1. **Purpose of this document** - This clinical protocol provides a clear framework for nurses employed by Torbay & Southern Devon Health & Care Trust when providing care to patients over 2 years of age presenting at Minor injury Units with Hand and Finger injuries.

2. **Scope of the Policy**: This protocol is for the use by Minor Injury Unit staff employed by Torbay and Southern Devon Health Care Trust who has achieved the agreed Trust clinical competencies to work under this protocol. **2.1 Red Flag**: Ensure all patients on anticoagulants i.e. Warfarin, Dabigatram etexilate (Pradaxa®), Apixiban (elixis®) and Rivaroxaban (Xarelto®) have appropriate medical follow up/review where risk of bleeding.

3. **Assessment**

   3.1. **Presenting signs and symptoms**: may include some of the following;
   
   - Pain, swelling, bruising/redness, wounds, inflammation/heat, reduced or loss of function, deformity, subluxation/dislocation, Numbness/altered sensation, loss of function

   3.2 **History**: refer to protocol for History taking and Clinical Documentation and the protocol for the management of soft tissue injuries. **Specific History**: Traumatic (direct/indirect), non –traumatic
   
   - Establish mechanism of injury e.g. fall onto outstretched hand, direct blow/impact, twisting injury, fingers hyper extended etc.
   - Hand dominance
   - Previous injury
   - Occupation.

4. **Clinical Examination**: refer also to protocol for the management of forearm and wrist injuries.

   **4.1. Look**
• Symmetry (compare right with left)
• Swelling
• Bruising/discolouration
• Wounds/grazing
• Deformity
• Dislocation/subluxation

4.2. **Feel (palpate)** include forearm and wrist.
• Note any bony tenderness, crepitus, step/deformity over;
• Carpal bones and joints
• Metacarpal bones and joints
• Phalanges and joints
• Collateral ligaments

4.3. **Move**
• Flexion/Extension, hyper extension of fingers.
• Abduction adduction of fingers/thumb, thumb opposition.
• Grip

4.4. **Special Tests**
• Sensation (radial ulnar and median nerves), circulation (neurovascular status) distal to and over injured site.
• Collateral ligament (testing for laxity) NB collateral ligaments of 1st MCPJ
• Thumb compression test/telescoping of thumb (scaphoid).
• Rotational deformity/alignment of fingers/metacarpals.

4.5. **Investigations**
• X-ray where there is clinical indication of fracture or dislocation/subluxation requesting appropriate views such as thumb, finger, hand, wrist or scaphoid views.

5. **Treatment**

5.1 **Metacarpal and phalangeal fractures**

• **Treatment** If there is: (1) No significant soft tissue injury (2) The fracture is in an acceptable position and (3) The fracture is clinically and radiologically stable it can be treated with
• Analgesia as per patient group direction
• Neighbour strapping of relevant fingers and elevation with high arm sling,
• Early mobilisation and appropriate follow-up in Fracture clinic or as per local Acute Trust review/referral pathways.
• Otherwise consider manipulation using appropriate analgesia and/or anaesthesia such as digital ring blocks with lignocaine or administer entenox as per patient group directions.
• **Significant soft tissue injury**: Refer compound injures (apart from fingertip injuries, which may be treated by a senior Emergency
department doctor), nerve or tendon injury, ligament rupture, extensive skin loss or degloving injury to the relevant specialist team after discussion with the Emergency department.

- **Avulsion fractures of the phalanges** are sometimes tiny and undisplaced, and hard to detect on radiography, but these apparently small injuries are potentially serious and may require specialist referral.
- Knowledge of attachments of tendons and ligaments near joints is essential to appreciate their clinical significance:
  - Lateral or medial site insertion of the collateral ligament = potential joint instability
  - Palmer site or volar plate injury = potential loss of flexion
  - Dorsal site extensor tendon attachment = potential loss of extension

- **Treatment of phalangeal fractures** where angulation is less than 10 degrees, 50% bony contact and no rotational deformity:
  - Neighbour strap for finger injuries and high arm sling
  - Thumb Spica for Thumb injuries and high arm sling.
  - Encourage finger exercises (Through full range of movement)
  - Follow up in Fracture clinic
  - Terminal Phalanx fractures without significant pulp injury Treat in high arm sling.
  - Terminal fractures with significant pulp injuries seek emergency department advice, open fractures commence co-amoxiclav as per patient group directions

- **Treatment of unstable fractures** refer to Emergency Department (ED) or orthopaedics for advice.

5.2 **Base 1st metacarpal (Bennetts)**
- **Treatment Undisplaced.**
  - Analgesia as per Patients Group Direction and patient’s pain score.
  - Bennetts plaster
  - Fracture clinic follow up
- **Treatment displaced**
  - Analgesia as per patient group direction and according to patients pain score.
  - Refer to orthopaedics for advice on management.

5.2.1 **Mid/Distal 1st metacarpal Fractures**
- Seek Emergency department senior advice.

5.3 **Thumb Metacarpal** – phalangeal sprain (Ulnar Collateral Ligament (Ulnar collateral ligament) (“Gamekeeper’s thumb”) Radial Collateral Ligament (Radial collateral ligament))
- **Clinical findings:**
  - History of a fall on the thumb or forcible abduction/adduction, e.g. skiing, bicycle injury
  - There is pain and swelling of the thumb Metacarpal-phalangeal joint with loss of grip
- **Radiographs:** Always get a thumb X-ray before testing the ligaments if an metacarpal phalangeal joint injury is suspected
- Collateral ligament rupture is indicated by volar subluxation of the Proximal phalanx or a lateral avulsion fracture
- If there is no fracture or volar subluxation, test the Ulnar collateral ligament and Radial collateral ligament as follows:
  - Explain to patient what you are going to do and test uninjured thumb first.
  - Immobilise the Metacarpal with the thumb and index finger of one hand, and with your other hand stress the ligaments as follows:
  - With the Metacarpal phalangeal joint at 30°, gently and only once hyper abduct (Ulnar collateral ligament) then hyper adduct (Radial collateral ligament) the joint, watching for abnormal ‘give’ and lack of firm endpoint
  - Gently move the Metacarpal phalangeal joint to full extension (if pain permits) and repeat the tests
  - Instability or rupture is indicated by angulation of over 35°, or 15° greater than the non-injured thumb, or lack of firm end point (in both extension and 30° flexion)
  - If the joint is too painful to test adequately and laxity is suspected, get senior ED advice
- **Treatment:** If there is a low index of suspicion of laxity
  - Give analgesia as per Patient Group Direction or advise over the counter analgesia,
  - Apply thumb spica,
  - High arm sling
  - Review in Minor injury unit in 5 -7 days, if remains unclear seek Emergency department review.

**Treatment:** if laxity suspected
- Discuss with Emergency Department for senior review or specialist referral.

### 5.4 Inter-phalangeal dislocations
- **Treatment:**
  - Reduce by traction under digital nerve block, using lignocaine as per patient group direction or according to patient’s pain response using Entenox under patient group direction.
  - Check the collateral ligaments post reduction,
  - Post reduction X-ray to confirm results.
  - Neighbour strap and High arm sling,
  - Analgesia as per Patient Group Direction or advise over the counter analgesia
  - Encourage Exercises of fingers (full range of motion)
  - Fracture Clinic follow up

### 5.5 5th Metacarpal fracture
- **Clinical findings:**
  - Usually result from punching
  - Check for rotational deformity. (If present will require referral)
  - Associated wounds may be compound human bites from punching someone in the mouth, which the patient may not admit (refer to
protocol for the management of Animal and Human bites) – if Fracture present please treat as open fracture.

- **Treatment 5th metacarpal neck fractures** – up to 45 degrees angulation
- Advise/provide analgesia as per patient group direction.
- Neighbour strap 4th & 5th Fingers
- Consider tubigrip to hand/forearm.
- High arm sling
- Encourage finger exercises.
- Fracture clinic follow up.
- Treatment Over 45 degree angulation – refer to ED or Orthopaedics for further management.
- For open fractures treat irrigated copiously with N/saline and treat with antibiotics co-amoxiclav – unless penicillin allergic and discussed with orthopaedics.

- **Treatment 5th metacarpal shaft and base.**
- Advise/provide analgesia as per patient group direction.
- Neighbour strap 4th & 5th Fingers
- Apply wool and crepe or volar slab Plaster of Paris.
- High arm sling.
- Simple exercises
- Fracture clinic follow up
- Displace or angulated fractures require Emergency department or Orthopaedic referral.

5.6 **2nd, 3rd & 4th Metacarpal fractures.**
- Check for rotational deformity and refer if present.
- Treatment:
  - Advise/provide analgesia as per patient group direction.
  - Neighbour strap 4th & 5th Fingers
  - Consider tubigrip to hand/forearm.
  - High arm sling
  - Encourage finger exercises.
  - Fracture clinic follow up
  - If Fracture is unstable or angulated (as previous) refer to Emergency department or Orthopaedics for advice.
  - For open fractures treat irrigated copiously with N/saline and treat with antibiotics co-amoxiclav – unless penicillin allergic and discussed with orthopaedics

5.7 **Mallet Finger**
- A loss of active extension of the distal interphalangeal joint caused by rupture of the extensor tendon slip or avulsion of its attachment to the base of the terminal phalanx
- Caused by forcible flexion of an extended finger, it is common in the elderly or arthritic after minor trauma such as bed making, and as a sports injury, e.g. impact of a cricket ball
Up to a third fails to unite after treatment and there may be some permanent flexion deformity, but these can be greatly improved by careful management, patient information and follow-up. Permanent disability is often well tolerated.

All mallet fingers must be X-rayed.

Classification of Mallet injuries
- Type 1. Rupture of the distal Extensor tendon
- Type 2. Avulsion of the bony attachment of the terminal phalanx
- Type 3 Avulsion of more than one third of the articular surface of the distal phalanx, sometimes with anterior subluxation and/or rotation of the fragment.

Treatment of Type 1 & 2
- Splint: Apply mallet splint and tape in place, keeping distal the distal inter-phalangeal joint in mild hyperextension while allowing full movement of the proximal inter-phalangeal joint. Trim the splint as necessary to allow this. The splint should be a close fit but should not cause discomfort or blanching of the skin, which could lead to ulceration.
- Occasionally a splint cannot be applied because of swelling or wound dressings. Consider using volar splint made from a wooden spatula (tongue depressor) to immobilise the distal inter-phalangeal joint only, discuss with ED in unsure.
- Advice (provide patient with mallet finger advice leaflet)
  - Explain that the joint must be continuously in extension for about 8 weeks in the splint without allowing any flexion, while not taping over the proximal inter-phalangeal joint. Advise that up to a third may fail to unite, and that even with good union there may be some extension lag.
  - The splint may be removed and reapplied if really necessary by the patient or practitioner (wound care/general hygiene) but care must be taken to ensure that the distal inter-phalangeal joint remains hyperextended for example resting on the surface of a table during the procedure.
  - Arrange hand clinic follow up type 1 and fracture clinic for type 2

Treatment Type 3 and compound mallet fractures
- Refer to orthopaedics/fracture clinic for further advice/management
- Late diagnosed mallet finger
- Extension splintage may be worth attempting even as late as six months, especially in children. Discuss with the patient and primary care doctor

5.8 Jersey Injury (Flexor Digitorum Profundus FDP)
• Forced hyper extension of an actively flexed Distal Inter-phalangeal (DIP) joint e.g. Football/rugby player grabs player’s jersey on tackle, lifting hatch on door.
• Symptoms: Pain and swelling in at volar aspect of DIP.
• Localised tenderness and fullness if tendon retraction.
• Affected finger more extended at DIP when hand at rest.
• Inability to extend at affected Joint.
• Assessment: Do not passively force finger into extension.
• Assess Flexor Digitorum Profundus (FDS) actively at DIP – avulsions result in inability to flex at Distal Inter-phalangeal Joint
• Also Assess FDS actively for Proximal inter-phalangeal joint flexion.
• Treatment: Refer to Orthopaedics/Plastics as surgical repair required.

5.9 Subungual Haematoma
• Treatment;
• Consider trephining, particularly if painful
• X-ray if pulp is tender and clinically indicated, joint possible involved or would otherwise affect management.
• Antibiotics are not needed solely because the nail has been trephined over a closed fracture.
• If fracture present review in 1 week GP/minor injury unit
• Do not routinely remove nail for a simple haematoma

5.10 Crush Injury
• Treatment: X-ray
• Do not suture crush or burst wounds of the finger pulp. (As they may swell a lot)
• Clean/irrigate wound (under Local anaesthetic, lignocaine as per Patient Group Direction)
• Skin closure e.g. Steristrip (Always avoid full circumference steristrips)
• Appropriate dressing and High arm sling
• Give Analgesia as per Patient Group Direction or advise over the counter analgesia.
• Review in 2-3 days.
• Crush injuries with open fractures, irrigate copiously with n/saline, commence on co-amoxiclav oral antibiotics (unless allergic to penicillin) and discuss with orthopaedics re management.

5.11 Thumb Bennetts fracture – dislocation. Carpal-metacarpal dislocations
• Refer to Emergency department for further advice/management.

5.11 Boutonniere deformity at proximal inter-phalangeal joint
• Usually a closed injury that needs early management. Also common in rheumatoid arthritis
• The finger extensor tendon normally has two lateral slips (inserting into the distal phalanx) and a middle slip inserting into the base of the middle phalanx
• If this middle slip ruptures the base of the middle phalanx may ‘button-hole’ through while the remaining lateral slips lie alongside the joint, acting as flexors at the Proximal inter-phalangeal joint while extending the distal inter-phalangeal joint. This produces the characteristic deformity.
• Apply a splint to hold the proximal inter-phalangeal joint straight
• Refer to Emergency department or orthopaedics according to local acute Trust referral pathway.

6. Documentation

6.1. Clinical records must be written in accordance with Torbay and Southern Devon Health & Care Trust History Taking and Clinical Documentation protocol and the Nursing & Midwifery Council guidelines of records and record management (2009).

6.2. A summary letter of the MIU attendance and the care delivered must also be sent to the General practitioner and also the health visitor if less than 5yrs or school nurse if aged between 5yrs and 16yrs to ensure the central medical record of the patient is accurate.

6.3. For patients being transferred to the Emergency department, ensure clinical records are completed in a timely manner on shared symphony IT system. A summary letter will be sent to the General practitioner in the normal manner.

6.4. For patients seeing the General practitioner or specialist within the next 24 hours ensure the patient has a copy of the attendance record to take with them. A copy will be sent to the General practitioner in the normal manner.

7. Discharge information

7.1 Ensure those patients who have been referred for further acute intervention has appropriate transport to meet their needs, all relevant treatment has been prescribed and/or administered and correct information & documentation is given to the patient.

7.2 The patient/carer understand that if the condition deteriorates or they have any further concerns to seek medical advice.

7.3 The patient and/or carer demonstrate understanding of advice given during consultation.

7.4 The patient/carer has been provided with written advice leaflet to reinforce advice given during consultation.

7.5 The patient/carer demonstrates and understanding of how to manage

8. Training and implementation:

• MIU Network meeting Cascade.
• All staff adhering to protocols must have agreed training and proven competence to work within protocol. Each protocol must be agreed and signed by line manager.

9. Monitoring tool – Regular review of clinical practice to ensure individuals are adhering to clinical protocol.

10. References

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• NHS Devon Protocol for the management of soft tissue injuries
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• Minor Emergencies Splinters to fractures. Butteovolli P, Stair T 2000
• Minor Injuries, A Clinical guide. Purcell D. 2nd edition 2010
• South & West Devon Formulary
• Torbay Care trust Management of Limb simple fractures and soft tissue injuries.
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Amendment History

<table>
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<tr>
<th>Issue</th>
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<tr>
<td>Version 1</td>
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<td>Reviewed – management of open fractures with antibiotics and referral included in metacarpal and phalangeal fractures. Documentation – amendments to reflect new symphony IT system.</td>
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