Alberta Bone and Joint Health Institute

2014 *IMPACT* REPORT

ALBERTA BONE & JOINT HEALTH INSTITUTE

Inform. *Instigate.* Improve.

August 2014

Alberta Bone and Joint Health Institute

We are
Canada's only independent institute for channelling knowledge into better bone and joint health care services, and
the nation's leading organization for engaging stakeholders in adopting best practices

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Closing the Gap between What We *Learn* and What We *Do* in Bone and Joint Health Care

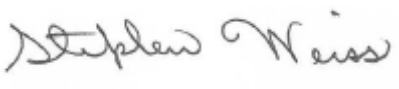
*Every day brings new opportunity to close the gap between what we **learn** and what we **do** in bone and joint health care in Alberta. Closing that gap – that is, using what we learn to improve the quality of patient care – is more than an occupation for the people at Alberta Bone and Joint Health Institute. It is our daily mission.*

We undertake our mission in dozens of different ways. We design innovative models of care and work with health care employees on the front lines to put them into everyday practice. We model future demand for bone and joint care and use the results to help service planners make decisions about the resources they will need. We develop frameworks for measuring health care performance, showing administrators and clinicians whether they are hitting their performance targets. We dig deep into public health data to find the root cause of problems, such as long wait times for surgery, and develop countermeasures for policy makers. We analyze patient information from surgeons to show them where they can take action to meet provincial or personal benchmarks.

There's much more – too much to list here. It is very practical work. And it produces measurable benefits – for the people who use health care services, the people who provide them, and the people who pay for them. In Alberta, that's just about everyone.

Importantly, we don't work in isolation. Our strength and success come from the skills and knowledge we have developed in bone and joint health care, and – just as importantly – from the relationships we have built and fostered over the years. These relationships – with doctors and other medical professionals, researchers, policy people and administrators – are founded on trust in our people. We understand that their trust in ABJHI is a reward that has to be earned over time. We also understand that the most effective way to earn the trust of others is to live our values to the extent that they define us as an organization. These values are ethics, integrity, privacy, evidence, respect, passion, innovation, collaboration, accountability and continuous improvement.

In this, our first Impact Report, we give you an account of the difference ABJHI has made in important areas of bone and joint health care in Alberta. Our Impact Report describes nine significant ways ABJHI has helped to close the gap between what we *learn* and what we *do* in bone and joint health care. As a not-for-profit charitable organization, we believe it is our impact on this gap that is most important to Albertans.



Stephen Weiss, PhD
Executive Director

Integrity – Our actions and behaviour individually and collectively reflect our words. Honesty and sincerity form the foundation on which we build enduring relationships.

Finding the Narrative behind the Numbers

The medical evidence shows that patients who have a hip or knee replaced should stay no longer than four days in hospital, providing there are no complications. But in 2010, hospital stay in Alberta averaged 5.2 days and 4.7 days for hip and knee replacement patients, respectively. An extra day may not seem like much, but 10,000 of these surgeries are done every year in Alberta.

As Alberta struggled to reduce the waiting time for hip and knee replacements, ABJHI saw an opening for improvement by reducing patient stay in hospital. Moving patients out of hospital sooner would open up beds for waiting patients.

But first ABJHI had to probe the data on hospital stay to find the narrative behind the numbers.

The narrative was surprising.

ABJHI found many patients were staying in hospital longer than necessary because they hadn't made arrangements for help at home following surgery. In the hospital environment, help is available around the clock. But it comes at an average cost of approximately $1,200 a day for hip and knee replacement patients. These avoidable extra days clog up the system.

The impact of mobilization following surgery and length of stay in hospital also become clear. ABJHI found patients were not routinely standing and taking a few steps in the hours following surgery, even though early mobilization is known to improve recovery.

Finally, the "comfort" factor was also contributing to longer stays than necessary. Some patients simply felt comfortable and secure in the hospital environment and wanted to stay longer.

In response, ABJHI engineered a plan that mobilized frontline teams in clinics and hospitals where hip and knee replacements services are provided. The plan included putting renewed effort into ensuring patients made arrangements prior to surgery for home help, making day-of-surgery mobilization routine practice, and being more heedful of the "comfort" factor. These arrangements are, in fact, a critical part of the care path for hip and knee replacements.

The move has paid off. Stay in hospital has declined to an average 4 days. Over the four-year period from April 2010 through March 2014, 44,000 bed-days have been saved with a value of $44 million.

Alberta now is performing almost 75% more hip and knee replacements with just 5% more beds, compared with a decade ago.

"Importantly, the shorter stay in hospital has been achieved without sacrificing patient wellbeing or patient satisfaction with care. In fact, the data we analyzed showed a decrease in the rate of patients being readmitted to hospital for complications following their hip or knee replacement. In satisfaction surveys, almost all discharged patients gave their care teams a nine or a perfect 10."

– Tanya Christiansen, Project Manager, Hip and Knee Replacement

Privacy – Personal health is among the most private of matters. The privacy of patient information is always protected.

Next-Available-Surgeon Option Cuts Waiting Time

"Waiting time to see the surgeon you requested is 19 weeks. But if you take the next available surgeon, you can be seen in six weeks."

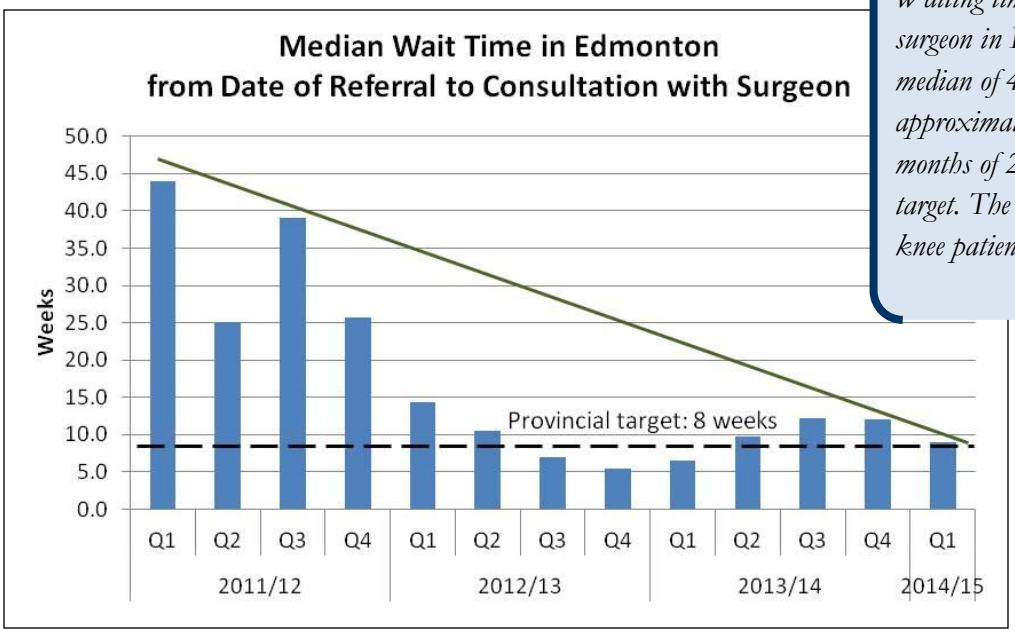
These words – or words like them – are being spoken many times every day by managers at Alberta's busiest hip and knee replacement clinics.

In any service business, there are periods when some service providers are exceptionally busy and others experience a slowdown. It's no different in hip and knee replacement.

At the two clinics in Calgary and the clinic in Edmonton, patients referred to orthopaedic surgeons with long waiting lists are offered the next available surgeon. The clinics, with 22 surgeons in Calgary and 25 in Edmonton, see approximately 10,500 new patients a year. They are the busiest hip and knee central intake clinics in Alberta, assessing approximately 70% of all referred hip and knee patients in the province.

The next-available-surgeon program was developed by ABJHI as a way to smooth out demand for surgeons with the objective of reducing the time patients wait to see them. Over the past two years, the median wait for a consultation has decreased to 11 weeks from 18 weeks.

"All hip and knee replacement surgeons in Alberta are highly skilled," said Jane Squire Howden, the Executive Director at the Edmonton Musculoskeletal Centre. "When patients realize this and when they understand clearly what to expect in terms of access and quality, the decision to switch becomes easy."



Waiting time for consultation with a surgeon in Edmonton has declined from a median of 44 weeks in 2011-12 to approximately eight weeks in the first three months of 2014-15, meeting the provincial target. The Edmonton clinic for hip and knee patients is the busiest in Alberta.

Driving Change from the Bottom Up

> *"The days of top-down, command-and-control change management are gone. It's people who change organizations."*
>
> *– Jack Silversin, health care consultant and author, on leading change.*

When ABJHI and the Bone and Joint Health Strategic Clinical Network (BJH SCN) teamed up to eliminate the high variability in the way a care path was being followed, they didn't expect they were laying the groundwork for major policy change in Alberta. But that's exactly what transpired.

The care path was designed by ABJHI for hip and knee replacement patients. It set out the evidence-based practices and protocols to be followed along the patient's journey from referral through consultation, surgery, recovery and rehabilitation. Care is fully integrated and provided by a multidisciplinary team. The benefits to patients have been proven in a major study.

But embedding the care path as standard practice across the province proved difficult and slow. Periodic audits by ABJHI found the degree of adherence to it varied significantly.

ABJHI and the BJH SCN, a unit of Alberta Health Services, decided that a top-down decree to adopt the care path was ineffective. A groundswell of support was needed. They decided to drive change through teams of frontline health professionals – orthopaedic surgeons, nurses, therapists and managers. Willing participants were found and a team was set up in each of the 12 hospitals performing hip and knee replacements in Alberta.

Each team set performance targets in key areas of the care path – waiting time for surgery, length of stay in hospital and patient satisfaction, to name a few. A balanced scorecard was created by ABJHI to measure and track the teams' progress toward their targets. The teams used Six Sigma and Institute for Health Improvement methodologies for accelerating progress.

As the care path became embedded as standard practice in the hospitals, provincial waiting time for surgery fell, patients were up and mobile and returned home sooner after surgery, and patient satisfaction levels soared. Readmissions to hospital for complications fell.

The hospital teams have become a permanent fixture in orthopaedic units across the province, and the care path is now standard practice.

The methodology was articulated in a Learning Collaborative developed by ABJHI. The Learning Collaborative has been adopted by Alberta Health Services as policy, serving as a model for achieving breakthrough improvement. It is now being used by Strategic Clinical Networks in other areas of medicine, such as Cardiovascular Health and Stroke, and Seniors Health, to create the conditions for bottom-up change.

> *"We found the more closely we followed the care path, the more progress we made to our targets. The benefits in all dimensions of health care quality became obvious."*
>
> *– Jason Werle, orthopaedic surgeon at Rockyview General Hospital, Calgary*

Dr. Jason Werle (left) shows an implant device to Kelly Anhelher who had hip replacement surgery in February 2014.

Mr. Anhelher said his quality of life improved dramatically after surgery. "I could tell how much better it was as soon as I woke up. The surgery was scheduled quickly, the procedure went well and the recovery has been good. It has all been a very positive experience."

Watch the YouTube video.

Rise and Shine – You Just Had a Knee Replaced

The last thing you might be looking forward to after having a major weight-bearing joint replaced is getting up just a few hours later, standing on it and taking a few steps, but that is exactly what you should do.

Those few steps in the hours following a hip or knee replacement are the necessary first steps to a good recovery, to getting out of hospital and home sooner, and to getting back to normal physical function more quickly.

Getting up and moving as soon as possible after surgery – "early mobilization" in medical parlance – is an essential part of the care path for hip and knee replacement patients in Alberta. The care path was developed by ABJHI and Alberta's orthopaedic surgeons and now is standard practice in every hospital in the province where these surgeries are performed.

In fact, early mobilization is but one component of planning for a smooth discharge from hospital. It's a multi-step plan. Get up and get moving is step one. Physiotherapy is step two. Meeting physical function goals, such as going up and down stairs, getting into and out of bed, and being able to do recovery exercises, is step three. Having help when you arrive home is the final step in discharge planning.

The benefits of early mobilization are numerous but perhaps most important is that getting on your feet is one of the most effective ways of avoiding a blood clot after surgery. Blood clots can have serious consequences, including stroke and heart attack.

Other patients benefit, too. Patients who recover well spend less time in hospital, freeing up bed space for the next patient who needs a hip or knee replaced. This, in turn, reduces waiting time for surgery.

"The physiotherapy assistant came into my room a few hours after surgery and went through some exercises with me. Shortly after that, a nurse came in and said, 'Okay, let's get you up'. I was a little fearful about it, but when I stood, I was quite surprised that it didn't hurt and I was also surprised at how much weight I could put on my leg. I had just had a whole body part removed and I expected a debilitating effect, but it wasn't at all debilitating.

"I took a few steps with a walker. The nurse was by my side. I continued to get out of bed after that, always with a walker and accompanied by a nurse.

"I had my surgery on a Tuesday and by Friday I was home."

– Laura O'Neill, 58, of Red Deer, who had her left knee replaced on July 29, 2014.

Evidence Shapes Practice in Hip Resurfacing

Orthopaedic surgeons in Alberta are now less likely to perform metal-on-metal hip resurfacing on women because rates of follow-up surgery to replace or repair the implanted device are significantly higher in women than in men. The change is largely in response to increasing reports in the literature of these follow-up surgeries, known as revisions, and confirmed with data on Alberta patients participating in a long-term study managed by ABJHI.

The study, called the Alberta Hip Improvement Project (HIP), has been under way for a decade. Alberta HIP is one of the world's largest high-quality studies comparing the effectiveness and safety of metal-on-metal hip resurfacing and total hip replacement. More than 1,200 Albertans who had metal-on-metal hip resurfacing or the more traditional total hip replacement are being followed for 10 years from their date of surgery. All of the metal-on-metal resurfacing patients participating in Alberta HIP have the Birmingham Hip Replacement (BHR) System, the resurfacing device most commonly used in Alberta.

BHR involves removing the diseased-damaged surfaces of the hip socket and femur head at the top of the thigh bone. These surfaces are reshaped and capped with metal implants forming a metal-on-metal hip joint.

In total hip replacement, the femur head is removed altogether and replaced with a metal stem inserted into the hollow centre of the femur. A metal or ceramic ball is placed at the top of the stem replacing the femur head, and a plastic, ceramic or metal spacer is inserted between the ball and socket to create a smooth gliding surface. The damaged surface of the hip socket is removed and replaced with a metal socket.

ABJHI has been releasing results at different stages of Alberta HIP. The latest data available from Alberta HIP show the revision rate for BHR is 4% in women, compared with 1% in men. While the rate in women remains low, it is four times higher than in men. The reasons for the difference are not yet known.

The results of Alberta HIP have influenced practice as surgeons respond to the information. Fewer women in Alberta are receiving BHR. The rate of metal-on-metal resurfacing in women has also declined in other parts of the world.

"Patient safety and excellent outcomes are always the primary concerns of health care professionals. The evidence from our study shows that BHR is a very good option for young, active men, but we have concerns about the higher revision rates we are seeing related to women with this procedure. The Alberta medical community's approach has been cautionary, responding as strong evidence emerges, rather than waiting until the end of the study."

– James MacKenzie, Calgary-based orthopaedic surgeon, Chair of the Alberta HIP Advisory Committee, and Principal Investigator on the study

Passion – We consider passion to be a commitment of the mind and the heart. It is a powerful force for change. We use our passion for bone and joint health care as a fuel for innovation and as an infectious energy for inspiring others.

In Public Health Care, It's 'Show Me the Value' (for Money)

Value for money is the new mantra in public health care. Value to the patient. Value to the taxpayer who funds the system. Value to the health professional who delivers the care.

Health care is an expensive public service. It consumes 45% of Alberta's operating budget. Health care managers who want to try something new must first demonstrate their idea will bring measurable value.

On that basis, the program developed by Misericordia Hospital in Edmonton to get fractured hip patients back on their feet and socially active the day after surgery seemed a sure-fire win. It showed promise of improving patient recovery from surgery.

The value? Hip fracture patients who have a good recovery also have a significantly higher probability of returning to their previous living environment – a private home or a seniors' residence. They regain more physical function, need less care and spend less time in hospital. Earlier release from hospital reduces the cost of care – by about $900 a day.

But the program required two new full-time positions: a recreation therapy assistant and a health care aide. Not an easy sell in a high-cost environment. That's where ABJHI stepped in. It backed Misericordia's program proposal, taking it to the BJH SCN for support and, with the BJH SCN, to Alberta Health Services executives for approval.

With the positions approved, Misericordia launched the Hip Fracture program in January 2014.

The health care aide gets up to 15 patients, most of them elderly and frail, ready for daily socialization, cognitive therapy and exercise group sessions. The hip fracture class runs Monday to Friday in the morning and combines a seated exercise program and recreation therapy activities. The recreation therapy assistant works with the patients to develop their social skills and cognitive function using music, problem-solving, puzzles and other tools. While the group sessions are under way, a physiotherapist and assistant take patients one at a time to walk in the hallway, rebuilding their physical capabilities. The recreation therapy assistant also works one-on-one with patients who are not able to attend the group sessions.

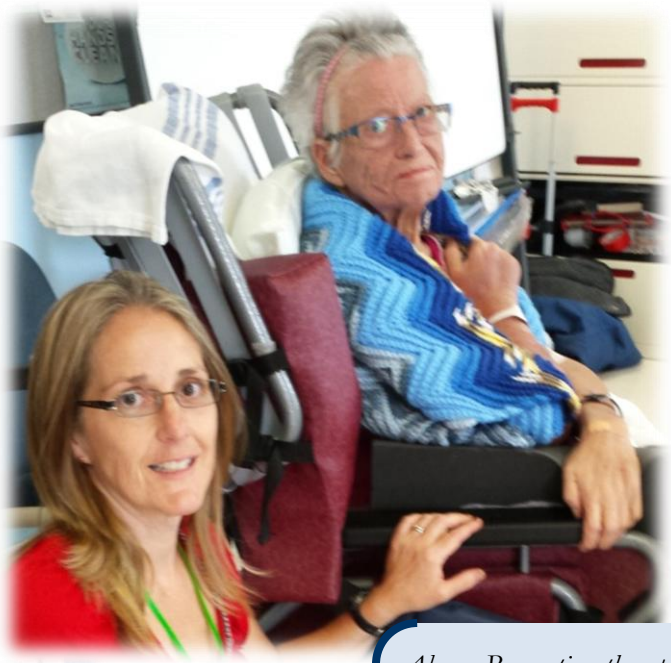
In the afternoon, patients are provided the opportunity to attend additional group social activities on Misericordia's orthopaedic floor or in its Geriatric Assessment Unit.

"We can see the change in the patients. They look happier and seem more engaged. The nurses see the difference, too. They're telling us the patients are better all around – they exercise more so they eat better, and by exercising and eating well, they sleep better. This leads to faster recovery.

"We're hearing from the different professionals who work with these patients that they are more satisfied with their work. They can see the difference they are making."

– Debbie Elliott, Program Manager, Orthopeadics, Misericordia Hospital

The program has paid off. Two-thirds of patients returned to their previous living environment in the April-to-June period. Length of stay in hospital for hip fracture patients is lower at Misericordia than at any other hospital in the Edmonton zone.



Above: Recreation therapy assistant Michelle Comeau works with hip fracture patient Mary Cooper.

At left: Physiotherapist Robyn Fischer (left) and physiotherapy assistant Kayla Levitsky help Karen Vinje get back on her feet following hip fracture.

The Hip Fracture program at Misericordia Hospital in Edmonton includes daily exercise, socialization and cognitive group sessions for patients.

Looking for Early Warning Signs

Early warning signs are crucial in health care. They are an opportunity for prevention, and an opening for meaningful dialogue with patients about risks and about lifestyle choices that can, in some instances, save their lives.

"We are in a position to see problems as they are developing," Christopher Smith, ABJHI's Chief Operating Officer, said. "This is especially true in hip and knee replacement surgery where we measure and report performance across all of the important indicators.

"No other organization in Canada has the level of access ABJHI has to multiple layers of health data from different sources."

Complication rates following surgery are one of the most closely watched indicators. ABJHI tracks the rate of hip and knee patients readmitted to hospital for complications within 30 days following their surgery. The data are tracked for individual surgeons, for hospitals and for the province's health zones.

The medical literature indicates a complication rate of 1% can be expected in hip or knee replacement patients.

"We saw a rate of 1.5% in the data we were collecting," Mr. Smith said. "This was a red flag."

ABJHI drilled into the data. Lung blood clots seemed high. ABJHI drilled deeper in search of the risk factors for these clots. "We're now working with the clinical experts to assess the impact of obesity," Mr. Smith said. "Early indications are that obese patients have a five-fold increase in risk of blood clot."

Once the analysis has been completed, ABJHI will show surgeons the findings. Surgeons may use the information to guide practice in areas such as clotting prevention in patients with a high body mass index. They may also use the information to make their patients more informed of the risks of surgery, to help them make informed choices about their treatment options, and to encourage them to become more engaged in their care.

"Physicians must balance the risk of bleeding against the risk of clotting when choosing how best to prepare patients for surgery. Our goal is to give them the right information to properly determine these risks for their patients."

– Christopher Smith, Chief Operating Officer, ABJHI

Accountability – We take ownership of our actions. We have the courage and confidence to hold ourselves accountable to our coworkers and to others with whom we interact. We know that in a healthy culture, improvement, not blame, is the purpose of accountability.

Education Materials Guide Patients to Optimal Readiness

There is a great deal of medical evidence that patients who are at their optimal readiness – physically, emotionally and socially – for surgery will have better outcomes than those who haven't made the effort.

Getting patients optimally ready for surgery is a central feature of the model of care ABJHI designed for hip and knee replacement patients in Alberta. The effort is multi-faceted but it all boils down to good patient education. It includes print and video materials, online materials, and classroom teaching.

At the hip and knee central intake clinics around the province, patients scheduled for surgery are given a printed guide for hip replacement or for knee replacement. These guides are prepared by ABJHI and scrutinized by a committee of leading orthopaedic surgeons. They offer a highly detailed account of the risks of surgery, what will happen before, during and after surgery, and what patients can do to help make their surgery a success. Lists of pre- and post-surgery exercises, including instructions for doing them, are included.

The guides are available in video format. The 35-minute video is posted on YouTube.

Patients also receive a printed guide on how to fit and safely use a walker, cane and crutches after surgery. All of the printed educational materials are available online at ABJHI's website, www.albertaboneandjoint.com.

Group education sessions are given at the clinics two to four weeks prior to surgery. These sessions are taught by a physiotherapist and a nurse and include patients and the people who will help them with recovery at home. Most of the information in the guides is reviewed and patients have an opportunity to ask questions about preparing for surgery, the surgery, the recovery period in hospital, and rehabilitation.

Sharron Brown stretches before a workout at a gym in Calgary. Her right hip was replaced May 29, 2014, and she returned to the gym three months later.

"I felt I was at a high level of readiness physically and mentally, and not just for the surgery, but also for the prospect of returning home from the hospital and going through the rehab phase. The information from the clinic was complete and given in very plain language. No complicated medical terminology. I did the exercises to gain strength, gathered all the necessary supplies, and prepared my home to make getting around with a walker and crutches safe and easy.

"My surgeon and I were both pleased with the level of function I regained in my hip. The pain I had daily is gone. Being informed and prepared made the difference."

Continuous Improvement – We view goals not as finish lines but as milestones in an ongoing process to improve bone and joint health and health care. Improvement should have no end.

New Model of Care Raises Profile of Rheumatoid Arthritis

When Terri Lupton agreed to join a working group assembled by ABJHI to design a standardized model of care for rheumatoid arthritis (RA) patients, she had no idea the task would be so difficult or so complex. But tangible rewards are coming now after two years of hard slogging through planning sessions, working group meetings, and presentations to doubters.

Among the rewards: Alberta has its first provincial care pathway for RA patients. It sets out evidence-based practices and protocols from the onset of symptoms through referral, triage, diagnosis, treatment and long-term monitoring. There is also a framework to measure how it is performing against benchmarks.

Nationally, the Arthritis Alliance of Canada (AAC) has used the Alberta model in developing the first national care pathway for inflammatory arthritis. Public health authorities in other parts of the country are using the Alberta model as the basis for developing their own RA care pathways.

But most significant of all, Ms. Lupton said, is the prospect of RA finally being viewed by the federal and Alberta governments as a disease with severe health and economic consequences that requires more attention.

"The work we have done will hopefully put RA on government radar screens," said Ms. Lupton, a nurse clinician in the Rheumatology Central Triage clinic in Calgary's Foothills Medical Centre. "That's the first step in getting the resources we need to treat people early in the disease's progress."

Early intervention is critical with RA. The disease causes the joints to become inflamed, sore and stiff. Without treatment to control the inflammation, irreversible joint damage and disability can occur.

Up to half of people with RA who do not receive adequate or timely treatment are unable to work within 10 years. And the disease can spread to tissue of internal organs – eyes, lungs and heart. The direct and indirect costs of RA to the Alberta economy were estimated to be $800 million in 2010.

The new model of care is being implemented across Alberta by the Bone and Joint Health Strategic Clinical Network (BJH SCN), a unit of Alberta Health Services. ABJHI, which managed the model's design, has also been given responsibility for managing its implementation.

"I was surprised at the complexity of the work. It's very detail-oriented specifying who patients see, where they go and when, treatment options, treatment timing, and long-term monitoring. It also requires the input of the many players who are part of the RA care team – rheumatologists, family doctors, nurse practitioners, physiotherapists, occupational therapists, pharmacists, dieticians. ABJHI made sure the right people were at the table and had the information they needed to make informed decisions."

– Terri Lupton, RA Working Group

With the BJH SCN's support, work is under way on developing a new approach to managing stable RA patients using multidisciplinary teams in specialty clinics located strategically around the province.

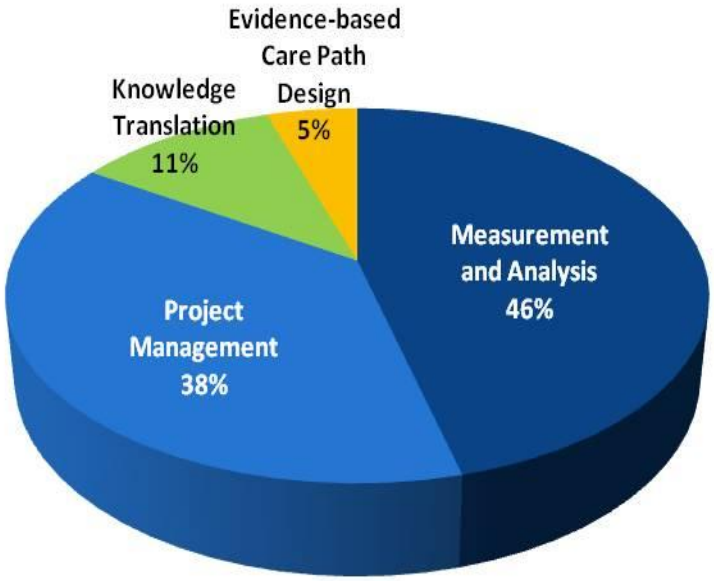
Distribution of Activity

ABJHI's core competencies are: project management, measurement and analysis, knowledge translation and evidence-based care path design.

Project Management – ABJHI is one of the leading organizations in Canada for managing projects designed to increase the quality of care patients receive. We are also highly effective at engaging stakeholders whose participation is critical to project success. The projects we manage are diverse. They range from designing and implementing integrated care paths to wringing greater efficiency out of health care resources and testing innovative service concepts. But they all have one common thread: they are designed to improve quality in one or more of six dimensions, including *safety, access, efficiency, acceptability, appropriateness* and *effectiveness*.

Measurement and Analysis – You can't improve what you don't measure. This truism is at the heart of ABJHI's work. We measure and analyze performance in critical areas of health care using measurement frameworks built around the six dimensions of health care quality. We use the results to identify opportunities for improving quality, to develop highly effective improvement strategies, and to provide timely reports for health service planning.

Evidence-based Care Path Design – ABJHI is a recognized leader in designing integrated care paths for patients that are based on the latest evidence of best practices and best products. Integrated care paths bring together different health care professionals to work in a multidisciplinary partnership, with the patient firmly at the centre.
Integrated care is crucial because most disorders that attack the bones and joints are chronic, meaning they require ongoing, possibly long-term, treatment that is multifaceted and involves different medical disciplines.



Knowledge Translation –
Health care should be dynamic, changing as knowledge sheds new light on practices, procedures, drugs and devices. But the gap between creating knowledge and putting it into practice is wide in Canada.
ABJHI works to close that gap by quickly disseminating, exchanging and applying knowledge to improve the quality of bone and joint health care and strengthen the public health system in this high-need area of medicine. Our knowledge-to-practice approach is comprehensive. It includes comprehensive reports to leading decision makers, briefing notes to stakeholders, presentations to medical groups and health professional organizations, impact modelling, papers for scientific journals, opinion articles to raise awareness of issues, and website postings.

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