

Hinged Knee Brace	
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This document is relevant to all WH sites, including Bacchus Marsh, Melton and Caroline Springs	

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1. Overview

A Hinged Knee Brace (HKB) is used to support and stabilise an injured knee. This intervention can restrict movement while the knee heals after an injury or surgery. A HKB has a hinge in the middle of the brace which can be locked to stop bending and/or straightening of the knee depending on the type of injury. The brace is set to a specific range of movement by the treating medical officer.

This guideline should be used for the management of a HKB at Western Health.

2. Applicability

This guideline relates to all clinical and support staff that have direct contact with patients who have a HKB insitu at Western Health facilities with no exclusions.

3. Responsibility

Western Health clinical staff have the responsibility to be aware of and comply with this guideline. Medical, Nursing, Midwifery, Education, Allied Health leadership teams and the Non-Weight bear Coordinator staff are responsible for implementing this procedure.

4. Authority

Only an Orthopaedic Consultant can authorise exceptions to this clinical guideline.

5. Associated Documentation

In support of this guideline, the following Manuals, Policies, Instructions and/or Guidelines apply:

Name	
P-GC2	Comprehensive Care
OP-GC2	Pressure Injury Prevention and Management
OP-GC2	Pressure Injury Prevention Equipment
OP-CC4	Wound Care Management
WEST0193931	Intermittent Opioid Analgesia and Observations of Acute Pain Management

6. Credentialing Requirements

Medical, Nursing, and Allied Health department managers or equivalent will ensure staff have the knowledge and skills to perform the clinical practices outlined in this guideline.

7. Definitions and Abbreviations

7.1 Definitions

For purposes of this guideline, unless otherwise stated, the following definitions shall apply:

Term	Define term, including reference if there is a separate authoritative source of the definition
Nil	

7.2 Abbreviations

For purposes of this guideline, unless otherwise stated, the following abbreviations shall apply:

Abbreviation	Expanded abbreviation, including reference if there is a separate authoritative source of the definition
APMS	Acute Pain Management Services
EMR	Electronic Medical Record
HKB	Hinged Knee Brace
IPOC	Interdisciplinary Plans of Care
PI	Pressure Injury
ROM	Range of Motion
WH	Western Health

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8. Guideline Detail

8.1 Indications for use

Indications for knee immobilisation and restrictions to knee range of motion may include:

- Ligament repairs/injuries such as anterior and posterior cruciate ligaments; and medial and lateral collateral ligaments
- Meniscal repairs
- Tibial plateau fractures
- Patella fractures
- Patella tendon repairs
- Quadricep tendon repairs
- Osteochondral repairs
- Condylar fractures
- Sprains/strains of the knee
- High Tibial Osteotomy

8.2 Medical Prescription

- Management of a HKB is prescribed by the Orthopaedic team.
- A Medical Officer is required to document in a progress note or post operative orders:
 - Instructions for use including frequency and duration of when the brace can be removed,
 - A plan to check underlying skin integrity to prevent pressure injuries from developing
 - Degrees the brace is to be set at for range of movement
 - Non-weight bear/weight bear instructions

8.3 How to fit, apply and remove a Hinged Knee Brace

- Fit, application and removal of the brace typically requires one person if the patient is able to lift and move their leg independently while keeping their knee within the restrictions of the brace as per the Orthopaedic team prescribed orders when the brace is removed.
- If this is not possible additional persons will be required to lift, move and stabilise the patient's leg
- HKBs come in right, left and universal. Right and left braces are pre-bent to allow for natural angle and shape of the leg. Universal braces are straight they are not shaped; therefore, they require bending to fit the right or left side. Universal is the standard HKB used at WH.
Note: All types of braces may require further bending or shaping to ensure the brace is safe and effective.
- HKBs are fully adjustable in their length and width.

8.3.1 How to fit a Hinged Knee Brace

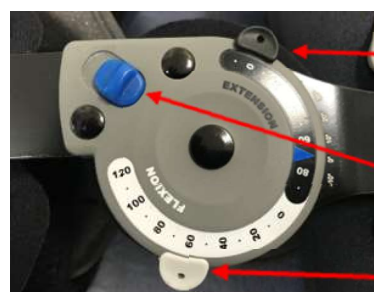
An EMR referral should be placed to the Physiotherapist or Orthopaedic (Plaster) Technologist to provide, fit and adjust brace as per Orthopaedic orders. EMR referrals can be placed by Orthopaedic team, Non Weightbear Coordinator or Nursing staff.
Note: Only trained staff can fit and adjust the brace.

Steps to ensure correct fit of hinged knee brace:

1. Prepare the patient by getting them to sit or lie on the bed.
2. Position the limb is in a neutral position ensuring the limb is not externally/internally rotated
3. Check foot plantar grade for fitting
4. Check prescription for ROM of the brace. (Locked, full extension etc.) and adjust ROM accordingly



Hinge



Button to change knee straightening movement

Drop Lock switch

Button to change knee bending movement

5. Lay HKB next to the limb to be applied
6. Ensure the centre joint of the brace (black button) aligns with mid patella
7. Ensure for proximal end of brace has clearance of approximately 5cm of the groin area. The lateral part of the brace must be fitted slightly longer or the same as the medial part of the brace

8. Ensure for distal end of brace: both lengths should match and be slightly above the malleoli to allow full ROM of the ankle
9. After finalising lengths of brace, proximal tibial cuff must be fitted just below the knee
10. If required, brace uprights need to be shaped accordingly to fit the patients leg profile
11. Round knee pads on the inside of each upright should either just lightly touch or be 1cm away from the medial and lateral sides of the tibial femoral joint line
12. Attach straps according to the manufacture recommendations
13. Stand patient to ensure slippage has not occurred. If slippage has occurred, revisit points 2, 3, 4, 5 and adjust accordingly

Note: If the brace is unable to achieve the above criteria, if there are any concerns with the fit or the patient is at high risk of developing pressure injuries staff are to contact Orthopaedic (Plaster) Technologist in hours Ph. 0407548623 or Physiotherapist out of hours.

8.3.2 How to apply and remove

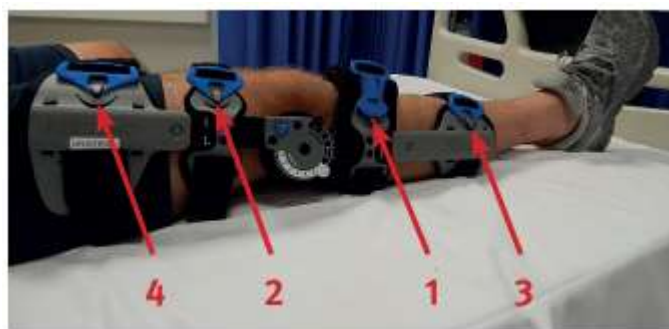
Once the brace has been correctly fitted the HKB can be applied and removed by Nursing, Medical and Allied Health staff.

8.3.2.1 Applying the brace

1. Hold the brace up; the wider part of the brace should be around the patient's thigh, and the black foam cuff should be around the patient's calf
2. Place the brace underneath the patient's leg, with the patient's knee at the level of the round foam pads. The brace may go under or over clothing depending on how loose the clothes are



3. Fasten the straps by placing the blue clip on the opposite grey hook starting with number 1 as shown in the picture below
4. Once the patient's leg is correctly lined up in the brace, fasten straps 2, 3 and 4 as shown in the picture below



5. Ensure each strap is not too tight; this can be checked by placing two fingers under the straps. If you are unable to slip two fingers under the strap, it is too tight and must be adjusted to avoid compromising skin integrity

6. If the brace slips down the leg when standing, it will need to be tighten further as outlined in steps 3 and 4.



8.3.2.2 Removing the brace:

1. Undo all straps, followed by the foam liner
2. Lift the patients leg high enough to remove from under the patient if required whilst supporting the ankle and knee
3. Do not change the settings on the two dials. The two dials on the brace indicate the range of motion of knee extension and knee flexion allowed.
4. The blue switch unlocks and locks the dial

8.4 Nursing management

- Where the brace is able to be removed, this will need to be determined and documented by the Orthopaedic team, care should be taken to ensure the knee remains within the restrictions of the brace as per the Orthopaedic team. At no time are adjustments to be made to the brace, which can change the ROM without medical consultation
- All patients with a HKB must have a documented plan in consultation with medical staff to check underlying skin integrity and prevent pressure injuries from developing
- All patients with a hinged knee brace insitu should have regular skin checks to the affected limb. Skin checks should be attended to at least once per shift on the affected limb, this will require the brace to be removed (refer to [8.3.2.1](#) and [8.3.2.2 How to Apply and Remove](#)) so skin can be inspected and assessment for:
 - Skin breakdown
 - Skin redness and/or localised heat
 - Existing pressure injuries and the potential for developing pressure injuries
 - Oedema
 - Pain, irritation or rubbing

Note: To inspect the back of the leg the patient may need to be turned on their side, this may require additional persons to assist with turning and to stabilise the knee and leg within the restrictions of the brace as per the Orthopaedic team.

- Skin integrity assessment must be documented in the ‘Adult Risk Assessment’ section of the EMR or on the relevant paper forms for non EMR sites.

Note: If a wound is identified then a wound chart should be commenced and appropriate referrals made
- Hygiene to the affected limb should be attended to daily. This can be performed by placing the affected leg on the bed, unfastening the straps and using a wipe or wet flannel to wash the leg.
 - Patients may be able to shower, refer to [8.5 Care of the brace](#) for more information
- Staff are required to document in the patients progress notes when the brace is removed, care attended to and if there are any issues, for EMR sites care can be documented in the ‘Devices – Pressure Injury Surveillance’ band in iView.

8.4.1 Management of a pressure injury

When a pressure injury is identified, the clinician should:

- Notify the Nurse in Charge and treating medical officer
- Notify the Orthopaedic team to review and consider making adjustments to the brace, this may include changing the angles so pressure points are changed reducing further injury over the impaired site once redness or a pressure injury has developed
- Communicate the pressure injury stage and preventative strategies at handover
- Inform the patient and his or her carers of the pressure injury and provide education on how to manage and prevent pressure injuries if applicable
- Skin integrity issues to be documented in the EMR ‘problems list’ by the referring unit
- Complete a comprehensive assessment of the pressure injury and document in EMR this includes commencing a Wound Chart and updating the Comprehensive Care IPOC
- Complete a RiskMan identifying pressure injury stage and location

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8.4.2 Wound care management

- If a wound is identified, a wound chart should be commenced and wound care order placed in the Comprehensive Care IPOC in the EMR
- If any signs of redness are noted, a Mepilex non-border foam is recommended to be placed on the affected site.
- The site should be checked each shift by lifting the Mepilex non-border foam and then resecuring
- A Wound Care Consultant referral should be made for:
 - Stage 2 pressures injuries that cannot be managed by ward staff
 - All stage 3, 4, unstageable pressure injuries and suspected deep tissue injuries

8.5 Care of the brace

- Braces are for single patient use only
- The brace should be kept dry and clean at all times
- The brace should not get wet, if the brace is required to be worn at all times; patients can still shower, with the brace insitu, however, the brace will need to be covered with a plastic bag to protect it from getting wet
- The brace can be spot cleaned using a damp cloth as needed

8.6 Allied Health management

- The treating Physiotherapist of a patient with a HKB:
 - Can fit and adjust brace as per documented prescription by the Orthopaedic Team if stock is readily available on the ward and the Plaster Technicians are unavailable.
Note: If there are any concerns with the fit of the brace staff should contact Orthopaedic (Plaster) Technologist for further advice Ph. 0407548623
 - Adjust range of motion on the brace as per orthopaedic orders, refer to section [8.3.1 How to fit a Hinged Knee Brace](#)
 - Assess mobility and provided ward mobility recommendations in line with brace requirements and weight-bearing instructions as per orthopaedic orders
 - Prescribe exercises within Orthopaedic orders to minimise risk of adverse events such as deep vein thrombosis.
 - Complete a skin assessment and check underlying skin integrity and assess for any risks for pressure injury

8.7 Pain management

- Patients should be regularly assessed, at least once per shift for the presence of pain when a HKB is insitu and document as per procedure *OP-GC3 Intermittent Opioid Analgesia and Observations of Acute Pain Management*.
- Consider administration of oral opioid at least 30 minutes prior to performing care, Physiotherapy or attending to procedures that may cause pain or discomfort to the affected limb (refer to medication chart)
- A pain management plan should be developed and reviewed regularly. Consider referral to APMS if procedural pain cannot be managed effectively with prescribed routine opioid administration.

8.8 Patient education

- Patients should routinely be educated and encouraged to:
 - Report any discomfort when the brace is in situ
 - Report if the brace is not fitted appropriately i.e., too loose or too tight
 - Not alter or tamper with the brace settings in any way
 - Practice circulatory exercises as per Physiotherapist' recommendations to minimise risk of adverse events

8.9 Escalation of care and troubleshooting

- Any continuing pain, discomfort, neurovascular change or change in placement of the brace should be reported to the treating medical officer.
- Any change in placement of the brace should be reported to the Physiotherapist
- Any wound or pressure injury identified should be reported to the Nurse in Charge, treating medical officer and Orthopaedic team.
- For issues relating to the make of brace, the manufacturer or supplier should be contacted by the Non-weightbear Coordinator.

8.10 Cessation of therapy

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Duration of therapy as prescribed by the Orthopaedic team.

9. Document History

Number of previous revisions: New

Previous version dates: Not applicable this version

Minor amendment: Not applicable this version

10. References

Any reference to statutes, legislation or other sources that relate to this guideline should be listed in full detail here. Cross reference with External Accreditation Standards.

The external frameworks, standards & programs informing this guideline include:

- Physiotherapy Outpatient Services Western Health, How to adjust your hinged-knee brace (HKB)
- Austin Health, Patient information, Hinged Knee Brace (HKB), V01.2, 2021
- Eastern Health, Procedures for use of External Orthopaedic Devices,
- Hip and Knee bracing: Categorization, Treatment Algorithm, and Systematic Review. Kember et al. Journal of the American Academy of Orthopaedic Surgeons. Global research & reviews [J Am Acad Orthop Surg Glob Res Rev] 2021 Jun 07; Vol. 5 (6), pp. e20.00181-12. *Date of Electronic Publication:* 2021 Jun 07
- NHS Ashford and St. Peter's hospital. Patient information V2 , Dec 2021
- NHS Royal Berkshire, Hinged Knee brace, Physiotherapy Department – Hinged knee brace information and exercises, June 2021
- Townsville Hospital and Health Service, Range of Motion (ROM) Brace Fact Sheet, V1, 2023

11. Sponsor

Orthopaedic Head of Unit

12. Authorisation Authority

Executive Director of Nursing and Midwifery

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