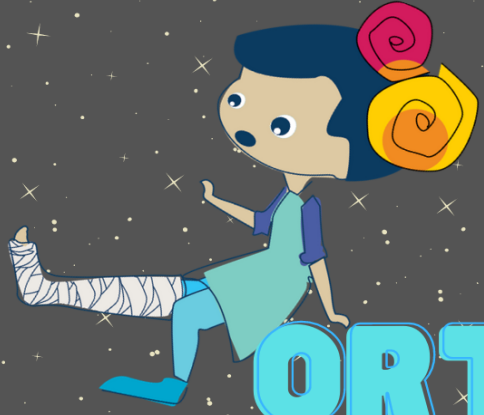
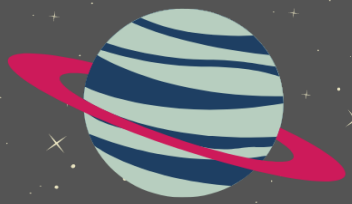
Orthopaedic Plaster Casting

Quick Cast Cards

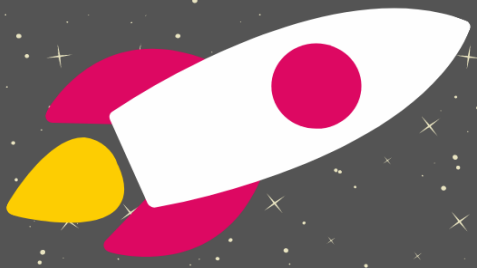




ORTHOPAEDIC RESOURCE HUB

Open a world of resources by scanning the QR Code below.

Orthopaedic Resource Hub



Above Elbow Backslab

Quick Cast Card	
Indication	• Humeral fractures • Elbow dislocations • Forearm fractures pre-operatively
Upper Limit	2-3 fingers below the axillar
Lower Limit	Distal palmar crease
Position	Elbow at 90°, forearm and wrist in neutral, fingers free and shoulder relaxed

Gather materials:

- ❑ Measured length of slab
- ❑ Triangle plaster struts
- ❑ Soffban
- ❑ Crepe
- ❑ Brown tape (3x approximately 10cm lengths)
- ❑ Plaster shears

Applying the cast:

- Measure the slab on the unaffected arm- place the child's shoulder and elbow at 90° as pictured, and measure from the upper limit to the lower limit.
- Cut 2 triangles to cover the lateral and medial aspects of the elbow.
- Wrap softban down the arm, completing 2 full rotations around the proximal aspect prior to advancing. Train track soft ban at the elbow and cut a semi-circle in the soft ban to advance the wrap between the thumb and for finger.
- Concertina the slab and submerge into lukewarm water.
- Apply slab from the proximal limit extending down the arm to the fingers and gently mould.
- Submerge and apply medial and lateral triangle plaster struts and gently mould.
- Overwrap with crepe and secure with brown tape.
- Apply an additional length of tape down the ventral aspect of the cast to prevent rolling.
- Allow to dry for 20minutes before applying a broad arm sling.

Discharging and documentation:

- Apply a broad arm sling, and provide education on elevation and slings. Refer to Cast Care Patient Advice sheet and family videos throughout your patient and whānau education.
- Families may prefer a collar and cuff style sling. This can be provided with clear instructions to only use the collar and cuff sling after the initial 48hr period as earlier will damage the cast.
- Provide whānau with copies of cast care and discharge advice.
- Document products used, position, cast type, skin integrity, and pressure injury risk assessment

Discharge:

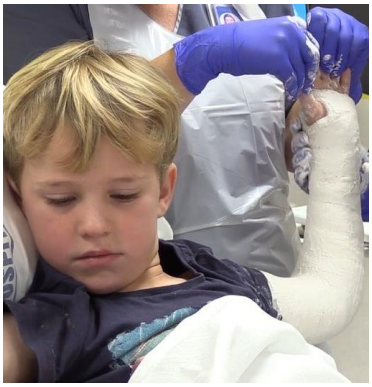
Have the cast checked by a credentialed nurse.
Discharge with cast care advice and on appropriate cast related pressure injury prevention bundle.

Follow Orthopaedic Resource Hub QR code to view the cast application videos.

Above Elbow Plaster of Paris

Starship Child Health

Quick Cast Card	
Indication	Forearm fractures Children with distal or midshaft radius and/or ulnar fractures. Children with distal radius and/or ulnar fracture over the age of 8 can be managed with a well molded Below Elbow POP
Upper Limit	2-3 fingers above the mid-shaft of the humerus
Lower Limit	Distal palmar crease
Position	Elbow at 90°, forearm and wrist in neutral, fingers free, shoulder relaxed. Arm is held by thumb and across the finger tips



Gather materials:

- ❑ Soffban
- ❑ Plaster of Paris rolls
- ❑ Measured plaster slab - See Above Elbow Backslab page for slab instructions
- ❑ Plaster sheers

Applying the cast:

- Wrap softban down the arm, completing 2 full rotations around the proximal aspect prior to advancing. Train track soft ban at the elbow and cut a semi-circle in the soft ban to advance the wrap between the thumb and for finger.
- 50% overlap results in 2 layers. 66% overlap results in 3 layers.
- Apply the above elbow backslab and gently mould . Cut off any slab that extends beyond the cast limits
- Starting distally to the injury, unroll the plaster of Paris rolls over the limb, taking care not to pull excessive tension.
- The first layer of plaster should complete two full rotations directly over each other prior to advancing the roll down the limb.
- Upon reaching the hand, ensure the plaster layer don't extend beyond the distal palmar crease
- Advance the cast between the thumb and fore-finger by creating a curved cut.
- 2 layers of plaster between thumb and fore finger are sufficient.
- Upon completing the first roll of plaster fold the soft ban edges back over the plaster layer to create an edge at the distal and proximal aspects.
- Repeat the plaster roll wrap again starting proximally, capturing the rolled back softban edges, and advancing down the limb creating 6-8 layer total layers of plaster.
- Laminate plaster layers by rubbing plaster between flat palms.
- Place the drying cast on a pillow and allow to set for 20 minutes prior to application of a broad arm sling.

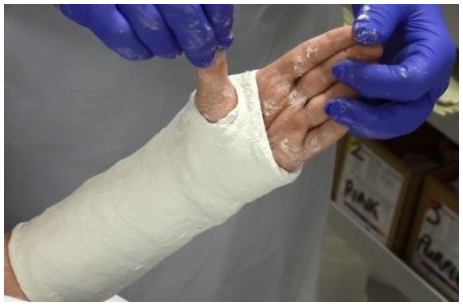
Discharge:

Have the cast checked by a credentialed nurse.

Discharge with cast care advice and on appropriate cast related pressure injury prevention bundle.

Below Elbow Plaster of Paris

Quick Cast Card	
Indication	Distal radial or ulnar fractures in children over 8 years of age Buckle fractures are ideally treated with wrist splints
Upper Limit	3-4 fingers below the ACF
Lower Limit	Distal palmar crease
Position	Elbow at 90°, forearm and wrist in neutral, fingers free



Gather materials:

- ❑ Soffban
- ❑ Plaster of Paris rolls
- ❑ Plaster sheers
- ❑ Lukewarm water bucket

Clean the skin gently with soap and warm water and gently dry.

Applying the cast:

- The first layer of padding should wrap around the limb in two complete rotations prior to advancing the roll, creating 2 layers of padding at the proximal most aspect.
- Commence plaster wrapping. Start distally to the injury ensuring not to breech the limits of the softban wrap.
- Unroll the plaster of Paris rolls over the limb, taking care not to pull excessive tension on the roll.
- The first layer of plaster should complete two full rotations directly over each other prior to advancing the roll down the limb.
- Continue to advance the plaster roll down the limb, wrapping 66% to create 3 layers of cast.
- Upon reaching the hand, ensure casting terminates prior to the distal palmar crease.
- Advance the cast between the thumb and fore-finger by creating a curved cut and continue.
- 2 Layers of plaster between thumb and fore finger are sufficient.
- Upon completing the first roll of plaster fold the soft ban edges back over the plaster layer to create an edge at the distal and proximal aspects.
- Repeat the plaster roll wrap again starting proximally, capturing the rolled back softban edges, and advancing down the limb creating 6-8 layers of plaster.
- Laminate plaster layers by rubbing plaster between flat palms.
- As the plaster hardens and dries, it warms up.
- Place the drying cast on a pillow and allow to set for 20 minutes prior to application of sling.

Families may prefer a collar and cuff style sling. This can be provided with clear instructions to only use the collar and cuff sling after the initial 48hr period as any earlier will damage the cast.

Discharge:

Have your cast checked by a credentialed nurse.

Discharge with cast care advice and on appropriate cast related pressure injury prevention bundle.

Above Knee Plaster of Paris

Quick Cast Card	
Indication	• Distal femoral fractures • Unstable lower limb fractures • Proximal tib +/- fib fractures • Knee injuries
Upper Limit	2-3 fingers distal to groin crease
Lower Limit	Base of toes
Position	Ankle in neutral and flexed to 90°, knee slightly flexed (approximately 10−15°)

Gather materials:

- ❑ Soffban
- ❑ Plaster of Paris rolls
- ❑ Plaster slab and struts
- ❑ Plaster sheers
- ❑ Lukewarm water bucket
- ❑ Knee rest (optional)
- ❑ HPS input
- ❑ Wedge or folded blanket

- Clean the skin gently with soap and warm water and gently dry.
- The slab is measured from 4 fingers below the gluteal crease to the base of the toes along the posterior of the leg. The slab is then cut double the length and folded in half for double thickness. Cut long sided triangles to cover the ankle both medially and laterally.

Applying the cast:

- The first layer of padding should wrap around the limb in two complete rotations prior to advancing the roll, creating 2 layers of padding at the proximal most aspect.
- Inspect padding for gaps, and fill in thin spots with softban strips.
- Apply measured backslab to the limb starting on the proximal aspect of the leg and gently mould as you extend down towards the toes.
- Cut any excess slab that extends beyond the toes rather than folding.
- Apply the measured struts medially and laterally along the foot, covering the malleoli and extending up the leg.
- Laminate the layers together with the flats of your hands by rubbing the plaster in a circular motion.
- Apply the plaster rolls, starting 3 fingers from the upper limit of the softban.
- The first layer of plaster should complete two full rotations directly over each other prior to advancing the roll down the limb. Unroll the plaster, taking care not to pull excessive tension as it is advanced down the leg.
- The first layer of plaster roll should be concertinaed over the knee to create additional strength.
- Continue to advance the roll in circumferential wraps down the lower leg to the base of the toes.
- Fold the padding edges smoothly over the first layer of plaster.
- Apply a second layer of plaster roll starting proximally and terminating at the base of the toes, this time wrapping circumferentially over the knee.
- Laminate the layers together with the flats of your hands by rubbing the plaster in a circular motion.
- Place the cast on pillows and allow to dry for 20 minutes.

Discharge:

- ❑ Have your cast checked by a credentialed nurse.
- ❑ Discharge with crutches and cast care information and on appropriate cast related pressure injury prevention bundle.
- ❑ **Consider an OT/PT referral.**

Above Knee Backslab

Quick Cast Card	
Indication	Typically in the pre-operative period prior to definitive management of unstable or grossly swollen lower limb fractures.
Upper Limit	2-3 fingers distal to groin crease
Lower Limit	Base of toes
Position	Ankle in neutral and flexed to 90°, knee slightly flexed (approximately 10° - 15°)

Gather materials:

- ❑ Soffban
- ❑ Measured plaster slab and struts
- ❑ Plaster sheers
- ❑ Crepe bandage
- ❑ Lukewarm water bucket
- ❑ Knee rest (optional)
- ❑ Folded blanket
- ❑ Brown tape

Clean the skin gently with soap and warm water and gently dry.

Applying the cast:

The slab is measured from 4 fingers below the gluteal crease to the base of the toes along the posterior aspect of the limb.

- The first layer of padding should wrap around the limb in two complete rotations prior to advancing the roll, creating 2 layers of padding at the proximal most aspect.
- Inspect padding for gaps, and fill in thin spots with softban strips.
- Concertina the slab and submerge it the in bucket of lukewarm water for 5 seconds.
- Remove the slab from the bucket, extend it to its full length and remove excess water.
- Apply measured backslab to the limb starting 1-2 fingers below the upper limit of the padding and gently mould as you extend down towards the toes.
- Cut any excess slab that extends beyond the toes rather than folding.
- Apply the measured struts medially and laterally along the foot, covering the malleoli and extending up the leg.
- Fold the softban edges smoothly over the backslab.
- Gently mould the slab over the ankle and sides of the knee.
- Overwrap with crepe bandage.
- Tape the crepe edges with brown tape and apply an additional strip anteriorly and medially down the length of the cast to prevent rolling.
- Place the cast on pillows and also to dry for 20 minutes.

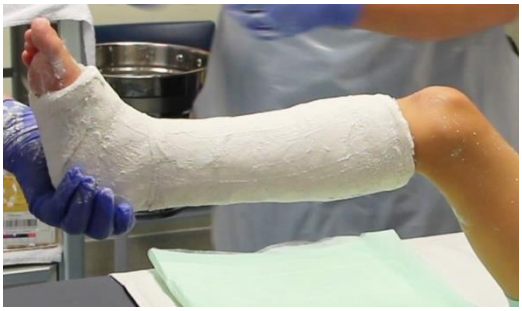
Discharge:

- ❑ Have your cast checked by a credentialed nurse.
- ❑ Discharge with crutches and cast care information and on appropriate cast related pressure injury prevention bundle.
- ❑ **Consider an OT/PT referral.**

Below Knee Plaster of Paris

Starship Child Health

Quick Cast Card	
Indication	• Stable distal tib +/- fib fractures • Foot fractures • Malleoli fractures not involving the growth plate
Upper Limit	2 fingers distal to the popliteal fossa
Lower Limit	Base of toes.
Position	Ankle in neutral, child lies on stomach with knee at 90° or with foot held by casting assistant.
Consider a moonboot in lieu of a plaster whenever appropriate.	



Gather materials:

- ❑ Soffban
- ❑ Plaster of Paris rolls
- ❑ Plaster slab measured
- ❑ Lukewarm water bucket
- ❑ Knee rest (optional)
- ❑ Plaster sheers

Clean the skin gently with soap and warm water and gently dry.

Preparing the slabs:

- The slab is measured from 4 fingers below the gluteal crease to the base of the toes along the ventral aspect of the limb.
- Cut a slab double the length then folded in half to double the thickness, using plaster slab wide enough to cover the child's malleoli when applied.

Applying the cast:

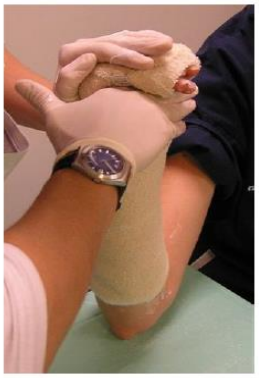
- Apply softban padding. The first layer of padding should wrap around the limb in two complete rotations prior to advancing the roll, creating 2 layers of padding at the proximal most aspect.
- Apply measured backslab to the leg starting on the proximal aspect. Gently mould as you extend down towards the base of the toes.
- Cut any excess slab that extends beyond the toes rather than folding.
- Apply the measured struts medially and laterally to the foot, covering the malleoli and extending up the leg.
- Apply the plaster rolls, starting 2-3 fingers from the upper limit of the softban.
- The first layer of plaster should complete two full rotations directly over each other prior to advancing the roll down the leg. Unroll the plaster, taking care not to pull excessive tension as it is advanced terminating at the base of the toes.
- Fold the padding edges smoothly over the first layer of plaster.
- Apply a second roll of plaster.
- Laminate the layers together with the flats of your hands by rubbing the plaster in a circular motion.
- Place the cast on pillows and also to dry for 20 minutes.

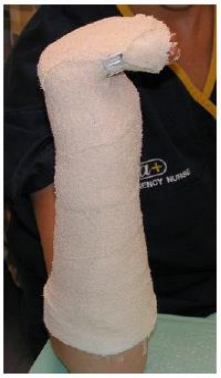
Discharge:

- ❑ Have your cast checked by a credentialed nurse.
- ❑ Discharge with crutches and cast care information and on appropriate cast related pressure injury prevention bundle.
- ❑ **Consider an OT/PT referral**.

Ulnar Gutter

Quick Cast Card	
Indication	Phalanx and metacarpal fractures
Upper Limit	3 fingers below the ACF
Lower Limit	Finger tips
Position	Wrist slightly ventrally angled and fingers at 90 bent at MCPs. Elbow can rest on bed.





Gather Materials:

- ❑ Crepe
- ❑ Brown tape
- ❑ Plaster shears
- ❑ Plaster Slab
- ❑ Soffban

- Clean the skin gently with soap and warm water and gently dry.
- The slab is measured on the unaffected hand and shaped as pictured.

Applying the cast:

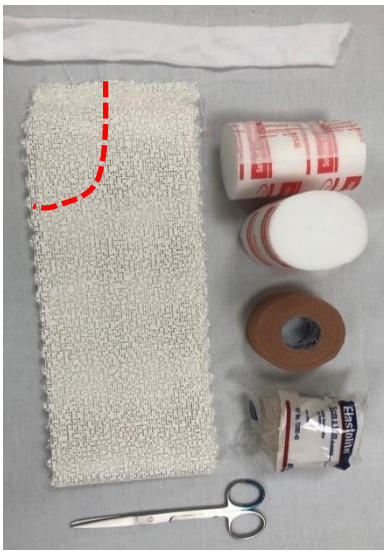
- The first layer of padding should wrap around the limb in two complete rotations prior to advancing the roll, creating 2 layers of padding at the proximal most aspect.
- Place the arm in correct position, Entonox may facilitate ideal positioning.
- Concertina the slab and submerge into lukewarm water.
- Apply slab to the forearm ensuring the thumb remains free, and extend to the finger tips.
- Gently mould the cast to ensure the MCPs are flexed at 90 and the wrist is slightly cocked back.
- Overwrap with crepe and secure with brown tape.
- Apply an additional length of tape down the dorsal aspect of the cast to prevent rolling.
- Allow to dry for 20minutes before applying a broad arm or triangular high elevation.

Discharge:

- ❑ Have your cast checked by a credentialed nurse
- ❑ Discharge with cast care advice and on appropriate cast related pressure injury prevention bundle

Thumb Spica Splint

Quick Cast Card	
Indication	Injuries of the thumb requiring splinting where definitive casting will be managed by Hand Works
Upper Limit	3-4 fingers distal to ACF
Lower Limit	Thumb tip visible, DPJ immobilised. Distal palmar crease visible
Position	Slight ulnar deviation or wrist in neutral. Thumb in relaxed extension



Gather Materials:

- ❑ Soffban
- ❑ Plaster slab
- ❑ Crepe bandage
- ❑ Plaster sheers or scissors
- ❑ Lukewarm water bucket
- ❑ Brown tape
- ❑ Thumb stockinette

Preparing the slab:

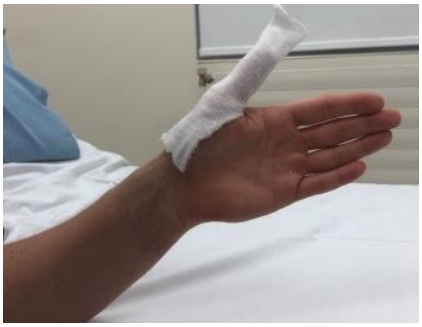
- Measure the slab from the tip of the thumb to 3-4 fingers distally to the ACF along the lateral boarder of the arm.
- Cut a single thickness slab. In smaller children 4-6 layers may suffice. Older children require 6-10.
- Cut out a small flap on one side of the slab (depicted above) to create the thumb piece. The remaining plaster extension should be able to wrap the thumb circumferentially.

Positioning:

- Have the child sit on an arm-restless chair next to the bed. Raise the bed height so that the child can rest their affected arm on the bed with their shoulder neutral. Position the patient's hand in comfortable ulnar deviation with thumb in comfortable extension.

Padding:

- Cut a length of the thumb stockinette that fits approximately from the proximal wrist crease to about 2 fingers above the thumb tip.
- Cut a slit in the stockinette approximately 1/3rd the length of the stockinette, and fit as pictured.
- Wrap soffban padding distally to proximally ensuring an even 2 layers throughout the cast.
- Inspect the padding layer and fill any gaps before applying the cast.



Applying the cast:

- Gather the slab and concertina it. Hold the edges and submerge the slab in bucket of water for 5 seconds.
- Remove the slab from the bucket, extend it to its full length and remove any creases
- Apply the slab to the limb. Place cut out side of the slab over the thumb, ensuring the thumb tip remains visible, and continue to trace the slab along the lateral aspect of the forearm.
- As the slab sets, ensure the it is well fitted by holding the slab over the thumb firmly with a closed fist until the cast is partially set.
- Overwrap with crepe bandage and secure with brown tape.

Discharge:

- ❑ Have your cast checked by a credentialed nurse.
- ❑ Discharge with cast care advice and on appropriate cast related pressure injury prevention bundle

Cast Inspection

Inspect:

- ✓ Before casting view the patient's X-ray
- ✓ Is this the correct cast for this injury?
- ✓ Is it in the correct position?
- ✓ Are the distal joints mobile?
- ✓ Are there any cracks, splits or dents in the cast?
- ✓ Are the child's fingers/ toes pink?

Ask:

- ✓ "Are you comfortable in your cast?"
- ✓ Do you have any pain under your cast?
- ✓ Patients and whānau about their understanding of discharge advice
- ✓ If the patient or family have any questions

Feel:

- ✓ For warm peripheries
- ✓ For brisk capillary refill and sensation
- ✓ The cast to ensure there are no dents or soft spots

Ensure patients receive cast care advice and patient information sheets prior to discharge.

Orthotics

Orthotic device can be fitted by any clinician who has undergone appropriate instruction. If you are unsure how to fit a splint, sling or orthotic device, please ask a senior.

Device	Indication	Fitting
Wrist splints 	• Buckle fracture (distal radius or ulna) • Suspected scaphoid fracture • Wrist sprains	• Measure circumference of wrist and match to measurement on box • Open straps wide and gently place arm in • Secure straps
Zimmer Splint (Finger) 	• Finger soft tissue injuries (over dressing if required) • Volar plate avulsions • Phlanyx fractures as directed by clinician This can be done in conjunction with buddy strapping, be guided by clinician.	• Cut 7cm length of stretchy brown tape- cut crescent shape to fit around base of finger • Place disc of splint over volar MCP head and mould over tip of injured finger • Secure with cross-over of tape

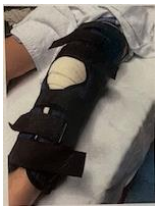
C-Spine

Aspen 	• Cervical injury where motion restriction is required Sized Infant- XL Adult. Tall and short options available	Please note we don't stock the vista brand. We do not need to adjust a dial.
Philly/ Philadelphia 	• Cervical injury where motion restriction is required	
Soft Collar 	• Cervical injury where additional support is required for comfort. Does not restrict movement.	

Cervical collars can be challenging to fit. It is imperative if you are unsure how to fit a c-collar please seek advice from a senior colleague.

Follow Orthopaedic Resource Hub QR code to view the cast application videos.

Orthotics and Slings

Device	Indication	Sizing and Fitting
Moonboot 	• NWB sprained ankle • Avulsion fractures of the ankle • Non-displaced distal single bone fractures of the lower leg	• Measure the length of the sole of the foot- half tear paper to mark. Measure from the heel to the popliteal fossa and tear off tape • Undo the velcro straps and remove sock. (leave pleastic sleeves on velcro). • Fit 'sock' to injured limb • Pull open the rigid arms with the plastic sleeves and place socked foot into boot with heel as far back as possible • Secure the straps
Darco Shoe 	• Foot fractures • Toe injuries	• Measure the length of the sole of the foot, or ask the patient's shoe size • Open velcro straps and place the injured foot into the shoe with the foot as you would a shoe
Zimmer Splint (Knee brace) 	• Knee injuries requiring management in extension • Soft tissue injuries requiring sutures over the knee or calf	• Remove medial metal bar • Apply soffban and crepe from thigh to Achilles and affix with brown tape • Split should run from mid thigh to mid calf • Stick to the splint where it will sit behind the knee • Place leg in splint and secure straps closest to knee first

Sling	Indication	Instruction and Links.
Broad arm sling (BAS)	Used in the first 72hrs following cast application. Ensure a comfortable pad is applied as a cushion between the knot of the sling and the neck. May be the preferred sling for fiberglass casts.	
Collar and Cuff	Often more comfortable than a BAS, **and able to be applied to a dry cast.** May also be used as primary immobilization in humeral and clavicle fractures.	
Poly-sling	Typically used for longer-term immobilization. May be useful for fiberglass casts- as the fiberglass can be abrasive on clothing and skin. May also be used in shoulder and clavicle injuries.	

Pressure Injury Escalation

Starship Child Health

Grading	Action
Blanching erythema post or during casting **(This is not a pressure injury)**	• Photograph • Document in notes Additional padding in forth-coming cast • Reassess pressure injury acquisition risk
Stage One: **Intact skin with non-blanching localised redness, usually over a bony prominence.**	• Datix • Photograph including tape measure to gauge size • Additional padding in forth-coming cast • Reassess pressure injury acquisition risk
Stage Two: **Partial thickness loss of dermis presenting as a shallow open wound with a pink-red wound bed OR as an intact or open serum filled blister.**	• Datix • Photograph including tape measure to gauge size • Additional padding in forth-coming cast • Dressing as per PI and wound care guideline • If required to remain in cast: mark cast over affected area • Consider splinting if appropriate • Consider Completion of ACC form: ACC45 + ACC2152
Stage Three: **Full thickness tissue loss. Subcutaneous fat may be visible but bones, tendons or muscles are not exposed. May be a shallow injury depending on anatomical location.**	• Datix • Complete ACC form: ACC45 + ACC2152 • Photograph including tape measure to gauge size. Serial photography may be indicated. • Dressing as per PI and wound care guideline • If required to remain in cast ensure a window is cut or marked over-lying the injury Strong recommendation to discontinue casting unless doing so would risk life or limb.
Stage Four: **Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present in parts of the wound bed.**	• Datix • Complete ACC form: ACC45 + ACC2152 • Inform Family + Senior Nursing team (CN/ NS if ascribed) • Photograph including tape measure to gauge size. Serial photography may be indicated • Inform responsible team Strong recommendation to discontinue casting unless doing so would risk life or limb.
Suspected Deep Tissue **Purple or maroon localised area or discoloured intact skin or blood filled blister.** **Or** **Unstageable Pressure Injuries** **Full thickness tissue loss in which the base of the PI is covered by slough and or eschar.**	• Datix • Complete ACC form: ACC45 + ACC2152 • Inform Family + Senior Nursing team (CN/ NS if ascribed) • Photograph including tape measure to gauge size. Serial photography may be indicated • Inform responsible team Strong recommendation to discontinue casting unless doing so would risk life or limb.