synovectomy</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Arthroscopic débridement</td>
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</tr>
<tr>
<td>Mobilizing in narcosis</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Surgery due to infection</td>
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<td></td>
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</tr>
<tr>
<td>Removal of implants</td>
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</tr>
<tr>
<td>Bone transplantation</td>
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</tbody>
</table>

X indicates applied procedure and each row gives the number of operations that is carried out with this combination of procedures. The table shows only combinations that have a number of ten or more.

Intraoperative complications

Table 6: Intraoperative complications for all categories of surgeries

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
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</thead>
<tbody>
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<td>2015</td>
<td>62</td>
<td>2001</td>
<td>60</td>
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</tr>
<tr>
<td>2014</td>
<td>59</td>
<td>1989</td>
<td>82</td>
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<td>2013</td>
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<td>1961</td>
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<td>2012</td>
<td>44</td>
<td>2046</td>
<td>43</td>
<td>2133</td>
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<td>2011</td>
<td>63</td>
<td>2084</td>
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<td>2183</td>
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<tr>
<td>2004-10</td>
<td>404</td>
<td>11492</td>
<td>232</td>
<td>12128</td>
</tr>
<tr>
<td>Total</td>
<td>692</td>
<td>21573</td>
<td>537</td>
<td>22802</td>
</tr>
</tbody>
</table>

Cruciate Ligament
Primary reconstruction of cruciate ligament

Figure 4: Age by primary operation

![Age distribution by primary operation](image)

* Mean number of primary operations for 2004 - 2010

Figure 5: Activity that lead to injury

![Activity distribution](image)
Actual injury

Table 7: Actual injury*

<table>
<thead>
<tr>
<th>Year</th>
<th>ACL</th>
<th>PCL</th>
<th>MCL</th>
<th>LCL</th>
<th>PLC</th>
<th>Cartilage</th>
<th>Meniscus</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1719</td>
<td>54</td>
<td>163</td>
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<td>2013</td>
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<td>662</td>
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<td>125</td>
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</table>

Total 19375 522 1452 336 223 4607 9838

* More than one type of injury can be given for each form

Additional injuries

Table 8: ACL with additional injuries

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<thead>
<tr>
<th>Number</th>
<th>ACL</th>
<th>PCL</th>
<th>MCL</th>
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<th>PLC</th>
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<th>Cartilage</th>
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</tbody>
</table>

x indicates registered injury and each row tell the number of incidences of different combination of injuries. The first row gives the number of records where ACL where the only injury. The table shows only combinations that have a number of 20 or more.
Table 9: PCL with additional injuries

<table>
<thead>
<tr>
<th>Number</th>
<th>ACL</th>
<th>PCL</th>
<th>MCL</th>
<th>LCL</th>
<th>PLC</th>
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</table>

x indicates registered injury and each row tells the number of incidences of different combination of injuries. The first row gives the number of records where PCL where the only injury. The table shows only combinations that have a number of 10 or more.

Choice of graft for injuries registered in primary reconstructions

Table 10: BPTB

<table>
<thead>
<tr>
<th>ACL</th>
<th>PCL</th>
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<th>LCL</th>
<th>PLC</th>
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<td>2015</td>
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<td>2012</td>
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<td>3220</td>
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Table 11: HAMSTRING

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<th>LCL</th>
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<tr>
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<td>711</td>
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<td>7</td>
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<td>2011</td>
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<td>21</td>
<td>2</td>
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<td>2004-10</td>
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<td>187</td>
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<td>34</td>
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Table 12: ALLOGRAFT

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<th>LCL</th>
<th>PLC</th>
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</thead>
<tbody>
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<td>20</td>
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<td>6</td>
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<tr>
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<tr>
<td>2011</td>
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<td>0</td>
<td>5</td>
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<td>2004-10</td>
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<td>6</td>
<td>32</td>
</tr>
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<td>44</td>
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</table>
Table 13: Suture

<table>
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<th>LCL</th>
<th>PLC</th>
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<td>5</td>
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<tr>
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<td>5</td>
<td>59</td>
<td>42</td>
<td>37</td>
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<tr>
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Table 14: Other

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<th>PLC</th>
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<tr>
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<tr>
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<td>36</td>
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</table>

There are 20 forms where there are registered product for ACL and 23 forms for PCL but not checked for choice of graft.

Figure 6: Choice of graft for all injuries in primary reconstructions

There are 20 forms where there are registered product for ACL and 23 forms for PCL but not checked for choice of graft.
**Fixation**

### Table 15: Femur ACL (The 5 most common)

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
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<tr>
<td>Endobutton CL BTB</td>
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<td>ToggleLoc</td>
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<td>132</td>
<td>89</td>
<td>115</td>
<td>157</td>
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<td>72</td>
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<td>TunnelLoc</td>
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<td>594</td>
<td>67</td>
<td>44</td>
<td>77</td>
<td>72</td>
<td>49</td>
</tr>
<tr>
<td>SoftSilk</td>
<td>2167</td>
<td>1116</td>
<td>103</td>
<td>135</td>
<td>168</td>
<td>280</td>
<td>365</td>
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<td>Endobutton CL Ultra</td>
<td>6046</td>
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<td>994</td>
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<td>511</td>
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### Table 16: Tibia ACL (The 5 most common)

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</thead>
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<td>85</td>
<td>76</td>
<td>133</td>
<td>102</td>
<td>51</td>
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<td>Intrafix Screw</td>
<td>1519</td>
<td>948</td>
<td>174</td>
<td>153</td>
<td>97</td>
<td>79</td>
<td>68</td>
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<tr>
<td>Biosure HA Interferenc</td>
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<td>382</td>
<td>341</td>
<td>288</td>
<td>234</td>
<td>204</td>
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<tr>
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<td>94</td>
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<td>343</td>
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</table>

### Table 17: Femur PCL (The 5 most common)

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<td>4</td>
<td>4</td>
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<td>23</td>
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### Table 18: Tibia PCL (The 5 most common)

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<td>3</td>
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<td>4</td>
</tr>
<tr>
<td>SoftSilk</td>
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</tr>
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<tr>
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<td>15</td>
<td>11</td>
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</table>

### Table 19: Femur and tibia ACL (The 5 most common)

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<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
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<td>79</td>
<td>74</td>
<td>114</td>
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<td>47</td>
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<td>Intrafix Screw</td>
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<td>214</td>
<td>117</td>
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<td>69</td>
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<td>46</td>
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<td>Biosure HA Interferenc</td>
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<td>371</td>
<td>316</td>
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<td>RCI Screw</td>
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<td>116</td>
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<td>248</td>
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</table>
Meniscal lesion

Table 20: Actual treatment of meniscal lesion

<table>
<thead>
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<th>Year</th>
<th>Lateral</th>
<th>Medial</th>
<th>OLD Total</th>
<th>Partial</th>
<th>Suture</th>
<th>Synthetic</th>
<th>Meniscus</th>
<th>Transplant</th>
<th>Trepanation</th>
<th>None</th>
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<td>232</td>
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<td>1</td>
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<td>235 2</td>
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<td>410</td>
<td>2634</td>
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</table>

It became possible to register "Trepanation" and "None" from 01.01.2005. There have been forms where this has been an additional information. This information have been registered, but the registration is not complete before 2005.

In table 7: Actual injury has less. The reason for this is that we distinguish between the lateral and medial injury and some injuries are registered in both groups.

The value in OLD Resection are the forms that are registered before the new forms were introduced in autumn 2011. Total and Partial Resection values are the new forms were introduced in autumn 2011.

Figure 7: Treatment of meniscal lesions in primary reconstructions
Fixation

Table 21: Synthetic

<table>
<thead>
<tr>
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<tr>
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<td>6</td>
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<td>6</td>
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<td>2</td>
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<td>10</td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>282</td>
<td>27</td>
<td>60</td>
<td>39</td>
<td>48</td>
<td>36</td>
<td>17</td>
<td>3</td>
<td>21</td>
<td>7</td>
<td>5</td>
<td>9</td>
<td>10</td>
</tr>
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</table>

Table 22: Suture

<table>
<thead>
<tr>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FAST-FIX</td>
<td>1674</td>
<td>28</td>
<td>45</td>
<td>61</td>
<td>99</td>
<td>118</td>
<td>127</td>
<td>192</td>
<td>208</td>
<td>203</td>
<td>280</td>
<td>313</td>
<td></td>
</tr>
<tr>
<td>Meniscal Dart Stick</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meniscus arrow</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapidloc</td>
<td>74</td>
<td>9</td>
<td>10</td>
<td>19</td>
<td>24</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>244</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>48</td>
<td>40</td>
<td>43</td>
<td>49</td>
<td>54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2000</td>
<td>9</td>
<td>38</td>
<td>66</td>
<td>86</td>
<td>108</td>
<td>123</td>
<td>134</td>
<td>244</td>
<td>248</td>
<td>248</td>
<td>329</td>
<td>367</td>
</tr>
</tbody>
</table>

Cartilage lesion all localizations

Table 23: ICRS Grade

Definition of ICRS Grade:
1. Nearly normal: Superficial lesions, soft indentation and/or superficial fissures and cracks.
2. Abnormal: Lesions extending down to <50% of cartilage depth.
3. Severely abnormal: Cartilage defects extending down >50% of cartilage depth as well as down to calcified layer.
4. Severely abnormal: Osteochondral injuries, lesions extending just through the subchondral boneplate or deeper defects down into trabecular bone.

<table>
<thead>
<tr>
<th>Year</th>
<th>Code 1</th>
<th>Code 2</th>
<th>Code 3</th>
<th>Code 4</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>31,3%</td>
<td>43,6%</td>
<td>19,0%</td>
<td>5,8%</td>
<td>0,3%</td>
</tr>
<tr>
<td>2014</td>
<td>29,9%</td>
<td>45,5%</td>
<td>17,9%</td>
<td>5,0%</td>
<td>1,8%</td>
</tr>
<tr>
<td>2013</td>
<td>25,1%</td>
<td>50,0%</td>
<td>20,2%</td>
<td>4,4%</td>
<td>0,3%</td>
</tr>
<tr>
<td>2012</td>
<td>26,2%</td>
<td>47,3%</td>
<td>20,7%</td>
<td>5,1%</td>
<td>0,6%</td>
</tr>
<tr>
<td>2011</td>
<td>30,1%</td>
<td>44,4%</td>
<td>18,5%</td>
<td>5,9%</td>
<td>1,0%</td>
</tr>
<tr>
<td>2004-10</td>
<td>39,2%</td>
<td>40,5%</td>
<td>14,6%</td>
<td>4,1%</td>
<td>1,5%</td>
</tr>
</tbody>
</table>

The complete overview of cartilage lesions with ICRS Grade and localization is located on The Norwegian Cruciate Ligament Registry’s website.

Table 24: Treatment codes for all localizations

<table>
<thead>
<tr>
<th>Year</th>
<th>Debridement</th>
<th>Micro fracture</th>
<th>No treatment</th>
<th>Other</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>12,2%</td>
<td>3,5%</td>
<td>80,6%</td>
<td></td>
<td>3,7%</td>
</tr>
<tr>
<td>2014</td>
<td>13,3%</td>
<td>3,8%</td>
<td>77,7%</td>
<td>0,9%</td>
<td>4,2%</td>
</tr>
<tr>
<td>2013</td>
<td>19,7%</td>
<td>3,9%</td>
<td>73,1%</td>
<td>0,2%</td>
<td>3,2%</td>
</tr>
<tr>
<td>2012</td>
<td>18,5%</td>
<td>5,1%</td>
<td>72,8%</td>
<td>0,6%</td>
<td>2,9%</td>
</tr>
<tr>
<td>2011</td>
<td>14,9%</td>
<td>5,2%</td>
<td>75,3%</td>
<td>0,4%</td>
<td>4,2%</td>
</tr>
<tr>
<td>2004-10</td>
<td>9,6%</td>
<td>2,5%</td>
<td>55,9%</td>
<td>1,5%</td>
<td>30,5%</td>
</tr>
</tbody>
</table>

The complete overview of treatment codes and localization is located on The Norwegian Cruciate Ligament Registry’s website.
Cartilage injuries registered in primary reconstructions

Figure 8: All Cartilage injuries (total)

Figure 9: All Cartilage injuries with area greater than 2 cm² and ICRS equal 3 or 4 (total)
Outpatient surgery

Table 25: Outpatient surgery

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1,233</td>
<td>497</td>
<td>13</td>
<td>1,743</td>
</tr>
<tr>
<td>2014</td>
<td>1,161</td>
<td>555</td>
<td>16</td>
<td>1,732</td>
</tr>
<tr>
<td>2013</td>
<td>1,140</td>
<td>616</td>
<td>13</td>
<td>1,769</td>
</tr>
<tr>
<td>2012</td>
<td>1,228</td>
<td>553</td>
<td>2</td>
<td>1,783</td>
</tr>
<tr>
<td>2011</td>
<td>1,183</td>
<td>674</td>
<td>2</td>
<td>1,859</td>
</tr>
<tr>
<td>2004-10</td>
<td>4,594</td>
<td>6,044</td>
<td>58</td>
<td>10,696</td>
</tr>
<tr>
<td>Total</td>
<td>10,539</td>
<td>8,939</td>
<td>104</td>
<td>19,582</td>
</tr>
</tbody>
</table>

Intraoperative complications

Table 26: Intraoperative complications

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>54</td>
<td>1,644</td>
<td>45</td>
<td>1,743</td>
</tr>
<tr>
<td>2014</td>
<td>55</td>
<td>1,616</td>
<td>61</td>
<td>1,732</td>
</tr>
<tr>
<td>2013</td>
<td>53</td>
<td>1,653</td>
<td>63</td>
<td>1,769</td>
</tr>
<tr>
<td>2012</td>
<td>39</td>
<td>1,711</td>
<td>33</td>
<td>1,783</td>
</tr>
<tr>
<td>2011</td>
<td>60</td>
<td>1,769</td>
<td>30</td>
<td>1,859</td>
</tr>
<tr>
<td>2004-10</td>
<td>363</td>
<td>1,0141</td>
<td>192</td>
<td>10,696</td>
</tr>
<tr>
<td>Total</td>
<td>624</td>
<td>18,534</td>
<td>424</td>
<td>19,582</td>
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</table>

Systemic antibiotic prophylaxis

Table 27: Systemic antibiotic prophylaxis

<table>
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<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>1,739</td>
<td>1</td>
<td>3</td>
<td>1,743</td>
</tr>
<tr>
<td>2014</td>
<td>1,729</td>
<td>1</td>
<td>2</td>
<td>1,732</td>
</tr>
<tr>
<td>2013</td>
<td>1,758</td>
<td>2</td>
<td>9</td>
<td>1,769</td>
</tr>
<tr>
<td>2012</td>
<td>1,777</td>
<td>5</td>
<td>1</td>
<td>1,783</td>
</tr>
<tr>
<td>2011</td>
<td>1,847</td>
<td>7</td>
<td>5</td>
<td>1,859</td>
</tr>
<tr>
<td>2004-10</td>
<td>10,581</td>
<td>86</td>
<td>29</td>
<td>10,696</td>
</tr>
<tr>
<td>Total</td>
<td>19,431</td>
<td>102</td>
<td>49</td>
<td>19,582</td>
</tr>
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</table>
### Table 28: Drug

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzyl penicillin (Penicillin G)</td>
<td>0,11%</td>
<td>0,06%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cefaleksin (Keflex, Cefalexin)</td>
<td>0,03%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cefalotin (Keflin)</td>
<td>89,59%</td>
<td>92,37%</td>
<td>92,52%</td>
<td>93,12%</td>
<td>92,37%</td>
<td>94,82%</td>
</tr>
<tr>
<td>Cefotaksim (Clororan)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,17%</td>
<td></td>
</tr>
<tr>
<td>Cefuroksim (Zinacef, Cefuroxin, Lifurox)</td>
<td>2,23%</td>
<td>1,03%</td>
<td>0,56%</td>
<td>0,46%</td>
<td>0,23%</td>
<td></td>
</tr>
<tr>
<td>Ciprofloxasasin (Ciproxin)</td>
<td>0,01%</td>
<td></td>
<td></td>
<td></td>
<td>0,06%</td>
<td></td>
</tr>
<tr>
<td>Dikloksacillin (Diclocil, Sicillin)</td>
<td>4,72%</td>
<td>0,54%</td>
<td>0,90%</td>
<td>0,91%</td>
<td>0,75%</td>
<td>0,06%</td>
</tr>
<tr>
<td>Doksysyklin (Vibramycin, Dumoxin, Doxylin)</td>
<td>0,01%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erytromycin (Ery-max, Abbotin)</td>
<td>0,02%</td>
<td></td>
<td></td>
<td></td>
<td>0,06%</td>
<td></td>
</tr>
<tr>
<td>Gentamicin (Garamycin, Gensumycin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klindamycin (Dalacin, Cliindamycin)</td>
<td>2,62%</td>
<td>2,92%</td>
<td>1,97%</td>
<td>1,93%</td>
<td>2,08%</td>
<td>1,32%</td>
</tr>
<tr>
<td>Kloksacillin (Ekvacillin)</td>
<td>0,63%</td>
<td>3,03%</td>
<td>4,05%</td>
<td>2,67%</td>
<td>3,30%</td>
<td>3,16%</td>
</tr>
<tr>
<td>Linkomycin (Lincocin)</td>
<td>0,01%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxacillin (Unspecified)</td>
<td>0,17%</td>
<td></td>
<td></td>
<td></td>
<td>0,17%</td>
<td></td>
</tr>
<tr>
<td>Tobramycin (Nebcina, Nebcin, Tobi)</td>
<td>0,11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>0,12%</td>
<td>0,11%</td>
<td>0,51%</td>
<td>0,75%</td>
<td>0,63%</td>
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</tr>
</tbody>
</table>

### Thrombosis prophylaxis

#### Table 29: Thrombosis prophylaxis

<table>
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<tr>
<th>Year</th>
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<th>No</th>
<th>Missing</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>1503</td>
<td>237</td>
<td>3</td>
<td>1743</td>
</tr>
<tr>
<td>2014</td>
<td>1422</td>
<td>301</td>
<td>9</td>
<td>1732</td>
</tr>
<tr>
<td>2013</td>
<td>1485</td>
<td>270</td>
<td>14</td>
<td>1769</td>
</tr>
<tr>
<td>2012</td>
<td>1473</td>
<td>360</td>
<td>2</td>
<td>1783</td>
</tr>
<tr>
<td>2011</td>
<td>1512</td>
<td>342</td>
<td>5</td>
<td>1859</td>
</tr>
<tr>
<td>2005-10</td>
<td>7923</td>
<td>1787</td>
<td>217</td>
<td>9927</td>
</tr>
<tr>
<td>Total</td>
<td>15318</td>
<td>3245</td>
<td>250</td>
<td>18813</td>
</tr>
</tbody>
</table>

There are 33 old forms that are filled out so that thrombosis prophylaxis can not be registered. These are added to missing.

#### Table 30: Use of drugs

<table>
<thead>
<tr>
<th>Year</th>
<th>One drug</th>
<th>Two drugs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1494 ( 99,4% )</td>
<td>9 ( 0,6% )</td>
<td>1503</td>
</tr>
<tr>
<td>2014</td>
<td>1410 ( 99,2% )</td>
<td>12 ( 0,8% )</td>
<td>1422</td>
</tr>
<tr>
<td>2013</td>
<td>1464 ( 98,8% )</td>
<td>21 ( 1,4% )</td>
<td>1485</td>
</tr>
<tr>
<td>2012</td>
<td>1470 ( 99,8% )</td>
<td>3 ( 0,2% )</td>
<td>1473</td>
</tr>
<tr>
<td>2011</td>
<td>1507 ( 99,7% )</td>
<td>5 ( 0,3% )</td>
<td>1512</td>
</tr>
<tr>
<td>2005-10</td>
<td>7873 ( 99,4% )</td>
<td>50 ( 0,6% )</td>
<td>7923</td>
</tr>
<tr>
<td>Total</td>
<td>15218 ( 99,3% )</td>
<td>100 ( 0,7% )</td>
<td>15318</td>
</tr>
</tbody>
</table>
### Table 31: Drug

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetylsalicylsyre (Albyl-E, Globoid, Acetyratio, Magnyl E)</td>
<td>0,07%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dabigatranetixalat (Re-Novate, Pradaxa)</td>
<td>0,01%</td>
<td>0,07%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dalteparin (Fragmin)</td>
<td>59,59%</td>
<td>62,50%</td>
<td>67,96%</td>
<td>65,05%</td>
<td>56,05%</td>
<td>58,48%</td>
</tr>
<tr>
<td>Dekstran (Macrodex, Dextran)</td>
<td>0,03%</td>
<td>0,07%</td>
<td>0,07%</td>
<td>0,27%</td>
<td>0,35%</td>
<td>0,20%</td>
</tr>
<tr>
<td>Enoksaparin (Klexane)</td>
<td>34,96%</td>
<td>35,52%</td>
<td>31,43%</td>
<td>32,05%</td>
<td>42,12%</td>
<td>40,05%</td>
</tr>
<tr>
<td>Heparin (Heparin)</td>
<td>0,07%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rivaroksaban (Xarelto)</td>
<td>0,07%</td>
<td>0,14%</td>
<td>0,27%</td>
<td>0,07%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warfarin (Marevan)</td>
<td>0,01%</td>
<td></td>
<td></td>
<td></td>
<td>0,14%</td>
<td></td>
</tr>
<tr>
<td>Ximelagatran (Exanta, Malagatran)</td>
<td>0,38%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No drugs</td>
<td>4,19%</td>
<td>1,46%</td>
<td>0,61%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>0,20%</td>
<td>0,14%</td>
<td>0,34%</td>
<td>0,42%</td>
<td>0,60%</td>
<td></td>
</tr>
<tr>
<td>Two drugs</td>
<td>0,63%</td>
<td>0,33%</td>
<td>0,20%</td>
<td>1,41%</td>
<td>0,84%</td>
<td>0,60%</td>
</tr>
</tbody>
</table>

### NSAID's

### Table 32: NSAID's

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>810 (46,5%)</td>
<td>897 (51,5%)</td>
<td>36 (2,1%)</td>
<td>1743</td>
</tr>
<tr>
<td>2014</td>
<td>710 (41,0%)</td>
<td>975 (56,3%)</td>
<td>47 (2,7%)</td>
<td>1732</td>
</tr>
<tr>
<td>2013</td>
<td>753 (42,6%)</td>
<td>955 (54,0%)</td>
<td>61 (3,4%)</td>
<td>1769</td>
</tr>
<tr>
<td>2012</td>
<td>805 (45,1%)</td>
<td>926 (51,9%)</td>
<td>52 (2,9%)</td>
<td>1783</td>
</tr>
<tr>
<td>2011</td>
<td>894 (48,1%)</td>
<td>882 (47,4%)</td>
<td>83 (4,5%)</td>
<td>1859</td>
</tr>
<tr>
<td>2010</td>
<td>763 (43,6%)</td>
<td>809 (46,3%)</td>
<td>176 (10,1%)</td>
<td>1748</td>
</tr>
<tr>
<td>2009</td>
<td>831 (44,7%)</td>
<td>639 (34,4%)</td>
<td>388 (20,9%)</td>
<td>1858</td>
</tr>
<tr>
<td>2008</td>
<td>572 (34,0%)</td>
<td>416 (24,7%)</td>
<td>696 (41,3%)</td>
<td>1684</td>
</tr>
<tr>
<td>2007</td>
<td>94 (5,8%)</td>
<td>76 (4,7%)</td>
<td>1463 (89,6%)</td>
<td>1633</td>
</tr>
<tr>
<td>Total</td>
<td>6232 (39,4%)</td>
<td>6575 (41,6%)</td>
<td>3002 (19,0%)</td>
<td>15809</td>
</tr>
</tbody>
</table>

### Table 33: Drug

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Celecoksib (Celebra)</td>
<td>1,73%</td>
<td>1,34%</td>
<td>1,86%</td>
<td>5,05%</td>
<td>2,96%</td>
<td>0,74%</td>
</tr>
<tr>
<td>Diklofenak (Voltaren, Diclofenac, Cataflam)</td>
<td>92,74%</td>
<td>91,95%</td>
<td>93,17%</td>
<td>86,72%</td>
<td>68,59%</td>
<td>54,69%</td>
</tr>
<tr>
<td>Etoricoksib (Arcoxia)</td>
<td>0,09%</td>
<td>0,56%</td>
<td>0,37%</td>
<td>2,12%</td>
<td>21,55%</td>
<td>38,52%</td>
</tr>
<tr>
<td>Ibuprofen (Ibux, Ibumetin)</td>
<td>0,35%</td>
<td>2,80%</td>
<td>0,37%</td>
<td>0,80%</td>
<td>0,99%</td>
<td>1,73%</td>
</tr>
<tr>
<td>Keterolak (Toradol)</td>
<td>2,70%</td>
<td>2,91%</td>
<td>3,73%</td>
<td>3,98%</td>
<td>4,37%</td>
<td>3,09%</td>
</tr>
<tr>
<td>Parecoksib (Dynastat)</td>
<td>0,27%</td>
<td>0,28%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piroxicam (Brexidol)</td>
<td>0,13%</td>
<td>0,12%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>2,26%</td>
<td>0,45%</td>
<td>0,37%</td>
<td>1,06%</td>
<td>1,41%</td>
<td>1,23%</td>
</tr>
</tbody>
</table>
Revision reconstruction

Figure 10: Age by primary operation

* Mean number of primary operations for 2004 - 2010

Figure 11: Activity that lead to injury
Actual injury

Table 34: Actual injury*

<table>
<thead>
<tr>
<th>Year</th>
<th>ACL</th>
<th>PCL</th>
<th>MCL</th>
<th>LCL</th>
<th>PLC</th>
<th>Cartilage</th>
<th>Meniscus</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>165</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>73</td>
<td>91</td>
</tr>
<tr>
<td>2014</td>
<td>195</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>59</td>
<td>86</td>
</tr>
<tr>
<td>2013</td>
<td>184</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>63</td>
<td>81</td>
</tr>
<tr>
<td>2012</td>
<td>195</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>62</td>
<td>71</td>
</tr>
<tr>
<td>2011</td>
<td>154</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>60</td>
<td>59</td>
</tr>
<tr>
<td>2004-10</td>
<td>772</td>
<td>18</td>
<td>27</td>
<td>8</td>
<td>9</td>
<td>327</td>
<td>279</td>
</tr>
<tr>
<td>Total</td>
<td>1665</td>
<td>37</td>
<td>48</td>
<td>18</td>
<td>18</td>
<td>644</td>
<td>667</td>
</tr>
</tbody>
</table>

* More than one type of injury can be given for each form

Figure 12: Actual injury

Table 35: ACL with additional injuries

<table>
<thead>
<tr>
<th>Number</th>
<th>ACL</th>
<th>PCL</th>
<th>MCL</th>
<th>LCL</th>
<th>PLC</th>
<th>Meniscus</th>
<th>Cartilage</th>
</tr>
</thead>
<tbody>
<tr>
<td>343</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>264</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>171</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>143</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>138</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>39</td>
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<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>33</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
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<td></td>
<td></td>
<td>x</td>
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<td></td>
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<tr>
<td>10</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

x indicates registered injury and each row tells the number of incidences of different combinations of injuries. The first row gives the number of records where ACL where the only injury. The total number will be identical to the total number of registered ACL injuries. The table shows only combinations that have a number of more than 5.
### Table 36: PCL with additional injuries

<table>
<thead>
<tr>
<th>Number</th>
<th>ACL</th>
<th>PCL</th>
<th>MCL</th>
<th>LCL</th>
<th>PLC</th>
<th>Meniscus</th>
<th>Cartilage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>x</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>3</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>3</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

x indicates registered injury and each row tells the number of incidences of different combinations of injuries. The first row gives the number of records where PCL was the only injury. The total number will be identical to the total number of registered PCL injuries. The table shows only combinations that have a number of more than 2.

### Reason for revision reconstruction

#### Table 37: Reason for revision reconstruction

<table>
<thead>
<tr>
<th>Year</th>
<th>Cause 1</th>
<th>Cause 2</th>
<th>Cause 3</th>
<th>Cause 4</th>
<th>Cause 5</th>
<th>Cause 6</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>6</td>
<td>12</td>
<td>3</td>
<td>115</td>
<td>81</td>
<td>1</td>
<td>1</td>
<td>218</td>
</tr>
<tr>
<td>2014</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>109</td>
<td>120</td>
<td>6</td>
<td></td>
<td>237</td>
</tr>
<tr>
<td>2013</td>
<td>1</td>
<td>11</td>
<td>1</td>
<td>123</td>
<td>74</td>
<td>5</td>
<td></td>
<td>210</td>
</tr>
<tr>
<td>2012</td>
<td>8</td>
<td>10</td>
<td>3</td>
<td>95</td>
<td>99</td>
<td>3</td>
<td>6</td>
<td>221</td>
</tr>
<tr>
<td>2011</td>
<td>4</td>
<td>12</td>
<td>1</td>
<td>81</td>
<td>80</td>
<td></td>
<td>5</td>
<td>183</td>
</tr>
<tr>
<td>2004-10</td>
<td>5</td>
<td>20</td>
<td>6</td>
<td>157</td>
<td>167</td>
<td>6</td>
<td>22</td>
<td>377</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>69</td>
<td>15</td>
<td>680</td>
<td>621</td>
<td>21</td>
<td>34</td>
<td>1467</td>
</tr>
</tbody>
</table>

- Cause 1: Infection
- Cause 2: Fixation failure
- Cause 3: Untreated ligament injury
- Cause 4: Graft failure
- Cause 5: New trauma
- Cause 6: Pain

### Choice of graft for injuries registered in revision reconstructions

#### Table 38: BPTB

<table>
<thead>
<tr>
<th>Year</th>
<th>ACL</th>
<th>PCL</th>
<th>MCL</th>
<th>LCL</th>
<th>PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>92</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>120</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>91</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>101</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>90</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2004-10</td>
<td>263</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>Total</td>
<td>757</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Table 39: HAMSTRING

<table>
<thead>
<tr>
<th>Year</th>
<th>ACL</th>
<th>PCL</th>
<th>MCL</th>
<th>LCL</th>
<th>PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2014</td>
<td>50</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>50</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>53</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2004-10</td>
<td>447</td>
<td>4</td>
<td>12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>700</td>
<td>6</td>
<td>16</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
It was registered direct suture for two cases (PLC, MCL).

Figure 13: Choice of graft for all injuries in revision reconstruction
## Fixation

### Table 42: Femur ACL (The 5 most common)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile Interference Screw</td>
<td>31</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Sheated Cannulated Interference Screw</td>
<td>37</td>
<td>1</td>
<td>13</td>
<td>10</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endobutton CL BTB</td>
<td>67</td>
<td>11</td>
<td>9</td>
<td>30</td>
<td>17</td>
<td></td>
<td></td>
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<tr>
<td>Endobutton CL Ultra</td>
<td>333</td>
<td>94</td>
<td>46</td>
<td>46</td>
<td>48</td>
<td>50</td>
<td>49</td>
</tr>
<tr>
<td>SoftSilk</td>
<td>378</td>
<td>125</td>
<td>51</td>
<td>53</td>
<td>44</td>
<td>61</td>
<td>44</td>
</tr>
</tbody>
</table>

### Table 43: Femur PCL (The 5 most common)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>ComposiTCP 30+60</td>
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<td>1</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Propel Cannulated</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SoftSilk</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCI Screw</td>
<td>11</td>
<td>10</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endobutton CL Ultra</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

### Table 44: Tibia ACL (The 5 most common)

<table>
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<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheated Cannulated Interference Screw</td>
<td>34</td>
<td>12</td>
<td>11</td>
<td>11</td>
<td></td>
<td></td>
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<td>81</td>
<td>31</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>Biosure HA Interference screw</td>
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<td>14</td>
<td>29</td>
<td>30</td>
<td>29</td>
<td>40</td>
</tr>
<tr>
<td>RCI Screw</td>
<td>307</td>
<td>216</td>
<td>20</td>
<td>21</td>
<td>18</td>
<td>21</td>
<td>11</td>
</tr>
<tr>
<td>SoftSilk</td>
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<td>47</td>
<td>52</td>
<td>44</td>
<td>59</td>
<td>39</td>
</tr>
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</table>

### Table 45: Tibia PCL (The 5 most common)

<table>
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<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intrax Screw</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propel Cannulated</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AO Skrue</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCI Screw</td>
<td>22</td>
<td>13</td>
<td>1</td>
<td>2</td>
<td>4</td>
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<td>1</td>
</tr>
</tbody>
</table>

### Table 46: Femur and tibia ACL (The 5 most common)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Sheated Cannulated Interference Screw</td>
<td>Sheated Cannulated Interference Screw</td>
<td>33</td>
<td>12</td>
<td>10</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endobutton CL Ultra</td>
<td>BioRCI-HA</td>
<td>34</td>
<td>6</td>
<td>12</td>
<td>12</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Endobutton CL Ultra</td>
<td>RCI Screw</td>
<td>111</td>
<td>58</td>
<td>13</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Endobutton CL Ultra</td>
<td>Biosure HA Interference screw</td>
<td>116</td>
<td>13</td>
<td>7</td>
<td>15</td>
<td>27</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>SoftSilk</td>
<td>SoftSilk</td>
<td>309</td>
<td>96</td>
<td>45</td>
<td>47</td>
<td>36</td>
<td>52</td>
<td>33</td>
</tr>
</tbody>
</table>

Cruciate Ligament

234
Meniscal lesion

Table 47: Actual treatment of meniscal lesion

<table>
<thead>
<tr>
<th>Year</th>
<th>Lateral</th>
<th>Medial</th>
<th>Synthetic fixation</th>
<th>Meniscus Transplant</th>
<th>Trepanation</th>
<th>None</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>OLD</td>
<td>19</td>
<td>8</td>
<td>3</td>
<td>16</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>Lateral</td>
<td>24</td>
<td>12</td>
<td>1</td>
<td>4</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>Medial</td>
<td>29</td>
<td>17</td>
<td>1</td>
<td>16</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>Lateral</td>
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<td>4</td>
<td>1</td>
<td>7</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>Medial</td>
<td>32</td>
<td>18</td>
<td>1</td>
<td>10</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>Lateral</td>
<td>14</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>Medial</td>
<td>1</td>
<td>28</td>
<td>10</td>
<td>13</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>Lateral</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>18</td>
<td>32</td>
</tr>
<tr>
<td>2011</td>
<td>Medial</td>
<td>11</td>
<td>3</td>
<td>16</td>
<td>7</td>
<td>10</td>
<td>48</td>
</tr>
<tr>
<td>2004-10</td>
<td>Lateral</td>
<td>83</td>
<td>13</td>
<td>4</td>
<td>2</td>
<td>10</td>
<td>48</td>
</tr>
<tr>
<td>2004-10</td>
<td>Medial</td>
<td>138</td>
<td>2</td>
<td>35</td>
<td>4</td>
<td>17</td>
<td>201</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>234</td>
<td>5</td>
<td>239</td>
<td>149</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

It became possible to register "Trepanation" and "None" from 01.01.2005. There have been forms where this has been an additional information. This information have been registered, but the registration is not complete before 2005.

In table 36: Actual injury has less. The reason for this is that we distinguish between the lateral and medial injury and some injuries are registred in both groups.

The value in OLD Resection are the forms that are registered before the new forms were introduced in autumn 2011. Total and Partial Resection values are the new forms were introduced in autumn 2011.

Figure 14: Treatment of meniscal lesions in revision reconstructions

[Graph showing the proportion of operations for different treatments over the years from 2004 to 2015]
## Fixation

### Table 48: Synthetic

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contour Meniscus arrow</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Meniscus arrow</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 49: Suture

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FAST-FIX</td>
<td>98</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>14</td>
<td>16</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>Meniscus arrow</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapidloc</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>26</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>129</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>15</td>
<td>21</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

## Cartilage lesion all localizations

### Table 50: ICRS Grade

**Definition av ICRS Grade:**

1. Nearly normal: Superficial lesions, soft indentation and/or superficial fissures and cracks.
2. Abnormal: Lesions extending down to <50% of cartilage depth.
3. Severely abnormal: Cartilage defects extending down >50% of cartilage depth as well as down to calcified layer.
4. Severely abnormal: Osteochondral injuries, lesions extending just through the subchondral boneplate or deeper defects down into trabecular bone.

<table>
<thead>
<tr>
<th>Code 1</th>
<th>Code 2</th>
<th>Code 3</th>
<th>Code 4</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>29,7%</td>
<td>42,3%</td>
<td>22,9%</td>
<td>4,0%</td>
</tr>
<tr>
<td>2014</td>
<td>10,6%</td>
<td>60,2%</td>
<td>23,9%</td>
<td>3,5%</td>
</tr>
<tr>
<td>2013</td>
<td>24,6%</td>
<td>47,0%</td>
<td>23,1%</td>
<td>3,7%</td>
</tr>
<tr>
<td>2012</td>
<td>14,3%</td>
<td>45,2%</td>
<td>31,7%</td>
<td>7,1%</td>
</tr>
<tr>
<td>2011</td>
<td>34,4%</td>
<td>39,3%</td>
<td>18,9%</td>
<td>7,4%</td>
</tr>
<tr>
<td>2004-10</td>
<td>19,4%</td>
<td>53,8%</td>
<td>21,3%</td>
<td>4,1%</td>
</tr>
</tbody>
</table>

The complete overview of cartilage lesions with ICRS Grade and localization is located on The Norwegian Cruciate Ligament Registry's website.

### Table 51: Treatment codes for all localizations

<table>
<thead>
<tr>
<th>Debridement</th>
<th>Micro fracture</th>
<th>No treatment</th>
<th>Other</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>16,0%</td>
<td>0,6%</td>
<td>76,0%</td>
<td>1,7%</td>
</tr>
<tr>
<td>2014</td>
<td>3,5%</td>
<td>4,4%</td>
<td>83,3%</td>
<td>1,8%</td>
</tr>
<tr>
<td>2013</td>
<td>18,7%</td>
<td>2,2%</td>
<td>71,6%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>18,3%</td>
<td>3,2%</td>
<td>74,6%</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>10,7%</td>
<td>3,3%</td>
<td>82,8%</td>
<td></td>
</tr>
<tr>
<td>2004-10</td>
<td>5,0%</td>
<td>2,0%</td>
<td>65,5%</td>
<td>1,7%</td>
</tr>
</tbody>
</table>

The complete overview of treatment codes and localization is located on The Norwegian Cruciate Ligament Registry's website.
Cartilage injuries registered in revision reconstructions

Figure 15: All Cartilage injuries (total)

Figure 16: All Cartilage injuries with area greater than 2 cm² (total)
Figure 17: All Cartilage injuries with area greater than 2 cm² and ICRS equal 3 or 4 (total)
### Outpatient surgery

**Table 52: Outpatient surgery**

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>117 (52.5%)</td>
<td>100 (44.8%)</td>
<td>6 (2.7%)</td>
<td>223</td>
</tr>
<tr>
<td>2014</td>
<td>125 (49.8%)</td>
<td>124 (49.4%)</td>
<td>2 (0.8%)</td>
<td>251</td>
</tr>
<tr>
<td>2013</td>
<td>96 (46.4%)</td>
<td>106 (51.2%)</td>
<td>5 (2.4%)</td>
<td>207</td>
</tr>
<tr>
<td>2012</td>
<td>120 (54.5%)</td>
<td>99 (45.0%)</td>
<td>1 (0.5%)</td>
<td>220</td>
</tr>
<tr>
<td>2011</td>
<td>81 (46.0%)</td>
<td>95 (54.0%)</td>
<td></td>
<td>176</td>
</tr>
<tr>
<td>2004-10</td>
<td>274 (34.4%)</td>
<td>519 (65.1%)</td>
<td>4 (0.5%)</td>
<td>797</td>
</tr>
<tr>
<td>Total</td>
<td>813 (43.4%)</td>
<td>1043 (55.7%)</td>
<td>18 (1.0%)</td>
<td>1874</td>
</tr>
</tbody>
</table>

### Intraoperative complications

**Table 53: Intraoperative complications**

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>8 (3.6%)</td>
<td>205 (91.9%)</td>
<td>10 (4.5%)</td>
<td>223</td>
</tr>
<tr>
<td>2014</td>
<td>3 (1.2%)</td>
<td>235 (93.6%)</td>
<td>13 (5.2%)</td>
<td>251</td>
</tr>
<tr>
<td>2013</td>
<td>7 (3.4%)</td>
<td>189 (91.3%)</td>
<td>11 (5.3%)</td>
<td>207</td>
</tr>
<tr>
<td>2012</td>
<td>5 (2.3%)</td>
<td>208 (94.5%)</td>
<td>7 (3.2%)</td>
<td>220</td>
</tr>
<tr>
<td>2011</td>
<td>3 (1.7%)</td>
<td>171 (97.2%)</td>
<td>2 (1.1%)</td>
<td>176</td>
</tr>
<tr>
<td>2004-10</td>
<td>37 (4.6%)</td>
<td>740 (92.8%)</td>
<td>20 (2.5%)</td>
<td>797</td>
</tr>
<tr>
<td>Total</td>
<td>63 (3.4%)</td>
<td>1748 (93.3%)</td>
<td>63 (3.4%)</td>
<td>1874</td>
</tr>
</tbody>
</table>

### Systemic antibiotic prophylaxis

**Table 54: Systemic antibiotic prophylaxis**

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>219 (98.2%)</td>
<td>3 (1.3%)</td>
<td>1 (0.4%)</td>
<td>223</td>
</tr>
<tr>
<td>2014</td>
<td>249 (99.2%)</td>
<td>2 (0.8%)</td>
<td></td>
<td>251</td>
</tr>
<tr>
<td>2013</td>
<td>204 (98.6%)</td>
<td>2 (1.0%)</td>
<td>1 (0.5%)</td>
<td>207</td>
</tr>
<tr>
<td>2012</td>
<td>216 (98.2%)</td>
<td>3 (1.4%)</td>
<td>1 (0.5%)</td>
<td>220</td>
</tr>
<tr>
<td>2011</td>
<td>175 (99.4%)</td>
<td>1 (0.6%)</td>
<td></td>
<td>176</td>
</tr>
<tr>
<td>2004-10</td>
<td>784 (98.4%)</td>
<td>10 (1.3%)</td>
<td>3 (0.4%)</td>
<td>797</td>
</tr>
<tr>
<td>Total</td>
<td>1847 (98.6%)</td>
<td>21 (1.1%)</td>
<td>6 (0.3%)</td>
<td>1874</td>
</tr>
</tbody>
</table>

**Table 55: Drug**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzylpenicillin (Penicillin G)</td>
<td>0.46%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cefalolin (Keflin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gentamicin (Garamycin, Gensumycin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dikloksacillin (Diclocil, Dicillin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gentamicin (Garamycin, Gensumycin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klindamycina (Dalacin, Clindamycin)</td>
<td></td>
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<tr>
<td>Kloksacillin (Ekvacillin)</td>
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<td></td>
</tr>
<tr>
<td>Oxacillin (Unspecified)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vankomycin (Vancomycin, Vancocin)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>0.57%</td>
</tr>
<tr>
<td>Missing</td>
<td>0.38%</td>
<td>0.46%</td>
<td>0.98%</td>
<td>0.40%</td>
<td>1.83%</td>
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</tr>
</tbody>
</table>

---

Cruciate Ligament 239
### Thrombosis prophylaxis

**Table 56: Thrombosis prophylaxis**

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>175 (78,5%)</td>
<td>47 (21,1%)</td>
<td>1 (0,4%)</td>
<td>223</td>
</tr>
<tr>
<td>2014</td>
<td>201 (80,1%)</td>
<td>49 (19,5%)</td>
<td>1 (0,4%)</td>
<td>251</td>
</tr>
<tr>
<td>2013</td>
<td>173 (83,6%)</td>
<td>32 (15,5%)</td>
<td>2 (1,0%)</td>
<td>207</td>
</tr>
<tr>
<td>2012</td>
<td>183 (83,2%)</td>
<td>36 (16,4%)</td>
<td>1 (0,5%)</td>
<td>220</td>
</tr>
<tr>
<td>2011</td>
<td>145 (82,4%)</td>
<td>31 (17,6%)</td>
<td></td>
<td>176</td>
</tr>
<tr>
<td>2005-10</td>
<td>596 (79,6%)</td>
<td>140 (18,7%)</td>
<td>15 (2,0%)</td>
<td>751</td>
</tr>
</tbody>
</table>

Total 1473 (80,6%) 335 (18,3%) 20 (1,1%) 1828

There are 2 old forms that are filled out so that thrombosis prophylaxis can not be registered. These are added to missing.

There are 6 forms with two drugs and 1467 forms with one drug.

### Table 57: Drug

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Apixiban (Eliquis)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,50%</td>
</tr>
<tr>
<td>Dalteparin (Fragmin)</td>
<td>65,10%</td>
<td>64,83%</td>
<td>67,21%</td>
<td>73,41%</td>
<td>58,21%</td>
<td>56,00%</td>
</tr>
<tr>
<td>Dekstran (Macrodex, Dextran)</td>
<td>0,69%</td>
<td>0,58%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enoksaparin (Klexane)</td>
<td>31,38%</td>
<td>34,48%</td>
<td>32,79%</td>
<td>25,43%</td>
<td>39,30%</td>
<td>42,86%</td>
</tr>
<tr>
<td>Rivaroksaban (Xarelto)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,50%</td>
</tr>
<tr>
<td>Warfarin (Marevan)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,57%</td>
</tr>
<tr>
<td>Ximelagatran (Exanta, Malagatran)</td>
<td>0,50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No drugs</td>
<td>2,35%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Missing</td>
<td>0,17%</td>
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<td>1,00%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two drugs</td>
<td>0,34%</td>
<td></td>
<td>0,58%</td>
<td>0,50%</td>
<td>0,57%</td>
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</tr>
</tbody>
</table>

### NSAID's

**Table 58: NSAID's**

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<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>82 (36,8%)</td>
<td>134 (60,1%)</td>
<td>7 (3,1%)</td>
<td>223</td>
</tr>
<tr>
<td>2014</td>
<td>80 (31,9%)</td>
<td>167 (66,5%)</td>
<td>4 (1,6%)</td>
<td>251</td>
</tr>
<tr>
<td>2013</td>
<td>84 (40,6%)</td>
<td>119 (57,5%)</td>
<td>4 (1,9%)</td>
<td>207</td>
</tr>
<tr>
<td>2012</td>
<td>84 (38,2%)</td>
<td>130 (59,1%)</td>
<td>6 (2,7%)</td>
<td>220</td>
</tr>
<tr>
<td>2011</td>
<td>63 (35,8%)</td>
<td>103 (58,5%)</td>
<td>10 (5,7%)</td>
<td>176</td>
</tr>
<tr>
<td>2007-10</td>
<td>124 (24,6%)</td>
<td>227 (45,0%)</td>
<td>153 (30,4%)</td>
<td>504</td>
</tr>
</tbody>
</table>

Total 517 (32,7%) 880 (55,7%) 184 (11,6%) 1581

**Table 59: Drug**

<table>
<thead>
<tr>
<th>Year</th>
<th>2007-10</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celecoksib (Celebra)</td>
<td>0,81%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,38%</td>
</tr>
<tr>
<td>Diklofenak (Voltaren, Diclofenac, Cataflam)</td>
<td>91,13%</td>
<td>95,24%</td>
<td>90,48%</td>
<td>73,81%</td>
<td>68,75%</td>
<td>56,10%</td>
</tr>
<tr>
<td>Etoricoksib (Arcoxia)</td>
<td>0,81%</td>
<td>3,17%</td>
<td></td>
<td>1,19%</td>
<td>17,50%</td>
<td>36,59%</td>
</tr>
<tr>
<td>Ibuprofen (Ibux, Ibumenin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,22%</td>
</tr>
<tr>
<td>Ketorolak (Toradol)</td>
<td>5,65%</td>
<td>1,59%</td>
<td>9,52%</td>
<td>19,05%</td>
<td>10,00%</td>
<td>4,88%</td>
</tr>
<tr>
<td>Parecoksib (Dynastat)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,19%</td>
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<tr>
<td>Piroxicam (Breexidol)</td>
<td>0,81%</td>
<td></td>
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<tr>
<td>Missing</td>
<td>0,81%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,38%</td>
</tr>
</tbody>
</table>

240 Cruciate Ligament
CONTENTS

Norwegian Paediatric Hip Register

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Calvè-Legg-Perthes ......................................................................................... 250
PAEDIATRIC HIP REGISTER
2016 ANNUAL REPORT

The Paediatric Hip Register is now in its sixth year of operation, and we are very pleased to have obtained the status of a national quality register. This means that all hospitals that treat children with the relevant hip disorders are now required to report to our register. In addition, we are now ensured more funding for future operations, which also involves stricter requirements for good organisation and reporting in our register.

Anne Kristin Reve, PhD candidate and assistant doctor at the Orthopaedic Department of Stavanger University Hospital has completed a completness analysis in cooperation with the Norwegian Patient Register (NPR) of data in the register. Much effort has gone into this analysis, and it has been especially difficult to obtain reliable figures on patients who were only outpatients. The analysis therefore focused most strongly on operated patients. The figures show that we still need to get more reports in and we will therefore conduct a new analysis in two years’ time.

For the past two years, we have been cooperating with Swedish paediatric orthopaedists, who have now established their own paediatric orthopaedic register. We aim to use as similar parameters as possible in the two national registers to enable data to be compared and used in larger studies. In this regard, we will also cooperate on joint Patient-Recorded Outcome Measures (PROMs) to be used in both registers. We have started to translate PROMIS Ped into Norwegian; this is validated for children from 8-17 years, with a separate version for children as young as four.

With regard to open and arthroscopic hip surgery in young adults, a group has been formed to draft a new form for these operations, to ensure that the most useful parameters are recorded. For this part of the register, we plan to use IHOT 12, a questionnaire containing 12 questions which is a simplified version of IHOT 33. IHOT 12 has now been translated and is ready for use.

The collection of radiographs of children in the Register is functioning satisfactorily, and work is now well underway to clean the files and measure the radiographs. Ola Wiig has leave from his post as a chief physician this spring, specifically to undertake this work.

To improve reporting to the registry, we have started planning electronic registration forms. We have got the green light to begin this work, and hope to have completed it during 2017.

Trude Gundersen
Haukeland University Hospital
General Manager

Ola Wiig
Oslo University Hospital
Head of the Steering Committee
## PAEDIATRIC HIP DISEASE

### Hip Dysplasia

#### Table 1: HD - New cases per year

<table>
<thead>
<tr>
<th>Year diagnosed</th>
<th>Unilateral</th>
<th>Bilateral</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>33</td>
<td>13</td>
<td>0</td>
<td>46</td>
</tr>
<tr>
<td>2014</td>
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<td>77</td>
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<td>2013</td>
<td>50</td>
<td>16</td>
<td>0</td>
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<tr>
<td>Ukjent</td>
<td>18</td>
<td>3</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>419</strong></td>
<td><strong>132</strong></td>
<td><strong>9</strong></td>
<td><strong>560</strong></td>
</tr>
</tbody>
</table>

#### Table 2: HD - Earlier treatment

<table>
<thead>
<tr>
<th>Treatment year</th>
<th>None</th>
<th>Pillow / abd. orthosis</th>
<th>Other</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>34</td>
<td>21</td>
<td>15</td>
<td>28</td>
<td>98</td>
</tr>
<tr>
<td>2014</td>
<td>38</td>
<td>39</td>
<td>12</td>
<td>25</td>
<td>114</td>
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<tr>
<td>2013</td>
<td>22</td>
<td>16</td>
<td>9</td>
<td>39</td>
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</tr>
<tr>
<td>2012</td>
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<td>0</td>
<td>121</td>
<td>131</td>
</tr>
<tr>
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<td>0</td>
<td>96</td>
<td>97</td>
</tr>
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<td>2010</td>
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<td>117</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
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<td><strong>83</strong></td>
<td><strong>38</strong></td>
<td><strong>440</strong></td>
<td><strong>664</strong></td>
</tr>
</tbody>
</table>

More than one form for patient per side is possible.

#### Table 3: HD - Hip status

<table>
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<th>Year treated</th>
<th>Located</th>
<th>Partially dislocated</th>
<th>Luksert</th>
<th>Missing</th>
<th>Total</th>
</tr>
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</tr>
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<td>114</td>
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<td>17</td>
<td>8</td>
<td>86</td>
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<td>2010</td>
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<td>4</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
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<td><strong>113</strong></td>
<td><strong>154</strong></td>
<td><strong>48</strong></td>
<td><strong>664</strong></td>
</tr>
</tbody>
</table>

More than one form for patient per side is possible
### Table 4: HD - Acetabular index

<table>
<thead>
<tr>
<th>Year diagnosed</th>
<th>&lt; 15°</th>
<th>&lt; 20°</th>
<th>&lt; 25°</th>
<th>&lt; 30°</th>
<th>&lt; 35°</th>
<th>&lt; 40°</th>
<th>&lt; 45°</th>
<th>&gt;= 45°</th>
<th>Missing</th>
<th>Total</th>
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</tr>
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</table>

Mean number used for both hips for bilateral HD.

### Table 5: HD - Non-operative treatment

<table>
<thead>
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<th>Treatment year</th>
<th>Pillow</th>
<th>Plaster</th>
<th>Abduction orthosis</th>
<th>Closed reduction</th>
<th>No treatment/obs.</th>
<th>Missing</th>
<th>Total</th>
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</tr>
<tr>
<td>Total</td>
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<td>79</td>
<td>182</td>
<td>32</td>
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<td>9</td>
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### Table 6: HD - Reduction - Surgical

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### Table 7: HD - Femoral osteotomy

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<th>Treatment year</th>
<th>Varising</th>
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### Table 8: HD - Pelvic osteotomy

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<th>Salter</th>
<th>Dega</th>
<th>Triple</th>
<th>Periacetab.</th>
<th>Periacetab. osteotomy</th>
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### Table 9: HD - Tenotomy

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# Epiphyseolysis Capitis Femoris

Table 10: ECF - New cases per year

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Table 11: ECF - Classification

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<th>Chronic</th>
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<th>Stable (Able to bear weight)</th>
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Table 12: ECF - Symptoms duration

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<th>&lt; 4 weeks</th>
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<th>27-52 weeks</th>
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### Table 13: ECF - Degree of slippage

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### Table 14: ECF - Type of primary operation

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<th>Year treated</th>
<th>Screw osteosynthesis</th>
<th>Femoral osteotomy</th>
<th>Pin osteosynthesis</th>
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### Table 15: ECF - Primary operation - Osteosynthesis with screws

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Smith+N. = Smith and Nephew

### Table 16: ECF - Primary operation - Osteosynthesis with pins

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## Calvè-Legg-Perthes

### Table 17: CLP - Number of new cases per year

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### Table 18: CLP - Catterall

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<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>12</td>
<td>26</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>164</td>
<td>64</td>
<td>304</td>
</tr>
</tbody>
</table>

I/II = < 50 % caput necrosis  
III/IV = < 50 % caput necrosis
### Table 19: CLP - Treatment

<table>
<thead>
<tr>
<th>Year treated</th>
<th>None/physiotherapy</th>
<th>Abduction orthosis</th>
<th>Femoral osteotomy</th>
<th>Salter</th>
<th>Dega</th>
<th>Periacetabular osteotomy</th>
<th>Other pelvic osteotomy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>29</td>
<td>0</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>42</td>
</tr>
<tr>
<td>2014</td>
<td>32</td>
<td>2</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>43</td>
</tr>
<tr>
<td>2013</td>
<td>30</td>
<td>0</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>43</td>
</tr>
<tr>
<td>2012</td>
<td>32</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>37</td>
</tr>
<tr>
<td>2011</td>
<td>29</td>
<td>0</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>44</td>
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<tr>
<td>2010</td>
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<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Total</td>
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<td>62</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>270</td>
</tr>
</tbody>
</table>

### Table 20: CLP - Plates and screws

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<tr>
<th>Year treated</th>
<th>Prebent plate</th>
<th>Angel plate</th>
<th>Special plate</th>
<th>Normal screws</th>
<th>Angle-stable screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>8</td>
</tr>
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<td>2014</td>
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<td>8</td>
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<td>5</td>
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<tr>
<td>2013</td>
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<td>1</td>
<td>9</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>2012</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>2</td>
<td>2</td>
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<tr>
<td>2011</td>
<td>0</td>
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<td>9</td>
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<td>7</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>10</td>
<td>54</td>
<td>18</td>
<td>39</td>
</tr>
</tbody>
</table>
LIST OF PUBLICATIONS

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Norwegian National Advisory Unit on Arthroplasty and Hip Fractures


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Exeter primary total hip arthroplasties reported to the Norwegian Arthroplasty Register.

of 11 516 uncemented primary femoral stems from the Norwegian Arthroplasty register.

54. Engesæter LB, Furnes O, Havelin LI. Developmental dysplasia of the hip - good results
of later total hip Arthroplasty: 7135 primary total hip arthroplasties after developmental
dysplasia of the hip compared with 59774 total hip arthroplasties in idiopathic coxarthrosis
followed for 0 to 15 years in the Norwegian Arthroplasty Register. J Arthroplasty

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uncemented press-fit stem and screw cup in young patients.

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newborns from the Medical Birth Registry of Norway in the Norwegian Arthroplasty

57. Hulleberg G, Aamodt A, Espehaug B, Benum P. A clinical and radiographic 13-year follow-
up study of 138 Charnley hip arthroplasties in patients 50–70 years old. Comparison of

58. Fevang BT, Lie SA, Havelin LI, Skredderstuen A, Furnes O. Risk factors for revision after
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59. Fevang BT, Lie SA, Havelin LI, Skredderstuen A, Furnes O. Results after 562 total elbow

60. Cummins JS, Tomek IM, Kantor SR, Furnes O, Engesæter LB, Finlayson SR. Cost-
effectiveness of antibiotic-impregnated bone cement used in primary total hip arthroplasty.

61. Espehaug B, Furnes O, Engesæter LB, Havelin LI. 18 years of results with cemented
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62. Havelin LI, Fenstad AM, Salomonsson R, Mehnert F, Furnes O, Overgaard S, Pedersen AB,
A unique collaboration between 3 national hip arthroplasty registries with 280, 201 THRs.

63. Dybvik E, Furnes O, Fosså SD, Trovik C, Lie SA. Long-term risk of receiving a total hip


Norwegian Cruciate Ligament Register


Norwegian Hip Fracture Register


Clinical trials related to the Norwegian National Advisory Unit on Arthroplasty and Hip Fractures


**Text books and book chapters related to the Norwegian National Advisory Unit on Arthroplasty and Hip Fractures**


Kurshefte: Implantatlære og protesekirurgi - Ortopediske infeksjoner.

Kurshefte: Implantatlære og protesekirurgi - Ortopediske infeksjoner.

Kurshefte: Implantatlære og protesekirurgi - Ortopediske infeksjoner.

Kurshefte: Implantatlære og protesekirurgi - Ortopediske infeksjoner.

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1. Myklebust G, Engebretsen L, Braekken IH, Skjolberg A, Olsen OEI, Bahr R. 
Prevention of noncontact anterior cruciate ligament injuries in elite and adolescent 
female team handball athletes. AAOS Instructional Course Lectures, Volume 56, 2007. 

2. Takeda H, Engebretsen L. Prevention and management of cartilage injury and 

Development of Osteoarthritis: What Can We Do to Prevent It? I: The ACL-deficient knee: 

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of hip prostheses and cements. A presentation of the Norwegian Arthroplasty Register 
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3. Furnes O. The Norwegian Arthroplasty Register. Update. International Society of Arthroplasty Registries (ISAR) meeting during AAOS. 2015 March 26; Las Vegas, USA.


15. Badawy M. The risk of revision in total knee arthroplasty is not affected by previous high tibial osteotomy. Poster presented at the 16th Effort Congress; 2015 May 27–29; Prague, Czech Republic.


36. Leta TH, Lygre SHL, Skredderstuen A, Hallan G, Gjertsen JE, Rokne B, Furnes O. The outcome of unicompartmental knee arthroplasties after aseptic revision into total knee arthroplasties. 4th International Conference on orthopedics & rheumatology; 2015 26–28 October; Baltimore, Maryland, USA.


38. Furnes O, Dybvik E, Småbrekke A, Fenstad AM, Hallan G, Havelin L. Ceramic on ceramic articulation in 4926 uncemented total hip replacements with up to 15 years follow up reported to the Norwegian arthroplasty register. Poster presented at the 58th Nordic Orthopaedic Federation Congress; 2016 27–29 April; Linköping, Sweden.

39. Furnes O. Report from Norwegian shoulder arthroplasty registry. The 7th Triennial Nordic shoulder and elbow conference; 2016 12–13. May; Odense, Denmark

40. Furnes O. The learning curve of surgical procedures - Influence on education. The 7th Triennial Nordic shoulder and elbow conference; 2016 12–13 may; Odense, Denmark.


45. Furnes O, Dybvik E, Småbrekke A, Fenstad AM, Hallan G, Havelin L. Ceramic on ceramic articulation in 4926 uncemented total hip replacements with up to 15 years follow up reported to the Norwegian arthroplasty register (ISAR). 5th International Congress of Arthroplasty registries; 2016 28–30 May; Manchester, UK.

46. Dyrhovden GS, Fenstad AM, Furnes O, Gøthesen Ø. Eight years survivorship of computer navigated total knee replacement reported to the Norwegian arthroplasty register (ISAR). 5th International Congress of Arthroplasty registries; 2016 28–30 May; Manchester, UK.


51. Furnes O, Dybvik E, Småbrekke A, Fenstad AM, Hallan G, Havelin L. Ceramic on ceramic articulation in 4926 uncemented total hip replacements with up to 15 years follow up reported to the Norwegian arthroplasty register. 17th EFORT Congress; 2016 1–3 June; Geneva, Switzerland.


53. Brüggermann H, Hallan G, Fenstad AM, Havelin LI, Fosse L. Risk factors for intraoperative proximal femoral fractures (IPFF) during primary hip arthroplasty: 1728 IPFFs were reported to the Norwegian arthroplasty register (NRL) between 1987 to 2014. 17th EFORT Congress; 2016 1–3 June; Geneva, Switzerland.

54. Havelin LI. The truth of cemented versus uncemented. 17th EFORT Congress; 2016 1–3 June; Geneva, Switzerland.

Norwegian Cruciate Ligament Register


Norwegian Hip Fracture Register


Norwegian Paediatric Hip Register


Clinical trials


Operation forms (in Norwegian only)
Data from these forms is the basis of this report.
**HOFTEPROTESER**

Alle totale hofteproteoseoperasjoner og hemiproteaser på annen indikasjon enn fraktur/fraktursekvele registreres her (hemiprotease for fraktur/fraktursekvele registreres på Hoftebuddskjema). Alle operasjoner skal registreres:

- skifte/fjerning av protesedeler, kanplastikk, bløtdelebrøtning, og operasjoner for proteseaen fraktur eller gluteal svikt.

### TIDLEGERE OPERASJON I AKTUELLE HOFT (ev. flere kryss)

- [ ] Nei
- [ ] Østosynthese for fraktur i prox. femurende
- [ ] Hemiprotease pga. fraktur
- [ ] Osteotomi
- [ ] Armodese
- [ ] Totalprotese(r)
- [ ] Annen operasjon

### AKTUELLE OPERASJON (ett kryss)

- [ ] Primaeroperasjon (også hvis hemiprotease tidligere)
- [ ] Reoperasjon (totalprotese tidligere)
- [ ] Primer hemiprotease for annen indikasjon enn fraktur/fraktursekvele

### OPERASJONSDATO (dd.mm.åå)

- [ ] Høyre
- [ ] Venstre

### ÅRSAK TIL AKTUELLE OPERASJON (KRYSS AV ENTEN I A ELLER B)

**A. Primærpro. pga. (ev. flere kryss)**

- [ ] Idiopatisk coxartrose
- [ ] Rheumatoid artritt
- [ ] Sekvele etter frakt. coll. fem. II
- [ ] Sekv. dysplasia med total luksasjon
- [ ] Sekv. Perthes
- [ ] Sekv. epifysiolysese
- [ ] Mb. Bechterew
- [ ] Akutt fraktur colli femoris
- [ ] Annet

(f.eks. capitumkrose, tidl. armodese o.l.)

- [ ] Osteolyse i acetab. uten løsning
- [ ] Osteolyse i femur uten løsning
- [ ] Implantatfraktur femurdei
- [ ] Implantatfraktur caput
- [ ] Implantatfraktur kopp
- [ ] Implantatfraktur liner
- [ ] Implantatfraktur annet

(f.eks. Girdlestone etter tidl. infisert protese)

### REOPERASJONSTYPE (ev. flere kryss)

- [ ] Byte av femurkomponent
- [ ] Byte av acetabulumkomponent
- [ ] Byte av hele protese
- [ ] Fjernet protease og satt inn sementspacer
- [ ] Fjernet sementspacer og satt inn ny protease
- [ ] Fjernet protease Girdlestone eller fjerning av sementspacer

Angi hvilke deler som ble fjernet av femurkomponenten:
- [ ] Plastforing
- [ ] Rengjøring (tidl.)
- [ ] Støttebånd
- [ ] Ny protease etter Girdlestone
- [ ] Resultat av muskel
- [ ] Transsístion for fraktur
- [ ] Konvertering til hemiprotease
- [ ] Andre operasjoner

### TILGANG (ett kryss)

- [ ] Frenne (Mellom sartorius og tensor)
- [ ] Anterolateral (Mellom glut. medius og tensor)
- [ ] Direkte lateral (Transgluteal)
- [ ] Bakre (Bak glut. medius)
- [ ] Annen

### MININVASIV KIRURGI (MIS)

- [ ] Nei
- [ ] Ja

### LEIE

- [ ] Sideleie
- [ ] Rygg

### TROCHANTEROSTEOTOMI

- [ ] Nei
- [ ] Ja

### BENTRANSPANTALASJON (ev. flere kryss)

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<thead>
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<th>Dosering</th>
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</tr>
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<tr>
<td>Acetabulum</td>
<td>☐ Nei</td>
<td>☐ Ja</td>
</tr>
<tr>
<td>Femur</td>
<td>☐ Nei</td>
<td>☐ Ja</td>
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</table>

### BENTAV VED REVISJON (Poprosky’s klassifikasjon se baksiden)

<table>
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<td>☐ IIA</td>
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<td>Femur</td>
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<td>☐ II</td>
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### PROTESEKOMPONENTER (Bruk klisterlåp på baksiden eller skriv REF NR.)

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<tr>
<td>Caput (+ ev. halsdel)</td>
<td>☐ Fastsittende caput</td>
<td>☐ Separat caput - Navn/Type</td>
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<tr>
<td>Navn</td>
<td>☐ REF NR.</td>
<td>☐ Diameter</td>
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<td>☐ Sement med antibiotika – Navn</td>
<td>☐ Sement uten antibiotika – Navn</td>
<td></td>
</tr>
<tr>
<td>☐ Smertekomponent</td>
<td>☐ Resur</td>
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### TROMBOSEREPROFYLASE

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<tr>
<td>☐ Sement med antibiotika – Navn</td>
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<tr>
<td>☐ Sement</td>
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### ANTIBIOTIKAPROFYLASE

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### MED HYDROKSYLAPATITT

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### TROMBOSEPROFYLASE

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### FIBRINOLYSEHEMMER

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### OPERASJONSTID

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### OPERASJONSTID (hud til hud) min

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### PEROPERATIV KOMPLIKASJON

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<td>☐ Ja</td>
<td>☐ Benpakking</td>
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### ASA KLASSE (se baksiden for definisjon)

<table>
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<tbody>
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<td>☐ Ja</td>
<td>☐ Benpakking</td>
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</tbody>
</table>

\[286\]
AKTUELL OPERASJON


ÅRSAK TIL AKTUELE OPERASJON

Kryss av under A ved primæroperasjoner og under B ved reoperasjoner. I B må du kryss av for alle årsakene til reoperasjon, eller forklare med fritekst.

REOPERASJONSTYPE


BENTTRANSPLANTASJON

Benpropp som sementstopper røgnes ikke som bentransplantat. Vi skiller mellom benpakking og transplantasjon.

PROTESEKOMPONENTER: Acetabulum - Femur - Caput - Trokanterdel og hals hvis disse er separate deler.

Bruk klistrelappene som følger med protesen. Lim disse på baksiden av skjema. Alternativt, skriv inn protesenavn + REF.NR., materialegjennomføring og design.

Sementnavn må anføres (bruk klistrelapp).


ASA-KLASSE (ASA=American Society of Anesthesiologists)

ASA-klasse 1: Friske pasienter som røyker mindre enn 5 sigaretter daglig.

ASA-klasse 2: Pasienter med en asymptotisk tilstand som behandles medikamentelt (f.eks hypertensiøn) eller med kost (f.eks diabetes mellitus type 2) og ellers friske pasienter som røyker 5 sigaretter eller mer daglig.

ASA-klasse 3: Pasienter med en tilstand som kan gi symptomer, men som holdes under kontroll medikamentelt (f.eks moderat angina pectoris og mild astma).

ASA-klasse 4: Pasienter med en tilstand som ikke er under kontroll (f.eks hjertesvikt og astma).

ASA-klasse 5: Moribund og døde.

MINNINSIV KIRURGI (MIS = Minimally Invasive Surgery) når det er brukt spesialinstrument laget for MIS.

ANTIBIOTIKAPROFYLAKSE: Før på antibiotikum som er benyttet i forbindelse med operasjonen, f.eks. Medikament 1: Keflin 2g x 4, med variabel 4,5 timer.


FIBRINOLYSEHEMMER: Her føres det på om en benytter blødningsreduserende legemidler i forbindelse med operasjonen (f.eks. Cyklokapron).

BEINTAP VED REVISJON

Femur (Paprosky’s klassifikasjon)

Type I: Minimalt tap av metafysært ben og intakta diafyse.

Type II: Stort tap av metafysært ben, med intakta diafyse.

Type IIIA: Betydelig tap av metafysært ben uten mulighet for proximal mekanisk støtte. Over 4 cm intakt corticalis i isthmusområdet.

Type IIIB: Betydelig tap av metafysært ben uten mulighet for proximal mekanisk støtte. Under 4 cm intakt corticalis i isthmusområdet.

Type IV: Betydelig tap av metafysært ben uten mulighet for proximal mekanisk støtte. Bred isthmus med liten mulighet for cortical støtte.

Acetabulum (Paprosky’s klassifikasjon)

Type I: Hemisfarisk acetabulum uten kantdefekter. Intakt bakre og fremre kolonne. Defekter i knokelten som ikke er under kontroll (f.eks moderat angina pectoris og mild astma).

Type II: Hemisfarisk acetabulum med store kantdefekter, intakt bakre og fremre kolonne, men med liten metafysært ben igjen.

Type III: Hemisfarisk acetabulum med store kantdefekter, intakt bakre og fremre kolonne, men med liten metafysært ben igjen og noe manglende støtte superiort.

Type III: Hemisfarisk acetabulum med store kantdefekter, intakt bakre og fremre kolonne, men med defekt i medial vegg.

Type IIIIB: Betydelig komponentvandring, osteolyse og bentap. Bentap fra kl.10 til 2. Type IIIIB: Betydelig komponentvandring, osteolyse og bentap. Bentap fra kl. 9 til 5.

Kopi beholdes til pasientjournalen, originalen sendes Haukeland universitetssjukehus.

PROTESENÆR FRAKTUR

Vancouversklassifikasjon

Type A  Type B1  Type B2  Type B3  Type C

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## Hofteproteser

**Alle TOTALPROTESER I HOFTELEDD REGISTERES.** Innsetting, skifting og fjerning av totalproteser i hofteledd, samt kantplastikk, bløtdelsrevisjon for infisert protese og hemiproteser på annen indikasjon enn fraktur/fraktursekvele.

Hemiproteser for fraktur/fraktursekvele registreres på Hoftebruddskjema.

### Tidligere Operasjon i Aktuelle Hofte
- **Nei**
- Osteosyntese for fraktur i prox. femurende
- Hemiprotepsen pga. fraktur
- Osteotomi
- Artrodiy
- Totalprotese
- Annen operasjon

**Operasjonsdato (dd.mm.åå)**: 

### Aktuelle Operasjon (ett kryss) - Primæroperasjon (også hvis hemiprotese tidligere)
- Reoperasjon (operasjon tidligere)
- Primær hemiprotese for annen indikasjon enn fraktur/fraktursekvele

### Aktuelle Side (ett kryss) - Bilateral opr. = 2 skjema
- Høyre
- Venstre

### Årsak til Aktuelle Operasjon (Kryss av Enten A eller B)

**A** Primærprotesen pga. (evt. flere kryss)
- Iddiopatisk coxarthrose
- Rheumatoid artritis
- Selvelev etter frakt. coli. fem.
- Selv. dysplasi
- Selv. dysplasi med total luksasjon
- Selv. Perthes
- Selv. Epiphyseolyse
- Mb. Bechterew
- Akut frakturen coli femors
- Annen

*(t.eks. caputnekrose, tidl. artrodiy o.l)*

### Årsak til Reoperasjon (evt. flere kryss)
- Las acetabulkomponent
- Las femurkomponent
- Luksasjon
- Dyp infeksjon
- Fraktur i acetabulum
- Fraktur (av femur)
- Smerter
- Osteolys i acetab. utan løsning
- Osteolys i femur utan løsning
- Annen

*(t.eks. Girdlestonesituasjon etter tidl. infisert protese)*

### Reoperasjonstype (evt. flere kryss)
- Bytte av frøtkomponent
- Bytte av acetabulkomponent
- Bytte av hele protesen
- Fjernet protese og sat i ny capsamer
- Fjernet sementspacer og sat i ny protese
- Fjernet protese (Girdlestonedelse eller fjerning av sementspacer)

### Angi hvilke deler som ble fjernet (t.eks. capsamer o.l)

### Systemisk Antibiotika

<table>
<thead>
<tr>
<th>Navn/Type</th>
<th>Dosering</th>
<th>Varighet i timer (døgn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetabulum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Femur</td>
<td></td>
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### Sementkomponenter

<table>
<thead>
<tr>
<th>Sementkomponent</th>
<th>Navn/Type</th>
<th>Dosering videre</th>
<th>Varighet i timer (døgn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sement uten antibiotika</td>
<td></td>
<td></td>
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<tr>
<td>Sement med antibiotika</td>
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</table>

### Tromboseproylaks

<table>
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<tr>
<th>Navn/Type</th>
<th>Dosering opr. dag</th>
<th>Varighet i timer (døgn)</th>
</tr>
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<tbody>
<tr>
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</table>

### Fast antikoagulasjon

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<thead>
<tr>
<th>Navn/Type</th>
<th>Dosering</th>
<th>Varighet i timer (døgn)</th>
</tr>
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</table>

### Fibrinolysehemmer

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<th>Navn/Type</th>
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### Peroperativ komplikasjon

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<tr>
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### ASA klasse (se baksiden for definisjon)

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<th>Navn/Type</th>
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<th>Varighet i timer (døgn)</th>
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</table>

### Legen som har fylt ut skjemaet (navnet registreres ikke i databasen)

**Legen**: 

- F.nr. (11 sifre): 
- Navn: 
- Sykehus: 

Lege: __________________________

Legen som har fylt ut skjemaet (navnet registreres ikke i databasen): __________________________
## RETTLEDNING TIL HOFTEPROTUSER


### AKTUELLE OPERASJON

**Primæroperasjon:** Dette er første totalproteseoperasjon.


**Primær hemiprotose for annen indikasjon enn fraktur/fraktursekleve:** Hemiprotose for fraktur/fraktursekleve registreres på Hoftebruddskjema.

### ÅRSAK TIL AKTUELLE OPERASJON

Kryss av under A ved primæreroperasjoner og under B ved reoperasjoner. I B må du kryss av for alle årsakene til reoperasjon, eller forklare med fritext.

### REOPERASJONSTYP


### TILGANG


### BENTRANSPLASJON

Benprop som sementstopper regnes ikke som bentransplantat.

### PROTESEKOMPONENTER: Acetabulum - Femur - Caput - Trokanterdel og hals hvis disse er separate deler


### KOMPLIKASJONER

Også operasjoner hvor pasienter dør på operasjonsbordet ellerrett etter operasjon skal meldes. Ved stor stor blodning, angi mengde.

### ASA-KLASSE (ASA=American Society of Anesthesiologists)

ASA-klasse 1: Friske pasienter som røyker mindre enn 5 sigarettet daglig.

ASA-klasse 2: Pasienter med en asymptomatisk tilstand som behandles medikamentell (f.eks hypertensjon).

ASA-klasse 3: Pasienter med en tilstand som kan gi symptomer, men som holdes under kontroll medikamentell (f.eks moderat angina pectoris og mild astma).

ASA-klasse 4: Pasienter med en tilstand som ikke er under kontroll (f.eks hjertesvikt og astma).

ASA-klasse 5: Mortbund/døende pasient.

### MININVASIV KIRURGI (MIS = Minimally Invasive Surgery)

Med MIS menes her at kirurgen har brukt kort snitt og at det er brukt specialinstrument laget for MIS

### SYSTEMISK ANTIBIOTIKI

Her føres det på hvilket antibiotikum som er blitt benyttet i forbindelse med operasjonen, f.eks.: Medikament 1: Keflin. 2g x 4, med varighet 12 timer.

### TROMBOSEPROFYLAKSE


### FIBRINOLYSEHEMMER

Her føres det på om en benytter blodningsnedresemende igensetninger i forbindelse med operasjonen (f.eks. Cylklokapron).

### BEINTAP VED REVISJON

**Femur (Paprosky’s klassifikasjon)**

Type I: Minimalt tap av metafysært ben og intak deltify.

Type II: Stort tap av metafysært ben, men intak deltify.

Type IIIA: Betydelig tap av metafysært ben uten mulighet for proximal mekanisk støtte. Over 4 cm intak corticalis i thyumosområdet.

Type IIIB: Betydelig tap av metafysært ben uten mulighet for proximal mekanisk støtte. Under 4 cm intak corticalis i thyumosområdet.

Type IV: Betydelig tap av metafysært ben uten mulighet for proximal mekanisk støtte. Bred thyum med liten mulighet for cortical støtte.

**Acetabulum (Paprosky’s klassifikasjon)**

Type I: Hemiførisk acetabulum uten kantdefekter. Intak bakre og fremre kolonne. Defekter i forankringshull som ikke ødelegger subchondral bænlflate.

Type II: Hemiførisk acetabulum uten store kantdefekter, intak bakre og fremre kolonne, men med lite metafysært ben igjen.

Type IIIB: Hemiførisk acetabulum uten store kantdefekter, intak bakre og fremre kolonne, men med lite metafysært ben igjen og noe manglende støtte superior.

Type IIIC: Hemiførisk acetabulum uten store kantdefekter, intak bakre og fremre kolonne, men med defekt i medial vegg.

Type IIId: Betydelig komponentvandring, osteolyse og bentap. Bentap fra kl. 10 til 2.

Type IIIB: Betydelig komponentvandring, osteolyse og bentap. Bentap fra kl. 9 til 5.

Kopi beholdes til pasientjournalen, originalen sendes Haukeland universitetsjukehus.

**Kontaktpersoner vedrørende registreringsskjema er**

- Overlege Leif Ivar Havelin, tlf.: 55 97 56 87 og klinikkoeverlege Ove Furnes, tlf.: 55 97 56 80
- Epost inf@helse-bergen.no
- Internet: http://www.haukeland.no/inf/
**KNEPROTESER og andre leddproteser**

Innsætting, skifting eller fjerning av protese eller protesedeler, samt bløtdelsrevisjoner for infisert protese.

### LOKALISASJON, AKTUELL OPERASJON
- ☐ Kne
- ☐ Ankel
- ☐ Tår (angri ledd)
- ☐ Skuldere
- ☐ Alg

**AKTUELLE SIDE (ett kryss)** (Bilateral opr. = 2 skjema)
- ☐ Høyre
- ☐ Venstre

### TIDLIGERE OPERASJON I AKTUELLE LEDD (ev. flere kryss)
- ☐ Nei

- ☐ Osteosyntese for intraartikulærleddfraktur
- ☐ Osteotomi
- ☐ Artrodese
- ☐ Protese
- ☐ Synovectomi

**ANNET (f.eks tidl fjernet prot)**
- ☐ Nei

### Hvilken (ev. flere kryss)
- ☐ Luksasjon av patella
- ☐ Lös patellaprotese
- ☐ Mb. Bechterew
- ☐ Dyp infeksjon

- ☐ Progresjon av artrose
- ☐ Instabilitet
- ☐ Fraktursequele
- ☐ Smerter

- ☐ Selvheint (angi leddparen):

### Luksasjon av patella
- ☐ Nei

### Lös patellaprotese
- ☐ Nei

### Mb. Bechterew
- ☐ Nei

### Dyp infeksjon
- ☐ Nei

<table>
<thead>
<tr>
<th>ÅRSAK TIL AKTUELL OPERASJON (KRYSS AV EN) A ELLER B</th>
<th>☐ Nei</th>
<th>☐ Ja</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Primærpro. (f.eks. f.eks. kryss)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Reoperasjon (ev. flere kryss)</td>
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</table>

### LOKASJON (dd.mm.åå) |__|__| |__|__| |__|__|

### MINI INVASIV KIRURGI (MIS)
- ☐ Nei
- ☐ Ja

### COMPUTERNAVIGERING (CAOS)
- ☐ Nei
- ☐ Ja

### PASIENTTILPASSEDE INSTRUMENTER
- ☐ Nei
- ☐ Ja

### ASA KLASSE (se baksiden for definisjon)
- ☐ Frisk
- ☐ Asymptomatisk tilstand som gir økt risiko
- ☐ Symptomatisk sykdom
- ☐ Livstvingende sykdom
- ☐ Mortbund

### OPERASJONSDATO (dd.mm.åå) |__|__| |__|__| |__|__|

### PROTESE KNE
- ☐ Bruk klistrelapper på baksiden, eller spesifiser nøyaktig

### PROTESETYPE
- ☐ Totalprot. m/patella
- ☐ Totalprot. u/patella
- ☐ Bi-compartmental prot
- ☐ Hemiarthroplast prot

### INTERMEDIÆR KOMPONENT (f.eks. caput humeri)
- ☐ Nei
- ☐ Ja
- ☐ Type: ...

### FAST TROMBOSEPROFYLAKSE
- ☐ Nei
- ☐ Ja

### PEROPERATIV KOMPLIKASJON
- ☐ Nei
- ☐ Ja (ev. flere kryss)

### FAST TROMBOSEPROFYLAKSE
- ☐ Nei
- ☐ Ja

### Operasjonstoner, skifting eller fjerning av protese eller protesedeler, samt bløtdelsrevisjoner for infisert protese.

### TROMBOSEPROFYLAKSE
- ☐ Nei
- ☐ Ja

### FIBRINOLYSEHEMMER
- ☐ Nei
- ☐ Ja (medikam.)

### PROKSIMAL KOMPONENT
- ☐ Nei
- ☐ Ja

### DISTAL KOMPONENT
- ☐ Nei
- ☐ Ja

### INTERMEDIER KOMPONENT
- ☐ Nei
- ☐ Ja

### SYKEHUS:

<table>
<thead>
<tr>
<th>F.nr. (11 sifre)</th>
<th>Navn:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Skriv tydelig ev. pasientklistrelapp – spesifiser sykehus.)</td>
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</tr>
</tbody>
</table>

### NAVN: ..................................................................................

### FYRSTE DOSE (dd.mm.åå) |__|__| |__|__| |__|__|

### Første dose
- ☐ Nei
- ☐ Ja

### AKTUELLE SIDE (ett kryss)
- ☐ Nei

### AKTUELLE OPERASJON (ETT KRYSS)
- ☐ Nei

### Primærpro. Reoperasjon (protese tidligere)
- ☐ Nei

### OPERASJONSDATO (dd.mm.åå) |__|__| |__|__| |__|__|

### NYTT SKJEMA FRA 2016

<table>
<thead>
<tr>
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### Første dose
- ☐ Nei
- ☐ Ja

### AKTUELLE SIDE (ett kryss)
- ☐ Nei

### AKTUELLE OPERASJON (ETT KRYSS)
- ☐ Nei

### Primærpro. Reoperasjon (protese tidligere)
- ☐ Nei

### OPERASJONSDATO (dd.mm.åå) |__|__| |__|__| |__|__|

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### NAVN: ..................................................................................

### FYRSTE DOSE (dd.mm.åå) |__|__| |__|__| |__|__|

### Første dose
- ☐ Nei
- ☐ Ja

### AKTUELLE SIDE (ett kryss)
- ☐ Nei

### AKTUELLE OPERASJON (ETT KRYSS)
- ☐ Nei

### Primærpro. Reoperasjon (protese tidligere)
- ☐ Nei

### OPERASJONSDATO (dd.mm.åå) |__|__| |__|__| |__|__|

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### FYRSTE DOSE (dd.mm.åå) |__|__| |__|__| |__|__|

### Første dose
- ☐ Nei
- ☐ Ja

### AKTUELLE SIDE (ett kryss)
- ☐ Nei

### AKTUELLE OPERASJON (ETT KRYSS)
- ☐ Nei

### Primærpro. Reoperasjon (protese tidligere)
- ☐ Nei

### OPERASJONSDATO (dd.mm.åå) |__|__| |__|__| |__|__|

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### FYRSTE DOSE (dd.mm.åå) |__|__| |__|__| |__|__|

### Første dose
- ☐ Nei
- ☐ Ja

### AKTUELLE SIDE (ett kryss)
- ☐ Nei

### AKTUELLE OPERASJON (ETT KRYSS)
- ☐ Nei

### Primærpro. Reoperasjon (protese tidligere)
- ☐ Nei

### OPERASJONSDATO (dd.mm.åå) |__|__| |__|__| |__|__|

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### NAVN: ..................................................................................

### FYRSTE DOSE (dd.mm.åå) |__|__| |__|__| |__|__|

### Første dose
- ☐ Nei
- ☐ Ja

### AKTUELLE SIDE (ett kryss)
- ☐ Nei

### AKTUELLE OPERASJON (ETT KRYSS)
- ☐ Nei

### Primærpro. Reoperasjon (protese tidligere)
- ☐ Nei
RETTLEDNING KNEPROTESER og andre leddproteser


På eget Samtykkeskjema skal pasienten gi samtykke til rapportering til Leddregisteret. Samtykkeskjemaet skal lagres i pasientjournal.

Kommentarer til de enkelte punktene

AKTUELLE OPERASJON

REOPERASJONSTYPE
Fjerning av protesedeler må spesifiseres og føres opp, også fjerning ved infeksjon.

BENTRANSPLANTASJON
Påsmøring av benvev rundt protesen regnes ikke som bentransplantat.

ANTIBIOTIKAPROFYLAKSE
Medikament, dose og varighet av profylaksen skal angis f.eks. slik: Medikament: Keflin, Dosering: 2g x 4, med varighet 4,5 timer.

TROMBOSEPROFYLAKSE

FIBRINOLYSEHEMMER
Her føres det på om en benytter blødningsreduserende legemidler i forbindelse med operasjonen (f.eks. Cyklokapron).

PEROPERATIV KOMPLIKASJON
Dersom det foreligger komplikasjon i form av stor blødning, må mengden angis.
Dersom pasienten dør under eller like etter operasjonen, ønsker vi likevel melding om operasjonen.

ASA-KLASSE (ASA=American Society of Anesthesiologists)
ASA-klassen 1: Friske pasienter som røyker mindre enn 5 sigaretter daglig.
ASA-klass 2: Pasienter med en asymptomatisk tilstand som behandles medikamentelt (f.eks. hypertensjon) eller med kost (f.eks. diabetes mellitus type 2) og ellers friske pasienter som røyker 5 sigaretter eller mer daglig.
ASA-klass 3: Pasienter med en tilstand som kan gi symptomer, men som holdes under kontroll medikamentelt (f.eks. moderat angina pectoris og mild astma).
ASA-klass 4: Pasienter med en tilstand som ikke er under kontroll (f.eks. hjertesvikt og astma).
ASA-klass 5: Moribund/døende pasient

PROTESETYPE
Dersom det er gjort revisjon av totalprotese uten patellakomponent og REOPERASJONSTYPE er insetting av patellakomponent, skal det krysses av for pkt. 1: Totalprotese med patellakomponent (dvs. protesen har nå blitt en totalprotese med patellakomponent). Ved revisjon av unicondylær protese til totalprotese brukes enten pkt. 1 eller 2.

PROTESEKOMPONENTER
Her anføres kommersielle navn, materiale, størrelse og design. Alternativt kan en føre opp protesenavn og katalognummer eller benytte klistrelapp som følger med de fleste proteserene. Denne kan times på baksiden av skjemaet (vennligst ikke plasser klistrelapper på markeringskryss, som brukes ved scanning av skjema).
Navnet på sementen som evt. brukes må anføres. f.eks. Palacos R+G. (Bruk helst klistrelapp)
Under femurkomponent skal evt. påsatt femurstamme anføres med lengde.
Med metalloring under femur- og tibiakomponent menes bruk av ei eller flere separate metallkiler (wedges) som erstattning for manglende benstøtte. Stabilisering er bruk av proteser med stabilisering som kompensasjon for sviktende båndapparat.
Forenget sentral stamme under tibiakomponent (metallplatå) skal bare anføres ved bruk av en lengre påsatt stamme enn standardkomponenten.

ANDRE LEDD. PROTESETYPE
Ved bruk av hemiproteser med bare en komponent, f.eks. resurfacing i skulder, skrives dette på DJSTAL KOMPONENT. Enkomponent-protese i fingerå, skrives på PROKSIMAL KOMPONENT.

COMPUTERNAVIGERING (CAOS = Computer Aided Orthopaedic Surgery)
Angi firmannavn på computerasystem.

MININVASIV KIRURGI (MIS = Minimally Invasive Surgery)
Her menes at kirurgen har brukt kort snitt og at det er brukt spesialinstrument laget for MIS.

PASIENTTILPASSEDE INSTRUMENTER
Her menes utstyr som lages etter MR eller CT bilder tatt av pasienten før operasjonen. Oppgi navn på systemet.

Kopi beholdes til pasientjournalen, originalen sendes Haukeland universitetssjukehus.

Kontaktpersoner vedrørende registreringskjema er
Overlege Ove Furnes, tlf. 55 97 56 90 og seksjonsoverlege Leif Ivar Havelin, tlf. 55 97 56 87.
Sekretær i Nasjonalt Register for Leddproteser, Ortopedisk klinikk, Helse Bergen: Randi Furnes, tlf. 55 97 37 42 og Ingunn Vindenes, tlf. 55 97 37 43.
Epost: nrl@helse-bergen.no Internett: http://nrlweb.ihelse.net/
Skjema revidert i november 2015.
KNEPROTESER og andre leddproteser

Innsættelse, skifting eller fjerning av protese eller protesedeler, samt bliktelsesvisjoner for infisert protese.

**LOKALISASJON, AKTUELL OPERASJON**

- Medikament 1
  - Håndledde
  - Finger (angii ledd)
  - Annet
- Medikament 2
  - Fingringer (angii ledd)
  - Annet
- Skulder
  - Rygg (angii nivå)
- Albu

**AKTUELL OPERASJON I AKTUELLE LEDD** (ev. flere kryss)

- Bei
- Osteosynthese for intraartikulær ledninger
- Artrodiase
- Artroresection
- Protese
- Synovetomie
- Annet (f.eks. menisk og ledvbåndosp.)

**OPERASJONSDATO** (dd.mm.åå)

**AKTUELL OPERASJON** (ev. flere kryss)

- Primæroperasjon
- Reoperasjon (protese tidligere)

**ÅRSAK TIL AKTUELLE OPERASJON (KRYSS AV ENTEN I A ELLER B)**

A. Primæroperasjon, pga (ev. flere kryss)
- Idiopatisk artrose
- Rheumatoid artritt
- Frakturensetting
- Mb. Bechterew
- Sequele ligamentskade
- Sequele mensiskskade
- Klut fra fraktur
- Infeksjonspusle
- Sponulys
- Sequele prolaps kirurgi
- Degenerativ skivesykdom
- Annet

B. Reoperasjon, pga (ev. flere kryss)
- Fjernelsetting
- Frakturensetting
- Lås patellaproteose
- Lås prox. protese
- Lås distal protese
- Instabilitet
- Akoefel
- Dyp infeksjon
- Fraktur av bein (nær protese)
- Smerter
- Stilt eller defekt plastforing

**MINIMINVASIV KIRURGI (MIS)**

- Nei
- Ja

**COMPUTERNAVIGERING (CAOS)**

- Nei
- Ja, Type:

**PASIENTTILPASSEDE INSTRUMENTER**

- Nei
- Ja, Type:

**ASA KLASSE** (se baksiden for definisjon)

- Frak
- Asymptomatisk tilstand som gir økt risiko
- Symptomatisk sykdom
- Livstruende sykdom
- Morbund

**PROTESE KNE** (Bruk klostrelapper på baksiden, eller spesifiser nøyaktig)

- Totalkneproteosse
- Bipatientproteosse
- Unicondyler protose

**FEMUR KOMPONENT**

- Navn/Type/Str
- ev. katalognummer

**PATELLA KOMPONENT**

- Navn/Type/Str
- ev. katalognummer

**TIBIA KOMPONENT** (plastkomponent)

- Navn/Type/Str
- ev. katalognummer

**PROTESETYPE**

- Totalkneproteose
- Hiprotese
- Enkomponentprotese

**PROSKIMAL KOMPONENT**

- Navn/Type/Str
- ev. katalognummer

**DISTAL KOMPONENT**

- Navn/Type/Str
- ev. katalognummer

**KORSBÅND**

- Intakt bakre korsbånd før operasjon
- Intakt bakre korsbånd etter operasjon
- Intakt bakre korsbånd før operasjon

**PROTESE ANDRE LEDD** (Bruk klostrelapper på baksiden, eller spesifiser nøyaktig)

- Totalkneproteose
- Hipprotese
- Enkomponentprotese

**SYSTEMISK ANTIBIOTIKA**

- Nei
- Ja

**BENTRANSPLANTASJON** (ev. flere kryss)

- Proximalt: Nei, Ja, Benpakking
- Distalt: Nei, Ja, Benpakking

**SYMPISTEM INDIKASJON**

- Nei
- Ja, Profylaks
- Behandling

Medikament 1: Dosing timer (døgn)
- Navn
- Dosing timer (døgn)
- Varighet (timer/døgn)

**TROMBOSEPROFYLAKSE**

- Nei
- Ja, Første dose
- Preoperativt
- Postoperativt
- Dosing timer (døgn)

**FIBRINOLYSEHEMMER**

- Nei
- Ja, medikament:

**PEROPERATIV KOMPLIKASJON**

- Nei
- Ja, hvilken(n):

**INTERMEDIER KOMPONENT (f.eks. caput humeri)**

- Navn/Type/Str
- Diameter
- ev. katalognummer

Lege

Legen som har fylt ut skjemaet (navnet registreres ikke i databasen).

Førsteprioritet: (Skriv tydelig ev. pasient kløvereplapp - spesifiser sykehus.)

Sykehus:

11.02.2011

F.nr. (11 sifre): _____________________________

Navn: __________________________________________

(Tlf 55973742/55973743

Møllendalsbakken 11, 5021 BERGEN

Haukeland universitetssjukehus

Ortopedisk klinikk, Helse Bergen HF

292
RETTLEDNING KNEPROTESER og andre leddproteser


Pasienten skal på eget skjema gi samtykke til registrering, samtykkesskjemaet skal lagres i pasientjournalen.

Kommentarer til de enkelte punktene

AKTUELLE OPERASJON


REOPERASJONSTYPE

Fjerning av protesedeler må spesifiseres og føres opp, også fjerning ved infeksjon.

BENTRANSPLANTASJON

Påmønning av bennevund protesen regnes ikke som bentransplantat.

SYSTEMISK ANTIBIOTIKA

Medikament, dose og varighet av profylaksen skal angis f.eks: Medikament: Keflin, Dosering: 2g x 4, Varighet: 12 timer, altså 4 doser i løpet av 12 timer.

TROMBOSEPROFYLAKSE


FIBRINOLYSEHEMMER

Her føres det på om en benytter blødningsreduiserende legemidler i forbindelse med operaasjonen (f.eks. Cyklokapron).

PEROPERATIV KOMPLIKASJON

Dersom det foreligger komplikasjon i form av stor blødning, må mengden angis. Dersom pasienten dør under eller like etter operasjonen, ønsker vi likevel melding om operasjonen.

ASA-KLASSE (ASA=American Society of Anesthesiologists)

ASA-klasse 1: Friske pasienter som røyker mindre enn 5 sigaretter daglig.
ASA-klasse 2: Pasienter med en asymptomatisk tilstand som behandles medikamentelt (f.eks. hypertensjon) eller med kost (f.eks diabetes mellitus type 2) og ellers friske pasienter som røyker 5 sigaretter eller mer daglig.
ASA-klasse 3: Pasienter med en tilstand som kan gi symptomer, men som holdes under kontroll medikamentelt (f.eks moderat angina pectoris og mild astma).
ASA-klasse 4: Pasienter med en tilstand som ikke er under kontroll (f.eks hjertesvikt og astma).
ASA-klasse 5: Moribund/døende pasient

PROTESEKOMPONENTER

Her anføres kommersielle navn, materiale, størrelse og design. Alternativt kan en føre opp protesenavn og katalognummer eller benytte klistrelapp som følger med de fleste protesene. Denne kan limes på baksiden av skjemaet (vennlign ikke plasser klistrelapper på markeringskryss, som brukes ved scanning av skjema).

Navnet på sementen som evt. brukes må anføres, f.eks. Palacos R+G. (Bruk helst klistrelapp)

Under femurkomponent skal evt. påsatt femurstamme anføres med lengde. Med metallfloring under femur og tibia komponent mener bruk av en eller flere separate metallkiler (wedges) som erstatning for manglende benstøtte. Stabilisering er bruk av proteser med stabilitet som kompensasjon for sviktende båndapparat.

Femurprotese skal bare anføres ved bruk av en lengre påsatt stamme enn standardkomponenten.

ANDRE LEDD. PROTESEKOMPONENTER

Hansom navn som navn, materiale, størrelse og design. Alternativt kan en føre opp protesenavn og katalognummer eller benytte klistrelapp som følger med de fleste protesene. Dette kan limes på baksiden av skjemaet (vennlign ikke plasser klistrelapper på markeringskryss, som brukes ved scanning av skjema).

Namnet på sementen som evt. brukes må anføres, f.eks. Palacos R+G. (Bruk helst klistrelapp)

Under femurkomponent skal evt. påsatt femurstamme anføres med lengde. Med metallfloring under femur og tibia komponent mener bruk av en eller flere separate metallkiler (wedges) som erstatning for manglende benstøtte. Stabilisering er bruk av proteser med stabilitet som kompensasjon for sviktende båndapparat.

Forlengt sentral stamme under tibiakomponent (metallplata) skal bare anføres ved bruk av en lengre påsatt stamme enn standardkomponenten.

COMPUTERNAVIGERING (CAGS = Computer Aided Orthopaedic Surgery)

Angi realisering av komponenter med bruk av computere og en egnet komputer system.

MINIINVASIV KIRURGI (MIS = Minimally Invasive Surgery)

Her mener at kirurgen har brukt kort snitt og at det er en fordel å benytte instrumenter som lages etter MR eller CT bilder tatt av pasienten før operasjonen. Oppgi navn på systemet.

Kopi beholdes til pasientjournalen, originalen sendes Haukeland universitetssjukehus.

Kontaktpersoner vedrørende registreringskjema er

Klinikkoverlege Ove Furnes, tlf. 55 97 56 80 og overlege Leif Ivar Havelin, tlf.: 55 97 56 87.
Sekretærer i Nasjonalt Register for Leddproteser, Ortopedisk klinikk, Helse Bergen:
Ruth Wasmuth, tlf.: 55 97 37 42 og Ingunn Vindenes, tlf.: 55 97 37 43.
Epost: nrl@helse-bergen.no
Internet: http://www.haukeland.no/nrl/
**HOFTEBRUDD**

**PRIMÆRE OPERASJONER PÅ BRUDD I PROKSIMALE FEMURENDE og ALLE REOPERASJONER, inkludert lukket reponering av hemiproteser.** Ved primæroperasjon med totalprotese og ved reoperasjon til totalprotese brukes kun hofteproteseskjema. Alle produktklistrelapper settes i merket felt på baksiden av skjemaet.

### AKTUELLE OPERASJON
- [ ] Primæroperasjon
- [ ] Reoperasjon

### SIDE (et kryss) (Bilateral opr. = 2 skjema)
- [ ] Høyre
- [ ] Venstre

### OPD TIDSPUNKT
(dd.mm.åå) |__|__| |__|__| |__|__| kl |__|__|

### OPD TIDSPUNKT
(dd.mm.åå) |__|__| |__|__| |__|__| kl |__|__|

Dersom det er usikkerhet om bruddtidspunkt, fyll ut neste punkt.

### TID FRA BRUDD TIL OPERASJON I TIMER
- [ ] 0-6
- [ ] >6-12
- [ ] >12-24
- [ ] >24-48
- [ ] >48

### KOGNITIV SVIKT
- [ ] Nei
- [ ] Ja (Se test på baksiden)

### ASA-KLASSE
(se bakside av skjema for definisjon)
- [ ] Frisk
- [ ] Asymptomatisk tilstand som gir økt risiko
- [ ] Symptomatisk sykdom
- [ ] Ukvinnenysk sykdom
- [ ] Morbund

### TYPE PRIMÆRBRUDD (ÅRSAK TIL PRIMÆROPERASJON) (Kun ett kryss)

<table>
<thead>
<tr>
<th>ÅRSAK TIL PRIMÆROPERASJON</th>
<th>Navn / størrelse og katalognummer</th>
<th>(Fylles ut bare ved primæroperasjon - eget skjema for totalproteser)</th>
<th>Se baksiden for klassifikasjon</th>
</tr>
</thead>
</table>

### TYPE PRIMÆROPERASJON (Flere enn ett kryss kan brukes)

<table>
<thead>
<tr>
<th>Navn</th>
<th>Dosering</th>
<th>Varighet i timer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medikament 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medikament 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medikament 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TILGANG TIL HOFTELEDDET VED HEMIPROTESE

- [ ] Bilateral opr. = 2 skjema

### FIKSASJON AV HEMIPROTESE

- [ ] Type: ..................................................  

### PATOLOGISKA ØVRIGE BRUDD

- [ ] Medikament: ..................................................  

### PEROPERATIVE KOMPLIKASJONER

- [ ] Navn: ..................................................  

### ANESTESITYPE

- [ ] Narkose
- [ ] Spinal
- [ ] Reoperasjon

### OPERASJONSTID (hud til hud) ...................... minutter.

### ANTIKOGNITIVPROFYLAKSE

- [ ] Nei
- [ ] Ja, medikament: ..................................................  

### TROMBOSEPROFYLAKSE

- [ ] Nei
- [ ] Ja, første dose: ..................................................  

### FAST TROMBOSEPROFYLAKSE

- [ ] Nei
- [ ] Ja, medikament: ..................................................  

### OPERATØRERFARING

<table>
<thead>
<tr>
<th>Legen som har fylt ut skjemaet (navnet registreres ikke i databasen)</th>
</tr>
</thead>
</table>

**Haukeland universitetssjukehus**

**NASJONALT HOFTEBRUDDREGISTER**

Nasjonalt Register for Lediproteser  
Helse Bergen HF, Ortopedisk klinikk  
Haukeland universitetssjukhus  
Møllendalsbakken 11  
5021 BERGEN  
Tlf: 55976452
REGISTRERING


Kommentarer til enkelte punkt:

**OPERASJONS- OG BRUDDTIDSPUNKT**


**KOGNITIV SVIKT**

Kognitiv svikt kan eventuelt testes ved å be pasienten tegne klokken når den er 10 over 11. En pasient med kognitiv svikt vil ha problemer med denne oppgaven.

**ASA-KLASSE (ASA=American Society of Anesthesiologists)**

ASA-klasse 1: Friske pasienter som røyker mindre enn 5 sigaretter daglig.
ASA-klasse 2: Pasienter med en asymptomatisk tilstand som behandles medikamentelt (f.eks hypertensjon) eller med kost (f.eks diabetes mellitus type 2) og ellers friske pasienter som røyker 5 sigaretter eller mer daglig.
ASA-klasse 3: Pasienter med en tilstand som kan gi symptomer, men som holdes under kontroll medikamentelt (f.eks modérat angina pectoris og mild astma).
ASA-klasse 4: Pasienter med en tilstand som ikke er under kontroll (f.eks hjertesvikt og astma).
ASA-klasse 5: Moribund/døende pasient

**GARDENS KLASSIFISERING AV LÅRHALSBRUDD**

Garden 1: Ikke komplett brudd av lårhalsen (såkalt inaktiv)
Garden 2: Komplett lårhalsbrudd uten dislokasjon
Garden 3: Komplett lårhalsbrudd med delvis dislokasjon. Fragmentene er fortsatt i kontakt, men det er feilstilling av lårhalsens trabekler.
Caputfragmentet ligger unnatürlich in acetabulum.
Garden 4: Komplett lårhalsbrudd med full dislokasjon. Caputfragmentet er fritt og ligger korrekt i acetabulum slik at trabeklene er normalt orientert.

**AO KLASSIFIKASJON AV TROKANTÆRE BRUDD**

A1: Pertrokantært tofragment brudd
A2: Pertrokantært flerfragment brudd
A3: Intertrokantært brudd
Subtrokantært brudd*

*Subtrokantært brudd: Bruddsentrum er mellom nedre kant av trokanter minor og 5 cm distalt for denne.

**REOPERASJONSÅRSAK**

Dyp infeksjon defineres som infeksjon som involverer fascie, protese, ledd eller periprostetisk vev.

**IMPLANTAT**

Implantattype må angis entydig. Produktklistrelapper er ønskelig for å angi katalognummer for osteosynthesematerialet eller protesten som er brukt.

**PEROPERATIVE KOMPLIKASJONER**

Vi ønsker også å få meldt dødsfall på operasjonsbordet og peroperativ transfusjonstrengende blødning.

**ANTIBIOTIKAPROFYLAKSE**

Her føres det på hvilket antibiotikum som er blitt benyttet i forbindelse med operasjonen. Det anføres dose, antall doser og profylaksens varighet. F.eks. Medikament 1: Keflin 2g x 4, med varighet 4,5 timer.

**TROMBOSEPROFYLAKSE**


**FIBRINOLYSEHEMMER**

Her føres det på om en benytter blødningsreduserende legemidler i forbindelse med operasjonen (f.eks. Cyklokapron).

**PRODUKTKLISTERLAPPER:**
NASJONALT HOFTEBRUDDREGISTER
Nasjonalt Register for Ledoproteres
Helse Bergen HF, Orthopedisk klinik
Haukeland universitetssjukehus
Møllendalsbakken 11
5021 BERGEN
Tlf: 55976452

HOFTEBRUDD

PRIMÆRE OPERASJONER PÅ BRUDD I PROKSIMALE FEMURENDE og ALLE REOPERASJONER, inkludert lukket reponering av hemiprotoser. Ved primæropasjon med totalprotese og ved reoperasjon til totalprotese brukes kun hofteproteseskjema. Alle produktdlistrelapper settes i merket felt på bakside av skjemaet.

AKTUELLE OPERASJON
☐ Primæroperasjon
☐ Reoperasjon

SIDE (ett kryss) (Bilateral opr = 2 skjema)
☐ Høyre
☐ Venstre

OPR TIDSPUNKT
(dd.mm.åå) □ □ □ □ □ □ □ □

BRUDD TIDSPUNKT
(dd.mm.åå) □ □ □ □ □ □ □ □

Navn / størrelse og katalognummer

ASA-KLASSE

SIDE (ett kryss) (Bilateral opr = 2 skjema)
☐ (Kun ett kryss)

AKTUELLE OPERASJON

ASA-KLASSE

SIDE (ett kryss) (Bilateral opr = 2 skjema)
☐ (Kun ett kryss)

REOPERASJON (Flere enn ett kryss kan brukes)
☐ Fjøring av implantat (Brukes når dette er eneste prosedyre)
☐ Girdestone (= fjøring av implantat og caput)
☐ Bipolar hemiprotein
☐ Unipolar hemiprotein
☐ Re-osteosynthese
☐ Debridement for infeksjon
☐ Lukket reposisjon av luksert hemiprotein
☐ Åpen reposisjon av luksert hemiprotein
☐ Ansett, spesifiser………….…………………………………...

TILGANG TIL HOFTELEDDET VED HEMIPROTESE
(Kun ett kryss)
☐ Direkte lateral (transgluteal)
☐ Anterolateral (mellem glutus medius og tensor)
☐ Femur (mellem sartorius og tensor)

ADNESTETYPE
☐ Narkose
☐ Spinal
☐ Ansett, spesifiser………….…………………………...

PEROPERATIVE KOMPLIKASJONER

OPERASJONSTID (hud til hud)……………..minutter.

SYSTEMISK ANTIKROBIALT

ANESTESIYTYP

NAV/DOSERING

TROMBOSEOPRYPKALSE

FAST ANTIKOAGUALASJON

FIBRINOLYSEHEMMER

OPERATIVFARING

Medikament 1 ……………………………………… timer (……døgn)
Medikament 2 ……………………………………… timer (……døgn)
Medikament 3 ……………………………………… timer (……døgn)

Dosering videre ……………… Varighet …… døgn

Medikament 2 ……………………………………… Doseringsprosent (……døgn)
Medikament 3 ……………………………………… Doseringsprosent (……døgn)

Fibrinolysehemmer
☐ Nei ☐ Ja, medikament : __________________________________________________________

Første dose ………. Postoperativt 
Doseringspr. dag…….. Varighet …… døgn

Doseringspr. dag…….. Varighet …… døgn

Lege……………………………………………………………………………….

Leget og pasientklistrelapp (fjøring blant annet i databasen).
RETTLEDNING

Registreringen gjelder alle operasjoner for hoftebrudd (lårhals, pertrokantære og subtrokantære) og alle reoperasjoner, også reposisjoner, på pasienter som er primæroperert og reoperert for hoftebrudd. Ved primæroperasjon med totalprotese og ved reoperasjon til totalprotese sendes bare skjema til hofteproteseregisteret.


Kommentarer til enkelte punkt:

OPERASJONS- OG BRUDDTIDSPUNKT


Ved reoperasjon er ikke klokkeslett nødvendig.

DEMENS

Demens kan eventuelt testes ved å be pasienten tegne klokken når den er 10 over 11. En dement pasient vil ha problemer med denne oppgaven.

ASA-KLASSE (ASA=American Society of Anesthesiologists)

ASA-klass 1: Friske pasienter som røyker mindre enn 5 sigaretter daglig.
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ASA-klass 4: Pasienter med en tilstand som ikke er under kontroll (f.eks hjertesvikt og astma).
ASA-klass 5: Moribund/døende pasient

GARDEN S KLASSEIFISERING AV LÅRHALSBRUDD

Garden 1: Ikke komplett brudd av lårhalsen (såkalt innkilt)
Garden 2: Komplett lårhalsbrudd uten dislokasjon
Garden 3: Komplett lårhalsbrudd med delvis dislokasjon. Fragmentene er fortsatt i kontakt, men det er feilstilling av lårhalsens trabekler. Caputfragmentet ligger uanatomisk i acetabulum.
Garden 4: Komplet lårhalsbrudd med full dislokasjon. Caputfragmentet er fritt og ligger korrekt i acetabulum slik at trabeklene er normalt orientert.

AO KLASSEIFISATION AV TROKANTÆRE BRUDD

A1: Pertrokantært tofragment brudd
A2: Pertrokantært flerfragment brudd
A3: Intertrokantært brudd
Subtrokantært brudd*

*Subtrokantært brudd: Bruddsentrum er mellom nedre kant av trokanter minor og 5 cm distalt for denne.

REOPERASJONSÅRSAK

Dyp infeksjon defineres som infeksjon som involverer fascie, proteste, ledd eller periprotetisk vev.

IMPLANTAT

Implantattype må angis entydig. Produktdokumentasjon er ønskelig for å angi katalognummer for osteosyntesematerialet eller protesen som er brukt.

PEROPERATIVE KOMPLIKASJONER

Vi ønsker også å få meldt dødsfall på operasjonsbordet og peroperativ transfusjonstrengende blødning.

SYSTEMISK ANTIHOTBIOTIKA


TROMBOSEPROFYLAKSE


FIBRINOLYSEHEMMER

Her føres det på om en benytter blødningsreduserende legemidler i forbindelse med operasjonen (f.eks. Cyklokapron).

Kontaktpersoner vedrørende registreringsskjema er:

Overlege Jan-Erik Gjertsen, Ortopedisk klinikk, Haukeland universitetssjukhus. Tlf. 55 97 56 72 (email: jan-erik.gjertsen@helse-bergen.no)
Professor Lasse Engesæter, Ortopedisk klinikk, Haukeland universitetssjukhus. Tlf. 55 97 56 84
Prosjektkoordinator Nasjonalt Hoftebruddregister: Line B. Kvamsdal. Tlf. 55 97 64 52 (email: nrl@helse-bergen.no)
Internett: http://www.haukeland.no/nrl/

PRODUKTKLISTRELAPPER:
KORSBÅNDSOPERASJONER OG ALLE REOPERASJONER på pasienter som tidligere er korsbåndsoperert. Alle klistrelapper (med unntak av pasientklistrelapp) settes i merket felt på baksiden av skjemaet.

Bilateral operasjon = 2 skjema

<table>
<thead>
<tr>
<th>AKTUELL SIDE</th>
<th>Øvre</th>
<th>Nederste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Football</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Handball</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Snowboard</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Alpin (inkl. thin tip)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Annen skiaktivitet</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Kampsport</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Basketball</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Annet…………..</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

YTTERLIGERE SKADER (evt. flere kryss) ☐ Nei, hvis ja spesifiser under

| Korskade | ☐ Høyre | ☐ Venstre |
| PCL      | ☐      | ☐        |
| Annet……. | ☐     | ☐        |

OPERASJONSDATO (dd.mm.åå) |__|__| |__|__| |__|__|

| OPERASJONSDATO | (dd.mm.åå) |__|__| |__|__| |__|__|
| Primær rekonstruksjon av korsbånd | ☐   | ☐   |
| Revisjonsskirurgi, 1. seanse | ☐   | ☐   |
| Revisjonsskirurgi, 2. seanse | ☐   | ☐   |
| Annen knekirurgi | ☐   | ☐   |

ÅRSAK TIL REVISJONSSKIRURGISK OPERASJON (evt. flere kryss) ☐ Nei, hvis ja spesifiser under

| Infeksjon | ☐      | ☐        |
| Fiksasjonsvikt | ☐  | ☐ |
| Ubehandlede andre ligamentskader | ☐    | ☐        |
| Annet…………..| ☐    | ☐        |

ANDRE PROSEDYRER (evt. flere kryss) ☐ Nei, hvis ja spesifiser under

| Meniskoperaasjon | ☐      | ☐        |
| Synovektomi      | ☐      | ☐        |
| Mobilisering i narkose | ☐  | ☐ |
| F Jensing av implantat | ☐  | ☐ |
| Benreseksjon (Notch plastikk) | ☐  | ☐ |
| Osteotomi        | ☐      | ☐        |
| Annet………….. | ☐    | ☐        |

GRAFVALG

| GRAFVALG | BPTB | Hamstring | Allograft | Direkte sutur | Annet………….. |

| GRAFVALG | ☐     | ☐        | ☐     | ☐        | ☐          |

GRAFTDIAMETER (oppgi største diameter på grafftet) ……..mm

| GRAFTDIAMETER | ☐     | ☐        | ☐     | ☐        | ☐          |

Ved bruk av double bundle-teknikk: AM:………..mm PL:………..mm

TILGANG FOR FEMURKANAL ☐ Anteromedial ☐ Transitibial ☐ Annet…………..
RETTLEDNING

- Registreringen gjelder ALLE fremre og bakre korsbåndsoperasjoner.
- Registreringen gjelder ALLE kneoperasjoner på pasienter som tidligere er korsbåndsoperert.
- Ett skjema fylles ut for hvert kne som blir operert.
- Aktuelle ruter markeres med kryss. Stiplet linje fylles ut der dette er aktuelt.
- Pasienten skal på eget skjema gi samtykke til registrering.

KOMMENTARER TIL DE ENKELTE PUNKTENE

FORKORTELSER SOM ER BRUKT PÅ SKJEMAET

- ACL: Fremre korsbånd
- PCL: Bakre korsbånd
- MCL: Mediale kollateralligament
- LCL: Laterale kollateralligament
- PLC: Popliteus kompleks/bicepssene kompleks
- BPTB: Patellarsene autograft
- AM: Anteromediale bunt av ACL
- PL: Posterolaterale bunt av ACL

SKAĐEDATO

Skriv inn skadedatoen så eksakt som mulig.
Ved ny skade av tidligere operert korsbånd, skriv inn den nye skadedatoen.

FIKSASJON

Angi hvilken fikasjonstype som er brukt ved å feste klistrelapp på baksiden.
Husk å skille mellom femur og tibia for graftfiksasjon, og mellom medial og lateral side for meniskfiksasjon.

PEROPERATIVE KOMPLIKASJONER

Ved en ruptur/kontaminering av høstet graft e.l. skal det opprinnelige graftet anføres her.
Andre peroperative komplikasjoner skal også fylles inn her.

SYSTEMISK ANTIBIOTIKA

Her fører det på hvilket antibiotikum som er blitt benyttet i forbindelse med operasjonen. Det anføres dose, antall doser og profylaksens varighet. F.eks. Medikament 1: Keflin 2g x 4, med varighet 12 timer.

TROMBOSEPROFYLAKSE

Type, dose og antatt varighet av profylaksen skal anges separat for operasjonsdagen og senere.

Kopi beholdes i pasientjournalen, originalen sendes til Nasjonalt Korsbåndsregister.

Kontaktpersoner vedrørende registreringsskjema er
Professor Lars Engebretsen, Ortopedisk avdeling, Oslo
Universitetssykehus e-post: lars.engebretsen@medisin.uio.no
Overlege Knut Andreas Fjeldsgaard, Haukeland universitetssjukehus
e-post: knut.andreas.fjeldsgaard@helse-bergen.no
Sekretær i Nasjonalt Korsbåndsregister, Ortopedisk avd., Helse Bergen
Merete Husøy, tlf.: 55 97 64 50, faks: 55 97 37 49
e-post: korsband@helse-bergen.no

<table>
<thead>
<tr>
<th>GRAFTFIKSASJON</th>
<th>MENISKFIKSASJON</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEMUR</td>
<td>TIBIA</td>
</tr>
<tr>
<td>MEDIAL</td>
<td>LATERAL</td>
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KOOS – Spørreskjema for knepasienter.

<table>
<thead>
<tr>
<th>NASJONALT KORSBÅNSREGISTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasjonalt Register for Leddproteser</td>
</tr>
<tr>
<td>Helse Bergen HF, Ortopedisk klinikk</td>
</tr>
<tr>
<td>Haukeland universitetssjukehus</td>
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<td>Møllendalsbakken 11</td>
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<tr>
<td>5021 BERGEN Tlf: 55976450</td>
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DATO: ___________
OPERASJONSDATO: ___________
FØDSELSNR (11 siffer): _______________________
NAVN: ___________________________
SYKEHUS: ___________________________


KRYSS AV FOR RIKTIG KNE (NB: Ett skjema for hvert kne): □ 1 VENSTRE □ 0 HØYRE

<table>
<thead>
<tr>
<th>Røyker du?</th>
<th>□ 0 Nei □ 1 Av og til □ 2 Daglig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vekt:</td>
<td>_______ kg</td>
</tr>
<tr>
<td>Høyde:</td>
<td>_______ cm</td>
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</tbody>
</table>

Symptom

Tenk på symptomene du har hatt fra kneet ditt den Siste uken når du besvarer disse spørsmålene.

S1. Har kneet vært hovent?
- Aldri
- Sjelden
- I blant
- Ofte
- Alltid

□ 0 □ 1 □ 2 □ 3 □ 4

S2. Har du følt knirking, hørt klikking eller andre lyder fra kneet?
- Aldri
- Sjelden
- I blant
- Ofte
- Alltid

□ 0 □ 1 □ 2 □ 3 □ 4

S3. Har kneet hakket seg opp eller låst seg?
- Aldri
- Sjelden
- I blant
- Ofte
- Alltid

□ 0 □ 1 □ 2 □ 3 □ 4

S4. Har du kunnet rette kneet helt ut?
- Alltid
- Ofte
- I blant
- Sjelden
- Aldri

□ 0 □ 1 □ 2 □ 3 □ 4

S5. Har du kunnet bøye kneet helt?
- Alltid
- Ofte
- I blant
- Sjelden
- Aldri

□ 0 □ 1 □ 2 □ 3 □ 4

Stivhet

De neste spørsmålene handler om leddstivhet. Leddstivhet innebærer vanskeligheter med å komme i gang eller økt motstand når du bøyer eller strekker kneet. Marker graden av leddstivhet du har opplevd i kneet ditt den Siste uken.

S6. Hvor stivt er kneet ditt når du nettopp har våknet om morgenen?
- Ikke noe
- Litt
- Moderat
- Betydelig
- Ekstremt

□ 0 □ 1 □ 2 □ 3 □ 4

S7. Hvor stivt er kneet ditt senere på dagen etter å ha sittet, ligget eller hvilt?
- Ikke noe
- Litt
- Moderat
- Betydelig
- Ekstremt

□ 0 □ 1 □ 2 □ 3 □ 4

Rapport 2016
### Smerte

**P1. Hvor ofte har du vondt i kneet?**

<table>
<thead>
<tr>
<th>Aldri</th>
<th>Månedlig</th>
<th>Ukentlig</th>
<th>Daglig</th>
<th>Hele tiden</th>
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</tr>
</tbody>
</table>

Hvilken grad av smerte har du hatt i kneet ditt den siste uken ved følgende aktiviteter?

**P2. Snu/vende på belastet kne**

<table>
<thead>
<tr>
<th>Ingen</th>
<th>Lett</th>
<th>Moderat</th>
<th>Betydelig</th>
<th>Svært stor</th>
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**P3. Rette kneet helt ut**

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**P4. Bøye kneet helt**

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**P5. Gå på flatt underlag**

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<th>Betydelig</th>
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**P6. Gå opp eller ned trapper**

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**P7. Om natten (smerter som forstyrer søvnen)**

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**P8. Sittende eller liggende**

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**P9. Stående**

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### Funksjon i hverdagen

De neste spørsmålene handler om din fysiske funksjon. Angi graden av vanskeligheter du har opplevd den siste uken ved følgende aktiviteter på grunn av dine kneproblemer.

**A1. Gå ned trapper**

<table>
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**A2. Gå opp trapper**

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**A3. Reise deg fra sittende stilling**

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</table>
Angi graden av vanskeligheter du har opplevd ved hver aktivitet den siste uken.

A4. Stå stille

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A5. Bøye deg, f.eks. for å plukke opp en gjenstand fra gulvet

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A6. Gå på flatt underlag

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A7. Gå inn/ut av bil

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A8. Handle/gjøre innkjøp

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A9. Ta på sokker/strømper

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A10. Stå opp fra sengen

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A11. Ta av sokker/strømper

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A12. Ligge i sengen (snu deg, holde kneet i samme stilling i lengre tid)

<table>
<thead>
<tr>
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<th>Ingen</th>
<th>Lett</th>
<th>Moderat</th>
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A13. Gå inn/ut av badekar/dusj

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A14. Sitte

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A15. Sette deg og reise deg fra toalettet

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<thead>
<tr>
<th></th>
<th>Ingen</th>
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A16. Gjøre tungt husarbeid (måke snø, vaske gulv, støvsuge osv.)

<table>
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<tr>
<th></th>
<th>Ingen</th>
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A17. Gjør lett husarbeid (lage mat, tørke støv osv.)

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<thead>
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<th>Lett</th>
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### Funksjon, sport og fritid

De neste spørsmålene handler om din fysiske funksjon. Angi graden av vanskeligheter du har opplevd den siste uken ved følgende aktiviteter på grunn av dine kneproblemer.

<table>
<thead>
<tr>
<th>SP1. Sitte på huk</th>
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<table>
<thead>
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<th>SP2. Løpe</th>
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<th>SP5. Stå på kne</th>
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<th>Moderat</th>
<th>Betydelig</th>
<th>Svært stor</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 0</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td></td>
</tr>
</tbody>
</table>

### Livskvalitet

<table>
<thead>
<tr>
<th>Q1. Hvor ofte gjør ditt kneproblem seg bemerket?</th>
<th>Aldri</th>
<th>Månedlig</th>
<th>Ukentlig</th>
<th>Daglig</th>
<th>Alltid</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 0</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q2. Har du forandret levesett for å unngå å overbelaste kneet?</th>
<th>Ingenting</th>
<th>Noe</th>
<th>Moderat</th>
<th>Betydelig</th>
<th>Fullstendig</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 0</td>
<td>□ 1</td>
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<td>□ 3</td>
<td>□ 4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q3. I hvor stor grad kan du stole på kneet ditt?</th>
<th>Fullstendig</th>
<th>I stor grad</th>
<th>Moderat</th>
<th>Til en viss grad</th>
<th>Ikke i det hele tatt</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 0</td>
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<td>□ 3</td>
<td>□ 4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q4. Generelt sett, hvor store problemer har du med kneet ditt?</th>
<th>Ingen</th>
<th>Lette</th>
<th>Moderate</th>
<th>Betydelige</th>
<th>Svært store</th>
</tr>
</thead>
<tbody>
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<td>□ 0</td>
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<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td></td>
</tr>
</tbody>
</table>

**Takk for at du tok deg tid og besvarte samtlige spørsmål!**
BARNEHOFTEDYSPLASI

(Dysplasi på røt beggen hos barn eldre enn 3 mnd)

FORETELSER

BEHANDLINGSDATO ........../...... 20..... SIDE ....... (Ett kryss. bilateral = 2 skjema)
Første gang diagnostisert ........../...... 20..... (Fylles ut første gang det sendes inn skjema)
TILGANG

(Nettspening ikke tilstede. Skal fylles ut først gang det sendes inn skjema)

SIDE

(Abbreviasjonen for leddretning og -side. Angi til venstre eller høyre
kort tid etter at det er sendt ut skjemaet. Dette skjer først gang det er sendt in skjemaet)

ÅPNENESSYKDOM

BEHANDLINGSDATO ........../...... 20..... SIDE ....... (Ett kryss. bilateral = 2 skjema)
Første gang diagnostisert ........../...... 20..... (Fylles ut første gang det sendes inn skjema)
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RETTLEDNING

1. HOFTEDYSPLASI
Kriterier: AI > mean + 2SD for aktuell alder (Se figur)
Alle barn som på røntgen bekken får påvist hoftedysplasi etter 3 måneds alder skal registreres. Barn som er diagnostisert før 3 måneds alder (putebehandlet) registreres hvis de fortsatt har dysplasi på røntgen bekken på kontroll etter 3 måneds alder. Barn med nevroortopediske lidelser skal ikke registreres.
- Registreres første gang ved diagnose (røntgen bekken)/primærbehandling
- Registreres ved senere behandling som krever anestesi/sedasjon Lukket reposisjon/hoftegips, åpen reposisjon, tenotomier, femur-/bekkenosteotomier, reoperasjoner. Operativ behandling (periaacetabulære osteotomier, takplastikk og lignende) hos ungdommer og voksne skal også registreres.

2. CALVÉ-LEGG-PERTHES
- Registreres første gang ved diagnose/primærbehandling
- Registreres ved senere behandling som krever anestesi
(Femur-/bekkenosteotomier, reoperasjoner)
CATTERALL: I/II = <50 % caputnekrose. III/IV = >50 % caputnekrose

3. EPIFYSIOLYSIS CAPITIS FEMORIS
- Registreres første gang ved diagnose/primærbehandling
- Registreres ved senere behandling som krever anestesi Osteosyntese, femurosteotomier, reoperasjoner.

4. ÅPNE OG ARTROSKOPISKE HOFTEOPERASJONER
Alle pasienter (uavhengig av alder) som gjennomgår åpen eller artroskopisk hofteoperasjon, unntatt fraktur-, protese- og tumor-operasjoner, skal registreres.
Brukskade i acetabulum – Grade:
0=Normal.
1=Loss of fixation to the subchondral bone resulting in a wave sign, defined as occurring when the capsular side of the labrum is pushed inwards with the probe resulting in bulging of the adjacent articular cartilage.
2=Presence of cleavage tear with obvious separation at the chondrolabral junction.
3=Delamination of the articular cartilage.
4=Presence of exposed bone in the acetabulum.
Brukskade på caput femoris – Dybde (ICRS):
1=Nearly normal: Superficial lesions, soft indentation and/or superficial fissures and cracks.
2=Abnormal: Lesions extending down to <50% of cartilage depth.
3=Severely abnormal: Cartilage defects extending down to >50% of cartilage depth as well as down to calcified layer.
4=Severely abnormal: Osteochondral injuries, lesions extending just through the sub chondral boneplate or deeper defects down into trabecular bone.

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