Registry Analytics Institute

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

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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
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.
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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.
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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.
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>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 - 2021</td>
<td>October 4, 2021</td>
<td>November 15, 2021</td>
<td>February 4, 2022</td>
<td>April 8, 2021</td>
</tr>
<tr>
<td>Cycle 2 - 2022</td>
<td>June 6, 2022</td>
<td>July 18, 2022</td>
<td>September 6, 2022</td>
<td>November 25, 2022</td>
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<tr>
<td>Cycle 3 - 2022</td>
<td>October 3, 2022</td>
<td>November 14, 2022</td>
<td>January 27, 2023</td>
<td>April 14, 2023</td>
</tr>
</tbody>
</table>
• When an application is submitted, the proposed project enters the AAOS Analyses Request and Publications pipeline, and proceeds along the process shown below.
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Application Process – Available Data

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

<table>
<thead>
<tr>
<th>Patient</th>
<th>Procedure</th>
<th>Comorbidities and Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Name (Last, First)</td>
<td>• Type (ICD-9/10, CPT)</td>
<td>• Comorbidities (ICD-9/10, CPT)</td>
</tr>
<tr>
<td>• Date of Birth</td>
<td>• Date of Surgery</td>
<td>• CJR Risk Variables*</td>
</tr>
<tr>
<td>• Social Security Number</td>
<td>• Length of Stay</td>
<td>• Height + Weight/Body Mass Index</td>
</tr>
<tr>
<td>• Diagnosis (ICD-9/10, CPT)</td>
<td>• Surgical Approach</td>
<td>• Length of Stay</td>
</tr>
<tr>
<td>• Gender</td>
<td>• Laterality</td>
<td>• American Society of Anesthesiologists Score*</td>
</tr>
<tr>
<td>• Race/Ethnicity</td>
<td>• Implants (Manufacturer, Lot #)</td>
<td>• Charlson Index</td>
</tr>
<tr>
<td>• Height + Weight/Body Mass Index</td>
<td>• Anesthesia</td>
<td>• Operative and Post-operative Complications</td>
</tr>
<tr>
<td>• Payer Status*</td>
<td></td>
<td>Patient-reported Outcomes</td>
</tr>
</tbody>
</table>

Surgeon

<table>
<thead>
<tr>
<th>Site of Service</th>
<th>Recommended:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Name and Address (TIN, NPI)</td>
<td>• PROMIS-10 Global</td>
</tr>
</tbody>
</table>

*: dataset may be limited if combined with other criteria
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
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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.
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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.
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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.
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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?

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Thank you!

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