



Brief communication

Highlights of the 2020 American Joint Replacement Registry Annual Report

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AJRR 2020 executive summary

The American Joint Replacement Registry (AJRR) joined the AAOS Registry Program as the inaugural Registry in 2017. With oversight from the American Academy of Orthopedic Surgeon (AAOS) Registry Oversight Committee (ROC) and the AJRR Steering Committee, the AJRR continues to work to achieve the AAOS Registry goals. The AAOS Registry Program has since added other registries, including the following subspecialties: shoulder & elbow, oncology, spine and trauma. The past year has been marked by a multitude of successes and growth for AJRR. This *Annual Report* includes data from approximately 2 million hip and knee procedures and over 1300 enrolled sites, which represents overall cumulative registered procedural volume growth of 24.4% compared to the previous year. Much attention has been paid to ensuring AJRR maintains its position as the definitive national registry for total joint arthroplasty. Additional highlights from 2020 include:

Ambulatory Surgery Centers (ASCs) have not been strongly represented in AJRR historically, as much of the procedural information in the Registry has come from hospitals. In order to provide ASCs and private practices access to data quality, data analysis, and benchmarking, AAOS began implementing plans to better serve these sites. The first step was to focus on actively recruiting, educating, and engaging ASCs. This strategic refocus has been successful, as the number of ASCs participating in the Registry grew by 38.7% between July 1, 2018 and December 31, 2019. As of October 1, 2020 there are now 133 ASCs contracted to submit data to the annual report. To continue this trend, AAOS partnered with the Ambulatory Surgery Center Association (ASCA) and began a pilot program that provides the data submission framework necessary for lower-volume ASCs and those with limited technical capabilities. This partnership enables ASCs to demonstrate their value as viable sources of healthcare, particularly as a large number of surgical procedures are transferring to the outpatient arena. This is evidenced by the exponential growth seen from 2012 to 2019, in

which the number of cases from ASCs reported in AJRR grew from 5 to 7840. This trend will likely continue and with adding more ASCs to the report we can anticipate significant growth in cases reported annually.

Patient-Reported Outcome Measures (PROMs) are increasingly being utilized to evaluate the results of hip and knee arthroplasty procedures. AJRR recommends collection of the Patient Reported Outcomes Measurement Information System (PROMIS)-10 Global, the Veterans Rand 12-Item Health Survey (VR-12), and Hip Disability and Osteoarthritis Outcomes Score for Joint Replacement (HOOS, JR) and Knee Injur and Osteoarthritis Outcomes Score for Joint Replacement (KOOS, JR), though multiple additional PROMS can be entered. Many orthopedic stakeholders are finding benefit in capturing the patients' perspectives to best assess their surgical outcomes. Recognizing this, AJRR offers the RegistryInsights PROM platform for facilities to easily collect and upload PROM submissions to the Registry. The American Association of Orthopedic Executives (AAOE) and AJRR have also formed a collaboration to facilitate data collection via text and email. Additionally, AJRR has formed multiple partnerships, expanding our Authorized Vendor Program to help streamline data capture through electronic health record (EHR) software. These efforts have led to substantial growth in PROMs capture. By the end of 2019, 209 sites had submitted PROMs, which is an increase of over 13% compared to the previous year. An example of the potential power of this data collection can be witnessed by the pre-operative and post-operative collection of HOOS Jr. scores. In the current report there were almost 6000 (and growing in number) matched scores with 92.5% of the patients demonstrating a meaningful improvement after their primary THA. Similarly, 88% of the just over 10,000 matched KOOS Jr. scores showed a meaningful improvement for primary TKA cases.

Tracking and Monitoring Outcomes with longitudinal patient information continues to be a focus of the AAOS Registry Program. To help sites best utilize Registry data for this purpose, RegistryInsights has been expanded and enhanced to allow individual participating institutions and surgeons to access to their own real-time dashboard comparing their metrics to the AJRR national benchmarks. Finally, for those needing more custom capabilities, AJRR offers both site of service and surgeon-specific custom reports,

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which can then be used for internal performance measures, quality improvement, and benchmarking.

Publications and Presentations based off registry data have been an important focus of AJRR over the past year. A series of continuing education presentations were made at the 2019 National Association of Orthopedic Nurses (NAON) Annual Congress. AJRR data was also presented at the podium and on posters at the following 2019 and 2020 Annual Meetings: American Academy of Orthopedic Surgeons (AAOS), American Association of Hip and Knee Surgeons (AAHKS), International Society of Arthroplasty Registries (ISAR), The Knee Society, and The Hip Society. Topics have included patient-reported outcome measures, infection, arthroplasty for femoral neck fracture, patient migration, dual mobility, and more. AJRR has been fortunate to publish in a number of peer-reviewed journals.

The Ability to Reuse Registry Data to enable performance measurement as well as facilitate national registry-driven quality improvement programs has been a concentration of the Registry over the past few years. Now, AJRR data can be submitted for:

- The Joint Commission (TJC) Advanced Certification for Total Hip and Total Knee Replacement
- American Board of Orthopedic Surgery (ABOS) Maintenance of Certification (MOC) program for Part II Self-Assessment Examination (SAE) credit
- Centers for Medicare & Medicaid Services (CMS) Bundled Payments for Care Improvement Advanced (BPCI-A) for the 2021 reporting year
- CMS Comprehensive Care for Joint Replacement (CJR) Model
- CMS Merit-based Incentive Payment System (MIPS) Promoting Interoperability (PI) and Quality Payment Program (QPP)
- Accreditation Association for Ambulatory HealthCare (AAAHC) Advanced Orthopedic Certification
- Aetna Institutes of Quality (IOQ) Orthopedic Surgery
- BlueCross BlueShield Blue Distinction Specialty Care
- Blue Shield of California waiver of prior authorization for their patients' hip or knee replacement procedures
- Bree Collaborative
- Cigna Surgical Treatment Support Program
- Det Norske Veritas & Germanischer Lloyd (DNV GL) Orthopedic Center of Excellence
- The Alliance QualityPath

2020 AJRR Annual Report Highlights (published online at: <http://connect.ajrr.net/2020-ajrr-annual-report>)

The 2020 American Joint Replacement Registry Annual Report includes 1,897,050 primary and revision hip and knee arthroplasty procedures performed between 2012 and 2019. Primary knee (53.0%) and primary hip (33.3%) procedures made up the majority of reported cases. Sex breakdown was 58.8% female and 41.1% male for all cases. The average age of a total hip arthroplasty patient was 66 years compared to

66.9 years for total knee arthroplasty. Most of the patients in the data were white (74.2%) although race was unreported in 16.2% of cases. Among AJRR surgeons performing elective primary total hip

arthroplasty and total knee procedures separately, the mean annual procedure count was 29.2 and 38.5, respectively.

Many trends identified in previous *AJRR Annual Reports* continued this year. For hip arthroplasty procedures, there is still a trend toward increased use of ceramic heads. The use of antioxidant polyethylene liners has remained stable. Usage of dual mobility constructs has continued to increase in both the primary and revision setting. While hemiarthroplasties still predominate for the treatment of femoral neck fractures, total hip arthroplasty usage has increased. The use of cement for femoral component fixation is slowly increasing for both elective primary total hip arthroplasty as well as arthroplasty for femoral neck fracture. For elective total hip arthroplasty, the utilization of cemented femoral fixation increased to 5.3% from 3% in 2014. Cemented femoral fixation now accounts for 44.8% of hemiarthroplasties and 15.8% of total hip arthroplasty for femoral neck fractures. Some recent trends were evaluated, including the move to larger femoral heads (32 mm and 36 mm), which was associated with a lower risk for revision compared to 28 mm or smaller femoral heads. Further after adjusting for confounding factors, increasing BMI was noted to be associated with an increasing risk of revision after elective primary THA.

For total knee arthroplasty procedures, the use of cruciate retaining and ultracongruent bearings continues to increase while usage of posterior stabilized designs is declining. Although cemented fixation still predominates, cementless fixation is growing in popularity and is now being used in approximately 10% of all primary total knee arthroplasty procedures. Use of conventional polyethylene continues to slowly decrease, while highly cross-linked polyethylene inserts are seeing increased use. Though partial knee arthroplasties represent a small percentage of the overall knee arthroplasty cases in the Registry, this percentage has slightly increased over the past 2 years. Length of stay has trended shorter, alongside a concomitant uptick in the use of neuraxial anesthesia for both hip and knee arthroplasty procedures.

Component specific statistical summaries have been added to the report this year displaying common components utilized in hip and knee arthroplasties as well as device specific cumulative percent revision curves as presented in the *2019 AJRR Annual Report Supplement*. For the first time this year, cumulative incidence of revision curves have been used to examine procedure and implant survivorship. This year represents the third year completing curves of revision over time utilizing Centers for Medicare & Medicaid Services (CMS) data. Much time was spent establishing a consensus-driven methodology determined by multiple stakeholders. This framework provides the foundation for performing analyses moving forward, with the goal of providing more sophisticated and detailed survivorship curves in the future.

AJRR has an integral role in data collection and reporting for hip and knee arthroplasty throughout the United States. Its growth in adoption, strategic partnerships, and enhanced reporting will impact patient care, quality improvement, and device surveillance in an increasing trajectory in coming years. The benefits of the AJRR to individuals, organizations, and society at large cannot be underestimated. Wide-scale participation is encouraged to maximize the potential impact of this important effort.