SOUTH AFRICAN NATIONAL JOINT REGISTRY

ANNUAL REPORT
Dec 2012 – Dec 2016
EXECUTIVE REPORT AND SUMMARY

Executive Report: South African National Joint Registry (SANJR)

Towards the end of 2012 the SANJR was designed in its current format. The layout, website and content changed over the past year, making the SANJR more user friendly and functional.

Up to the end of December 2016 more than 8700 events were logged on the registry. The ensuing report is based on the analyses of the reported data. Right from the start we realised that three critical areas would determine the success or failure of the project. The three issues are: compliance, funding and validation of the data.

Compliance:
The project started as a pilot project, evolved into voluntary participation, but I am afraid that we have reached the point that obligatory statutory measures might be necessary to ensure participation and compliance, involving the private and public hospital groups as well as medical funders.

Funding:
The funding of the project is currently done by using voluntary sponsorships from some of the trade firms. For the first year sponsorships were obtained from Stryker, Zimmer, Johnson & Johnson (de Puy) and Heraeus. Unfortunately Stryker and Heraeus decided not to take part in the second round. The following companies have indicated their willingness towards sponsorship: Zimmer-Biomet, Johnson & Johnson (de Puy) and Heraeus. Zimmer-Biomet has already extended their sponsorship to the SANJR and all the other trade companies are invited to consider participation in this project. The private hospital groups indicated funding the SANJR as well as some of the medial funders.

Validation:
The data will be validated by various processes, probably included, but not limited by comparing it to detail supplied by the various trade companies, medical funders and hospitals. These processes will be implemented as soon as negotiations with the various stakeholders are completed.

Goals for 2017
We will endeavour to:
- Expand participation and compliance to include 80% of primary total hip and knee joints arthroplasties done in 2017.
- To expand the registry to include total ankle and shoulder arthroplasties.
- To start reporting on “failures” of joint arthroplasties.
- To activate and to start reporting on Patient Reported Outcome Measures (PROMS).

Kind Regards

Jan de Vos
Summary

This summary gives an overview from December 2012 to December 2016.

Considering the time frame of only 4 years and limited information, as the registry is still in its infancy, reporting is limited. The data used to compile this report is also not representative of total hip and knee arthroplasties done in South Africa yet as it is, at this stage, not compulsory to participate in the registry.

The focus in this report will be on providing information with regards to:

1. Hip Replacement Surgery
   a. Done respectively in Private and Public Hospitals
   b. Categories of hip replacement
      - Total Hip replacement
      - Partial Hip replacement
      - Revision Hip replacement
   c. Demographics of Patients
      - Primary Total Hip Replacement by Gender
      - Primary Total Hip Replacement by Age
      - Primary Total Hip replacement by side (left/ right)
   d. Prosthesis suppliers used
      - Cement used
   e. Pathologic diagnoses
   f. Reason for Revision
   g. Type of Revision

2. Knee Replacement
   a. Done respectively in Private and Public Hospitals
   b. Categories of knee replacement
      Total Knee replacement
      Partial Knee replacement
      Revision Knee replacement
c. Classes of Partial knee replacement
   - Patellofemoral
   - Unicompartmental

d. Demographics of Patients
   - Primary Total Knee Replacement by Gender
   - Primary Total Knee Replacement by Age
   - Primary Total Knee Replacement by Side (left/right)

e. Prosthesis Suppliers used
   - Cement used

f. Pathologic Diagnosis

g. Reason for Revision

h. Type of Revision
# CONTENTS

Executive summary ........................................................................................................ 2
Summary .......................................................................................................................... 3

Introductory section ...................................................................................................... 6
- SANJR Company Structure ...................................................................................... 6
- SANJR NPO Status .................................................................................................. 6
- The Registry’s mission .............................................................................................. 6
- Objectives of the SANJR ......................................................................................... 6
- Online registry and website functionalities ............................................................. 7
- Advisory Committee ................................................................................................. 7
- Terms of Reference – Advisory Committee ............................................................. 7
- Legislative Route ...................................................................................................... 8

Introductory Paragraphs ............................................................................................... 9
- Primary Hip ................................................................................................................ 9
- Revision Hip ............................................................................................................... 9
- Primary Knee ............................................................................................................ 9
- Revision Knee .......................................................................................................... 9

Primary Hip Arthroplasty analysis ............................................................................... 11
- Section on the overall impression of the Primary Hip Arthroplasty results .......... 22

Revision Hip Arthroplasty analysis ............................................................................. 23
- Section on the overall impression of the Revision Hip Arthroplasty results ....... 29

Primary Knee Arthroplasty analysis ........................................................................... 30
- Section on the overall impression of the Primary Knee Arthroplasty results ....... 39

Revision Knee Arthroplasty analysis .......................................................................... 40
- Section on the overall impression of the Revision Knee Arthroplasty results ..... 49

Patient informed consent form .................................................................................... 50
Patient information form .............................................................................................. 51
Surgeon consent form .................................................................................................. 52
SANJR terms of use ..................................................................................................... 53
Conclusion of report ...................................................................................................... 55
INTRODUCTORY SECTION

SANJR COMPANY STRUCTURE
Time was spent in structuring the registry (SANJR) as a not for profit entity, with registration at the Companies and Intellectual Property Commission as a NPC and the Department of Social Development as a NPO. The current directors of the South African National Joint Registry are:

Dr JN de Vos  Chairperson  President Elect Arthroplasty Society
Prof A Schepers  Director  Wits University
Prof MV Ngcelwane  Director  University of Pretoria

Daily operational requirements of the SANJR are currently supervised by the Chief Executive Officer (CEO) of the company, Ms ES Müller.

SANJR NPO STATUS
The Department of Social Development has awarded the South African National Joint Registry NPC the status of an official not for profit organisation. As the purpose of the registry is to enhance the orthopaedic industry through knowledge sharing and reporting, the NPO status will assist in securing donations for the company’s operational expenses. The registry’s NPO number is 141-473-NPO.

THE REGISTRY’S MISSION
‘The South African National Joint Registry aims to collect accurate and relevant data related to joint replacement surgery in both the public and private health sectors of South Africa. The high quality of data will facilitate an early warning system ensuring that patients’ safety remains a priority. In a continuous drive to improve the quality of outcomes and ensure the quality and cost effectiveness of joint replacement surgery, the NJR will monitor and report on outcomes, offer support and enable functional research to be performed.’

OBJECTIVES OF THE SANJR
- Monitor in real time the outcomes achieved and highlight where these fall below an expected performance in order to allow prompt action.
- Inform patients, clinicians, providers and commissioners of healthcare, regulators and implant suppliers of the outcomes achieved in joint replacement surgery.
- Evidence variations in outcome achieved across surgical practice in order to inform best practice.
- Enhance patient awareness of joint replacement outcomes to better inform patient choice and patients’ quality of experience through engagement with patients and patient organisations.
- Support evidence-based purchasing of joint replacement implants for healthcare providers to support quality and cost effectiveness.
Support suppliers in the routine post-market surveillance of implants and provide information to clinicians, patients, hospital management and the regulatory authorities.

ONLINE REGISTRY AND WEB FUNCTIONALITIES
- Registered orthopaedic surgeons are able to download reports.
- Links to supplier websites are available to patients and medical professionals, providing information on specific products and pre-operative as well as post-operative care.
- The website is also the platform for patient PROMS

ADVISORY COMMITTEE
The Advisory committee was established in September 2015 and had its first official meeting on 04 March 2016.

TERMS OF REFERENCE OF THE ADVISORY COMMITTEE

Role/purpose/scpe:
In general, the role of the Advisory Committee is to provide guidance to the SANJR and its Board of Directors in respect of policy development and administration of its functions.

The Advisory Committee must also supply recommendations, support and assist in the implementation of strategies as identified by the SANJR.

Authority
The Advisory Committee derives its authority from Section 2.10.2 of the Company’s Memorandum of Incorporation that in turn refers to Section 72(1) of the Companies Act, encompassing the Board’s authority to delegate to a committee any of its authority without restriction.

The Advisory Committee shall provide recommendations to the Board in line with its responsibilities and objectives detailed below, which recommendations shall only be implemented once approved by the Board.

Responsibilities/obectives
The responsibilities / objectives of the Advisory Committee are:

1. To assist the SANJR in ensuring the submission and processing of data as mandated by the Regulations are compliant with all prevailing legislation.
2. To provide guidance and make recommendations regarding the provision of information to organs of state and the public, professional organisations and other stakeholders as described in the Regulations and for the purposes described in the Regulations.
3. **Membership**

The Advisory Committee shall be comprised of the following members:

- One representative from the National Department of Health, nominated by the Director-General of Health.
- One representative from the public hospital sector, at levels where orthopaedic services are rendered and nominated by the South African National Joint Registry.
- One representative from the private hospital sector, nominated by the South African National Joint Registry.
- One director of the SANJR Board, nominated by the Board of the SANJR.
- Two representatives from the organized orthopaedics profession, with an interest and experience in patient registries, nominated by the South African Orthopaedic Association (SAOA).
- One representative from the organized orthopaedics profession, with an interest and experience in patient registries, nominated by the Arthroplasty Society of South Africa (SAAS).
- Two representatives from the organized medical device industry.

**LEGISLATIVE ROUTE**

A lawyer was appointed to assist in drafting a proposal to be discussed with the minister of health in a follow-up meeting with the minister.

**DATA ANALYSIS**

Initial statistical analysis of the available data was done by Business Enterprises, a private company with links to the University of Pretoria, but due to the very high cost and problems regarding proper funding, SOSIT is analysing the statistics at present.
INTRODUCTORY PARAGRAPHS

PRIMARY HIP ARTHROPLASTY
Analysis of primary hip replacements that have been captured by the SANJR to date. The numbers are not representative of the total procedures done Countrywide.

REVISION HIP ARTHROPLASTY
Analysis of revision hip replacements that have been captured by the SANJR to date. The numbers are not representative of the total procedures done Countrywide.

PRIMARY KNEE ARTHROPLASTY
Analysis of primary knee replacements that have been captured by the SANJR to date. The numbers are not representative of the total procedures done Countrywide.

REVISION KNEE ARTHROPLASTY
Analysis of revision knee replacements that have been captured by the SANJR to date. The numbers are not representative of the total procedures done Countrywide.

GENERAL COMPARISONS

Gender and events

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Gender</th>
<th>Count</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Hip Arthroplasty</td>
<td>Female</td>
<td>2570</td>
<td>29.29</td>
</tr>
<tr>
<td>Primary Hip Arthroplasty</td>
<td>Male</td>
<td>1652</td>
<td>18.83</td>
</tr>
<tr>
<td>Primary Knee Arthroplasty</td>
<td>Female</td>
<td>2403</td>
<td>27.39</td>
</tr>
<tr>
<td>Primary Knee Arthroplasty</td>
<td>Male</td>
<td>1558</td>
<td>17.75</td>
</tr>
<tr>
<td>Revision Hip Arthroplasty</td>
<td>Female</td>
<td>216</td>
<td>2.46</td>
</tr>
<tr>
<td>Revision Hip Arthroplasty</td>
<td>Male</td>
<td>199</td>
<td>2.26</td>
</tr>
<tr>
<td>Revision Knee Arthroplasty</td>
<td>Female</td>
<td>113</td>
<td>1.28</td>
</tr>
<tr>
<td>Revision Knee Arthroplasty</td>
<td>Male</td>
<td>65</td>
<td>0.74</td>
</tr>
</tbody>
</table>

More females than males are involved in both, primary total hip and knee arthroplasties as well as revision arthroplasty.
Age and events

Surgery in the age group 65-74 is the highest as to be expected, although primary hip arthroplasty in the below 55 age group is high in South Africa due to the high incidence of HIV and TB.

Primary Hip Arthroplasty
- <55: 902
- 55-64: 992
- 65-74: 1307
- 75: 1021

Primary Knee Arthroplasty
- <55: 425
- 55-64: 1174
- 65-74: 1528
- 75: 834

Revision Hip Arthroplasty
- <55: 102
- 55-64: 85
- 65-74: 120
- 75: 108

Revision Knee Arthroplasty
- <55: 20
- 55-64: 42
- 65-74: 65
- 75: 48

BMI and events

Reporting could be done on 4865 cases.

Primary knee arthroplasty in patients with an elevated BMI is significantly higher.

Primary Hip Arthroplasty
- <18.5: 33%
- 18.5-24.9: 33%
- 25-29: 4%
- 30-42: 2%
- >42: 28%

Primary Knee Arthroplasty
- <18.5: 33%
- 18.5-24.9: 33%
- 25-29: 4%
- 30-42: 2%
- >42: 28%

Revision Hip Arthroplasty
- <18.5: 33%
- 18.5-24.9: 33%
- 25-29: 4%
- 30-42: 2%
- >42: 28%

Revision Knee Arthroplasty
- <18.5: 33%
- 18.5-24.9: 33%
- 25-29: 4%
- 30-42: 2%
- >42: 28%
PRIMARY HIP ARTHROPLASTY ANALYSIS

- Data analysed includes 4222 operations
- Analysis includes:
  - Gender
  - Age
  - Sector analysis

Total Primary Hip Arthroplasty by Gender

More female than male patients had total hip arthroplasty surgery in 2016.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>2570</td>
</tr>
<tr>
<td>Male</td>
<td>1652</td>
</tr>
</tbody>
</table>

Primary Total Hip Arthroplasty by Age

The largest age group having primary total hip arthroplasty is the group aged between 65 and 74 years.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;55</td>
<td>902</td>
</tr>
<tr>
<td>55-64</td>
<td>992</td>
</tr>
<tr>
<td>65-74</td>
<td>1307</td>
</tr>
<tr>
<td>&gt;75</td>
<td>1021</td>
</tr>
</tbody>
</table>
Primary Total Hip Arthroplasty by Sector

Report was done on 4097 cases. 86% of cases recorded were done in the Private Sector and 14% in the Public Sector.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>3533</td>
</tr>
<tr>
<td>Public</td>
<td>564</td>
</tr>
</tbody>
</table>

Total Primary Hip Arthroplasty by Region

Reporting was done on 4128 cases. Most cases recorded was done in Gauteng.

<table>
<thead>
<tr>
<th>Region</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>244</td>
</tr>
<tr>
<td>Eastern Province</td>
<td>7</td>
</tr>
<tr>
<td>Free State</td>
<td>228</td>
</tr>
<tr>
<td>Gauteng</td>
<td>2116</td>
</tr>
<tr>
<td>KZN</td>
<td>400</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>6</td>
</tr>
<tr>
<td>Western Cape</td>
<td>1127</td>
</tr>
</tbody>
</table>
Primary Total Hip Arthroplasty by Side

<table>
<thead>
<tr>
<th>Side</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>1862</td>
</tr>
<tr>
<td>Right</td>
<td>2201</td>
</tr>
</tbody>
</table>

More right hips are replaced than left hips.

Primary Total Hip Arthroplasty by Body Mass Index

<table>
<thead>
<tr>
<th>BMI Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;18.5</td>
<td>48</td>
</tr>
<tr>
<td>18.5–24.9</td>
<td>618</td>
</tr>
<tr>
<td>25–29</td>
<td>726</td>
</tr>
<tr>
<td>30–42</td>
<td>728</td>
</tr>
<tr>
<td>&gt;42</td>
<td>83</td>
</tr>
</tbody>
</table>

Reporting could only be done on 2203 cases.

Most primary total hip arthroplasties are done in patients with a BMI between 30 and 42.
Primary Total Hip Arthroplasty by Surgical Approach

Reporting was done on 4015 cases.

In this year’s report, reporting could be done on AMIS approach as well.

The lateral approach was done in most cases recorded.

<table>
<thead>
<tr>
<th>Approach</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMIS</td>
<td>52</td>
</tr>
<tr>
<td>Anterolateral</td>
<td>869</td>
</tr>
<tr>
<td>Direct Anterior</td>
<td>100</td>
</tr>
<tr>
<td>Lateral (Hardinge)</td>
<td>2025</td>
</tr>
<tr>
<td>Posterior</td>
<td>969</td>
</tr>
</tbody>
</table>

Primary Total Hip Arthroplasty Intra-operative Complications

Of the 4 most common Intra-operative complications, femur fracture was noted more frequently.

<table>
<thead>
<tr>
<th>Complication</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetabular Fracture</td>
<td>9</td>
</tr>
<tr>
<td>Femur Fracture/Calcar Crack</td>
<td>47</td>
</tr>
<tr>
<td>Abductor Rupture</td>
<td>14</td>
</tr>
<tr>
<td>Shaft Penetration</td>
<td>3</td>
</tr>
</tbody>
</table>
Prostheses from Johnson & Johnson were used in most of the cases recorded.

Primary Total Hip Arthroplasty – Anaesthesia Used

Report was done on 4097 cases. Spinal block was used in most cases. Conscious sedation could be added to this year’s report.

<table>
<thead>
<tr>
<th>Anaesthesia Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidural</td>
<td>50</td>
</tr>
<tr>
<td>General</td>
<td>430</td>
</tr>
<tr>
<td>General / Epidural</td>
<td>36</td>
</tr>
<tr>
<td>General / Epidural / Peripheral Block</td>
<td>1</td>
</tr>
<tr>
<td>General / Peripheral</td>
<td>350</td>
</tr>
<tr>
<td>General / Spinal</td>
<td>1019</td>
</tr>
<tr>
<td>General / Spinal / Peripheral Block</td>
<td>6</td>
</tr>
<tr>
<td>Spinal</td>
<td>2029</td>
</tr>
<tr>
<td>Spinal / Peripheral Block</td>
<td>54</td>
</tr>
<tr>
<td>Conscious Sedation</td>
<td>102</td>
</tr>
</tbody>
</table>
Primary Total Hip Arthroplasty - Antibiotic Prophylaxis

**Primary Hip Arthroplasty by Antibiotics Used**

<table>
<thead>
<tr>
<th>Antibiotic Combination</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cephalosporin</td>
<td>3319</td>
</tr>
<tr>
<td>Cephalosporin-Gentamycin</td>
<td>450</td>
</tr>
<tr>
<td>Gentamycin</td>
<td>45</td>
</tr>
<tr>
<td>Gentamycin-Other</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
</tr>
</tbody>
</table>

Cephalosporin was most commonly used.

Primary Total Hip Arthroplasty - Pathology

**Primary Hip Arthroplasty by Diagnosis**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteoarthrosis</td>
<td>3369</td>
</tr>
<tr>
<td>Avascular Necrosis</td>
<td>118</td>
</tr>
<tr>
<td>Inflammatory Disease</td>
<td>106</td>
</tr>
<tr>
<td>Tumour and Sepsis</td>
<td>14</td>
</tr>
<tr>
<td>Fracture</td>
<td>327</td>
</tr>
</tbody>
</table>

Reporting was done on 3934 cases.

Osteoarthrosis was indicated as the most common reason for primary hip arthroplasty done.
Primary Total Hip Arthroplasty by Bone Graft Done

Acetabular bone graft was done in 95% of cases where bone graft was recorded.

Primary Total Hip Arthroplasty: Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipolar</td>
<td>103</td>
<td>2.42%</td>
</tr>
<tr>
<td>Resurfacing</td>
<td>41</td>
<td>0.99%</td>
</tr>
<tr>
<td>Total Hip Replacement</td>
<td>4069</td>
<td>95.51%</td>
</tr>
<tr>
<td>Tripolar</td>
<td>2</td>
<td>0.04%</td>
</tr>
<tr>
<td>Unipolar Monoblock</td>
<td>9</td>
<td>0.21%</td>
</tr>
</tbody>
</table>

Bone graft Acetabulum: 932
Bone graft Femur: 53
Arthroplasty – Acetabulum Cemented versus Uncemented

Reporting done on 4006 cases.
No cement was used in most cases.

<table>
<thead>
<tr>
<th></th>
<th>Cemented</th>
<th>Uncemented</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>157</td>
<td>3849</td>
</tr>
</tbody>
</table>

Arthroplasty – Acetabulum Insert Used

Reporting was done on 3862 cases.
Cross-linked Poly insert was used in most cases.

<table>
<thead>
<tr>
<th></th>
<th>Ceramic</th>
<th>Conventional Poly</th>
<th>Cross-linked Poly</th>
<th>Vit E Poly</th>
<th>Metal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1462</td>
<td>310</td>
<td>2066</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>
Primary Total Hip Arthroplasty – Procedure method

Reporting was done on all cases loaded. Most primary total hip replacements were uncemented.

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cemented</td>
<td>130</td>
</tr>
<tr>
<td>Hybrid</td>
<td>741</td>
</tr>
<tr>
<td>Uncemented</td>
<td>3351</td>
</tr>
</tbody>
</table>

Primary Total Hip Arthroplasty Cement Used – Femoral Component

Reporting could be done on 4060 cases. In most cases no cement was used.

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cemented</td>
<td>844</td>
</tr>
<tr>
<td>Uncemented</td>
<td>3216</td>
</tr>
</tbody>
</table>
Primary Total Hip Arthroplasty - Cement type Used on Acetabular Component

Reported on 163 cases. In 26 cases cement use not indicated.

Palacos was used in most cases recorded for primary hip arthroplasty, acetabular components inserted.

Primary Total Hip Arthroplasty - Cement type Used on Femoral Component

Report done on 855 cases. In 124 cases cement use was not indicated.

The cement used most in primary hip arthroplasty recorded for the femoral component was Palacos.
Primary Total Hip Arthroplasty by Head Type

Primary Hip Arthroplasty by Femoral Head Type

Reporting could be done on 4020 cases.

Ceramic heads were used in most of the cases recorded.

<table>
<thead>
<tr>
<th>Head Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceramic</td>
<td>2572</td>
</tr>
<tr>
<td>Ceramised Metal</td>
<td>183</td>
</tr>
<tr>
<td>Metal</td>
<td>1265</td>
</tr>
</tbody>
</table>

Primary Total Hip Arthroplasty - Additional Femoral Fixation Components Used

Primary Hip Arthroplasty by Femoral Fixation

<table>
<thead>
<tr>
<th>Component</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cables</td>
<td>39</td>
</tr>
<tr>
<td>Wires</td>
<td>8</td>
</tr>
<tr>
<td>Trochanter Clamp</td>
<td>2</td>
</tr>
<tr>
<td>Screws</td>
<td>136</td>
</tr>
</tbody>
</table>
Primary Total Hip Arthroplasty – Arthroplasty-Head-Modular Neck
There were 108 modular necks used.

Primary Total Hip Arthroplasty – Computer Assisted
CAS was used in 3 cases.

Primary Total Hip Arthroplasty by Position

<table>
<thead>
<tr>
<th>Position</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lateral</td>
<td>2685</td>
</tr>
<tr>
<td>Supine</td>
<td>1428</td>
</tr>
</tbody>
</table>

Primary Total Hip Arthroplasty by Product used – Acetabulum

The most implanted acetabular component currently recorded in the registry is the Pinnacle cup, followed by the cup Cerafit and the Continuum cup.
SECTION ON THE OVERALL IMPRESSION OF THE PRIMARY HIP ARTHROPLASTY RESULTS

Typically most of the hip arthroplasties are done on the right side in women in the age group of 65 to 74 years, for osteoarthritis. Spinal blocks and first generation cephalosporin were used.

The patients were placed in the lateral decubitus position, a lateral approach was used to implant an uncemented cup with a cross-linked polyethylene insert, a ceramic head and an uncemented stem.

REVISION HIP ARTHROPLASTY ANALYSIS

- Data analysed includes 415 operations
- Analysis includes:
  - Gender
  - Age
  - Sector analysis

Revision Total Hip Arthroplasty by Gender

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>216</td>
</tr>
<tr>
<td>Male</td>
<td>199</td>
</tr>
</tbody>
</table>

More female patients were recorded to have had revision hip arthroplasty surgery than male patients.

In the previous report the numbers were equal.
Revision Total Hip Arthroplasty by Age

Most revision hips were done in the age group 65-74 years.

<table>
<thead>
<tr>
<th>Age</th>
<th>&lt;55</th>
<th>55-64</th>
<th>65-74</th>
<th>≥75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision Hip Arthroplasty</td>
<td>66</td>
<td>61</td>
<td>93</td>
<td>70</td>
</tr>
</tbody>
</table>

Revision Total Hip Arthroplasty by Body Mass Index (BMI)

Report could be done on 149 recorded cases.

Most hip revisions were done in patients with a BMI between 30 and 42.

<table>
<thead>
<tr>
<th>Event Type</th>
<th>&lt;18</th>
<th>18.5-24.9</th>
<th>25-29</th>
<th>30-42</th>
<th>&gt; 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision Hip Arthroplasty</td>
<td>2</td>
<td>43</td>
<td>40</td>
<td>59</td>
<td>5</td>
</tr>
</tbody>
</table>
Revision Total Hip Arthroplasty by Sector

Most revisions were recorded to have been done in the Private Sector.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>305</td>
</tr>
<tr>
<td>Public</td>
<td>103</td>
</tr>
</tbody>
</table>

Revision Total Hip Arthroplasty by Region

Most revision surgeries were recorded to have been done in the Western Cape, followed by Gauteng. The opposite was noted in the previous report. Surgery done in the Eastern Province was also noted in this report for the first time.

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>19</td>
</tr>
<tr>
<td>Eastern Province</td>
<td>2</td>
</tr>
<tr>
<td>Free State</td>
<td>1</td>
</tr>
<tr>
<td>Gauteng</td>
<td>147</td>
</tr>
<tr>
<td>KZN</td>
<td>51</td>
</tr>
<tr>
<td>Western Cape</td>
<td>186</td>
</tr>
</tbody>
</table>
Revision Total Hip Arthroplasty Done by Side

More right sided revision total hip arthroplasties were recorded to have been done than left sided. The difference is 2% greater than noted in the previous report.

<table>
<thead>
<tr>
<th>Side</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>187</td>
</tr>
<tr>
<td>Right</td>
<td>212</td>
</tr>
</tbody>
</table>

Revision Total Hip Arthroplasty by Position

Most revision total hip arthroplasties were done in the lateral position.

<table>
<thead>
<tr>
<th>Position</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lateral</td>
<td>336</td>
</tr>
<tr>
<td>Supine</td>
<td>66</td>
</tr>
</tbody>
</table>
Revision Total Hip Arthroplasty by Approach Used

The lateral (Hardinge) approach was used in most cases recorded. AMIS was added to this year's report.

<table>
<thead>
<tr>
<th>Approach</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMIS</td>
<td>2</td>
</tr>
<tr>
<td>Anterolateral</td>
<td>139</td>
</tr>
<tr>
<td>Direct Anterior</td>
<td>9</td>
</tr>
<tr>
<td>Lateral (Hardinge)</td>
<td>146</td>
</tr>
<tr>
<td>Posterior</td>
<td>102</td>
</tr>
</tbody>
</table>

Revision Total Hip Arthroplasty - Bone Graft done

<table>
<thead>
<tr>
<th>Bone Graft Type</th>
<th>Graft done</th>
<th>Cases</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Femoral Bone Graft</td>
<td>18</td>
<td>415</td>
<td>In 4.33% of revision cases Femoral bone graft was done</td>
</tr>
<tr>
<td>Acetabular Bone Graft</td>
<td>53</td>
<td>415</td>
<td>In 12.77% of revision cases Acetabular bone graft was done</td>
</tr>
</tbody>
</table>
Revision Total Hip Arthroplasty: Intra-operative Complications

Calcar Crack was noted as the most common complication during revision hip arthroplasty surgery.

<table>
<thead>
<tr>
<th>Complication</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcar Crack</td>
<td>5</td>
</tr>
<tr>
<td>Shaft Penetration</td>
<td>2</td>
</tr>
<tr>
<td>Acetabulum Penetration</td>
<td>3</td>
</tr>
<tr>
<td>Trochanteric Fracture</td>
<td>3</td>
</tr>
</tbody>
</table>

Revision Total Hip Arthroplasty by Component Revised

<table>
<thead>
<tr>
<th>Component</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetabular Cup</td>
<td>237</td>
</tr>
<tr>
<td>Liner</td>
<td>224</td>
</tr>
<tr>
<td>Head</td>
<td>337</td>
</tr>
<tr>
<td>Femoral Stem</td>
<td>239</td>
</tr>
</tbody>
</table>
Revision Total Hip Arthroplasty by Indication for Revision Done

**Revision Hip Arthroplasty by Pathology**

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aseptic Loosening-Femur</td>
<td>116</td>
</tr>
<tr>
<td>Aseptic Loosening-Acetabulum</td>
<td>122</td>
</tr>
<tr>
<td>Peri-Prosthetic Fracture</td>
<td>38</td>
</tr>
<tr>
<td>Malalignment-Femur</td>
<td>3</td>
</tr>
<tr>
<td>Malalignment-Acetabulum</td>
<td>10</td>
</tr>
<tr>
<td>Lysis-Femur</td>
<td>47</td>
</tr>
<tr>
<td>Lysis-Acetabulum</td>
<td>53</td>
</tr>
<tr>
<td>Implant Fracture-Femur</td>
<td>6</td>
</tr>
<tr>
<td>Implant Fracture-Acetabulum</td>
<td>5</td>
</tr>
</tbody>
</table>

Most recorded reason for revision done, is aseptic loosening.

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implant Fracture Acetabulum</td>
<td>5</td>
</tr>
<tr>
<td>Implant Fracture Femur</td>
<td>6</td>
</tr>
<tr>
<td>Lysis Acetabulum</td>
<td>53</td>
</tr>
<tr>
<td>Lysis Femur</td>
<td>47</td>
</tr>
<tr>
<td>Malalignment Acetabulum</td>
<td>10</td>
</tr>
<tr>
<td>Malalignment Femur</td>
<td>3</td>
</tr>
<tr>
<td>Peri-Prosthetic Fracture Femur</td>
<td>38</td>
</tr>
<tr>
<td>Aseptic Loosening Acetabulum</td>
<td>122</td>
</tr>
<tr>
<td>Aseptic Loosening Femur</td>
<td>116</td>
</tr>
</tbody>
</table>

Revision Total Hip Arthroplasty by –Stages

**Revision Hip Arthroplasty by Stage**

- **One Stage**: 372
- **Second of Two Stage**: 10
- **First of Two Stage**: 15
- **Amputation/ Disarticulation**: 1

Reported on 417 cases

One Stage revision was done most commonly, fitting in with aseptic loosening as the most common cause for revision.
Revision Total Hip Arthroplasty Cemented / Uncemented/ Hybrid

Most revisions were done not using cement.

<table>
<thead>
<tr>
<th>Method</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncemented</td>
<td>391</td>
</tr>
<tr>
<td>Hybrid</td>
<td>19</td>
</tr>
<tr>
<td>Cemented</td>
<td>7</td>
</tr>
</tbody>
</table>

**SECTION ON THE OVERALL IMPRESSION OF THE REVISION HIP ARTHROPLASTY RESULTS**

The registry is not mature enough to report on cases where primary procedure is part of the reported revision cases.

Most of the reported cases were done for aseptic loosening, as a one stage procedure, replacing loose components with uncemented prostheses.

**PRIMARY KNEE ARTHROPLASTY ANALYSIS**

- Data analysed for 3961 operations
- Analysis includes:
  - Gender
  - Age
  - Sector analysis
Primary Total Knee Arthroplasty by Gender

More female patients had knee replacements done.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>2403</td>
</tr>
<tr>
<td>Male</td>
<td>1558</td>
</tr>
</tbody>
</table>

Primary Total Knee Arthroplasty by Age

The most primary knee arthroplasty cases were recorded in the 65 – 74 year age group.

<table>
<thead>
<tr>
<th>Age</th>
<th>&lt;55</th>
<th>55-64</th>
<th>65-74</th>
<th>≥75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>425</td>
<td>1174</td>
<td>1528</td>
<td>834</td>
</tr>
</tbody>
</table>

Primary Knee Arthroplasty by Age
Primary Total Knee Arthroplasty by Side

Reporting was done on 3884 cases.

The least amount of cases were done on the left side.

<table>
<thead>
<tr>
<th>Side</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>1797</td>
</tr>
<tr>
<td>Right</td>
<td>2084</td>
</tr>
</tbody>
</table>

Primary Total Knee Arthroplasty by Body Mass Index (BMI)

Reporting was done on 1415 cases.

Most cases were done in the 30-42 BMI group.

<table>
<thead>
<tr>
<th>BMI</th>
<th>&lt;18.5</th>
<th>18.5-24.9</th>
<th>25-29</th>
<th>30-42</th>
<th>&gt; 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>8</td>
<td>276</td>
<td>719</td>
<td>1230</td>
<td>192</td>
</tr>
</tbody>
</table>
Primary Total Knee Arthroplasty by Region

Most primary total knee arthroplasty surgeries were recorded in Gauteng, followed by the Western Cape. Eastern Province and Mpumalanga were added to this year's report.

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>360</td>
</tr>
<tr>
<td>Free State</td>
<td>290</td>
</tr>
<tr>
<td>Gauteng</td>
<td>2057</td>
</tr>
<tr>
<td>Eastern Province</td>
<td>4</td>
</tr>
<tr>
<td>KZN</td>
<td>558</td>
</tr>
<tr>
<td>Limpopo</td>
<td>1</td>
</tr>
<tr>
<td>Western Cape</td>
<td>638</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>3</td>
</tr>
</tbody>
</table>

Primary Total Knee Arthroplasty by Tourniquet used

Tourniquet was used in most cases recorded.

<table>
<thead>
<tr>
<th>Tourniquet Used</th>
<th>Tourniquet Not Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>2794</td>
<td>1246</td>
</tr>
</tbody>
</table>

Primary Knee Arthroplasty By Tourniquet Used

- Used: 31%
- Not Used: 69%
Most primary total knee replacements were recorded in the Private Sector.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>3430</td>
</tr>
<tr>
<td>Public</td>
<td>450</td>
</tr>
</tbody>
</table>

Palacos was the cement used most commonly in primary total knee arthroplasty for the femoral prosthesis, followed by Smartset and Cerafix. Reporting was done on 3257 cases recorded.
Palacos was the cement used most commonly in cases recorded for primary total knee arthroplasty tibial fixation, followed by Cerafix and Smartset.

Hybrid procedure (uncemented femur and cemented tibia) was preferred to totally cemented or uncemented procedure.

<table>
<thead>
<tr>
<th>Primary Knee Arthroplasty by Procedure Type</th>
<th>Uncemented</th>
<th>Hybrid</th>
<th>Cemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncemented</td>
<td>302</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hybrid</td>
<td>3321</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cemented</td>
<td>417</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Primary Total Knee Replacement— Type

Primary Knee Arthroplasty by Type of Replacement done

<table>
<thead>
<tr>
<th>Type</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicompartmental</td>
<td>18</td>
</tr>
<tr>
<td>Patella Resurfacing</td>
<td>15</td>
</tr>
<tr>
<td>Total Knee Replacement</td>
<td>3748</td>
</tr>
<tr>
<td>Uni-compartmental</td>
<td>206</td>
</tr>
</tbody>
</table>

Primary Total Knee Arthroplasty Done With PSI
There are 475 cases recorded to have been done using PSI

Primary Total Knee Arthroplasty Done With CAS
There are 64 cases recorded to have been done using CAS, thus no new cases recorded for this report.
Primary Total Knee Arthroplasty by Anaesthetic

Spinal Block was used in most cases recorded.

<table>
<thead>
<tr>
<th>Anaesthetic used</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinal/Peripheral Block</td>
<td>97</td>
</tr>
<tr>
<td>General/Spinal/Peripheral Block</td>
<td>155</td>
</tr>
<tr>
<td>General/Peripheral Block</td>
<td>0</td>
</tr>
<tr>
<td>General/Epidural</td>
<td>29</td>
</tr>
<tr>
<td>Epidural</td>
<td>28</td>
</tr>
</tbody>
</table>

Primary Total Knee Arthroplasty by Prophylactic Antibiotic Used

Cephalosporin was the antibiotic used by most surgeons in primary total knee arthroplasty.

<table>
<thead>
<tr>
<th>Antibiotics used</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cephalosporin</td>
<td>2965</td>
</tr>
<tr>
<td>Cephalosporin &amp; Gentamycin</td>
<td>525</td>
</tr>
<tr>
<td>Gentamycin</td>
<td>38</td>
</tr>
<tr>
<td>Gentamycin &amp; Other</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
</tr>
</tbody>
</table>
Primary Total Knee Arthroplasty by Bearing Surface used

**Primary Knee Arthroplasty by Bearing**

<table>
<thead>
<tr>
<th>Bearing Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Modular</td>
<td>1827</td>
</tr>
<tr>
<td>Fixed Non-Modular</td>
<td>52</td>
</tr>
<tr>
<td>Mobile Free Floating</td>
<td>6</td>
</tr>
<tr>
<td>Mobile Medial Pivot</td>
<td>175</td>
</tr>
<tr>
<td>Mobile Rotating</td>
<td>183</td>
</tr>
<tr>
<td>Mobile Rotating an Gliding</td>
<td>27</td>
</tr>
<tr>
<td>Not Indicated</td>
<td>1130</td>
</tr>
</tbody>
</table>

Fixed Modular Bearing were used in most cases recorded for Primary Total Knee Arthroplasty.

Primary Total Knee Arthroplasty by Diagnosis

**Primary Knee Arthroplasty by Diagnosis**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteoarthritis</td>
<td>3289</td>
</tr>
<tr>
<td>Avascular...</td>
<td>4</td>
</tr>
<tr>
<td>Inflammatory...</td>
<td>118</td>
</tr>
<tr>
<td>Tumor and Sepsis</td>
<td>2</td>
</tr>
<tr>
<td>Fracture</td>
<td>33</td>
</tr>
</tbody>
</table>

Most primary total knee arthroplasties were done due to osteoarthritis.
Primary Total Knee Arthroplasty by Intra-op complications

The most frequent complication recorded is MCL damage. A total of 16 complications were recorded.

<table>
<thead>
<tr>
<th>Surgical Complication</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fracture-Femur</td>
<td>3</td>
</tr>
<tr>
<td>Fracture-Tibia</td>
<td>4</td>
</tr>
<tr>
<td>Ligament Damage-Lateral Collateral</td>
<td>2</td>
</tr>
<tr>
<td>Ligament Damage-Medial Collateral</td>
<td>6</td>
</tr>
<tr>
<td>Ligament Damage-Patellar Tendon</td>
<td>1</td>
</tr>
</tbody>
</table>

Primary Total Knee Arthroplasty - Soft Tissue Release
Soft Tissue release was recorded in 1137 cases done, 28.7% of cases recorded.

Section on the overall impression of the Primary Knee Arthroplasty results

Typically most of the recorded knee arthroplasties are done on the right side in women, in the age group between 65 to 74 years, for osteoarthrosis. Spinal blocks and first generation cephalosporin were used. In most cases a tourniquet was used and a fixed bearing implant inserted, using a hybrid fixation technique.
Revision Knee Arthroplasty Analysis

- 175 events were recorded

Revision Total Knee Arthroplasty by Gender

Most revisions were done in females.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>113</td>
</tr>
<tr>
<td>Male</td>
<td>62</td>
</tr>
</tbody>
</table>
Revision Total Knee Arthroplasty by Age

Most revision knee arthroplasty surgeries were recorded in the age group 65-74 years.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>&lt;55</th>
<th>55-64</th>
<th>65-74</th>
<th>≥ 75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision Knee Arthroplasty by Age</td>
<td>20</td>
<td>42</td>
<td>65</td>
<td>48</td>
</tr>
</tbody>
</table>

Revision Total Knee Arthroplasty by Body Mass Index (BMI)

Most revision knee arthroplasties were done in patients with a BMI between 30 and 42.

<table>
<thead>
<tr>
<th>BMI Group</th>
<th>&lt;18.5</th>
<th>18.5-24.9</th>
<th>25-29</th>
<th>30-42</th>
<th>&gt; 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision Knee Arthroplasty</td>
<td>0</td>
<td>13</td>
<td>27</td>
<td>43</td>
<td>5</td>
</tr>
</tbody>
</table>
Revision Total Knee Arthroplasty by Cement Used

Most of the revision knee arthroplasties were done using the Hybrid technique.

Revision Knee Arthroplasty by Cement used

<table>
<thead>
<tr>
<th>Cemented</th>
<th>Hybrid</th>
<th>Uncemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision Knee Arthroplasty</td>
<td>9</td>
<td>84</td>
</tr>
</tbody>
</table>

Revision Total Knee Arthroplasty by Sector

Most recorded revisions were done in the Private Sector.

Revision Knee Arthroplasty by Sector

<table>
<thead>
<tr>
<th>Private</th>
<th>145</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>27</td>
</tr>
</tbody>
</table>
Revision Total Knee Arthroplasty by Region

Most revisions were recorded in Gauteng.

Eastern Cape 7
Eastern Province 2
Free State 1
Gauteng 89
KZN 34
Western Cape 37

Revision Total Knee Arthroplasty by Side

More revisions were done on the left knee.

Left 83
Right 85
Revision Total Knee Arthroplasty by Stage

Most revisions were done as one stage procedures.

Stage-First 10
Stage-One 119

Revision Total Knee Arthroplasty – Components Revised

Report was done on 339 cases.
Tibial components were replaced in most cases.

<table>
<thead>
<tr>
<th>Resurfaced</th>
<th>Femoral</th>
<th>Patellar</th>
<th>Tibial</th>
<th>Poly</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>79</td>
<td>18</td>
<td>115</td>
<td>102</td>
</tr>
</tbody>
</table>
Revision Total Knee Replacement-Bearing Surface

Reporting can be done on 93 cases.

<table>
<thead>
<tr>
<th>Bearing Surface</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed: modular</td>
<td>49</td>
</tr>
<tr>
<td>Fixed: non-modular (monoblock)</td>
<td>2</td>
</tr>
<tr>
<td>Mobile: rotating</td>
<td>36</td>
</tr>
<tr>
<td>Mobile: rotating &amp; gliding</td>
<td>2</td>
</tr>
<tr>
<td>Mobile: medial pivot</td>
<td>4</td>
</tr>
</tbody>
</table>

Revision Total Knee Replacement-Stability

Posterior stabilised prosthesis was used in most revision total knee arthroplasty cases recorded.

<table>
<thead>
<tr>
<th>Stability</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruent</td>
<td>14</td>
</tr>
<tr>
<td>Hinge fixed</td>
<td>5</td>
</tr>
<tr>
<td>Posterior stabilised</td>
<td>45</td>
</tr>
<tr>
<td>Rotating hinge</td>
<td>15</td>
</tr>
<tr>
<td>Varus-valgus constraint</td>
<td>16</td>
</tr>
</tbody>
</table>
Revision Total Knee Arthroplasty – Reason for Revision

Revision Knee Arthroplasty by Reason for Revision

<table>
<thead>
<tr>
<th>Reason for Revision</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse Soft tissue reaction to particulate debris (ARMD)</td>
<td>3</td>
</tr>
<tr>
<td>Infection</td>
<td>39</td>
</tr>
<tr>
<td>Instability</td>
<td>34</td>
</tr>
<tr>
<td>Pain</td>
<td>27</td>
</tr>
<tr>
<td>Wear</td>
<td>1</td>
</tr>
<tr>
<td>Fracture</td>
<td>2</td>
</tr>
</tbody>
</table>

Reporting could be done on 106 cases.
The most common reasons for revision knee surgery done are infection and instability.

Revision Total Knee Replacement - Intra-op complications

Revision Knee Arthroplasty by Intra-Operative Complication

<table>
<thead>
<tr>
<th>Intra-Operative Complication</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fracture-Femur</td>
<td>3</td>
</tr>
<tr>
<td>Fracture-Tibia</td>
<td>1</td>
</tr>
<tr>
<td>Ligament Damage-Medial Collateral</td>
<td>1</td>
</tr>
</tbody>
</table>

5 Intra-operative complications were recorded.
Most of the femoral prosthesis in revision knee surgery was cemented.

<table>
<thead>
<tr>
<th>Type of Cement Used</th>
<th>Femur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cemented</td>
<td>96</td>
</tr>
<tr>
<td>Uncemented</td>
<td>8</td>
</tr>
</tbody>
</table>

Reporting was done on 96 cases. 26 surgeons did not indicate the type of cement used. Cement most frequently used was Palacos.
Revision Total Knee Arthroplasty – Cemented Used Tibia

Most tibial components in revision knee arthroplasty were cemented.

<table>
<thead>
<tr>
<th>Cemented</th>
<th>Uncemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>104</td>
<td>10</td>
</tr>
</tbody>
</table>

Revision Total Knee Arthroplasty - Type of Cement Used Tibia

Palacos was used in most recorded revision knee arthroplasty followed by Smartset.
**Revision Knee Arthroplasty – Tourniquet used**

<table>
<thead>
<tr>
<th>Tourniquet Used</th>
<th>Tourniquet Not Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>34%</td>
<td>66%</td>
</tr>
</tbody>
</table>

Tourniquet was used in most cases.

<table>
<thead>
<tr>
<th>Used</th>
<th>Not Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>115</td>
<td>60</td>
</tr>
</tbody>
</table>

**SECTION ON THE OVERALL IMPRESSION OF THE REVISION KNEE ARTHROPLASTY RESULTS**

The registry is not mature enough to report on cases where the primary procedure is part of the reported cases.

Most of the reported cases were done for causes other than sepsis, as a one stage procedure, using cemented prostheses.

Typically most of the recorded revision knee arthroplasties were done on the right side, in women in the age group of 65 to 74 years. Spinal block and first generation cephalosporin were used. In most cases a tourniquet was used and a fixed bearing, posterior stabilised, total knee arthroplasty prosthesis inserted, by using the cemented fixation technique.
PATIENT / AUTHORISED PERSON* CONSENT FORM
TO HAVE HEALTH AND PERSONAL INFORMATION INCLUDED IN THE SANJR

I, ___________________________________________ (insert full name & surname),

a patient of Dr _________________________________ (insert initials and surname),

with my ID number ____________________________________________,

Hereby confirm and acknowledge that (Please initial box to indicate your agreement with each statement.)
Please ask if you are unsure about anything

1. I have read and understood the patient information sheet on the inclusion of my information in the South African National Joint Registry (SANJR). I understand why the Registry is kept and the role my information will play in it. ☐

2. I understand that the SANJR will not contain any information that could identify me, but that the SANJR will keep the data sheet on which personal information will be included. This consent will also be kept as proof that I have agreed to participate in the SANJR ☐

3. I understand what the information on the SANJR will be used for and agree to such processing and further use of the information. ☐

4. I therefore, freely and voluntarily agree that my doctor and the hospital can submit the required information to the SANJR and that the SANJR can keep the datasheets as well as the database that forms the registry. ☐

Name of patient/authorised person* ____________________________ Date ___________ Signature ____________________________

Name of Person taking consent ____________________________ Date ___________ Signature ____________________________

1 copy to for patient; 1 copy in doctor file; original to SANJR.

* Patient / authorised person: Where the patient is unable to consent to participation (e.g. a person who is unconscious or mentally unable to consent), or a child under the age of 18, the law prescribes that the spouse/partner, adult child, brother/sister, parent, etc. can consent on their behalf.
PATIENT INFORMATION SHEET

The South African National Joint Registry (SANJR)
The SANJR is a not-for-profit entity benefitting the public by collecting and reworking health information. It is a project of the South African Orthopaedic Association, the body representing doctors who specialise in this field. The SANJR would like to obtain your permission to include your information into this Registry. Please read the information provided. If anything is unclear, please ask your doctor or the practice staff for this to be explained.

What is the reason for the SANJR?
The SANJR is a database of orthopaedic surgery undertaken in South Africa. It helps policy makers and doctors understand better what products are used, and what happens before, during and after the surgery. The database can be used to draw reports on specific aspects of surgery, for example how long people who had hip replacements stayed in hospitals, or what implants they received. These reports can then be used to make submissions to policy-makers, or to do further research with the data collected or to understand what works better for patients.

Will my name and personal details be in the database?
Yes. Your name, surname, telephone numbers, email address, physical address, identity number and date of birth will be stored. Your health information insofar as it relates to orthopaedic procedures, are also included in the database. Your own doctor and the website administrators will be able to see your identified information, but other doctors and the reports drawn from the SANJR will ONLY contain de-identified information, which means you will not be able to be identified by such persons or entities.

Why is personal information collected?
The reason for collecting this info is that in cases of product recalls, the doctor and the company must be able to reach you. We may also to contact you with patient surveys, which is used to evaluate the treatment experiences and outcomes from a patient perspective.

Why have I been chosen?
You have been chosen to participate because you have consented to an orthopaedic procedure as treatment and because your doctor has agreed to participate in the SANJR.

Must I agree or can I refuse to participate?
Your participation is entirely voluntary. It will not influence any treatment that you will receive and your surgery is not dependent on your consent to your data being included in the SANJR. If you do agree to participate, you will have to sign the consent form that gives your doctor the right to complete the information and to submit it to the SANJR.

If I agree, what does the SANJR involve?
1. You then agree that your doctor can provide relevant information about your surgery and treatment to the SANJR. An example of the data to be collected is available from your doctor. It for example includes the name of the specific implant, the medication provided to you before and after the surgery, etc.
2. You will have to agree that your personal details and health information will be registered in a database held by SANJR. SANJR will never release information that could be used to identify an individual and will not give any third party access to the database.
3. SANJR will keep secure and then destroy the forms used to collect the data. The data on the registry will be kept indefinitely, so as to ensure that South Africa builds up a good understanding of orthopaedic surgery.
4. You may be requested to, from time to time, complete questionnaires and other survey forms about your health.

Is my personal- and health information kept confidentially?
Your identifiable information can only be accessed by the CEO and authorised staff and contractors of the SANJR. They are bound by strict confidentiality and non-disclosure agreements. The database is kept securely in an encrypted manner, similar to that used by banks (“SSL”) on a server. The database does contain personal- and health information that is identifiable, but all reports drawn from the system only includes de-identified information.

Will my participation affect my healthcare?
The SANJR is only about your healthcare information, and will not influence the care you have received, or will receive. The registry merely documents what had happened in your care.

Contact person for the Registry
You can contact your treating doctor should you require more information about the Registry. His/her contact details are:

[practice stamp here]
DOCTOR AGREEMENT AND CONSENT FORM
Participation in the South African National Joint Registry ("SANJR")

I, the undersigned, Dr. _____________________________ (initials and surname),
Practice number ___________________ Telephone number ___________________
MP (HPCSA) no ______________________ Email address ___________________
Practicing at ____________________________
(address) hereby agree -

1. To the objectives of the SANJR, which are:
   1.1. To collect data regarding orthopaedic surgical procedures performed and orthopaedic devices and other products used before, during and after procedures and treatment;
   1.2. To work with, publish, analyze and deal extensively with the data collected in order to establish, amongst others, health outcomes;
   1.3. To work with, publish, analyze and deal with the data collected in order to make submissions to relevant bodies, and to conduct further research using the database and to publish such research;
   1.4. To enhance the understanding of the use and manufacture of orthopaedic devices and related products within the South African health sector;
   1.5. To use all data analyzed and collected for the public benefit, viz. to better understand orthopaedic surgery within the South African health sector.

2. To the terms and conditions of the SANJR, as amended from time to time and available on the SANJR website.

3. To enrol patients who will receive orthopaedic surgery into the registry, provided such patients agree to it in writing in a manner that complies with all applicable legislation, which includes being informed of the purpose and uses of the SANJR.

4. To comply with all requirements of the SANJR and to submit data in a manner that is complete, honest and not misleading, and to respond to all reasonable requests by registry staff in connection with the completeness and accuracy of the data submitted.

5. That -
   5.1. My own information and that of my patients (including that relating to health outcomes) will be de-identified when collated reports are drawn from the database for the purposes outlined above;
   5.2. I will be able to obtain an annual report on all the data I submitted to the database ("my data"), which may also include reworked datasets (e.g. drawing conclusions on health outcomes, etc.). No person other than the CEO and administrators of the database will have access to my data. I can also, on an ad hoc basis, request my own data and use such data for my own practice’s purposes. In this I will, however, not disclose any identifiable personal information to any person outside of the practice.
   5.3. The data may only be used for purposes as set out in this agreement, and no further processing will be permitted.

6. All data is submitted online to the SANJR and will be stored safely and securely and destroyed in line with SANJR policy from time to time. Only the CEO, administrator of the registry and data capturers will have access to raw data and are bound by strict confidentiality- and non-disclosure agreements.

7. That my outcomes will not be disclosed to third parties, but that the information may be used to evaluate the achievement of health outcomes overall. The use of the data for practitioner profiling is strictly prohibited.

8. That the notification of adverse events that may be included in the data fields does not absolve me from the obligation of notifying such events to the applicable company and regulator.

9. Signed at __________________________ (place) on this __________ day of __________ 20__1

______________________________             ________________________________
Signature: Medical practitioner              Signature: SANJR CEO, duly authorised
TERMS of USE

SANJR is a registry of information on- and related to orthopaedic surgery. By submitting information to the SANJR you agree to abide by these terms and conditions (T’s & Cs), which includes fulfilling certain duties, such as to obtain written consent from patients, and adhere to certain rules (e.g. those on use of the database) diligently. The latest version of these (T’s & Cs) will always be available from the SANJR office and the SANJR website.

Data processing: Purpose of SANJR
1. SANJR is a registry of orthopaedic health information, which includes orthopaedic surgical procedure information, types and brands of implants/prostheses used, medicines prescribed, duration of procedures and hospital stays, etc.
2. The SANJR is a not-for-profit entity, established in the public interest, and in particular, to:
   2.1. Collect data regarding orthopaedic surgical procedures performed and orthopaedic devices and other products used before, during and after procedures and treatment;
   2.2. Work with, publish, analyze and deal extensively with the data collected in order to establish, amongst others, health outcomes;
   2.3. Work with, publish, analyze and deal with the data collected in order to make submissions to relevant bodies, and to conduct further research using the database and to publish such research;
   2.4. Enhance the understanding of the use and manufacture of orthopaedic devices and related products within the South African health sector;
   2.5. To use all data analyzed and collected for the public benefit, viz. to better understand orthopaedic surgery within the South African health sector.
3. The use of SANJR for any purpose outside of what is listed in these T’s & Cs is strictly prohibited.

Data fields
4. The SANJR and the data fields are not a diagnostic or treatment tool, nor a recommendation to treat any patient in any particular manner, with any particular product or for any period.
5. You remain responsible to ensure that all patients are treated in a manner that is appropriate and in line with your ethical and legal responsibilities.

Confidentiality and access
6. The SANJR will never release any identifiable information from any practitioners or any patient.
7. Participating healthcare professionals may access information that relates to themselves and their patients only. SANJR reserves the right to, in future, charge for this service.
8. The data sheets submitted to the SANJR, as well as the data subsequently included in the SANJR are subject to strict confidentiality controls in line with the Protection of Personal Information Act, 2013. If practitioners keep copies of the data sheets, they take responsibility to keep such data sheets in the securest manner possible and subject to strict confidentiality.
9. Patient data on the SANJR will be de-identified, but the data pertaining to the treating practitioner on the SANJR will not be de-identified.
10. The SANJR may not be used as a mechanism to conduct peer review or practice profiling, but a practitioner may access his/her own information and compare that to published collated information from the database.
11. No third party, viz. outside of the SANJR and its authorized users, may use the SANJR for any purpose whatsoever and only the SANJR and its authorized users by use the SANJR for the purposes as set out in paragraph 2 above.
12. The SANJR will not sell the data on the SANJR to any third party.
13. SANJR may not be used for any commercial purpose whatsoever. If SANJR is used for bona fide research purposes or as a tool or an aid in compiling patient cases for presentations or publication in journals, the permission of the SANJR should be sought first. If granted, such research use is subject to SANJR being credited as the source of the information. Permission may also be granted for the use of the SANJR logo on such presentations or publications.
14. Patients and consumers should not be granted access to SANJR or any specific section of SANJR. Requests for copies of health records of patients by such patients must be made in accordance with the provisions of the Promotion of Access to Information Act (PAIA) and only the requested records can be printed or emailed to them after compliance with PAIA.
15. It is your responsibility that your log-on details are kept safe. SANJR cannot be held responsible if you share these with third parties and confidentiality is subsequently violated. Such violations are offences under privacy legislation and could also lead to ethics complaints at the HPCSA.

Law and ethics
16. The records stored by- and on the SANJR databases are health records like any other and constitutes the keeping of personal- and health information of both the doctor and patient. As such it is subject to the POPI Act, the National Health Act and the HPCSA Ethical Rules and policies on confidentiality.
17. It remains the duty of the practitioner to adhere to these legal- and ethical duties, and the SANJR will assist to ensure that both the SANJR, as well as participating practitioners are able to adhere to such rules.
18. Each practitioner who has agreed to participate in the SANJR agrees to ensure that patients or those authorized to provide consent, are sufficiently informed about the SANJR, its purposes and to obtain consent from such patients or informed persons BEFORE providing any information to the SANJR. A failure to do so will render the practitioner liable and may lead to the information submitted by the practitioner to be excluded, as such information would have been obtained unlawfully. A template information sheet and consent form is available from the SANJR office / website.

Data security and accuracy
19. Only a patient’s practitioner or the person given consent by the practitioner can load that patient’s data unto the registry.
20. A practitioner may also authorize another person to update a patient’s information via a one-time PIN allocated to such a person when authorized by the practitioner.
21. SANJR has taken care in ensuring that all data is stored in a secure manner. But as with all electronic media, no absolute guarantee can be made in relation to SANJR being safe from all hacking, free from crashing or other system errors, etc.
22. The SANJR is hosted on a server accessible via a webpage, protected by SSL security built into the system.
23. SANJR may at any stage, without prior notice, change SANJR, its layout, categories and the likes and may make any upgrade, change or modify the platform, service, software or any aspect of SANJR as it may require from time to time.
24. The source codes, logos, text, menus, lists and all other aspects of the platform that constitutes SANJR is the exclusive and sole property of SANJR. The copying and unauthorized use of any such materials, are strictly prohibited, and SANJR reserves the right to institute any appropriate action should any of these rights be violated. SANJR may use third party software, which is similarly protected.
25. All SANJR designs, marks, logos, texts, examples of documents and so forth are subject to copyright and trademark law. The unauthorized use thereof is strictly prohibited.

Duration of data storage
26. SANJR will store data included in the SANJR database indefinitely, as well as the consents and agreements that authorize such processing.
27. A patient’s information can never be removed from the system, but can be moved to a space where it is no longer linked to a particular practitioner and becomes inaccessible.

Advertisements
28. SANJR reserves the right to sell advertisements on webpages associated with the SANJR, but not on the registry itself where data is stored and seen.
29. Advertisements should not be seen or construed as SANJR endorsing such products or services, or that SANJR prefers one product or service provider over another.

Termination of agreement
30. SANJR will delete all information of persons (practitioners) who have terminated the agreement with SANJR. Due to the de-identified nature of patient information, patients who terminate their consent to participate will only have their identifiable information (i.e. the consent) destroyed from the system.
31. SANJR will not be responsible or liable for the any consequence of any termination and the subsequent deletion of information stored on SANJR.

Disclaimer and Reservation of rights
32. Practitioners participate and, where so authorize, use the SANJR their own risk. By participating in the SANJR, practitioners indemnify the SANJR from any claim, loss, damage or liability (including legal costs on an attorney and own client basis) for or in relation to any claims arising from the participation in, use of, or any allegedly unethical, negligent act or omission of SANJR and/or any allegation that SANJR operates in- or facilitates contravention of the ethical- or applicable legal rules.
33. SANJR reserves the right to:
   33.1. Discontinue SANJR without prior notice, should it be appropriate.
   33.2. Terminate the participation of any practitioner, should the practitioner violate any of the T’s &Cs and conditions contained herein.
   33.3. Take any action reasonably required in order to ensure compliance, or enhanced compliance, with legislation and ethics, and/or to ensure data and/or platform integrity.

**CONCLUSION — REPORT 2016**

A vast amount of knowledge was gained in producing this report. A lot of additional information was collected and some could already be reported on. The SANJR will continue to strive to deliver accurate and comprehensive reports on all hip and knee joint replacement surgery done in South Africa, with new fields incorporated with each report.