

Orthopaedics in the Emergency Department Clinical Guideline

V4.0

January 2019

Summary.

This guideline contains a summary of locally agreed management of orthopaedic conditions commonly seen in the emergency department. It is aimed at junior doctors and emergency nurse practitioners.

1. Aim/Purpose of this Guideline

1.1 This guideline is aimed at RCHT junior doctors and emergency nurse practitioners to provide guidance on the management of commonly seen orthopaedic conditions in the emergency department. It is not designed to replace specialist guidance and it is recognised that individual patients may require different management after consultation with a senior ED or orthopaedic doctor.

1.2. Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation

The Trust has a duty under the DPA18 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed and documented. We can't rely on Opt out, it must be Opt in.

The DPA18 covers how the Trust obtains, hold, record, use and store all personal and special category (e.g. Health) information in a secure and confidential manner. This Act covers all data and information whether held electronically or on paper and extends to databases, videos and other automated media about living individuals including but not limited to Human Resources and payroll records, medical records, other manual files, microfilm/fiche, pathology results, images and other sensitive data.

DPA18 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the DPA18 please see the 'information use framework policy', or contact the Information Governance Team rch-tr.infogov@nhs.net.

2. The Guidance

2.1. **Upper limb:** Advice on the appropriate initial management of orthopaedic patients presenting to emergency departments in the Cornwall area.

These are guidelines only and not a substitute for thorough, patient-centred assessment, clinical examination and management.

BONE	INJURY SITE	TYPICAL MECHANISM	PITFALLS/COMPLICATIONS	ED/ MIU/ UCC TREATMENT	FOLLOW-UP
Clavicle	# Medial 1/3	Fall onto shoulder or outstretched hand. Resulting bony prominence may take months/years to remodel	Posterior displacement – mediastinal injury Nerve injury	Assess clinically: If Posterior displacement CT chest	Posterior – Immediate referral to ortho Anterior - VFC
	# Middle 1/3		Nerve/Vascular Injury Possible skin compromise if very displaced caudally	May require fixation in adults. In children <16yrs fixation rarely required unless skin compromised	Adults - VFC <16yrs old – follow up unnecessary, give patient info leaflet
	# Lateral 1/3 or lateral to the corocoid on the AP view		Non union	Broad arm sling	VFC
Scapula	Glenoid, neck, acromion or corocoid #	Uncommon. Direct blow	Glenoid or glenoid neck involvement may require fixation. Nerve injury	Broad arm sling followed by early mobilisation to restore shoulder function	Immediate referral to ortho +/- CT Many will be followed up in VFC
	Isolated minimally displaced blade #	Blow to upper back or fall (eg down stairs)	Associated chest injuries	Broad arm sling followed by early mobilisation to restore shoulder function	VFC
Sterno-clavicular joint	Dislocation	Uncommon	If posterior displacement potential compression of trachea or great vessels	Monitor vital signs CT chest if posterior Broad arm sling	Posterior – Immediate referral to ortho Anterior - VFC
Acromio-clavicular joint	Subluxation (Rockwood 1/2)			Broad arm sling initially – Mobilise as comfort allows	Discharge with advice or ED physio
	Superior Dislocation	Fall directly on to shoulder	Persistent pain, deformity	Broad arm sling initially – May require fixation	Grade 3 - VFC
	Posterior/Inferior Dislocation (rare)		Mediastinal Neurovascular injury	Broad arm sling +/- CT	Immediate referral to ortho

BONE	INJURY SITE	TYPICAL MECHANISM	PITFALLS/COMPLICATIONS	ED/ MIU/ UCC TREATMENT	FOLLOW-UP
Dislocated shoulder	Anterior	Fall onto shoulder Wrenching injury	Axillary nerve injury Humeral # may occur during reduction if rotation used. Rotator cuff tear especially in older patients	Reduce under sedation: Axial traction only with Senior input. Document neurovascular exam/ sensation in regimental badge area at each stage	X-ray in 2 planes post reduction Refer if unable to reduce Successful reduction – VFC, sling
	Posterior	Direct blow, convulsion electric shock	Easily missed without 2 orthogonal views on X-ray. Look for 'light bulb' sign. Neurovascular injury	Reduce under sedation using axial traction only. Document neurology exam at each stage	As for anterior dislocation: Sling and VFC
Acute Rotator cuff tears	Supraspinatus, infraspinatus or subscapularis	Spontaneous rupture of degenerate tendon with sudden stress. Wrenching injury in younger patients. Post dislocation in older patients	Infraspinatus tear particularly debilitating: Identify from loss of active external rotation/lag sign	Broad arm sling and early active mobilisation	Elderly, low demand or frail: Next available ED physio appointment or referral to local physio via patient's own GP Young/active/high demand: Urgent OPD USS + VFC
Biceps rupture	Long head (proximal) rupture	Often spontaneous. Look for 'Popeye' sign: Distal biceps bulge	Don't confuse with distal biceps rupture	None normally required but may reflect significant rotator cuff pathology. Assess for signs described above.	Suggest GP attendance if pain not settling for further assessment of rotator cuff and for pain relief VFC for young, active, high demand patients
	Distal rupture	With maximal biceps contraction: Proximal bulge/Pain over anterior elbow	Significant injury. Delayed repair difficult. Check for weakness of supination	X-ray to check for avulsion fracture Broad arm sling if required	Urgent ortho referral

BONE	INJURY SITE	TYPICAL MECHANISM	PITFALLS/COMPLICATIONS	ED/ MIU/ UCC TREATMENT	FOLLOW-UP
Humerus Document neuro/vascular exam findings carefully for all humeral fractures	Neck	Fall onto limb – usually elderly pt	Displacement may be severe without functional compromise Axillary nerve injury – may recover with time	Collar & cuff. Hanging U-slab if displaced.	VFC for most. Immediate referral to ortho for young, active patients on day of injury
	Greater tuberosity	Fall onto shoulder or outstretched arm	Displacement may lead to cuff dysfunction stiffness or impingement	Collar and cuff. Avoid active elevation/abduction	VFC
	Shaft – usually mid third	Indirect twisting force causes spiral # Direct blow – transverse #	Rare in children – consider NAI Proximal half is common site for pathological # Radial nerve injury – wrist drop. Recovery usually spontaneous if closed	Occasionally require internal fixation. Hanging U slab may be useful for analgesia	VFC unless radial nerve injury in which case, discuss with Orth team
	Supracondylar	Common in children. Fall on outstretched arm	Significant arterial and nerve injury common. Requires careful assessment	Undisplaced – POP with elbow at 90°. Displaced or significant angulation– POP and refer for MUA	VFC if MUA not required and no extreme swelling. Most heal well within 3 weeks
	Lateral epicondyle	Rare. Mostly children. Caused by a fall	May require fixation if displaced	As above	As above
	Medial epicondyle	Usually children – avulsed by flexor muscles during a fall, dislocation or subluxation of the elbow	Ulnar nerve injury	As for supracondylar injuries	As for supracondylar injuries

Bone	Injury site	Typical Mechanism	Pitfalls/complications	ED/ MIU/ UCC Treatment	Follow-up
Elbow	Dislocation	Heavy fall on outstretched hand. Usually posterior	Vascular & nerve injury possible.	Reduction in ED with procedural sedation as required. X-ray before and after. Above elbow POP at 90° or C&C if adequate pain relief and stability	VFC
	Effusion without obvious bony injury on XR	Various	Missed #. Usually radial head # in adults or supracondylar # in children	C&C or POP if required for comfort	If clinical examination suggests an underlying radial head # then discharge with patient info leaflet If a supracondylar # suspected then refer to VFC
	Pulled elbow	Traction injury in toddler but may occur in babies	A clinical diagnosis – X-Rays usually not required	Manipulate once adequately. If unsuccessful C&C.	None if successfully reduced. If unsuccessful then advise GPreview within 48hrs
Radius	Radial head & neck	FOOSH	Posterior interosseous nerve injury: Check wrist/finger extension	C&C.	Urgent review if displaced. Otherwise discharge with advice leaflet
	Shaft	FOOSH or direct blow	Galeazzi – associated dislocation of distal radio-ulnar joint.	May require MUA but depends on degree of angulation and age of pt. If forearm clinically bent – will require MUA. Above elbow POP	Immediate referral to ortho if requires MUA or Galeazzi Otherwise VFC

Bone	Injury site	Typical Mechanism	Pitfalls/complications	ED/ MIU/ UCC Treatment	Follow-up
Radius - continued	Distal metaphysis - Colles #	FOOSH	Median nerve injury	1. High energy, young pt or complex intra-articular - perform first -aid MUA in ED only if neurovascular compromise or off ended. 2. For frail osteoporotic pts with low demand on wrist MUA in ED as needed, followed by below elbow POP 3. All other pts - MUA in ED. Below elbow full split POP	1. Immediate referral to ortho 2. VFC 3. Immediate referral to ortho if inadequate position. Otherwise VFC
	Distal metaphysis Smith's or Barton's #	FOOSH	Median nerve injury	Above elbow POP with wrist dorsiflexed.	Immediate referral to ortho
	Styloid	FOOSH	none	Simple below elbow POP	VFC
	Buckle/ Torus in 1-16yr olds	FOOSH	Missed #	1. Stable Torus i.e. buckle to one cortex, with no deformity, angulation <15° on XR, not involving the growth plate and within the stable zone (distance from the physis < width of physis) - Splint 2. All other torus #s - Below elbow POP	1. Discharge with Futuro splint for up to 3 weeks and patient info leaflet. 2. Below elbow POP and VFC. Consider immediate referral if significant deformity

Bone	Injury site	Typical Mechanism	Pitfalls/complications	ED/ MIU/ UCC Treatment	Follow-up
Ulna	Olecranon	Fall on point of elbow	Open # Displacement by pull of triceps tendon. Ulna nerve injury	1. Hairline crack with minimal displacement – above elbow POP. 2. Displaced - above elbow POP 3. Open – washout, antibiotics and above elbow POP	1. VFC 2. Immediate referral to ortho 3. Immediate referral to ortho
Carpus	Scaphoid	FOOSH in young adults. Rare before puberty.	Delayed union; non-union; avascular necrosis; osteoarthritis Always document ASB tenderness and request scaphoid views if present. If <14yrs obtain AP/Lateral of wrist only	All suspected and confirmed scaphoid # - scaphoid cast/ backslab	Refer all ?scaphoid # to next available hand clinic If patients present to ED/ MIU for follow up then re-examine the wrist with the cast off and discuss with hand team/ on call ortho team prior to further imaging
	Triquetral – small flake # best seen on the lateral	Hyperextension of the wrist.	Full function usually restored	Futura splint or POP for pain relief	Discharge with patient info leaflet or VFC if given POP
	Lunate dislocation	FOOSH High speed RTC (eg motorbike)	May be missed. Suspect when sig swelling but no fracture seen at first.	Splint or POP for pain relief	Immediate referral to ortho - needs reduction and internal fixation

Bone	Injury site	Typical Mechanism	Pitfalls/complications	ED/ MIU/ UCC Treatment	Follow-up
Thumb	1 st Metacarpal Base – Bennett’s # May extend into the joint	Longitudinal blow – eg boxing or forced abduction	Often unstable if joint involved and may require fixation	POP if no joint extension. Ensure adequate position and no extension into joint with a check X-Ray in cast	Next available hand clinic Refer immediately if extends into joint or displaced
	Ulnar collateral ligament (Gamekeeper’s/ Skier’s thumb)	Forcible abduction	Suspect if tender in this region. Test for abnormal ‘give’ on stressing the UCL. Significant permanent disability possible if missed	Scaphoid backslab (not elastoplast spica)	If avulsion on XR or obvious laxity then refer immediately Refer to hand clinic if less clear at presentation
Hand	5 th Metacarpal neck (Boxer’s #)	Punch injury	Tooth injury (Fight Bite)	1. Closed - angulation up to 40° is acceptable. Buddy strap and analgesia 2. Open/bite injury – Washout. antibiotics and buddy strap	1. Discharge with patient info leaflet 2. Immediate referral to ortho
	5 th MC shaft			MC shaft POP	Hand clinic
	Other metacarpals	Common at all ages from a blow to the hand	May cause shortening & rotation If involving the base of metacarpal obtain true lateral to assess posterior displacement	1. Position acceptable – buddy strap for comfort and encourage early mobilisation. 2. Some displacement or on-going discomfort - POP e.g. ulnar gutter with MCPJs at 90° and interphalangeal joints extended 3. If severe displacement or rotation – buddy strap	1. VFC 2. Next available hand clinic 3. Immediate referral to ortho

Bone	Injury site	Typical Mechanism	Pitfalls/complications	ED/ MIU/ UCC Treatment	Follow-up
Hand - continued	Phalanges – proximal & middle phalanx	Often simple & undisplaced	Occasionally angulated – tends to increase due to intrinsic muscle pull. Beware rotational deformity	If >10° angulation correct under ring block. # usually stable in flexion so consider strapping over a rolled bandage or simple buddy strap.	Next available hand clinic
	Terminal phalanx	Often a direct blow or laceration	Open #, sometimes displaced. Nailbed injury	<ol style="list-style-type: none"> 1. No bony injury 2. Open # - washout and antibiotics. Don't close the wound. 3. Closed # - buddy strap for comfort 4. Nail bed/ fold injury – clean the wound and replace the nail if possible 	<ol style="list-style-type: none"> 1. Discharge 2. Refer immediately to hand surgeon 3. Discharge 4. Immediate referral.
	Mallet finger (soft tissue injury only)	Forcible flexion of an extended finger	Dropped fingertip	Mallet splint for 6/52	Discharge with leaflet and GP or hand physio FU
	Mallet Finger (with avulsion: look for bony flake at extensor tendon insertion)	Forcible flexion of an extended finger	Non-union	Mallet splint	Hand clinic in 1 week and give advice leaflet.

Bone	Injury site	Typical Mechanism	Pitfalls/complications	ED/ MIU/ UCC Treatment	Follow-up
Hand - continued	MCP & IP joint dislocations	Usually result from hyperextension	If one look for others Associated head/neck #	Reduce under LA or entonox. Buddy strap and X-Ray post reduction	Next available Hand clinic If not reduced then immediate referral
	Cuts/Wounds	Multiple causes	Nerve	Document neurological status prior to any LA	If nerve injury refer immediately
			Tendon - careful assessment of movement and direct vision of the tendon	1. <1/3 tendon width laceration & normal movement or power – washout, close wound & buddy strap, splint in extension 2. >2/3 tendon width laceration or concerns re. movement or power – washout & non-adherent dressing	1. Hand Clinic 2. Immediate referral to ortho
			Artery	If does not stop with 5 mins pressure and elevation then it may be a partial arterial laceration – check distal cap refill	If unable to stop bleeding or concerns re. distal ischaemia: Below elbow laceration - Immediate referral to ortho Above elbow laceration - Refer to vascular team.
			Lacerations to the palm of the hand – risk of scar & contracture		Wounds requiring closure with sutures - discuss with on-call ortho team prior to closure in ED/MIU
Bites		Infection of deep structure	Clean and irrigate	Discuss all bites which have broken the skin below the elbows with the on call team	

2.2. **Lower limb:** Advice on the appropriate initial management of orthopaedic patients presenting to emergency departments in the Cornwall area.

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BONE	INJURY SITE	TYPICAL MECHANISM	PITFALLS/ COMPLICATIONS	ED/ MIU/ UCC TREATMENT	FURTHER MANAGEMENT
Femur: Implies a high degree of violence in younger patients: X-ray hip and knee to exclude other fractures/ dislocation if significant trauma. Consider pelvic/spinal injury	# Neck NB in young active patients this is a clinical emergency	Commonly a fall in the elderly – unable to weight bear. Leg may be shortened & externally rotated. Requires extreme violence in the young	Impacted # may be difficult to see on initial X-Rays. Consider CT or if ongoing pain and/or struggling to mobilise. Note: any patient who is discharged from ED or CDU after a hip injury with no fracture seen on X-ray requires a hip injury advice leaflet to return if problems.	Most require operative fixation. Utilise the #NOF pathway to expedite imaging, analgesia and transfer to trauma ward. Provide a fascia iliaca nerve block with monitoring unless contraindicated + parenteral analgesia +/- iv fluids if any delay. Clerk on trauma proforma and complete mental health assessment in over 65s.	Immediate referral via ortho SHO and trauma coordinator. In patients under 65 prompt referral is vital. Provide patient info leaflet to all patients who are discharged home i.e. patients with no clear # on X-Ray and safe for discharge.
	Hip dislocation	RTC or fall: Axial force along femur with hip flexed. Leg may be short, adducted externally rotated.	Acetabular fracture, knee or sciatic nerve injury Be alert for other significant injury as requires extreme violence	Orthopaedic emergency: Will normally require emergency surgery within 6 hours.	Immediate emergency referral to ortho.
	Dislocated THR	Internal/External rotation with hip flexed. Leg short and internally/externally rotated.	Recurrence. Sciatic nerve injury: Note neurovascular status	Normally by ortho in theatre (always for 1 st dislocation) Consider in ED ONLY if GA& analgesia available. Trained personnel only and ED consultant must approve.	Immediate referral to ortho
	Slipped Upper Femoral Epiphysis (SUFE) in children	Occurs as a chronic problem or acutely as a Salter-Harris I #, often during sport. Usually 8yrs or older	Request frog lateral view: May be missed on AP pelvis. Knee pain with a normal knee examination may represent hip pathology.	Immediate referral for fixation	Immediate referral to ortho

BONE	INJURY SITE	TYPICAL MECHANISM	PITFALLS/ COMPLICATIONS	ED/ MIU/ UCC TREATMENT	FURTHER MANAGEMENT
Femur - continued	Femoral Shaft	Any age. Usually significant force – often RTC or fall from a height. Consider non-accidental injury in children	Common site for pathological #. Note neurovascular status: Arterial injury can occur. X-Ray whole femur to exclude hip #/dislocation/ knee injury	Kendrick splint, iv access and femoral nerve block (unless contraindicated) including children.	Immediate referral to ortho
	Femoral condyles	High energy injury except in frail/elderly.		Above knee backslab. Usually require fixation. Undisplaced # may be treated NWB in AK POP	Immediate referral to ortho
KNEE: Check for lipo-haemarthrosis on lateral knee X-Ray: - Implies intra-articular injury Consider aspirating for analgesia if tense haemarthrosis. Always check hips/abdo if a knee exam is normal	Patella #	Direct blow, sudden contraction of quadriceps or both	Check and document extensor mechanism: Ability to straight leg raise or if pain allows to straighten leg from flexed (more sensitive)	Above knee backslab Congenital bi-partite patella may mimic #. Skyline view if unsure.	If displaced or multifragmentary – Immediate referral to ortho If undisplaced and able to actively extend - VFC
	Patella dislocation	Usually lateral after direct blow or sudden muscular contraction. May be recurrent.	Often reduced by time of assessment. Tenderness over medial quads attachment may indicate recent dislocation	Reduce with adequate analgesia & may require mild sedation: Fully extend knee then gentle pressure to lateral aspect of patella. Cylinder cast or cricket pad splint	VFC - may require urgent MRI +/- repair of medial patello femoral ligament
	Quadriceps or patellar tendon rupture	Abrupt muscular contraction +/- direct blow	Check and document extensor mechanism: Ability to straight leg raise or if pain allows to straighten leg from flexed (more sensitive).	If diagnosis is in question then USS is helpful.	Immediate referral to ortho - tendon must be re-attached surgically

Bone	Injury site	Typical Mechanism	Pitfalls/ Complications	ED/ MIU/ UCC Treatment	Further management
KNEE - continued	Knee ligaments: Isolated medial collateral, lateral collateral, ACL or PCL injuries	Injury common in sports	Exclude gross instability and posterolateral corner injury (PLCI). Associations: haemarthrosis, capsular tear, meniscal tear or tibial spine #. X-Rays often normal	Often too painful to assess clinically at presentation. Crutches and analgesia Must document distal N/V status	ED physio appointment at 5-7 days or referral to local physio via patient's own GP Immediate referral to ortho if gross instability. Refer associated injuries as indicated e.g PLCI
	Posterolateral corner injury (PLCI)	Sport/RTC/Fall. Hyperextension or anteromedial trauma	Often missed. Can be associated with knee ligament and nerve injury	Dial Test: Patient prone, External rotation of tibia with knee at 30° and 90°. +ve if > 10° difference	Immediate referral to ortho
	Knee dislocation	Falls. RTA	Neurovascular injury: Consider CT angiogram	Must document neurovascular exam.	Immediate referral to ortho. Consider concurrent vascular referral
	Meniscus	Twisting injury. True locking. Bucket handle tear = springy block to full extension.	Often settles over 2-3 weeks but prone to recurrent locking or giving way	Crutches and analgesia	VFC If locked knee despite maximal analgesia – Immediate referral to ortho
TIBIA:	Tibial plateau	Common: Longitudinal compression or blow to lateral side of knee (lateral tibial plateau). High violence injury in young	Common peroneal nerve may be damaged.	Above knee backslab. Will usually require fixation. Undisplaced fractures may be treated non-operatively. Consider urgent CT to assess fully	Immediate referral to ortho
	Mid shaft tibia	Direct blow or rotational force.	Compartment syndrome	Above knee POP and split cast. Analgesia. Open fractures should be transferred to Derriford.	Immediate referral to ortho for elevation and compartment syndrome observation.

Bone	Injury site	Typical Mechanism	Pitfalls/ Complications	ED/ MIU/ UCC Treatment	Further management
Tibia - continued	Toddler's #. Undisplaced midshaft, spiral # in a walking child <7yrs old	Often minimal force. Consider NAI if before walking age. Ability to crawl without discomfort indicates that the pathology is below the knee	May not be evident on initial films. Periosteal reaction is often visible on repeat film at day 10	Long leg cast. If no # initially evident then review in local MIU/ED in 2 days. If persistent refusal to weight-bear then replace cast and repeat XR at day 10 post-injury See also pathway on management of limping child	VFC when # evident on XR
	Osgood Schlatter's Disease	Recurrent pain, tenderness & swelling over tibial tubercle usually in teenagers.	May have associated # of tibial tuberosity but this can be tricky to distinguish from usual appearance. X-ray is not always required.	Analgesia, rest and reassurance.	Discharge Patient's own GP can refer on to physio as needed
FIBULA	Head or shaft	Rarely # in isolation. Isolated # may occur with direct blow. Displacement seldom severe.	Common peroneal injury: Check ankle dorsiflexion Check for integrity of ankle as may have rupture of inferior tibio-fibular ligament or medial ligament complex.	If isolated and stable, patients can present after several days. Analgesia and walking below knee cast if needed. Some don't require a cast, but manage to partially WB with crutches	VFC for isolated # Refer associated injuries as indicated
ANKLE: Re-Xray all displaced # after POP to check position NICE advise fixation within 24-36 hours so discuss all ankle fractures with T&O for early admission if surgery needed	Isolated lateral malleolar #: No talar shift and undisplaced	Inversion (common) or eversion (less Common) injury	Unstable if medial (deltoid) ligament complex disrupted. Document examination of medial malleolus and deltoid ligament.	1. Avulsion of the tip of the lateral malleolus – treat as sprain. Can try an Orthopaedic boot if needed for comfort. 2. Proximal Weber A or Weber B without talar shift or deltoid ligament rupture - Orthopaedic boot 3. Weber B or C with suspicion of deltoid ligament rupture – ensure adequate position in below knee backslab	1. Discharge with patient advice leaflet 2. VFC 3. Immediate referral to ortho

Bone	Injury site	Typical Mechanism	Pitfalls/ Complications	ED/ MIU/ UCC Treatment	Further management
ANKLE – CONTINUED Re-Xray all displaced # after POP to check position NICE advise fixation within 24-36 hours so all ankle fractures should be discussed with T&O for early admission if surgery needed	Medial malleolar # or talar shift with no # seen		Check for fibula head tenderness: may indicate # at this site – Maisonneuve #.	Reduce in ED as required, with adequate analgesia +/- sedation	Immediate referral to ortho
	Isolated lateral malleolar # with talar shift	Inversion (common) or eversion (less Common) injury	Talar shift indicates medial (deltoid) ligament is torn. Accurate reduction essential to ensure joint congruity and avoid post traumatic OA	Reduce in ED with adequate analgesia +/- sedation. BK slab POP and split the cast to ensure position maintained. Ensure ankle is at 90° flexion	Immediate referral to ortho after reduction. Refer to ED if unable to reduce in MIU/UCC
	Bi/Tri malleolar # with displacement of talus.	A more severe variation of above leads to the medial malleolus being avulsed rather than ligament rupture.	May be difficult to reduce accurately by manipulation and usually require fixation	Manipulate initially to achieve improved position and, therefore, reduce swelling that can lead to a delay in surgery. BK slab POP and split the cast to ensure position maintained. Ensure ankle is at 90° flexion	Immediate referral to ortho after reduction. Senior review if reduction difficult. If fail to reduce despite good sedation & analgesia will need early operative reduction. Avoid repeated attempts in ED.
	Clinically dislocated ankle injury	Rare but significant forces involved and clinically unstable	May compromise neurovascular supply. Often tight white skin.	Record neurovascular status pre and post reduction. Manipulate before X-Ray to reduce pressure on skin and vessels. Full BK POP and split the cast to ensure position maintained. Ensure ankle is at 90° flexion	Immediate referral to ortho
	Vertical compression or Pilon #	Usually caused by a fall from a height but relatively uncommon	High violence injury. Swelling and pain may be severe	Require referral for fixation in most cases	Immediate referral to ortho

Bone	Injury site	Typical Mechanism	Pitfalls/ Complications	ED/ MIU/ UCC Treatment	Further management
SOFT TISSUE INJURIES ABOUT THE ANKLE	Sprain or rupture of lateral ligament complex	Severe adduction force causing inversion may sprain or, more rarely, completely rupture the lateral ligament complex. Pain and swelling are common with reduced ability to weight bear.	Use Ottawa ankle rules to assess need for X-Ray. Greatest tenderness is often immediately below and anterior to the tip of the fibula. May be difficult to assess initially due to pain	Consider Orthopaedic boot for 5/7 in severe sprains. Otherwise soft tissue management advice +/- crutches with appropriate advice sheet.	Next available ED physio appointment or referral to local physio via patient's own GP
	Rupture of Achilles tendon	Abrupt onset of severe posterior ankle pain. No movement on squeezing the calf. May be a palpable defect	May retain the ability to plantar flex foot but will have no movement on squeezing calf. Refer if in doubt May be missed if calf squeeze not performed.	Below Knee POP in full equinus.	In all patients under 55 years old and especially those active patients with physically demanding employment then discuss with on-call ortho team for consideration of percutaneous surgery. Otherwise VFC
	Strained calf muscle	Similar to Achilles rupture – Achilles clinically intact	Document that Achilles tested and intact clinically	Rest, analgesia and advice that will take several weeks to heal and bruising may be significant.	Discharge – consider ED physio clinic
FOOT:	Talus	Forced dorsiflexion. A rare injury but most often # is through the neck. Occ small flake # are seen without displacement	Small intra articular fragments may represent significant osteochondral injury. Serious if missed. Neck # are prone to non union.	BK backslab for analgesia Flake # may be managed conservatively. Treat talar dome # with BKPOP slab, crutches and VFC follow up.	Refer ortho if any concern, particularly if intra articular bone fragments- CT early

Bone	Injury site	Typical Mechanism	Pitfalls/ Complications	ED/ MIU/ UCC Treatment	Further management
FOOT - CONTINUED	Calcaneum	A fall from a height onto the heel(s). Severe local pain & pt usually unable to weight bear.	May be associated with spinal, pelvic or femoral #: Document spinal pain or tenderness. Obtain calcaneal view and CT if high clinical suspicion but negative films.	If minimal displacement: NWB with crutches. BK backslab only if necessary for pain relief Elevate: Swelling may be extreme If significant joint depression may require CT and possible fixation	Refer ortho for admission and CT
	Tarso-metatarsal dislocation (Lisfranc injury)	Uncommon: Forced inversion or eversion with hindfoot fixed. Occasionally a crush.	May be overlooked if alignment not carefully checked on the X-Ray.	Reduction should be attempted promptly in theatre to reduce the risk of oedema and circulatory impairment.	Refer ortho for admission. CT if displaced
	5 th Metatarsal Base	Common: Avulsion # of peroneus brevis insertion from inversion /equinus . Jones # is 1.5 cm distal to the base of the 5 th MT due to twisting inversion of the foot	Non union may occur in a Jones #. In children the longitudinal epiphysis may be wrongly mistaken for a fracture	Immobilisation not essential for an avulsion # but may be helpful for pain relief – Orthopaedic boot if necessary Immobilise & rest a Jones #- consider a BK backslab	Discharge with appropriate advice leaflet.
	Other metatarsals	Direct blow (maybe multiple) or as a fatigue or stress # (March #)	With crush injury there may be marked swelling. Advise elevation ++ Beware Lisfranc injury	Treat conservatively if minor buckle or minimal displacement. POP if displaced.	Refer if significant displacement of 1 st MT. Other displaced # review in next available # clinic.
TOES:	Phalanges	Usually a crush or stubbed toe. X-Ray only if you suspect MTP joint involved or IP joint dislocation or if the big toe affected	Trephine subungual haematomas for pain relief. No evidence for prophylactic antibiotics	Little or no treatment required. Neighbour strapping or metatarsal pad may be useful. Malrotation may need treatment	Discharge with advice on analgesia and supportive footwear. Consider referral to VFC if big toe

3. Monitoring compliance and effectiveness

Element to be monitored	Use of this guideline will be monitored regularly as part of the ongoing ED and orthopaedic audit programmes.
Lead	Departmental audit leads
Tool	Bespoke audit proforma which will vary with the aspect of the guideline that is being monitored/audited
Frequency	As dictated by departmental audit programmes
Reporting arrangements	Completed audits will be disseminated via the ED and orthopaedic departmental governance meetings. Occasionally these will be combined audit meetings.
Acting on recommendations and Lead(s)	Identified recommendations and action planning will be coordinated by the departmental governance leads with assistance from the audit leads. Changes to practice will be incorporated into departmental induction programmes and will also result in a update to this guideline
Change in practice and lessons to be shared	Required changes to practice will be identified and actioned within 6 months. A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant stakeholders

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the ['Equality, Inclusion & Human Rights Policy'](#) or the [Equality and Diversity website](#).

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Document Title	Orthopaedics in the Emergency Department Clinical Guideline V4.0		
Date Issued/Approved:	December 2018		
Date Valid From:	January 2019		
Date Valid To:	January 2022		
Directorate / Department responsible (author/owner):	Dr Sian Ireland, Consultant Emergency Medicine1 & Mr Sean Dixon, Consultant Orthopaedic Surgeon2		
Contact details:	101872 253219; 201872 253440		
Brief summary of contents	This guideline contains a summary of locally agreed management of orthopaedic conditions commonly seen in the emergency department. It is aimed at junior doctors and emergency nurse practitioners.		
Suggested Keywords:	Orthopaedic guidelines; Emergency Department guidelines		
Target Audience	RCHT ✓	CFT	KCCG
Executive Director responsible for Policy:	Medical Director		
Date revised:	December 2018		
This document replaces (exact title of previous version):	Clinical guideline for orthopaedics in the Emergency Department V3.0		
Approval route (names of committees)/consultation:	Emergency Department Governance Group Orthopaedic directorate meeting		
Divisional Manager confirming approval processes	Mike Butler		
Name and Post Title of additional signatories	Not required		
Name and Signature of Divisional/Directorate Governance Lead confirming approval by specialty and divisional management meetings	{Original Copy Signed}		
	Name: Paul Evangelista		
Signature of Executive Director giving approval	{Original Copy Signed}		
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet & Intranet	✓	Intranet Only

Document Library Folder/Sub Folder	Clinical / Emergency Department
Links to key external standards	N/A
Related Documents:	N/A
Training Need Identified?	Departmental Induction for Junior Doctors

Version Control Table

Date	Version No	Summary of Changes	Changes Made by (Name and Job Title)
28 Feb 12	V1.0	Initial Issue	Sean Dixon, Consultant Orthopaedic Surgeon
1st April 2012	V2.0	Review by Orthopaedic consultant body.	Sean Dixon, Consultant Orthopaedic Surgeon
July 2012	V3.0	Review by ED consultant body	Dr Sian Ireland, Consultant Emergency Medicine
January 2019	V4.0	Minor additions and amendments throughout	Jonathan Wyatt Consultant Emergency Medicine

All or part of this document can be released under the Freedom of Information Act 2000

This document is to be retained for 10 years from the date of expiry.
This document is only valid on the day of printing

Controlled Document

This document has been created following the Royal Cornwall Hospitals NHS Trust Policy for the Development and Management of Knowledge, Procedural and Web Documents (The Policy on Policies). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Initial Equality Impact Assessment Form

This assessment will need to be completed in stages to allow for adequate consultation with the relevant groups.

<i>Name of Name of the strategy / policy /proposal / service function to be assessed</i> Orthopaedics in the Emergency Department Clinical Guideline V4.0						
Directorate and service area: Urgent, Emergency and Trauma Medicine/Emergency Department			Is this a new or existing Policy? Existing			
Name of individual completing assessment: Sian Ireland			Telephone: 01872 253219			
1. <i>Policy Aim*</i> <i>Who is the strategy / policy / proposal / service function aimed at?</i>		To improve quality of care for patients with common orthopaedic injuries by reducing variability and improving timeliness of management of their injuries.				
2. <i>Policy Objectives*</i>		To provide guidance on the management of commonly seen orthopaedic conditions in the emergency department.				
3. <i>Policy – intended Outcomes*</i>		To reduce the time to decision making after diagnosis of the commonly encountered orthopaedic injuries in the ED				
4. <i>*How will you measure the outcome?</i>		Regular departmental audit				
5. <i>Who is intended to benefit from the policy?</i>		Patients & staff at RCHT				
6a Who did you consult with		Workforce	Patients	Local groups	External organisations	Other
		X				
b). Please identify the groups who have been consulted about this procedure.		Please record specific names of groups Emergency Department Governance Group Orthopaedic directorate meeting				

What was the outcome of the consultation?	Ratified
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7. The Impact
Please complete the following table. **If you are unsure/don't know if there is a negative impact you need to repeat the consultation step.**

Are there concerns that the policy could have differential impact on:				
Equality Strands:	Yes	No	Unsure	Rationale for Assessment / Existing Evidence
Age		X		
Sex (male, female, trans-gender / gender reassignment)		X		
Race / Ethnic communities /groups		X		
Disability - Learning disability, physical impairment, sensory impairment, mental health conditions and some long term health conditions.		X		
Religion / other beliefs		X		
Marriage and Civil partnership		X		
Pregnancy and maternity		X		
Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian		X		

You will need to continue to a full Equality Impact Assessment if the following have been highlighted:

- You have ticked “Yes” in any column above and
- No consultation or evidence of there being consultation- this excludes any *policies* which have been identified as not requiring consultation. **or**
- Major this relates to service redesign or development

8. Please indicate if a full equality analysis is recommended.		Yes		No	X
9. If you are not recommending a Full Impact assessment please explain why.					
There are no adverse effects on any of the protected characteristics.					
Signature of policy developer / lead manager / director				Date of completion and submission	
Sian Ireland				January 2019	
Names and signatures of members carrying out the Screening Assessment		1. Sian Ireland 2. Human Rights, Equality & Inclusion Lead			

Keep one copy and send a copy to the Human Rights, Equality and Inclusion Lead
c/o Royal Cornwall Hospitals NHS Trust, Human Resources Department, Knowledge Spa,
Truro, Cornwall, TR1 3HD

This EIA will not be uploaded to the Trust website without the signature of the Human Rights, Equality & Inclusion Lead.

A summary of the results will be published on the Trust's web site.

Signed _ Sian Ireland _ _____

Date _____ January 2019 _____