Clinical approach to knee pain

Case discussion

MED215 Musculoskeletal System and Disorders

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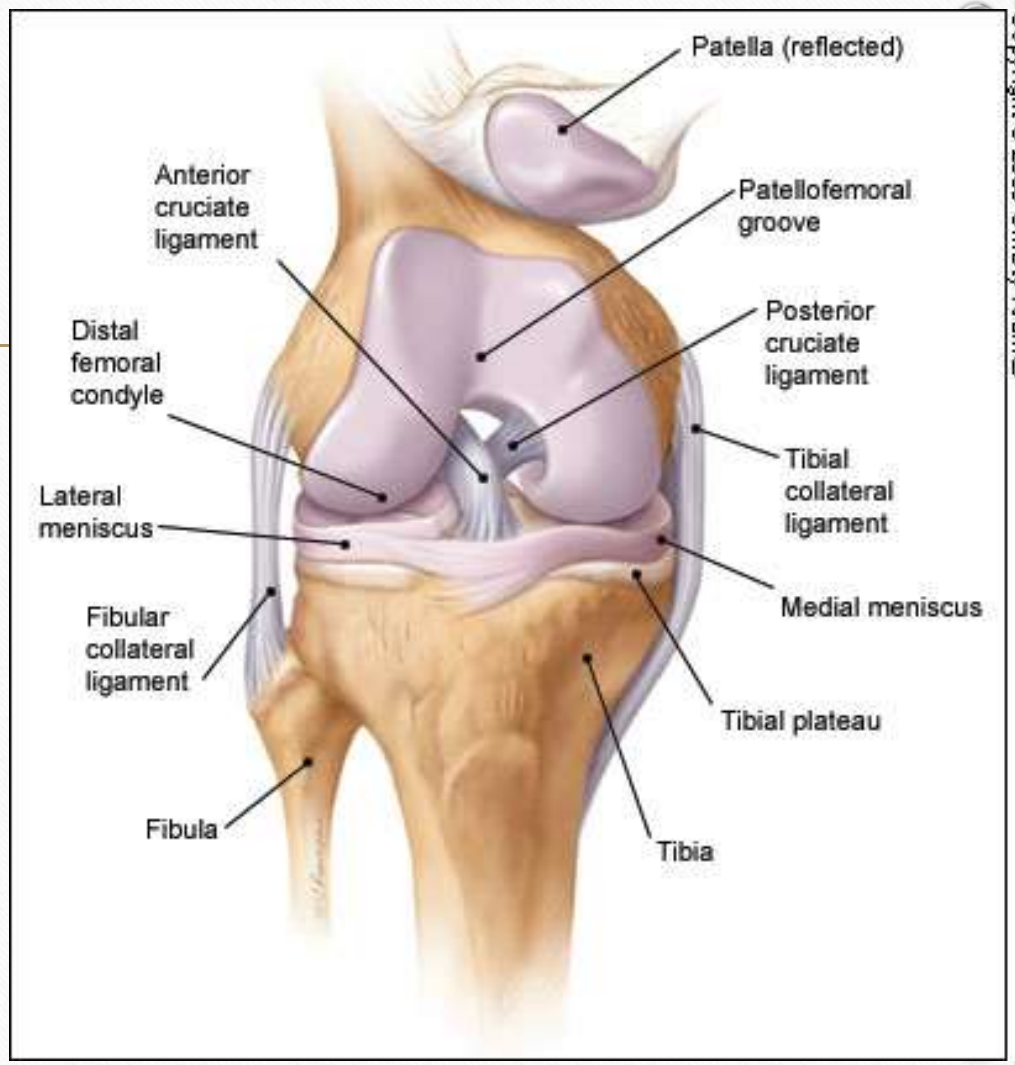
Speech content

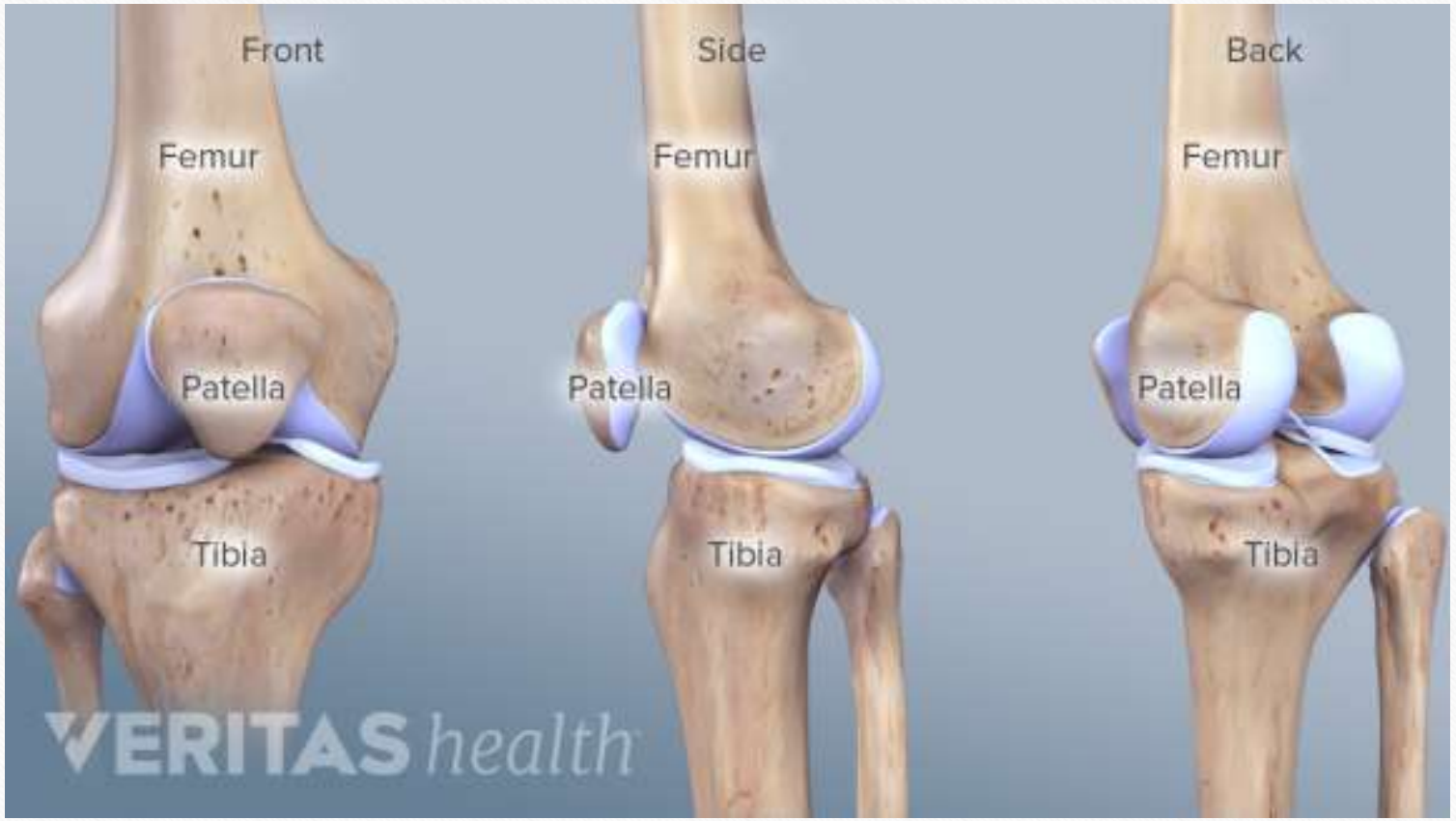
- Epidemiology of knee pain
- Presentation of a case with knee pain
- Clinical approach to a patient with knee pain
- Key messages

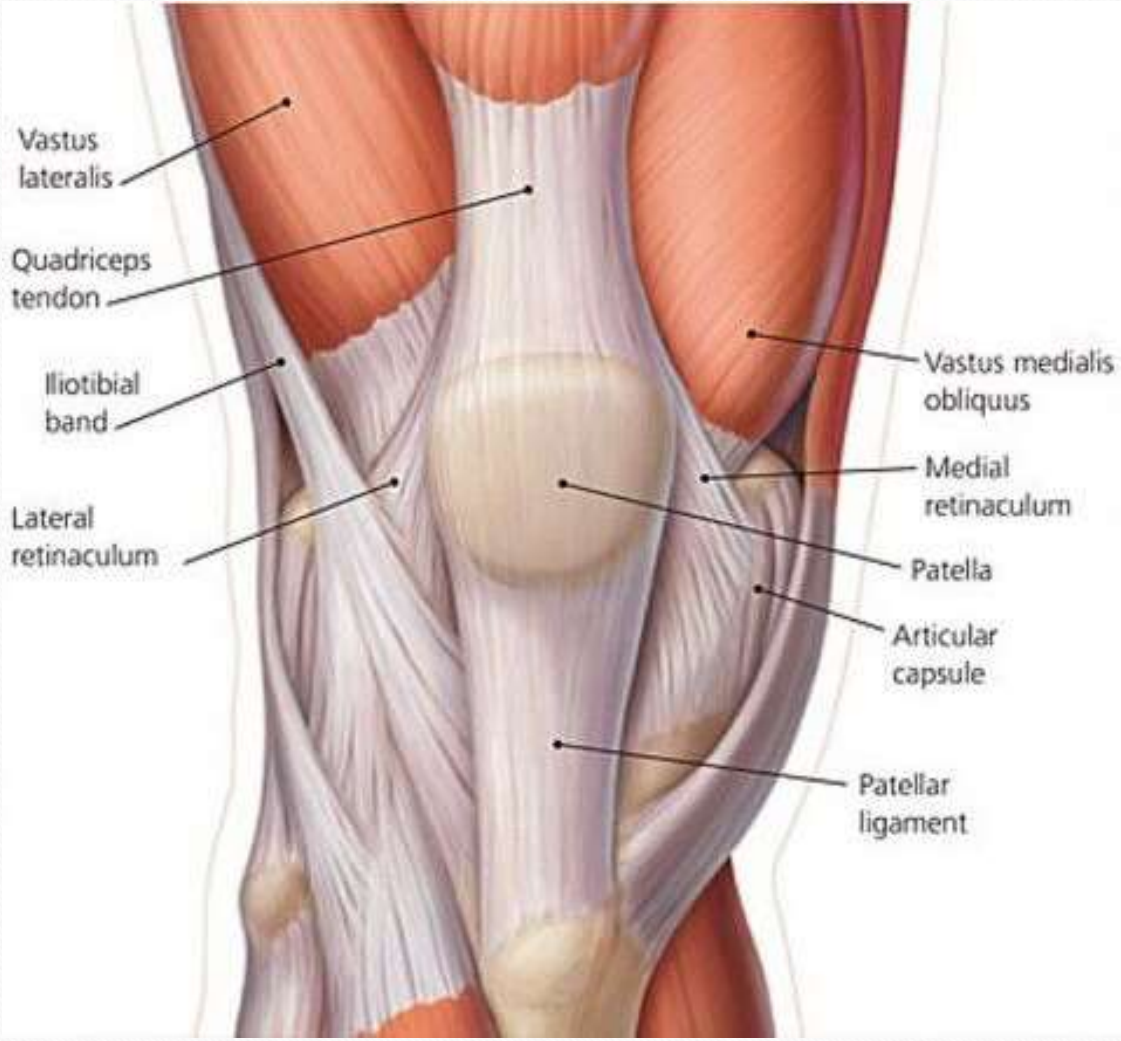
Epidemiology – knee pain

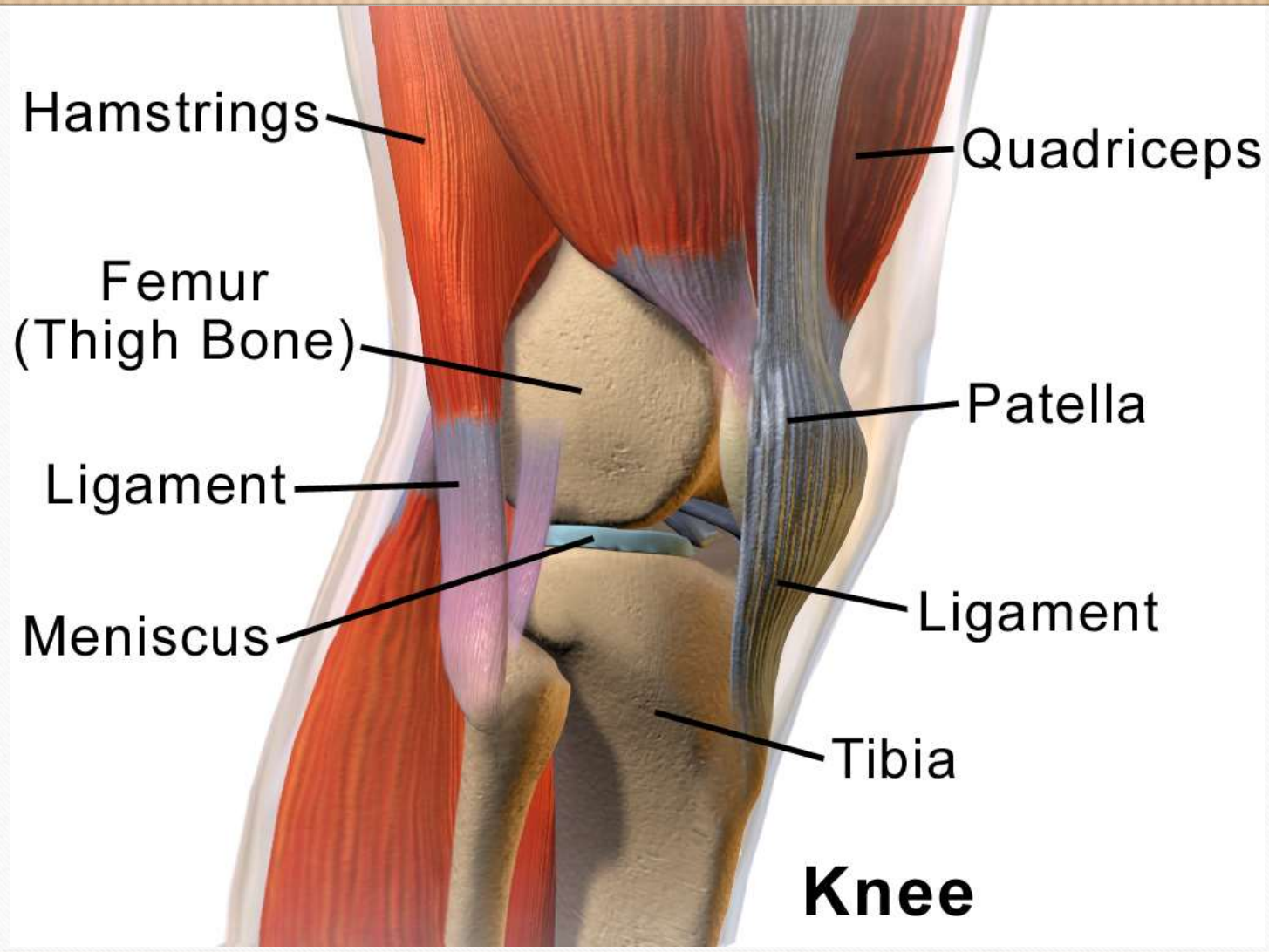
- Accounts for approximately 1/3 of musculoskeletal problems seen in primary care settings
- Knee pain can be a source of significant disability, restricting the ability to work or perform activities of daily living

Anatomy of knee joint

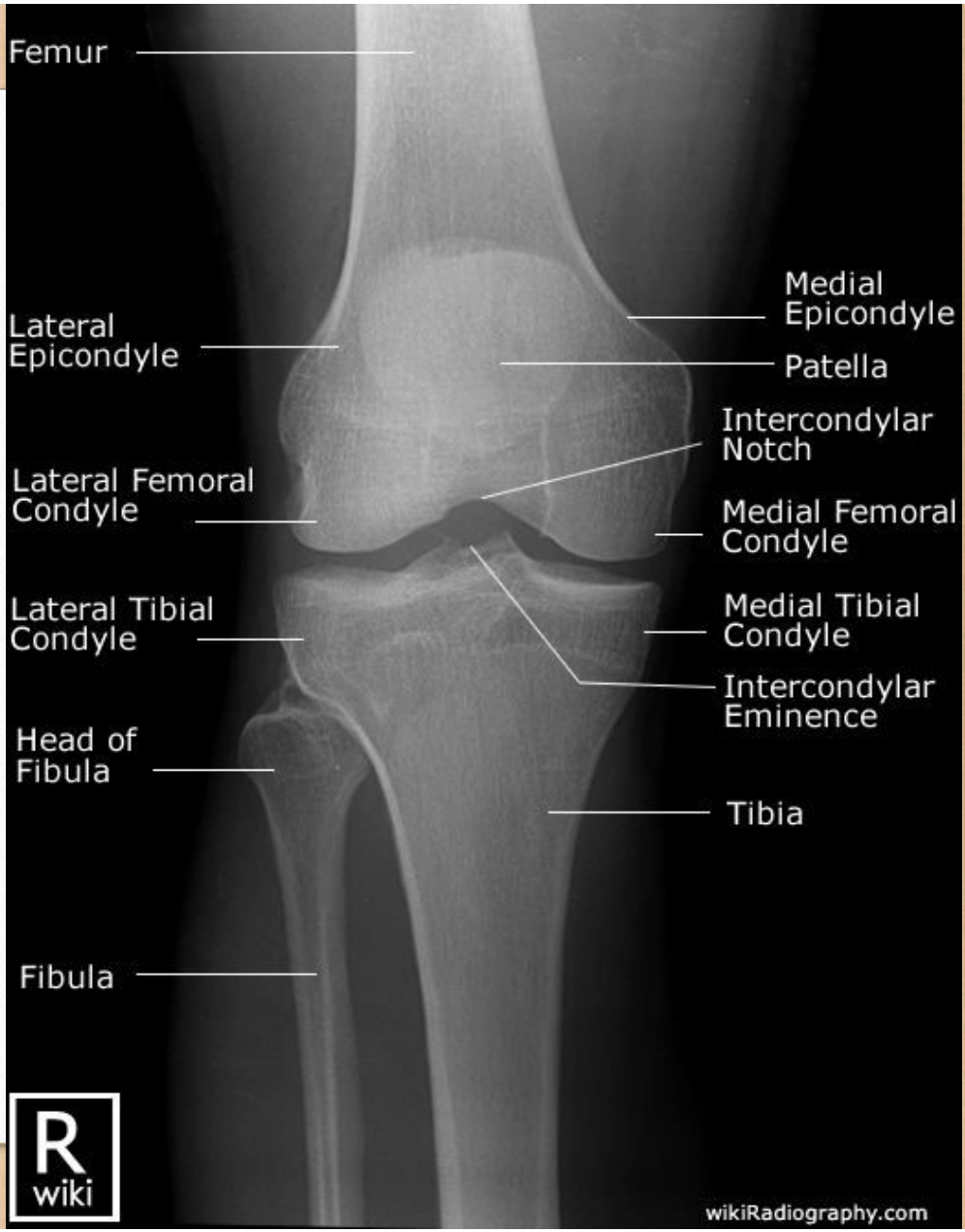



Front
Femur
Patella
Tibia
Side
Femur
Patella
Tibia
Back
Femur
Patella
Tibia
VERITAS health


Vastus lateralis
Quadriceps tendon
Iliotibial band
Lateral retinaculum
Vastus medialis obliquus
Medial retinaculum
Patella
Articular capsule
Patellar ligament


Hamstrings
Quadriceps
Femur
(Thigh Bone)
Patella
Ligament
Meniscus
Ligament
Tibia
Knee


Femur
Articular Surface
Patella
Patella
Medial + Lateral
Femoral Condyle
Tibial
Tuberosity
Tibia
Fibula
R
wiki


Femur
Medial
Epicondyle
Lateral
Epicondyle
Patella
Intercondylar
Notch
Lateral Femoral
Condyle
Medial Femoral
Condyle
Lateral Tibial
Condyle
Medial Tibial
Condyle
Intercondylar
Eminence
Head of
Fibula
Tibia
Fibula
R
wiki
wikiRadiography.com

A 62 yrs old woman complaints about right knee pain

History

- No history of trauma
- Pain decreases at rest
- It deteriorates when she walks
- No pain at night

PE

- Both knees appear symmetric
- No swelling, erythema or discoloration
- Right knee hurts during flexion mevement
- No local tenderness on palpation
- No effusion

Imaging

- Anteroposterior and lateral knee X-ray

Differential diagnosis

- Differential diagnosis of knee pain is **extensive!**
- it can be narrowed with
  - **a detailed history**
  - a focused physical examination
  - appropriate imaging
  - laboratory studies

History

- Onset (rapid or insidious)
- Location (anterior, posterior, lateral, medial)
- Duration (acute, chronic)
- Severity
- Quality (dull, sharp, achy)
- Aggravating or alleviating factors

History

Mechanical symptoms

- Locking
- Popping
- Giving away

Effusion

- Timing (rapid/slow onset)
- Amount (mild, moderate, severe)

History

Medical history

- History of knee injury or surgery
- Previous attempts to treat knee pain (medication, PT, supportive device)
- History of gout, pesudogout, rheumatoid arthritis, degenerative joint disease (osteoarthritis)

Differential diagnosis

- Differential diagnosis of knee pain is **extensive!**
- it can be narrowed with
  - a detailed history
  - **a focused physical examination**
  - appropriate imaging
  - laboratory studies

Physical examination

Inspection and palpation

- Erythema, swelling, bruising, and discoloration
- Compare the painful knee with the asymptomatic knee
- Palpate and check for pain, warmth, and effusion
- Range of motion should be assessed by extending and flexing the knee as far as possible

Initial steps to categorizing knee pain

Step 1: Distinguish acute vs chronic pain

- For most musculoskeletal conditions, pain of less than 6 weeks duration is classified as acute or subacute, while pain lasting longer than six weeks is classified as chronic.
- Acute knee pain may stem directly from trauma (easily identified by the history in most cases) or from regular activity (eg, overuse injury), or it may be unrelated to trauma or activity.

Initial steps to categorizing knee pain

Step 2: Distinguish traumatic vs non-traumatic pain

- Determine whether an acute injury has occurred.
- Generally, this is obvious from the history.
- Common examples include a fall, a direct blow to the knee, or a motor vehicle crash.
- However, direct contact is not necessary for a person to sustain an acute traumatic knee injury.
- Adults may experience acute pain after non-contact trauma, such as running, jumping, squatting, slipping on ice without falling, or abruptly twisting their knee

Initial steps to categorizing knee pain

Step 3: Determine whether an effusion is present

- Moderate to large volume effusions (20 mL or more) are readily detected by manual examination
- US can detect small effusions (5 to 10 mL), which are clinically significant but can be difficult to detect by physical examination alone (especially in obese or muscular patients)
- The presence of a knee joint effusion following acute trauma suggests the presence of structural damage to bone, cartilage, or a ligament.

Initial steps to categorizing knee pain

Step 4: Determine pain location

- important when evaluating patients with non-traumatic knee pain and no joint effusion.
- The location of the knee pain (anterior, medial, lateral, or posterior) helps to inform the differential diagnosis.
- Ask the patient to point with one finger to the precise location of the pain.

Differential diagnosis

Adults

- Overuse
- Trauma
- Infection

Older adults

- Osteoarthritis
- Crystal induced inflammatory arthropathy
- Popliteal cyst (Baker's cyst)

Differential diagnosis

- Differential diagnosis of knee pain is **extensive!**
- it can be narrowed with
  - a detailed history
  - a focused physical examination
  - **appropriate imaging**
  - laboratory studies

Diagnostic imaging

- Diagnostic imaging is used as an adjunct to the history and PE
- Following acute trauma, imaging typically begins with plain radiographs
- In patients with non-traumatic knee pain associated with an effusion, poor response to a treatment plan, or when the diagnosis is unclear, advanced diagnostic imaging may be useful.
- Magnetic resonance imaging (MRI) is the best imaging technique for diagnosis of soft tissue knee injuries
- Utrasound has gained popularity for evaluating musculoskeletal conditions

Laboratory studies

- CBC (eg. Hb, WBC)
- Biochemical analysis (eg. Uric acid)
- Synovial fluid analysis and culture
- Acute phase reactants (eg. ESR, CRP)