

Nurses' guide to ordering x-rays

By Lori Vollmerhaus, RN, BScN, and Shannon Wilson, RN, BN, Clinical Nurse Educators, Alberta Children's Hospital Emergency

Emergency departments across Canada have been faced with many challenges including long patient wait times, inefficient patient flow through the department and decreased patient satisfaction. By ordering x-rays prior to the physician assessment, emergency nurses can help streamline the emergency visit of a patient and expedite care. The physician can view the x-ray prior to seeing the patient and start appropriate treatment or discharge on their first interaction with the patient, thus reducing the interactions by at least one episode (Fry, 2001; Seaberg, & MacLeod, 1998; Tambimuttu, Hawley, & Marshall, 2002). In 1990, the Alberta Children's Hospital Emergency Department (ACH ED) developed a "Nurses Guide for Ordering X-rays" to assist triage nurses to

address some of these issues. The decision to have only triage nurses order x-rays was supported by the available literature. However, in 2001, the ACH ED made the decision to train all staff nurses to order x-rays to alleviate demands

Table One: Lower leg fractures

	Mechanism of injury	Diagnostic findings	X-ray ordered
Tib/Fib Fractures	Direct blow, indirect stress, twisting or compression to the bone	Point tenderness, swelling, and impaired weight bearing	Yes
		Deformity	No

Table Two: Ankle and foot injuries

	Mechanism of injury	Diagnostic findings	RN ordered x-ray
Ankle Sprain	Twisting of foot: Inversion - turn inward by rolling the ankle Eversion - turn outward by rolling the ankle	- Local swelling, discoloration and general tenderness with impaired weight-bearing	No
		- General tenderness anterior and inferior to the lateral malleolus (inversion injury)	No
		- General tenderness anterior and inferior to the lateral malleolus (eversion injury)	No
Ankle Fractures	Inversion or eversion injury	- Swelling, ecchymosis, point tenderness over medial of lateral malleolus - Pain when foot is directed toward tibial surface (flexion)	Yes
Calcaneal Fracture	Fall from a height on extended legs	- Local swelling, point tenderness to heel area, impaired weight-bearing ecchymosis on posterior sole of foot	Yes
		- May have associated #s (i.e., lumbar spine or wrist fractures)	No
Metatarsal Fractures	Base of fifth metatarsal is fractured as a result of inversion Fractures of metatarsal shaft usually result of crush injury Hairline stress fractures at base of metatarsal after jogging, hiking or jumping	- Local swelling and point tenderness with impaired weight-bearing	Yes

on triage, increase staff competence, confidence and satisfaction and to further address the issue of streamlining patient flow through the department (Lindley-Jones, 2000, & Finlayson, 2002).

At the ACH ED, the two requirements an RN must fulfil prior to ordering x-rays are to review the “Nurse’s Guide for Ordering X-rays” module and to demonstrate comprehension by discussing three actual patient scenarios with an instructor or clinician verifying the accuracy of their assessment. After

meeting these criteria, nurses are certified to order an x-ray following completion of their assessment.

According to our guidelines, emergency department staff nurses may order x-rays to conduct a foreign body search, and for a below-elbow, below-knee or clavicular injury (see tables on pages 21-22). The rationale for ordering only these particular x-rays is based on the literature, and because these presentations are typically treated easily in a non-urgent manner (Fry, 2001). The exceptions to this include patients

Table Three: Upper extremities

	Mechanism of injury	Diagnostic findings	RN ordered x-ray
Clavicular fracture	Fall or blow to the shoulder or extended arm	- Point tenderness and possible deformity at point of fracture	Yes
		- Pain on movement of affected arm or shoulder	Yes
Radial head dislocation or subluxation (pulled elbow)	Sudden longitudinal pull on forearm while arm is pronated Reported in children less than six months after rolling over	- Arm is in passive pronation, child won’t move arm	No
		- Resistance to pain with full supination	No
		- General tenderness over elbow area	No
		- Child complains of pain at wrist	No
Radial head fracture	Fall on outstretched arm (FOOSH)	- Point tenderness over radial head	Yes
Distal 1/3 radius and ulna Fracture	Fall on palm of hand or blow to forearm	- Swelling and point tenderness over fracture site	Yes

Table Four: Hand and wrist injuries

	Mechanism of injury	Diagnostic findings	RN ordered x-ray
Scaphoid (Navicular)	Fall on outstretched hand (FOOSH)	- Point tenderness over the anatomic snuffbox (when the thumb is abducted and extended, a triangular depression is formed on the back of the wrist at the radial border between the three tendons of the thumb. This is the anatomic snuffbox.)	Yes
Metacarpal bone fracture	Due to blow to hand or crush injury	- Decreased grip strength	Yes
		- Swelling and point tenderness	Yes
		- Deformity with displacement	No
Phalangeal Fracture	Direct blow to tip of finger	- Swelling and point tenderness of phalanx	Yes
		- Deformity with or without displacement	No
Finger Dislocation	Blow to tip of finger	- Point tenderness at joint - Swelling and inability to flex finger	Yes
		- Obvious deformity	No

with an obvious deformity, patients requiring IV analgesia, compromised patients who need to see the physician immediately, or if the nurse is uncertain whether the injury requires an x-ray, e.g., soft tissue injury (STI). Also exempt is a foreign body search with any airway compromise or if the object may not be detectable on x-ray (e.g., plastic object).

A foreign body search can be ordered if the patient has a history of ingesting a foreign body. The assessment and documentation should include:

- Airway patency
- Breathing/chest assess
- History
- Drooling and ability to swallow

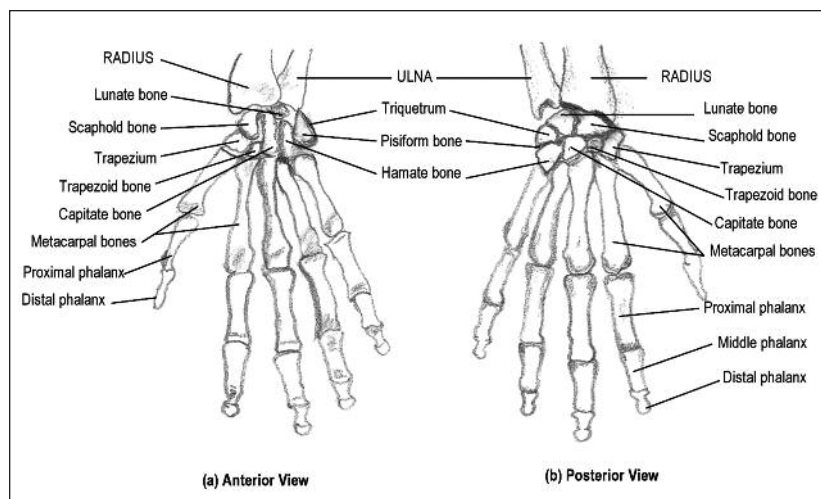
In the case of an orthopedic injury, the assessment and documentation should include:

- Location of injury
- Deformity
- Colour of affected limb
- Sensation
- Pulses/circulation
- Movement
- Temperature
- Pain – noting in particular any point tenderness
- Mechanism of injury
- Weight-bearing (Molczan, 2001).

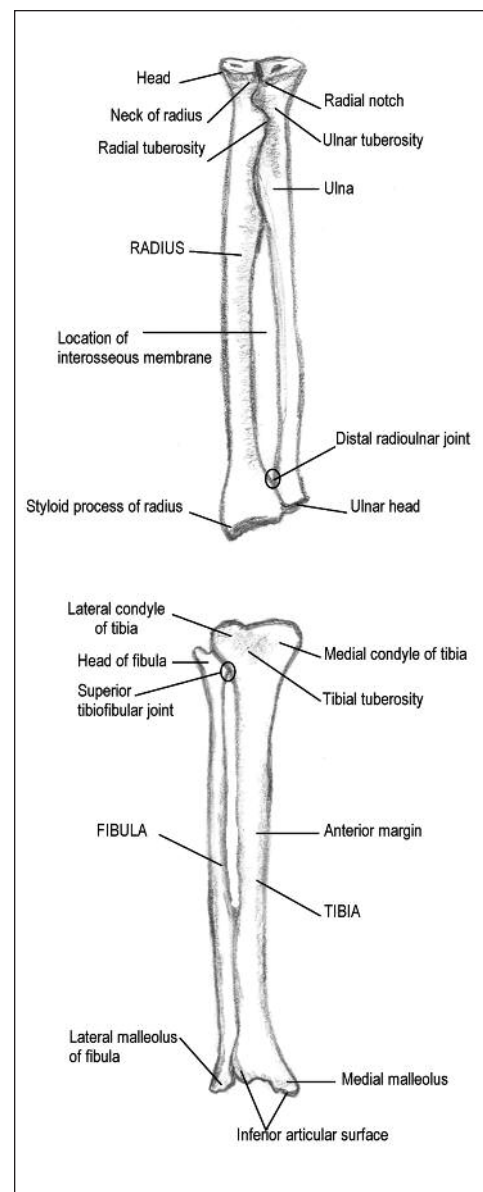
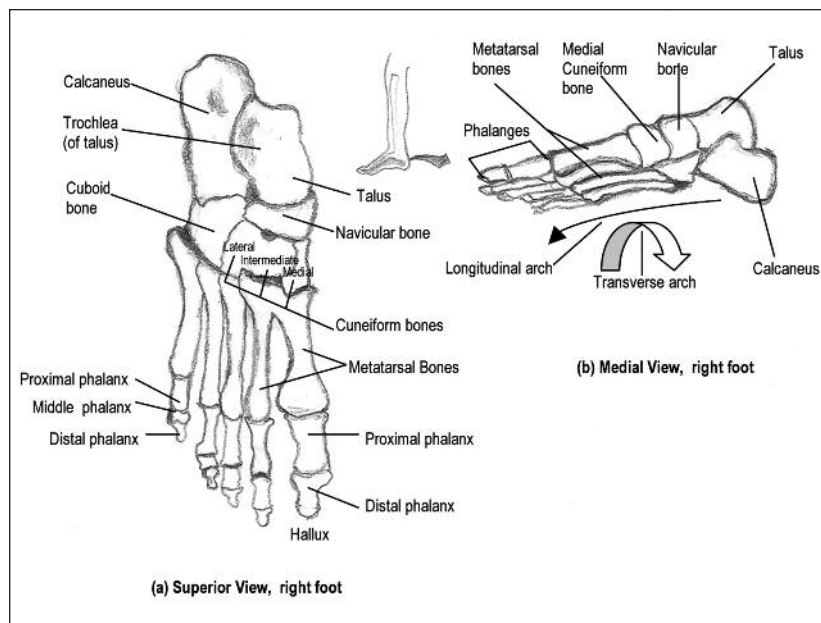
The patient must have point tenderness to confirm the exact location and have no neurovascular deficits for a qualified nurse to order an x-ray.

Some of the more common orthopedic injuries that we see and their typical presentations are described in the charts on

Illustrations



Hand



pages 21 and 22. The history and physical assessment of the patient is necessary for the nurse to make an informed decision about whether or not the patient requires an x-ray (Tham Kwee Ching, Leong Yin Leng, & Ngain Bang, 1999; Lindley-Jones, & Finlayson, 2000; Grossman, & Diekman, 1990).

Ordering x-rays for the more common minor injuries is well within an emergency nurse's scope of practice. If nurses are ordering x-rays, a guide should be developed to educate and guide the practice (Tham Kwee Ching, Leong Yin Leng, & Ngain Bang, 1999). This will avoid unnecessary x-rays and potential harm to a more severely injured child. As reflected in the literature, the Alberta Children's Hospital Emergency Department has had great success with improving patient flow in the department as well as improving the quality of service (Lindley-Jones, & Finlayson, 2000). Furthermore, patients and their parents/caregivers have expressed extreme satisfaction with our practices to streamline care and help to decrease the congestion so common in emergency departments today. ❏

Acknowledgements

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Outlook

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