

	Emergency Nurse Practitioner CLINICAL PRACTICE GUIDELINE <b>INJURY – OPEN WOUNDS</b>	<b>JOONDALUP</b> HEALTH CAMPUS
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Scope		Outcomes
<b>Nurse Practitioner</b>	<ul style="list-style-type: none"> <li>All open wound injuries</li> </ul>	Identify patients suitable for ED NP CPG
<b>Medical Practitioner +/- Nurse Practitioner</b>	<ul style="list-style-type: none"> <li>Wound requiring specialist suture technique</li> <li>Haemorrhage uncontrolled</li> </ul>	Identify patients not suitable for ED NP CPG and redirect to usual ED care +/- ED NP in team.
Initial Assessment and Interventions		Outcomes
<b>Primary Survey</b>	<ul style="list-style-type: none"> <li>Airway</li> <li>Breathing</li> <li>Circulation</li> </ul>	Abnormal primary survey identified → exit CPG
<b>History</b>	<ul style="list-style-type: none"> <li>MIST Mechanism, injuries sustained, signs-vitals, treatment - given pre hospital management</li> <li>Range of movement / ability to weight bear</li> <li>Deformity</li> <li>Past medical history / medications</li> <li>Allergies / immunisations / tetanus status</li> <li>Last food / fluids</li> <li>Compensable status - MVIT / WC / DVA / Private Insurance</li> </ul>	Identify patients not suitable for ED NP CPG → exit CPG
<b>Focused clinical assessment</b>	<p>Assess size and location of wound Classify by: -</p> <ul style="list-style-type: none"> <li>Severity - Superficial / Penetrating</li> <li>Degree of Contamination – Clean / Contaminated / Infected</li> <li>Depth -epidermis/dermis/subcutaneous/ muscle fascia/bone</li> <li>Cause – Intentional / Unintentional</li> <li>Description and Location – Lac / Abrasion / Contusion / Incision / Puncture</li> <li>Consider facial lacerations with view of referral to Plastics/Surgical Unit</li> <li>Consider hand lacerations with view of referral to Plastics Unit</li> <li>Consider lacerations overlying a joint with view of referral to surgical/orthopaedic unit.</li> <li>Consult with ED Consultant for wounds requiring suturing in young children</li> </ul> <p>After anaesthetising of wound</p> <ul style="list-style-type: none"> <li>Look and explore the wound for any underlying structures i.e. Tendon injury</li> </ul> <ul style="list-style-type: none"> <li>If bony tenderness or suspicion of foreign body see appropriate CPG</li> </ul>	<p>Determine method of closure and additional management required</p> <p>Determine necessity for sedation for good wound apposition</p>

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<b>Neurovascular Assessment</b>	<ul style="list-style-type: none"> <li>• colour</li> <li>• warmth</li> <li>• movement</li> <li>• sensation</li> <li>• capillary refill</li> <li>• peripheral pulse</li> <li>• nerves/tendons( a thorough understanding of anatomy and function of the injured limb is essential for proper management <sup>[1]</sup> )</li> </ul>	Identify patients not suitable for ED NP CPG → exit CPG
<b>Pain Assessment</b>	<ul style="list-style-type: none"> <li>• Pain scale</li> </ul>	Determine need for and type of analgesia
<b>Analgesia / First Aid Management</b>	<ul style="list-style-type: none"> <li>• First aid               <ul style="list-style-type: none"> <li>- rest</li> <li>- ice / immobilisation</li> <li>- compression</li> <li>- elevation</li> </ul> </li> <li>• Administration of analgesia (see medications)</li> </ul>	Reduction / relief of pain. Minimise or prevention of complications
<b>Working diagnosis and Investigations</b>		<b>Outcomes</b>
<b>Imaging</b>	<p>No imaging required if</p> <ul style="list-style-type: none"> <li>• trivial injury <sup>[1]</sup></li> <li>• patient has full range of motion</li> <li>• no bony tenderness</li> </ul> <p>X-ray required if</p> <ul style="list-style-type: none"> <li>• Pain localised to area suggestive of bony tenderness</li> <li>• Suspicion of FB</li> <li>• Suspicion of tendon injury<sup>[1]</sup></li> <li>• Ultrasound may be required if</li> <li>• Non radio-opaque material such as glass or wood may be embedded <sup>[1]</sup></li> <li>• Pre operative CXR and ECG may be required as discussed with admitting medical officer.</li> </ul>	Detect foreign body or determine joint involvement
<b>Pathology</b>	<p>Not routinely indicated but consider</p> <ul style="list-style-type: none"> <li>• Wound swab if moderate or severe infection especially when there is spreading cellulitis or signs and symptoms of systemic infection.<sup>(8)</sup></li> <li>• IV access and insert cannula if required</li> <li>• Pre operative investigations may include FBP, U&amp;E, Group and Hold and INR as discussed with admitting medical officer.</li> </ul>	Ongoing assessment of need for intravenous access

Interpretation of results (diagnostic features) and management decisions		Outcomes
<b>Diagnosis</b>	<ul style="list-style-type: none"> <li>• <b>Clean wound</b> – appears clean, no evidence of contamination, healthy tissue present, good apposition of wound edges evident</li> <li>• <b>Contaminated wound</b> – evidence of contamination and presence of debris in wound, devitalisation of wound edges. Extent of contamination of the wound and/or location of wound will determine whether referral to Plastics/Orthopedic/Surgical unit is required. The patient may require surgical debridement of the wound in an operating theatre if extensive.</li> <li>• <b>Nerve damage</b> – evidence of peripheral nerve damage after focussed clinical examination will require referral to specialty unit dependent of injury sustained and location in conjunction with EP</li> <li>• <b>Tendon damage</b> – evidence of peripheral tendon damage will require referral to specialty unit, in conjunction with EP, dependent on location of wound and injury sustained.</li> <li>• <b>Other</b> - Need for antibiotics and or tetanus will depend on patient MIST and wound examination findings as per therapeutics guidelines<sup>[2]</sup></li> </ul>	<p>Patient identified as suitable for ED NP CPG and discharged safely</p> <p>Correct diagnosis made and Patient referred to specialty units for intervention prior to discharge home safely or further management +/- admission</p>
<b>Cleaning of wound<sup>5</sup></b>	<p><b>Wound irrigation<sup>[3]</sup></b></p> <ul style="list-style-type: none"> <li>• A 30ml syringe attached to 19g cannula without the stylet should be used to copiously irrigate with 0.9% NaCl<sup>[3, 4]</sup></li> <li>• <b>Wound cleansing<sup>[4]</sup></b> Chlorhexidine solution soaked gauze used to topically clean wound</li> </ul> <p><b>Contaminated wounds</b> - 1% Povidine Iodine applied for 3 – 5 minutes then washed off.<sup>[3, 4]</sup></p>	

<p><b>Management</b></p>	<p><b>a. Tissue Adhesive</b> <sup>[5]</sup>        Simple laceration &lt;3cm in length –ensure good skin apposition. <sup>[5]</sup>        Consider for lacerations in children</p> <p><b>b. Steri-strip</b>        May be adequate in simple laceration in areas with little skin tension ie. not over joints– requires patient compliance, keep dry for 72hrs, minimal movement</p> <p><b>c. Suture</b>        Select appropriate suture material        Absorbable / Non-Absorbable        Wound usually requires infiltration with local anaesthetic        Allows for thorough wound examination / cleaning</p> <p><b>d. Dressing</b>        Consider: -        Dressing will be required for closure of wounds. Select appropriate dressing according to need.        Absorption of blood / exudate        Wound immobilisation / pain relief        Application of pressure        Occlusion of dirt, bacteria and inquisitive fingers        Aesthetic covering</p>	<p>Selection of appropriate closure material will ensure good wound healing and cosmesis</p>
<p><b>Associated Care</b></p>	<p>Further care appropriate to patient's medical history and disposition i.e. surgical intervention.</p>	
<p><b>Acute Referral</b></p>	<ul style="list-style-type: none"> <li>• Referral to          +/- Allied health          +/- discharge coordinator          +/- interpreter</li> </ul>	

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<b>Patient discharge education</b>		<b>Outcomes</b>
<b>When to return</b>	<ul style="list-style-type: none"> <li>• Verbal instructions from ED NP</li> <li>• ED written patient information</li> </ul>	Ensure patient understands problem, treatment, follow up and is safe for discharge home
<b>Follow up appointments</b>	<ul style="list-style-type: none"> <li>• Verbal instructions from ED NP</li> <li>• Written instructions for LMO/Fracture clinic (if applicable)</li> <li>• OPD appointment book (if applicable)</li> </ul>	Ensure patient understands problem, treatment, follow up and is safe for discharge home
<b>Medication instructions</b>	<ul style="list-style-type: none"> <li>• Verbal instructions from ED NP</li> <li>• Contact ED Pharmacist to provide medication education for patient when available.</li> <li>• Written information as per Hospital Pharmacy on medications dispensed.</li> </ul>	Ensure patient understands problem, treatment, follow up and is safe for discharge home
<b>POP care when appropriate</b>	<ul style="list-style-type: none"> <li>• Verbal instructions from ED NP</li> <li>• Appointment for Plaster check in 24hrs with LMO</li> <li>• ED written patient information</li> </ul>	Ensure patient understands problem, treatment, follow up and is safe for discharge home
<b>Safety assessment i.e. crutches</b>	<ul style="list-style-type: none"> <li>• Appropriate fitting of crutches and ambulation instructions from ED NP / physiotherapist</li> <li>• Patients &gt; 60 yrs of age consider referrals</li> </ul>	Ensure patient understands problem, treatment, follow up and is safe for discharge home
<b>Other Referrals</b>	Referrals may be made for specific patient problems or as required to; <ul style="list-style-type: none"> <li>- social work</li> <li>- physiotherapy</li> <li>- drug and alcohol counsellor</li> <li>- aboriginal liaison officer</li> </ul>	Ensure patient understands problem, treatment, follow up and is safe for discharge home
<b>Certificates</b>	<ul style="list-style-type: none"> <li>• Absence from work certificates</li> <li>• WC certificate</li> <li>• Certificate of attendance</li> </ul>	Appropriate documentation completed
<b>Letters</b>	<ul style="list-style-type: none"> <li>• Local medical officer letter</li> </ul>	Ensures continuity of care and referral to health care team

<b>Medications</b>		<b>Outcomes</b>
All medications will be stored, labelled and dispensed in accordance with hospital policy and relevant legislation <sup>[6]</sup>		
<b>Simple analgesia</b> <sup>[7]</sup> <b>S2</b> <b>Mild pain</b>	<p><b>Paracetamol 500mg:</b> 1 or 2 tablets 4-6/24, not to exceed 8 tablets in 24 hrs.</p> <p><b>Children:</b> 15 mg/kg 4 hourly up to 4 times a day. Not to exceed 4 doses in 24 hours</p> <p><b>Painstop Day:</b> 0.6-0.8 mls/kg <sup>(6)</sup></p>	<p>Patients given analgesia appropriate to allergies, current medications and past medical history.</p>
<b>S4</b> <sup>[7]</sup> <b>Moderate</b>	<p><b>ADD to paracetamol if still in pain</b></p> <p><b>Naproxen</b> 500 mg initially then 250 mg 6 – 8 hourly</p> <p><b>Children;</b> <b>Ibuprofen:</b> 10 mg/kg 3-4 times daily to maximum of 600 mg in 24 hours <sup>(7)</sup></p> <p><b>If NSAIDS contraindicated,</b> <b>Tramadol</b> <b>Adults and Children &gt; 12 years</b> <b>Contraindicated in epilepsy, SSRI use</b> <b>Caution in the Elderly – Maximum 300 mg daily</b> Oral: 50-100mg QID, maximum 400mg over 24 hours OR Intravenous: 50-100mg QID, maximum 600mg over 24 hours</p>	<p>Analgesia requirements determined by ongoing assessment of pain and adequate analgesia</p> <p>Provided.</p> <p>Patients with excessive pain or pain unrelieved by analgesia need review by EP.</p>
<b>Narcotic Analgesia</b> <sup>[7]</sup> <b>S8</b> <b>Severe</b> <b>Reassess</b>	<p><b>ADD to paracetamol + NSAID if still in pain</b></p> <p>Currently NPs require Medical Prescription for Schedule 8 medication</p> <p><b>Oxycodone:</b> <b>Adults only;</b> Oral: 5mg every 4 hours OR <b>Morphine</b> <b>Adults;</b> Intramuscular/intravenous: 2.5mg then incremental doses to a maximum total dose of 10mg (given over period of 30 minutes)</p> <p><b>Children;</b> IM – 0.2 mg/kg IV: 0.1- 0.2 mg/kg/dose given in titrated doses:</p> <p><b>IF PAIN NOT CONTROLLED WITH ALL 3 AGENTS, REFER TO ED CONSULTANT</b></p>	

<p><b>Local Anaesthetic S4</b></p>	<p><b>Lignocaine 1%:</b> <b>Lignocaine 1% with adrenaline 1:200,000</b></p> <ul style="list-style-type: none"> <li>• <b>Adrenaline not used for digits, nose, ears or penis</b></li> </ul> <p>Lignocaine local infiltration; <b>Max 3mg/kg</b></p>	
<p><b>Antibiotics</b> <sup>[2,9]</sup></p>	<p><b>Low Risk :</b> Not routinely used for clean wounds not involving tendons or joints that can be adequately debrided and irrigated and are seen within 8 hours</p> <p><b>High Risk:</b> Dirty wounds</p> <p><b>Amoxicillin+clavulanate:</b> 875+125mg orally 12hourly for 5 days Children: <b>Amoxicillin+clavulanate:</b> 400 + 57 mg 2 months – 12 years &lt;40 kg 45 mg/kg in 2 divided doses for 5 – 10 days And <b>Procaine Penicillin 1.5g IMI</b> if commencement delayed Children: Max dose 50 mg/kg once daily</p> <p><b>If infection evident</b></p> <p><b>Metronidazole:</b> 400mg po 12 hourly 5-10days Children: 7.5 mg/kg 8 hourly PLUS</p> <p><b>Ceftriaxone:</b> 1g IV, daily 5-10 days Children: 50mg/kg daily Consider <b>Cephazolin</b> 1 gm 12 hourly if Hospital in the Home likely.</p> <p><b>For patients with penicillin hypersensitivity</b></p> <p><b>Metronidazole:</b> 400mg po, 12 hourly 5-10 days Children: 7.5 mg/kg 8 hourly PLUS</p> <p><b>Doxycycline:</b> 200 mg loading dose then 100mg po, daily 5-10 days Children: &gt; 8 years. 2 mg/kg BD on day 1 then once daily OR</p> <p><b>Trimethprim+sulfamethoxazole:</b> 160+800mg po, 12hourly 5-10days Children: 4+20mg/kg 12 hourly OR</p> <p><b>Ciprofloxacin:</b> (authority prescription ) 500mg po, 12 hourly 5-10 days Children: 5-10mg/kg 12 hourly</p>	

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<b>Vaccine S4</b>	<p><b>Tetanus Immunoglobulin</b> intramuscular Injection</p> <p><b>Absorbed diphtheria and tetanus toxoids (ADT) 0.5ml</b> intramuscular Injection</p> <p>Or</p> <p><b>Tetanus Toxoid:</b> 0.5ml IM injection</p> <p>Refer to Australian Immunisation Handbook 8<sup>th</sup> Edition - section on Immunisation for tetanus prone wounds - for dosage regimen (dependent upon previous immunisation status and type of exposure) online @ <a href="http://www1.health.gov.au/immhandbook/">http://www1.health.gov.au/immhandbook/</a></p>	
<b>Clinical Audit Evaluative strategies</b>		
<b>Unexpected representation</b>	Emergency Department attendance register and ED NP clinical log	
<b>References</b>		
<ol style="list-style-type: none"> <li>1. Freeman, P., Hand injuries, in Textbook of Adult Emergency Medicine. 2004, Churchill Livingstone: Sydney. p. 142-147.</li> <li>2. eTG 2006 [cited 2006 Mar 14]; Available via Hospital Intranet</li> <li>3. Solutions, techniques and pressure for wound cleansing, Best Practice. [The Joanna Briggs Institute] c2003 [cited 2006 Feb 17]; Available from: <a href="http://www.joannabriggs.edu.au">http://www.joannabriggs.edu.au</a>.</li> <li>4. Waller, R., Wound care and repair, in Textbook of Adult Emergency Medicine. 2004, Churchill Livingstone: Sydney. p. 109 -113.</li> <li>5. Farion, K., et al., The Cochrane Library, in Tissue adhesives for traumatic lacerations in children and adults., Update Software: Oxford.</li> <li>6. JHC Medication Storage and Administration Policy. Available via Hospital Intranet</li> <li>7. eMIMS 2006 [cited 2006 Mar 16]; Available via Hospital Intranet.</li> <li>8. The Royal College of Pathologists Australasia RCPA Manual. [The Royal College of Pathologists of Australasia] 2004. [cited April 19 2006]; Available from: <a href="http://www.rcpamanual.edu.au">http://www.rcpamanual.edu.au</a></li> <li>9. Australian Medicines Handbook. 2005 [cited 2006 April 19]; Available via Hospital Intranet.</li> </ol>		

**This CPG was written by:**

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**Key to Terms**

**ED NPC-** Emergency Department Nurse Practitioner Candidate

**EP-** Emergency Physician

**PS-** Pain Score

**S1-S4-** Schedule of the drug administration act

**LMO-** Local Medical Officer

**OP-** Outpatients

**CPG-** Clinical Practice Guideline

**WC-** Work cover

**MVIT-** Motor vehicle insurance trust

**DVA-** Department of Veteran Affairs