

# CELEBRATING GROWTH

# 2019

## Annual Report



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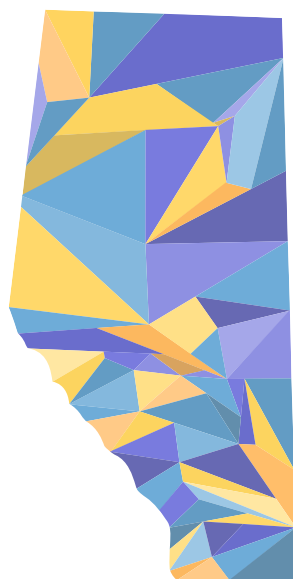
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## MESSAGE FROM OUR LEADERS,

“

*It's been a year of growth for the Alberta Bone and Joint Health Institute (ABJHI), as we flesh out solutions to expand the scope of quality improvement to new bone and joint health areas. There are gaps in bone and joint care in our province that, if fixed, will improve how bone and joint diseases and conditions are managed. Through developing new approaches that consider evidence and measurement, we have proven that patient outcomes and patient satisfaction with the care they receive can find harmony with management of the health care system.*

*As a province we're struggling economically compared with times past and, now more than ever, Albertans need to make strategic, innovative decisions for where we invest time, money and resources. Throughout this annual report you will find examples of how our focus ties into our strategic plan for what we aim to accomplish for Albertans by 2023, centered on three pillars that have made health care improvements successful with past initiatives: partnerships, data and analytics innovation, and integrated continuous quality improvement.*

*Through strategic partnerships, like that with Alberta Health Services (AHS) Bone and Joint Health Strategic Clinical Network (BJH SCN), evidence-based models of care unite leading patient outcomes with the business of delivering health care. The care pathways for elective hip and knee arthroplasty and hip fracture patients are now standard practice in Alberta and have embedded quality improvement processes for care providers to monitor quality of care being delivered and to develop other services that improve patient care and health outcomes.*

*Wait times received much media attention in 2019 as Alberta is not meeting evidence-based benchmarks for some treatments. The success of standardized care pathways is a testament to what can be achieved when evidence is applied strategically through planning and measurement. Our forecasts of hip and knee arthroplasty wait times in 2019 informs the evolution of service planning for the next decade. New initiatives in Alberta looking at conservative management for bone and joint conditions, how patients access bone and joint specialists and how they're assessed by those specialists aim to better support the overall patient journey.*

*Our founder, Cy Frank, was an innovative leader who saw the value in connecting information-based research with medical practice. As the Institute continues to work with healthcare and research partners on challenging best evidence and improving outcomes, we're launching MAP to MOTION, an initiative that will greatly advance bone and joint health evidence through an information platform that links all bone and joint services that patients need.*

Martin Ferguson-Pell  
Executive Director

Christopher Smith  
Director of Operations  
(Technical)

Don Dick  
Chair, Board of Directors

Liz Evens  
Director of Operations  
(Administrative)

*We hope that all Albertans recognize the value behind our vision and soon come to see it as their bone and joint information hub. Collaboration and knowledge translation play important roles with this new initiative and Alberta is uniquely situated to make optimal bone and joint health become a reality. You manage what you measure, and Albertans deserve the best that can be offered in lessening the impact of bone and joint diseases and conditions on their lives.*

”

## OUR VISION

*Better Bones, Better Joints, Better Being*

## OUR MISSION

*Be a source of truth for improving bone and joint health of Albertans through collaboration with patients, clinical professionals, researchers, healthcare professionals and government*



Shaping better bone and joint health by giving decision makers tools that empower and enable them to act according to best-evidence.



We specialize in supporting care path design based on international best practices and protocols that result in standardized care. Evidence-based care pathways are healthcare management tools that promote coordination of care for a specific health problem by integrating multiple healthcare disciplines into a care plan. Without these pathways, care is often fragmented and inconsistent. Processes that work well for an inner city clinic may not for a small, rural population and the care paths are designed to recognize the uniqueness of each location while still ensuring all patients receive equal care based on best-evidence.

ABJHI operates a robust data repository that integrates bone and joint data from the Alberta health system. The current repository includes data from orthopedic surgeon offices, hospitals, provincial administrative databases, and patient-reported (survey) outcome measures. We operate the repository under formal affiliation agreements with approximately 90 custodians of health data, including Alberta Health Services, orthopedic surgeons and other physicians.

Measurement and analytics around health care performance and health outcomes methodically finds gaps in practices and protocols and promotes improved patient care. Continuous quality improvement helps generate safe, appropriate, effective and cost-effective health care.

Our history is rooted in a provincial care path for hip and knee replacements, which has resulted in better patient experience and outcomes, shorter stays in hospital, reduction in unnecessary blood transfusions (\$9 million cost savings), and released over 100,000 inpatient bed days of hospital capacity. We're committed to advancing care for the diversity of other bone and joint conditions affecting Albertans.



Partnerships



Data & Analytics  
Innovation



Integrated Continuous  
Quality Improvement



ABJHI collaborates with many different organizations and we share a very special partnership with the AHS BJH SCN, the McCaig Institute for Bone and Joint Health and the University of Alberta. The McCaig Institute for Bone and Joint Health and the University of Alberta conduct ground-breaking research to improve prevention and treatment of debilitating bone and joint diseases and conditions. The BJH SCN devises creative strategies to move health care services quickly from the design phase to delivery in the population. ABJHI is an independent, trusted third-party organization that is currently contracted by the BJH SCN to build synergy on specific bone and joint health deliverables and programs that support the health needs of Albertans.

The ABJHI Data Repository is also of interest to researchers. The ABJHI Research Advisory Committee provides oversight of data and project management requests to ensure the data repository has maximum impact by focusing on priority bone and joint research areas.

### Did You Know...



21

Health Zone  
Reports



413

Hospital/  
Clinic Reports



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New Research  
Projects

## IMPROVING BONE AND JOINT HEALTH

ABJHI facilitates projects in areas where the bone and joint health stakeholders we collaborate with are the recognized authorities. We cannot compel compliance; instead, we rely on evidence, information from health providers and our established reputation as effective health system influencers to encourage healthcare change that is in the best interests of Albertans. Measurement of health outcomes reveals opportunities for considerable improvements when applied as evidence or as positive reinforcement, and we're expanding our reach to partner with the multitude of health disciplines and academics that share our ambition of improving the wellness journey of a bone and joint patient throughout the course of their life.

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Surgeon  
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Journal  
Publications



2019



## PARTNERSHIPS

Our work with the BJH SCN in 2019 focused on refining assessment and care models of priority bone and joint conditions, improved information and education for patients, and patient engagement into osteoarthritis management. Strategic planning took place in support of the BJH SCN's transformational roadmap for 2020-2025.

ABJHI connected with several new faces in 2019 including: Alberta Innovates, the Alberta Machine Intelligence Institute, AltaML Inc., AHS Improving Health Outcomes Together (IHOT), and the Health Quality Council of Alberta. ABJHI also engaged with the AHS Surgery Strategic Clinical Network (Surgery SCN) on improving access to surgical bone and joint health services.

Research advancements in 2019 utilizing ABJHI resources include long-term prospective studies on the hip and knee arthroplasty population looking at a tool for surgical decision-making, effectiveness and safety of hip resurfacing, and wearable technology to support surgical outcomes. Retrospective research studies span across machine learning predictability in care settings, advanced imaging for preventing osteoporotic fractures, a data cube analytics platform for simulation modeling, the impact of antidepressants on hip and knee arthroplasty patient outcomes, micro-costing and outcome evaluations for hip and knee arthroplasty, a cost-effectiveness evaluation of Fracture Liaison Service in Alberta and dissemination and engagement for the 3-year STOP-FRACTURE study.



# DATA AND ANALYTICS INNOVATION

We believe that a sustainable health care system that is responsive to the needs and expectations of patients and their families is achievable through innovation. The prospect of readily available advanced data and analytics to fuel research and quality improvement in support of prevention, chronic care and rehabilitation is an opportunity that Alberta cannot afford to overlook.

## CUTTING EDGE ANALYTICS

**We informed:**



**wait time demand modelling and provided context for strategic osteoarthritis healthcare planning.**

Timely and appropriate access to health care in the province was on a lot Albertans' minds in 2019, including surgical wait times for hip and knee arthroplasties. On behalf of the BJH SCN, ABJHI published a White Paper on the history and current state of care for those afflicted with OA in Alberta. Wait times are currently beyond the clinical recommendations (and getting worse). Our forecasts, which consider the current and future size of the wait list, paint a much different picture than looking at past performance. We used statistical modeling to forecast the number of hip and knee replacements that are needed to get wait times back within acceptable targets. If current trends continue, the demand for surgery is expected to grow by more than a thousand patients per year simply as a result of population growth, aging, and the wear and tear on our joints from increasing rates of obesity. Our system must build the capacity to care for the existing backlog of patients as well as this new demand.

ABJHI continues to engage with stakeholders across the province on a combined approach of conservative care and surgical management of OA that will reduce the burden of the disease on Albertans and our healthcare system. We believe that this is the only way to flatten the demand curve and provide sustainability for arthroplasty care.

**52.3%**

Waiting over 26 weeks for surgeon consult, 2017/18



**43.5%**

Waiting over 26 weeks for surgery, 2017/18



### Did You Know...



The current clinical recommendation for an appropriate wait for surgical intervention of advanced hip or knee OA is no more than 26-weeks from the decision date to the date the patient receives the procedure. Thanks to affiliation agreements with clinics that conduct the surgical consultations, ABJHI and the BJH SCN are also able to measure the waiting period for the consultation appointment.

The ideal wait time for hip or knee replacement surgery is not zero. Patients must be well prepared—medically, physically and socially—for the experience, and a process called optimization brings patients to their optimal state of readiness for the surgery. Depending on the medical and physical health of the patient, this process can take some time. Patients who are in optimal health are more likely to enjoy a successful recovery and return to normal function.



### **We supported:**

#### **Alberta as a leader in bone and joint healthcare.**

Alberta's patient-reported outcome measures (PROMs) for hip and knee replacements were profiled in the Organisation for Economic Co-operation and Development's international 2019 Health at a Glance report alongside national initiatives (England, the Netherlands, Sweden), regional initiatives (Manitoba and Geneva, Switzerland), sub-national registries (Australia) and single hospitals (Coxa Hospital, Finland and Galeazzi Institute, Italy).

Our efforts to introduce new technology to track orthopedic implants, supported by Alberta Health Services and the Alberta Orthopedic Society, helped to dramatically increase data submissions to the Canadian Joint Replacement Registry. This will improve monitoring of patient safety and outcomes.



### **We investigated:**

#### **application of artificial intelligence for healthcare planning and decision-making.**

The implants that arthroplasty patients receive don't last forever and some patients must have a revision surgery to replace some or all parts of the original prosthesis. Alongside the Alberta Machine Intelligence Institute (Amii) and Alberta Innovates, a model is being developed to try and identify which patients factors can predict the need for future revision surgery. Machine learning puts algorithms and statistical models to work to make a system automatically learn and improve from experience without further programming by a human. By identifying the likelihood of a patient to need a revision to their joint, the model could help inform the clinical and patient decision for an initial joint replacement.

Many hip fracture patients require extra rehabilitation before they return to their previous living situation and some patients need to find new placements at assisted living or long-term care facilities. Partnering with AltaML Inc., we're looking to predict the discharge destination for hip fracture patients on the day after surgery. Knowing as soon as possible where a patient will ultimately end up will help planning and improve transitions in care following a patient's surgery.



A photograph of two hikers on a snowy mountain trail. The hiker on the left is wearing a dark jacket and a white beanie, smiling. The hiker on the right is wearing a bright yellow jacket and a patterned beanie, looking down. Both are using trekking poles. The background is a snowy, rocky mountain slope. The image is overlaid with a semi-transparent blue rectangle on the right side and a yellow rectangle at the top right.

**"You cannot rest on your success;  
you must build on your success."**


**-Cy Frank, Founder**






**We developed:**  
**a data cube capable of complex simulation modelling under accelerated timelines thanks to the project, an “Integrative Approach for Translating Research to Improve Musculoskeletal Health”.**

Through a grant supported by the Canadian Foundation for Innovation (CFI), ABJHI supported Dr. Steven Boyd, Dr. Deborah Marshall and their University of Calgary research team to develop a data cube analytics platform that streamlines data analysis. A data cube lets users quickly analyze vast amounts of data from multiple perspectives; what would previously be analyzed in weeks and months can now be done in hours and days with the cube.



Improved and integrated data capture from bone and joint medical professionals will guide Alberta towards a healthier community that can stay active and healthy for years to come.



**We progressed:**

**towards fixing the gap in information available about bone and joint health in Alberta through MAP to MOTION, an innovative information platform.**

A unified bone and joint patient journey is possible through collaborative efforts of health professionals and administrators in our province. In 2019, we engaged with numerous stakeholders on how to advance what Albertans know about bone and joint health. For many new to the bone and joint health world, this involved discussions around the critical need for better information. For some familiar with the healthcare system, it's simply a question of how and when.

## MAP to MOTION

### Your Bone & Joint Information Hub

ABJHI launched a \$2 million fundraising campaign in support of cutting-edge research that provides the opportunity for:



prevention and slowing of disease progression



more personalized care tailored to each patient



integration of a patient's healthcare experience with various providers



technology options that support improved patient experiences



There are many questions that patients, care providers and health administrators ask that cannot be answered based on current evidence, either because that information doesn't exist, the data is unstructured or incomplete, or because it's not accessible across the domains of public and private healthcare. This is true not only of our province but across the world.

What preventative strategies can best support patients from developing more debilitating and long-term bone and joint conditions? How often do Albertans seek treatment for sports or work-related injuries from physiotherapists, chiropractors or physiatrists? Why do some people respond to some treatments, while not to others?

### Did You Know...



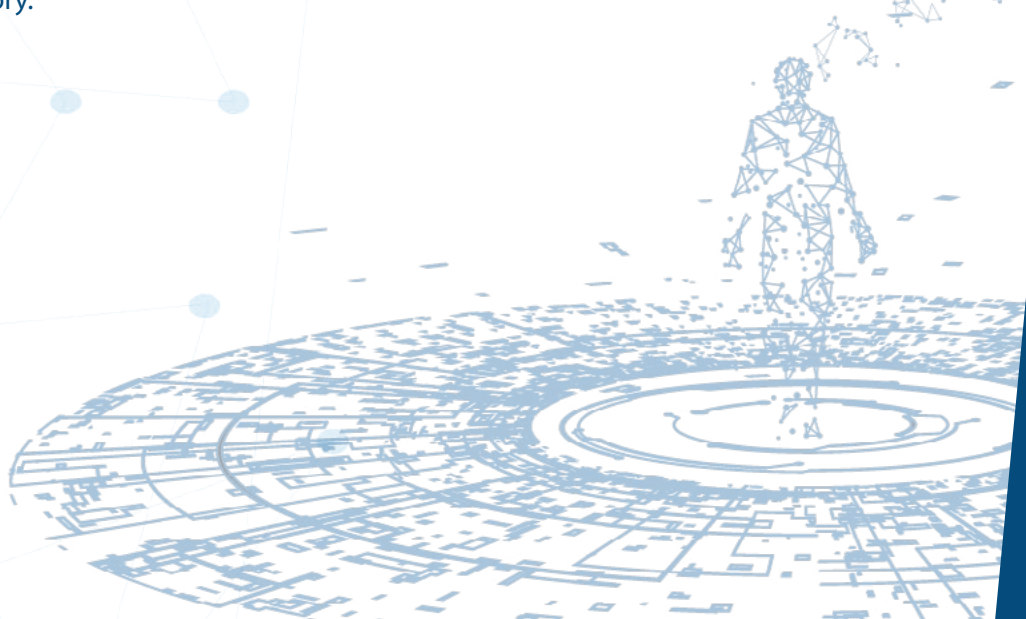
#### **We engaged: with a broad stakeholder group of bone and joint health professionals and patients across the Alberta community.**

Following a public expression of interest, 2019 saw the formation of two initial stakeholders groups for MAP to MOTION. The Governance Committee, who will oversee the development of key operating processes and policies, has a broad membership representative of patients, researchers, physiotherapists, physicians, physiatrists, chiropractors, and surgeons. The committee is chaired by Murray Smith, who along with a patient perspective also brings significant governance experience in the private and public sectors.

The Shoulder Topic Expert Group, the first of many groups that will provide their expertise on specific health areas within MAP to MOTION, are determining the scope of the shoulder module. The Shoulder Expert Group is chaired by an Edmonton sport medicine physician, Dr. Terry DeFreitas.

The expression of interest also culminated in the selection of two clinical champions for guidance and insight into the establishment of MAP to MOTION: Dr. David Sheps and Dr. Raj Sharma, the Northern and Southern Alberta representatives, respectively.

MAP to MOTION is a long-term solution to address the impact of bone and joint conditions on Albertans and sustainability is at the forefront our minds, borrowing from ABJHI's more than 10 years of experience in managing the current data repository.





# INTEGRATED CONTINUOUS QUALITY IMPROVEMENT

## CONTINUITY OF CARE



### We supported:

**the expansion of Alberta's Fracture Liaison Service (FLS) to all five Alberta health zones.**

Alberta FLS, a program created by the BJH SCN, are designed to restore quality of life to hip fracture patients and prevent subsequent fractures. Hip fracture patients at participating hospitals with FLS are assigned a dedicated FLS team who monitor management of the patient's bone health up to 1-year post-fracture, before care is transferred fully back to family physicians.

South Health Campus (Calgary) and Chinook Regional Hospital (Lethbridge) launched their FLS programs in 2019, bringing the total count to ten across the province since the program was introduced four years ago. Each FLS brings us closer to improving the bone health of Albertans, especially the more than 3,000 patients who end up in hospital each year with a hip fracture. ABJHI assisted the BJH SCN with coordinating the launches and we provide quarterly quality improvement reporting to the FLS teams on behalf of the BJH SCN.



### We evaluated:

**the model of FLS in Alberta, examining initiation of osteoporosis treatment following hip fracture.**

Without FLS, only 24.9% of hip fracture patients started on osteoporosis medication after their fracture. With support from the FLS team and family doctors, 43.8% of hip fracture patients started osteoporosis medication to help prevent additional fractures. While osteoporosis medication is a key component for managing bone health, FLS also emphasizes support services for the elderly (e.g. falls prevention and geriatric assessment). The evaluation was conducted at the Misericordia Community Hospital and the Peter Lougheed Centre, the two longest running FLS in Alberta.

**24.9%**  
Osteoporosis medication usage, without FLS



**43.8%**  
Osteoporosis medication usage, with FLS





## ACCESS TO SERVICES AND STANDARDIZED CARE PATHWAYS

### We supported:



**the BJH SCN in initiating their Musculoskeletal (MSK) Assessment project, aiming to improve patient access to timely and accurate MSK assessments.**

MSK care, that is the care of bones, muscles, ligaments, tendons, and joints in your body, is a complex multidisciplinary healthcare field, with often overlapping scopes of clinical practice. Long waits and different standards for assessment are common, just one of the many sources of frustration for patients with bone and joint problems.

The goal is to form multidisciplinary assessment clinics incorporating evidence-based guidelines, advanced clinical expertise, and measurement of patient outcomes. We are providing project management expertise for current state analysis and care path development, with data collection to support evidence for the assessment pathways.

### We coordinated:



**evidence review for an Alberta Standards of Practice for the conservative management of osteoarthritis.**

The standards of practice sponsored by the BJH SCN will provide guidance on the principles to achieve the best outcome for patients in managing OA. A review of national and international evidence was completed and will form the basis for the standard, with particular emphasis on the Health Quality of Ontario's Quality Standard, "Osteoarthritis: Care for Adults with OA of the Knee, Hip, or Hand."



## PATIENT ENGAGEMENT AND EDUCATION



**We expanded:**

**education to empower patients with knowledge and confidence to self-adjust managing their osteoarthritis.**

In today's internet age, it's easy to get caught up in a whirlwind of health information that isn't evidence-based. To successfully manage their chronic disease, OA patients may find they need to continuously adapt their management strategies to fit their fluctuating symptoms and lifestyles. We supported the launch of the BJH SCN's new osteoarthritis education and tools, being evaluated with patients seen at the Chinook Bone and Joint Clinic in Lethbridge for problems with their hip or knee OA. All patients receive an OA education class and evidence-based toolkit. Patients who are deemed non-surgical following consultation take part in an additional education session and receive up to 1-year of telephone navigation support with a physiotherapist, with the aim of cultivating patient comfort in adjusting activities and treatments to self-manage their disease, and awareness of what community-based resources are available for support. In 2020, ABJHI will provide an evaluation to the BJH SCN of the new patient supports. The Alberta Hip and Knee Clinic (Gulf Canada Square) in Calgary began offering the first OA education class in December for hip and knee patients referred through their clinic.

## SUSTAINABLE FEEDBACK SYSTEMS



**We engaged:**

**with the BJH SCN and the network of professionals who provide hip and knee arthroplasty care in Alberta in redesigning their quality improvement reports.**

The philosophy behind continuous quality improvement is that processes are established that provide ongoing evaluation of how something is working and the outcomes that result. Reinforcing quality improvement processes for the hip and knee arthroplasty care pathway was a top priority in 2019. The arthroplasty care providers and hospital and clinic administrators reflected on what has worked well over the past 10 years to share information and learnings provincially as medical professionals. As the province engages on how to improve access to surgical services for hip and knee arthroplasty, and as we look to new, exciting projects that expand the areas of improvement for bone and joint health, we will continue to work with stakeholders to not lose sight of the traction in care improvements and patient health under the existing care pathway.



# THANK YOU TO OUR DONORS

Our sincerest appreciation for the generosity shown by our donors.  
You are helping to make Alberta a centre of excellence in bone and joint health!

THE DIFFERENCE  
IS  
YOU!

## Landrex Ventures

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Chris Smith

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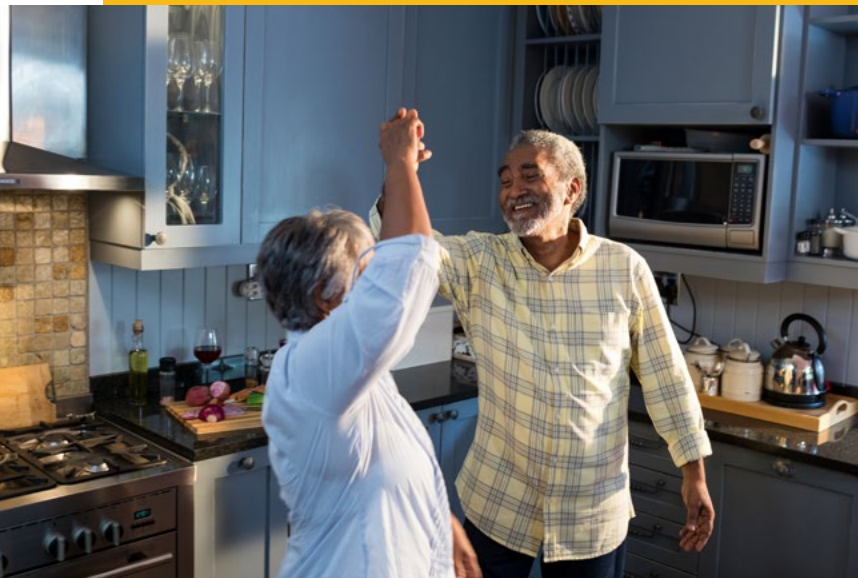
Kern Industries

Lowe Mechanical

Norma McElhone

Dave Rowan

Oct 2018 -  
Sep 2019





## FINANCIAL SUMMARY

(Unaudited)

*ABJHI Fiscal Year Oct 1, 2018 to Sept 30, 2019*

### Revenue:

Donations and Events	\$ 290,401
Government Contracts and Grants	1,439,376
Non-government Contracts and Grants	276,696
Other: Rental and interest income	22,239

TOTAL	\$ 2,028,712
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### Expenses:

Labour (salaries & benefits)	\$ 1,332,312
Operating Expenses	262,634
Administration	350,937
Amortization	21,765

TOTAL	\$ 1,967,648
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ABJHI contributed to the following 2019 publications:

Ashish T, Ahmed E, Khong H, Railton P, Sharma R, Johnston K, Puloski S, Smith C, and Powell J. **Association between Allogeneic Blood Transfusion and Wound Infection after Total Hip or Knee Arthroplasty: A Retrospective Case-Control Study.** J Bone Joint Infect. 4(2): 99-105.

Bansback N, Trenaman L, MacDonald KV, Hawker G, Johnson J.A., Stacey D, Marshall DA. **An individualized patient-reported outcome measure (PROM) based patient decision aid and surgeon report for patients considering total knee arthroplasty: Protocol for a pragmatic randomized controlled trial.** BMC Musculoskeletal Disorders, Feb 2019; 20:89.

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Jin X, Sayah FA, Ohinmaa A, Marshall DA, Smith C, Johnson JA. **The EQ-5D-5L Is Superior to the -3L Version in Measuring Health-related Quality of Life in Patients Awaiting THA or TKA.** Clinical Orthopaedics and Related Research.

Jin X, Sayah FA, Ohinmaa A, Marshall DA, Johnson JA. **Responsiveness of the EQ-5D-3L and EQ-5D-5L in patients following total hip or knee replacement.** Quality of Life Research. (9):2409-2417.

Lopatina E, Miller J, Teare S, Marlett N, Patel J, Barber CE, Mosher D, Wasylak T, Woodhouse L, Marshall DA. **The voice of patients in system redesign: A case study of redesigning a centralized system for intake of referrals from primary care to rheumatologists for patients with suspected rheumatoid arthritis.** Health Expectations, June 2019;22(3):348-363.

Marshall DA, Liu X, Shahid R, Bertazzon S, Seidel J, Patel AB, Nasr M, Barber CEH, McDonald T, Sharma R, Briggs T, Faris P, Waters N. **Geographic variation in osteoarthritis prevalence in Alberta: a spatial analysis approach.** Applied Geography, Feb 2019;103(1):112-121.

Organisation for Economic Co-operation and Development, **Health at a Glance 2019: OECD Indicators**, OECD Publishing, Paris.





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