Does my Knee Pain Come From my Knee?

Although knee pain is usually caused by injury or inflammation of the structures in or immediately surrounding your knee, pain felt in the knee region may also be referred from another structure - our conscious brain doesn’t know where to localize pain from deep body structures so instead we feel pain in a superficial location which is supplied by the same nerves as the deep part that was injured. The commonest cause of pain referred to your knee is an injury to the hip joint area. This is especially common in young children and senior patients and may present as knee pain alone with no pain felt in the hip at all! Pinched nerves in the low back due to arthritic spurs or disc herniation are also common cause of referred pain to your knee and may also cause symptoms down the front of your thigh and knee or down the back of your knee all the way to your foot and toes. For these reasons a considerable part of my diagnosis and treatment of your knee condition is devoted to careful evaluation for other causative conditions including your low back, hips and nerves.

Is My Knee Pain Caused by Arthritis?

Common conditions within your knee joint such as: torn meniscus cartilage, torn ligaments, osteochondral defects and loose bodies can all cause knee pain that may mimic some aspects of Degenerative Joint Disease. Though not technically part of your knee joint proper, injury to structures surrounding your knee may also result in knee pain. These conditions include: tendonitis and bursitis or ganglion cysts between the tendons around your knee as well as injuries to the superficial nerves under the skin. Any condition from your back to your toes that changes the standing alignment of your limb or alters the way you walk may also cause pain in your knee as can other systemic inflammatory types of arthritis including: Rheumatoid Arthritis, Lupus, Psoriatic Arthritis, Arthritis associated with Inflammatory Bowel Disease and some infections including Lyme Disease and Sexually Transmitted Diseases.
Degenerative Joint Disease/Osteoarthritis of the Knee:
Degenerative Joint Disease (DJD) also known as Osteoarthritis (OA) is the most common form of knee arthritis. DJD is usually a slowly progressive disease in which the knee’s bearing surface (articular cartilage) gradually degenerates and wears away. It most often affects middle-aged and older people though some patients inherit a form of OA (Primary OA) that begins much earlier in life. As the articular cartilage deteriorates, the smooth surface frays and then may break away in chunks from the supporting (subchondral) bone. The loose debris and the rough bearing surface cause inflammation of the synovial lining of the joint resulting in swelling, stiffness and pain. As the condition progresses, the bearing surface wears thin and no longer cushions the subchondral bone on either side of the joint. This can lead to bone marrow swelling (edema) and microfractures in the supporting bone - often associated with aching pain down your inner shin. As the joint space narrows the “spacer effect” of the articular cartilage is lost leading to increased deformity. In the healthy, well aligned knee, the weight bearing axis of the leg is centered in the knee so that the load is shared almost equally between the inner half (medial compartment) of the knee joint and the outer half (lateral compartment) of the knee joint. In real life most of us have slight bow-leg deformity and tend load the inner side of the knee more so that the medial compartment tends to wear out first. This loss of the spacer effect on the inside of the knee increases the bow-leg (varus deformity) and moves the weight bearing axis further to the inside of the knee. This, in turn, shifts a greater proportion of body weight onto the already worn compartment of the knee further accelerating the joint damage and pain.

The diagnosis of DJD or OA is confirmed by the clinical history, findings on knee examination and X-Ray appearance. Presently there are no blood tests used routinely to confirm Osteoarthritis. MRI scans show OA clearly but are not needed to confirm the diagnosis in most cases.

Post-Traumatic Arthritis:
Post-traumatic arthritis develops after a knee injury causes mechanical damage to the bearing surface. The common causes for Post-traumatic Arthritis are meniscus tear, previous surgical meniscectomy, previous anterior cruciate injury & intra-articular fractures (involving the joint surface). This type of arthritis may become symptomatic years after a fracture, ligament injury, or meniscus tear. It appears very similar to OA on X-Ray and it is treated in the same way as DJD.
Inflammatory Arthritis:

Inflammatory Arthritis can occur at any age. It tends to involve both knees, as well as other joints in the body simultaneously. Arthritic knock-knees (valgus deformity) may be frequently seen in patients with Inflammatory Arthritis especially Rheumatoid Arthritis. Rheumatoid Arthritis (RA), Lupus (SLE), Psoriatic Arthritis, Arthritis associated with Crohns/Colitis, Seronegative Spondyloarthropathies (Anklylosing Spondylitis) and the Arthritis associated with Lyme disease are all examples of Inflammatory Arthritis - each is different but they share some general features.

Inflammatory Arthritis tends to result from a generalized inflammatory/allergic/infective process affecting our entire body as the first event. As part of this systemic process, inflammation and overgrowth of the knee joint synovium (knee lining) occurs as the primary process within the knee joint. If not treated, the inflamed synovium invades and damages the otherwise healthy articular cartilage secondarily. In some types of inflammatory arthritis, our body’s immune response to the infection or allergen directly attacks the bearing surface leaving it weakened and prone to premature wear. The exact mechanism of knee joint damage in so-called auto-immune arthritis is under intense research presently.

In simple terms: in Inflammatory Arthritis, the systemic inflammatory process usually starts first then the knee bearing surface deteriorates secondarily - the articular cartilage is damaged by the body’s inflammatory response. In Degenerative Joint Disease, Osteoarthritis and Post-traumatic Arthritis, the articular cartilage degenerates first and the inflammation occurs secondarily.

The treatment of Inflammatory Arthritis is beyond the scope of this paper but generally speaking: Inflammatory Arthritis may respond to systemic therapies (Antibiotics, NSAIDS, Steroids, Disease Modifying Anti-Rheumatic Drugs and Radio-Isotope Synovectomy) under the direction of your PCP or Rheumatologist. These therapies are increasingly successful in preventing or reducing the severe articular cartilage and joint damage characteristic of these diseases. Occasionally there is a role for surgical intervention early in the course of inflammatory arthritis. These include: Arthroscopic synovectomy in knees that have persistent swelling despite aggressive treatment by your rheumatologist and corrective Osteotomy (surgically re-aligning your leg) to restore a healthy weight bearing axis to your knee to reduce excessive wear in one compartment of the other. Note also that many patients who have been treated effectively for inflammatory arthritis may eventually develop typical Degenerative Joint Disease in later life requiring total knee replacement.
Normal Knee  Medial Osteoarthritis  Orthoroentgenogram

**Routine X-Rays:**
Routine X-Rays help diagnose arthritis as well as other conditions such as acute fractures, dislocations, calcific tendonitis/bursitis congenital abnormalities and bone tumors.

**Standing X-Rays:**
X-Rays are taken standing with your knees straight and while crouching slightly with your knees flexed to assess the degree of joint space narrowing due to arthritis. Occasionally an Orthoroentgenogram - a standing X-Ray showing both your legs from the hips to your ankles all on a single X-Ray will be obtained to measure your limb alignment.

**MRI:**
Since Routine X-Rays quickly and accurately diagnose most routine knee arthritis, MRI scans are usually reserved for cases where the diagnosis is unclear or I am looking for associated pathology that is not well seen on plain and standing X-Rays. Examples include: tumors, occult fractures, ganglion cysts and tears of the ligaments, meniscus tears and Osteonecrosis. Most patients who are undergoing an acute flare up of Degenerative Arthritis will show some bone marrow edema (swelling of the supportive bone as a response to the increased activity) on their MRI which appear very similar to micro fractures or tiny stress fractures around the knee.

**CT Scans:**
These are mainly used for pre-operative planning or if there is concern about a fracture or bone abnormality. CT Scans provide far better bone detail compared to MRI. The computer can reformat the CT data to show a 3D surface image of your knee that is especially useful to understand the size and exact location of bone defects when considering surgery.
Treatment of Post-Traumatic, Degenerative and Osteo Arthritis of Your Knee:

Although Degenerative Arthritis is not presently curable, simple non-operative and in most cases inexpensive treatments allow most patients to lead healthy and active lives with remarkably few symptoms. Each of us will typically experience mild or moderate flares of Degenerative Joint Disease involving the knee at some point in our lives. The following treatments listed here have been extensively reviewed by the American Academy of Orthopaedic Surgeons recently. The information in this handout is compatible with the recommendations published in 2013 as: Treatment of Osteoarthritis of the Knee: Evidence-based Guideline, 2nd Edition.

☐ Active Rest for an Acute Flare -up of Knee Arthritis:

As with an injured joint, reduction of the inflammation and swelling in your knee is very important.

a) Active Rest:

Start with “Active Rest” - avoidance of strenuous or painful activity to give the torn, stressed or inflamed tissues a chance to heal. Use your knee carefully as tolerated for basic day to day activities to prevent stiffness and loss of muscle strength. If sleeping is difficult you may need to temporarily place a pillow under your knee when lying on your back or between your knees when lying on your side. Be sure to stop using the pillow behind your knee as soon as the swelling subsides otherwise you will lose your full knee extension.

b) OTC Medicines:

Many patients find a combination of over the counter medicines such as Tylenol, Aleve & Ibuprofen reduces the inflammation and the pain. (Additional instructions are at the end of this handout). Occasionally your primary care doctor may prescribe pain killers or Tramadol for daytime use if you have other conditions that prevent you from taking NSAIDS

c) Cold Compression:

Use an ice pack or other cold therapy when the pain is recent or severe. Local heat from a heating pad or hot shower/tub may be more comforting especially as the swelling subsides and if stiffness is an issue.

Self-Management Rehabilitation:

After the acute pain has settled, the 1st phase of rehab involves a gentle stretching program. Don’t stretch too hard - If you find yourself holding your breath, you are stretching too vigorously! Be sure to hold each stretch for at least 30 seconds (the length of a TV commercial).

a) ☐ Regain Knee Extension:

Regaining Knee extension (fully straight) is the first and most important goal. Many people do this most effectively when standing up. Use your thigh muscles to push the uninjured side back and fully straight - then do the same thing with the injured or sore knee until it matches the normal side. You can also create a similar knee stretch by standing on both heels.

b) ☐ Regain Knee Flexion:

Once you have regained full knee extension and the swelling has subsided, you will need to regain flexion. This is easier for most of us since we naturally flex our knees getting in & out of cars, in & out of chairs, on & off the toilet etc. Practice bending your knee fully - use it to help raise and lower your body from a sitting position with every opportunity. Even though the swelling has subsided, it may cause pain or spasm in the hamstring muscles (the back of your thigh) if you use these muscle to pull your heel back while sitting or lying down. To avoid this hamstring discomfort, try “chair scoots” - sit back in a chair that has arms and place both feet on the floor. “Scoot” your butt forward on the chair seat leaving your feet in place - feel the stretch in your knee. It should feel tight but comfortable enough that you can carry on a conversation and can hold it for 30 seconds at a time. Repeat with every TV commercial!
c) **Low-Impact Aerobic Exercise:**
As your knee straightens more fully and you learn not to walk with a “bent knee gait” you will likely see a gradual but significant improvement in your walking distances as well as enhanced comfort for most daily activities. At this stage you should be resuming your everyday activities and beginning to cautiously introduce low-impact aerobic activities such as walking, cycling, swimming, snowshoeing, cross country skiing, the use of treadmills & elliptical machines, rowing machines may be fine. Carefully introduce each new activity at ½ of what you feel you should be able to do. Use swelling of your knee and knee stiffness to guide you as to how quickly to add new activities or ramp up the ones you have already started. It is common and permissible to experience some increased pain & swelling after a new activity or strenuous day as long as the swelling resolves overnight with a brief period of active rest, OTC medicines & cold compression. If it takes longer than 24hrs to recover from an activity or activity escalation you need to back off on your activities, let your knee settle completely and then cautiously reintroduce the activity at a slower pace.

d) **Physical Therapy:**
Physical Therapy can reduce pain and swelling, and can help to restore range of motion, strength and an improved gait pattern as well as a sense of trust for everyday activities. As you have just read, the initial treatment for a flare up of arthritis can be done effectively and inexpensively in your home without formal PT so we don’t use it routinely in this situation. Nevertheless, some patients have difficulty getting their knee straight again or need a more complicated or comprehensive program and will definitely benefit from referral to a Physical Therapist followed by a carefully tailored program to correct the deficits measured at the initial assessment. Once your range of motion and gait pattern is restored, your therapist will begin to cautiously strengthen your knee, hip and core muscles. Since it may require 3 to 6 months to achieve complete restoration of movement, strength & endurance, it is impractical to continue formal outpatient physical therapy for that long. Most likely you will be taught a specific home therapy program by your physical therapist who may then supervise your progress every few weeks and help you to increase or moderate your program.

e) **Manual Therapy, Electrical Stimulation, TENS:**
Evidence-Based Guidelines do not recommend nor do they recommend against the use of these treatments. No harm has been proven from use of these modalities.

f) **Acupuncture:**
Evidence-Based Guidelines strongly recommend not using Acupuncture due to lack of proven efficacy though no harm from its use has been proven.

**Weight Loss:**
The unfortunate truth is that most Americans are significantly overweight. Clearly Obesity is a major cause for the increasing number of patients I now see daily with early onset of Degenerative Knee Arthritis - particularly those patients who are considered Morbidly Obese (BMI>35 with health problems - in this case knee DJD). Not only do most of us need to lose weight, there is convincing evidence that losing as little as 20lbs can make a significant difference in your pain while exercising. **If your Body Mass Index (BMI) is greater than 25, there are significant opportunities for you to reduce your knee pain with weight reduction.** Easy to say & hard to do for many of us but nevertheless it is a simple, safe, inexpensive way to significantly reduce your knee pain due to Osteo Arthritis, Degenerative Arthritis & Post-Traumatic Arthritis.
Treatment of the Arthritic Knee - J Hatch MD FRCSC

Bracing:

a) Unloader Braces:
Unloader braces are typically large, strongly constructed braces that resemble those worn by college football & NFL linemen. For knee arthritis, the braces are typically molded not exactly to the shape of your leg (which is usually bow-legged) but to the correct or optimal alignment of your leg. As you tighten the straps, your leg is pulled into a more normal alignment which is supposed to “Unload” the medial (inside) compartment of your knee where the arthritis is most severe. This all makes sense in theory but evidence-based treatment guidelines neither recommend nor recommend against using these devices. The main reason is that bracing just doesn’t mechanically work for many people. The braces are quite large, not cosmetically appealing and can be uncomfortable - especially when first applied since they are trying to pull your leg straighter than it has been for several years (they only work in patients with knee deformity). They don’t fit patients with short, cone-shaped legs and large thighs and are uncomfortable to sit in.

That said, patients with longer & thinner (or well-muscled) legs who use an unloader brace for activities such as walking, golf, yard work or a standing/walking job, often find significant relief of their weight bearing pain - usually to the point where they only need the brace for a few strenuous activities and are pain free the rest of the time.

b) Simple Hinged Braces:
There are a number of simple and less expensive braces that may give you significant pain relief during painful flare-ups or strenuous activities. These vary in degree of support from simple Neoprene knee sleeves to hinged “utility” knee braces. Most of these can be purchased inexpensively from your local pharmacy or surgical supply store. Alternatively they are available by prescription also. These fit a greater range of patients but as with the unloader braces, unless they are a snug fit & comfortably stay in place with activity, they are unlikely to be of benefit. Be sure to remove the brace if you are sitting or driving for prolonged periods to avoid leg swelling or possible blood clots from excessive use.
Shoe Inserts & Orthotics:
By placing a small wedge under the outer (lateral) part of your foot, orthotics attempt to reduce the load on the inside of your knee by reducing the bow-legged misalignment. Shoe inserts are available as “Off The Shelf” inserts or prescription custom orthotics. Evidence-based guidelines for the treatment of osteoarthritis of the knee cannot support the use of lateral wedge insoles so it is hard to justify the expense of custom made orthotics given the lack of scientific support. Patients who have used them successfully in the past can buy felt lateral wedge insoles direct from companies like Ha-pad quite inexpensively. If you usually wear custom arch supports for flat feet and have slightly bowed legs, try removing them from your shoes during flare-ups of your knee arthritis. Many patients find an Off The Shelf gel insole or cushioned arch support helps to reduce their knee pain due to the cushioning effect rather than any effect on alignment.

Glucosamine & Chondroitin:
Evidence-Based Guidelines strongly recommend not using Glucosamine and/or Chondroitin Sulfate due to lack of proven efficacy. No harm from their use has been proven but if you use these products, know that these “nutraceutical” medicines are completely unregulated and, especially if not manufactured in the USA, Canada or Western Europe, may contain very little of the actual active ingredients or may contain considerable impurities.

NSAIDS:
Evidence-Based Guidelines strongly recommend Non-Steroidal Anti-Inflammatory Drugs as a treatment for symptomatic Degenerative Arthritis of your knee. NSAIDS are a group of medicines developed to combat the pain of arthritic joints and other inflammatory conditions throughout your body. Usually taken by mouth, Aspirin, Aleve (Naproxen Sodium), Advil/Motrin (Ibuprofen) are available “OTC” (over the counter without a prescription). These and many other NSAIDS are also available by prescription. Most of these drugs act in a similar way on your arthritis though each may work differently for your knee pain. “COX-2 Inhibitors” are a subset of NSAIDS specifically developed to reduce the risk of stomach bleeding (although they don’t treat the arthritis any differently). Celecoxib (Celebrex) is the best known of these. Some NSAIDS are also available as a topical gel which can be absorbed through your skin rather than your stomach. Diclofenac (Voltaren Gel) is perhaps the best known of these.

Acetaminophen (Tylenol):
Evidence-based Guidelines neither recommend for nor against the use of Acetaminophen based therapy. Tylenol is not an anti-inflammatory drug but it is a safe, effective pain reliever for most patients’ pain. It makes an excellent first choice for patients with osteoarthritis of the knee since it can be safely combined with NSAIDS and/or Tramadol if necessary. Please be aware that the maximum daily dose of Acetaminophen/Tylenol is 3000mg/24hrs. This means a maximum of 6 extra strength Tylenol tablets or 12 regular strength Tylenol tablets daily. Note that prescription medicines such as Percocet, Vicodin or those with APAP on the label contain Acetaminophen (usually 500mg) in each tablet so you must reduce your Tylenol dose accordingly if you take these prescription pain relievers.
Pain Patches:
Prescription pain patches typically contain a local anesthetic called Lidocaine (a cousin but from a different class of drugs to Novocaine). These can provide temporary pain relief of knee arthritis but they are expensive and cause significant side effects due to overdose if left on your skin too long. Current evidence-based guidelines do not recommend for or against the use of these drugs.

Narcotic Pain Relievers & Tramadol:
Narcotics are opioid drugs that provide an effective and reasonably safe way to treat acute pain - regardless of its origin. It is common to receive a small prescription for these as treatment for a flare-up of your knee arthritis. The emphasis here is on providing a few days of relief for an acute painful event. We are all acutely aware of the problems of narcotics diversion within our community directly resulting from the increased availability of prescription narcotics. Evidence-based guidelines neither recommend for nor against the use of opioid therapy for symptomatic osteoarthritis of the knee and generally we try to avoid long term use of narcotics for this condition. There are occasional patients and specific circumstances where these may be used but they require a single prescribing physician (usually your primary care or a pain specialist) regular drug testing and careful monitoring & supervision. Tramadol is a Schedule 3, opioid type pain reliever (think of it as a Codeine substitute with different side effects) which may be prescribed for moderate to severe knee arthritis. Unlike for other opioids, evidence-based guidelines currently contain a strong recommendation for the use of Tramadol in symptomatic knee osteoarthritis. It may be prescribed for flare-ups of knee arthritis and may be used chronically in selected patients with chronic pain with appropriate monitoring & safeguards in place. It is not a good choice in patients prone to seizures or with major mental health issues. Long term (>3 months) use is associated with withdrawal symptoms, as well as worsening anxiety or depression. I do not prescribe chronic opioid therapy.

Cortisone Injections:
Cortisone is a powerful steroid type anti-inflammatory drug, which helps shrink the swollen synovial lining of the knee joint. While it may be given in tablet form (Medrol Dose Pack or Prednisone tablets) since it is given by mouth, the cortisone is distributed throughout your body and may inadvertently also damage your bones and other joints. To prevent these unwanted side effects, we target the therapy to your knee by injecting small amounts of Cortisone (Depo-Medrol or Celestone) directly into the knee joint. While there may be some slight systemic effect (Diabetics will see their blood sugar rise for 24-36 hours) most of the active drug stays within the joint. A small amount of local anesthetic is added to the Cortisone before injection to minimize discomfort. Most patients feel a brief “jab” as the needle is inserted but do not feel the medicines actually being injected. It is typical to feel immediate relief of knee pain for an hour or so followed by a bruised feeling for a day or two after the injection. It may take over a week for the Cortisone injection to shrink the swollen tissue and deliver its full effect. Cortisone injections typically last for up to 3 weeks and are usually helpful in getting patients back to their baseline arthritis symptoms and able to resume their extension stretching & lifelong low-impact exercise programs. Cortisone does not “cure” your arthritis and there is no role for using it regularly to prevent flare-ups of Degenerative Joint Disease. There has been a recent change in evidenced-based guidelines which now neither recommend for nor against the use of intra-articular corticosteroid injections for the treatment of symptomatic osteoarthritis of the knee.
Hyaluronate (HA Gel) Injections:
Hyaluronic Acid Injections were introduced to the US market over 15 years ago in the hope of repairing some of the bearing surface damage by restoring a more normal lubrication (joint) fluid to the arthritic knee. The original preparation (Synvisc) is derived from chicken combs and, though modestly effective, is associated with hot, swollen knee joints in a few patients after they are re-injected with Synvisc. These “pseudo septic” reactions are felt to be due to an allergy to the residual avian protein in the gel. Although usually not life threatening, considerable expense and patient inconvenience is incurred with antibiotics, lab tests and sometimes surgery in the process of ensuring that the patient does not have a truly infected knee rather than an allergy to Synvisc. Other preparations including Supartz, Hyalgan, Euflexxa & Gel-One are manufactured by a different process and do not seem as likely to cause the pseudo sepsis/allergic reaction but are no more effective in treating symptomatic OA than the original preparation. HA injections may result in a longer period of pain relief in Degenerative Joint Disease than cortisone even though it cannot be detected in the knee 3 weeks after the injection. Although most HA preparations may be safely injected more frequently, most insurance companies including Medicare will only pay for repeat injections at greater than 6 monthly intervals. Evidence-based guidelines strongly recommend not using Hyaluronate injections due to lack of proven efficacy though no harm from its use has been proven for those preparations which are not usually associated with pseudo septic allergic reactions.

PRP & Growth Factor Injections:
Platelet rich plasma & growth factors are currently under investigation as potential healing accelerators - especially for tendon healing. Typically they are obtained by concentrating the specific factors from a sample of your blood and then re-injected into or around the damaged area to promote healing. Current evidence-based guidelines are inconclusive as to the effectiveness of these therapies meaning we don’t know if they work or not.

Arthroscopic Knee Surgery:
Arthroscopic surgery is a short Outpatient surgical procedure usually performed under general anesthesia. By distending your knee joint with sterile fluid and accessing the joint through a series of small incisions (portals) I can visualize all the important structures of your knee through a videoarthroscope. In the non-arthritic knee I can also repair some types of torn meniscus cartilage and repair or at least stimulate repair of osteochondral defects in the bearing surface cartilage if they are small or intermediate in size. I can also trim torn meniscus cartilage, trim or smooth damaged bearing surface cartilage, and remove excessively swollen joint lining. If your knee is healthy except for a localized meniscus tear or localized bearing surface defect, arthroscopic surgery can give years of relief of pain & swelling. Unfortunately, the benefits of arthroscopic surgery in the arthritic knee (with certain exceptions) usually last only a few months so that evidence-based guidelines strongly recommend against the use of arthroscopic knee surgery if your primary diagnosis is Osteoarthritis of the knee. That said, you may have a torn meniscus as a component of your arthritic process causing persistent pain, swelling and a mechanical feeling of something shifting or moving (often painfully) within your knee. In this situation, there may be a definite role for arthroscopic surgery. Unfortunately since we can’t predict the natural history of knee arthritis, arthroscopically removing your meniscus may provide only short term improvement in your mechanical knee symptoms before your arthritis progresses. Evidence-based guidelines are inconclusive about the role of arthroscopic partial meniscectomy presently.
Knee Realignment (Osteotomy):
In young, or active patients who have medial (inside) compartment arthritis combined with varus (bow legged) alignment of their leg, the worn medial compartment often hurts because it is carrying too much of your body weight. By surgically re-aligning your leg to slightly overcorrect this alignment, your body weight can be shifted to the outer, healthy compartment of your knee - in turn off-loading the inner compartment and reducing the pain on the inside of your knee. This is an excellent option for patients who are young & very active and it has been shown to delay the need for total knee replacement by about ten years. It has the advantage of retaining your original (albeit arthritic) knee and thus theoretically allows participation in sports and activities that would definitely damage a partial or total knee replacement. The downside to the procedure is that it takes at least 3 months for the bone to heal sufficiently so that you can walk comfortably. This is an excellent investment for you when you are in your 40’s but patients in their 50’s increasingly elect to undergo partial knee replacement which is easier to undergo and usually has a slightly a faster recovery with better published results. Corrective osteotomy of the knee is frequently used in conjunction with meniscus transplants or instability procedures as a possible means of preventing or diminishing the severity of future arthritis in the young & the very active. Current evidence-based guidelines do provide limited support for the use of re-alignment osteotomy in the treatment of symptomatic knee arthritis.

Partial Knee Replacement:
If you have exhausted all the other non-operative options above and your enjoyment of life is significantly and negatively affected by Degenerative Joint Disease/OA or Post-traumatic Arthritis involving only 1 compartment of your knee, while the other compartment remains unaffected by your arthritis, you may be an excellent candidate for partial knee replacement - replacing or resurfacing only your worn natural bearing surface with an artificial bearing made of metal & plastic. Partial knee replacements can be used to replace each 1 of the 3 compartments of your knee (medial, lateral or patellofemoral). The results of partial knee replacement are equally as good as total knee replacements in carefully selected individuals.

Total Knee Replacement:
If you have exhausted all the other non-operative options above and your enjoyment of life is significantly and negatively affected by Degenerative Joint Disease/OA, Post-traumatic Arthritis or Inflammatory Arthritis involving multiple compartments of your knee, you may be an excellent candidate for total knee replacement. In this procedure, all of your knee’s natural bearing surfaces as well as some of the ligaments may be replaced by artificial bearings made of metal and plastic with differing mechanisms of connectivity depending on the mechanical or arthritic problem being treated. The details of knee replacement are covered in my handout: “Knee Replacements” which we can print for you or you may access through my web site.
NSAIDS
Oral Non Steroidal Anti-Inflammatory Drugs are a group of medicines developed to combat the pain of arthritic joints and other inflammatory conditions throughout your body. These include: Aspirin, Aleve, Advil (Motrin) which are available “OTC” (over the counter without a prescription) and also include a vast array of prescription medicines. The newest class of these drugs is “COX-2 Inhibitors” which were developed to reduce the risk of stomach bleeding. Celecoxib (Celebrex) is the best known of these.

What Is The Best NSAID?
Scientific studies show a similar response rate for most NSAIDS. Almost every drug will help relieve symptoms in about 70 out of 100 people. The practical problem we all face however is that it isn’t the same 70 people who get relief of their symptoms from each NSAID! Each person responds differently and unpredictably to each drug. Since I can’t predict in advance which NSAID will work for you, we must use the rather unscientific “trial & error” method. We try several different types of NSAIDS until we find one that works for you - hopefully without many side effects.

What Are The Complications of NSAIDS?
The most frequent complications include: heartburn/acid reflux, altered bone/fracture healing, ulcers & stomach bleeding, heart attacks (in susceptible individuals) and drug interactions with other medicines (including many herbal remedies). Asthma attacks, high blood pressure, kidney damage & liver damage are less frequently seen in otherwise healthy people. These complications become more frequent as you take higher doses for longer periods of time and especially if you have other medical problems. Please note that the complications often develop “silently” - you don’t know you are developing the complications until they become very serious or it's too late to repair the damage!

What Can Be Done To Avoid These Complications?
I generally only prescribe short courses of NSAIDS. Since most of these drugs start working within an hour, I recommend short bursts of NSAIDS at moderate to high doses only when needed. If you don’t take NSAIDS on days when your symptoms are mild, it gives your stomach, heart & kidneys a chance to recover. If you have to take these medicines daily for more than a month, you will need to see your PCP for prescription renewals. Your PCP may monitor you for the potential complications by clinical examination & possibly blood and urine tests. Your PCP also knows the details of your medical history such as known risk factors, drug incompatibilities, duplications or drug interactions.

Do NSAIDS Cause Heart Attacks?
Aspirin interferes with the ability of platelets in your blood to stick to each other (form blood clots) which is how they help protect against heart attack & stroke. COX-2 Inhibiting NSAIDS (Celebrex) were specifically designed not to interfere with platelet “stickiness” so they do not protect you against heart attacks and stroke. Recently, COX-2 Enzymes have also been found to line the walls of small blood vessels so COX-2 Inhibiting NSAIDS may also help clots stick to the blood vessel walls more easily. This is why COX-2 Inhibitors may provoke heart attacks especially in people with a personal or family history of heart disease. Since all NSAIDS have some COX-2 Inhibitory properties, I believe that we should assume that all NSAIDS (except Aspirin) can increase your risk of heart attack if taken at high enough doses and for long enough. The increased risk of heart attack due to NSAIDS appears to return to baseline as soon as you stop taking the drug.
Which NSAID Is The Safest?
It is important to realize that all of these drugs can have serious side effects. Complications are seen with all these medications - from simple Aspirin up to the new COX-2 inhibitors.

For brief usage (1 to 2 weeks), “Over The Counter” NSAIDS have a proven track record at low to moderate doses (that’s why they are available without a prescription!) Once we increase to “prescription strength”, the safety of OTC drugs becomes the same as prescription NSAIDS.

For long term daily use, the American Heart Association (Feb. 2007) recommends the following from safest (#1) to least safe (#4) for the treatment of chronic pain in patients with known heart disease or strong risk factors for heart disease:

1. Aspirin, Acetaminophen, Tramadol or low dose narcotic analgesics
2. NSAIDS with minimal COX-2 selectivity (Naproxen/Aleve/Naprosyn may have a slight advantage over other non-selective NSAIDS)
3. Non-selective NSAIDS (essentially all other NSAIDS)
4. COX-2 INHIBITORS (Celebrex)

If your PCP has recommended that you take an Aspirin a day for stroke or heart attack prevention, you should continue taking it even while you are taking other NSAIDS.

What about Glucosamine & Chondroitin sulfate?
Several veterinary studies show Glucosamine reduces pain & swelling in arthritic joints. Its ability to regenerate the bearing surface of joints remains questionable. Its major role is to provide long term sustainable pain relief in patients with mild to moderate arthritis without the risks of long term NSAIDS. About 60% to 70% of my patients find it helpful. Scientific studies on Chondroitin Sulfate (and recently MSM) however are less robust and recent studies have suggested that in humans there may be no more effect than placebo (dummy pills). Chondroitin Sulfate is a very large molecule and there is controversy presently as to whether humans can absorb some types. Evidence-Based Guidelines strongly recommend not using Glucosamine and/or Chondroitin Sulfate due to lack of proven efficacy. No harm from their use has been proven but if you use these products, know that these “nutraceutical” medicines are completely unregulated and, especially if not manufactured in the USA, Canada or Western Europe, may contain very little of the actual active ingredients or may contain considerable impurities.

A Few Suggestions:
1. Try over the counter ASA or NSAIDS first (if you know you can tolerate them and you are completely healthy) since they are cheap and very effective. Start with the dosage listed on the bottle. If you see no response in your symptoms after the first week, increase the dose to the maximum prescription dose: for a maximum of 10 more days.

   Ibuprofen/Advil/Motrin: maximum 2400 mg (12 OTC tablets) per day
   Aleve/Naproxen Sodium: maximum 1000mg (4 OTC tablets) per day

2. Try to pre-empt pain by taking your NSAID an hour or so in advance of painful activities
3. Consider using heat, ice and Acetaminophen (Tylenol) in place of NSAIDS when possible.
4. Don’t take NSAIDS when your pain is mild - give yourself frequent drug holidays.
5. Do not take any NSAIDS if you take prescription blood thinners unless specifically prescribed by your doctor who monitors you carefully.
6. Do schedule a follow-up appointment with your PCP before your NSAID prescription runs out so that he/she may examine you for potential side effects or complications.
7. Do not take NSAIDS for 4 weeks after fractures to enhance bone healing (exception - children).
KNEE EXERCISES

Follow this simple program remembering that each stretch should be done gently (don’t hold your breath) but held long enough that the tissue has time to “give” (just like wringing out a mop). 30 second TV commercials are a handy timer (and will remind you to repeat them often)!

#1: STRAIGHTEN YOUR KNEE (LYING DOWN)
- Lie on a firm, comfortable surface with your knee as straight as possible
- Contract your quadriceps (feel your kneecap move towards you) and press your knee into the floor
- Hold for 15-30 seconds, then relax
- Repeat 5-10 times, 3 sets/day

#1: STRAIGHTEN YOUR KNEE (STANDING)
- These are best performed after you have warmed up your knee by walking
- Contract your quadriceps and feel your knee straighten as you push it back
- Hold for 15-30 seconds, then relax
- Repeat anytime you are standing!

#2: BEND YOUR KNEE (LYING DOWN)
- Lie on a firm, comfortable surface with your knee straight initially
- Bend your knee & slide your heel towards your buttock
- Hold for 15-30 seconds, then relax
- Once your knee bends 90 degrees, progress to the chair exercises to prevent muscle cramps

#2: BEND YOUR KNEE (SITTING)
- Sit in a firm chair -preferably one with arms
- Sit with your back against the chair back
- Slide both feet back towards you and press them firmly to the floor
- Lift your buttocks off the chair to slide forward until you feel a stretch in your thighs and knees
- Sit and hold for 15-30 seconds, then slide back
- Repeat 5-10 times, 3 sets/day
- A rocking chair or glider may also help