



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

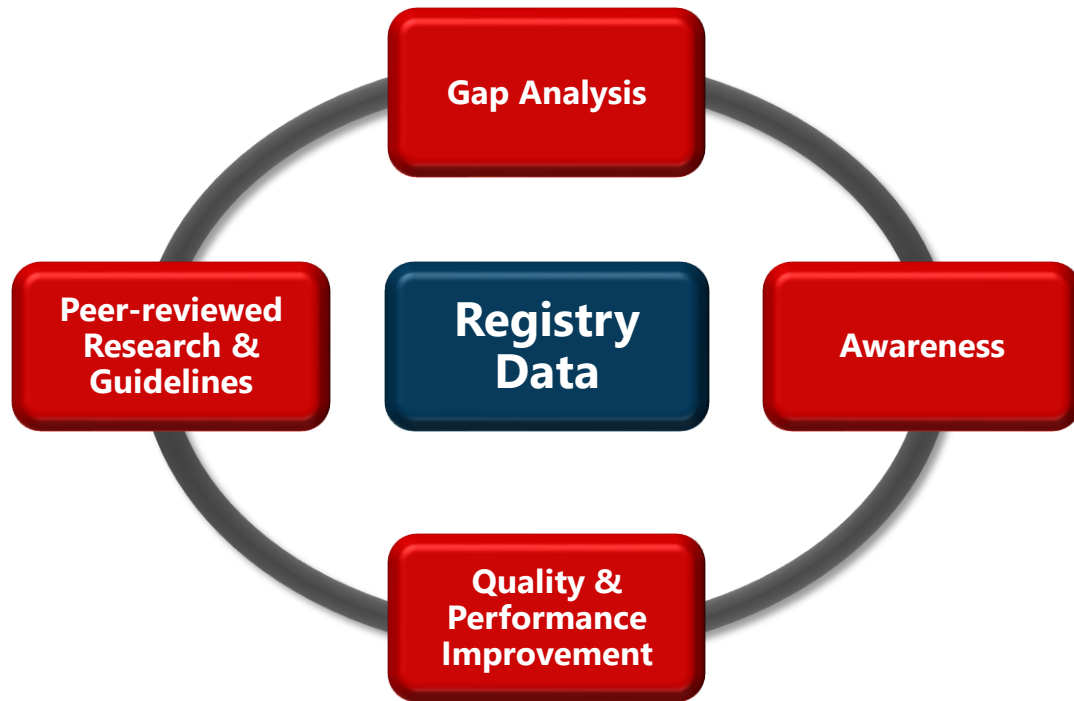
Wolters Kluwer: IP royalties

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

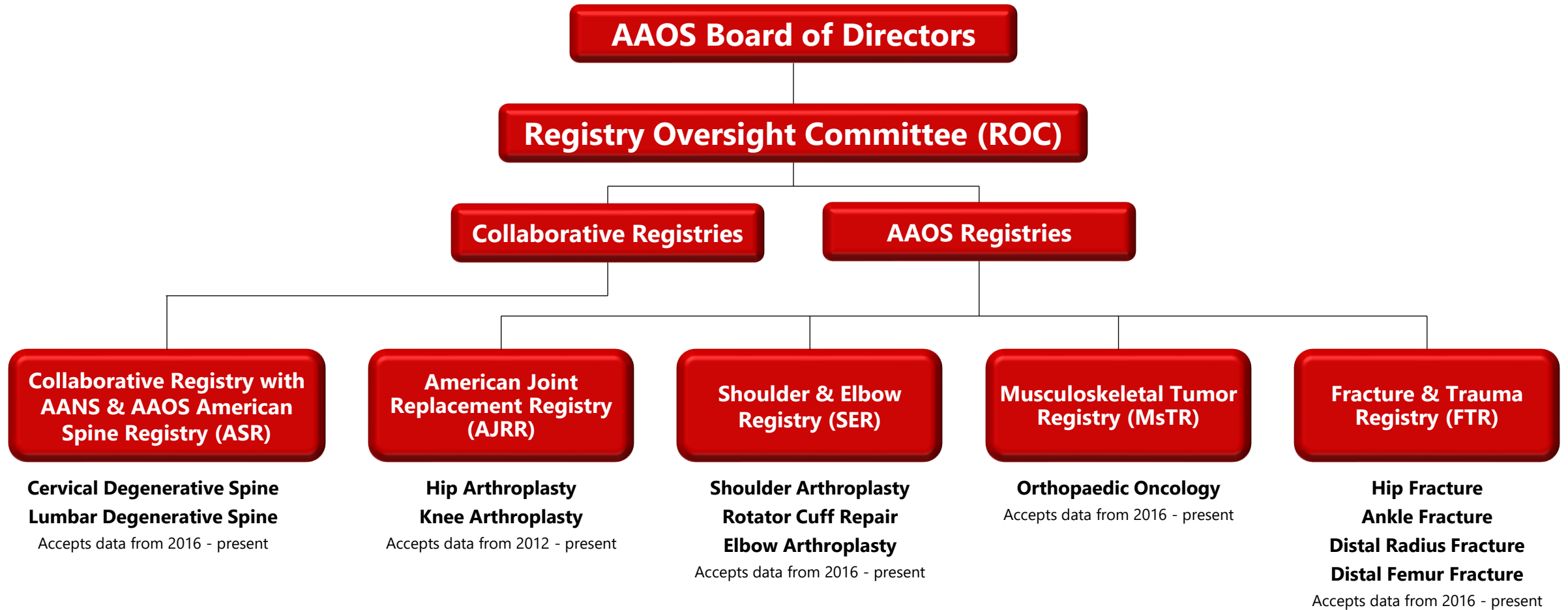
At the Core of Academy Strategy



Registry Effort Goals

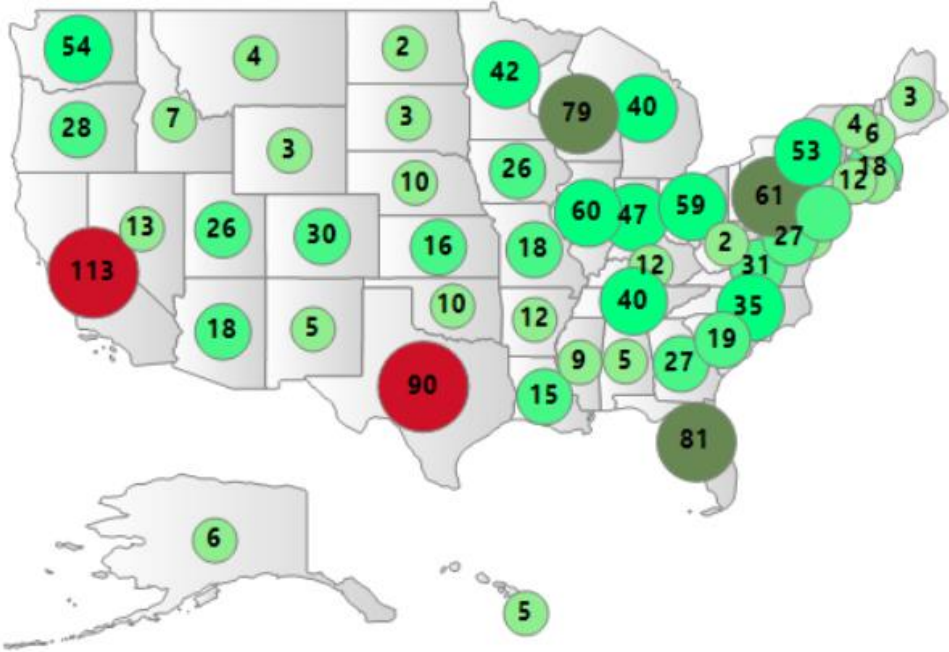
- ✓ Collect unique clinical information demonstrating ***real-world practice***
- ✓ Enable ***performance measurement*** by physicians for physicians
- ✓ Facilitate national registry-driven ***quality improvement*** programs
- ✓ Support novel scientific ***research***

AAOS Family of Registries



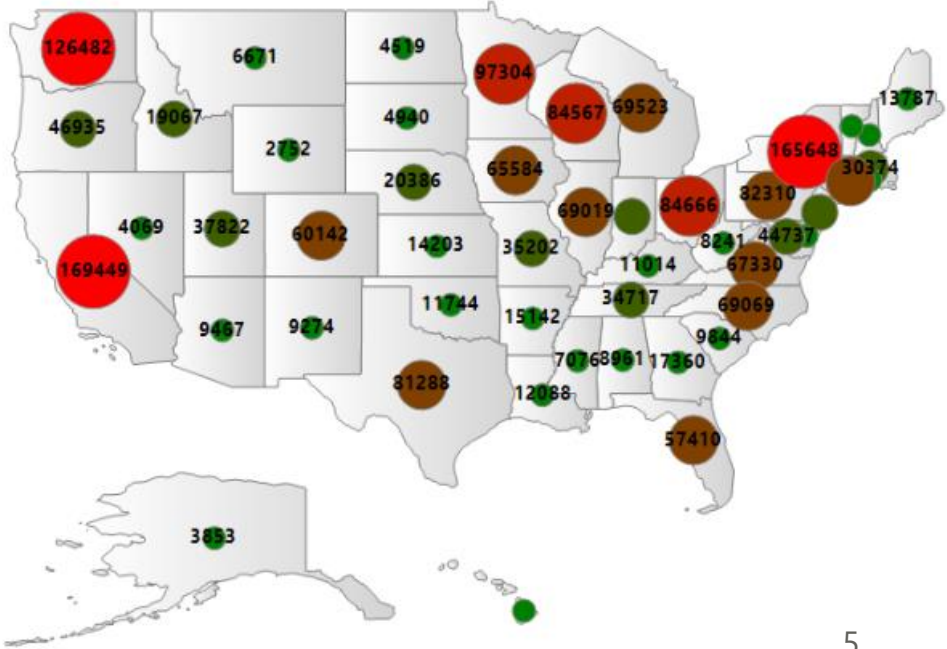
Participation Across the Registries

Sites by State



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

Procedures by State



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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- **James A. Browne, MD, FAAOS**
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Health Plan Representative, Optima Health
- **Jonathan H. Lee, MD, FAAOS**
Health Plan Representative, Cigna Healthcare
- **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.

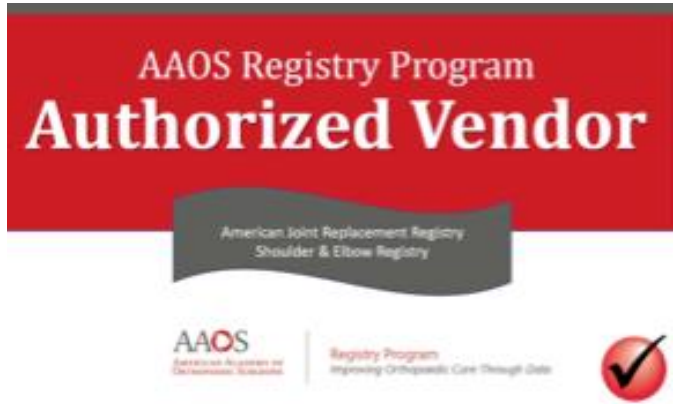
Also Accepted:

- 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)

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

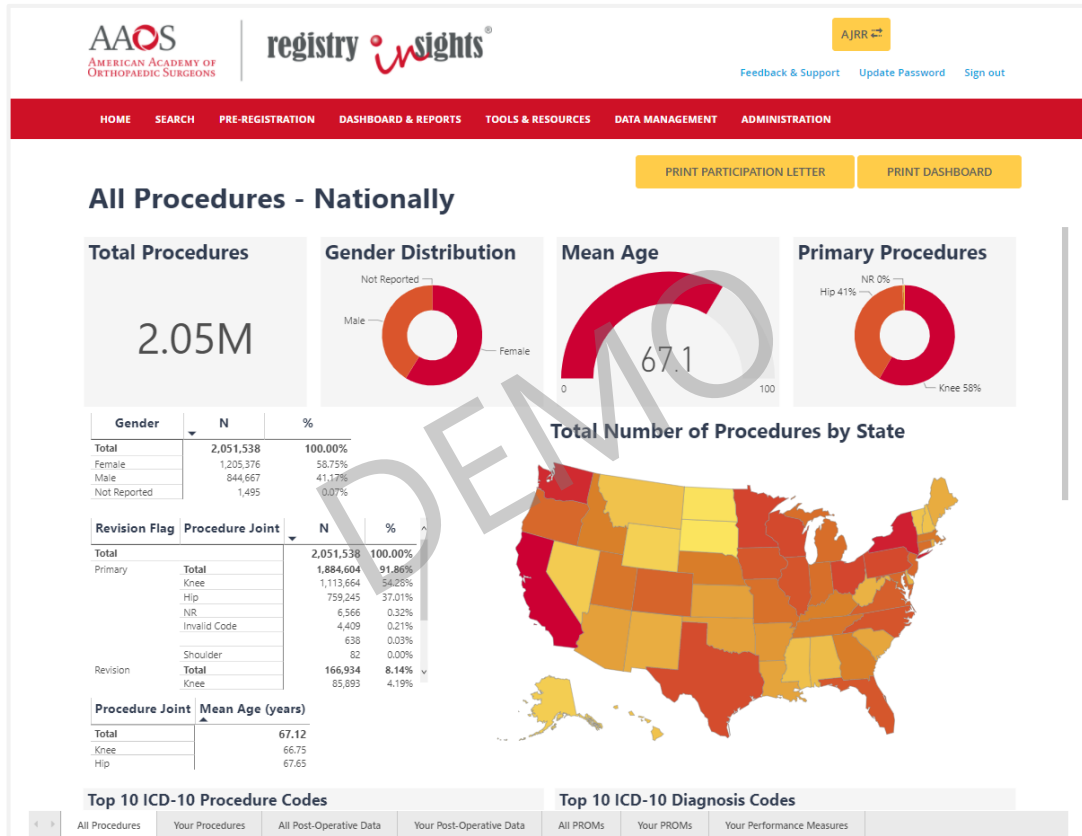


Custom reports created by our analytics team to help understand and package your site data in an actionable format

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

RegistryInsights® Dashboards



On-demand practice specific dashboards



Compare your practice to national performance benchmarks



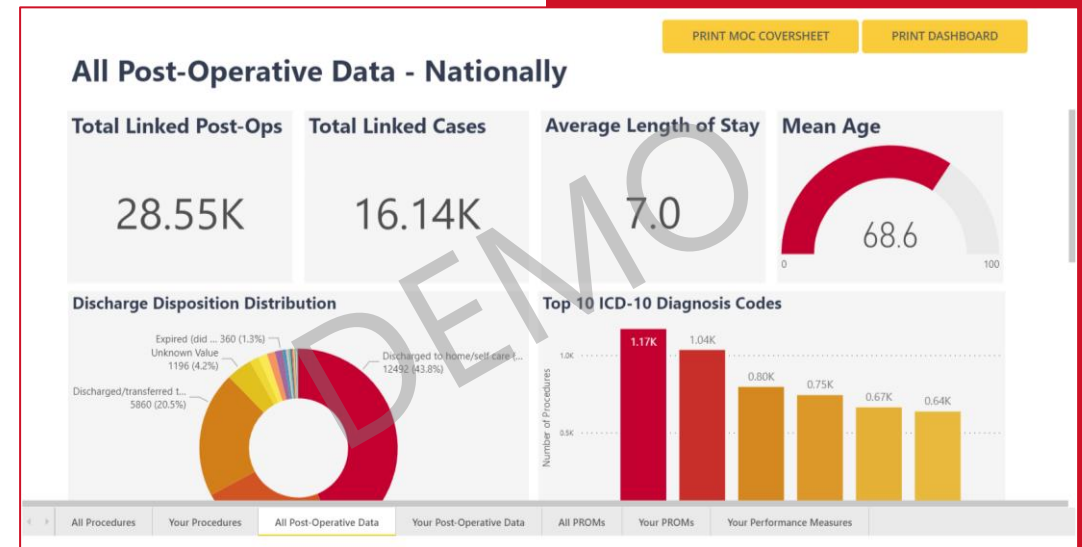
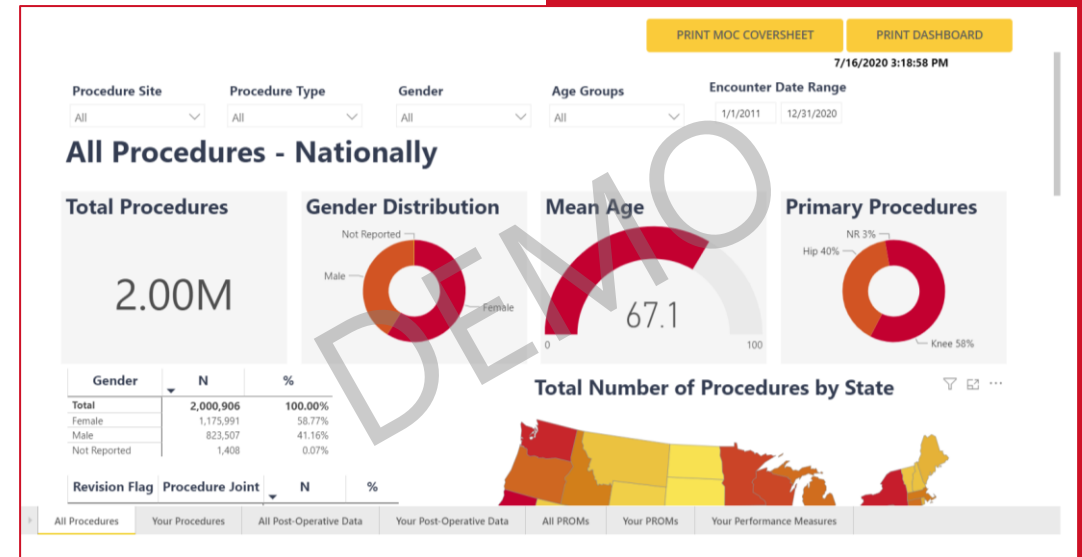
Unlimited surgeon accounts with access to system, site, and surgeon level dashboards



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

AAOS AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS registry insights

UNET Community Feedback & Support Sign out

HOME SEARCH PRE-REGISTRATION DASHBOARD & REPORTS TOOLS & RESOURCES DATA MANAGEMENT ADMINISTRATION

HOME / REPORTS

Procedure Reports

Count of Components by Type

Count of Procedures by ICD-10 Procedure Codes

Count of Procedures by CPT Procedure Codes

Procedures With Component Information (ICD-10)

Shoulder Procedures Submitted to SER (ICD-10)

Count of Procedures By Surgeon

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AAOS AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS registry insights

UNET Community Feedback & Support Sign out

HOME SEARCH PRE-REGISTRATION DASHBOARD & REPORTS TOOLS & RESOURCES DATA MANAGEMENT ADMINISTRATION

HOME / REPORTS / PROM PATIENT STATUS REPORT

Entries 10 Results 1-10 of 120

ACCOUNT ID	HOSPITAL/ASC NAME	PATIENT ID	PATIENT LAST NAME	PATIENT FIRST NAME	PATIENT DATE OF BIRTH	PATIENT EMAIL ADDRESS	PATIENT PHONE TYPE	PATIENT PHONE NUMBER	PROCEDURE	LATERALITY	PLANNED SURGERY DATE	SURGEON NPI
1041062	SER Test Hospital 1	PRP30258	ataAOS	johnny	1/1/1980				Shoulder Arthroplasty	Left	1/24/2019	
1041062	SER Test Hospital 1	PRP30258	ataAOS	johnny	1/1/1980				Shoulder Arthroplasty	Left	1/24/2019	
1041061	SER Test Hospital 5	PRP30261	Bobby	Ricky	7/16/2019				Rotator Cuff Repair	Left	2/28/2019	1619012200
1041061	SER Test Hospital 5	PRP30261	Bobby	Ricky	7/16/2019				Rotator Cuff Repair	Right	2/28/2019	1619012200
1041062	SER Test Hospital 1	PRP30246	Brown	Charlie	1/1/1980				Shoulder Arthroplasty	Left	1/20/2019	
1041062	SER Test Hospital 1	PRP30246	Brown	Charlie	1/1/1980				Shoulder Arthroplasty	Left	1/20/2019	
1041062	SER Test Hospital 1	PRP30235	butkus	dick	1/1/1980				Shoulder Arthroplasty	Left	1/20/2019	

PRE-REGISTRATION FORM PRE-REGISTRATION UPLOAD

This form allows AJRR Users to pre-register patients prior to surgery for pre-operative, patient-reported outcome measures (PROMs) data collection. Once the form has been submitted, a patient pre-operative case will be added to the Registry. The pre-registration process permits users to collect PROMs from patients via the AJRR platform through the patient kiosk or through manual entry of a patients' PROMs responses into the platform if collected by paper or clinician/surrogate administration.

PART 1: Patient demographic details

Please complete all applicable required and optional fields of the patient demographic section. Note: Email is conditionally required, however if you are administering assessments via email you must provide a patient email or the system will not be able to send the email to the patient.

If the Patient Social Security Number (SSN) is not available, please select the 'Not Available' option next to the Social Security field. Please note that the Registry also accepts the last 4 digits of the SSN. Patient SSN assists the Registry with achieving its mission through the ability to track longitudinal device information.

Not Available
Email

PART 2: Pre-Operative Case Information

Please complete all applicable required and optional fields of the pre-operative case section. Case information is required for all cases to be added to the Registry. Please note that all case data requested pertains to future procedures.

Planned Proc Date

Procedure Site

Shoulder

Elbow

Institution

Surgeon

Payer Info

SUBMIT

Registry Analytics Institute®



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.

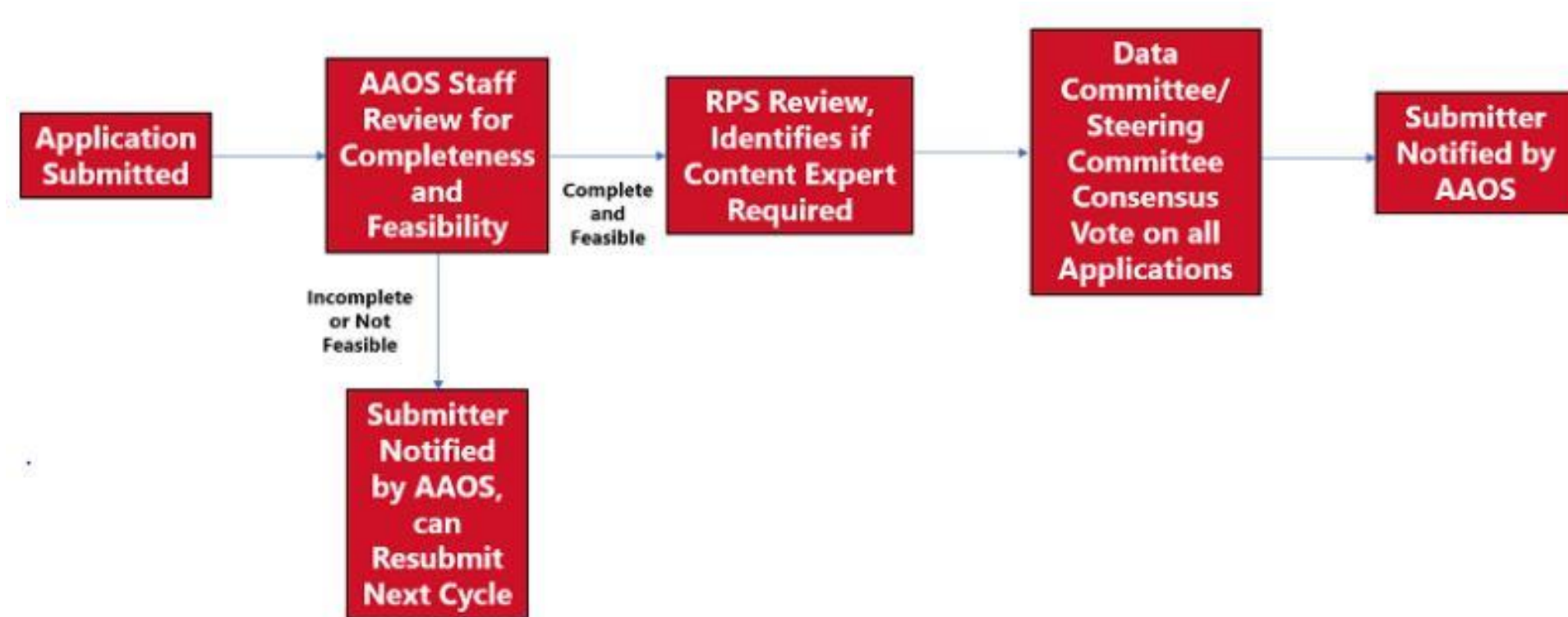
Application Seasonal Cycle

- Three cycles per year
 - 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.

Seasonal Cycle	Opens	Preliminary Application Due Date	Feasibility Assessments Completed	RPS Grading Completed and Applicants Notified of Final Decisions
Cycle 3 - 2020	October 5, 2020	November 16, 2020	February 1, 2021	April 5, 2021

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
- Height + Weight/BMI
- Payer Status

Site of Service

- Name and Address (TIN, NPI)

Surgeon

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Procedure

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Patient-reported Outcomes

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

Application Process – Data Analysis

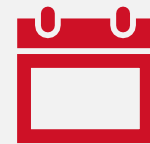
AAOS Registry Analytics team will work with investigators of approved applications to develop an analysis plan and timeline.



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.

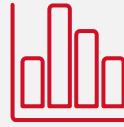
Examples of Past Projects - DAIR

- 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?



Compare your practice to **national performance benchmarks**



Access to on-demand practice specific **quality reports and dashboards**



Facilitate tracking and monitoring of **longitudinal patient outcomes**



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



Qualify for **national distinction programs** such as the Joint Commission Advanced Certification & AAAHC



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



Improve the **value of care** delivered to Patients



Questions?

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