

Minor Burn Management

4th Edition



The Agency for Clinical Innovation (ACI) works with clinicians, consumers and managers to design and promote better healthcare for NSW. It does this by:

- *service redesign and evaluation* – applying redesign methodology to assist healthcare providers and consumers to review and improve the quality, effectiveness and efficiency of services
- *specialist advice on healthcare innovation* – advising on the development, evaluation and adoption of healthcare innovations from optimal use through to disinvestment
- *initiatives including guidelines and models of care* – developing a range of evidence-based healthcare improvement initiatives to benefit the NSW health system
- *implementation support* – working with ACI Networks, consumers and healthcare providers to assist delivery of healthcare innovations into practice across metropolitan and rural NSW
- *knowledge sharing* – partnering with healthcare providers to support collaboration, learning capability and knowledge sharing on healthcare innovation and improvement
- continuous capability building – working with healthcare providers to build capability in redesign, project management and change management through the Centre for Healthcare Redesign.

ACI Clinical Networks, Taskforces and Institutes provide a unique forum for people to collaborate across clinical specialties and regional and service boundaries to develop successful healthcare innovations.

A priority for the ACI is identifying unwarranted variation in clinical practice and working in partnership with healthcare providers to develop mechanisms to improve clinical practice and patient care.

www.aci.health.nsw.gov.au

AGENCY FOR CLINICAL INNOVATION

Level 4, 67 Albert Avenue
Chatswood NSW 2067

PO Box 699 Chatswood NSW 2057

T +61 2 9464 4666 | F +61 2 9464 4728

E aci-info@health.nsw.gov.au | www.aci.health.nsw.gov.au

SHPN (ACI) 170420, ISBN 978-1-76000-691-4

Produced by: Statewide Burn Injury Service

Further copies of this publication can be obtained from the Agency for Clinical Innovation website at www.aci.health.nsw.gov.au

Disclaimer: Content within this publication was accurate at the time of publication. This work is copyright. It may be reproduced in whole or part for study or training purposes subject to the inclusion of an acknowledgment of the source. It may not be reproduced for commercial usage or sale. Reproduction for purposes other than those indicated above, requires written permission from the Agency for Clinical Innovation.

Version: 4.7

Trim: ACI/D17/6733

Date Amended: 5 February 2024. Updated email addresses for CHW and RNSH burns units.

Review date: 2024

ACI_0017-C [06/19]

© State of NSW (Agency for Clinical Innovation)

Acknowledgments

These guidelines were developed with the collaboration of the members of the multidisciplinary team of the ACI Statewide Burn Injury Service (SBIS), from Royal North Shore Hospital (RNSH), Concord Repatriation General Hospital (CRGH) and The Children's Hospital at Westmead (CHW).

The 'rule of nines' and 'depth of burn' diagrams are reproduced from the *Emergency management of severe burns course manual* (18th edition; 2016) with permission from the Australian and New Zealand Burn Association.

Glossary

ACI	Agency for Clinical Innovation
ANZBA	Australian and New Zealand Burn Association
CHW	the Children's Hospital at Westmead
CMC	Carboxymethylcellulose
CRGH	Concord Repatriation General Hospital
EMSB	Emergency Management of Severe Burns course
IV	Intravenous
Pre-med	Pre-medication
RNSH	Royal North Shore Hospital
SBIS	Statewide Burn Injury Service
TBSA	Total body surface area

Contents

Acknowledgments	iii
Glossary	iii
Introduction	1
Assessment	2
On presentation of a burn patient	2
Burn size assessment	3
Burn depth assessment	4
Recognising burn depths chart	5
Management	6
Pain management	6
Wound management	6
Analgesia for wound management	6
Blister management	7
Dressing selection	8
Outpatients management	9
Referral	9
Digital photo referral	9
Further information	10
NSW Trauma App	10
References	10

Introduction

- It is often difficult to define a minor burn as classification is not solely reliant on burn size or depth. A minor burn is one which does not fit the aforementioned transfer criteria and can be managed in a non-burn unit hospital or clinic; including appropriate wound and pain management.
- Referral to a burn unit may only involve a consultative phone conversation, using emailed digital images if possible (with patient consent). Burn unit staff will provide support if the clinician is confident to care for minor burns within the local setting. Discussion with a burn unit will aid planning for appropriate management.
- Some burns which do not initially meet the criteria for referral to a tertiary burn unit may still need consultation with a specialist unit if a burn takes longer than 10-14 days to heal.
- If the burn is deep dermal or full thickness it will need skin grafting to heal and would need the services of an appropriate surgeon, scar management and functional follow up care. If the facilities do not exist locally for any or all of these services the patient will require transfer.
- Some small burns may develop significant scarring resulting in functional and psychosocial impairment. These burns should be referred to an appropriate burn unit for follow up care and rehabilitation.

On presentation of burn patient to emergency department flowchart

First aid for burns

- STOP, DROP, COVER face and ROLL if on fire
- Apply 20 minutes cool running water
- Keep rest of body warm to prevent hypothermia
- Remove clothing and jewellery

Perform Primary and Secondary Surveys

Obtain clear history of burn injury

- Mechanism of injury, how and when burnt
- Any first aid (what, how long?)
- Continue cooling if within 3 hours of burn
- Were clothes removed?

Give appropriate pain relief

Assess % total body surface area (TBSA) using Rule of Nines

Does it meet transfer criteria?

- | | |
|--|--|
| <ul style="list-style-type: none"> • Dermal thickness burns >10% TBSA, full thickness >5% TBSA in adults • Dermal/full thickness burns in children >5% TBSA • Burns with associated inhalation injury • Any priority areas are involved, i.e. face, neck, hands, feet, perineum, genitalia and major joints | <ul style="list-style-type: none"> • Caused by chemical or electricity, including lightning • Any circumferential burn • Burns with concomitant trauma or pre-existing medical condition • Suspected non-accidental injury • Pregnancy with cutaneous burns |
|--|--|

Yes

No

Refer to appropriate Burn Unit

Royal North Shore Hospital

Ph: (02) 9463 2111 (Burn Unit)

Ph: (02) 9463 2110 (Ambulatory Care)

Concord Repatriation General Hospital

Ph: (02) 9767 7776 (Burn Unit)

Ph: (02) 9767 7775 (Ambulatory Care)

The Children's Hospital at Westmead

(all paediatrics <16yrs)

Ph: (02) 9845 1114 (Burn Unit)

Ph: (02) 9845 1044 (Ambulatory Care)

Minor burn

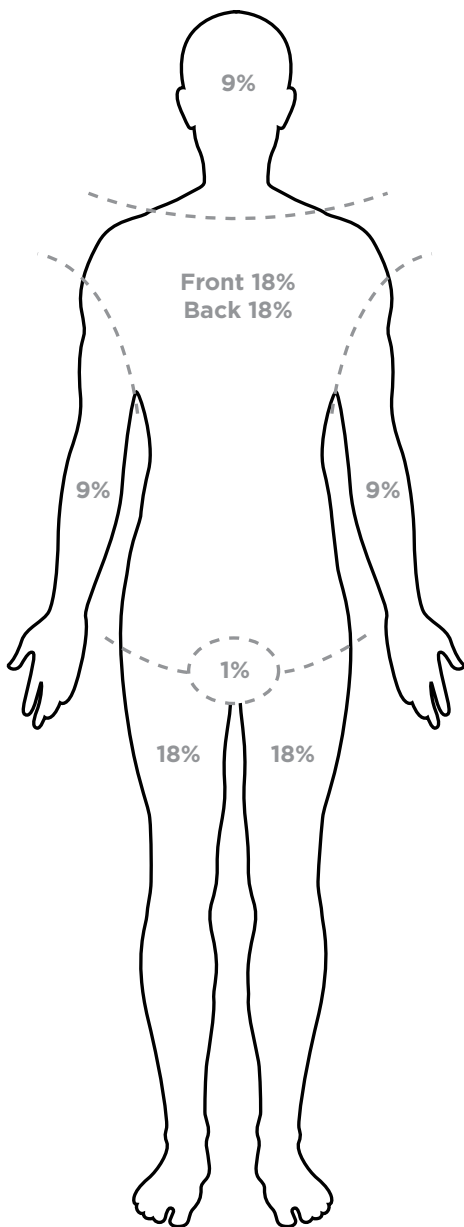
Can be managed in outlying hospitals and clinics, (see Minor Burn Management document)

- Assess burn wound
- Apply appropriate dressing
- Arrange follow-up dressing and review
- Prescribe pain relief as required
- Contact Burn Unit for any questions or for further review via emailed digital photograph or phone consult

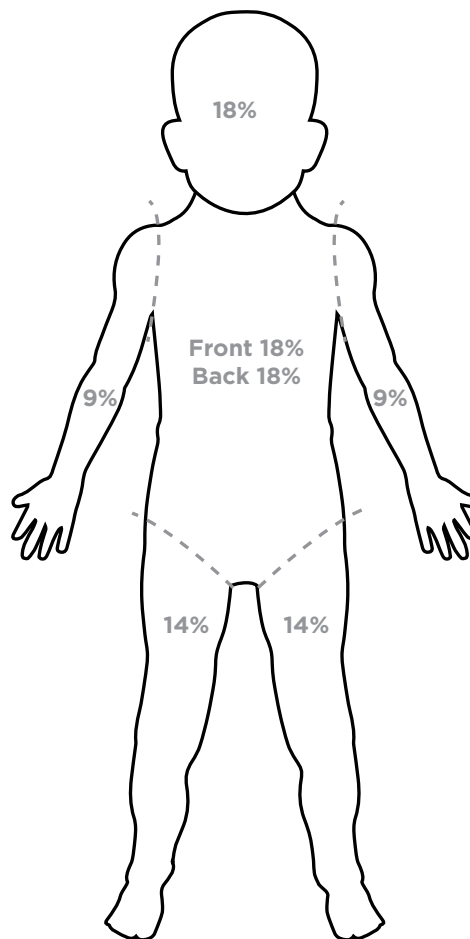
Burn size assessment

- It is important to accurately assess the surface area involved and possible depth of the burn. The most experienced clinician, in burns, available should assess the patient. Surface area should be charted on an appropriate chart.
- Record an accurate weight to assist calculation of pain relief medication (especially important in children), and fluid requirements if necessary.

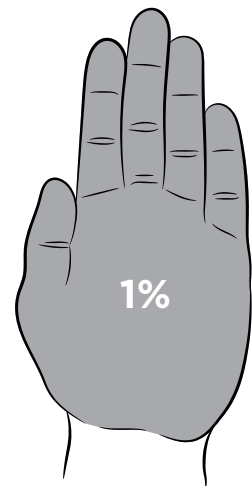
Rule of Nines



Adult



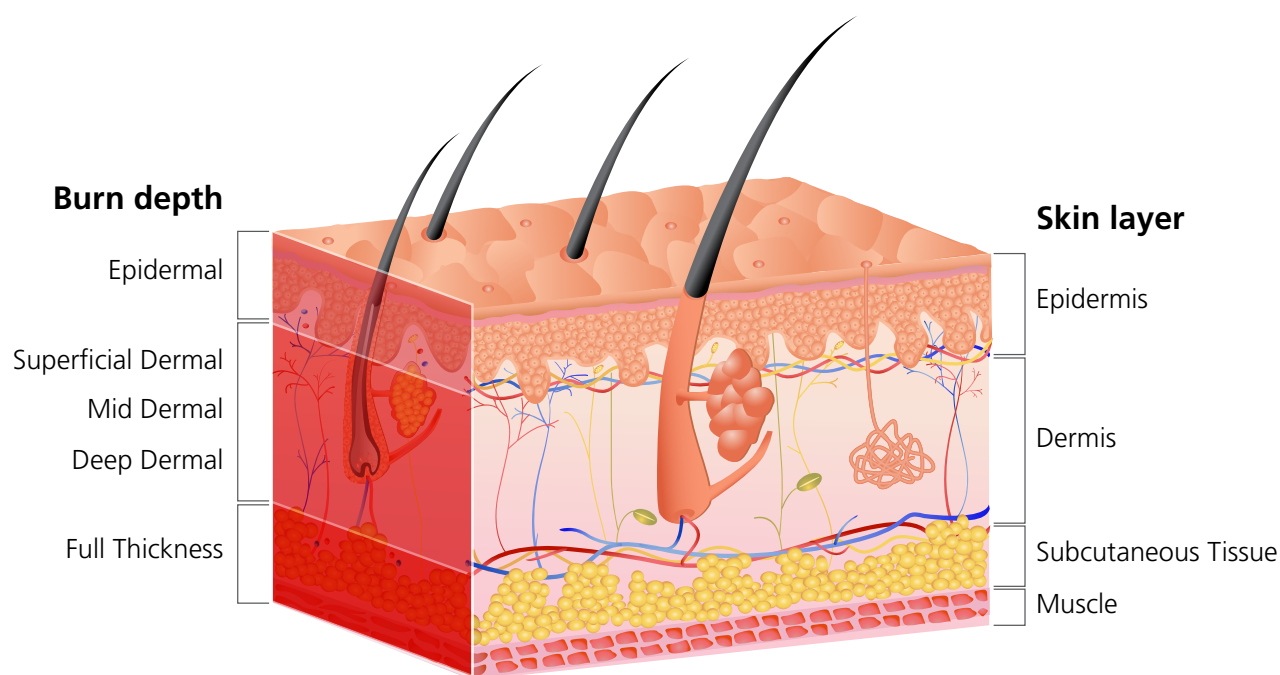
**Paediatric
<9 years**



**Palmar, palm + fingers
of patient = 1%**

For every year of life take 1% from the head and add ½% to each leg.
Use adult Rule of Nines from 10yrs.

Burn depth assessment



Burn assessment: depth					
Depth	Colour	Blisters	Capillary refill	Healing	Scarring
Epidermal	Red	No	Brisk 1–2 sec	Within 3–7 days	None
Superficial dermal	Red or pale pink	Small	Brisk 1–2 sec	Within 7–14 days	None Slight colour mismatch
Mid-dermal	Dark pink	Present	Sluggish >2 sec	14–21 days Grafting may be required	Yes (if healing >3wks)
Deep dermal	Blotchy red or white	+/-	Sluggish >3 sec or absent	Grafting required	Yes
Full thickness	White, waxy, cherry red, brown, black	No	Absent	Grafting required	Yes

Source: Modified from ANZBA EMSB Course Manual, p461; Partial Thickness Burns – Current Concepts as to Pathogenesis and Treatment, p21. (Jan Darke CNC RNSH)

Recognising burn depths chart

Epidermal burn (erythema)

- Damage to epidermis only. Skin intact, no blisters present
- Erythema. Red
- Brisk capillary refill
- Heal spontaneously within 3–7 days with moisturiser or protective dressing



Superficial dermal burn

- Damage to upper layer of dermis
- Pink. Blisters present or absent
- Brisk capillary refill (under blister)
- Should heal within 7–10 days with minimal dressing requirements



Mid dermal burn

- Damage into mid dermis
- Dark pink
- Sluggish capillary refill
- Should heal within 14 days.
- Deeper areas may need surgical intervention and referral



Deep dermal burn

- Burn extends into the deeper layers of the dermis, but not through the entire dermis
- Blotchy red/white
- Sluggish to absent capillary refill
- Generally need surgical intervention.
- Refer to specialist unit



Full thickness burn

- Entire destruction of dermis, sometimes underlying tissue involved
- White, waxy, brown, black.
- No capillary refill
- Surgical intervention and long-term scar management required
- Refer to specialist unit



Pain management

- In the acute period intravenous (IV) or oral routes are preferred, but as most patients with minor burns do not require IV therapy, an oral opioid can provide initial pain relief. Avoid using intramuscular pain relief for burn patients due to extended absorption times and poor fluid hydration status of burn patients.
- After the acute phase a medication regimen such as paracetamol and oral codeine or oxycodone may be necessary for significant background pain.
- If the patient is required to attend an outpatient appointment appropriate pre-medication or 'pre-med' may need to be prescribed, to be taken prior to procedure (see 3.3 Analgesia for wound management).
- If patient is prescribed regular opioids they should also have a prescription for aperients.
- Admission for pain management may be required, even if admission is not indicated for burn wound.

Wound management

- For a guide to selecting an appropriate dressing see following page or *Clinical Guidelines: Burn Patient Management*, available on SBIS website www.aci.health.nsw.gov.au/resources/burn-injury
- Superficial dermal minor burns should heal within 7-14 days and not require any long-term scar management.
- If the burn is deep dermal or full thickness it will need skin grafting to heal and requires the services of an appropriate surgeon, and scar management and functional follow up care.
- Dressing changes should be as infrequent as possible to allow epithelialisation, unless there is concern of infection. Apply a long-term dressing if possible, to avoid disturbing the regenerating wound bed.
- Soak dressings prior to removal to reduce damage to regenerating epithelial layer.
- If available take digital photos to monitor wound progress or for email consultation with burn specialists (with patient's consent). See *Clinical Guidelines: Burn Patient Management*, for tips on taking digital photographs.

Tips

- Plan carefully prior to dressing application to ensure optimum wound care.
- Avoid burnt surfaces coming into contact with each other.
- Elevate affected arms and legs to reduce oedema especially in the acute period. When bandaging, start distal and work proximal (e.g. from fingertips or toes and move upwards). Sometimes it is necessary to incorporate the hands and feet, even if they are not burnt to avoid oedema formation.
- Encourage early mobility and range of movement of affected limb. Discourage use of mobility aids such as crutches, unless used prior to injury. Slings should not be used as they inhibit normal functioning.

Analgesia for wound management

- Removal of dressings and cleansing can be painful – instructions should be given to take a pre-med 30-60 mins prior to procedure, especially for children.
- Pre-med can be paracetamol, ibuprofen, paracetamol and codeine mixture, etc. as required.
- Nitrous oxide, methoxyfluorane and intranasal fentanyl can also be used instead of, or in combination, with a pre-med if pain is severe or not controlled with other analgesia.

MINOR BURN BLISTER MANAGEMENT

Blisters are formed when there is separation of the epidermal and dermal layers, often with fluid present. The management of these blisters is generally guided by specialist clinician or institutional preference. The ACI Statewide Burn Injury Service recommended management for burn blisters is 'de-roofing' (removal of skin and fluid), after adequate analgesia.

NB If your facility does not have capacity or resources (access to adequate analgesia and dressings) to follow this guideline, incise and drain the blister and contact the appropriate Burn Unit.

De-roofing is done to:

- remove non-viable tissue
- prevent uncontrolled rupture of blister
- avoid risk of blister infection
- relieve pain from tense blisters
- reduce restriction of movement of joints
- assess the burn wound bed

Prior to de-roofing

- Assess blister size. Burn blisters $\leq 5\text{mm}$ can be left intact.
- If patient is being transferred to a burn unit contact the receiving unit before de-roofing.
- Obtain consent from the patient or family.
- Administer appropriate analgesia and allow time to take effect prior to procedure.
- Take digital image before and after de-roofing procedure if possible.

Procedure for de-roofing blisters $>5\text{mm}$

- de-roof blister either with moist gauze or forceps and scissors
- dress wound appropriately with a moist, non or low-adherent dressing¹
- refer patient to local emergency department or burn service if your facility does not have the capacity or resources to de-roof blisters.

Important clinical considerations

- There is risk of infection or desiccation if removing blister skin when adequate facilities or resources are not available (i.e. in remote area). Consider leaving blister intact until patient transferred to appropriate facility.
- Skin on the palm of the hand and the sole of the foot is thicker. Consider leaving blisters intact in these areas if appropriate.
- Consider leaving small, non-tense blisters intact when there is a risk of poor patient compliance with the procedure and on-going care i.e. patients with dementia, learning difficulties, etc.

Blister management example



Blister in situ



Carefully trim blister skin



Clean wound bed. Dress

Contacts

Royal North Shore Hospital – BurnsRNS@health.nsw.gov.au
Burn Unit (02) 9463 2111 Ambulatory Care (02) 9463 2110

Concord Repatriation Hospital – slhd-concordburnsunit@health.nsw.gov.au
Burn Unit (02) 9767 7776 Ambulatory Care (02) 9767 7775

The Children's Hospital at Westmead (all paediatrics $<16\text{yrs}$) – kidsburns@health.nsw.gov.au
Burn Unit (02) 9845 1114 Ambulatory Care (02) 9845 1850

ACI Statewide Burn Injury Service resources
aci.health.nsw.gov.au/resources/burn-injury

Dressing selection

For further information on wound care product selection see 'Burn wound management: wound care product selection' in *Clinical Guidelines: Burn Patient Management*)

NB ACI Statewide Burn Service does not support or endorse any specific product or company. Below are examples only.

Wound care product What?	Function Why?	Indications When?	Application How?	Notes and Precautions
Silicone foam Hydrophilic polyurethane foam and soft silicone layer. E.g. Mepilex® range. Also available with silver.	<ul style="list-style-type: none"> Non-adherent. Conformable. 	<ul style="list-style-type: none"> Superficial burns. 	<ul style="list-style-type: none"> Apply to clean wound bed. Cover with fixation/retention dressing. 	<ul style="list-style-type: none"> Do not use if any infection (unless using silver version).
Hydrocolloid Hydrocolloid wafer E.g. Comfeel®, Duoderm®	<ul style="list-style-type: none"> Aids autolysis of devitalised tissue. Provides moist wound environment. Absorbs exudate. 	<ul style="list-style-type: none"> Superficial to mid-dermal burns. Low to moderately exuding wounds. 	<ul style="list-style-type: none"> Allow 2-5cm margin around wound. Can remain intact up to 5 days if no signs infection. 	<ul style="list-style-type: none"> Do not use if any infection. Exudate level indicates frequency of dressing change.
Paraffin gauze Paraffin impregnated gauze. E.g. Jelonet®, Adaptic® Also available with chlorhexidine E.g. Bactigras®.	<ul style="list-style-type: none"> Antiseptic dressing. Conformable. 	<ul style="list-style-type: none"> Dermal thickness burns. 	<ul style="list-style-type: none"> Apply directly to wound. 2-3 layers for acute wounds. Cover with secondary dressing. Change every 1-3 days. 	<ul style="list-style-type: none"> Soak off if adhered to wound bed.
Silver Sodium carboxymethylcellulose (CMC) and 1.2% ionic silver in fibrous material. E.g. AquacelAg®	<ul style="list-style-type: none"> Broad spectrum antimicrobial. Facilitates debridement. Absorbs exudate. 	<ul style="list-style-type: none"> Mid-dermal to full thickness burns. Moderately exuding wound. 	<ul style="list-style-type: none"> Apply to moist wound bed. Allow 2-5 cm overlap. Cover with secondary dressing. Review 7-10 days. Leave intact until healed. 	<ul style="list-style-type: none"> Exudate level indicates frequency of dressing change.
Silver Nanocrystalline silver coated mesh with inner rayon layer. E.g. Acticoat®.	<ul style="list-style-type: none"> Broad spectrum antimicrobial protection. Decreases exudate formation. 	<ul style="list-style-type: none"> Dermal to full thickness burns. Infected wounds. Grafts and donor sites. 	<ul style="list-style-type: none"> Wet Acticoat with water; drain and apply blue or silver side down. Moistened secondary dressing. Replace 3-4 days (Acticoat) or 7 days (Acticoat 7). 	<ul style="list-style-type: none"> Temporary skin staining. Avoid hypothermia.
Silver Silver sulphadiazine 1% cream. E.g. Flamazine®	<ul style="list-style-type: none"> Reduces infection. Assists removal of well adhered dressing. 	<ul style="list-style-type: none"> Infected wounds. Dermal to full thickness burns if only available option. 	<ul style="list-style-type: none"> Apply generous amount to sterile handtowel to ease application. Apply to wound. Cover with secondary dressing. Change daily. 	<ul style="list-style-type: none"> Not recommended for most burns due to changes to wound appearance and frequency of required dressing changes.

Outpatients management

- Patients are instructed to leave dressing intact and keep it clean and dry until review.
- Paracetamol may be useful for pain relief, as required. A prescription for codeine, oxycodone or a paracetamol and codeine mixture may be necessary if pain is severe, or the area is sensitive.
- Patients are advised to stop smoking due to adverse effects on wound healing.
- A normal well-balanced diet high in protein is recommended with encouragement of extra fluid for the first few days following the injury.
- Follow-up is arranged as ordered by the doctor or specialist clinician – refer to burns referral unit as required.

Referral

- Refer to ACI Statewide Burn Injury Service NSW Burn Transfer Guidelines, available on website. www.aci.health.nsw.gov.au/resources/burn-injury
- If unsure or concerned contact the appropriate referral centre.
- If healing time is delayed >10-14 days the patient should be referred to a specialist unit for review and treatment.
- Some small burns, that did not fit the criteria for referral to a specialist unit, may develop significant scarring and functional and psychosocial impairment. These burns should be referred to a burn unit for follow up care and rehabilitation.

Digital photo referral

- NSW burn units have digital photo consultancy services for clinician to clinician referral.
- All photographs must be accompanied by a clinical history.

Email addresses are:

CHW: kidsburns@health.nsw.gov.au

RNSH: BurnsRNS@health.nsw.gov.au

CRGH: SLHD-ConcordBurnsUnit@health.nsw.gov.au

Further information

- For information on specific dressing selection and application refer to *Clinical Practice Guidelines: Burn Patient Management*.
- For information on functional and physiological management refer to *Physiotherapy and Occupational Therapy Clinical Practice Guidelines*, and *Burns Scar Management for Therapists (Education Poster)*.
- *NSW Burn Transfer Guidelines* and Model of Care.

All of these documents are available on the Burn Injury page of the ACI website.

www.aci.health.nsw.gov.au/resources/burn-injury

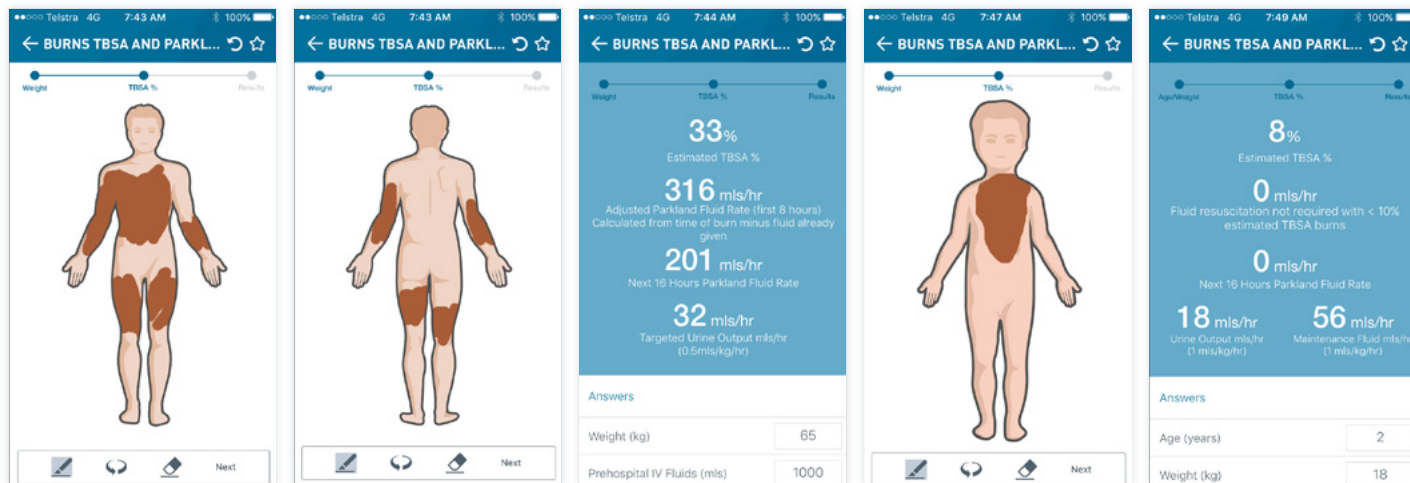
ACI Statewide Burn Injury Service Website: <http://www.aci.health.nsw.gov.au/networks/burn-injury>

NSW Trauma App

The NSW Trauma App was created by the ACI Institute of Trauma and Injury Management. It includes information on traumatic injured patients, including a section on burn management. The app can be downloaded from iTunes and Google Play.



Useful tools included in the burn section include algorithms on recognition and management of specific issues such as circumferential burns. Also included are the calculators which are useful for calculating burn size and fluid requirements. Below are example views of the calculators.



References

References and supporting material for this document can be found in the *Clinical Guidelines: Summary of Evidence*, available via the website <https://www.aci.health.nsw.gov.au/resources/burn-injury>.