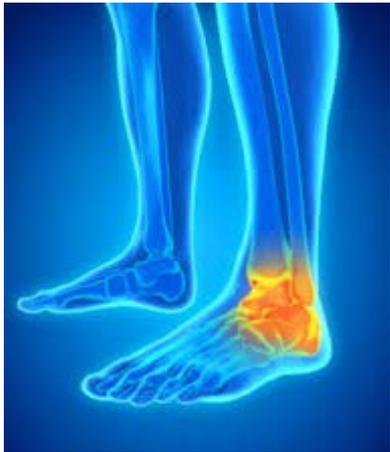


Foot and Ankle Fractures: Best Practices for Treatment and Prevention



Janet Simon, DPM

NEW MEXICO
Foot & Ankle
INSTITUTE



No disclosures.



Purpose:

- ▶ This program is to describe best practices for treating fractures in the foot/ankle.

Objectives:

- ▶ Understand symptoms of fractures and methods of prevention.
 - ▶ Develop an awareness of misconceptions and consequences of fractures.
 - ▶ Recognize factors contributing to fractures and healing.
- 

What is pain ?

- ▶ “An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” International Association for the Study of Pain (Merskey, 1979)



Fracture Pain

Source: Sensitive nerve fibers on the outer surface of bone

Description:

- ▶ Tends to be constant
- ▶ Worse with movement and weightbearing
- ▶ Accompanied by swelling.

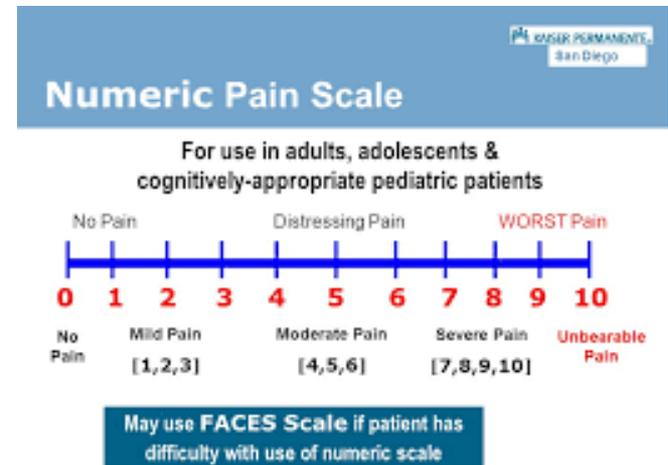
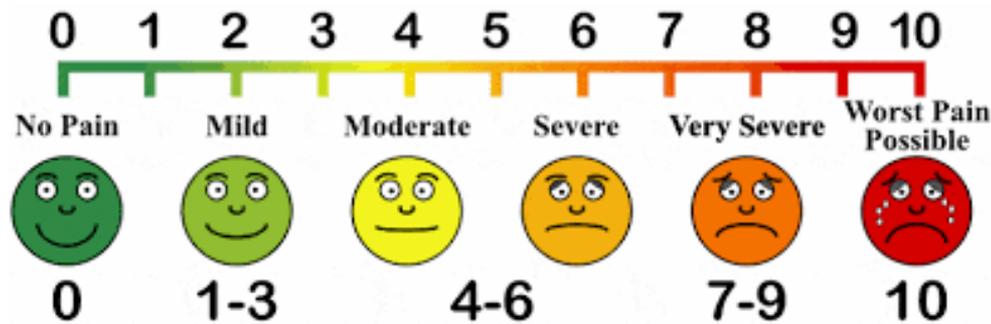


Who may not feel pain in their feet ?

- ▶ Neuropathic Feet (Diabetics and other neurologic conditions)



Asking about pain is an important part of ALL assessments!!



Consequences of Untreated fractures:

- ▶ Difficulty walking /standing
- ▶ Decreased ability to perform ADL's
- ▶ Disturbed sleep
- ▶ Poor appetite and weight loss
- ▶ Withdrawal from social activities
- ▶ Sadness, anxiety, or depression
- ▶ Development of DJD arthritis



If an injury or acute problem occurs in my foot/ankle

▶ Self-Triage:

1. Is there an open wound/bleeding?
2. Is the foot/ankle in alignment?
3. Determine pain level.



- ## ▶ Minor – Begin self treatment with RICE (Rest/Ice/Compression/Elevation).



- ## ▶ > Minor: Determine what medical facility to seek care from –
- ▶ ER / UC / PCP / Podiatrist's Office

Triage Quiz ?



Triage Quiz ?



Big OUCH ! GO TO ER.



Sore (low pain) – Make appointment with Podiatrist

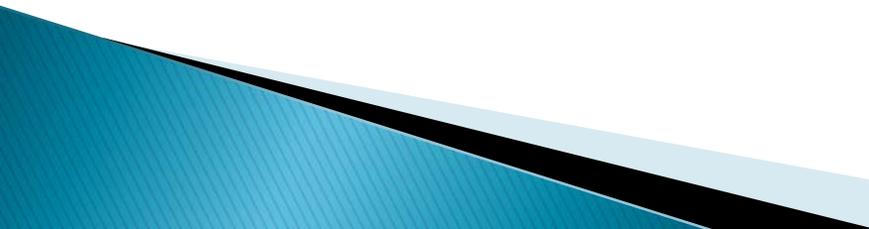
Common Fractures in Feet/Ankles/Legs

- ▶ Toes – Most Common



- ▶ Metatarsals account for 35% of foot fractures. About 80% of metatarsal fractures are nondisplaced or minimally displaced, which often makes conservative management appropriate

Step-Wise Assessment

- ▶ X-rays–Minimum of 3 views
 - ▶ Determine type of fracture –
 - Open vs Closed
 - Displaced vs Non–displaced
 - Intra–articular vs non–articular
 - Stress
 - ▶ Conservative vs Surgical Treatments
 - ▶ Additional diagnostics if fracture is suspected (US,CT,MRI)
- 

Closed



Open



Closed



Displaced



Non-articular

Courtesy of
E. Kent
Picklesimer, DPM



Displaced, Intra-articular

Courtesy of
E. Kent
Picklesimer, DPM



Surgery with ORIF

Metatarsal fxs



Stress (March) Fxs



Calcaneal Stress Fxs



Stress Fx – Causes

- ▶ Change in activities; for example, an increase in exercise and athletics, or different job duties without a gradual break-in period.
 - ▶ Errors in training or technique.
 - ▶ Changes in surface; for instance, going from a soft surface (an indoor running track) to a harder surface (sidewalk or street).
 - ▶ Repetitive activity in certain high-impact sports, such as long-distance running, basketball, tennis, track and field, gymnastics, and dance.
 - ▶ Improper footwear (shoes that are too worn out, too flimsy, or too stiff).
 - ▶ Foot problems, such as bunions, blisters, or tendonitis, that can affect the way the foot strikes the ground.
 - ▶ Osteoporosis or other diseases that weaken bone strength and density (thickness). The weak or soft bones may not be able to handle the changes in activity.
 - ▶ Low vitamin D levels.
- 

Lisfranc's Fxs – Midfoot type



Causes:

- ▶ Falls with twisting of foot.
- ▶ High speed MVA where foot hits brake
- ▶ Flexed foot position with impact (common in soccer/ football)
- ▶ Fall with foot in hole

Navicular Fxs



Accessory Navicular bones



occurs in 4–14% of the population

Heel -Calcaneal Fxs

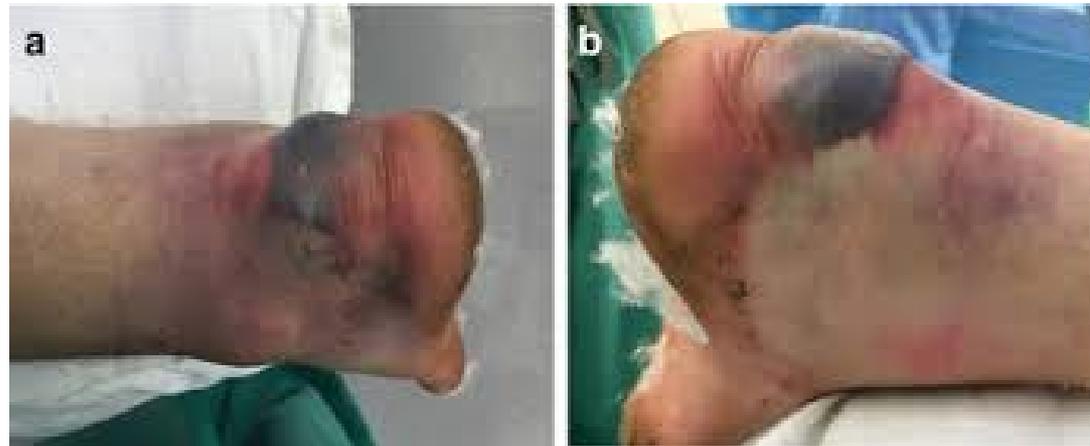


Calcaneal (Heel) Fractures

Causes–

- ▶ MVAs
- ▶ Falls from heights

17% are open fractures



Ankle Fxs



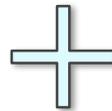
Big Ouch ! Go Directly to ER.



Common forms of Immobilization



Toe Splints



Forms of Assisted Devices



Forms of Anti-inflammatory

Topical + Systemic



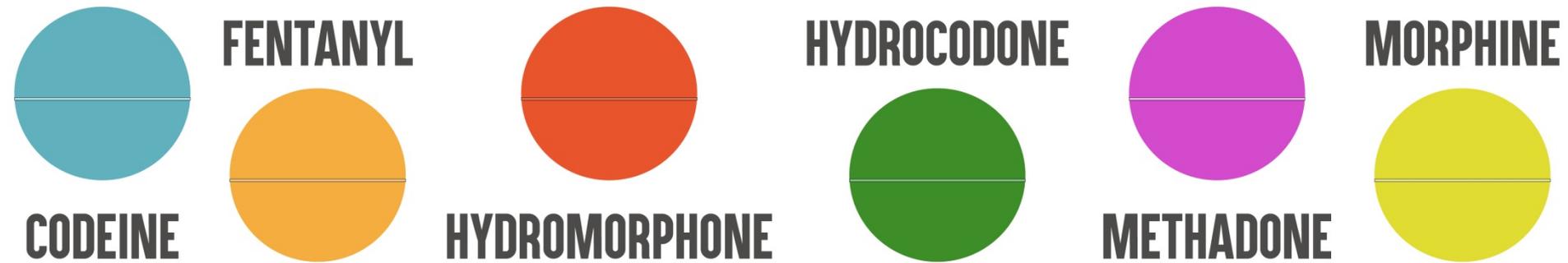


-Common sense treatment rules for pain:

- ▶ Use the lowest effective dose by the simplest route.
- ▶ Start with the simplest single agent and maximize it's potential before adding other drugs.
- ▶ Use scheduled, long-acting pain medications for constant or frequent pain.
- ▶ Treat breakthrough pain with as needed (prn), short-acting medications.

Opioid Use–Education is Essential

- ▶ Smaller starting doses required
- ▶ Opioids produce higher plasma concentrations in older persons
- ▶ Greater sensitivity in both analgesic properties and side effects
- ▶ Increased drug interactions



How long does it take to heal ?

- ▶ Toe Fxs: 6 – 12 wks+
- ▶ Metatarsal Fxs : 8– 12 wks+
- ▶ Midfoot/Heel Fxs: 10 – 20 wks+
- ▶ Ankle Fxs: 8 – 20 wks +

- ▶ Transition from phases of healing vary and all fxs will require reconditioning and physical therapy either home-based or supervised.
- ▶ Supportive, stiffer soled shoes best to use after immobilization.
- ▶ Adequate Vit D levels aide bone healing.



Vitamin D Supplementation

- ▶ Several studies link low vitamin D levels with an increased risk of fractures in older adults, and they suggest that vitamin D supplementation may prevent such fractures—as long as it is taken in a high enough dose.
- ▶ A summary of the evidence comes from a combined analysis of 12 fracture prevention trials that included more than 40,000 elderly people, most of them women. Researchers found that high intakes of vitamin D supplements—of about 800 IU per day—reduced hip and non-spine fractures by 20 percent, while lower intakes (400 IU or less) failed to offer any fracture prevention benefit.

What You Can Do To Avoid Fractures

- ▶ Do wear footwear around home (firm soled slippers/sandals)
 - ▶ Wear appropriate supportive shoes for activities.
 - ▶ If there's a hx of "weak feet/ankles" wear above ankle shoes/boots when on uneven surfaces.
 - ▶ Don't be in a hurry which helps to avoid falls.
 - ▶ Treat your osteopenia/osteoporosis.
- 

Must be why they're called “slippers”

- ▶ Walking in socks or slippers is a strong independent factor for falls (OR=5.5)



Larsen ER, Mosekilde L, Foldspang A. Correlates of falling during 24 h among elderly Danish community residents. *Prev Med.* 2004;39(2):389–98. [[PMID: 152260511](https://pubmed.ncbi.nlm.nih.gov/152260511/)]

- ▶ 107 older people who were admitted to hospital following a fall-related hip fracture, 33% were wearing slippers and 68% wore shoes with flexible heel counters at the time of fracture



- ▶ Hourihan F, Cumming RG, Taverner-Smith KM, Davidson I. Footwear and hip fracture-related falls in older people. *Aust J Ageing* 2000; 19: 91-3.



"Bad news. You have to start wearing sensible shoes."

You Choose -



VS





VS





VS



Therapeutic Footwear 20th Century



Therapeutic Footwear 2019



**NEW
Athletic
Styles!**

Bold new colors.
Virtually seamless.
Super lightweight.



What's "key" in Shoe Fit ?

- Proper sizing
- Fastener /closure system of shoe
- Correct shoe matched with activity requirements



Questions ?

- ▶ Thank you for allowing me to share my knowledge with you.



Email: drsimon@nmfootdoc.com