

Burn Transfer Guidelines - NSW Severe Burn Injury Service - 2nd Edition

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Functional Sub group Clinical/ Patient Services - Critical care

Summary Details emergency treatment and management for patients suffering severe burn injury. This document provides the necessary information for the effective and efficient transfer of burn patients in NSW to specialised burn units.

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Applies to Area Health Services/Chief Executive Governed Statutory Health Corporation, Board Governed Statutory Health Corporations, Affiliated Health Organisations - Non Declared, Affiliated Health Organisations - Declared, NSW Ambulance Service, Public Hospitals

Audience All staff, emergency departments, intensive care units

Distributed to Public Health System, Community Health Centres, Divisions of General Practice, Government Medical Officers, Health Professional Associations and Related Organisations, NSW Ambulance Service, NSW Department of Health, Public Hospitals, Private Hospitals and Day Procedure Centres

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Burn Transfer Guidelines NSW Severe Burn Injury Service

Second Edition

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1. Introduction

Since implementation of *Transfer guidelines for people with burn injury, July 1996*, burn care in NSW has evolved significantly. Since that time many changes to the management of burn patients have taken place necessitating a revision of the guidelines for transfer of burn patients in NSW. Burns can present at any point in the NSW Health system and the ability to assess, manage and transfer these patients to tertiary services is central to good outcomes in appropriate timeframes.

The NSW Severe Burn Injury Service (SBIS) comprises three Burn Units located at Concord Repatriation General Hospital (part of Sydney South Western Sydney Area Health Service), Royal North Shore Hospital (part of North Sydney/Central Coast Area Health Service) and The Children's Hospital at Westmead.

This document is the second edition of the NSW Severe Burn Injury Service – Burn Transfer Guidelines, August 2004, and provides the necessary information for effective management and efficient transfer of patients with a burn injury in NSW to tertiary burn units.

The information given is based on the NSW Severe Burn Injury Service Model of Care available at <http://www.health.nsw.gov.au/pubs/2004/burninjurymoc.html>. The document reflects the standards identified by Australia and New Zealand Burn Association (ANZBA), and the International Society for Burn Injuries (ISBI) for the care and transfer of severe burn injuries.

2. Referral criteria

The criteria for admission are consistent with those of the Australia and New Zealand Burn Association (ANZBA) and the International Society for Burn Injuries (ISBI). Burn mechanisms are varied and include: flame, scald, explosion, contact, chemical, electrical, friction, reverse thermal (cold) and radiation.

The referral criteria are:

- partial thickness burns in adults >10% TBSA (total body surface area)
- full thickness burns in adults >5% TBSA
- partial/full thickness burns in children >5% TBSA
- burns to the face, hands, feet, genitalia, perineum, and major joints
- chemical burns
- electrical burns including lightning injuries
- burns with concomitant trauma
- burns with associated inhalation injury
- circumferential burns of the limbs or chest
- burns in patients with pre-existing medical conditions that could adversely affect patient care and outcome

- suspected non-accidental injury including children, assault or self inflicted
- pregnancy with cutaneous burns
- burns at the extremes of age – infants and frail elderly

Although not all patients in these categories will require transfer to a specialised burn unit, advice must be sought early in their management.

2.1 Age-specific criteria

Children up to their 16th birthday should be transferred to The Children's Hospital at Westmead. Anyone 16 years or older should be transferred to an adult burns unit.

2.2 Pregnancy

Women in their second or third trimester should be referred to Royal North Shore Hospital where comprehensive obstetric services are available, should they be required. Referral of women in their first trimester should be decided on an individual basis, with consideration given to burn severity, predicted length of stay etc.

2.3 Spinal Injury

Patients with spinal cord injuries or suspected spinal cord injuries should be referred to Royal North Shore Hospital where the acute specialist Spinal Unit is situated.

2.4 Medical retrieval

In determining the requirement for medical retrieval, these guidelines should be read in conjunction with PD2006_046 NSW Critical Care Adult Tertiary Referral Networks – Intensive Care Default Policy; and PD2005_157 Emergency Paediatric Referrals, in addition to the ensuing burn specific retrieval criteria:

- any intubated patient
- inhalation injuries with cutaneous burns
- head and neck burns
- partial or full thickness burns >10% in children
- partial or full thickness burns >20% in adults
- burns with significant co-morbidities
- associated trauma
- significant pre-existing medical disorder
- circumferential burn to limbs or chest that compromises circulation or respiration
- electrical conduction injury with cutaneous burns
- chemical injury with cutaneous burns.

Retrieval services can be activated by contacting the following:

Adults - Aeromedical & Medical Retrieval Service (AMRS) 1800 65 0004

Children – NSW newborn & paediatric Emergency Transport Service (NETS) 1300 36 2500

Expert advice about the management of the burn injury, need for intubation and fluid resuscitation can be obtained through these services using a multi-party conference call with relevant tertiary clinicians (including a burn surgeon and receiving intensivist).

The need for physician-assisted transfer is determined by AMRS or NETS, in consultation with the receiving Burn Unit and ICU.

If medical retrieval is considered necessary, a single telephone call to AMRS or NETS is all that is necessary. The Retrieval Service (AMRS or NETS) will act as the agent for the referring hospital, facilitating clinical, transport and destination needs, appropriate to the presenting clinical situation. All follow-up calls should be made via AMRS or NETS to ensure all participants (including retrieval staff) are included, and there is efficient sharing of information.

If the patient requires transfer, please complete and send copy of the Burn Patient Emergency Assessment & Management Chart. (Appendix 1)

2.5 Referral of patients who meet the agreed transfer criteria but do not fit the medical retrieval criteria

Some patients will require transfer to a specialised burns unit who do not meet the criteria for immediate medical retrieval. These patients should be referred to the on-call burns registrar at the appropriate campus.

Any issues involving the transfer and treatment of burn injuries can be referred to the NSW Severe Burn Service Injury Service Directorate.

Service contact numbers and geographical (Area Health Service) divisions are provided in Appendix 2.

3. Assessing body surface area burnt

Rule of nines

The “**Rule of Nines**” divides the body surface into areas of nine percent or multiples of nine percent, with the exception that the perineum is estimated at one percent. This allows the extent of the burn to be estimated with reproducible accuracy.

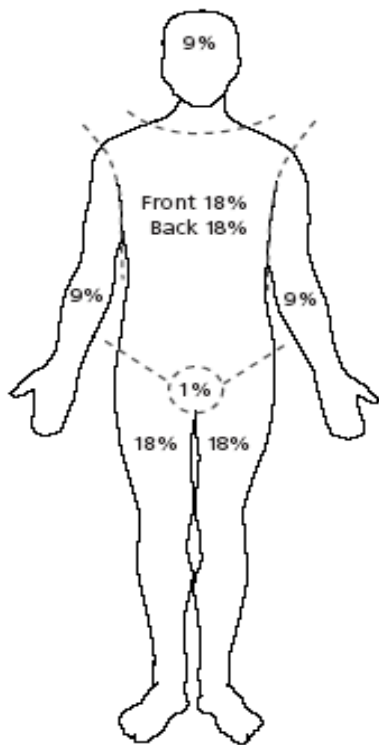
Children have different body surface area proportions: Use the **Paediatric Rule of Nines**. * **and adjust for age** by taking 1% BSA from the head and adding ½% BSA to each leg for each year of life after 1 year until 10 years. (Adult proportions are reached at 10Yrs.)

Additionally small burns may be estimated by using the area of the palmar surface (fingers and palm) of the **Patient's** hand, which approximates to 1% body surface area.

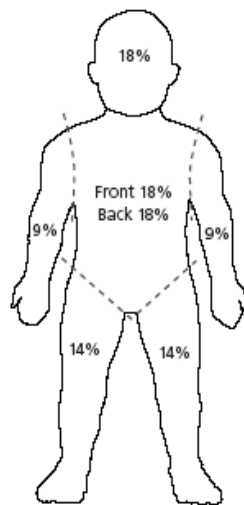
Ignore simple erythema

Rule of Nines

Ignore simple erythema



Adult



Paediatric <10yrs



Palmar, palm + fingers of patient = 1%

4. Stabilisation prior to transfer

4.1 Cooling the burn wound

The burn surface is cooled with cold running water. The ideal temperature is 15°C and the range between 8°C and 25°C. Running water is applied for at least 20 minutes. Hypothermia must be prevented. If the application of cold water does not take place in the first three hours post-burn, it will have no beneficial effect thereafter. Cool water can be used for its analgesic effect for up to three hours, but this should only occur on minor burn injuries less than 10% in adults and 5% in children where the likelihood of hypothermia is low.

Ice or iced water should never be used to cool a burn injury.

4.2 Preventing hypothermia

The burn injury will cause compromise to the body's thermo-regulatory system and the patient can lose body temperature very quickly. To prevent this, remove wet packs and soaks and cover the patient in a clean sheet or plastic cling wrap and warm blankets, space blankets or patient-warming blankets. Check the patient's temperature regularly.

4.3 Respiratory care

Give 100% oxygen (preferably humidified) to all patients except those with minor burns. 100% oxygen should be given to any patient retrieved from a fire or in a closed space even if cutaneous burns are not present.

Criteria for intubation

1. Clinical evidence of possible airway compromise:
 - head and neck burns/scalds with increased swelling
 - stridor, hoarse voice, swollen lips
 - carbonaceous material around or in the mouth, nose or sputum
 - singed facial, head or nasal hairs
 - intra-oral oedema and erythema
2. Intubate early:
 - if patient unconscious
 - if there are head and neck burns with obvious swelling
 - if the patient is to be transported and meets any of the above criteria.
 - if there are other clinical symptoms and signs and ABG results are indicative of respiratory dysfunction.

If there is any doubt regarding airway management prior to transport, please consult early with the AMRS (adults), NETS (children) and via one of them with the receiving Intensive Care Unit for airway management advice.

4.4 Circulatory care

Two peripheral lines should be inserted; preferably through unburnt skin. Use 16 gauge cannula in adults, and never smaller than 22 gauge cannula in children.

A silastic urinary catheter should be inserted for adults with >20% burns and children with >15% burns. Fluid resuscitation guidelines shown in Section 5.0 should be followed. If the patient is not transferred early, adjust fluids to achieve recommended urine output.

For circumferential burn of the limbs use **ELEVATION** in the first instance. Seek advice from burns unit regarding the need for escharotomy.

4.5 Gastrointestinal care

All patients must remain nil by mouth until after consultation with the appropriate burns unit. However early feeding is important and this should be discussed early if transfer is delayed.

A nasogastric tube is required for all patients with >20% TBSA burns and all intubated patients. Also patients with head and neck burns, after consulting with a Burn Surgeon. Children with TBSA burns >10% require insertion of a gastric tube prior to transfer.

4.6 Pain management

Early pain management is important. Analgesia is always given intravenously. Morphine is the drug of choice in managing acute pain from burns.

Adult requirements administer a stat dose of IV morphine 2 mg repeated if necessary every 5 minutes to a maximum of 0.2 mg/kg.

Paediatric requirements administer a stat dose of IV morphine 0.1mg/kg ***repeated if necessary every 15 minutes to a maximum of 0.3 mg/kg.**

Assess pain score and adjust analgesia to patient requirements.

All medication administered prior to and during transfer must be appropriately documented. This should include dose, time of administration and authorization signature.

4.7 Wound management

Management of the burn wound at presentation should not preclude resuscitation and emergency management interventions. **Once the patient is stable, cling wrap is recommended for transfer.** If the face is burnt, paraffin ointment should be applied.

Silvazine (SSD) should only be used after consulting a burn surgeon. Never apply SSD to a patient’s face.

SSD is not recommended for newborn infants.

If escharotomy is required, it should only be undertaken after consultation with a burn surgeon. If limbs are burnt, elevation can be used where possible to reduce swelling. Avoid the application of tight bandages. Apply only a clean sheet/towel or cling wrap. Patients with head and neck burns should be nursed head-up to reduce oedema and swelling.

If there is a delay in transfer, wound management should take place in consultation with the burn surgeon who will receive the patient.

Clinical photography can play a role in treating the patient. Clinical photographs sent from referring hospitals should be clearly identified with patient identification (eg MRN or retrieval number) but not name and must be accompanied by documentation of consent. This does not obviate a consultative phone call in which relevant history can be provided.

4.8 Tetanus prophylaxis

Tetanus status must be assessed for every person. Check the table below for follow-up.

| Immunisation status | Action |
|---|---|
| More than 10 years since last tetanus toxoid booster OR Person has never had tetanus immunisation OR There is doubt as to their tetanus immunisation. | <ul style="list-style-type: none"> If the burn occurred within the last 24hrs give tetanus immunoglobulin (TIG) 250IU IMI. If the burn occurred more than 24hrs ago give TIG 500IU IMI. <p>Note: Give ADT/DPT/tetanus toxoid at the same time in the opposite arm with a separate syringe and make arrangements for the patient to complete the full course of tetanus toxoid vaccinations.</p> |
| Person has had 3 doses but is 5 or more years since last tetanus toxoid booster. | Give ADT or DPT or tetanus toxoid. |
| Person has had 3 doses and it is less than 5 years since last tetanus toxoid booster. | No tetanus toxoid required. |

- Give the same dose of TIG for adults and children.
- For adults and children >8 years, ADT is preferred to tetanus toxoid.
- For children <8years, DPT (triple antigen) is preferred to tetanus toxoid.
- Use CDT if there has been a previous serious reaction to DPT.

5. Fluid resuscitation

Fluid resuscitation is necessary to maintain adequate circulating blood volume and renal function. Fluid resuscitation should be used for adults with burns >15% TBSA and children with >10% TBSA.

There are two stages to fluid management:

- 1. The Modified Parkland Formula is used to calculate the fluid volumes needed for resuscitation and to generate the desired urine output.**
- 2. Once urine flow is established, hourly urine output measures are used to adjust the fluid input for the following hour.**

Desired urine output must be established and maintained for adults at; **0.5 to 1.0mL/kg/hr** and for children <30kg at; **0.5 to 2mL/kg/hr**.

Patients with delayed resuscitation, electrical conduction injury and inhalation injury have higher fluid requirements.

A higher target urine output (1-2mL/kg/hr) is indicated for patients with haematuria (blood in urine), haemoglobinuria or rhabdomyolysis. Mannitol may be required to achieve this target.

To estimate fluid requirements:

1. The extent of the burn needs to be calculated (see *3 Assessing body surface area burnt*).
2. The patient's weight is needed. If possible, weigh the patient or obtain a weight through the history-taking process.

The data are then used in the resuscitation formula.

Modified Parkland Formula

3-4 mL Hartmann solution x kg body wt x % total body surface area burnt.

Note:

- The calculation of resuscitation fluid requirements is based on the time of the burn, not the time of presentation. The initial volume administered should address any deficit.
- Half the calculated volume should be given in the first 8hrs post-burn injury.
- The remaining half is given over the next 16hrs.
- All care should be taken to avoid hyponatremia, especially in young children and the elderly.
- Use 4mls, in the Formula, for patients with delayed resuscitation, electrical conduction, inhalation injury and if patient has dehydration due to other causes.
- Early review of urine output and status of patient is essential to evaluate the adequacy of the fluid resuscitation and adjust fluids accordingly.

5.1 Example 1 – Adults

Adult fluid replacement for a 70kg patient with 30% burns arriving immediately after the injury.

3 x 70kg x 30% = 6300 etc. Give ½ in the first 8 hrs and 1/2 in the next 16 hrs.

| | |
|-------------------------------|--------|
| 1 st 8-hour period | 3150mL |
| 2 nd 8-hour period | 1575mL |
| 3 rd 8-hour period | 1575mL |

| | |
|--------------------|---------------|
| Total 24hrs | 6300ml |
|--------------------|---------------|

Once fluid resuscitation has been initiated by calculating the formula, the urine output is calculated by multiplying 0.5ml (urine) by the patient's weight (70kg): 0.5ml x 70kg = 35ml of urine/hour minimum.

Hartmann is titrated to meet this requirement by increasing or decreasing the volume given by 30% of the previous hour's rate. In electrical high voltage conduction injuries it may be necessary to increase the volume given by 50% for the next hour.

Example:

The resuscitation fluid rate is at 900mL/hour, the urine output for that hour was 30mL. To compensate, increase the hourly volume to 1200mL then review.

Note: Patients with an electrical conduction injury or inhalation injury will require higher fluid volumes to maintain adequate tissue perfusion.

Paediatrics:

Due to children’s limited physiological reserves and tendency to hypoglycaemia maintenance fluids should be added to the fluid calculated with the Modified Parkland Formula.

Children weighing <30kg should have maintenance fluid in addition to the calculated resuscitation fluid.

Maintenance fluid: N/2 Saline and 2.5% Dextrose

| | |
|-------------------|---|
| Up to 10kg | 100mL/kg/day |
| 10-20kg | 1000mL plus 50mL/kg/day for each kg over 10kg |
| 20-30kg | 1500mL plus 20mL/kg/day for each kg over 20kg |

5.2 Example 2 – Children

3-4mL Hartmann solution x kg body weight x % total burn surface area
plus
Maintenance with N/2 Saline and 2.5% Dextrose for first 24hrs post-burn injury
 Child formula = FR (Modified Parkland Formula) +FM (fluid maintenance) = total fluid requirements in first 24hrs
 A child weighing 25kg with a 20% burn will require the following:
 Child fluid replacement (FR) – Modified Parkland Formula
 $3\text{ml} \times 25\text{kg} \times 20\% = 1500\text{ml}$ in 24hrs **Give ½ in the first 8 hrs and ½ in the next 16 hrs.**

| | |
|-------------------------------|-----------------------------------|
| 1 st 8-hour period | $750\text{mL}/8 = 94\text{mL/hr}$ |
| 2 nd 8-hour period | $375\text{mL}/8 = 47\text{mL/hr}$ |
| 3 rd 8-hour period | $375\text{mL}/8 = 47\text{mL/hr}$ |
| <hr/> | |
| Total FR 24hours | 1500mL/24hrs |

plus
 child fluid maintenance (FM) 25kg child in 24 hours

| | |
|-------------------------------------|-----------|
| 1 st 10kg – 100ml x 10kg | = 1000mL |
| Next 10kg – 50ml x 10kg | = 500mL |
| Next 5kg – 20ml x 5kg | = 100mL |
| <hr/> | |
| Total FM 1600ml/24hrs | = 67ml/hr |

Therefore
 the hourly rate for the 1st 8 hours is the FR + FM

| |
|----------|
| FR 94ml |
| +FM 67ml |
| <hr/> |
| 161ml/hr |

Total fluid requirement = 3100ml for 1st 24 hrs (i.e. 1500ml (FR) + 1600ml (FM))

6. Transfer

- The Burn Patient Emergency Assessment & Management Chart (Appendix 1) should be completed for the patient being transferred (including history of burn, related injuries, and other relevant medical details) and sent with the patient. A photocopy of the fluid balance chart, amount of analgesics given and any signed consents obtained, should be sent with the patient or, in retrieval cases, faxed or given to the AMRS or NETS as appropriate.
- Transfer should occur within 4 hours if possible.
- If an Intensive Care bed is required, the AMRS will organise transfer for adults and NETS will organise for children.

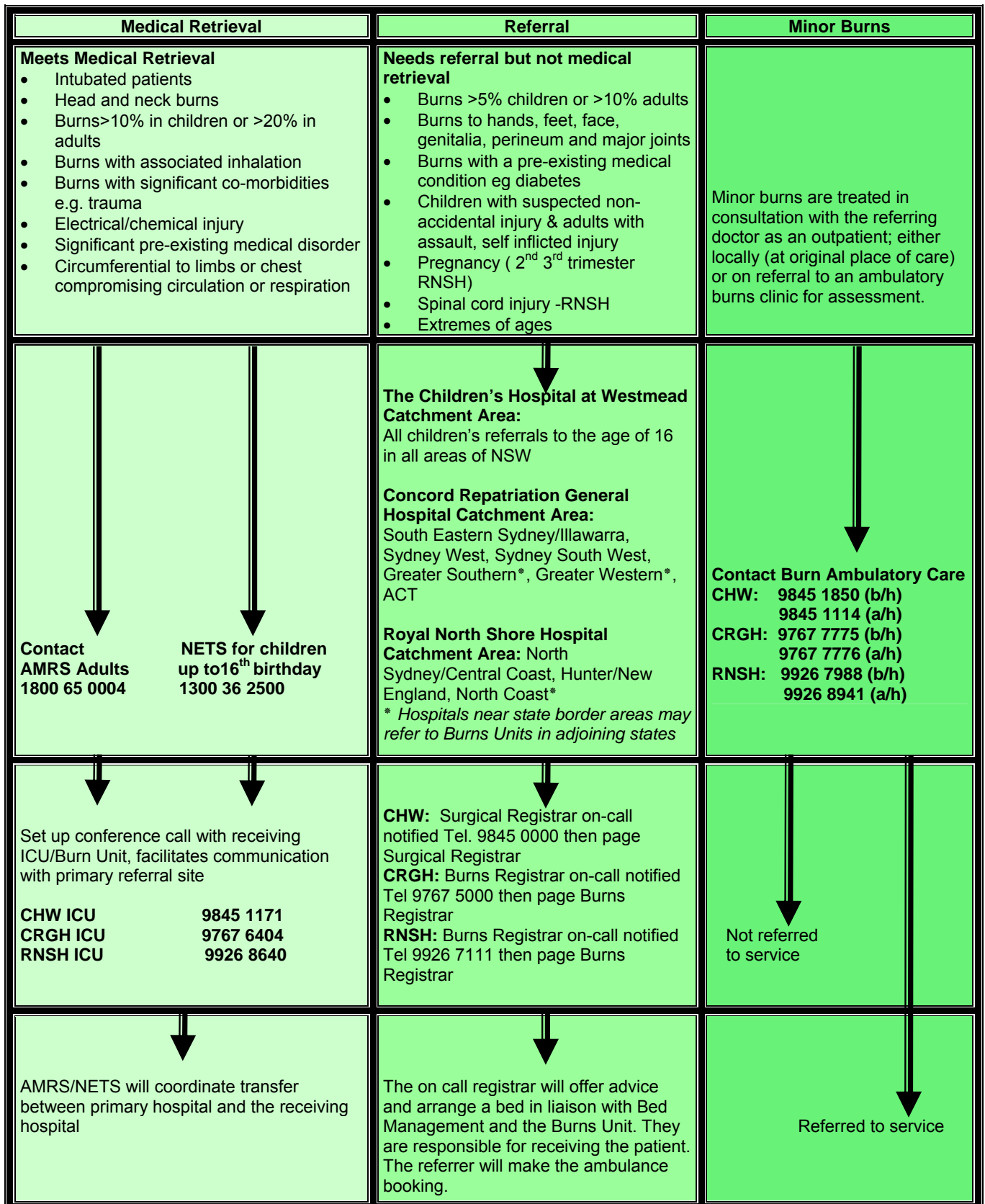
Documentation

The Burn Patient Emergency Assessment & Management Chart should be completed and be faxed to the Retrieval Service (AMRS or NETS) at the time of initial call and then a copy given to the Team for transport; along with any signed consents, history and relevant information.

7. Treatment of minor burns and those not meeting transfer criteria

- Services exist within the NSW Severe Burn Injury Service for burn advice 24hrs a day. The contact details are provided in Appendix 2.
- Each tertiary referral site has an ambulatory care service for wound management and minor burn review. These services can be contacted during business hours. Contact details are provided in Appendix 2.
- Many patients not meeting the burn referral criteria can be managed at their primary referring site. The NSW Severe Burn Injury Service is able to provide support and assistance to primary health sites to liaise in ongoing burn management.

NSW Severe Burn Injury Service Burn Transfer Flow Chart

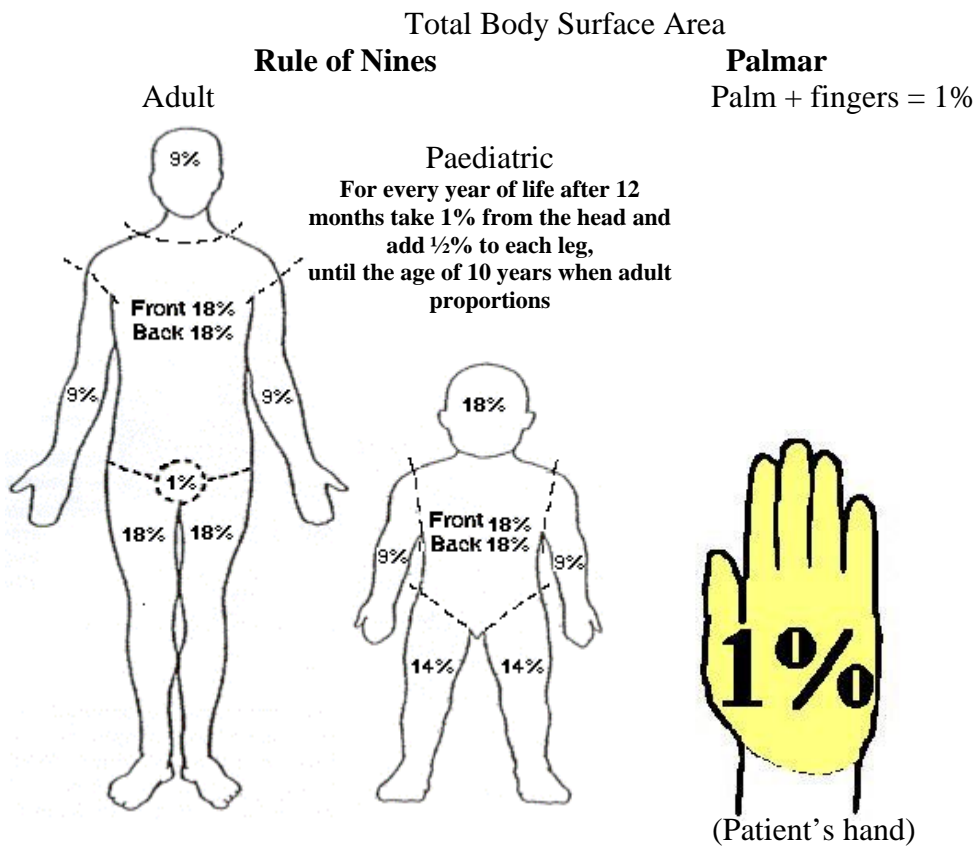


Any issues or problems with these processes or if further advice is required, The NSW Severe Burn Injury Service Manager can be contacted on 02 9926 5641.

Appendix 1: Burn Patient Emergency Assessment & Management Chart

| | |
|--|---|
| To be used for patients requiring transfer to a specialised burn unit. | Place patient label here or: MRN: _____ Name: _____ D.O.B. _____ Sex: _____ AMO: _____ Ward: _____ |
| Presentation Date: _____ Time: _____ Trauma Call: <input type="checkbox"/> YES <input type="checkbox"/> NO Burn Date: _____ Burn Time: _____ Triage Category: _____ Weight (kgs): _____ Doctor: _____ Burn Mechanism: _____ First Aid given (as defined below): <input type="checkbox"/> NO <input type="checkbox"/> YES Specify _____ | |
| FIRST AID | |
| <ul style="list-style-type: none"> • At least 20 mins cold running water (8 - 25°C). <u>Effective up to 3 hours post injury.</u> • Protect against hypothermia, keep rest of body warm. Cease cooling if body temp <35°C | |
| PRIMARY SURVEY | |
| Airway <input type="checkbox"/> Normal <input type="checkbox"/> Neck/facial burns with swelling <input type="checkbox"/> Burn in confined space <input type="checkbox"/> Intubated <input type="checkbox"/> Hoarse Voice / Stridor / Cough / Carbonaceous material – mouth / nose / sputum C Spine <input type="checkbox"/> Normal <input type="checkbox"/> At Risk <input type="checkbox"/> Immobilised | |
| Breathing RR ____ Air Entry _____ O ₂ sats ____ FiO ₂ ____ Effort - normal/shallow/increased Burn circumferential around chest / torso / neck? <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| Circulation HR _____ BP _____ / _____ Central capillary refill <input type="checkbox"/> 1-2 seconds <input type="checkbox"/> > 2 seconds <input type="checkbox"/> Absent Any circumferential burns? <input type="checkbox"/> No <input type="checkbox"/> Yes, specify area/s _____ Peripheral capillary refill <input type="checkbox"/> 1-2 seconds <input type="checkbox"/> > 2 seconds <input type="checkbox"/> Absent | |
| Disability Level of consciousness (AVPU): _____ Pupils: (L) ____ mm (R) ____ mm AVPU = A – Alert, V - Response to Vocal stimuli, P - Responds to Painful stimuli, U - Unresponsive | |
| Environment Patient Temp. ____ °C @ _____ (time/date) Temp route _____ Remove clothing and jewellery Keep unburnt areas warm Warm IV fluids <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> N/A Warm blankets <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> N/A | |
| Assess % Total Body Surface Area (TBSA) burnt using Rule of Nines (see page 2) TBSA body chart completed? <input type="checkbox"/> No <input type="checkbox"/> Yes By whom? _____ | |
| Fluid Resuscitation (see page 3 for specific fluid calculations) <input type="checkbox"/> Not required Large bore IVCs (2 for >20%, 1 for >10%) or CVL inserted? <input type="checkbox"/> No <input type="checkbox"/> Yes Bloods taken: <input type="checkbox"/> FBC <input type="checkbox"/> EUC <input type="checkbox"/> BSL <input type="checkbox"/> Coags <input type="checkbox"/> COHb <input type="checkbox"/> Drug screen IDC Inserted? (if % TBSA > 10% or perineum) <input type="checkbox"/> No <input type="checkbox"/> Yes Nasogastric tube inserted? (if % TBSA > 15%) <input type="checkbox"/> No <input type="checkbox"/> Yes | |
| Co-existing injuries? <input type="checkbox"/> Yes <input type="checkbox"/> Possible (eg blast / electrical injury) <input type="checkbox"/> No Specify _____ | |
| PAIN MANAGEMENT | |
| Morphine is the drug of choice for acute pain following burns. If allergic use appropriate alternative. <ul style="list-style-type: none"> • Adults Stat IV morphine 2mg, repeat every 5mins as required Max. 0.2mg/kg • Children Stat IV morphine 0.1mg/kg, repeat every 15mins as required Max. 0.3mg/kg • Reassess every 5 minutes and discuss with appropriate medical staff if analgesia insufficient • Minor burn Oral analgesia (eg paracetamol +/- codeine / oxycodone, etc) may be adequate | |
| Analgesia given prior to presentation: <input type="checkbox"/> No <input type="checkbox"/> Yes Specify _____ Pain Score _____ Time _____ (use age appropriate pain rating scale) Analgesia given _____ Dose _____ Time _____ Effective <input type="checkbox"/> No <input type="checkbox"/> Yes | |
| IMMUNISATION | |
| Immunisations up to date? <input type="checkbox"/> No <input type="checkbox"/> Yes Specify _____ Tetanus status: <input type="checkbox"/> Primary course given <input type="checkbox"/> Give Immunoglobulin if < 3 doses <input type="checkbox"/> Last dose of booster _____ <input type="checkbox"/> Give booster if last booster > 5yrs ago | |

ASSESSMENT OF % TOTAL BODY SURFACE AREA (TBSA) AND BURN DISTRIBUTION



BURN DISTRIBUTION (shade affected areas on diagram below)

Shade affected area

Total % TBSA

= _____

NB Faint erythema not included in % TBSA assessment

NB Difficult to accurately assess burn depth within the first 24 - 48 hrs post injury

| RESUSCITATION FLUIDS (if > 10% TBSA for children, >15% for adults) | |
|--|---|
| Weight _____ kg | |
| Modified Parkland Formula = 3-4 mls x weight (kg) x % TBSA burn to be given as Hartmann's solution in 24hrs following the injury (see Transfer Guidelines) 3-4 mls x _____ kg x _____ % TBSA = total fluids for 1st 24hrs * NB This is a guide only - Titrate fluids to urine output* | |
| Total resuscitation fluids in 24hrs | _____ mls |
| | Start time _____ Finish time _____ |
| 50% Replacement in 1 st 8hrs following injury | _____ mls |
| Total Fluid given prior to admission | _____ mls |
| Subtract Fluid already given = fluid to be given to complete 1 st 8hrs | _____ mls |
| Hourly rate for replacement (within 1st 8 hrs) | mls/hr |
| | Start time _____ Finish time _____ |
| Remaining 50% of Replacement in next 16hrs | _____ mls |
| Hourly rate for replacement (in subsequent 16 hrs) | mls/hr |
| | Start time _____ Finish time _____ |
| Maintenance fluids (for children < 30kgs only) | _____ mls/hr |
| MAINTENANCE FLUIDS (Not applicable for adults) | |
| Children < 30kg require maintenance fluids (N/2 Saline + 2.5% Dextrose) in addition to resus. fluids. | |
| Up to 10kg | 100ml/kg/day |
| 10-20kg | 1000mls plus 50ml/kg/day (for each kg >10kg and <20kg) |
| 20-30kg | 1500mls plus 20ml/kg/day (for each kg > 20kg) |
| URINE OUTPUT | |
| <ul style="list-style-type: none"> • Children 1ml/kg/hr (range 0.5 – 2ml/kg/hr) • Adults 0.5 – 1 ml/kg/hr • 2ml/kg/hr required for pigmented urine such as myoglobinuria / haemoglobinuria | |
| REFERRAL CRITERIA | |
| Refer to Transfer Guidelines (“Referral” meaning <i>contact</i> with not necessarily <i>transfer</i> to Burn Unit) | |
| <ul style="list-style-type: none"> • Partial/full thickness burns in children >5% TBSA, in adults >10% TBSA. • Any priority areas are involved, i.e. face/neck, hands, feet, perineum, genitalia and major joints. • Caused by chemical or electricity, including lightning. • Any circumferential burn. • Burns with concomitant trauma or pre-existing medical condition. • Burns with associated inhalation injury. • Suspected non-accidental injury. • Pregnancy with cutaneous burns <p>NB All paediatric burns (<16 yrs) fitting any of the above criteria need referral to The Children’s Hospital at Westmead (CHW). Adult burns fitting above criteria need referral to the adult unit at Royal North Shore Hospital (RNSH) or Concord Repatriation General Hospital (CRGH) (dependent on area health service intake area). For contact details see Transfer Guidelines.</p> | |
| DRESSING | |
| For transfer to specialist unit within 8 hrs apply cling film to burnt areas (Vaseline gauze/white paraffin for face). Do not wrap circumferentially. For delayed transfer > 8hrs apply antimicrobial dressing such as Vaseline gauze (eg Bactigras) or silver dressing, after discussion with burn unit. | |
| For burns not requiring transfer to specialist unit | |
| <ul style="list-style-type: none"> • give pre med analgesia 30mins prior to procedure (eg paracetamol +/- codeine / oxycodone, etc) • clean wound with chlorhexidine 0.1%, saline or clean water • apply appropriate dressing such as silver dressing or Vaseline gauze (see Minor Burn Management). Contact Burn Unit for advice if required. • make follow-up appointment and advise on care and analgesia for home usage and pre-dressing. | |

| HISTORY OF INJURY | |
|--|-------|
| When did it happen? Time: | Date: |
| How did it happen? | |
| Who saw it? | |
| Who else was there? | |
| What was done? | |
| Was the burn cooled? <input type="checkbox"/> No <input type="checkbox"/> Yes If YES when, with what and for how long? | |
| MEDICAL HISTORY | |
| Past Medical History | |
| Co-morbidities? | |
| Allergies? <input type="checkbox"/> No <input type="checkbox"/> Yes If YES specify? | |
| Medications? <input type="checkbox"/> No <input type="checkbox"/> Yes If YES specify? | |
| Last oral intake? | |
| Social History | |
| SOCIAL ISSUES | |
| Any features of concern? Eg non-accidental injury/self-harm/abuse? <input type="checkbox"/> No <input type="checkbox"/> Yes If YES specify? | |
| CPU / DOCS / Psych Team notified? <input type="checkbox"/> No <input type="checkbox"/> Yes DOCS Reference Number | |
| Action taken | |
| Signature: | |
| Print name: | |

| CONTACT NUMBERS | | | |
|---|--------------|--|---------------------------|
| Retrieval (refer to Transfer Guidelines for Retrieval Criteria) | | Transfer and consultations (Burns Registrar via Hospital Switch) | |
| AMRS (adult retrieval) | 1800 650 004 | RNSH | 02 9926 7111 (adult) |
| NETS (paediatric retrieval) | 1300 362 500 | CRGH | 02 9767 5000 (adult) |
| | | CHW | 02 9845 0000 (paediatric) |
| <p>NB Digital pictures can be emailed to Burn Units only after consent and contact have been made RNSH - burnsconsult@nsccahs.health.nsw.gov.au CHW - kidsburns@chw.edu.au</p> | | | |

Appendix 2: Contact details for the NSW Severe Burn Injury Service

Adults (16 years +)

AMRS - Aeromedical and Medical Retrieval Service
1800 650 004

Children (< 16 years)

NETS - NSW newborn & paediatric Emergency Transport Service
1300 36 2500
help@nets.org.au

NSW Severe Burn Injury Service campuses

Royal North Shore Hospital

Area Health Service Coverage: *Northern Sydney/Central Coast, Hunter/New England and North Coast.* RNSH will cover all areas to the north and north-west of Sydney

Burns Registrar /Consultant on-call

Tel. 9926 7111 then page Burns Registrar
Intensive Care Unit 9926 8640 or 9926 8642

Ambulatory Care/Burn Unit

Tel. 9926 7988 (b/h), 9926 8941 (a/h)
Fax: 9926 7589

Burns/Plastics CNC

Tel. 9926 8940
Tel. 9926 7111 then page Burns/Plastics CNC
Office Tel. 9926 8940
Digital photos can be sent to burnsconsult@nscchahs.health.nsw.gov.au only after consent and contact have been made

Concord Repatriation General Hospital

Area Health Service Coverage: *South Eastern Sydney/Illawarra, Western Sydney, south western Sydney, Greater southern, Greater Western, ACT.* Concord will cover all areas to the west and south of Sydney.

Burns Registrar/Consultant on-call

Tel. 9767 5000 then page
Intensive Care Unit 9767 6404

Ambulatory Care/Burns Unit

Tel. 9767 7775 (b/h), 9767 7776 (a/h)
Fax. 97675835

Burns Transitional Nurse Practitioner

Tel. 9767 5000 then page 60271
Office Tel 97677798

The Children's Hospital at Westmead

Will take referrals for all children to the age of 16 years in NSW and the ACT.

Burns Registrar on-call

Tel. 9845 0000 then page Surgical Registrar if Registrar not available page Burns Specialist on call

Ambulatory Care/Burn Unit

Tel. 9845 1850 (b/h), 9845 1114 (a/h)

Fax. 9845 0546

Burns Transitional Nurse Practitioner

Tel. 9845 0000 then page 7038

Office Tel. 9845 1029

Digital photos can be sent to kidsburns@chw.edu.au only after consent and contact have been made

NSW Severe Burn Service Directorate

Can be contacted for any information regarding burns, issues with burn transfers and admissions, Clinical Practice Guideline information, and advice and direction on who to contact for clinical issues within the service.

Tel. 9926 5641 (b/h) or 0421 029 430 to speak to the NSW Severe Burn Injury Service Network Manager.

Webpage: www.health.nsw.gov.au/gmct/burninjury

Appendix 3: List of contributors

This document was prepared by the Directorate NSW Severe Burn Injury Service (SBIS) with contributions from:

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