

Registry Analytics Institute

How to do Research with AJRR data: The Research Analytics Institute Process

November 12, 2021

Dr. Richard Illgen

Professor of Orthopedic Surgery

University of Wisconsin

School of Medicine and Public Health

Discussion Agenda

- Introduction to Research Analytics Institute (RAI)
- Application Process - Eligibility
- Application Process - Request Process
- Application Process - Available Data
- Application Process - Data Analysis
- Application Process - Funding Award
- Scientific Publications Policies
- Examples of Past Projects

Introduction to RAI

- RAI provides a resource to the scientific community by providing clinician researchers in the United States access to the AJRR for hypothesis-driven research.
- Goal is to further understand and improve orthopaedic and musculoskeletal care through registry-based clinical research.

Introduction to RAI

- AAOS committees provide peer reviews and oversight to which proposals are approved.
- Data analysis is completed by AAOS Registry Analytics team members.
- AAOS does not allow access to our raw data, but results from all analyses are shared.

Discussion Agenda

- Introduction to RAI
- **Application Process - Eligibility**
- Application Process - Request Process
- Application Process - Available Data
- Application Process - Data Analysis
- Application Process - Funding Award
- Scientific Publications Policies
- Examples of Past Projects

Application Process – Eligibility

- Investigators who have a well-defined hypothesis/question applicable to registry-based science related to orthopedics or musculoskeletal care can apply.
- “Investigators” are clinicians or clinician-scientists affiliated with a clinical practice or care setting in the United States.
- Representatives from industry, federal agencies, commercial entities, insurance companies, administrative databases, or hospital consortia are not eligible.

Discussion Agenda

- Introduction to RAI
- Application Process - Eligibility
- Application Process - Request Process
- Application Process - Available Data
- Application Process - Data Analysis
- Application Process - Funding Award
- Scientific Publications Policies
- Examples of Past Projects

Application Process – Request Process

- Application process has two phases:
 1. After the submission deadline, AAOS staff reviews all applications for completeness and feasibility
 2. After passing the feasibility phase, AAOS AJRR Research Projects Subcommittee reviews the application and provides scoring based on the quality of the application
- If the application is approved, the investigators are notified and provided a timeline for data analysis completion. This is usually between 6-12 months after approval.

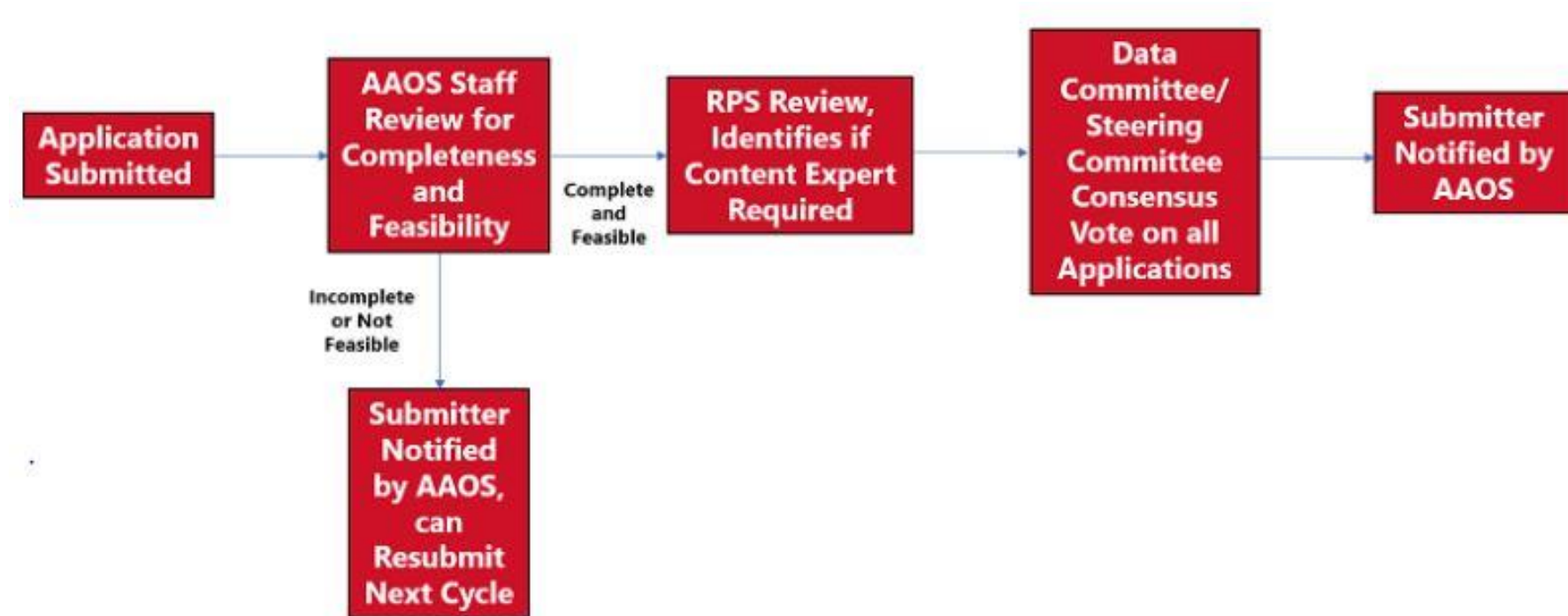
Application Process – Seasonal Cycle Dates

- 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	Application Due Date	Feasibility Assessments Completed	RPS Grading Completed and Applicants Notified of Final Decisions
Cycle 2 - 2021	June 7, 2021	July 12, 2021	September 10, 2021	December 3, 2021
Cycle 3 - 2021	October 4, 2021	November 15, 2021	February 4, 2022	April 8, 2022
Cycle 1 - 2022	January 31, 2022	March 14, 2022	April 29, 2022	July 15, 2022
Cycle 2 - 2022	June 6, 2022	July 18, 2022	September 6, 2022	November 25, 2022
Cycle 3 - 2022	October 3, 2022	November 14, 2022	January 27, 2023	April 14, 2023

Application Review, Summary Flow Chart

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



Discussion Agenda

- Introduction to RAI
- Application Process - Eligibility
- Application Process - Request Process
- Application Process - Available Data
- Application Process - Data Analysis
- Application Process - Funding Award
- Scientific Publications Policies
- Examples of Past Projects

Application Process – Available Data

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

Patient

- Name (Last, First)
- Date of Birth
- Social Security Number
- Diagnosis (ICD-9/10, CPT)
- Gender
- Race/Ethnicity
- Height + Weight/Body Mass Index
- Payer Status*

Site of Service

- Name and Address (TIN, NPI)

Surgeon

- Name (NPI)
- Trainee

*: dataset may be limited if combined with other criteria

Procedure

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

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 Index
- Operative and Post-operative Complications

Patient-reported Outcomes

Recommended:

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

Application Process – Available Data

Link to AJRR & CMS Data Elements & NDI

- Reasons for Revisions (65+)
- Frequency of Infections
- Early Complications
- Associations with BMI
- Updated Mortality using National Death Index



Comorbidities, Complications, and Survivorship

Comorbidities (ICD-9/10)
Height + Weight/Body
Mass Index
Length of Stay
American Society of
Anesthesiologists Score
Operative and Post-
operative Complications
Survivorship curves

Discussion Agenda

- Introduction to RAI
- Application Process - Eligibility
- Application Process - Request Process
- Application Process - Available Data
- **Application Process - Data Analysis**
- Application Process - Funding Award
- Scientific Publications Policies
- Examples of Past Projects

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.

Discussion Agenda

- Introduction to RAI
- Application Process - Eligibility
- Application Process - Request Process
- Application Process - Available Data
- Application Process - Data Analysis
- **Application Process - Funding Award**
- Scientific Publications Policies
- Examples of Past Projects

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 arthroplasty.
- Funding is limited to a maximum of \$3,500 per project.
- Individual applicants must be a United States residents.

Discussion Agenda

- Introduction to RAI
- Application Process - Eligibility
- Application Process - Request Process
- Application Process - Available Data
- Application Process - Data Analysis
- Application Process - Funding Award
- **Scientific Publications Policies**
- Examples of Past Projects

Scientific Publication Policy

- AAOS team will follow up with investigators regarding the expectation that the data will be presented and published in peer-reviewed literature.
- Investigators shall ensure that all proposed scientific publications are submitted to AAOS for a formal review with the Research Projects Subcommittee at least one month prior to publication submission.
- If AAOS staff or volunteer leaders collaborate with investigators on a scientific publication, such individual or individuals will be listed as a co-author[s].
- Investigators agree to acknowledge the contribution and will provide copies of such publications to be placed on the AAOS website.

Discussion Agenda

- Introduction to RAI
- Application Process - Eligibility
- Application Process - Request Process
- Application Process - Available Data
- Application Process - Data Analysis
- Application Process - Funding Award
- Scientific Publications Policies
- **Examples of Past Projects**

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 more than 1 DAIR attempt and (2) percentage of patients who have undergone further surgery to treat recurrent infection.
- Methods: Study group limited to CMS patients. AJRR data linked to CMS database.
- Results: There were **1,470 total DAIR** procedures to treat PJI, of which **97% had a single DAIR** and **3% had multiple DAIR** attempts. **Of the total DAIR population, 3% of subjects died, 20% progressed to subsequent revisions, 21% endured further TJA related procedures on the affected joint, and 56% were not found to incur further surgery or infectious outcomes.**
- This study was presented as a poster presentation at AAOS 2021 in San Diego and is submitted for publication.

Examples of Past Projects – TKA All-Poly Tibia

- Introduction: Previous studies have demonstrated equivalent survivorship of modular metal-backed tibial (MBT) and all-polyethylene tibial (APT) components.
- Aims: To determine utilization and outcomes of APT and MBT.
- RESULTS: **703,007 TKAs** were reported with **97.8% utilizing MBT** and **2.2% utilizing APT** components. The **rate of reoperation** for all-causes was **higher for APT** compared to MBT. The **rates of reoperation** for **infection, aseptic loosening**, and **other reasons** were also **higher** for **APT** compared to MBT. The **Kaplan-Meir survival curves for reoperation in APT and MBT were similar across** the study for all time points.
- This study was presented as a poster presentation at AAOS 2021 in San Diego and is submitted for publication.



Questions?

AnalyticsInstitute@aaos.org

www.aaos.org/registryanalyticsinstitute



Thank you!

AnalyticsInstitute@aaos.org

www.aaos.org/RegistryAnalyticsInstitute