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Approach to Limb Injury

Assessment

- ❑ Check ABCs, screen for other injuries & rule out other trauma
- ❑ Assess for RED flags with PE & Hx (screen for non-accidental injury in Peds)

RED FLAGS	Management
Open Fracture	❑Early antibiotics & control bleeding ❑Neurovascular & soft tissue assessment (see below if abnormal) ❑Dress wound & immobilize with splint ❑Prompt surgical consult
Neurovascular Compromise	❑Urgent reduction needed (before x-ray) ❑Document full neurovascular assessment BEFORE reduction ❑Obtain consent; analgesia if time ❑Repeat neurovascular assessment AFTER to determine success ❑Immobilize with splint, x-ray & discuss with consultant
Signs of Compartment Syndrome (CS)	❑Document presence of CS signs (pain out of proportion/with passive stretch/muscle contraction; swollen compartment; paresthesias; weakness/paralysis; pallor; pulseless) ❑Limb AT level of heart & remove constricting items ❑Urgent surgical consult

- ❑Determine need for x-ray (min. 2 views AP & lateral). Knee, ankle & foot may not need films if meeting Ottawa decision rules.

Fracture Present

Describe X-RAY: **Anatomy, # Pattern** (transverse, oblique, spiral, comminuted, segmental, avulsion), **Articular Involvement** (Ortho referral), **Apex Angulation** (medial or lateral; angle of distal in relation to proximal), **Rotation** (internal or external), **Distracted or Impacted, Shortening, Apposition** (% fragments touching) & **mm Displacement.**

Consult resources for unique # reduction & mgmt: (e.g. Dynamed, orthobullets.com etc.)

Immobilize. Splint (accommodate swelling) x 2-3d → Cast after splint. Goals: ↓pain, ↓soft tissue damage, protect neurovascular state; when cast comes off

Fracture Absent

Tendon/ligament injury: completely torn (refer). May be injury to cartilage.

Acute Rx: **R**est, **I**ce, **C**ompression, **E**levation

Dislocation → consult resources for unique reduction & immobilization

Physiotherapy referral & provide guidance to regain strength & ROM.

	NERVE	MOTOR	SENSORY
Upper Limb	Axillary	aBduct shoulder	lateral upper arm
	Musculocutaneous	elbow flexion	lateral forearm
	Radial	wrist extension	lateral lower arm; dorsal forearm; Lateral 3 & ½ digits (dorsal)
	Median	oppose thumb & little finger	lateral 3 & ½ digits (volar)
	Ulnar	aBduct fingers	medial 1 & ½ digits (volar & dorsal)
Lower Limb	Femoral	knee extension	anterior thigh, medial leg, ankle & foot
	Deep fibular	foot dorsiflexion & inversion; toe extension	1st dorsal web space foot
	Superficial fibular	foot eversion	dorsal areas of foot & toes
	Tibial	knee flexion; foot plantar flexion; toe flexion	posteriolateral lower leg; lateral side of ankle, foot; sole of foot

Key References: 1) Eiff MP, Hatch R. *Fracture Management for Primary Care*. Philadelphia, PA: Saunders/Elsevier; 2012. 2) Cross WW, 3rd, Swiontkowski MF. Treatment principles in the management of open fractures. *Indian Journal of Orthopaedics*. 2008;42(4):377-386. 3)Vogl W, Drake RL, Mitchell AWM, Gray H, Gray H. *Grays Anatomy for Students*. Philadelphia, PA: Churchill Livingstone/Elsevier; 2010. 4) Styf J, Wiger P. Abnormally increased intramuscular pressure in human legs:. Comparison of two experimental models. *Journal of Trauma-Injury Infection & Critical Care*. 1998;45(1):133-139.