FOCUS	*Rationale*
Initiation of ordering radiographs by Registered Nurses in the Emergency Department prior to physician assessment.	*To promote early identification of patients in need of simple radiological studies by the Emergency Nurse to expedite patient care and the emergency evaluation process.*

X-RAYS APPROVED FOR ORDERING

Upper extremity

- Clavicle
- Humerus
- Elbow
- Radius/Ulna
- Wrist
- Hand Metacarpal / phalanges

Lower extremity

- Knee Injuries
- Tibia / Fibula
- Ankle
- Foot – Metatarsal / Tarsal

PRACTICE LEVEL / COMPETENCIES

Ordering of radiographs in the emergency department is considered an advanced skill for Registered Nurses and is practiced after the practitioner has the required education and has had his/her learning validated with the appropriate clinical support person.

ASSESSMENT

- History and mechanism of injury
- Physical assessment:
  - Color of affected limb, movement, circulation, sensation, and warmth
  - Point tenderness
  - Swelling
  - Bruising
  - Impaired range of motion
  - Pulses distal to the injury
  - Deformity
  - Right/left
  - **Always Undress & Compare to other limb**

EXCEPTIONS / CONTRAINDICATIONS

- Neurovascular compromise; diminished pulses distal to the injury
- Patient is pregnant
- No clear history of injury, concerns possible non-accidental injury (NAI)
- Obvious dislocation which needs reducing

INDICATIONS FOR RADIOGRAPH ORDERING

Clavicle – palpate along clavicle, remember majority of clavicle fractures are in the middle third.

Indication for Clavicle X-ray: Mechanism of injury, deformity, tenderness, swelling

Humerus – Palpate, may be a proximal fracture (Close to the shoulder) or Shaft fracture (Close to the middle of the bone)
Indication for Humerus X-ray – Mechanism of injury, deformity, tenderness, swelling, reduced range of movement.

Elbow – Majority are supracondylar fractures, Exercise caution with these x-rays, take careful note of the history and ensure this is not a pulled elbow.
Indication for Elbow X-ray - Mechanism of injury, deformity, tenderness, swelling, reduced range of movement.

PRECAUTIONS / SPECIAL CONSIDERATIONS FOR ELBOW

If mechanism of injury and physical exam indicate a suspected fracture –

Immobilize elbow where possible before radiographs to avoid further injury from sharp fragments (flexion 20 -30 degrees = least nerve tension)

Forearm ***(Radius/ulna, wrist & elbow are included in this x-ray. Fig 1)***

Childhood forearm fractures are very common following a fall on to outstretched hand. With a wrist injury ensure you check forearm/elbow for further injury.

X-rays are indicated if:

- there is any deformity and/or
- tenderness or swelling over the radius/ulna (***NOT isolated to the distal radius/ulna as this is a wrist xray)***
- loss or restricted movement during pronation and supination



Fig 1 Forearm X-ray includes Radius, Ulna, Wrist and Elbow

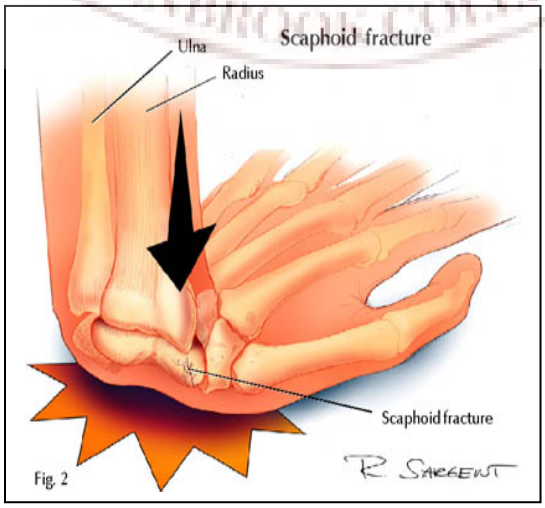
Wrist (Includes Distal Radius) – Often called a wrist injury because of its proximity to the carpal bones of the wrist.

Indication for wrist X-ray- mechanism of injury, deformity, tenderness, swelling, reduced range of movement unable to pronate and or supernate wrist.

There is a concern that a scaphoid injury may occur in children over the age of 12 years. (See resource pack for more information).

Scaphoid X-rays are different to wrist x-rays, they include different views generally taken 7-10 days post injury.

Suspected isolated scaphoid fractures are treated clinically regardless of initial X-rays.

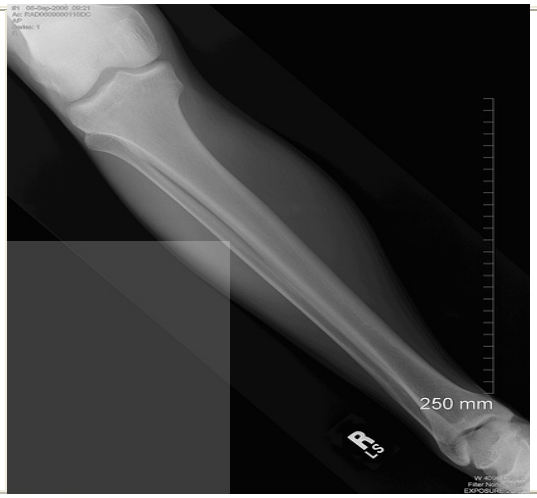


Hand/finger – Carefully examine hands, gently palpate along metacarpals & phalanges to identify point of tenderness. This is important as you will need to describe on the X-ray request specifically where this is.

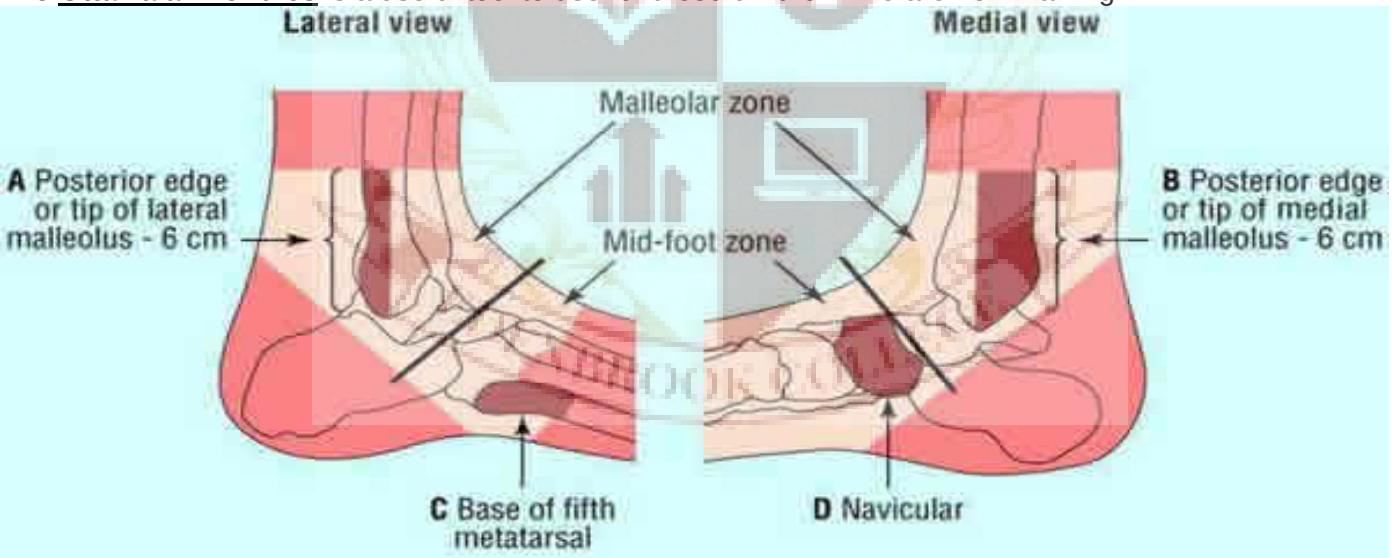
Indication for hand/finger X-ray - mechanism of injury, deformity, tenderness, pain, swelling reduced range of movement.

Fibula /Tibia- (Fib/tib x-ray includes ankle & knee fig 2) Look for mechanism of injury, deformity swelling, and inability to weight bear. The tibia is the weight bearing bone, if there is an injury to the tibia it is highly likely that the fibula is also fractured.
Toddlers fractures – occur in children under three years learning to walk.

Indication for Fib/tibia X-ray – mechanism of injury, swelling, deformity, tenderness, reduced range of movement



Ankle Injuries- An ankle fracture is a common childhood injury and involves a break in one or more of the bones that make up the ankle: the tibia, fibula, and talus. Ankle fractures in children are more likely to involve the tibia and fibula than the talus (a smaller bone in the foot). Fractures at the ends of the tibia and fibula typically involve the growth plates.
Indication for ankle X-ray- Mechanism of injury, swelling, deformity, tenderness, reduced range of movement.
The **Ottawa ankle rules** is a useful tool to use for those children who are now walking.



A series of ankle *x* ray films is required only if there is any pain in malleolar zone and any of these findings:
- Bone tenderness at **A**
- Bone tenderness at **B**
- Inability to bear weight both immediately and in emergency department

A series of foot *x* ray films is required only if there is any pain in mid-foot zone and any of these findings:
- Bone tenderness at **C**
- Bone tenderness at **D**
- Inability to bear weight both immediately and in emergency department

Foot/Metatarsal/Phalanges- Palpate to identify point(s) of tenderness over dorsum of foot.
With the exception of the big toe, toes are not usually worth x-raying as management is not altered or affected.

Indication for X-ray of the foot or Phalange of big toe – Mechanism of injury, swelling, deformity, tenderness, reduced range of movement.

PROCEDURE	RATIONALE
1. **COMPLETE** history, mechanism of injury and physical assessment.	
2. **PREPARE for Xray** Give comfort measures of: analgesia, splinting, ice packs. o Ensure dressed appropriately for radiology exam. o Patient should be NPO, inform patient/family and document.	*It is in the patient's best interest to be NPO in case they require sedation to repair the injury. If this becomes a challenge for the patient/family then a discussion with the CNC or physician is indicated*
3. **COMPLETE** requisition for radiograph including: ▪ Addressograph or label with the patient's information ▪ Request Radiology, Emergency ▪ There is a **white sticker** on the requisition provided for nurses ordering radiographs. Tick off appropriate boxes to indicate: o Body part to be x-rayed, specify: **Right or Left side** o Mechanism of Injury o Point Tenderness o Patient Presents With ▪ Print the name of the attending staff physician ▪ Clearly write your name followed by RN	*Ensure you pick the correct side as this is the most common error made* *The more details provided assist the Technologists and Radiologist to determine which x-rays are needed.*
4. **DOCUMENT** in the patient record the data, action and response related to the assessment and condition warranting the Nurse Initiated Activity i.e. x-ray.	
5. **DOCUMENT** notification of responsible healthcare provider with the date and time.	

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