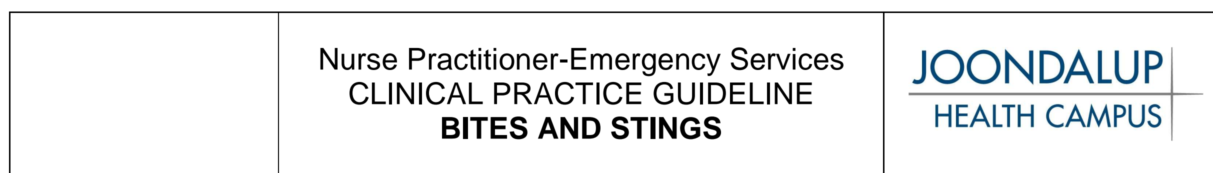

Scope		Outcomes
Nurse Practitioner	History of bite or sting.	Identify patients suitable for NP (Emergency) CPG
Medical Practitioner +/- Nurse Practitioner	• Bites that may require antivenom • Bites to the face in children • Bites or stings causing swelling to neck • Mammalian bites to the hand • Mammalian bites greater than 12 hours old. • Patients exhibiting signs of anaphylaxis • Patients with complex medical conditions or immunologically suppressed. • Extensive cellulitis and/ or systemically unwell. • Oral cavity stings	Identify patients not suitable for NP (Emergency) CPG and redirect to usual ED care +/- NP (Emergency) in team.
Assessment & Intervention		
Primary Survey	• Airway • Breathing • Circulation • Disability • Environment	Abnormal primary survey identified → exit CPG and refer to EP.
History	• Hx of bite/sting including time of bite/sting, the causative creature and any treatment received prior to presentation e.g. sting removed • Relevant past medical history/ medication use • Allergies • Previous anaphylaxis • Immunisation history • Social/occupational circumstances	Identify patients not suitable for NP (Emergency) CPG → exit CPG and refer to EP.
Focused clinical assessment	• Assess size, location, depth and surface of bite/sting site. • Assess range of movement, • Assess neurovascular status and tendon functions • Assess for signs of anaphylaxis • Assess for erythema, sweating of affected area or pilorection • Assess pain – local or spreading	Determine extent of problem.

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	proximally, involving lymph channels and nodes, becoming truncal. Assess severity. • Assess for any systemic symptoms – nausea, vomiting, abdominal pain, headache, migratory arthralgia, hypertension, tachycardia, profuse sweating, restlessness, insomnia, muscle weakness and twitching. [10, 11]	
Pain Assessment	• Pain scale	Determine need for and type of analgesia.
Analgesia	• Hot water baths or Ice as appropriate • Administration of analgesia – see formulary	Reduction / relief of pain.
Working diagnosis and Investigations		**Outcomes**
Imaging	• Marine stings – x-ray may be required to exclude the presence of cartilaginous barb remnants from marine creature injuries i.e. stingray/ cobbler. • Mammalian bites – x-ray may be required if doubt whether wound may potentially be penetrating a joint capsule or to rule out a fracture or a retained tooth fragment.	Detect foreign body or determine joint involvement.
Pathology	• Consider FBC ± U&E if systemic symptoms, prolonged inflammation despite medical intervention, or relevant co-morbidities. • Blood Culture if Temp >38[5] or toxic clinical picture • Wound Swab MC&S if history of no improvement despite antibiotic therapy. • Pre operative investigations may include FBP, U&E, Group and Hold and INR as discussed with admitting medical officer.	Detect underlying pathology. Identify degree of systemic involvement

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Interpretation of results and Management decisions		Outcomes
Insects **Bees, Ants and Wasps and spiders**	NP (Emergency) review with view to discharge • Remove the bee sting by scooping it off with fingernail. • Apply cold compress to reduce swelling and pain. • Simple analgesia • Urticaria with no systemic effects can be managed with antihistamines. See formulary • If evidence of cellulitis see Inflammation suggestive of Cellulitis CPG • Patient education/ health promotion	Ensure patient understands problem, treatment and follow up and is safe for discharge home.
Local reaction to insect bites and stings. Redness around bite/sting +/- ascending lymphangitis and absence of systemic symptoms i.e. Fever, headache, vomiting, myalgia	NP (Emergency) review with view to discharge • Elevate affected limb • No need for antibiotics • Review in 24 hours by GP • Return if develop fever or vomiting • Patient education/ health promotion	
Red Back Spider Bites - Pain - localised sweating - unimpressive bite site	NP (Emergency) review with view to referral to EP. • If well and no indications for antivenom – discharge if able to easily return if onset of symptoms occurs later. • Consider use of Antivenom after discussion with EP only if evidence of systemic envenomation or very severe local pain unresponsive to adequate analgesia if it is confirmed red back spider bite.	Assessment by EP

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Sea Creatures: Stingray, Cobbler or Jellyfish injuries	NP (Emergency) review with view to discharge or referral to orthopaedic team if FB or penetrating injuries suspected. • Immerse the stung limb in hot water (as hot as can stand) [1] • Analgesia as per formulary • X-ray in stingray injuries to exclude the presence of cartilaginous barb remnants • Early referral of confirmed or suspected penetrating injuries as debridement and surgical exploration may be necessary. • Check tetanus status • Patient education/ health promotion • Evidence of FB or extensive injury - consider need for antibiotics	Assessment by Orthopaedic Unit. Patient discharged or admission arranged
Mammalian Bites Dog, cat and Human bites. [3] Wounds to the hands and puncture wounds demonstrate a particular high risk of infection.[2]	NP (Emergency) review with view to discharge, or referral to Orthopaedic or Plastics speciality • Clenched fist – tooth injuries – see **Hand Injuries CPG**. Require special attention. • Local anaesthetic to allow adequate wound toilet • Debridement of devitalised tissue • Large volume irrigation – 30 ml syringe and 19 g blunt needle [4] • Referral to Plastics Team if neurovascular impairment or tendon damage suspected on hands, otherwise Orthopaedic Team. Consider Plastics referral if cosmetic issue. • Wound closure – Consider closure of wounds on individual basis. Infected wounds, puncture wounds and wounds older than 24 hours should be left open. Bite wounds to hands should be left open. Non-puncture wounds elsewhere may be treated by primary closure after thorough cleaning[12] • Check tetanus status • Elevation	Ensure patient understands problem, treatment and follow up and is safe for discharge home. Advice ± Assessment by Orthopaedic or Plastics team. Patient discharged or admission/transfer arranged.

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	• Analgesia – see formulary • Follow up – see in 1 – 2 days by GP or ED if concerned • High Risk Wounds – consider prophylactic antibiotics – see formulary • Patient education/ health promotion	
Tick Removal	NP (Emergency) review with view to discharge • Remove tick with forceps using a straight slow method to prevent leaving the mouthparts embedded.[6]	Ensure patient understands problem, treatment and follow up and is safe for discharge home.
Associated Care	• Consider IV fluids if patient fasting for surgical intervention • Consider ECG /CXR for patients who require surgical intervention.	
Acute Referral	Referral to • Interpreter • Allied health	
Patient Discharge Education		**Outcomes**
When to return instructions	• If becomes febrile and unwell • If signs infection • Adverse reaction/ intolerance to oral antibiotics • Develop signs of serum sickness if treated with antivenom – fever, pruritus and arthropathy	Patient understands treatment and follow up and is discharged safely.
Follow-up Appointments	• Verbal instructions from NP (Emergency) • Written instructions for GP Review (if applicable)	
Medication Instructions	• Verbal/written instructions from NP (Emergency)	

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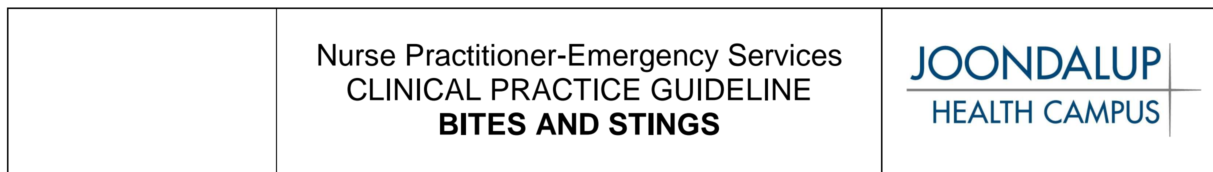

Letters	• Letter for GP	
Certificates	• Absence from work certificates • WC certificate	

Medication	
All medications will be stored, labelled and dispensed in accordance with hospital policy and relevant legislation (7)	
Patients given analgesia appropriate to allergies, current medications and past medical history. Analgesia requirements determined by ongoing assessment of pain and adequate analgesia provided. Patients with excessive pain or pain unrelieved by analgesia need review by EP	
Simple analgesia (8) **S2** Mild pain	**Paracetamol 500mg**: 1 or 2 tablets 4-6/24, not to exceed 8 tablets in 24 hrs. **Children:** 15 mg/kg 4 hourly up to 4 times a day. Not to exceed 4 doses in 24 hours **PAINSTOP DAY:** 0.6 - 0.8 MLS/KG
NSAIDS (8) **S4** Moderate	**ADD to paracetamol if still in pain** **Naproxen** 500 mg initially then 250 mg 6 – 8 hourly OR Instead of Paracetamol, **Panadeine Forte:** 1 -2 tablets 4–6/24, not to exceed 8 tablets in 24 hrs. **Children;** **Ibuprofen:** 10 mg/kg 3-4 times daily to maximum of 600 mg in 24 hours (7) **If NSAIDS contraindicated,** **Tramadol** **Adults and Children > 12 years** **Contraindicated in epilepsy, SSRI use** **Caution in the Elderly – Maximum 300 mg daily** Oral: 50-100mg QID, maximum 400mg over 24 hours OR Intravenous: 50-100mg QID, maximum 600mg over 24 hours

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Narcotic Analgesia [8] **S8** Severe Reassess	**ADD to paracetamol + NSAID if still in pain** Currently NPs require Medical Prescription for Schedule 8 medication **Oxycodone: Adults only;** Oral: 5mg every 4 hours OR **Morphine** **Adults;** Intramuscular/intravenous: 2.5mg then incremental doses to a maximum total dose of 10mg (given over period of 30 minutes) **Children;** IM **–** 0.2 mg/kg IV: 0.1- 0.2 mg/kg/dose given in titrated doses: **IF PAIN NOT CONTROLLED WITH ALL 3 AGENTS, REFER TO ED CONSULTANT**
Antiemetics [8] **PRN S4**	**Metoclopramide hydrochloride:** Oral/IM/IV:10-20mg 8/24 **Prochlorperazine:** Oral 5-10mg 8-12/24, if acute IM deep 12.5 mg 8/24. Not in children
IV Fluids	**0.9% Sodium Chloride Intravenous fluid:** 5-10ml flush of Intravenous cannulae 6/24 or Infusion at 8-12hrly titrated to patients requirements. For children discuss with EP
Digital Nerve Blocks	• Documented neurovascular assessment PRIOR to administration of digital nerve block. • 1% Lignocaine **NO ADRENALINE** • Max 3 mg/kg
Antibiotics [8]	**<u>Low risk</u>**: Antibiotics may not be necessary for mild wounds not involving tendons or joints that can be adequately debrided and irrigated and that are seen within 8 hours. **<u>High Risk:</u>** Wounds having a high risk of infection include: • Wounds with delayed presentation (>8 hours) • Puncture wounds unable to be debrided adequately • Wounds on hands, feet or face • Wounds with underlying structures involved (e.g. bones, joints, tendons) • Wounds in the immunocompromissed patient These wounds Presumptive Therapy is necessary;

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Presumptive therapy use:
Amoxicillin + clavulanate 875 + 125 mg (child: 22.5 + 3.2 mg/kg up to 875 + 125 mg) orally, 12 hourly for 5 days.

If the commencement of the above is likely to be delayed, give:
Procaine penicillin 1.5 g (child: 50 mg/kg up to 1.5 g) IM, as a single dose, followed by amoxicillin + clavulanate as above.

For patients hypersensitive to penicillin, see '**Established Infection**' (below)

Alternatively, as a single preparation use:

Ticarcillin + clavulanate 3 + 0.1 g (child: 50 + 1.7 mg/kg up to 3 + 0.1 g) IV, 6 hourly

For patients with immediate penicillin hypersensitivity, use:
Metronidazole 400 mg (child: 10 mg/kg up to 400 mg) orally, 12 hourly

PLUS EITHER

1. Doxycycline 200 mg (child > 8 years: 5 mg/kg up to 200 mg) orally, for the first dose, then 100 mg (child:> 8 years: 2.5 mg/kg up to 100 mg) orally, daily

OR

2. trimethoprim + sulfamethoxazole 160 + 800 mg (child: 4 + 20 mg/kg up to 160 + 800 mg) orally, 12 hourly

OR

3. Ciprofloxacin 500 mg (child: 10 mg/kg up to 500 mg) orally, 12 hourly. (caution in renal failure) **Authority** Script required**. (Not drug of First choice in children)**

Established Infection

For severe and penetrating injuries, treatment duration is usually a total of 14 days (IV + oral). Longer therapy is needed for injuries involving bones, joints and/or tendons.

Metronidazole 400 mg (child: 10 mg/kg up to 400 mg) orally, 12 hourly.

PLUS

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	Ceftriaxone 1 g (child: 25 mg/kg up to 1 g) IV daily **Water Related Infections** Rx of most of these infections is difficult. **Advice should be sought from a clinical microbiologist or an infectious diseases physician. Particularly the management of water related infections in children.** May require, after discussion with above; **Ciprofloxacin:** 200 **-** 400mg (child: 10 mg/kg up to 400 mg) IV, 12 hourly (Caution in renal failure)(**Needs microbiologist approval – not recommended in children as first line)** **OR** **Ciprofloxacin** 500 – 750 mg (child: 10 mg/kg up to 500 mg) orally, 12 hourly. (Caution in renal failure) **Doxycycline:** 200 mg (**child > 8 yrs**: 5 mg/kg up to 200 mg) orally for First dose followed by Doxycycline 100 mg (**child> 8 yrs**: 2.5 mg/kg up to 100 mg) orally, 12 hourly.
Red Back Spider Antivenom	**500 units IMI.** Repeat after 1 hour if symptoms not resolved as guided by EP. **For IV administration:** (Dose as guided by EP) Same dose diluted in 100 mls Normal Saline intravenously over 30 minutes. Repeat after 2 hours if symptoms not resolved.
Vaccine S4	**Tetanus Immunoglobulin** intramuscular Injection **Absorbed diphtheria and tetanus toxoids** (ADT) **0.5ml** intramuscular Injection Or **Tetanus Toxoid**: 0.5ml IM injection Refer to Australian Immunisation Handbook 8th Edition - section on Immunisation for tetanus prone wounds - for dosage regimen (dependent upon previous immunisation status and type of exposure) online @ http://www1.health.gov.au/immhandbook/
Clinical Audit Evaluation Strategies	
Unexpected representation	Emergency Department attendance register and NP (Emergency) Clinical Log

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Key to Terms

CPG- Clinical Practice Guideline
DVA- Department of Veteran Affairs
EP- Emergency Physician
HITH – Hospital in the Home
PS- Pain Score
S1-S4- Schedule of the drug administration act
LMO- Local Medical Officer
MVIT – Motor Vehicle Insurance Trust
NP (Emergency)- Nurse Practitioner – Emergency Services
OP- Outpatients
WC- Work cover

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