

IMMOBILIZATION OF LONG BONE INJURIES

- Take appropriate Body Substance Isolation precautions.
- Remove clothing from the injured area.
- Assure the patient is stable and *not* a candidate for rapid transport.
If the patient is critical/unstable and/or meets the significant mechanism of injury criteria, routine extremity splinting should not be done. Instead, immobilize the patient using a long backboard and transport.
- Have a helper manually stabilize the fracture.
This is necessary to keep the jagged bone ends still and minimize pain during assessment and splint application. This is done for both open and closed wounds at the injury site. This is best accomplished by holding above and below the fracture and exerting some gentle traction in opposite directions.
- Assess for distal pulses, motor, and sensory function.
Fractures may result in damage to nerves and blood vessels. Ask the patient to wiggle all their fingers or toes (distal to the injured site) and determine if they can sense your touch. Assess the skin color and temperature distal to the injury site. Also assess for pulses distal to the injury site and comparing the strength of the pulse with the corresponding pulse on the opposite side of the body.
- Severe deformity and/or absent distal pulses.
If there is severe deformity or the extremity distal to the injury site is cyanotic or lacking a palpable pulse, align the extremity with gentle traction before splinting. If you encounter resistance to limb alignment, splint the limb in its deformed position. If the injury is involving a hand it should be immobilized in the position of function.
- Cover open wounds.
Cover all open wounds with sterile dressings and control bleeding.
- Select an appropriate immobilization device.
The device chosen must immobilize the bone ends and the joints above and below the injury site. The splint must be appropriately measured to assure the splint is of adequate size.
- Position the splint while maintaining stabilization of the fracture.
The helper must continue to exert some gentle traction while the EMS provider positions the immobilization device. Gentle traction helps to keep the bone ends apart and minimizes pain. Avoid gross movement of the injured extremity.
- Secure the device to the extremity.
The splint must be applied in a manner that will immobilize the bone ends and the adjacent joints. The ties or straps used to secure the splint should be on either side of the injury site and above and below the adjacent joints (whenever possible). If the radius/ulna, wrist and/or hand is involved, ensure the hand is immobilized in the position of function.

- Assess for distal pulses, motor and sensory function.
The pulses, motor, and sensory function must be re-evaluated after the splint is secured. Ask the patient to wiggle all their fingers or toes (distal to the injury site) and see if they can sense your touch. Assess the skin color and temperature distal to the injury site. Also assess for pulses distal to the injury site and compare the strength of the pulse with the corresponding pulse on the opposite side of the body.

SUGGESTED SPLINTS BY SINGLE ISOLATED FRACTURE SITES

HUMERUS

Sling or wrist-sling and swathe (wire ladder; a commercially made appropriate splint or a padded short board splint may be incorporated with sling/swathe).

WARNING! A “full arm” splint is *not* sufficient to splint fractures of the humerus because it does not immobilize the shoulder! It is designed to splint the hand and forearm.

RADIUS/ULNA

Short padded board with sling and swathe or full padded board; air or vacuum splint, or an appropriate commercially made splint.

HAND

Short padded board with the hand immobilized in the position of function. Sling and swathe may also be used for elevation/fixation.

PELVIS

Long backboard immobilization. If hypotension is present (systolic BP below 90 mm Hg) and an unstable pelvic fracture, MAST should be used.

FEMUR

Traction splint (refer to section on Traction Splinting)

WARNING! “Full leg” splints are not sufficient to splint mid-shaft femur fractures; a traction splint is the splint of choice.

TIBIA/FIBULA

Full leg, air splint, vacuum splint, cardboard, or an appropriate commercially made splint.

ANKLE

Pillow splint, full leg, air splint, vacuum splint, cardboard, or an appropriate commercially made splint.

Any splint which immobilizes the injured bone ends and the adjacent joints is acceptable!