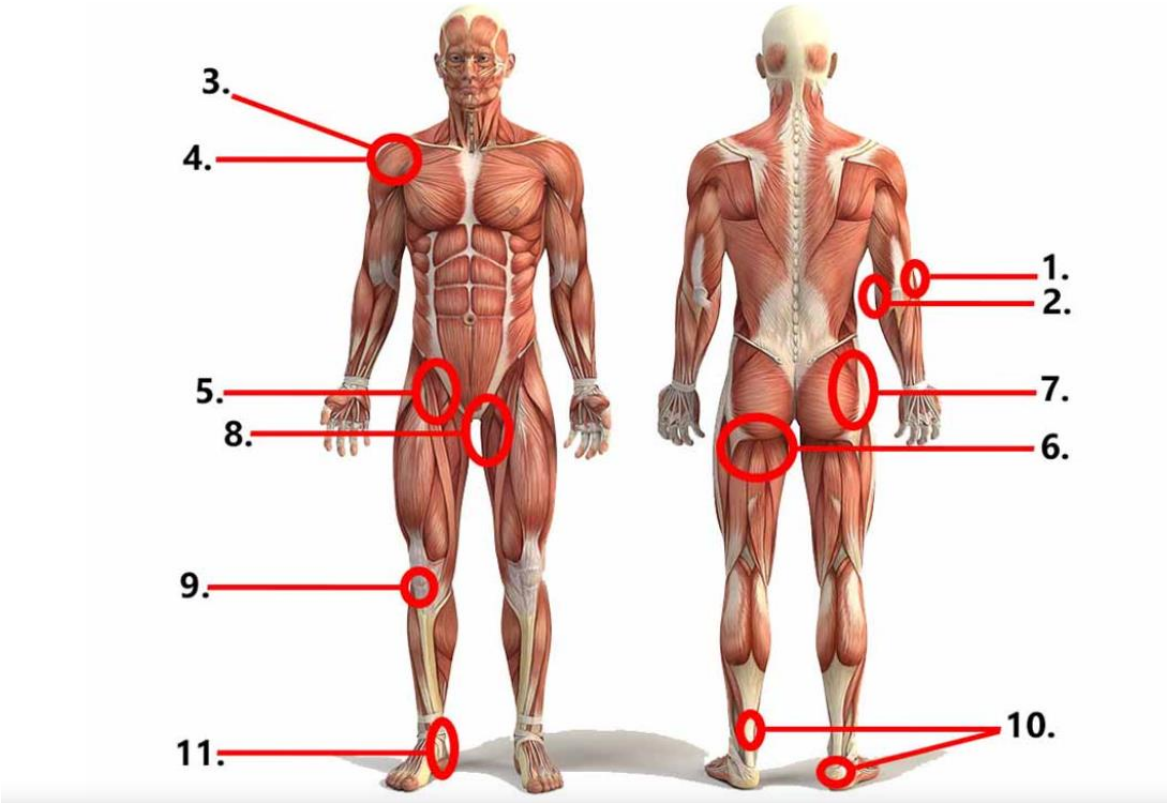
Texas Department of State Health Services
Tuberculosis and Hansen's Disease Section

Tendon Assessment

Directions: Nurse case managers may use this guide when assessing side effects and potential medication toxicity for tuberculosis (TB) patients prescribed a fluoroquinolone (FQN)– either moxifloxacin (MFX) or levofloxacin (LFX). Document findings on the TB-205 or TB-702.

Tendons: An Overview

A tendon is a fibrous tissue that attaches a muscle to a bone; tendons are located on either end of each muscle. Tendons may become damaged through overuse, repetitive motion, or sudden injury (e.g., sports injuries). While rare, certain medications, including FQNs, used to treat TB can cause inflammation of the tendon (tendonitis) and, if not treated, may cause tendon rupture. Damage to tendons can be very painful and difficult to treat.



Source: https://www.sports-injury-physio.com/post/body-hack-4-tendon-pain

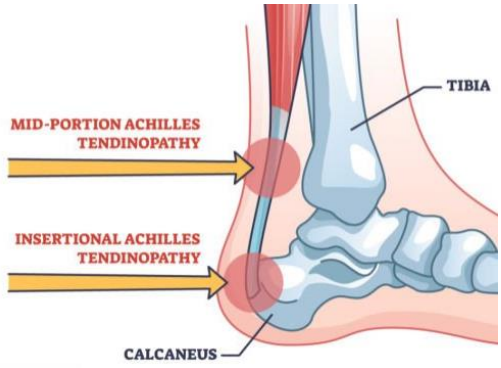
1. **Lateral epicondyle tendon** – Located outside the elbow and serves a vital role in forearm movement and stability. When this area is inflamed, it is often called "tennis elbow."
2. **Medial epicondyle tendon** – Located inside the elbow, known as the common flexor tendon, helping with wrist flexion and forearm pronation. When inflammation or injury occurs in this area, it is often referred to as "golfer's elbow."
3. **Biceps tendon** – Tendon runs over the front of the shoulder, connecting the bicep muscle to the shoulder and helping with the movement and stability of the shoulder and elbow joints.
4. **Rotator cuff tendons** – A group of four muscles located in the shoulder joint that help with shoulder stability and movement.

5. **Iliopsoas (hip flexor) tendon** – Runs over the front of the hip and helps with flexion and stability.
6. **Hamstring tendon** – Attaches the hamstring muscles to the bones in the pelvis, knee, and lower leg, helping with knee flexion and hip extension.
7. **Gluteus medius tendon** – Located deep inside the buttock, usually more towards the side. Helps to stabilize the pelvis during activities, e.g., walking, running, and climbing stairs.
8. **Adductor tendons** – Attach on to the pelvic bone in the groin and assist with stabilizing the hip joint and facilitating bringing the thighs together.
9. **Patellar tendon** – Attaches to the lower end of the kneecap, facilitating knee extension and enabling movements such as jumping, running, and walking.
10. **Achilles tendon** – Attaches to the heel bone, or in the middle of the tendon, enabling movement of the foot and ankle, and allows for plantarflexion.
11. **Tibialis posterior tendon** – Wraps around the inside of the ankle and assists with foot stability, arch support, and movement.

Which Tendons to Assess During FQN-Containing TB Regimen(s)

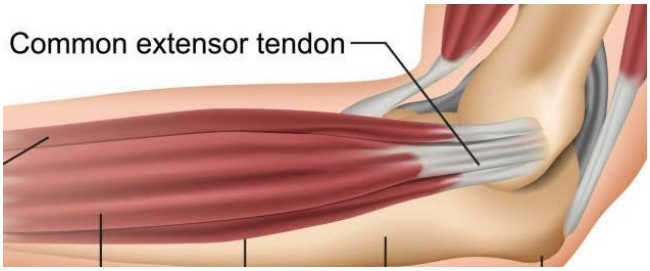
Patients taking FQNs should be assessed at baseline and at least monthly to identify early signs of tendonitis and prevent rupture. Tendons most commonly affected are those located in the base of the ankle (Achilles tendon), elbow (tennis elbow), shoulder, and hands. However, it may involve any tendon. At a minimum, nurse case managers should ensure they assess the following sites.

1) **Achilles tendon**: Located in the back of the lower leg, it is the largest tendon in the body that connects the calf muscle to the heel bone.



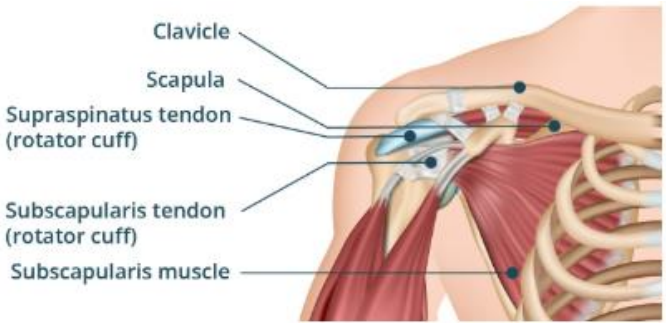
Source: https://www.estautbergmd.com/blog/what-is-achilles-tendonitis-and-why-does-it-hurt

2) **Lateral epicondyle tendon (referred to as *tennis elbow*)**: Located on the outside of the elbow, it attaches muscles and tendons that extend the wrist and fingers.



Source: https://www.nhsinform.scot/illnesses-and-conditions/muscle-bone-and-joints/arm-shoulder-and-hand-problems-and-conditions/tennis-elbow/

3) **Subscapularis, supraspinatus, infraspinatus, and teres minor tendons (rotator cuff tendons)**: Located in the shoulder, it helps stabilize and move the shoulder joint.



Source: https://www.healthdirect.gov.au/rotator-cuff-injury

4) **Hand tendons**: Multiple tendons travel through the retinaculum at the wrist and into the hand. There are two groups of tendons in the hands and wrist. The extensor tendons help extend and straighten the fingers, hand, and wrist, and the flexor tendons help flex and curl the fingers, hand, and wrist.

Source: https://www.floridaortho.com/specialties/hand-wrist/flexor-tendonitis/

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Tendon Assessment

Signs and Symptoms of Tendonitis or Tendon Rupture

Signs and symptoms commonly associated with tendonitis or tendon rupture may include findings on physical exam and as self-reported symptoms. They include the following:

Tendonitis	Tendon Rupture
Pain or tenderness (usually near a joint)	Sudden severe pain
Swelling	Popping or snapping sound when pain started
Warm to the touch at affected site	Weakness to affected area

Instructions for Assessing and Palpating a Tendon

Assessments for patients on FQNs should occur at baseline and then monthly, at a minimum.

1. Begin by asking the patient whether they have any symptoms of pain, swelling, or tenderness in any area of their body.
    a. If the patient responds **yes**, ask them to point out the area and, if it is associated with any area surrounding a tendon, ask about the following:
        1) Pain or tenderness at the site
        2) Severity of pain
        3) Date of onset of symptom
        4) Activities that aggravate the pain
2. Ask the patient to move the affected joint, noting any pain or limitations.
3. Visually inspect the affected area for swelling, redness, or any deformities.
4. Palpate along the tendon to evaluate for pain or tenderness upon touch.
5. Document all findings on the TB-205 or TB-702 and progress notes, and notify the licensed healthcare provider as soon as possible of any signs and symptoms of tendon inflammation or rupture.

Counsel the Patient and Inform the Licensed Healthcare Provider

1. Instruct the patient to rest at the first sign of tendinitis or tendon rupture.
    a. Avoid vigorous physical activity if there is tenderness, redness, pain, or swelling until evaluated by a licensed healthcare provider.
    b. Recommend a purine-restricted diet, which may help if the pain is due to gout (e.g., avoid purine-rich foods such as liver and kidney; limit intake of red meat, poultry, and fish).
    c. Advise the patient on the importance of keeping well-hydrated.
2. Contact the licensed healthcare provider for any signs or symptoms of tendon inflammation or rupture, and for any recommendations for non-steroidal anti-inflammatory (NSAID) medications or other interventions.

References and Resources

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