Roughly 23,000 knee arthroscopic surgeries are performed in Ontario every year, each costing public healthcare about $1,350. Those surgeries are often intended to help patients struggling with degenerative knee conditions.

The question is whether those surgeries are actually valuable. Studies done in the late 2000s through Western University and others discovered that alternate treatments, such as non-operative physical therapy and exercise, are just as effective in limiting pain and improving patients’ quality of life.

That’s a lot of money — more than $31 million — for surgeries determined to be no more effective than alternative, less-expensive treatments.

It was the first case on Jackie Marsh’s desk when she was hired as the Bone and Joint Institute’s first Early Career Researcher in 2016. A health economist, Marsh’s job is to determine the value of various treatments by examining their outcomes relative to the cost of treatment and associated expenses such as transportation, lost work, and other aspects of treatment less visible at first glance.

“Musculoskeletal health represents a huge economic burden,” Marsh said. “It’s becoming more essential that we look for cost-effective treatment strategies.”

That does not mean lowering Ontario’s standard for care. Instead, Marsh wants to target common procedures shown to give no added value compared to less-expensive treatments.

Of growing importance in bone and joint treatment is health economics, because musculoskeletal diseases often require long-term pain management. Joint pain is a chief complaint that impacts people’s mobility and ability to participate in daily activities.

Knee arthroscopy is far from the only example of a standard procedure costing millions per
year with no added benefit. “It’s about that knowledge gap,” Marsh said. “We’re using tests, like MRI tests, even if they don’t affect treatment decisions. But they’re costing us so much money.”

The Bone and Joint Institute was created in part to conduct research that will inform policy and to promote active knowledge translation. The publications that said arthroscopy for degenerative knees gives no added value for their expensive price tag resulted in fewer operations, temporarily. But public funding continued to prioritize surgery over physical therapy and before long, the number of surgeries rose to its previous rate.

Informing public health policy, and the public, is only the first step. “It’s not good enough to do the best research possible,” Dr. Trevor Birmingham, the Canada Research Chair in Musculoskeletal Rehabilitation, said. “We can focus all our efforts on research, but if we really want our research to have better impact then we have to go beyond just producing quality research.”

The goal is to engage stakeholders throughout the research process, to better share new information, and to translate that information for clinicians and policy makers. That starts with people like Dr. Joy MacDermid, a physical therapist and epidemiologist with experience in knowledge translation.

Through the institute Marsh and MacDermid help scientists peer-reviewed journals,” Birmingham said. Health economics will likely be incorporated into other research before long, as scientists look for more cost-effective treatments.

“I think we’re going to see a lot of growth in this area,” Dr. David Holdsworth, the Dr. Sandy Kirkley Chair in Musculoskeletal Research, said. “Decisions related to healthcare have to inescapably include economics now.” Emphasis on health economics will expand as healthcare improves, Holdsworth added. People expect more out of retirement, which will soon result in a larger cost burden for public health.

In musculoskeletal health, economic impact could soon be just as important as effectiveness when conducting impactful research. “The best quality research is going to have greater impact,” Birmingham said. “That now includes investigating, the cost effectiveness of one intervention versus another. We aim to get the best quality care to patients. Expensive therapies may be necessary, but we have to show that they’re worth it. That they provide value.”

“We’ve definitely made economic evaluation one of our priorities,” Birmingham added.

As the institute’s research progresses, Marsh will collaborate with more Bone and Joint Institute members like Dr. Ana Luisa Trejos who is designing wearable technology the support and accelerate patient rehabilitation and Dr. Elizabeth Gillies who is developing polymeric platforms for drug delivery and tissue engineering that will help combat joint pain. A cost benefit analysis becomes more important the more solutions there are for common musculoskeletal problems.

“We want to make sure we’re getting the most value out of our interventions for people,” Marsh said. “The most bang for our buck.”

By the Numbers

23,000
Knee arthroscopic surgeries performed in Ontario, 2013

$1,350
Average cost per surgery, funded publicly

$31 million
Total cost of surgeries in Ontario

Studying the benefits of physical therapy at the Fowler Kennedy Sport Medicine Clinic, partner of the Bone and Joint Institute