Model of Efficiency
delivering high-performance orthopaedic care in Canada

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Think of Bone and Joint Canada's core model of care for hip and knee arthroplasty as a type of "engine of change" – a robust all-terrain driver of efficiency, productivity and sustainable orthopaedic care that's being road-tested in all ten provinces under all kinds of operating conditions.

Of course, as with many metaphors and models, what we're talking about here isn't so much a thing as a process. And while this process can change the way you deliver care, one of its greatest strengths lies in its power to change you from skeptic to believer. "Surgeons are trained as individuals and tend to think of teams mainly within the context of the operating room," says Dr. Cy Frank, scientific director of Bone and Joint Canada (BJC). "But, in fact, the full treatment team extends from one end to the other of the arthroplasty care path, from initial referral to first appointment to surgery to postop to rehab and home care. There's a huge team involved in treating every patient. And when the surgeon realizes how the other parts of the care path influence how he does his bit in the OR, well, there's often a kind of epiphany."

Along with the Millennium, the year 2000 ushered in the Bone and Joint Decade, an international effort to improve understanding of musculoskeletal disorders. In 1999, Dr. James Waddell, who was COA President at the time, went to the intial planning meeting, where he accepted the task of developing a Canadian MSK national action network. The idea was to bring together professional and patient stakeholders who would work at the global level with similar national networks. "There was enthusiasm at first," he recalls, "but soon the various constituent organizations, including the COA, didn't see much value in the initiative, because we have some unique problems here in delivering orthopaedic and arthritis care that aren't found elsewhere."

By 2004, the backlogs of patients waiting for hip and knee arthroplasty were so long that Canada's First Ministers made them a clinical priority in that year's Health Accord. "So, we decided that we would make improved access our number one goal for Bone and Joint Canada," says Waddell, "as distinct from the work of Bone and Joint *Decade* Canada. These nuances may seem a little silly, but there was a practical reason for it. We wanted to set up a structure that had no ties to industry and could receive government funding. Bone and Joint Canada became a subsidiary of the Canadian Orthopaedic Foundation, so it could act as our banker and we didn't have to incorporate ourselves or register as a charity."

It didn't take Waddell long to realize he needed help. Enter Hazel Wood, president of a private national rehab service and, more importantly for our story's purposes, an extraordinary community organizer and committed advocate for improved patient outcomes. If ever an engine of change came in human form, it would be Hazel. "Before Cy introduced me to her," says Waddell, "we were going nowhere, and I was pretty much getting ready to pack it in. None of this would have happened without Hazel. I begged her to help me, with the understanding that I would pay her one-tenth of what she would normally charge whenever we had some money. From my perspective, it was a real deal."

Some seed money through IMHA helped with start-up, but it was the late (and much missed) Tom Fullan – a veteran government-relations consultant who couldn't take ten steps without running into someone he knew – who worked some real magic. As a volunteer international ambassador for the Bone and Joint Decade, he helped bring together key stakeholders and made introductions to various levels of government. "Tom had this real knack," says Hazel Wood, "for finding out where the money was and to which branch of government we should apply. He was really helpful to us." In 2006, Health Canada provided funding for a four-phase project over as many years, which concluded in March 2011.

As might be expected, the first phase of BJC's national core model of care project mostly concentrated on assembling a nation-wide network of champions: surgeons, primary-care physicians, nurses, advanced practice physiotherapists, clinical scientists, government health care administrators, district health authorities, hospital program managers and anybody else who might be involved in delivering care to arthroplasty patients – no small crowd and no small achievement.

Next came the hard work of developing consensus on what might comprise a core care model for arthroplasty. That is, the central processes that add value. Some elements seemed obvious: the need to have efficient patient referral and intake, accurate wait list maintenance, standard patient information collection, standard length of stay in hospital, coordinated rehabilitation and home care, and so on. Of course, it's all in the details. Teleconferences were held with some 400 people from different surgical units across the country looking for best practices. Network members were also asked to send in their patient intake and processing forms, as well as care path guidelines and protocols – the typical paper trail for an arthroplasty care path. The picture that emerged from this first round of information-gathering might best be described as a "continuum of Babel."

Even though hip and knee arthroplasty is a standard procedure, there's nothing standard about the information given out

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to patients or the way they are processed along the care path. Moreover, even within a care path, a patient can easily receive contradictory or outdated instructions that cause confusion and delay. In an extreme example, one institution was still distributing material produced in 1993 that advised patients they would be in hospital for 14 days.

"So much of what we do in health care is process-driven," says Rhona McGlasson, who joined Bone and Joint Canada in 2007 as project director and is now its executive director. "We're trying to make sure that the patient gets the right information and set of instructions at each point in the health care continuum. It's really a huge educational effort to get everyone singing from the same songbook." Four working groups (preop, surgery, postop and rehab) rolled up their sleeves and developed the national model of care, while five hard-working coordinators reviewed the hundreds of submissions – protocols for optimizing patients, primary-care referral forms, surgical processing documents, OR scheduling policies, wait management tools and more – to identify best practices.

"Basically, you have to do a whole lot of work up front to make it simple for the patient," says Hazel Wood. "It's much like ordering a hamburger at McDonald's. Each of the little steps is not such a big deal, but getting everything to consistently click like clockwork is." To match that level of efficiency and productivity in health care requires careful planning and clear directives so that the 50 or more health care professionals and technicians who look after a single arthroplasty patient can smooth the way in a truly integrated and timely fashion, from start to finish.

And therein lies the essence of the core model of care. True, hips aren't hamburgers, and it all sounds a bit daunting and pie-in-the-sky. To keep things grounded, phase three of the model of care project centred around pulling together all the best practices in a virtual do-it-yourself "toolkit," which was then posted with permission on BJC's web site. Canadian health practitioners can gain access to about 400 tools in the kit for free and use them as is or adapt them to a particular circumstance. Waddell notes: "What we said was, 'There's no one solution. Here are all the proven solutions to a particular problem. None of these approaches are theoretical. They've all been proven by the people who use them and sent them in with evidence to show they work."

Need to better manage a wait list? Here's a menu of options for that. Need to make sure that a patient is optimized for surgery? Here's a check list of things that need to be done in the hospital and at home. Need to reduce the number of non-surgical patients coming your way? Here's a referral form for the primary-care physician and a how-to on central intake. Tried something from the Toolkit and improved on it? Send it in. Have some data that further validates (or not) a particular tool? Share it with the network. This kind of free exchange and cycle of continual improvement is how the Bone and Joint Canada Network transformed itself into a national knowledge translation network. "We have some sites, such as Toronto's Holland Centre and Richmond in BC, that do up to 2500 hip and knee replacements a year," says McGlasson. "They have dedicated staff to continually review best practices. So we wanted to leverage that new knowledge so that people who use the Toolkit always know the information is practical and useable. The real innovation is the sharing. Nobody has ever shared this stuff before."

Phase four of the project was implementation of some aspect of the core model of care. Each provincial team was encouraged to select some process from the model and test it in real-world circumstances. Here's a quick round-up of what they're doing: BC did a gap study, looking for pitfalls and inefficiencies. Alberta chose to initiate a change management strategy that measures key performance indicators in that province's hospitals. For its part, Saskatchewan tested a new OR allocation model in one health region's orthopaedic department; while Manitoba has standardized a referral form and is working on a central intake plan. Ontario has developed a booklet to assist patients to return to activity from 3–12 months post-surgery. Quebec is finalizing educational modules that will then be tested in two community clinics, and New Brunswick has developed a standardized referral form. Nova Scotia rolled out central intake across the province. And Prince Edward Island conducted an orthopaedic gap analysis with an action plan.

A really good example of how implementation can be transformative is Newfoundland's Eastern Health Region, which includes St. John's. Hazel Wood remembers how Dr. Rod Martin, who had faithfully attended BJC meetings through the years, expressed his frustration that they hadn't been able to really achieve anything in Newfoundland. A little seed money from BJC allowed Martin to start a central intake program by hiring a part-time project manager, which in turn attracted funding from the health ministry. Like most orthopaedic surgeons, he and his colleagues at Memorial University Health Sciences Centre see their fair share of non-surgical patients and people who should see a different subspecialist. "I do joint replacement and trauma. When I see a patient with a foot problem and have to send him to the foot guy," says Martin, "or when the back guy sees a hip patient and sends him to me, that's a huge inefficiency."

Development of a patient referral form began with reviews from prominent family physicians such as Dr. Lydia Hatcher, a former president of the Newfoundland and Labrador Medical Association and currently chair of its policy committee. She shared successive drafts with her core group of family physicians and members of several committees on which she sits, all of whom gave feedback. "This form has probably gone through six or seven versions before we got to what we have now," says Martin. "We pilfered a lot of ideas and things from intake sheets from across Canada that were available in the Toolkit. We take some credit for it, but we'd certainly be comfortable saying this is plagiarism at its best, with input from all. It's all tick-box stuff: patient contact information, duration of symptoms, type of arthritis, treatment so far, tests, physio and so on. It wouldn't take a whole lot longer to fill than writing 'Knee pain, please see.' Also every patient must have recent screening radiographs, and the form indicates specifically what types we need."

Martin also borrowed some new policies from the Toolkit, now that the surgery department has a full-time efficiency analyst gathering throughput data: "We've got a turnaround policy that's just coming into effect. Our start times are now more strict. We've set targets so that the patient will be consented, signed and marked by 'x' time. It's a bit embarrassing that 'big brother' has to be watching, but it's only human to get a bit lax." He's also

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instituted a new booking policy for elective patients that requires a completed booking package no later than five days before the surgery: "When you find out five days in advance that you need an echocardiogram, you can get it done and still do the patient. Or if you get the echo done and find out the patient is unsuitable for surgery, then you're not scrambling to fill the spot. You have time to do another patient."

If Martin seems bitten by the efficiency bug, it may be due to his perspective as chief-of-surgery and some forward-thinking initiatives by his predecessor that are just now coming to fruition. The surgery department now has a full-time wait-list manager who has cleaned up all the lists. In some divisions up to 25% of names were removed. Also, underused ORs in the paediatrics wing were converted for OB/GYN, freeing up two more ORs for all other surgical specialties, including orthopaedics. After allocation of this new resource, Martin's OR time has increased from 1.5 days to two days per week. Time management experts from Siemens Management Consulting have recently conducted a flow study for the ministry of health and have a wide spectrum of recommendations for implementation.

Earlier this year, Martin met with the health ministry and successfully made a case for increased funding for a total joint assessment clinic so that it can operate full time. "A couple of years ago," says Martin, "it would not be uncommon for most total joint patients to stay in hospital from five to eight days. Now we're frequently in the three- to four-day range. If patients are optimized, if they're primed and ready, we have improved throughput and better value for the money. The mousetrap is gradually being improved."

Shorter hospital stays with predictable outcomes are the kind of real results and data that turn surgeons into believers – and governments, as well. "We've got a plan that will save the Alberta government about 10 to 20 cents on the dollar," says Cy Frank. "Several months ago, we had a meeting with our teams in outlying hospitals to see how they scored on key performance indicators. There's a palpable energy. People feel engaged, that they're doing something useful. They see results, both with the patients and objective measures. They're working harder, that's for sure, but they're enjoying it more."

And just to show where all this can go. For the last three years or so, one of Canada's most sophisticated MSK care paths, the Osteoarthritis Service Integration Service (OASIS), has been operating in the Richmond metropolitan area in the Vancouver Coastal Health region. OASIS has a wider mandate than the BJC core model of care, seeking to integrate MSK services from the time when osteoarthritis is first diagnosed by a primary-care physician. "The provincial and federal governments need to support the MSK care model process," says Dr. Ken Hughes, co-chair of OASIS. "There are already good examples of models that work within the public health care system, here in BC and elsewhere, that are changing the way we deliver care. We don't need to reinvent the wheel. We can get to work implementing the model on a larger scale pretty well right away, but we need new resources." Last March, stakeholders from Canada's MSK community held an initial meeting to explore how to proceed with developing a national care model that would encompass all facets of musculoskeletal care. A follow-up meeting will take place in August.

From the outset, the BJC core model of care was designed so that it not only can be modified according to regional and local realities but also transposed to other orthopaedic subspecialties. Hip and knee arthroplasty was chosen first to see if the model was robust enough to handle high-volume procedures. Currently, James Waddell and Rhona McGlasson have begun work on a hip-fracture care model. "It's certainly the commonest fracture to require surgical treatment," says Waddell. "There are about 10,000 hip fractures a year in Ontario, about 30,000 across Canada. We've developed a model loosely based on a hip fracture model from Ontario and added some stuff from other jurisdictions, particularly Scotland where they've done a lot of work on hip fractures." There are also initiatives underway in BC with foot and ankle surgery, and a spine program is up and running in Saskatchewan. Momentum will continue to build as more orthopaedic surgeons from the different subspecialties become believers in the knowledge network process and see it as the road to delivering high-performance, sustainable health care.

In the meantime, Cy Frank is concentrating on the costs of delivering this approach to orthopaedic care, looking for savings and identifying wasted money that can be re-invested to do more: "It's the hardest data to get. Once we have it, though, it will be very hard to hide from the facts. Rather than advocating from a position of weakness – a great idea with no evidence – I would rather have the evidence sell itself."