Scope		Outcomes
Nurse Practitioner	• Knee injury, pain, swelling or deformity	Identify patients suitable for NP (Emergency) CPG
Medical Practitioner +/- Nurse Practitioner	• Compound # / obvious fracture dislocation/ dislocation • Neurovascular compromise • Locked knee • Dislocated Patella • Multiple injuries • Altered conscious state including effects of drugs / alcohol • History consistent with collapse	Identify patients not suitable for NP (Emergency) CPG and redirect Mx to usual ED care with NP (Emergency) part of the ED team.
Initial Assessment and Interventions		**Outcomes**
History	• Mechanisms of injuries sustained, • Time of injury • Treatment - given pre hospital • Range of movement / Ability to weight bear • Deformity • Past medical history / medications • Allergies / immunisations • Last food / fluids • Compensable status - MVIT/ WC / DVA / Private Insurance	Exclusion criteria identified → exit CPG. Referral to EP.
Neurovascular assessment	• Colour • Warmth • Movement • Sensation • Capillary refill • Peripheral pulses	Neurovascular compromise → exit CPG. Referral to EP.
Focused clinical assessment	• Knee assessment [1, 2] • Ottowa Knee Rules [3] – see Appendices. Not validated for use in patients less than 18 years of age. • Patients < 18 yrs of age with tenderness over growth plate require x-ray.	Determine need for knee x-ray
Pain assessment	• Pain scale	Determine need for and type of analgesia
Analgesia / First Aid	• - rest - ice / immobilisation - compression - elevation • Administration of analgesia (see medications)	Reduction / relief of pain Minimise / prevent swelling
Working diagnosis and Investigations		**Outcomes**
Imaging	• Imaging may not be required if [3] - patient able to weight bear - no bony or focal tenderness - age > 18 years and <55 years • Knee Ultrasound/CT may be suggested by Orthopedic Unit after assessment, if clinical diagnosis of tendon rupture	
Pathology	Not routinely indicated but consider	Ongoing assessment of

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	• IV access and insert cannula if required • Pre operative investigations may include FBP, U&E, Group and Hold and INR as discussed with admitting medical officer.	need for intravenous access
Interpretation of results (diagnostic features) and management decisions		**Outcomes**
Imaging ± clinical features		
No fracture seen and weight bearing. - no effusion Soft tissue injury	• NP (Emergency) review with view to discharge • Apply conforming tubular bandage for comfort and support • Crutches for non weight bearing mode for first 24 hours[1] • Continuing analgesia for the patient to take following discharge from the ED if required or until review • Patient education / health promotion • Follow-up appointment with LMO in 7 days for clinical reassessment and review of formal x-ray report	Patient discharged with review LMO
Stable Ligamentus injury [2] -medial -lateral -anterior cruciate -posterior cruciate -meniscus Effusion or clinical suspicion of injury	• NP (Emergency) review with view to discharge • Apply conforming tubular bandage for comfort and support • Apply knee immobilizer splint[1, 4] • Crutches for non weight bearing mode until return to Orthopedic clinic in 5 – 7 days for reassessment • Continuing analgesia for the patient to take following discharge from the ED if required or until reviewed in clinic • Patient education / health promotion • Follow-up appointment with LMO if required and • Orthopedic clinic appointment made for 5 – 7 days	Patient discharged with review 1/52 Orthopedic Unit
Unstable Ligamentus injury [2]	• NP (Emergency) review with advice from Orthopedic Unit • Treatment varies according to acuteness of symptoms and age of patient • Discuss with Orthopedic Unit who may recommended POP or knee immobiliser • Apply knee immobiliser splint or POP • Crutches for non weight bearing mode until return to Orthopedic clinic in 7 days • Continuing analgesia for the patient to take following discharge from the ED if required or until reviewed in clinic • Patient education / health promotion • Follow-up appointment with LMO if required and • Orthopedic clinic appointment made for 7 days • Patient education / health promotion	Patient discharged with review 1/52 Orthopedic Unit
Fracture undisplaced [5] - patella - tibial tubercle	• NP (Emergency) review with view to referral to Orthopedic Unit for consultation • Review and maintain adequate analgesia • Discuss with Orthopedic Unit whom may recommended knee immobiliser splint or POP • Apply POP or Knee immobilizer splint	Consultation by Orthopedic Unit and Patient discharged with review 1/52 Orthopedic Unit

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	• Crutches for non weight bearing mode until return to Orthopedic clinic in 7 days [5] • Continuing analgesia for the patient to take following discharge from the ED if required or until reviewed in clinic • Follow-up appointment with LMO if required and • Orthopedic clinic appointment made for 7 days • Patient education / health promotion	
Fracture displaced - Femur - patella - tibial tubercle - tibial table	• NP (Emergency) review with referral to Orthopedic Unit for admission and operative repair[5] • Maintain RICE, review and maintain adequate analgesia • Monitor neurovascular perfusion of limb • Maintain nil orally until review • Patient education re admission • IV fluids as per medications	Patient Assessment by Orthopedic Unit for admission
Associated care	• Consider ECG / CXR for patients who require surgical intervention • Consider IV fluids for patients who require fasting for surgical intervention	
Acute Referral	• Consider referral to • +/- physiotherapy • +/- interpreter • +/- allied health etc.	
	Patient discharge education	**Outcomes**
When to return	• Verbal instructions from NP (Emergency) • ED written patient information	Ensure patient understands problem, treatment, follow up and is safe for discharge home
Follow up appointments	• Verbal instructions from NP (Emergency) • Written instructions for LMO/Fracture clinic	Ensure patient understands problem, treatment, follow up and is safe for discharge home
Medication instructions	• Verbal instructions from NP (Emergency) • Contact Pharmacist to provide medication education for patient when available. Written information as per Hospital Pharmacy on medications dispensed.	Ensure patient understands problem, treatment, follow up and is safe for discharge home
POP care	• Verbal instructions from NP (Emergency) • Appointment for Plaster check in 24 - 48hrs with LMO • ED written patient information	Ensure patient understands problem, treatment, follow up and is safe for discharge home
Safety assessment i.e. crutches	• Appropriate fitting of crutches and ambulation instructions. • Patients > 60 yrs of age, consider referrals	Ensure patient understands problem, treatment, follow up and is safe for discharge home

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Other Referrals	• Referrals may be made for specific patient problems or as required to - social work - physiotherapy - drug and alcohol counsellor - aboriginal liaison officer	Ensure patient understands problem, treatment, follow up and is safe for discharge home
Certificates	• Absence from work certificates • WC certificate • Certificate of attendance	Appropriate documentation completed
Letters	• Local medical officer letter	Ensures continuity of care and referral to health care team

Medications	Outcomes
Should pharmaceutical treatment be necessary, the prescriber should refer to the current version of the 'Therapeutic Guidelines" All medication will be stored, labelled and dispensed in accordance with hospital policy and relevant legislation [3]	

Approved medications for nurse practitioner use within this clinical guideline include;

Non Steroidal Anti-inflammatory Drugs

Diclofenac
Ibuprofen
Indomethacin
Naproxen
Meloxicam

Analgesia

Paracetamol with codeine added 8 – 30mg as needed
Tramadaol

Anti-emetic

Metoclopramide
Prochlorperazine
Ondansetron

All medications will be used in accordance with current best practice as outlined in the current edition of Therapeutic Guidelines, Australian Medicines Handbook and MIMS. All available on;
http://www.library.health.wa.gov.au/nmahs/resources/resource.cfm

Intravenous fluids S4	**Adults: 0.9% Sodium Chloride Intravenous fluid:** 5-10ml flush of Intravenous cannula 6/24 or Infusion at 8-12hrly titrated to patients requirements. **Children:** Discuss with ED Consultant.	

Clinical audit evaluation strategies		
Unexpected representation	Emergency Department attendance register and NP (Emergency) clinical log	

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Missed problem	Emergency Department x-ray review	

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Authorship and endorsement

This CPG has been reviewed and is endorsed by nurse practitioner clinical practice guidelines committee Swan/Kalamunda Health Service	**Approved by Executive Committee for NP CPGs** Dr John Keenan Director of Clinical Services Signature________________ Date ______________ Annemarie Alexander Director of Nursing and Midwifery Services Signature________________ Date ______________ Halena Halton Nurse Practitioner Signature________________ Date______________ Robin Moon Nurse Practitioner Signature________________ Date______________

Key to terms	**Appendices**
CPG- Clinical Practice Guideline **DVA**- Department of Veteran Affairs **EP**- Emergency Physician	Ottawa Knee Rules

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LMO- Local Medical Officer **MVIT –** Motor Vehicle Insurance trust **NP (Emergency)** - Nurse Practitioner – Emergency Services **OP**- Outpatients **PS**- Pain Score **S1-S4**- Schedule of the drug administration act **WC**- Work cover	
Written: June 2006 **Reviewed :** Reviewed April 2010	**Review date:** April 2012

Ottawa Knee Rules[10]
For Knee Injury Radiography

A knee x-ray series is only required for knee injury patients with any of these findings:

1. age 55 or older
   OR
2. isolated tenderness of patella (no bone tenderness of knee other than patella)
   OR
3. tenderness of head of fibula
   OR
4. inability to flex to 90 degrees
   OR
5. inability to bear weight both immediately and in the emergency department for 4 steps (unable to transfer weight twice onto each lower limb regardless of limping)

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