Introduction to the American Joint Replacement Registry & Registry Analytics Institute

www.aaos.org/registries/ajrr
www.aaos.org/registryanalyticsinstitute

James I. Huddleston III, MD, FAAOS - AJRR Steering Committee Vice Chair
Disclosure

James I. Huddleston III, MD, FAAOS (Vice Chair): Submitted on: 10/09/2020
AAOS: Board or committee member
American Association of Hip and Knee Surgeons: Board or committee member
Apple: Research support
Biomet: Paid consultant; Research support
Corin U.S.A.: Paid consultant; Paid presenter or speaker; Research support; Stock or stock Options
Exactech, Inc: IP royalties; Paid consultant; Paid presenter or speaker
Journal of Arthroplasty: Editorial or governing board
Knee Society: Board or committee member
Porosteon: Stock or stock Options
Wolters Kluwer: IP royalties
Wolters Kluwer Health - Lippincott Williams & Wilkins: Publishing royalties, financial or material support
Yale CORE/CMS: Paid consultant
Zimmer: Paid consultant; Paid presenter or speaker; Research support
Registry Effort Goals

- Collect unique clinical information demonstrating real-world practice
- Enable performance measurement by physicians for physicians
- Facilitate national registry-driven quality improvement programs
- Support novel scientific research
AAOS Family of Registries

AAOS Board of Directors

Registry Oversight Committee (ROC)

Collaborative Registries

American Joint Replacement Registry (AJRR)
Cervical Degenerative Spine
Lumbar Degenerative Spine
Accepts data from 2016 - present

Hip Arthroplasty
Knee Arthroplasty
Accepts data from 2012 - present

Shoulder & Elbow Registry (SER)
Shoulder Arthroplasty
Rotator Cuff Repair
Elbow Arthroplasty
Accepts data from 2016 - present

Musculoskeletal Tumor Registry (MsTR)
Orthopaedic Oncology
Accepts data from 2016 - present

AAOS Registries

Fracture & Trauma Registry (FTR)
Hip Fracture
Ankle Fracture
Distal Radius Fracture
Distal Femur Fracture
Accepts data from 2016 - present
Participation Across the Registries

Over 1,600 participating sites contracted and 12,200 registered surgeons across all 50 states.

Data representing over 2,100,000 procedures capturing over 40% of all US TJA volume annually.
AJRR Steering Committee

- Bryan D. Springer, MD, FAAOS, Chair
  OrthoCarolina
- James I. Huddleston III, MD, FAAOS, Vice Chair
  Stanford University
- Scott M. Sporer, MD, FAAOS, Secretary
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- Richard F. Seiden, Esq.
  Public Advisory Board (PAB) Representative
- James D. Slover, MD, FAAOS, MS
  NYU Langone Health
- Jeffrey B. Stambough, MD, FAAOS
  University of Arkansas
AJRR Data Element Overview

Two Modules: Hip Arthroplasty & Knee Arthroplasty

**Procedure**

**Patient**
- Name, Date of Birth, SSN
- Diagnosis (ICD-9/10, CPT)
- Gender
- Race/Ethnicity
- Height + Weight/BMI
- Payer Status

**Site of Service**
- Name and Address (TIN, NPI)

**Surgeon**
- Name (NPI)
- Trainee

**Procedure**
- Type (ICD-9/10, CPT)
- Date of Surgery, Length of Stay
- Surgical Approach
- Surgical Technique
- Laterality
- Implants (Manufacturer, Lot #)
- Anesthesia Technique

**Comorbidities and Complications**
- Comorbidities (ICD-9/10, CPT)
- CJR Risk Variables
- Height + Weight/Body Mass Index
- Length of Stay
- American Society of Anesthesiologists Score
- Charlson Comorbidity Index
- Operative and Post-operative Complications

**Patient-reported Outcomes**

*Recommended:*
- PROMIS-10 Global
- VR-12
- HOOS Jr. /KOOS, Jr.

*Also Accepted:*
- SF-36 v1
- HOOS/KOOS
- Oxford Hip and Knee Scores
- Knee Society Knee Scoring System
- Harris Hip Score
- WOMAC (Modified via HOOS and KOOS)
- SF-12, EQ-5D, WOMAC (only accepting final scores)

This page is a summary of the AJRR data elements and is not all inclusive.
Integration of Medicare Data

- Access to **Medicare claims** includes inpatient (148 data elements), outpatient (122 data elements) & National Death Index data
- Linked by full identifiers for longitudinal tracking
- 2012-2019 Medicare data for all patients represented in Registry with quarterly updates
  - Medicare files ~ 1 year delayed
  - National Death Index ~ 2 years delayed
  - National Inpatient Sample (NIS) integrated as reference data for representative analyses
  - NPPES dataset incorporated for NPI validation
- Access to custom reports that compare their site to the national Annual Report analyses, show migration trends, etc.
Decrease Data Collection Burden

- AAOS has partnered with technology vendors to facilitate the data submission process.
- Re-use data that already exists in medical record, practice management and PRO systems.
- Direct data submission and management can be handled by a technology provider with sites able to fix rejected files.
Data Reuse Opportunities

Participation in the American Academy of Orthopaedic Surgeons (AAOS) Registry Program offers a wide variety of data reuse opportunities including requirements for quality initiatives and state collaboratives.

- AAOS RegistryInsights® Platform Standard Reports and personalized dashboards
- AAOS RegistryInsights National Benchmarks
- Accreditation Association for Ambulatory Health Care (AAAHC) Advanced Orthopaedic Certification
- Aetna Institutes of Quality (IOQ) Orthopaedic Surgery
- American Board of Neurological Surgery (ABNS) Continuous Certification (CC)
- American Board of Orthopaedic Surgeons (ABOS) Maintenance of Certification (MOC) Program
- BlueCross BlueShield Blue Distinction Specialty Care
- Blue Shield of California waiver of prior authorization
- Bree Collaborative
- CMS Merit-based Incentive Payment System (MIPS) Promoting Interoperability (PI) and Quality Payment Program (QPP)
- Centers for Medicare & Medicaid Services (CMS) Bundled Payments for Care Improvement Advanced (BPCI-A)
- CMS Comprehensive Care for Joint Replacement (CJR) Model
- Cigna Surgical Treatment Support Program
- DNV GL Orthopaedic Center of Excellence
- The Alliance QualityPath
- The Joint Commission Advanced Certification for Total Hip & Knee Replacement
Three Ways to Access Data

- Custom Reports
- RegistryInsights® Dashboards
- Registry Analytics Institute®
Custom reports created by our analytics team to help understand and package your site data in an actionable format.

Custom reports can include site specific metrics and shape continuous improvements to the canned dashboards provided.

Aggregated reports and national benchmarks for every metric across all data submitted including procedural, post-operative and PROMs data can be provided at your site level.
On-demand practice specific dashboards

Compare your practice to national performance benchmarks

Unlimited surgeon accounts with access to system, site, and surgeon level dashboards
**Surgeon Dashboards**

**Authorized Surgeon Users**

- View their procedural, post-operative and PROM data
- National benchmarks for comparison measures
- Request custom reports
- Submit data for quality initiatives (e.g. ABOS MOC, QPP, BPCI-A)
PROM Management
Provides a resource to the scientific community by providing data analyses and insight that are contained within our registries.

RAI provides clinicians and scientist-clinicians access to information beyond what is already published.

All to further understand and improve orthopaedic and musculoskeletal care.
Eligibility Overview

Investigators who have a well-defined hypothesis/question related to orthopaedics or musculoskeletal care can apply.

“Investigators” are clinicians or clinician-scientists affiliated with a clinical practice or care setting.

Representatives from industry, federal agencies, commercial entities, insurance companies, administrative databases, or hospital consortia are not eligible.
• Three cycles per year
  o Dates are announced at the end of the year
• Applications can be submitted until 7:00 p.m. (Central Time Zone) on the day of the deadline. Submissions received after the deadline will be deferred to the next review cycle.

<table>
<thead>
<tr>
<th>Seasonal Cycle</th>
<th>Opens</th>
<th>Preliminary Application Due Date</th>
<th>Feasibility Assessments Completed</th>
<th>RPS Grading Completed and Applicants Notified of Final Decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle 3 - 2020</td>
<td>October 5, 2020</td>
<td>November 16, 2020</td>
<td>February 1, 2021</td>
<td>April 5, 2021</td>
</tr>
</tbody>
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Application Review Process

• When an application is submitted, the proposed project enters the AAOS Analyses Request and Publications pipeline, and proceeds along the process shown below.
Available RAI Data

- The Registry Program collects data related to procedures and post-operative care.

**Procedure**

**Patient**
- Name, Date of Birth, SSN
- Diagnosis (ICD-9/10, CPT)
- Gender
- Race/Ethnicity
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**Site of Service**
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**Patient-reported Outcomes**
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Application Process – Data Analysis

AAOS Registry Analytics team will work with investigators of approved applications to develop an analysis plan and timeline.

At the completion of the project, investigators will receive a completed, de-identified analysis.

Analyses for all applications will be completed and sent back to the submitter within a year of application approval.
Application Process – Funding Award

• The RAI provides eligible applicants with funding to support approved RAI projects.
• Funds are intended for use towards travel related expenses and registration to supported conferences for presentation of their RAI project.
• Conferences must be a meeting with scientific merit, Continuing Medical Education (CME) credit, and a focus on hip and knee arthroplasty.
• Funding is limited to a maximum of $3,500 per project.
• Funding is available to eligible individuals and organizations.
• Individual applicants must be United States residents.
Publication Scientific Publications

• Recipient shall ensure that all proposed scientific publications are submitted to AAOS for review at least one month prior to submission for publication.

• If AAOS staff or volunteer leaders collaborate with Recipient on a scientific publication, such individual or individuals will be listed as a co-author.

• Recipient agrees to acknowledge the contribution and will provide copies of such publications to be placed on the AAOS website.
Examples of Past Projects - DAIR

• Introduction: Debridement, Antibiotics, and Implant Retention (DAIR is an alternative approach to managing periprosthetic joint infections (PJI) after total hip or knee arthroplasty.

• Aims: To determine (1) incidence of patients are treated with more than 1 DAIR attempt for PJI and (2) percentage of patients who have undergone ≥ 1 DAIR go on to further surgery to treat recurrent infection.

• Results: There were 1,406 total DAIR procedures to treat PJI reported to both CMS and AJRR, of which 97% had a single DAIR and 3% had multiple DAIR attempts. After the first DAIR, 2.6% of subjects died, 15% progressed to subsequent revisions, 16.2% endured further TJA related procedures on the affected joint, and the remaining (66%) were not found to incur further surgery or infectious outcome.
Examples of Past Projects – TKA All Poly

• Introduction: All early designs of total knee arthroplasty (TKA) prostheses used tibial components made entirely of polyethylene. Additionally, the introduction of modular components with metal-backed tibial baseplates have remained popular due to its advantages.

• Aims: To determine (1) the utilization of all-polyethylene and metal-backed tibial components in patients undergoing primary TKA and (2) postoperative complication rates and patient reported outcome scores associated with all-polyethylene and metal-backed tibial components.

• RESULTS: During the study period 2012-2019 703,007 TKAs were reported, with 97.8% utilizing MMB and 2.2% utilizing AP tibial components. The demographics of the two cohorts, were similar except for a higher proportion of female patients in the AP cohort (72.8% vs 60.6%). The survival of AP and MMB TKA were similar: 99.1% vs 99.5% at 1 year, 98.9% vs 99.2% at 2 years, 98.7% vs 98.9% at 4 years, 98.4% vs 98.7% at 6 years, and 98.1% vs 98.6% at 8 years. The rate of reoperation for all-cause was higher for AP compared to MMB (1.36% vs 1.00%, OR 1.52, p<0.0001). The rates of reoperation for infection, aseptic loosening, and other reasons were also higher for AP compared to MMB.
Why Do Sites Participate?

| Qualify for national distinction programs such as the Joint Commission Advanced Certification & AAAHC |
| Facilitate site, practice-specific, payer-incentivized performance improvement programs such as Blue Distinction & Centers of Excellence |
| Use for reporting to quality improvement programs such as MIPS, BPCI-A, ABOS MOC & ABNS CC |
| Early access to surveillance alerts for poorly performing implants |
| Access to on-demand practice specific quality reports and dashboards |
| Compare your practice to national performance benchmarks |
| Facilitate tracking and monitoring of longitudinal patient outcomes |

Facilitate site, practice-specific, payer-incentivized performance improvement programs such as Blue Distinction & Centers of Excellence.
Questions?

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