Provincial Knee Primary Care Clinical Pathway

Quick Links: Primer & Expanded details | Provider resources | Patient resources | Provide feedback

Patient ≥18 years old presents to primary care with knee complaint

1a. History
What is the patient's main complaint? Onset, mechanism of injury (trauma vs atraumatic), characterize pain, previous injury/surgery, giving way, snapping, locking, swelling, comorbidities

1b. Assessment
Observe, examine, palpate: ROM; Special tests, screen hip and ankle. If too painful or swollen to perform assessment, re-assess every 2 weeks

2. Red Flags

Fracture/Significant ligamentous/Tendinous injury (including quads or patella)/ Locked knee/Dislocation: History of trauma, unable to weight-bear, cannot bend knee >90° or unable to fully extend knee

Neurovascular compromise: History of rapid change in sensation. Constant or progressive intractable pain; reduced, absent or aneurysmal popliteal or distal pulses

Infection: Pain, redness, heat, swelling, fever, systemically unwell. If concerned about septic joint or bursa, hold antibiotics until aspiration performed

→ Emergent referral to emergency department or RAAPID

Rheumatological: No history of trauma, potentially multiple joints, stiffness, decreased ROM, symptoms external to joints, consider inflammatory and crystal arthropathy

→ Work up appropriately or seek advice

Malignancy: Deformity or mass with absence of trauma, pain unrelated to activity, night sweats, night pain, unremitting pain not relieved by rest, unintentional weight loss, potential prior history of cancer

→ Urgent Orthopedic Oncology advice or referral

3. Consider timely advice/referral to sports medicine or orthopedics if you suspect conditions highlighted yellow in Box 4.

No Red Flag findings

4. Location of pain or knee complaint to help with differential diagnosis (anatomical approach to pain +/- instability) listed in approximate order of prevalence

Anterior Knee Pain	Intra-Articular Knee Pain	Medial Knee Pain	Lateral Knee Pain	Posterior Knee Pain	Instability +/- pain
• Patellar-femoral syndrome/ Chondromalacia patella	• Osteoarthritis	• **Acute medial meniscal tear**	• ITB Syndrome	• Baker's cyst	• **Patellar instability**
• Quad & patellar tendinopathy	• **Osteochondral defect**	• Degenerative medial meniscal tear	• LCL sprain	• Gastrocnemius strain	• **Unstable meniscal tear**
• Bursitis	• Spontaneous osteonecrosis of the knee (SONK)	• Medial compartment arthritis	• **Acute lateral meniscal tear**	• PCL sprain	• **ACL/PCL tear**
		• Pes Anserine bursitis	• Degenerative lateral meniscal tear		• **MCL/LCL sprain- high grade**
		• MCL sprain	• Lateral compartment end stage OA		• **Intra-articular loose body**

5. Diagnostic Imaging

a. X-ray:
- Knee routine series
- If trauma within 7 days order trauma series.
- If OA is questioned, order knee weightbearing series

Include symptom onset, duration, functional status limitations, and treatment to date.

b. Ultrasound and MRI are generally not recommended in primary care management. See expanded details.

→ **Red flag** findings on X-ray, return to **box 2**

No Red Flags OR criteria for **specialist referral***

6. Non Operative Treatment or Management while awaiting consultation

- Physiotherapy for at least 12 weeks (education, active, exercise focused, strength-based)
- Additional means of pain control (i.e., topical analgesia +/- oral NSAID medication, +/- hot-cold therapy)
- Consider bracing options
- Injections: Consider visco-supplementation (hyaluronic acid) for intra-articular knee pathology if minimal degenerative changes in knee. Avoid cortisone in knees without osteoarthritis
- OA: Physio, pain control, cortisone injection
- GLA:D®

7. Follow Up in 6-12 weeks

Re-assess symptoms, functional progress and re-evaluate diagnosis

Improving OR no role for surgical intervention → **Reinforce self-management and conservative strategies** and follow-up as needed

Not improving, bold and * condition in box 4, or unclear diagnosis → Consider advice/referral to Sports Medicine or Orthopedic Surgery

Primary Care Alberta | ALBERTA'S PATHWAY HUB

Call to Action: We need your feedback during this **new** pathway's initial testing phase!

Advice & Referral Info | Background

This primary care pathway was co-developed by primary and specialty care and is intended to be used in conjunction with specialty advice services, when required, to support care within the medical home.

EXPANDED DETAILS

Pathway Primer

The knee has the largest articulating surface of any joint in the human body, is a weight bearing joint and is one of the most commonly injured body parts [1]. In Alberta, during the 2018-2019 fiscal year, over half a million individuals sought physician services for knee related issues. Knee pain can present as acute pain from trauma or overuse, chronic knee pain associated with overuse, or knee pain without trauma or overuse (possibly associated with systemic signs and symptoms).

This clinical pathway was co-designed by primary and specialty care leaders to help support early care and non-operative management for patients in their medical home, reduce unnecessary diagnostic imaging, increase appropriateness and timeliness of surgical referrals and reduce wait lists for surgical consult [1]. As depicted in Figure 1, education and conservative management should be considered as first line management for knee issues. A subset of patients experiencing knee pain may also require pharmacologic pain relief and physiotherapy. An even smaller subset may benefit from surgical intervention. It is important that physicians and patients participate in joint decision making when exploring the pros and cons of any treatment, including surgical intervention.

Patient assessment may identify other conditions that may require additional resources to help optimize management. These resources may include advice services, referrals to other medical specialties and connections to programs and services designed to target root causes and psychosocial factors. Programs and services may vary by zone.

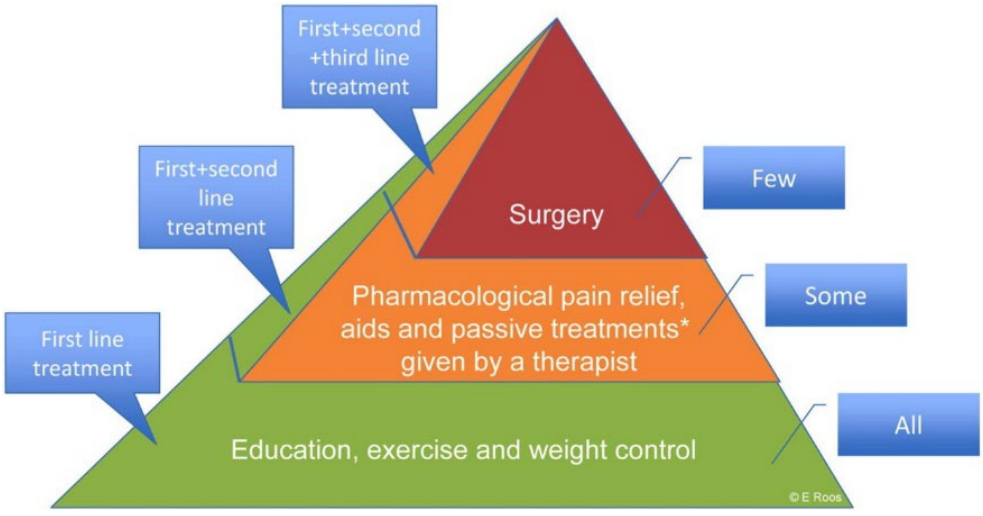


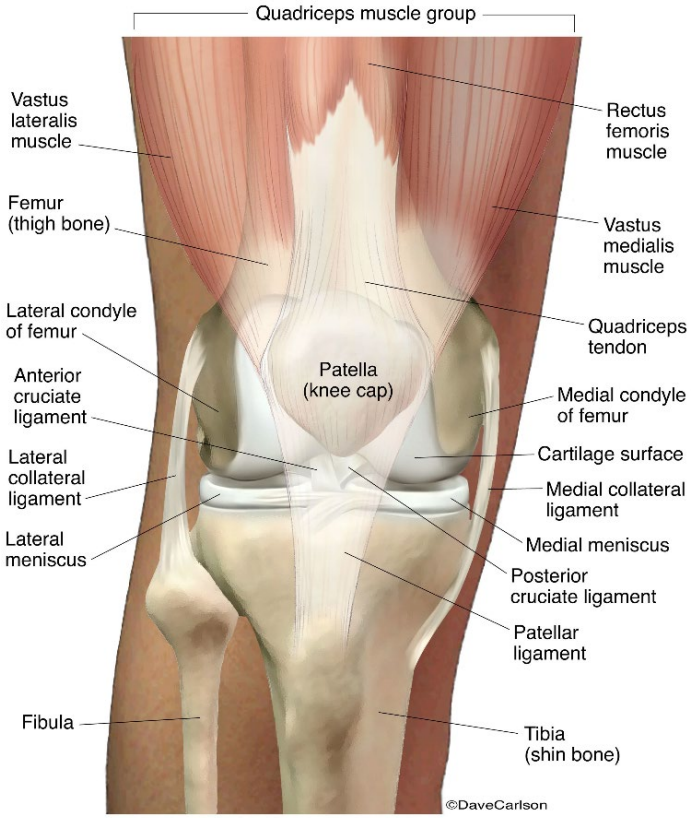
Image 1: GLA:D® Canada [2]

1a. History Taking (Initial Work Up)

- Demographics: Age, sex, occupation (is this a knee injury that you suffered at work?).
- Onset: Acute (less than 6 weeks) vs chronic (greater than 6 weeks) - sudden vs gradual; traumatic vs non-traumatic – how, when and where any injury took place?
- What is the current problem or primary concern with your affected knee? [e.g., pain, instability, swelling, mechanical symptoms (clicking, catching, locking)].
- Pain (location, describe pain, radiating). Aggravating and alleviating factors that help with structures involved. Constant pain suggests more active inflammatory injury vs intermittent points more to excessive activity or activity related. Night pain more suggestive of boney/joint pain.
- Previous injury or surgery – higher suspicion of re-injury.
- Previous imaging and/or treatments for the knee?
- Other symptoms:
    - True locking. This suggests a mechanical block such as a meniscal tear or loose body within the joint, this is different to patient's reporting clicking or stiffness.
    - True giving way. This suggests instability often from a lack of ligamentous integrity commonly reported following an ACL injury.
    - Rapid swelling, ecchymosis, erythema after an injury. This suggests significant tissue damage such as an ACL tear.
- Comorbidities (BMI, smoking, A1c) – these are important factors to note for management decisions.

1b. Assessment (Physical Examination)

- Observe gait, examine for redness, swelling, prior surgical scars, heat/signs of infection, and palpate, including patella, quadriceps tendon, per anserine and joint lines for point(s) of maximal tenderness. Compare to unaffected side including ROM (active and passive) and strength.
- Special tests to assess for crepitus, effusion and cartilage/ligament integrity to examine for cruciate ligaments, menisci, lateral ligaments.
- Video demonstrating and reviewing special tests for the knee – Knee Special Tests [3].
- Video demonstrating an example of knee examination Knee exam [4].
- Assess joint above and below to consider referred pain or predisposing factors to issues being felt in the knee.



Anterior (front) view of knee
[Dynamed [5]]

2. Red Flags

- **Fracture, Significant ligamentous or tendinous injury (including quads or patella), Locked knee or Dislocation:** Assess patient for history of trauma, ability to weight-bear and range of motion (ROM) (i.e., cannot bend knee >90° or unable to fully extend knee).
  - ➢ If these signs and symptoms are present, refer the patient immediately to the emergency department or call RAAPID for advice.
- **Neurovascular compromise:** Assess for history of rapid change in sensation in the lower limb and constant or progressive intractable change in pain. Assess for reduced, absent, aneurysmal popliteal or distal pulses.
  - ➢ If these signs and symptoms are present, refer the patient immediately to the emergency department or call RAAPID for advice.
- **Infection**: Assess patient for pain, redness, heat, swelling and fever. Is the patient systemically unwell? If concerned about septic joint or bursa, hold starting antibiotics until aspiration performed.
  - ➢ If these signs and symptoms present, refer the patient immediately to the emergency department or call RAAPID for advice.
- **Rheumatological:** Typically, patients present with no history of trauma. There may be multiple joint involvement, and symptoms may extend beyond joints. Assess for stiffness, decreased ROM. Consider inflammatory and crystal arthropathy.
  - ➢ Work up appropriately, utilize advice services or consult rheumatology.
- **Malignancy:** Assess for deformity or mass with absence of trauma, pain unrelated to activity, night sweats, night pain, unremitting pain not relieved by rest, unintentional weight loss, potential prior history of cancer.
  - ➢ These symptoms warrant seeking Urgent Orthopedic Oncology advice or referral. For suspected primary or locally aggressive bone tumors, refer to Orthopedic Oncology (except in Lethbridge – Call orthopedic surgeon on call for advice).

3. Consider Advice or Referral

Certain conditions may require timely advice/referral to sports medicine or orthopedics. If you suspect the following conditions, consider either specialty advice or a referral.

Area	Differential diagnosis
Intra-articular	Osteochondral defect
Medial knee pain	Acute medial meniscal tear
Lateral knee pain	Acute lateral meniscal tear
Instability +/- pain	Patellar instability Unstable meniscal tear ACL/PCL tear MCL/LCL sprain- high grade Intra-articular loose body

4. Location of pain or knee complaint to help with differential diagnosis (anatomical approach)

This table is designed to provide guidance on typical symptoms. Patients may present with some or many of the signs and symptoms below. An indication on management is illustrated. Note, this table offers guidance for practice on typical presentations but is not all-encompassing or absolute [6]**.**

Area	Condition with history & examination findings	Management
Anterior knee pain	**Patellar Femoral Syndrome (PFS):** Overuse disorder, often with running, diffuse pain around or behind patella, aggravated by weight bearing on flexed knee, prolonged sitting and descending stairs. Hip weakness common, normal knee motion. Extremely common cause of chronic knee pain.	Conservative management as first management approach. This should include structured education, exercise (active, strength-based) and promoting physical activity.
	Chondromalacia patella: Similar to PFS but may have an effusion distinguished radiographically.	Conservative management as first management approach. This should include structured education, exercise (active, strength-based) and promoting physical activity.
	Quadriceps and patellar tendinopathy: Pain with overuse, often with explosive movements. Often gradual onset/no trauma. Pain with jumping, sprinting and with resisted knee extension such as squats. May have atrophy quadriceps muscle. Tenderness felt over patellar tendon, may feel thickened and often found with tight quad muscles. Knee range normal.	Conservative management as first management approach. This should include structured education, exercise (active, strength-based) and promoting physical activity.
	Bursitis: History of swelling and pain below patella. History of prolonged pressure such as kneeling. Marked tenderness anterior to the patella or patella tendon.	Conservative management as first management approach. This should include structured education, exercise (active, strength-based) and promoting physical activity.
	Osgood Schlatter's: Pain and tenderness at tibial tubercle in children and adolescents often experienced during growth spurts. Pain increased with activity, decreased with rest. Related to running and jumping. Tenderness on palpation over tibial tubercle. Knee stable and normal range.	Topical or oral NSAIDs dosed according to weight/age, activity modification. Osgood Schlatter's is typically self-limiting when growth completed. Physio and surgery are not typically required but physio may help guide patient to ensure that secondary issues do not develop.
	Chronic patellar subluxation/dislocation: Typically describe antero-medial knee pain after an acute dislocation, then may describe anterolateral pain if more chronic. History of patella dislocation and/or hyper-mobility.	Refer to ortho.

Area	Condition with history & examination findings	Management
Intra-articular knee pain	**Osteoarthritis:** Generally occurs in adults over 50 years. Pain with activity, stiffness present with inactivity. Diffuse pain around affected joint line (i.e., not necessarily lateral pain if OA is medial compartment). Effusion present during a flare up. Ligaments stable, range often limited in both flexion and extension.	Conservative management as first management approach. This should include structured education, exercise (active, strength-based) and promoting physical activity. Pain control: Consider cortisone injection if pain is limiting rehab. Consider off-loader brace. Consider visco-supplementation (hyaluronic acid) if minimal degenerative changes in knee (avoid cortisone in knees without degenerative changes). Consider referral to ortho for end-stage disease.
	Osteochondritis Dissecans: Occurs mostly in children and adolescents, can be after an injury or after period of overuse. Usually affects one joint but can be in several joints. Pain with activity such as stairs or sports. Swelling common and may also complain of popping or locking. End range extension is limited.	Refer to ortho. MRI should be ordered for this condition.
	Osteochondral defect: Diffuse knee pain worse during and after activity. Effusion brought on by activity. Pain worse with weightbearing, reduced range of motion and swelling. May experience catching or locking sensation.	Refer to ortho.
	Spontaneous osteonecrosis of the knee (SONK)/Avascular necrosis: Pain on inside of knee. May be a rapid onset but can progress over months, worse with weightbearing. Focal lesion often seen on imaging. The acute severe pain usually lessens after a few months and then settles into chronic OA pain.	Symptomatic treatment including NSAIDs and Tylenol. Can consider bisphosphonate use for pain during acutely painful period. Once acute pain subsides manage as per OA guidelines.
	Unstable meniscal tear: Includes mechanical component such as locking knee.	Refer to ortho for consideration of arthroscopy and debridement.

Area	Condition with history & examination findings	Management
Medial knee pain	**Medial meniscal injury** **Acute tears:** Sudden or forceful twisting motion with foot planted. Tearing, popping pain at time of injury. Complaint of feeling unstable, swelling and reduced motion, possible locking. Pain over medial joint line and worse with squatting or pivoting. Positive McMurray's test, pain with compression and twisting of knee. Patient may experience some or all these symptoms. **Degenerative tears:** Develops progressively, more common with passing decades. Pain with pivoting or twisting knee. May complain of catching locking sensation. Medial joint line tenderness. Positive McMurray's test, pain with compression and twisting of knee.	Refer to physio for early management of swelling and to begin rehabilitation. Refer to ortho for any suspected tear with a locking component, or with failure to improve after 3 months of conservative treatment. Refer to physio for active, exercise focused rehab. Degenerative meniscal tears only warrant surgical opinion after they have failed physiotherapy.
	Medial compartment osteoarthritis: Similar to osteoarthritis but affecting the medial compartment. More common in cases of mal-alignment, genu varum stress and after medial meniscus injuries.	Conservative management as first management approach. This should include structured education, exercise (active, strength-based) and promoting physical activity. Pain control: Consider cortisone injection if pain is limiting rehab. Consider off-loader brace. Consider visco-supplementation (hyaluronic acid) if minimal degenerative changes in knee (avoid cortisone in knees without degenerative changes). Consider referral to ortho for end-stage disease.
	Pes Anserine bursitis: Associated with repetitive valgus strain, more commonly seen with Genu Valgus. Pain and tenderness over pes anserine insertion distal to medial joint line.	Conservative management as first management approach. Should include (active, exercise focused, strength-based).
	MCL sprain: Twisting of leg or direct blow to lateral knee causing valgus stress. Feeling of instability with tenderness over medial joint line. Positive valgus stress test (pain). Note - often accompanied by meniscal injury.	Conservative management as first management approach. Should include (active, hands-on, exercise focused, strength-based). Consider sports medicine or ortho referral if meniscal injury also suspected.

Area	Condition with history & examination findings	Management
Lateral knee pain	**Iliotibial band (ITB) syndrome:** Insidious onset, lateral knee pain that increases over time and related to overuse. Often seen in runners and cyclists. Pain often felt over lateral femoral condyle. Often associated with weak hip abduction.	Conservative management as first management approach. Should include (active, hands-on, exercise focused, strength-based).
	LCL sprain: Twisting of leg or direct blow to medial knee causing varus stress. Feeling of instability with tenderness over lateral joint line. Positive varus stress test (pain).	Conservative management as first management approach. Should include (active, hands-on, exercise focused, strength-based). Consider sports medicine or ortho referral if meniscal injury also suspected.
	Lateral meniscal injury **Acute tears:** Sudden or forceful twisting motion with foot planted. Tearing, popping pain at time of injury. Complaint of feeling unstable, swelling and reduced motion, and locking. Pain over lateral joint line and worse with squatting or pivoting. Positive McMurray's test, pain with compression and twisting of knee. **Degenerative tears:** Develops progressively, more common with passing decades. Pain with pivoting or twisting knee. May complain of catching locking sensation. Lateral joint line tenderness. Positive McMurray's test, pain with compression and twisting of knee.	Refer to physio for early management of swelling and to begin rehabilitation. Refer to ortho for any suspected tear with a locking component, or with failure to improve after 3 months of conservative treatment. Refer to physio for active, exercise focused rehab. Degenerative meniscal tears only warrant surgical opinion after they have failed physiotherapy.
	Lateral compartment osteoarthritis: Similar to osteoarthritis but affecting the lateral compartment. More common in cases of mal-alignment, genu valgus stress and after lateral meniscus injuries.	Same as osteoarthritis management above.
Posterior knee pain	**Baker's cyst:** Posterior knee pain, palpable swollen cystic structure in popliteal fossa. These tend to recur so the patient may report a history of these symptoms.	For calcitrant, highly symptomatic, consider referral to interventional radiology or sports medicine for aspiration/steroid injection for temporary relief.
	Gastrocnemius strain: Common muscle strain, particularly in medial head of the muscle. Often from sudden burst of acceleration and patients may report 'pop' feeling at time of injury. Pain and swelling common over first 24 hours, pain worse with stretching of muscle and in push-off phase of walking or with resisted plantar-flexion.	Conservative management as first management approach. Should include (active, hands-on, exercise focused, strength-based).
	PCL sprain: Same mechanism as PCL tear but ligament still intact, positive posterior drawer laxity but with firm end feel. Still presents with instability, particularly descending stairs.	Conservative management as first management approach. Should include (active, hands-on, exercise focused, strength-based). Consider knee bracing.

Area	Condition with history & examination findings	Management
Instability	**Patellar instability:** Characterized by episodes of patella subluxations and ligamentous laxity.	Refer to ortho. Also refer to physio for strengthening exercises. Consider referral for patella stabilizing brace.
	Unstable meniscal tear	Refer to physio for early management of swelling and to begin rehabilitation. Refer to ortho for any suspected tear with a locking component. Patients with degenerative meniscal tears only warrant surgical opinion after they have failed physiotherapy.
	ACL tear: Common athletic injuries, seen more so in female patients, particularly in younger adults. Mechanism often a non-contact pivoting injury where patient describes feeling a 'pop' with pain deep in the knee. Immediate swelling post injury, feeling unstable (may report knee giving way) and difficulty weightbearing. Excessive effusion, lack of full extension, positive Lachman test, anterior drawer test. **PCL tear:** Traumatic knee injury, often presents with other ligamentous injuries to the knee. Often from direct blow to proximal tibia, posterior knee pain, instability. Positive findings on posterior drawer test. Complains of difficulty going downstairs.	Refer to physio for early management of swelling and to begin rehabilitation. Refer to ortho for consult. Refer to physio for active, exercise focused rehab.
	MCL/LCL high grade sprain: **MCL:** Twisting of leg or direct blow to lateral knee causing valgus stress. Feeling of instability with tenderness over medial joint line. Positive valgus stress test (pain). Note - often accompanied by meniscal injury. **LCL:** Twisting of leg or direct blow to medial knee causing varus stress. Feeling of instability with tenderness over lateral joint line. Positive varus stress test (pain).	Refer to physio for early management of swelling and to begin rehabilitation. Refer to ortho for consult. Refer to physio for active, exercise focused rehab.
	Intra-articular loose body: Most commonly present after history of trauma but can also be due to degenerative causes. Can cause pain and swelling as well as knee locking.	If persistent issues, refer to ortho for consult.

5. Diagnostic Imaging

a. X-ray

- X-ray of the affected knee:
  - Knee routine series: These would be AP and lateral views.
  - Trauma series: If trauma has occurred within 7 days, this is required. This would be AP, AP Oblique – Medial rotation, AP Oblique – Lateral rotation, lateral – horizontal beam. If it is longer than 7 days from trauma, order knee routine series above.
  - Weightbearing series: If clinical history indicates OA, pain due to OA, then this series should be ordered. This would be AP/PA Knee(s), PA with knee flexed, lateral, skyline.
- **Include the following within the referral letter:**
  - Description of symptom onset and duration.
  - Functional status limitations (example: impact on sleep, work, activities of daily living).
  - Treatments initiated and responses.

b. Ultrasound

- Knee ultrasound is generally **NOT** recommended unless trying to confirm tendon rupture (do not delay care awaiting ultrasound).
- Knee ultrasound can also be used to assess for Baker's cyst.

c. MRI

- MRI is **NOT** required for referral to a trained knee expert. If necessary, the trained knee expert will make arrangements for an MRI to be completed or may ask you to order it after a discussion with them.
- Do **NOT** order MRI if there are degenerative knee changes on X-ray (e.g., osteoarthritis and symptoms are suggestive of OA osteoarthritis) as the MRI rarely adds useful information to guide diagnosis or treatment [7].
- ACUTE KNEE INJURY (<6 weeks from injury and history of knee trauma), MRI is recommended for: Locked knee, osteochondral fracture (often associated with patellar dislocation), multi-ligamentous knee injury (i.e., knee dislocation), clinical suspicion of posteromedial or posterolateral corner injuries and clinical suspicion of 3rd degree distal medial collateral ligament injury (i.e., Stener lesion).
- SUB-ACUTE KNEE INJURIES (6-12 weeks from injury or symptom presentation): Persistent swelling and effusion despite appropriate non-operative management (i.e., exercise and strength-based rehabilitation program & anti-inflammatories) for 6 weeks or Inability to lift and extend knee against gravity.
- FOR CHRONIC KNEE INJURIES (>12 weeks from injury or symptom presentation), consider MRI if ALL of the following are present: Absence of OA osteoarthritis; Persistent unexplained symptoms (e.g., pain, instability, giving way) > 3 months; Failed non-operative management (i.e., exercise and strength-based rehabilitation program & anti-inflammatories); Patient desires and is medically appropriate or fit for surgery.
- Consider ordering MRI for conditions affecting blood flow to a joint (e.g., Osteochondritis Dissecans).

For further information on diagnostic imaging, please follow the Provincial Orthopedic & Spine, Adult Referral Pathway for where to refer.

6. Non Operative Management

Patient education should be seen as a first-line treatment approach for patients with knee complaints, particularly where pain is present [8]. This should in an ideal situation be structured and real-time delivery that offers patients knowledge, tools and coping strategies that advocates a belief of self-management such as healthy lifestyle choices and symptom management techniques.

Physiotherapy for at least 12 weeks (active, exercise focused, strength-based) should be encouraged where appropriate. Of paramount importance is a focus on self-management strategies and a conscious understanding on pain processing. Safe physical activity should be encouraged and signs of kinesiophobia (fear of movement) should be considered, particularly on follow-up visits where improvement is not being seen. Frequency of physiotherapy should be spaced 1-2 weeks apart and a minimum of 12 weeks of rehabilitation should be done to expect functional improvement. Passive modalities such as ultrasound, TENS and IFC *may* provide short term relief but should not be the focus of treatment.

Pain is often a primary barrier to functional movement and therefore should be managed carefully. Additional means of pain control (i.e., topical analgesia +/- oral analgesic medication if no contra-indications to same) should be considered if mobility and participation in activity is limited by pain. In acute/sub-acute phases of injury where swelling and pain are present, ice may be helpful in reducing these symptoms.

Best practice would support management that promotes active recovery of tissue damage such as light movement exercise, pain relief and beginning physiotherapy [9]. In chronic injuries (greater than 6 weeks of injury), where pain and stiffness are limiting factors, heat can be beneficial, particularly in patients with osteoarthritis and is often beneficial before exercise.

Knee bracing may be an option depending on the complaint. They are often used to help stabilize the knee following ligamentous injury or to unload in cases of degenerative disease. These can be off-the-shelf or custom-made depending on the issue and cost will vary accordingly. For longer-term needs (greater than 6 months) unloading braces may be of benefit to reduce pain and improve function, especially in OA, and may be eligible for Alberta Aids to Daily Living support for a portion of the costs. This requires a physician prescription and diagnosis on imaging and is based on eligibility criteria following an assessment.

Visco-supplementation injections (hyaluronic acid), may be beneficial to help improve function and reduce pain caused by intra-articular knee pathology if minimal degenerative changes have occurred. This should be a shared decision-making conversation with the patient given the varied levels of guidelines and the cost associated with the treatment. There is a growing body of evidence to suggest that corticosteroids can damage cartilage and joint health. While they are traditionally the most common intra-articular joint injection, they should not be performed more than four times per year and where possible, avoided, in non-arthritic joints.

There is a wide range of techniques in the method and approach to platelet-rich plasma (PRP) and prolotherapy, making most of the research in this area quite poor. Generally, this pathway would not recommend these within primary care management.

Overall, injections may have a place and offer meaningful benefit to the patient in allowing them to participate more in rehabilitation and improve function. Educating patients on the role of injections is an important starting point if considering them within a care plan [10].

Osteoarthritis: Physiotherapy that builds on first-line treatment of structured education, exercise that consists of strengthening, low-impact aerobic training, and promoting physical activity. Additionally, off-loader brace (covered by Alberta Health for those over 65 years of age), pain control, and cortisone injections may be considered. Weight-loss (if indicated) is recommended in patients with a BMI >25kg/mg^2. It can help encourage patients to know that each pound of weight lost will result in a 4-fold reduction in the load exerted on the knee per step during daily activities [11]. Patients should be encouraged to partake in daily exercise and consideration of a walking aid if functional mobility or pain are issues.

As noted above, consider visco-supplementation (hyaluronic acid) if minimal degenerative changes in knee (try to avoid cortisone in knees without degenerative changes). Use caution as some research suggests that cortisone may advance osteoarthritis [12] [13].

GLA:D® is a group exercise and educational program specifically for people with osteoarthritis. It is an eight-week program that includes education sessions and supervised exercise sessions. Cost may vary depending on the provider and patients should be aware of this.

Advice and Referral Information

Zone	Program	Online Request	Phone Number
Urgent Telephone			
All Zones	RAAPID	N/A	**North:** 1-800-282-9911 or 780-735-0811 **South:** 1-800-661-1700 or 403-944-4486
Non-Urgent Electronic			
All Zones	Netcare eReferral (eConsult)		N/A
Non-Urgent Telephone			
Calgary	Specialist Link	Online Request	403-910-2551
Edmonton, North	ConnectMD	Online Request	1-844-633-2263

In addition to where specified in the clinical pathway algorithm, you can request non-urgent advice at any point when uncertain about medications, next steps in treatment, imaging, or resources available.

Referral Process

Referral pathways are guidelines to help referring providers know what information, labs and diagnostic imaging are required with their referral to a specialty. These pathways are co-designed with Primary and Specialty Care, AHS Operations, and patients to ensure the right amount of information is included throughout the referral process to triage the patient as quickly as possible. To ensure referring providers have referral information at their fingertips, referral pathways may link to clinical pathways when available. AHS manages referral pathways and extensive work is ongoing as part of the Alberta Surgical Initiative. If you have questions or want more information about the referral pathway development process, please email access.ereferral@ahs.ca.

- Urgent Referral – Call surgeon on call via RAAPID or call 911.
- Follow the Provincial Orthopedic & Spine, Adult Referral Pathway.

Rehab Advice Line

The **Rehabilitation Advice Line (1-833-379-0563)** is a telephone service open Monday to Friday and provides rehabilitation advice and general health information for Albertans of any age. The service can:

- Assess your rehabilitation needs over the phone.
- Speak to parents, guardians, or caregivers about a child's development or well-being.
- Give advice on activities and exercises that help with physical, functional, or developmental concerns.
- Provide strategies to manage the day-to-day activities affected by these concerns.
- Link you to rehabilitation services.

7. Follow Up with Patient

In acutely swollen injuries, follow-up assessment should be every 2 weeks until a clear diagnosis has been achieved. In cases where inflammation prevents a full examination, management should focus on reducing inflammation with conservative management such as light movement exercise, analgesics and physiotherapy. The goal in this phase is not to specifically target reducing inflammation, but rather to speed up the transition from inflammation to repair and remodeling which requires blood flow to the area and lymphatic drainage away from the area.

In most musculoskeletal injuries to the knee that are appropriate for conservative management, clear improvement should be seen within 6-12 weeks. It is, therefore, recommended that a follow-up be scheduled within this timeframe to re-assess symptoms and functional progress, as well as to re-evaluate diagnosis if improvement is not being seen.

BACKGROUND

About this pathway

This pathway will help guide appropriate procedures for patient management, investigations, and referrals. The purpose of this guideline is to initiate early, non-operative management for suitable patients, reduce unnecessary diagnostic imaging, increase appropriate surgical referrals, and reduce waiting lists for surgical consult.

Authors and conflict of interest declaration

This pathway was co-designed for use in primary care settings as part of the Alberta Surgical Initiative Provincial Working Group for Orthopedics. Work is based on the Soft Tissue Knee Assessment Clinical Pathway (MSK Soft Tissue Knee Assessment Clinical Pathway) which was developed under the guidance of the Bone and Joint Health Strategic Clinical Network and the Alberta Bone & Joint Health Institute in 2022. Names of participants and their conflicts of interest declarations are available upon request to AlbertaPathways@primarycarealberta.ca.

Co-Design Team Project Membership	
Name and Designation/ Post Nominals	**Organization**
Dr. Jessica Page, BSc, MD, FRCS(C), Dip. Sport Med.	Orthopedic Surgeon (Knee)
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Pathway review process, timelines

Primary care pathways undergo scheduled review every three years, or earlier if there is a clinically significant change in knowledge or practice. The next scheduled review is August 2028, however, we welcome feedback at any time. Please send us your feedback here.

PROVIDER RESOURCES

Choosing Wisely Canada: Orthopedics	Orthopaedics - Choosing Wisely Canada
Alberta Health: Alberta Wait Times Reporting	Alberta Wait Times Reporting: Wait Time Trends
Banff Sports Medicine	Knee Rehab Programs
Calgary Acute Knee Injury Clinic	Acute Knee Injury Clinic | Alberta Health Services
Smoking Cessation	• The importance of smoking in orthopedic surgery (tandfonline.com) • Becoming Tobacco Free | Alberta Health Services • COF_StopSmoking.qxp_Layout 1 (movepainfree.org)
BMI and weight management	• Impact of Obesity on Bone and Joint Health • Adult Weight Management | Alberta Health Services
DynaMed	DynaMed

CLINICAL CARE/ REFERRAL CHECKLIST	
☐	History and Physical (thorough assessment)
☐	If patient too sore or swollen to allow for through assessment, plan to reassess in 2 weeks
☐	Confirm Soft Tissue Knee problem (if not, please refer to alternate pathway and manage as appropriate)
☐	Checked for RED and YELLOW flag symptoms and made referrals as appropriate
☐	Assess location of pain or complaint and determine differential diagnoses
☐	If differential diagnosis is a time sensitive condition (bold and highlighted conditions in box 4), consider direct referral to orthopedics for surgical intervention or to Sports Medicine depending on zone
☐	Order DI (likely X-ray) as per recommendations
☐	Exploration of patient barriers to attending investigations, referrals or receiving care
☐	If red flag findings are detected on X-ray, return to Red Flags box (2) and refer as needed
☐	If time sensitive conditions are detected on X-ray, refer to Sports Medicine or Orthopedic advice
☐	If no red flags or time sensitive conditions are identified/suspected, initiate conservative management (physiotherapy, pain relief, etc.)
☐	Follow-up in 6-12 weeks and continue conservative management or refer as needed
☐	Prior to any referral, ensure that patient has a clear understanding or treatment expectations and potential outcomes

PATIENT RESOURCES

This section is intended to list resources that primary care providers may find useful to share with patients to help support self-management and care in the medical home.

The Rehabilitation Advice Line (1-833-379-0563). Available Monday-Friday 09:00-17:00.	A telephone service open Monday to Friday and provides rehabilitation advice and general health information for Albertans of any age.
MyHealth Alberta: Knee- Exercises	Knee: Exercises (alberta.ca)
MyHealth Alberta: Knee Arthritis-Exercises	Knee Arthritis: Exercises (alberta.ca)
MyHealth Alberta: Osteoarthirits	Osteoarthritis (alberta.ca)
MyHealth Alberta: Knee exercises for osteoarthritis	Knee exercises for osteoarthritis (alberta.ca)
MyHealth Alberta: Patellofemoral pain syndrome	Patellofemoral Pain Syndrome (alberta.ca)
Canadian Orthopaedic Foundation	Patient Information Resources - Canadian Orthopaedic Foundation: Canadian Orthopaedic Foundation (movepainfree.org)
Alberta Healthy Living Program: Improving health and quality of life for those with a chronic condition	www.albertahealthservices.ca/ahlp

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