

## Musculoskeletal imaging

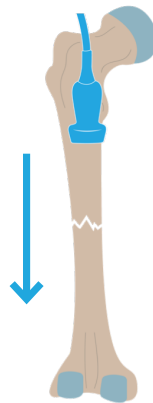
# DIAGNOSING FRACTURES

While x-rays remain the standard to diagnose most fractures, ultrasound can be a helpful adjunct for some fractures that are difficult to identify with radiographs, or in low resource settings.

### Technique

Use a high frequency, linear transducer. Normal bone should have a regular, continuous cortical surface. The essential principle of identifying a fracture on ultrasound is to look for a discontinuity of the bone. Be sure to examine the bone in short- and long-axis, and when feasible, compare to an unaffected side.

- Evaluate for smooth cortex
- Look for discontinuity
- Image in two planes

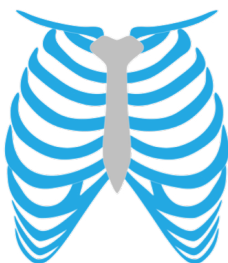


**NOTE:**

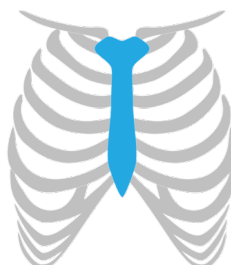
*A water bath may be helpful to examine digits of the hand or foot.*

### When to use ultrasound?

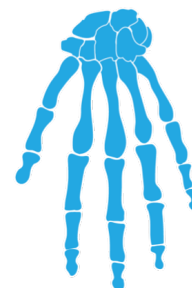
Ultrasound can be especially helpful to diagnose the following fractures



ribs



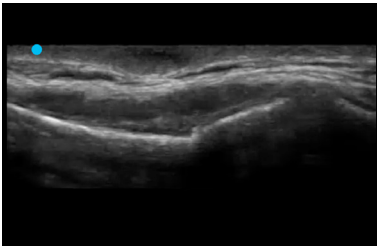
sternum



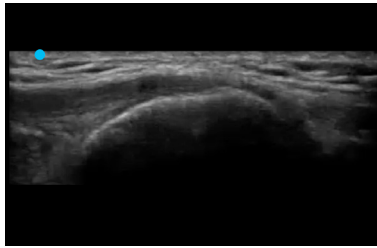
digits

## Recognizing fractures

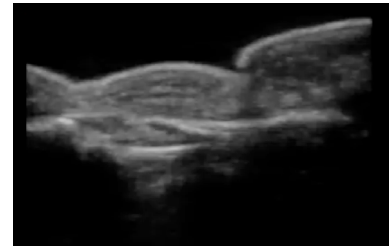
Fractures can be recognized by a disruption of the regular surface of hyperechoic bone.



Sternum: long-axis view



Sternum: short-axis view



Proximal phalanx

## Procedural guidance

Ultrasound can be used to guide the needle for a hematoma block, and to provide intra-procedure visualization of fracture reduction.

