Revolutionizing Joint Replacement Research

HealthEast Care System
HJRR was among the earliest orthopedic registries created in the United States, with more than 29,000 hip, knee, shoulder and small joint replacement procedures from St. John’s Hospital, St. Joseph’s Hospital and Woodwinds Health Campus recorded in its growing database. In fact, HJRR became the first community-based orthopedic registry in the nation when it was established in 1991. Although HJRR has made significant research contributions since its conception, the registry began as a cost analysis tool.

“In its earliest iteration, it wouldn’t have been described as a joint registry,” says Terence Gioe, M.D., Chief of Orthopedic Surgery at Minneapolis VA Health System and adjunct professor at the University of Minnesota. “It was really an outgrowth of a process designed to get a better handle on total joint implant costs in the HealthEast system.”

When Dr. Gioe and other members of the HealthEast staff launched HJRR, they gathered limited data to determine which prostheses were most effective and cost-efficient. However, the HJRR team soon realized the database could have enormous potential if they added new data points, such as body mass index or comorbidities data.

“Once the database was up and running, and we made it more robust, we realized that it was a much more powerful research tool than we had envisioned that it might be,” Dr. Gioe says. “We realized that we had some really good information and that we needed to go back and make sure that we added additional data to the database retrospectively.”

Reaping the Benefits of Community Collaboration

Armed with supplemental data, the HJRR became a uniquely powerful research tool. Today, it remains one of only a few community-based orthopedic registries in the United States. Most American joint registries draw their data from single institutions, such as academic medical centers. These databases typically provide results from subspecialists working in closely controlled operating environments. In contrast, HJRR provides data from general orthopedic surgeons working in community hospital settings across the metropolitan St. Paul, MN, area, enabling practitioners to compare their own results with those of their peers.

“Evaluating our outcomes in the registry creates a team approach among surgeons who are collectively trying to do a better job and achieve better outcomes,” says Daniel Hoeffel, M.D., orthopedic surgeon at Summit Orthopedics. “Though we may have differences of opinion, the mission and goals are clear for all.”

HJRR data allows surgeons to make evidence-based choices when faced with surgical complications, such as venous thromboembolism or joint dislocation. In addition, surgeons can utilize the database to evaluate implant device performance and choose prostheses that are effective both in terms of costs and outcomes.

“As surgeons, we base our decisions about implant selection on outcomes and results, not on marketing,” Dr. Hoeffel says. “The HJRR is absolutely in line with drivers that we currently face in orthopedic surgery: quality, value and continued research.”

Affecting Change in Implant Selection

To date, HJRR has put forth a number of studies that have significantly altered implant selection.

“The HealthEast Joint Replacement Registry has been a very forward-looking initiative. It enables the orthopedic surgeons to participate in a data-driven, evidence-based effort to optimize quality care and safety, patient satisfaction and cost.”

— Jack Drogt, M.D., President of Summit Orthopedics
surgical processes within the HealthEast system and nationwide. In one study, HJRR released results on the survivability and revision rate of all-polyethylene tibia components in total knee arthroplasty. This research demonstrated that plastic components yielded superior outcomes at lower cost compared to modular metal-backed tibia components. More recently, HJRR data showed that a specific metal-on-metal hip implant design showed a relatively high-failure rate, particularly in comparison with metal-on-polyethylene bearing surfaces. More recently, HJRR data showed that a specific metal-on-metal hip implant design showed a relatively high-failure rate, particularly in comparison with metal-on-polyethylene bearing surfaces. This information quickly drove a change in surgical practices, reducing usage of one particular metal-on-metal hip implant design to nearly 0% within the HealthEast system after 2009.

In some cases, this type of data has even been useful in recalls of specific implant devices.

“There have been three significant recalls of hip replacement devices in the last 10 years. We were able to identify those patients within 24 hours and begin a rapid notification process,” Dr. Hoeffel says. “This expedited patient care allowed surgeons to reassure patients who were concerned about the implant devices.”

The Future of Joint Surgery

As a community resource, HJRR served as a significant influence for the development of the national American Joint Replacement Registry (AJRR), created in 2010 by the American Academy of Orthopaedic Surgeons. In fact, HealthEast was among the earliest participants. As national data is assembled and compared with registries from other countries, HJRR remains a crucial source of primary research and analysis. Current investigations include a study of the effects of larger head sizes in total hip arthroplasty, a long-term follow-up study comparing cemented femoral stems with cementless varieties, and research concerning waste factors in total implant procedures.

“Your registry is a really compelling example of how worthwhile information and advancements in orthopedic science can be made in a community setting,” Dr. Gioe says. “The AJRR is a really large and important database, but smaller registries will still be required to look at certain subsets of data. Our role is changing, but that won’t take anything away from what we’ve already accomplished.”

For more information about orthopedic services available within the HealthEast Care System, visit www.healtheast.org/orthopaedic-care.