

# HOME

## **A patient-centred approach to caring for osteoarthritis in the knee**

*With deeper insight and standardization, we will improve patient care.*

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KneeCareInsight (KCI) uses evidence-based clinical information to stage the severity of osteoarthritis (OA) present in the knee joint. This gives patients, physicians and caregivers greater insight into the disease and an improved base from which effective surgical and non-surgical care decisions can be made.

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### **We have a mission to fulfill**

KCI's vision is to bring scientific insights to the forefront of knee osteoarthritis diagnosis and management.

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### **A primordial problem**

OA of the knee has been around since the dinosaurs.

This very common disease has a variable but progressive course of pain and functional loss, that can cripple, without a cure in sight.

For many Primary Care Providers (PCP) the ease of OA diagnosis, a simple x-ray, offers little help by way of treatment decisions. And OA care offers little challenge when compared to that for heart disease or diabetes.

But, for thousands of patients with osteoarthritis, the resulting disability affects their work, leisure and independence. The disease's impact only increases over time, until elderly patients find themselves least prepared to bear it.

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## **The challenge**

Millions of Canadians have osteoarthritis in one or both of their knees. They suffer from knee pain and loss of function due to OA. The issue lies not with the diagnosis, but rather with how to deal with the disability and the socioeconomic impacts!

Lacking insight into best care, *thousands* of Ontarians are waiting.

*Hundreds* of Ontarians are listed for surgery at each major care centre.

Because surgery is regarded as "the only cure", surgeon referrals lack a unified valid approach. 1/5 of the people who receive surgery do not need it, and 20% of those who get it are dissatisfied with the results.

*A validated science-based approach is urgently needed.*

KneeCareInsight (KCI) meets that challenge.

In conjunction with leading Canadian and American orthopedic surgeons, the KCI approach has already been applied in numerous studies to test the capability for its use as a tool to correlate with the decision for surgery or non-surgical care. To date, we have evaluated its use in close to 1000 patients. As a decision aid, "KCI was in accord with the surgical decision ninety percent of the time".

Now, let us get to work and use KCI to improve patient care, lessen wait times and lower costs. Time is of the essence.

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### **Did You Know?**

\_\_\_ patients in Canada currently suffer from osteoarthritis of the knee.  
\_\_\_ patients have already been staged through KCI.  
\_\_\_ patients have severe OA, but limited pain.  
\_\_\_ % of patients have severe pain, but are NOT good candidates for surgery.  
The current wait time for a Total Knee Replacement (TKR) is \_\_\_\_\_.  
The healthcare costs of TKR surgeries are \_\_\_\_\_ / year.

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### **The KCI solution**

KCI was developed with one important objective in mind:

*Enable patients to gain an understanding of their problem, and give family doctors precise staging information for the disease so that the best form of treatment may be selected.*

This results in a collaborative, informed and highly successful approach to managing a lifelong problem.

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### **How the KCI program works**

In simple terms, KCI uses disease severity to optimize care. It applies readily available information about the patient's age and limitations with a reliable grading of their x-rays to accurately define the severity of the problem. This information is provided as a report, couched in simple terms with images of the knee damage. Used collaboratively, the KCI report then acts as an aid in making the best decision for care of the knee, based on its severity.

[Learn more.](#)

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### **Why it's so important**

Currently, there is no unified approach for knee OA care. This variability has led to unnecessary delays in care and inappropriate choices. KCI offers a reliable, repeatable way to define severity and is presently the only tool that combines multiple existing clinical elements (x-ray, BMI, demographics and disability score).

This shared information puts patients and caregivers on the same page, to define meaningful goals and expectations for treatment. Costs of knee OA care are enormous, of which surgery is the highest. Yet, done at the right time for the right stage, joint replacement has been shown to be extremely cost effective, while eliminating unnecessary surgery results in major savings. The use of KCI has the potential to prioritize non-surgical and surgical care, which will reduce variability, lessen wait times and optimize outcomes.

[Learn more.](#)

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### **Who will benefit**

KCI benefits many groups, each of which can realize the value this program has to offer.

**Patients**

Better understanding.  
Managed expectations.

**PCPs**

Greater insight.  
Improved patient care.

**Surgeons**

Effective triage.  
Prioritization.

**Radiologists**

Detailed x-ray reviews.  
Reduced need for MRIs.

**System Administrators**

More efficient institution.  
Optimal patient management.

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**Testimonials and Endorsements**

[Insert here, from different groups]

**It's time for improvement.  
It's time for optimized patient care.  
It's time for a fresh approach.**

[Contact us today.](#)

# **KCI OA GRADING APPROACH**

**Assess.  
Stage.  
Understand.**

*A patient-centred, scientific approach for the effective assessment of osteoarthritis in the knee.*

The KneeCareInsight (KCI) program is a fresh, science-based and insightful approach to a primordial problem: Osteoarthritis (OA) of the knee. Providing specific staging information on the severity of the disease, KCI acts as a supportive tool which begins with the patient and their Primary Care Physician (PCP).

Since OA has no cure, the key to optimal care is heightening a patient's understanding of their problem, and giving the PCP the tools to define what is happening so they may accurately evaluate the disease and determine the best options.

## **The KCI Osteoarthritis Grading Approach**

KCI is supported by Dr. Cooke's initial publications in 1999 as well as numerous studies since then which have proven the fact that KCI has the ability to:

- Define the stage of the problem
- Communicate the urgency of the disease and direct patients to the best choice of care for their knee at a specific stage
- Act as a collaborative framework to communicate disease progression between patients and care providers
- Effectively triage and prioritize knee osteoarthritis cases

## **How it works**

KCI uses patient demographics, an assessment of the patient's disability (including their pain and functional loss) and an accurate grading of their knee X-rays to define the severity of the arthritis. This is a novel approach, using the severity of the problem to identify care pathways, is shared between the patient and their physician. The end result is an effective selection of the best form of care for that specific stage of osteoarthritis.

KCI's ability to stage the severity of knee OA can and should be used to improve patient care.

[Contact us today to learn more.](#)

# PATIENTS

## **Centred on patients, focused on improving care.**

The KneeCareInsight (KCI) report is designed to better engage you in your understanding of the osteoarthritis (OA) present in your knee joint, and to educate you on the best options according to its severity. The more you and your doctor know, the better able you are to make ideal choices for your care, be they surgical or non-surgical.

Take a look at a sample KCI report [here](#).

### **Why use KCI?**

- **Greater insight into your knee arthritis**

Currently, an x-ray of a knee showing osteoarthritis is labelled as mild, moderate or severe, at which point you are referred to an orthopedic surgeon. KCI is a more in-depth program which uses an x-ray, a disability score, a questionnaire to rate your pain, your BMI and demographic information in order to provide you with a final grading score for your knee OA and the most applicable care options.

- **No additional cost to you**

KCI is a program you can take advantage of through referral from your Primary Care Physician (PCP), without incurring any additional costs.

- **Avoidance of long wait times**

The current process is flawed because it lacks good science and best timing. This means long waits, followed by the selection of less-than-ideal options for surgery or non-surgical care. Patients are often referred to surgeons when they do not need it, while others with dire needs wait and worsen as time goes on. KCI offers a fresh, simple and fast approach to these

problems. We reliably define how bad the problem is (based on science) and use this information to guide care choices from there.

- **Easy to understand and apply**

Your severity level and care options give you the ability to comprehend exactly what stage of the disease you are in, and which forms of care are likely to be most successful for you to minimize knee pain and improve the quality of your daily life.

- **Excellent tracking tool**

The KCI report is a tool that you and your PCP can use and benefit from over time. It is an effective tracking measure to see how your knee OA progresses year over year.

## **How you can take advantage**

Using the KCI program is simple.

- 1. Inform your physician.**

KCI is an approved service within the Ontario Health Insurance Plan (OHIP).

- 2. Go through the process.**

Fill in the pain-rating and function questionnaire, and obtain an x-ray.

- 3. Get the report and review it with your physician.**

Your physician will submit your x-ray, questionnaire and demographic information. KCI blends reliable measures of your disability (pain and limitations) with your age and an accurate grading of your knee x-rays to assess the severity of the damage. This is compiled in a unified report identifying the best considerations for care based on its severity. The end result is a tool which helps you navigate the knee OA pathway to optimal results.

Have questions?

[Contact us today.](#)

# PRIMARY CARE PHYSICIANS

## **A unified evidence-based approach to knee OA care.**

KneeCareInsight (KCI) is an easy-to-use, reliable guide for surgical and non-surgical care. It bases its considerations for care on scientifically-driven measures of disability, radiographic grades and age in order to assess the severity of OA in the knee. This is reported for you to use as the basis for treatment. The clinical information is readily available, and the program is designed to use your EMR as the means to collect, send and store the report. It is an excellent educational tool for you to share with your patient and the unified approach means you can use it as needed for future evaluations as the years go on.

### **Why use KCI?**

- **Improved patient management**

The KCI evaluation provides the right information early in the clinical encounter. Providing a detailed report specifying the stage of the disease and giving specific recommendations, KCI empowers you to improve the care of your patients with knee OA.

- **Better disease analysis and understanding between you and your patient**

The detailed information on knee OA severity (level of disability, accurate grading of x-ray, and age risks) provided in the KCI report, coupled with considerations for surgical and non-surgical care, is easy to review with your patient and helps you select the best options. You now have a detailed analysis and understanding of your patient's disease, enabling you to guide them in the right direction to receive the best form of care at their specific stage.

- **Continuum of care**

The KCI report gives you accurate staging of the disease and is readily embedded in the patient's EMR. It can accompany any referral, and acts as a baseline of information to measure disease progression over the years.

- **Enhanced communication**

Given the level of detail and standardization of the KCI report, the communication between you and your patients is naturally improved. Interactions are highly guided, thus leading to better outcomes.

## **How to incorporate KCI into your practice**

KCI is an approved service through OHIP.

- 1. Identify good candidates.**

For those patients suffering from knee pain and limitations due to OA, choose KCI.

- 2. Select the service.**

KCI is available for your selection through our e-referral platform.

- 3. Follow the process.**

Refer your patient to receive an x-ray of the knee with required views. Once an x-ray confirms the presence of OA, support your patient as they fill in the disability questionnaire and refer them to KCI.

- 4. Get the report and review it with your patient.**

To obtain the evaluation, KCI requires the patient completed disability questionnaire, demographics and access to x-rays. You will receive a detailed report on the stage of the disease with considerations for surgical or non-surgical care couched in simple terms. This improves communication with your patient, as you plan the next step.

Have questions?

[Contact us today.](#)

# **RADIOLOGISTS**

## **Less time, greater detail.**

KneeCareInsight (KCI) is an innovative and enriching assessment for reporting on osteoarthritis (OA) of the knee joint, designed to help you deliver more value to patients, physicians and surgeons.

The report assessing the severity of the OA is educational for patients and designed to be an aid which helps optimize surgical and non-surgical care for all caregivers.

### **Why use KCI?**

KCI brings forward the latent diagnostic value of x-rays in staging the severity of OA, which is only partly why MSK fellowship-trained Radiologists read for KCI.

- **Standardized history**

Unlike many of the cases you read daily, KCI gives you access to standardized history (disability scoring) and referral forms to support historical information required for diagnosis.

- **Measurements and scoring**

Similar to ultrasounds, trained technologists grade the images, and collect and assemble scores and relevant demographics to compile the report on severity. Your expertise is applied to review its appropriateness when linked to care considerations.

- **Integration**

Benefit from cutting edge integration of the requisition, technologist notes, reporting and billing that allow you to perform your work for KCI seamlessly.

### **How to incorporate KCI into your practice**

KCI offers a detailed second read of the x-ray for certain measures, as covered by OHIP. X-ray imaging with relevant dimensions and clinical history will be shared with you on PACS for your input on the severity of OA and any other incidental findings.

Your dictated report will be shared with the referring physician and your billing will be managed directly through KCI. Your findings will be integrated into a detailed report that supports the staging and management of this debilitating chronic disease.

Have questions?  
[Contact us today.](#)

# **SCIENCE**

## **The science to support the vision**

The KneeCareInsight (KCI) methodology is the result of decades of research and practice by academic surgeon, Dr. Derek Cooke. His experience, expertise and passion for addressing a patient-centric approach to osteoarthritis (OA) of the knee, are what have led to the development of KCI, an innovative program with the capability of greatly improving patient care.

### **Research and findings**

The first study supporting the KCI concept was published in 1999, which identified KCI as a novel, precise and reliable way to grade the radiographic severity of knee OA. Furthermore, evidenced based studies added relevant clinical parameters, including age and disability level, which support KCI as an important decision aid in knee OA care. The KCI approach is currently patent pending.

### **Evidence supporting the use of KCI**

The evaluation process uses evidenced-based data from the patient as an index of disease severity. Severity is based on a combination of the patient's Disability Level measured using a validated assessment tool (Oxford Knee, WOMAC or KOOSjr score) and detailed Radiographic Grading (Validated Compartmental Grading) (1,2), with age (at or over 60) linked to better outcomes.

Our studies, undertaken in collaboration with a number of distinguished academic surgical groups, showed strong agreement between the severity index and the surgical decision for care (3). Another report found enhanced prediction for an assessment centre's surgical referral when combined with the patient's willingness for surgery (4).

Our recent studies drew attention to significant variations in a regional assessment centre's triage process referring cases with low radiographic and/or disability scores for surgery and not referring other cases with disability and sometimes advanced

radiographic grades (5, 6). But, based on the final decision for care, there was strong agreement for non-surgical and surgical decisions (6). In another study identifying cases for surgery, the KCI triage was in agreement with the surgeons in ninety percent of cases receiving surgery (total and partial knee replacement) (7).

## **An outline of the KCI program**

### **1. X-ray**

A standing x-ray and skyline views of the knee are obtained. The extent of the arthritis is captured by a detailed analysis of the damage in the knee joint compartments (including the knee cap).

### **2. Pain-rating questionnaire and disability score**

The patient completes a detailed questionnaire designed to accurately identify the amount of pain they experience over the previous week. From this, a disability score is produced, quantifying the patient's level of pain and their physical limitations.

### **3. Age and demographics**

Information about the patient is gathered and recorded including age and Body Mass Index (BMI).

### **4. Disease grading and KCI report**

The x-rays, questionnaire, demographics and disability score are combined and assessed by KCI. A proprietary algorithm is used to produce a final report which details the findings, with images, to reliably stage the severity of the arthritis.

### **5. Considerations of care**

In the final KCI report, there is a comprehensive outline for considerations of care. These may include non-surgical options (exercise, weight loss, steroid treatments, medications) and/or surgical approaches (partial or total knee replacement).

Here is a sample KCI report.

[Insert image of report]

The KCI report is a powerful decision tool and aid which can prove useful at any stage in a patient's care journey. It serves to engage patients in the diagnosis and treatment of OA, to track progression of the disease over time, and ultimately, improve outcomes.

Would you like to learn more about the science behind KCI?

[Contact us today.](#)

# **STAKEHOLDERS**

## **Who stands to benefit from KCI**

KneeCareInsight (KCI) is an exciting and innovative program designed to improve the healthcare experience for those patients suffering from osteoarthritis (OA) in the knee. With several touch points, KCI has the capability to positively impact a number of stakeholders.

### **PATIENTS**

By providing a detailed report which accurately stages OA of the knee, patients gain a better understanding of their problem, and have improved communication with their doctor on decision-making for the ideal form of care.

### **FAMILY DOCTORS**

The KCI report equips primary care physicians with a powerful decision aid tool capable of improving patient care, managing expectations and reducing surgical referral wait times.

### **RADIOLOGISTS**

By engaging in the KCI program, radiologists have an opportunity to validate the x-ray analysis with a much-needed comprehensive evaluation.

### **ORTHOPEDIC SURGEONS**

Provided with a report which accurately stages a patient's OA, surgeons have greater insight to help them triage and prioritize patients effectively.

### **SYSTEM ADMINISTRATORS**

The KCI program presents system administrators with an optimized approach to streamline care with knee OA patients more efficiently, thereby reducing patient backlog.

To learn more about the KCI program,  
[contact us today.](#)

## **SURGEONS**

# **Effectively triage and prioritize your knee osteoarthritis patients.**

KneeCareInsight (KCI) is an innovative and insightful patient triaging tool for osteoarthritis (OA) of the knee joint, designed to inform and improve patient surgical management. The program extends beyond the current status-quo for knee OA triaging with surgeons. Detailed information is provided to address the patient's disability score, determine their priority for an initial consultation and effectively educate them on the care options available so they have realistic expectations throughout the process.

### **Why use KCI?**

- **Greater insight prior to consultation**

KCI produces a report which defines the current state of a patient's osteoarthritis in the knee. This report is evidence-based and designed to be a decision aid to help prioritize the level of care needed, using a uniform evaluation of its severity. This avoids patients ending up on your waitlist who are not good candidates for partial or total knee replacement; and it provides you with the insight you need in order to schedule patients according to the severity of their pain. [Read about the research behind it.](#)

- **No need for repeat imaging**

KCI offers a detailed approach to the radiographic assessment of OA in the knee joint. Our expert radiologists with fellowship training in MSK provide further interpretation of the existing imaging to elevate the diagnostic value of the x-ray. This, in turn, reduces the need for and eliminates the misuse of MRI, and greatly enhances the quality of the information on the extent of damage in the knee compartments, including the patella-femoral joint.

- **Improved patient engagement**

KCI's staging of the disease gives patients and their Primary Care Physicians a heightened level of insight into the disease and its current stage. This allows

for more productive and open communication, along with the decision of a more effective care plan to be followed. Patients' engagement throughout the process is heightened, which decreases false expectations of OA management (i.e. 20% of patients believe the pain two years post-surgery is worse than the pain prior. [Read more here.](#))

## **KCI benefits you and your patient**

Our OHIP funded triage only costs you a request to the referring physician to provide the KCI radiologist report. Alternatively, simply refer the patient to us directly through the requisition form [here](#). Because of its upstream impact on triaging and care support, we highly recommend that you inform your referring physicians so they may consider using the KCI evaluation routinely.

Here is how it works.

### **1. Select the service.**

KCI is available for selection through OHIP.

### **2. Patients and PCPs follow the process.**

The X-ray, pain-rating questionnaire, BMI and demographic information are compiled into the KCI system.

### **3. The KCI report is produced and used.**

The KCI program produces a report which stages osteoarthritis of the knee joint for a more optimal plan of patient care. The detailed report, including images and stage, offers specific care considerations to be shared with the patient and all their caregivers. As a surgeon, it helps you decide on a surgical or non-surgical approach, as well as the type of surgery under consideration (osteotomy or partial, versus total knee replacement).

Have questions?  
[Contact us today.](#)

# SYSTEM ADMINISTRATORS

## **Reduce the backlog with a unified pathway.**

KneeCareInsight (KCI) is an innovative and insightful patient triaging tool for osteoarthritis (OA) of the knee joint. It is designed to address productivity, costs, resource requirements and other administrative responsibilities, and to help clinical administrators and executives at the hospital level minimize wait times for their elective surgeries, and standardize the clinical pathways for their patients.

### **Why KCI?**

In Ontario, there are approximately 150,000 elective surgeries in backlog with an estimated two (2) years to clear the backlog (38,263 patients). See <https://ottawa.ctvnews.ca/more-than-20-000-patients-in-ottawa-region-waiting-for-surgeries-as-hospitals-deal-with-covid-backlog-1.5465534>, and see <https://www.cbc.ca/news/canada/new-brunswick/nb-knee-hip-surgeries-patient-wait-times-1.5785931>. The evidence is nothing short of compelling.

The Financial Accountability Office estimates it will take three (3) years and \$1.3B to clear the total present backlog. At all levels, clinical administrators and executives are feeling the strains related to elective surgery demands including required operating rooms, personnel, funding and other essential resources.

There is significant administrative benefit to be achieved through KCI, which is a value-based health and value-based procurement model.

- **Reduced backlog**

KCI provides a detailed report of a patient's osteoarthritis in the knee, which accurately stages the disease. This report is used to give the patient an appropriate care plan, tailored to their specific stage. By doing so, unnecessary and unfitting referrals to surgeons are avoided, thereby decreasing the strain on the system, and reducing wait times and existing backlogs of patients slotted for surgery. This also creates benefit for patients with nascent

osteoarthritic knee problems who do not require knee surgery, by providing them with a more proactive, upstream approach.

- **Prioritization of patients according to urgency**

For patients who are identified as good candidates for knee surgery, hospitals will be able to prioritize consultations and surgeries when they implement the unified approach provided by KCI. Efficiencies will be maximized and costs reduced through the identification of real surgical capacity and post op requirements. Accurate disease staging allows prioritized timing for surgery (defer, timely/ideal, urgent) which frees time slots, identifying the need for specific resources within a unified single-entry pathway.

- **Improve surgical management of knee OA**

KCI creates a common platform of standardized urgency through which collaboration can take place among surgeons, within a hospital and across a region, to improve wait times and resource allocations, and to allow for the ability to continuously monitor capacity. There is an opportunity for the prioritization of required resources, logistics and supply chain management.

## **How to incorporate KCI into your institution**

OHIP funded clinical services are provided to your hospital and region upon clinical referral to KCI. By requesting that the knee replacement surgery performed at your region or hospital be clinically triaged by KCI, you can subsequently lower variation and system backlog.

- 1. Prepare all relevant staff and referring Primary Care Physicians.**

For patients receiving x-rays for their knee pain, you can inform and increase awareness among your surgeons and PCPs of the advantages and value provided by KCI.

- 2. Select the service.**

KCI is available for selection through OHIP.

- 3. Patients and PCPs follow the process.**

The x-ray, pain-rating questionnaire, BMI and demographic information are compiled into the KCI system.

- 4. The KCI report is produced.**

The KCI program produces a report which stages osteoarthritis of the knee joint for a more optimal plan of patient care. As a result, surgeons at your hospital are given a tool to assist them in the selection of the best surgical options prioritized to patients' needs.

KCI also collects and integrates quality data across the system, both for the Knee Registry and Ontario Health.

Have questions?  
[Contact us today.](#)