

DEFINITION

- Injury to a bone, muscle, joint, or ligament of the ankle and foot
- Associated skin and soft tissue injuries are also included

TRIAGE ASSESSMENT QUESTIONS

Call EMS 911 Now

Major bleeding (actively dripping or spurting) that can't be stopped

FIRST AID: Apply direct pressure to the entire wound with a clean cloth.

Amputation or bone sticking through the skin

FIRST AID: Apply direct pressure to the entire wound with a clean cloth.

Looks like a dislocated joint (crooked or deformed)

R/O: dislocation, fracture

Serious injury with multiple fractures (broken bones)

Sounds like a life-threatening emergency to the triager

See More Appropriate Protocol

Wound looks infected

Go to Protocol: Wound Infection Suspected (Adult)

Caused by an animal bite

Go to Protocol: Animal Bite (Adult)

Puncture wound of foot

Go to Protocol: Puncture Wound (Adult)

Toe injury is main symptom

Go to Protocol: Toe Injury (Adult)

Cast problems or questions

Go to Protocol: Cast Symptoms and Questions (Adult)

Go to ED Now

Bullet, stabbed by knife or other serious penetrating wound

FIRST AID: If penetrating object still in place, don't remove it.

Go to ED/UCC Now (or to Office With PCP Approval)

Can't stand (bear weight) or walk (e.g., 4 steps)

R/O: fracture, severe sprain

Skin is split open or gaping (length > 1/2 inch or 12 mm)

Reason: May need laceration repair (e.g., sutures).

Bleeding won't stop after 10 minutes of direct pressure (using correct technique)

Reason: May need laceration repair (e.g., sutures).

Dirt in the wound and not removed after 15 minutes of scrubbing

Reason: needs irrigation and/or additional wound care

Numbness (new loss of sensation) of toe(s)

Looks infected (e.g., spreading redness, red streak, pus)

R/O: cellulitis, lymphangitis

Sounds like a serious injury to the triager

See in Office Today

Severe pain (e.g., excruciating)

R/O: fracture, severe sprain

A "snap" or "pop" was heard at the time of injury

R/O: ligament tear

Large swelling or bruise and size > palm of person's hand

R/O: fracture, large contusion

No prior tetanus shots (or is not fully vaccinated) and any wound (e.g., cut or scrape)

Note: A full tetanus vaccination series consists of 3 shots. Nearly all adults born in North America have received a full 3-tetanus shot series in childhood.

HIV positive or severe immunodeficiency (severely weak immune system) and DIRTY cut

Reason: May need Tetanus Immune Globulin (TIG). Referral to the emergency department may likely be required as doctors' offices usually do not stock TIG.

Patient wants to be seen

See in Office Today or Tomorrow

Moderate pain (e.g., interferes with normal activities, limping) and high-risk adult (e.g., age > 60 years, osteoporosis, chronic steroid use)

Reason: Greater risk of fracture in patients with osteoporosis.

Limp when walking

R/O: contusion, sprain, minor fracture

Has diabetes (diabetes mellitus) and any bruising or wound

Reason: Diabetic neuropathy reduces pain of fracture and wound infection.

Suspicious history for the injury

R/O: domestic violence, elder or vulnerable adult abuse

Last tetanus shot > 5 years ago and DIRTY cut or scrape

Reason: May need a tetanus booster shot (vaccine).

Last tetanus shot > 10 years ago and CLEAN cut or scrape

Reason: May need a tetanus booster shot (vaccine).

See in Office Within 3 Days

Injury and pain has not improved after 3 days

Injury is still painful or swollen after 2 weeks

Home Care

Minor injury or pain from twisting or over-stretching and walks normally

Reason: Probably a minor sprain or muscle strain.

Minor injury or bruising from direct blow

R/O: contusion (bruise)

Small cut (scratch) or abrasion (scrape) is also present

Reason: Minor superficial cut or abrasion.

Home Care Advice

Treatment of a Minor Bruise, Sprain, or Strain

- 1. Reassurance and Education - Direct Blow (Contusion, Bruise):**
 - A direct blow to your ankle or foot can cause a contusion. Contusion is the medical term for bruise.
 - Symptoms are mild pain, swelling, and/or bruising.
 - *Here is some care advice that should help.*
- 2. Reassurance and Education - Bending or Twisting Injury (Strain, Sprain):**
 - Strain and sprain are the medical terms used to describe over-stretching of the muscles and ligaments of the ankle or foot. A twisting or bending injury can cause a strain or sprain.
 - The main symptom is pain that is worse with movement and walking. Swelling can occur. Rarely there may be slight bruising.
 - *Here is some care advice that should help.*
- 3. Use a Cold Pack for Pain, Swelling, or Bruising:**
 - Put a cold pack or an ice bag (wrapped in a moist towel) on the area for 20 minutes.
 - Repeat in 1 hour, then every 4 hours while awake.
 - Continue this for the first 48 hours (2 days) after an injury.
 - This will help decrease pain, swelling, and bruising.
 - *Caution:* Avoid frostbite.
- 4. Use Heat on Area After 48 Hours:**
 - If pain, swelling, or bruising last more than 48 hours (2 days), then use heat on the area.
 - Use a heat pack, heating pad, or warm wet washcloth.
 - Do this for 10 minutes three times a day.
 - This will help increase blood flow and improve healing.
 - *Caution:* Avoid burn. Do not sleep on a heating pad.
- 5. Wrap With an Elastic Bandage:**
 - Wrap the injured part with a snug, elastic bandage for 48 hours.
 - The pressure from the bandage can make it feel better and help prevent swelling.
 - If you start to get numbness or tingling of your foot or toes the bandage may be too tight.

Loosen the bandage wrap.

6. **Elevate the Ankle and Foot:**
 - Lie down and put your ankle and foot on a pillow. This puts (elevates) the ankle and foot above the heart.
 - Do this for 15 to 20 minutes, 2 to 3 times a day, for the first two days.
 - This can also help decrease swelling, bruising, and pain.
7. **Rest vs. Movement:**
 - Movement is generally more healing in the long term than rest.
 - Continue normal activities (like walking) as much as your pain permits.
 - Avoid running and active sports for 1 to 2 weeks or until the pain and swelling are gone.
 - Complete rest should only be used for the first day or two after an injury. If it really hurts too much to walk, you will need to see the doctor.
8. **Expected Course:**
 - Pain, swelling, and bruising usually start to get better 2 to 3 days after an injury.
 - Swelling most often is gone after 1 week.
 - Bruises fade away slowly over 1 to 2 weeks.
 - It may take 2 weeks for pain and tenderness of the injured area to go away.
9. **Call Back If:**
 - Pain becomes severe
 - Pain does not improve after 3 days
 - Pain or swelling lasts more than 2 weeks
 - You become worse

Treatment of a Small Cut or Scrape

1. **Reassurance and Education - Small Cut or Scrape:**
 - It sounds like a small cut or scrape that we can treat at home.
 - *Here is some care advice that should help.*
2. **Cleaning a Cut or Scrape:**
 - Wash the wound with soap and water.
 - For any dirt, scrub gently with a washcloth.
 - *Bleeding:* Put direct pressure on the wound for 10 minutes to stop any bleeding. Place a clean cloth or gauze pad over the wound. Press down firmly with your fingers over the bleeding area.
3. **Antibiotic Ointment for a Cut or Scrape:**
 - Put a small amount of antibiotic ointment on the wound once a day for 3 days.
 - You can get this over-the-counter (OTC) at a drugstore.
 - Use Bacitracin ointment (OTC in U.S.) or Polysporin ointment (OTC in Canada) or one that you already have.
 - *Read the package instructions on all medicines that you use.*
4. **Dressing a Cut or Scrape:**
 - Cover the wound with a dressing.
 - Use a sterile gauze (held in place with paper tape) or an adhesive bandage (such as a Band-Aid).
5. **Liquid Skin Bandage:**
 - You can use a liquid skin bandage **instead** of using an antibiotic ointment with an adhesive bandage (such as Band-Aid, Curad) or a dressing.
 - **Benefits:** Liquid skin bandage has several benefits when compared to an adhesive bandage (such as Band-Aid) or a dressing. You only need to put a liquid bandage minor cuts and scrapes one time. Liquid bandage helps stop minor bleeding. It seals the wound and it may promote

faster healing and lower infection rates. However, it also costs more.

- **How to Use It:** First clean and dry the wound. You put on the liquid as spray or with a swab. It dries in less than a minute and usually lasts a week. You can get it wet.

- **Examples:** Liquid skin bandage is available over-the-counter. Examples include Band-Aid Liquid Bandage, New Skin, Curad Spray Bandage, and 3M No Sting Liquid Bandage Spray.

6. **Call Back If:**

- Dirt in the wound persists after scrubbing
- Looks infected (pus, redness)
- Doesn't heal within 10 days
- You become worse

Over-The-Counter Pain Medicines

1. **Pain Medicines:**

- For pain relief, you can take either acetaminophen, ibuprofen, or naproxen.
- They are over-the-counter (OTC) pain drugs. You can buy them at the drugstore.
- **Acetaminophen - Regular Strength Tylenol:** Take 650 mg (two 325 mg pills) by mouth every 4 to 6 hours as needed. Each Regular Strength Tylenol pill has 325 mg of acetaminophen. The most you should take is 10 pills a day (3,250 mg total). *Note:* In Canada, the maximum is 12 pills a day (3,900 mg total).
- **Acetaminophen - Extra Strength Tylenol:** Take 1,000 mg (two 500 mg pills) every 6 to 8 hours as needed. Each Extra Strength Tylenol pill has 500 mg of acetaminophen. The most you should take is 6 pills a day (3,000 mg total). *Note:* In Canada, the maximum is 8 pills a day (4,000 mg total).
- **Ibuprofen (e.g., Motrin, Advil):** Take 400 mg (two 200 mg pills) by mouth every 6 hours. The most you should take is 6 pills a day (1,200 mg total).
- **Naproxen (e.g., Aleve):** Take 220 mg (one 220 mg pill) by mouth every 8 to 12 hours as needed. You may take 440 mg (two 220 mg pills) for your first dose. The most you should take is 3 pills a day (660 mg total). *Note:* In Canada, the maximum is 2 pills a day (one every 12 hours; 440 mg total).
- Use the lowest amount of medicine that makes your pain better.

2. **Pain Medicines - Extra Notes and Warnings:**

- Follow these dosing instructions unless your doctor (or NP/PA) has told you to take a different dose.
- Acetaminophen is thought to be safer than ibuprofen or naproxen in people over 65 years old. Acetaminophen is in many OTC and prescription medicines. It might be in more than one medicine that you are taking. You need to be careful and not take an overdose. An acetaminophen overdose can hurt the liver.
- McNeil, the company that makes Tylenol, has different maximum dosage instructions for Tylenol in Canada than in the United States. Bayer, the company that makes Aleve, has different dosage maximum instructions for Aleve in Canada and the United States.
- **Caution:** Do not take acetaminophen if you have liver disease.
- **Caution:** Do not take ibuprofen or naproxen if you have stomach problems, kidney disease, are pregnant, or have been told by your doctor to avoid this type of anti-inflammatory drug. Do not take ibuprofen or naproxen for more than 7 days without consulting your doctor. If you take blood thinners, ibuprofen and naproxen can increase the risk of bleeding.
- *Before taking any medicine, read all the instructions on the package.*

3. **Call Back If:**

- You have more questions
- You become worse

FIRST AID Advice for Bleeding: Apply direct pressure to the entire wound with a clean cloth.

FIRST AID Advice for Penetrating Object: If penetrating object still in place, don't remove it.

FIRST AID Advice for Shock: Lie down with feet elevated.

FIRST AID Advice for a Sprain or Twisting Injury of Ankle or Foot:

- Apply a cold pack or an ice bag (wrapped in a moist towel) to the area for 20 minutes.
- Wrap area with an elastic bandage.

FIRST AID Advice for Suspected Ankle or Foot Fracture (Broken Bone) or Dislocation (Out of Joint):

- Do not remove the shoe.
- Immobilize the ankle and foot by wrapping them with a soft splint (e.g., a pillow, a rolled-up blanket, a towel).
- Use tape to keep this splint in place.

Transport of an Amputated Body Part:

- Briefly rinse amputated part with water (to remove any dirt).
- Place amputated part in plastic bag (to protect and keep clean).
- Place plastic bag containing part in a container of ice (to keep cool and preserve tissue).

BACKGROUND INFORMATION

Types of Foot and Ankle Injuries

- Achilles tendon rupture: There is pain in the Achilles tendon (area above heel and behind ankle). There is weakness or inability to extend the foot (e.g., can't stand on tiptoes).
- Contusion: A direct blow or crushing injury results in bruising of the skin, muscle, and underlying bone.
- Cuts, abrasions
- Dislocations (bone out of joint)
- Fractures (broken bones)
- Sprains: Stretches and tears of ligaments
- Strains: Stretches and tears of muscles (e.g., pulled muscle)

What Cuts Need to be Sutured?

- Any cut that is split open or gaping probably needs sutures (or staples or skin glue).
- Cuts longer than 1/2 inch (1 cm) usually need sutures.
- Any open wound that may need sutures should be evaluated by a physician regardless of the time that has passed since the initial injury.

Tetanus Booster - When Does an Adult Need a Tetanus Shot?

All **serious or major wounds** are triaged and referred for immediate wound care. This includes crush injuries, amputations, avulsions, gaping cuts, larger burns, or any other wound that needs debridement or irrigation. For these wounds, if a tetanus booster is needed, it will be given with medical care on the **day of the injury**.

When is a tetanus shot needed for other wounds?

• **Clean Cuts and Scrapes - Tetanus Booster Needed Every 10 Years:** Patients with **clean minor** wounds AND who have previously had 3 or more tetanus shots (full series) need a booster every 10 years. Examples of minor wounds include a superficial abrasion, a small cut from a clean knife blade, or a glass cut sustained while washing dishes. All wounds need wound care and cleaning right away. A tetanus booster (Td or Tdap) should be given within 72 hours (3 days).

• **Dirty Wounds - Tetanus Booster Needed Every 5 Years:** Patients with **dirty** wounds need a booster every 5 years. Examples of dirty wounds include any cut contaminated with soil, feces, saliva and more serious wounds from deep punctures, crushing, and burns. All wounds need to be cleaned right away. A tetanus booster (Td or Tdap) should be given as soon as possible, preferably at the time of wound care, and definitely within 72 hours (3 days).

What if a person has had no prior tetanus shots or is not fully vaccinated?

• If a person has never gotten a tetanus shot, they should get the **first tetanus shot today or within 24 hours**. Then they will need to get the full tetanus series.

• If a person is not fully vaccinated (3 shots), they should get a **tetanus shot today or within 24 hours**.

• The full tetanus shot series is a shot now, a shot in 4 to 8 weeks, and a shot in 6 to 12 months. Three shots in total.

• If the wound is dirty, the person may also need tetanus immune globulin (TIG) at the same time they get the tetanus booster.

REFERENCES

1. Bachmann LM, et.al. Accuracy of Ottawa ankle rules to exclude fractures of the ankle and mid-foot: a systematic review. *BMJ*. 2003;326: 417-423.

2. Bleakley C, McDonough S, MacAuley D. The use of ice in the treatment of acute soft-tissue injury. *Am J Sports Med*. 2004;32(1):251-261.

3. Boyce SH, Quigley MA, Campbell S. Management of ankle sprains: a randomised controlled trial of the treatment of inversion injuries using an elastic support bandage or an Aircast ankle brace. *Br J Sports Med*. 2005;39(2):91-6.

4. Clanton TO, Porter DA. Primary care of foot and ankle injuries in the athlete. *Clin Sports Med*. 1997;16(3):435-66.

5. Collins NC. Is ice right? Does cryotherapy improve outcome for acute soft tissue injury? *Emerg Med J*. 2008;25(2):65-8.

6. Cosic F, Kimmel L, Edwards E. Patient comprehension of common orthopedic terminology. *Health Lit Res Pract*. 2019 Aug 8;3(3):e187-e193.

7. Dake AD, Stack L. Penetrating trauma to the extremities: systematic assessment and targeted management of weapons-related injuries. *Emerg Med Reports*. 1997;18(7).

8. Dalton JD Jr, Schweinle JE. Randomized controlled noninferiority trial to compare extended release acetaminophen and ibuprofen for the treatment of ankle sprains. *Ann Emerg Med*. 2006;48(5):615-23.

9. Hocutt JE Jr. Cryotherapy in ankle sprains. *Am J Sports Med*. 1982;10(5):316-9.

10. Kellett J. Acute soft tissue injuries--a review of the literature. *Med Sci Sports Exerc*. 1986;18(5):489-500.

11. Kerkhoffs GM, Struijs PA, Marti RK, Assendelft WJ, Blankevoort L, van Dijk CN. Different functional treatment strategies for acute lateral ankle ligament injuries in adults. *Cochrane Database Syst Rev.* 2002;(3):CD002938.
12. Kretsinger K, et.al. Centers for Disease Control and Prevention; Advisory Committee on Immunization Practices; et.al. Preventing tetanus, diphtheria, and pertussis among adults: use of tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine recommendations of the ACIP. *MMWR Recomm Rep.* 2006 Dec 15;55(RR-17):1-37.
13. Lavery LA, Armstrong DG, Wunderlich RP, Mohler MJ, Wendel CS, Lipsky BA. Risk factors for foot infections in individuals with diabetes. *Diabetes Care.* 2006;29(6):1288-93.
14. Markert RJ. A pooled analysis of the Ottawa ankle rules used on adults in the ED. *Am J Emerg Med.* 1998;16(6):564-7.
15. McMaster WC, Liddle S, Waugh TR. Laboratory evaluation of various cold therapy modalities. *Am J Sports Med.* 1978; 6: 291-294.
16. Moran GJ, Talan DA, Abrahamian FM. Antimicrobial Prophylaxis for Wounds and Procedures in the Emergency Department. *Infect Dis Clin North Am.* 2008; 22(1); 117-143.
17. Pellegrino JL, Charlton NP, Carlson JN, et.al. 2020 American Heart Association and American Red Cross Focused Update for First Aid. *Circulation.* 2020 Oct 27;142(17):e287-e303.
18. Sampson FC, Goodacre SW, O'Cathain A. The Reality of Pain Scoring in the Emergency Department: Findings From a Multiple Case Study Design. *Ann Emerg Med.* 2019 Oct;74(4):538-548. *Ann Emerg Med.* 2019 Oct;74(4):512-520.
19. Singer AJ, Dagum AB. Current management of acute cutaneous wounds. *N Engl J Med.* 2008 Sep 4;359(10):1037-46.
20. Singletary EM, Charlton NP, Epstein JL, Ferguson JD, Jensen JL, MacPherson AI, Pellegrino JL, Smith WW, Swain JM, Lojero-Wheatley LF, Zideman DA. Part 15: First Aid: 2015 American Heart Association and American Red Cross Guidelines Update for First Aid. *Circulation.* 2015 Nov 3;132(18 Suppl 2):S574-89.
21. Singletary EM, Zideman DA, Bendall JC, et.al. First Aid Science Collaborators. 2020 International Consensus on First Aid Science With Treatment Recommendations. *Resuscitation.* 2020 Nov;156:A240-A282.
22. Singletary EM, Zideman DA, De Buck ED, et.al.; First Aid Chapter Collaborators. Part 9: First Aid: 2015 International Consensus on First Aid Science With Treatment Recommendations. *Circulation.* 2015 Oct 20;132(16 Suppl 1):S269-311.
23. Stiell IG, Wells GA, Laupacis A, Brison R et.al. Implementation of the Ottawa ankle rules. *JAMA.* 1994;271(11):827-32.
24. Wedmore IS, Charette J. Emergency department evaluation and treatment of ankle and foot injuries. *Emerg Med Clin North Am.* 2000;18(1):85-113.

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