

Clinical Practice Guidelines: Burn Patient Management

ACI Statewide Burn Injury Service

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Agency for Clinical Innovation

NSW Health describes the Agency for Clinical Innovation (ACI) in the following way: “ACI is a board-governed statutory health corporation that reports to the NSW Minister for Health and the Director-General of NSW Health. Established by the NSW Government in direct response to the Garling Inquiry into Acute Care Services in NSW Public Hospitals, the ACI is building on the work of the Greater Metropolitan Clinical Taskforce (GMCT), and engaging doctors, nurses, allied health professionals, managers and the wider community in the process of researching, designing and delivering evidence-based improvements to the way specific treatments and services are provided within the NSW public health system. As one of the "pillars of reform" identified by the former Commissioner Peter Garling SC, the ACI works closely with the Bureau for Health Information, Clinical Excellence Commission, the Clinical Education and Training Institute and the Cancer Institute NSW (NSW Health, 2011).

Abbreviations

ACI	Agency for Clinical Innovation
SBIS	ACI Statewide Burn Injury Service
ANZBA	Australian and New Zealand Burn Association
EMSB	Emergency Management of Severe Burns course
ED	Emergency Department
TBSA	Total Body Surface Area
IV	Intravenous
IM	Intramuscular
IDC	In-Dwelling Catheter
C spine	Cervical spine
MBA	Motorbike Accident
IPL	Intense Pulse Light
LPG	Liquid Petroleum Gas
LDI	Laser Doppler Imaging

TABLE OF CONTENTS

ACKNOWLEDGMENTS

CONTRIBUTORS

AGENCY FOR CLINICAL INNOVATION

ABRIEVIATIONS

1. INTRODUCTION	2
1.1 Purpose	2
2. MANAGEMENT OF THE BURN WOUND: FIRST AID	3
3. EMERGENCY ASSESSMENT AND MANAGEMENT OF SEVERE BURNS	5
3.1 Acute Management	5
3.2 Surface Area Assessment	9
3.3 Pain Management	10
3.4 Initial Assessment of the Burn Wound Depth	11
3.5 Recognising Burn Depths	13
4. ON PRESENTATION OF BURN PATIENT TO THE ED - FLOWCHART	15
5. BURN UNIT ADMISSION CRITERIA	16
6. BURN WOUND MANAGEMENT	18
6.1 Burn Wound Healing Principles and Concepts	18
6.2 Burn Patient Dressing Decision-Making Tree	19
6.3 Cleansing and Debriding the Burn Wound	20
6.4 Digital Photograph of the Burn Wound	22
6.5 Selecting an Appropriate Dressing: Quick Reference Guide	24
6.6 Dressing Procedure	25
6.7 Specific Dressing Application	27
6.8 Dressing Fixation Application	29
7. THE MULTIDISCIPLINARY TEAM	31
8. WEBSITES	32
9. APPENDICES	32
9.1 Burn Wound Management: Wound Care Product Selection	33

1. Introduction

1.1 Purpose

The following guidelines were developed by specialist staff working within the ACI Statewide Burn Injury Service (SBIS) from the tertiary Burns Units at The Children's Hospital at Westmead, Royal North Shore Hospital and Concord Repatriation General Hospital. They were designed for use by staff working in these Burn Units to guide practice, not to replace clinical judgement.

Burn Units provide specialist, multidisciplinary care in the management of burn injuries due to the continued reinforcement of treatment modalities, which is not readily available in outlying areas. Burn care involves high expense for wound management materials, staffing, equipment and long term scar management products. There are also commonly long term issues arising from the initial trauma, resultant scars and the ongoing effects these have on the patient and their family.

It is acknowledged that primary care or follow up management of burn injuries may occur outside of specialist units, particularly for patients with a minor burn. These guidelines are designed as a practical guide to complement relevant clinical knowledge and the care and management techniques required for effective patient management. Clinicians working outside a specialist burn unit are encouraged to liaise closely with their colleagues within the specialist units for advice and support in burn patient management.

Due to the dynamic nature of burn wounds and the large and changing number of available wound management products, it is not possible to state emphatically which product is superior for each wound, however suggestions of possible dressings for different wound types are included in this document, along with application advice.

1.2 References:

Please refer to Clinical Practice Guidelines: Summary of Evidence, available via the SBIS website, for supporting material for this document.

2. Management of the Burn Wound – First Aid

Aim:

- Stop the Burning Process
- Cool the Burn Wound

2.1 Stop the Burning Process

- Remove patient from the source of injury.
- If on fire STOP, DROP, COVER face & ROLL
- Remove hot, scalding or charred clothing.
- Avoid self harm during above steps.

2.2 Cool the Burn Wound

- Cool burn with cold running tap water for at least 20 minutes
- Ideal water temperature for cooling is 15°C, range 8°C to 25°C
- Cooling is effective up to 3 hrs after injury
- Keep the remaining areas dry and warm to avoid hypothermia. If patient's body temperature falls below 35°C - stop cooling.

NB

- Ice should not be used as it causes vasoconstriction and hypothermia. Ice can also cause burning when placed directly against the skin.
- Duration of running water should be at least 20 minutes unless other factors prevent this (eg. large burn causing rapid heat loss, hypothermia, and multiple traumas).
- Wet towels / pads are not efficient at cooling the burn as they do not cool the wound adequately. They should not be used unless there is no water readily available ie in transit to medical care. If required use 2 moistened towels / pads and alternate at 30 second intervals.
- Remove any jewellery or constrictive clothing as soon as possible.

2.3 Seek medical advice

- Dial "000" (Triple Zero) for any burn over 10% of the body for adults, 5% of the body for children, or when there are associated trauma or concerns.
- Visit a local doctor if the burn is larger than the size of a 20c piece with blisters, or if there are any concerns about the burn.

Plastic cling wrap is an appropriate simple dressing for transferring patients with burn injuries to a specialist burns unit. It protects against bacterial colonisation and excess fluid and heat loss.

2.4 On arrival at Hospital

- Place the person on a clean dry sheet and keep them warm.
- Keep the burn covered with plastic cling wrap and a clean sheet when not being assessed.
- Elevate burnt limbs.
- Small burns may require continuous application of water to reduce pain.
- Chemical burns require copious amounts of water for prolonged periods. A shower is preferable. Identify the chemical involved. If the chemical is a powder first brush off excess, then irrigate.

- Eye burns require an eye stream (*saline*) or an IV bag of saline attached to a giving set and placed over the open eye to flush it adequately until ph is neutral

Outcome: The burning process is stopped and the burn wound is cooled.

For further information see NSW Statewide Burn Injury Service Transfer Guidelines

http://www.health.nsw.gov.au/policies/gl/2008/pdf/GL2008_012.pdf

3. Emergency Assessment and Management of Severe Burns

Aim:

Immediate life threatening conditions are identified and emergency management commenced.

3.1 Acute Management

3.1.1 Primary Survey

A. Airway maintenance with cervical spine control

- Stabilise the neck for suspected cervical spine injury.
- It is important to maintain a patent airway. Inspect the airway for foreign material/oedema. If the patient is unable to respond to verbal commands open the airway with a chin lift and jaw thrust.
- Keep movement of the cervical spine to a minimum and never hyperflex or hyperextend the head or neck.
- Insert a Guedel Airway if airway patency is compromised. Think about early intubation.

B. Breathing and Ventilation

- Administer 100% oxygen
- Expose the chest and ensure that chest expansion is adequate and bilaterally equal – beware circumferential deep dermal or full thickness chest burns – is escharotomy required?
- Palpate for crepitus and for rib fractures
- Auscultate for breath sound bilaterally
- Ventilate via a bag and mask or intubate the patient if necessary.
- Monitor respiratory rate – beware if rate <10 or > 20 per minute.
- Apply pulse oximeter monitor
- Consider carbon monoxide poisoning – non burnt skin may be cherry pink in colour in a non-breathing patient (send blood for carboxyhaemoglobin)

C. Circulation with Haemorrhage Control

- Inspect for any obvious bleeding – stop with direct pressure.
- Monitor and record the peripheral pulse for rate, strength (strong, weak) and rhythm,
- Apply capillary blanching test (centrally and peripherally to burnt and non-burnt areas) – normal return is two seconds. Longer indicates poor perfusion due to hypotension, hypovolaemia or need for escharotomy on that limb; check another limb.
- Monitor circulation of peripheries if there is a circumferential burn present. Firstly elevate the limb to reduce oedema and aid blood flow (Kagan & Smith 2000). If this does not prove effective then it may be necessary to perform an escharotomy.

D. Disability: Neurological Status

- Establish level of consciousness:
 - A** - Alert
 - V** - Response to Vocal stimuli
 - P** - Responds to Painful stimuli
 - U** - Unresponsive

- Examine pupils response to light for reaction and size.
- Be alert for restlessness and decreased levels of consciousness – hypoxaemia, CO intoxication, shock, alcohol, drugs and analgesia influence levels of consciousness.

E. Exposure with Environmental Control

- Remove all clothing and jewellery.
- Keep patient warm
- Hypothermia can have detrimental effects on the patient. It is important to ensure that the patient is kept warm, especially during first aid cooling periods.
- Log roll patient, remove wet sheets and examine posterior surfaces for burns and other injuries.

F. Fluids Resuscitation

- Fluid Resuscitation will be required for a patient who has sustained a burn >10% for children, >15% for adults.
- Estimate burn area using Rule of Nines. For smaller burns the palmar surface (including fingers) of the patient's hand (represents 1% TBSA) can be used to calculate the %TBSA burnt.
- Insert 2 large bore, peripheral IV lines preferably through unburned tissue.
- Collect bloods simultaneously for essential base line bloods - FBC/EUC/ LFT. /Group & hold/Coags. Others to consider – Drug/alcohol screen/Amylase/Carboxyhaemoglobin
- Obtain patients body weight in kgs.
- Commence resuscitation fluids, IV Hartmann's solution at an initial rate of the Modified Parkland Formula and adjust according to urine output:

3-4 mls x kgs x % TBSA burnt = IV fluid mls to be given in 24hrs following the injury
 Give ½ of this fluid in the first 8hrs from the time of injury
 Give a ½ of this fluid in the following 16hrs

- Children less than 30kg require 5% dextrose /N/2 saline for maintenance fluids in addition to resuscitation fluids.
- Insert an IDC for all burns >10% for children, >15% for adults and attach hourly urine bag. IV fluids are adjusted each hour according to the previous hour's urine output.

REMEMBER: The infusion rate is guided by the urine output, not by formula.

The urine output should be maintained at a rate

Adult 0.5 / kg / hr

Children 1 ml / kg / hr

- If urine output <0.5mls/kg/hr increase IV fluids by 1/3 of current IV fluid amount. If urine output >1ml/hr for adults or >2ml/kg/hr for children decrease IV fluids by 1/3 of current IV fluid amount (see fluid balance chart on following page).

Eg: Last hrs urine = 20mls, received 1200mls/hr, increase IV to 1600mls/hr

Last hrs urine = 100mls, received 1600mls/hr, decrease IV to 1065mls.

- More IV fluids are required:
 1. When haemochromogenuria (dark red, black urine) is evident.
Haemochromogenuria occurs when the person has endured thermal damage to muscle eg electrical injury. Mannitol may be ordered if haemochromogenuria evident.
 2. Inhalation Injury.

- 3. Electrical injury
- 4. Delayed resuscitation
- 5. Fluid loss prior to burn eg fire fighter, diuretics, alcohol etc.
- ECG, pulse, blood pressure, respiratory rate, pulse oximetry or arterial blood gas analysis as appropriate.

3.1.2 Nutrition

- Insert nasogastric/ nasojejun tube for larger burns (>20% TBSA in adults; >15% TBSA in children) or if associated injuries. See SBIS Nutrition & Dietetics Guidelines.

3.1.3 Pain Relief

- Give morphine (or other appropriate analgesia) slowly, intravenously and in small increments according to pain score and sedation scale (see Page 18).

3.1.4 Secondary Survey

Perform a comprehensive secondary survey.

3.1.4.1 History

A	-	Allergies
M	-	Medications
P	-	Past Illnesses
L	-	Last Meal
E	-	Events/Environment related to injury

3.1.4.2 Mechanism of Injury

- Gather information from the patient or others the following:
 - Date and time of burn injury, date and time of first presentation.
 - Source of injury and length of contact time.
 - Clothing worn.
 - Activities at time of burn injury.
 - Adequacy of first aid.

3.1.4.3 Head to Toe Assessment

- Reassess **A, B, C, D, E, and F**

3.1.4.4 Other actions

- Record and document
- Swab all burn wounds and send to microbiology.

3.1.5 Circulation:

If the patient has a circumferential full thickness burn it may impede circulation and or ventilation (if burn around chest).

- Contact the Burns Registrar at a specialist burns unit.
- Elevate the effected limb above the heart line.
- Commence a circulation chart.
- Escharotomy may be necessary to relieve pressure if circulation is compromised.

3.1.6 Psychosocial Care

- Document next of kin and telephone number.
- Inform and provide support to family.
- Obtain relevant psychosocial information during assessment and document.
- Contact relevant Social Worker, Psychologist or Psychiatrist

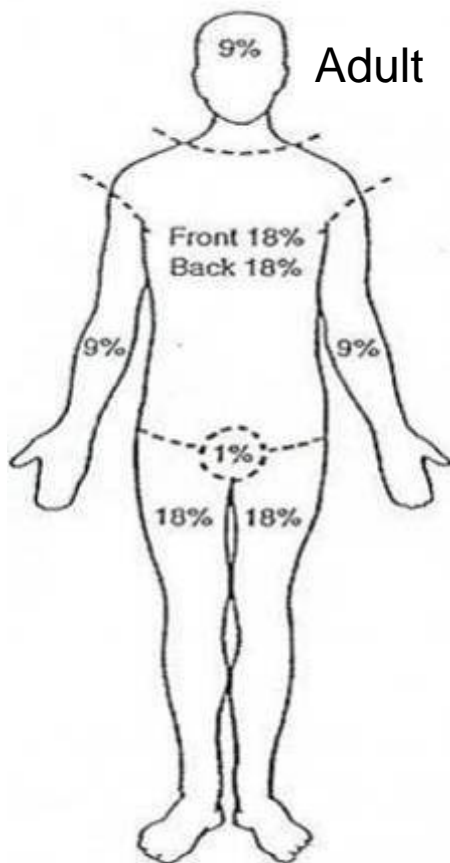
3.1.7 Re-evaluate

- Give tetanus prophylaxis if required
- Note urine colour for haemochromogenuria
- Laboratory investigations:
 - Haemoglobin/ haematocrit
 - Urea/creatinine
 - Electrolytes
 - Urine microscopy
 - Arterial blood gases, carboxyhaemoglobin/
 - Electrocardiogram

Outcome: Life threatening injuries are identified and patient receives emergency management

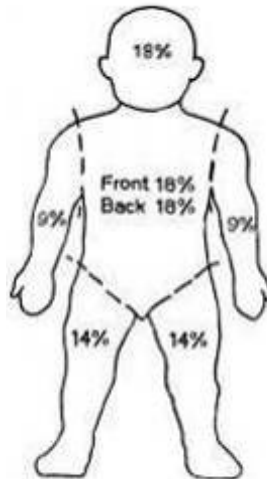
3.2 Surface Area Assessment

3.2.1 Rule of Nines



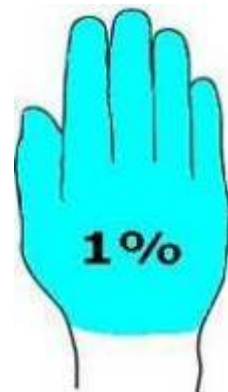
Child

For every year of life after 12 months take 1% from the head and add $\frac{1}{2}\%$ to each leg, until the age of 10 years when adult proportions



3.2.2 Palmar Method

- Palm and fingers of the patient = 1% TBSA
- Useful for small and scattered burns
- Can be used for subtraction e.g. full arm burnt except for hand-sized area = 8% TBSA



3.3 Pain Management

Aim:

- To reduce pain levels that are unacceptable to the patient
- To minimise the risk of excessive or inadequate analgesia

3.3.1 Assessment

- How much pain does the patient have? Utilise a scale such as the Visual Analogue Scale (VAS) at regular intervals every 3-5 minutes, document.
- How much analgesia has the patient been given prior to arrival?
- Ask the patient if they use illicit drugs and alcohol.
- Weigh patient so that analgesic amounts are adequate.

3.3.2 Acute Management

- Give small increments of IV narcotic. A standard stat dose of IV morphine is 2.5 - 10 mg for adults and 0.1 - 0.2 mg/kg of body weight for children.
- The dose should be titrated against the patient's response, including the respiratory rate.
- A narcotic infusion can be commenced once the initial treatments have stabilised the patient.
- Burn procedures may require analgesia beforehand allowing time for it to take effect. The drug of choice is determined on an individual basis and may include an opiate such as morphine, with paracetamol. Oral midazolam may also be used for its dissociative, anxiolytic and sedative qualities. Antihistamines can be useful in patients where there is excessive itch, but should not be used in conjunction with midazolam. Inhaled nitrous oxide mixture is often used during dressing removal and reapplication in some cases.
- Tapes, music and overhead pictures are useful diversion/distraction techniques. For children a play therapist can also assist with procedures. Provision of diversion/distraction therapy can help decrease pain and anxiety for both adults and children.
- Anti-emetics may be necessary when narcotics are given.
- Aperients to be administered when narcotics given to avoid constipation.
- Oral analgesia may be administered to patients with minor burns.
- Follow local hospital/institutional Pain Management Guidelines.

3.3.3 Special Considerations:

Narcotic IM injections should not be administered for major burns as peripheral shut down occurs in burns > 10% TBSA. Absorption of the drug will not take place so pain relief will not be achieved. As circulation improves an overdose of the opiate may occur.

Outcome: Pain is kept at an acceptable level

3.4 Initial Assessment of the Burn Wound Depth

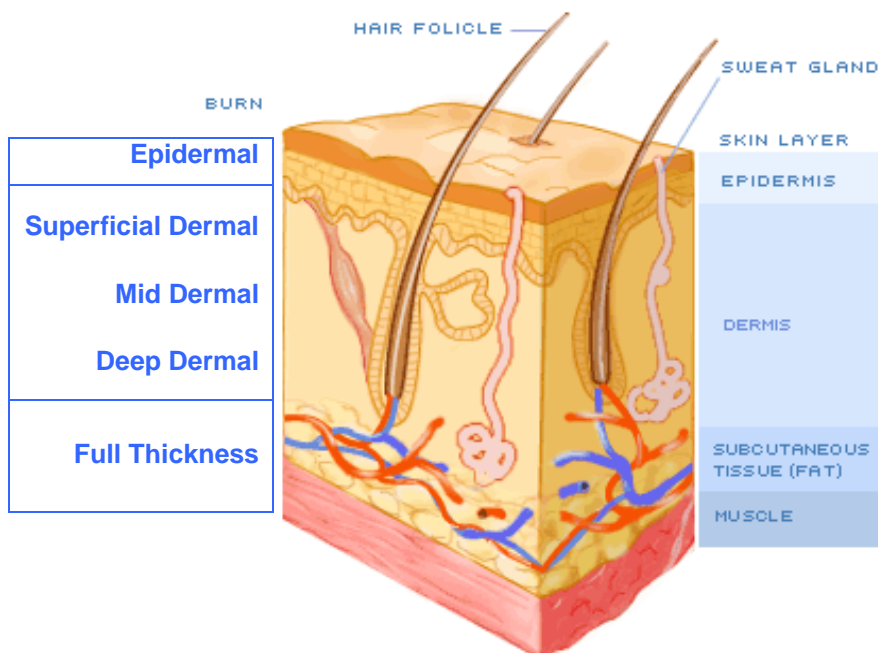
Aim:

- To determine the depth of the burn wound.
- Epidermal, superficial dermal (superficial partial), mid-dermal (partial), deep dermal (deep partial), and full thickness are terms to describe the depth of burn injury.

3.4.1 To determine the depth of the injury several aspects should be investigated

- Clinical examination of the burn, including capillary refill
- Source and mechanism of the injury, including heat level, chemical concentration, and contact time with source.
- First aid. Prompt first aid will reduce further destruction of the zone of stasis.
- Age of the patient
- Pre existing disease or medical condition

3.4.2 Burn Skin Depth



http://www.skinhealing.com/2_2_skinburnsscars.shtml

3.4.3 Burn Wound Depth Assessment Table

Depth	Colour	Blisters	Capillary Refill	Healing	Scarring
Epidermal	Red	No	Brisk 1-2 sec	Within 7 days	None
Superficial Dermal (Superficial Partial)	Red / Pale Pink	Small	Brisk 1-2 sec	Within 14 days	None Slight colour mismatch
Mid-Dermal (Partial)	Dark Pink	Present	Sluggish >2 sec	2-3 weeks Grafting may be required	Yes (if healing >3wks)
Deep Dermal (Deep Partial)	Blotchy Red / White	+/-	Sluggish >2 sec / Absent	Grafting required	Yes
Full Thickness	White / Brown / Black (charred) / Deep Red	No	Absent	Grafting required	Yes

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

3.4.4 Capillary Refill

Pictures by Rae Johnson CNC CRGH



If there is a blister lift small area of skin. Apply pressure to wound bed and observe for capillary refill, replace skin as biological dressing if acceptable refill time.

3.5 Recognising Burn Depths

Aim:

- Define burn wound depths

Epidermal Burn



- Skin intact, blanch to pressure
- Erythema not included in % TBSA assessment
- Heal spontaneously within 3-7 days with moisturiser or protective dressing

Superficial Dermal Burn (Superficial Partial Thickness)



- Blisters present or denuded
- Blanch to pressure (under blister)
- Should heal within 7-10 days with minimal dressing requirements

Mid Dermal Burn (Mid Partial Thickness)



- Heterogeneous, variable depths
- Blanching to pressure may have slow capillary return
- Should heal within 14 days
- Deeper areas or over a joint may need surgical intervention and referral

Deep Dermal Burn (Deep Partial Thickness)



- Heterogeneous, variable depths
- Deeper areas may not blanch
- Generally need surgical intervention

Full Thickness Burn



- Outer skin, and some underlying tissue dead
- Present as white, brown, black
- Surgical intervention and long-term scar management required
- Refer to specialist unit

3.5.1 Wound Appearance

The wound appearance can change over a period of time, especially during the first 7 days following injury.

This patient suffered a scald burn. Notice the changing appearance of the wound over just a few days.



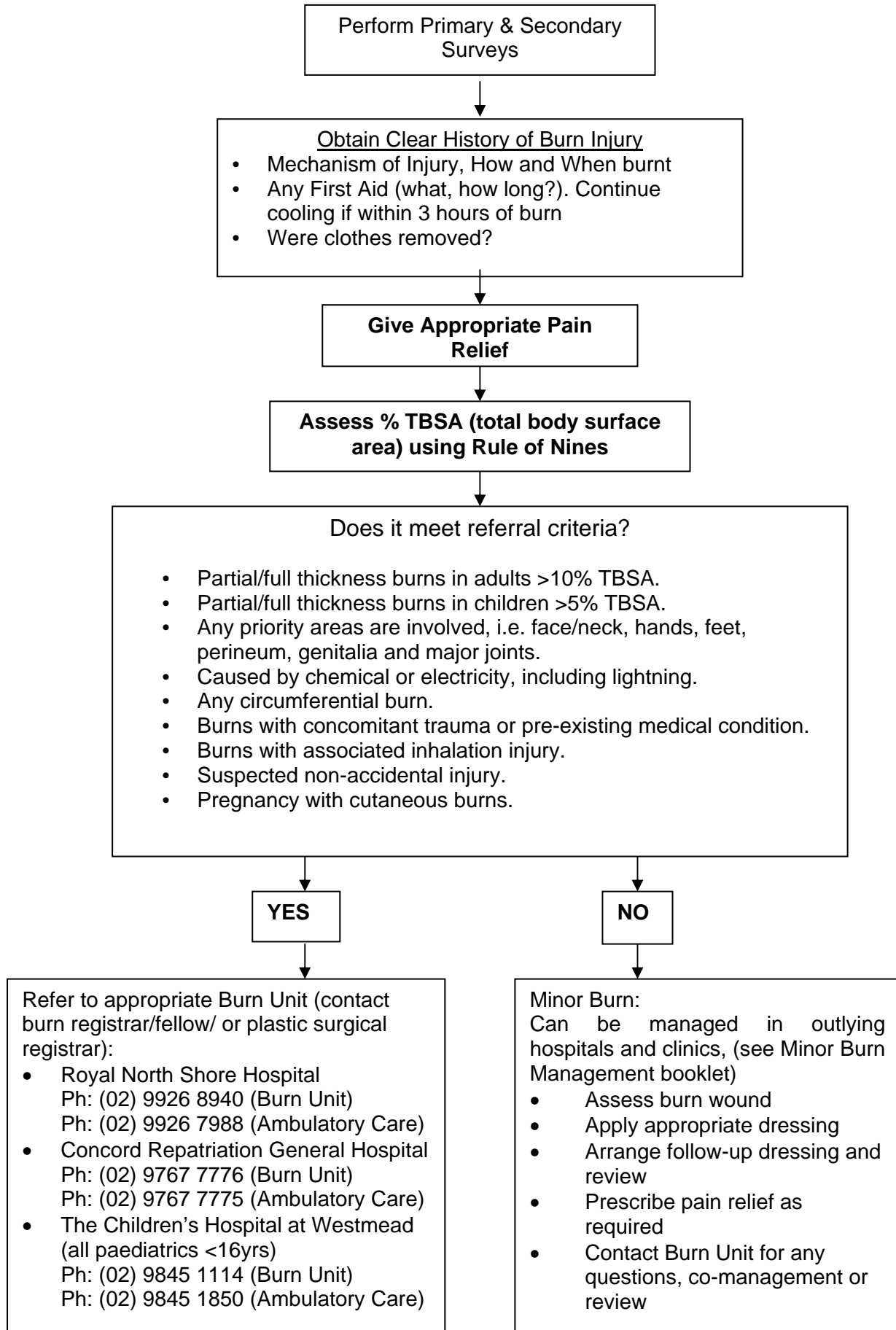
Day1

Day 2

Day 5

Outcome: wound depths are defined

6. On Presentation of Burn Patient to ED – Flowchart



5. Burns Unit Admission Criteria

Aim:

- Define the difference between severe and minor burns
- Define SBIS burn transfer criteria

5.1 Severe burns

These are burns which require referral to a specialised tertiary burns unit. These units include adult units at Royal North Shore Hospital and Concord Repatriation General Hospital, and the paediatric unit at The Children's Hospital at Westmead.

5.1.2 Acute period - first 24-48 hours - may be longer in severe burns.

NSW Burn Units will admit patients who meet the criteria for a severe burn (see table 5.3.1). They will also admit patients who have major skin loss due to trauma or disease, or require post burn reconstructive surgery. Additionally Burns Units will admit patients requiring pain management, physical or psychosocial support.

5.1.3 Special Considerations:

- Burn Unit staff are available for consultation on any burn patient as required. See Page 24 for digital photograph information
- If the patient requires admission, referring staff must liaise with Burns Unit staff prior to sending the patient to the unit.
- Patients with respiratory involvement and/or large %TBSA are generally managed in the Intensive Care until they can be cared for in the ward setting.
- Child Protection Unit (CPU) involvement required for all suspected non-accidental injuries in children. Psychiatry involvement required for adult suspected non-accidental injuries.

5.2 Minor Burns

A minor burn is defined as a burn which does not meet any of the above criteria for referral to specialist burn unit and there are no adverse physical or social circumstances to outpatient management.

These are burns which can be managed in outlying hospitals/medical centres, or via the ambulatory care units within the referral hospitals named above or co managed with the burns units. It is recommended that there is at least some discussion with burn unit to aid planning for appropriate management.

5.3 SBIS Transfer Criteria

Can be classified into 3 sections (see table below)

- Medical Retrieval
- Referral
- Minor Burn

5.3.1 NSW transfer criteria

Medical Retrieval	Referral	Minor Burns
Meets Medical Retrieval <ul style="list-style-type: none">• Intubated patients• Head and neck burns• Burns >10% in children or >20% in adults• Burns with associated inhalation• Burns with significant co-morbidities e.g. trauma• Electrical/chemical injury• Significant pre-existing medical disorder• Circumferential to limbs or chest compromising circulation or respiration	Needs referral but not medical retrieval <ul style="list-style-type: none">• Burns >5% children or >10% adults• Burns to hands, feet, face, genitalia, perineum and major joints• Burns with a pre-existing medical condition eg diabetes• Children with suspected non-accidental injury & adults with assault, self inflicted injury• Pregnancy (2nd 3rd trimester RNSH)• Spinal cord injury -RNSH• Extremes of ages	Minor burns are treated in consultation with the referring doctor as an outpatient; either locally (at original place of care) or on referral to an ambulatory burns clinic for assessment.

For further information see NSW Statewide Burn Injury Service Transfer Guidelines

http://www.health.nsw.gov.au/policies/gl/2008/pdf/GL2008_012.pdf

Outcome: Severe and minor burns are defined and transfer criteria is outlined

6. Burn Wound Management

6.1 Burn Wound Healing Principles and Concepts

6.1.1 Principles

To promote wound healing and ease patient discomfort observe the following principles:

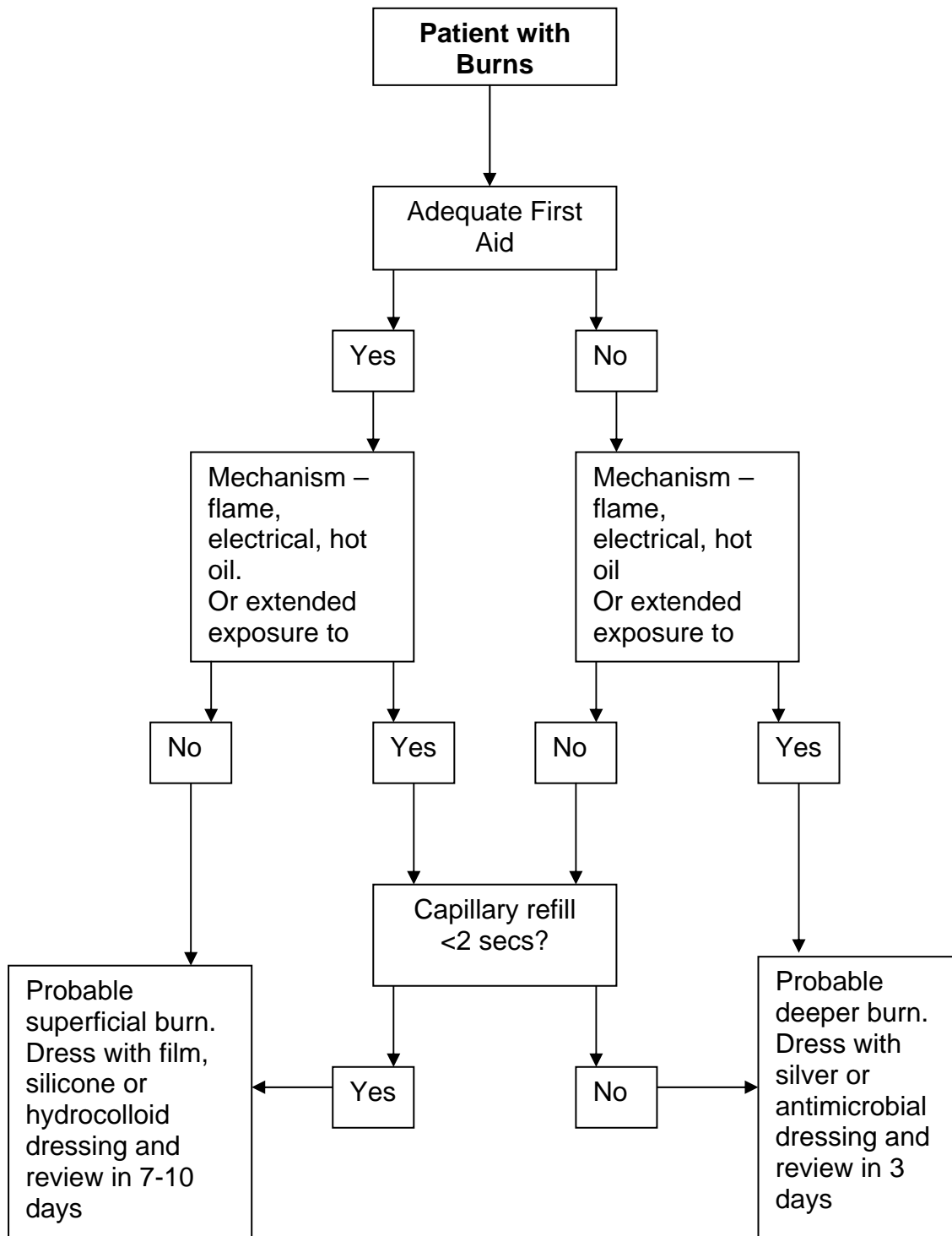
- Ensure adequate perfusion
- Minimise bacterial contamination
- Minimize negative effects of inflammation
- Provide optimal wound environment
- Promote adequate nutrition and fluid management
- Provide adequate pain management
- Promoting re-epithelialisation
- Provide pressure management

6.1.2 Concepts

To ensure the above principles are observed utilise the following concepts for burn wound management:

- Cleansing – wound surface should be free of slough, exudate, haematoma and creams
- Debridement – removal of loose, devitalised tissue and non-surgical removal of eschar
- Dressing
 - choose appropriate primary dressing to maintain optimal moisture level and promote wound healing
 - Exudate management - appropriate absorbency level of dressing must be considered on application
 - consider pain and trauma on dressing removal, consider long-term dressing wherever possible, aim for prevention of trauma on dressing removal
 - application - protect against alteration to distal perfusion due to constrictive dressings, protect against wound bed colonisation
- Pressure – to manage oedema and minimise the effects of scarring

6.2 Burn Patient Dressing Decision-Making Tree



6.3 Cleansing and Debriding the Burn Wound

6.3.1 Aim:

- Remove exudate and creams
- Debride devitalised and loose tissue
- Prevent damaging the healing burn wound.
- Minimise bacterial contamination
- Minimise psychological trauma to patient, carers and staff.
- Reassess the wound

6.3.2 Pain Management

- Adequate analgesia (refer to pain management guidelines 3.3)
- For specific pharmacological and non pharmacological pain management strategies see Clinical Practice Guidelines: Summary of Evidence. Older children and adult patients are involved, wherever possible, in the procedure as this gives them a sense of control.

6.3.3 Preparation

- The patient should be given adequate explanation of the procedure.
- Prepare environment and equipment eg warm environment. The patient with an acute burn wound should be washed and dried within 30 minutes or less, if possible. Longer sessions may cause heat loss, pain, stress and sodium loss (water is hypotonic). Keep the bathroom well heated.

6.3.4 Cleansing

- The wound is cleansed gently to remove loose devitalised tissue, exudate and old dressings or creams.
- Wash with soft combines or sterile handtowels (ie Chux or Daylees) in diluted approved solution such as chlorhexidine gluconate (diluted in water 1:2000), dilute betadine, pre-impregnated chlorhexidine sponges or saline. Use cloth for unburnt parts of the body to maintain hygiene.
- Dry the patient well, as moisture left behind may macerate the burn and provide an ideal environment for bacterial contamination.

6.3.5 Debridement

- Complete a holistic patient and wound assessment – not all wounds require debridement. Clinically examine the patient, does the wound require debridement, can the patient tolerate debridement, what is the patients clinical pathway (eg surgical, non surgical, conservative treatment, comfort care?)
- Select the most appropriate method of debridement (see Summary of Evidence for different methods)

6.3.6 Exudate Management

- There will be high exudate from the wound in the first 72hrs post injury
- Appropriate dressing will be required to manage exudate level
- Maintain optimal moisture balance

6.3.7 Special Considerations

- Assess and monitor for possible hypersensitivity or allergic responses to products

- Burns to scalp and excessively hairy areas should be shaved to allow initial assessment and ongoing wound management, thus preventing folliculitis. Ideally this should extend 2-5cm past the boundary of the burn to ensure full visualisation and prevent hair impeding skin regeneration. The necessity for this procedure should be discussed with the patients as sometimes religious beliefs preclude cutting of the hair under normal circumstances, and may cause great distress if they do not understand the rationale.
- Prophylactic antibiotics are not routinely given to burn patients as they do not reduce the risk of infection. **Antibiotics are only given to patients with known infections and are prescribed to sensitivities, consultation with Infectious Diseases is strongly recommended.**

Outcome: The burn wound is visibly clean.

6.4 Digital Photograph of the Burn Wound

6.4.1 Aim:

- Allow ease of communication between Burn Units and external hospitals or health care facilities
- Assist with monitoring of wounds progress
- Minimises prolonged or multiple exposure of patients
- Reduces issue of infection control by reducing attending staff numbers

6.4.2 Preparation

- The patient should be given adequate explanation of the procedure and sign a consent prior to any photographs being taken.
- Taking of photos should not delay the dressing procedure for extended periods due to the risk of hypothermia and distress to the patient.
- Turn off overhead heat light whilst taking photographs as they can lead to discolouration.
- Consider colouring. Dark skin on stark white background can give illusion of greater severity of burn. Very pale skin on white background will not give enough contrast.
- Aim for neutral colour background such as green sterile sheet.

6.4.3 Procedure

- Patient should be made comfortable on clean dry sheet.
- Take a photo of the patient's hospital sticker for identification.
- If patient has extensive burns take global photograph to show where burn occurs on body.
- For small burns lay a measure rule next to the wound to display wound size.
- Consider patient's dignity especially if burns around perineum or genitalia. Use small cloth to cover non-involved areas.

6.4.3.1 Tips:

- Take numerous pictures, with and without flash if necessary, extras can be deleted when downloading.
- Label photos stating date photo taken, days post burn injury, patient identification, anatomical position and orientation

6.4.4 Storage

- To preserve confidentiality all images must be stored in a limited access area, such as password protected.
- For ease of access to appropriate images each should be stored in an easily recognisable pattern such as under medical record number and date taken.

6.4.5 Emailing pictures







It is possible to email digital photographs of burn wound to burn units. Contact must be made between referring and accepting medical/nursing staff. Photographs must be taken in accordance with above guidelines and must be accompanied by injury history and consent.

6.4.5.1 Email Consultation Addresses

- CHW: kidsburns@chw.edu.au
- RNSH: burnsconsult@nsccahs.health.nsw.gov.au
- CRGH: crghburns@email.cs.nsw.gov.au

Outcome: The burn wound is photographed.

6.5 Selecting an Appropriate Dressing – Quick Reference Guide

What Dressing	Dressing Options	Dressing Product	Dressing Application
	<ul style="list-style-type: none"> • Silicone/foam • Film • Vaseline Gauze • Silver • Hydrocolloid 	<p>Silicone Eg</p> <ul style="list-style-type: none"> • Mepilex® • Mepilex Lite® • Allevyn® <p>Also available with silver</p> <ul style="list-style-type: none"> • MepilexAg 	<ul style="list-style-type: none"> • Apply to clean wound bed • Cover with fixation/retention dressing • Change 3-7 days depending on level of exudate
	<ul style="list-style-type: none"> • Hydrocolloid • Film • Silicone • Vaseline Gauze • Silver 	<p>Hydrocolloid Eg</p> <ul style="list-style-type: none"> • Comfeel® • Duoderm® 	<ul style="list-style-type: none"> • Apply to clean wound bed • Change 3-4 days depending on level of exudate
	<ul style="list-style-type: none"> • Vaseline Gauze • Film • Silicone • Silver • Hydrocolloid 	<p>Vaseline Gauze Eg</p> <ul style="list-style-type: none"> • Bactigras® • Jelonet® • Curity® • Adaptic® 	<ul style="list-style-type: none"> • Apply directly to wound • 2 layers for acute wounds, 1 layer for almost healed wounds • Cover with appropriate secondary dressing • Change every 1-3 days
	<ul style="list-style-type: none"> • Silver • Silicone • Vaseline Gauze • Hydrocolloid 	<p>Silver Eg</p> <ul style="list-style-type: none"> • AquacelAg® 	<ul style="list-style-type: none"> • Apply to moist wound bed • Allow 2-5 cm overlap • Cover with secondary dressing • Review in 7-10 days, remove secondary dressing • Leave intact until healed, trimming edges as required. Do not use if frequent dressing change required
	<ul style="list-style-type: none"> • Silver • Vaseline Gauze • Hydrocolloid 	<p>Silver Eg</p> <ul style="list-style-type: none"> • Acticoat® 	<ul style="list-style-type: none"> • Wet Acticoat with H₂O; drain and apply blue side down • Insert irrigation system for Acticoat⁷ • Moistened secondary dressing to optimise desired moisture level • Replace 3-4 days (Acticoat) or 7 days (Acticoat 7)
	<ul style="list-style-type: none"> • Silver • Vaseline Gauze • Hydrocolloid 	<p>Silver Eg</p> <ul style="list-style-type: none"> • Flammazine® 	<ul style="list-style-type: none"> • Apply generous amount to sterile handtowel to ease application • Cover with secondary dressing • Not recommended for most burns due to changes to wound appearance and frequency of required dressing changes – daily

6.6 Dressing Procedure

6.6.1 Aim:

- To apply most appropriate dressing using correct technique
- To apply dressing in timely manner to avoid hypothermia, excess pain or trauma
- To maintain an aseptic technique at all times

6.6.2 Dressing notes

- Healed areas of skin need moisturising with appropriate moisturiser; a small amount is rubbed in until absorbed.
- Secondary dressings must not come in contact with the wound as they may adhere and cause trauma on removal.
- Care must be taken not to tightly wrap primary dressings circumferentially around the burns.
- Post procedure pain relief may be required for some patients.
- Occlusive dressings should not be applied to infected wounds

6.6.3 Dressing Specialised Areas

Specialised areas include face, head, neck, ears, hands, perineum and genitals. These areas require the application of complex dressings which should only be carried out by experienced clinicians. If attending these types of dressings in areas other than a burn unit please seek advice from Burns Unit staff and access resources available on the SBIS website.

6.6.3.1 Face, Head, Neck

- Tracheostomy tape may be used to secure a naso-gastric tube when adhesive tape is unsuitable due to burns around the nose.

6.6.3.2 Ears

- The area behind the ear should be padded to avoid burnt surfaces coming into contact with each other and the area incorporated into the head dressing if appropriate.
- Bactigras or Jelonet are often the dressings of choice on ears.
- Doughnuts made of a soft foam such as Lyofoam can be made to fit around the ear to help prevent pressure on the ear.
- To protect the helix (cartilage) of the ear, the ear must lie in a natural position and the padding must be high enough so that any pressure from the bandaging is borne by the padding.

6.6.3.3 Hands & Fingers

- In the first 24-48 hours if the fingers are swollen, it is sometimes recommended to dress each finger separately by applying an appropriate primary dressing. The whole hand is then bandaged as shown in FIG.1. This method inhibits normal functioning and mobility and should only be used when necessitated.

- At all other times, and once oedema has subsided, the fingers should be individually bandaged as shown in Fig.2. These bandages allow better mobility and enhance functional ability.

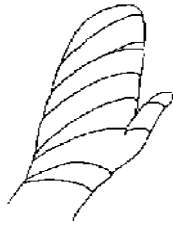


FIG.1.



FIG.2.

6.6.3.4 Feet

- The web spaces between the toes should be separated but it is often difficult to bandage toes separately due to their size.
- A large supportive dressing allows for mobilisation and helps keep the toes in a normal position. Foam padding (i.e. Lyofoam, Allevyn) can be used to protect burnt soles.

6.6.3.5 Perineum

- Males: If the penis and/or scrotum are burnt, apply appropriate primary dressing with outer supportive dressings. A scrotal support may be necessary.
- Females: Dressing the female perineum is more difficult but the type of dressing is the same as for males.
- Children: When still in nappies, dressings such as Bactigras can be cut to size and placed in the nappy.
- Patients with perineal burns are generally catheterised to decrease pain and allow for the area to be kept as clean as possible.

6.6.3.6 Tips:

- It is important to separate burnt surfaces
- Occlusive dressings should not be applied to infected wounds
- Care must be taken not to tightly wrap primary dressings circumferentially around the burns.
- Secondary dressings must not come in contact with the wound as they may adhere and cause trauma on removal.
- When bandaging start distally and work proximally, from feet or hands. It may be necessary to incorporate feet or hands, even if they are not burnt to avoid oedema formation.
- Elevate the arms and legs, especially in the acute period to reduce oedema.
- Legs should be bandaged straight and splints may be necessary.
- Healed areas of skin need moisturising with appropriate moisturiser; a small amount is rubbed in until absorbed.
- Post procedure pain relief may be required for some patients.

Outcome: A correct timely dressing is applied aseptically

6.7 Specific Dressing Application

6.7.1 Mepilex Application



Clean wound
bed



Apply directly
to wound

6.7.2 Mepilex Ag Application



Clean wound
bed



Apply directly
to wound



Apply stabilisation
dressing if required

6.7.3 Acticoat Application



Clean wound
bed



Moisten
Acticoat with
water NOT
saline



Apply to
wound, either
side down



Apply moistened
secondary dressing
and stabilise as
above

6.7.4 AquacelAg Application



Clean wound
bed



Apply to
wound



Leave intact

6.7.5 Bactigras Application



Clean wound
bed



Apply Bactigras.
2 layers for moist
wounds



Appropriate external
dressings



6.7.6 Problem dressings



Issue

Primary dressing slipped off wound. Secondary dressing stuck causing trauma

Solution

Use appropriate fixation dressing over primary and secondary dressings

6.8 Dressing Fixation Application

6.8.1 Self Adherent Tape Application



Start at base of hand working with a slight stretch



Then work from tips of fingers in a spiral covering half of the previous coban



Anchor to coban on hand



Place pieces through web spaces of each finger to separate

6.8.2 Adhesive Tape Application



Can be used on many areas of the body to fix dressing in place

NB This is not a primary dressing and must not be used on areas of skin

6.8.3 Tubular Bandage Application



Cut to length, then cut slit for thumb



Put onto applicator



Apply to area



Remove wrinkles

6.8.4 Problem Fixation Dressings



Issue

Swelling, pressure areas and reduced blood flow in peripheries

Solution

Remove wrinkles in Tubigrip and incorporate feet and hands even if not burnt to prevent pressure areas and swelling



Issue

Patient unable to move hand adequately

Solution

Wrap fingers individually

Issue

Dressing falls off quickly

Solution

Use appropriate fixation dressing

Issue

Tape applied over pressure dressing can lead to pressure areas

Solution

Use appropriate fixation dressing

7 The Multidisciplinary team

Burn care is conducted by members of a multidisciplinary burn team which include medical, surgical, intensive care, nursing, physiotherapy, occupational therapy, dietetics, social work, psychiatry, psychology, speech therapy, pharmacy and technicians. A multidisciplinary approach to burn management is essential for optimal functional and cosmetic outcome. Serious long term physical and psychosocial morbidity may be associated with a burn injury. All members of the burn management team interact throughout the patient's management, from admission to discharge and beyond to support the patient and family in reintegration. All team members contribute to patient care throughout the early management, ongoing clinical intervention periods during all phases of care, and continuous educative support to the patient, family and staff.

For further information regarding multidisciplinary care please refer to the following documents:

- Burn Survivor Rehabilitation: Principles and Guidelines for the Allied Health Professional (ANZBA)
http://www.health.nsw.gov.au/gmct/burninjury/docs/anzba_ahp_guidelines_october_2007.pdf
- Nutrition & Dietetics: Principles and Guidelines for Adult & Paediatric Burns Patient Management
http://www.health.nsw.gov.au/gmct/burninjury/docs/nutrition_burns_cpqs.pdf
- NSW Statewide Burn Injury Service Clinical Practice Guidelines Speech Pathology for Burn Patient Management
http://www.health.nsw.gov.au/gmct/burninjury/docs/speech_pathology_adults.pdf
- NSW Statewide Burn Injury Service Clinical Practice Guidelines Play Therapy for Burn Injured Paediatric Patients
http://www.health.nsw.gov.au/gmct/burninjury/docs/play_therapy_cpg_children.pdf

All of these documents are available via the NSW Statewide Burn Injury Service Website:

- <http://www.health.nsw.gov.au/gmct/burninjury>

Also available on this website are:

- NSW Statewide Burn Injury Service Burn Transfer Guidelines
http://www.health.nsw.gov.au/policies/gl/2008/pdf/GL2008_012.pdf
- NSW Statewide Burn Injury Service Model of Care
http://www.health.nsw.gov.au/gmct/burninjury/docs/burninjury_moc.pdf

8 Websites

There are many useful websites. For a few examples please see the list below.

- NSW Statewide Burn Injury Service
<http://www.health.nsw.gov.au/gmct/burninjury>
- Australian New Zealand Burn Association
<http://www.anzba.org.au>
- Journal of Burn Care & Research
www.burncareresearch.com
- International Society for Burn Injuries
<http://www.worldburn.org>
- Burnsurgery.org
<http://www.burnsurgery.com/>
- Annals of Burns and Fire Disasters
<http://www.medbc.com/annals/>
- Management Guidelines for People with Burn Injury
www.health.nsw.gov.au/public-health/burns/burnsmgt.pdf
- Resident Orientation Manual – Acute Burn Management
www.totalburncare.com/orientation_acute_burn_mgmt.htm
- Skin Healing
<http://www.skinhealing.com>

9 Appendices

9.1 Burn Wound Management: Wound Care Product Selection

9.1 Burn Wound Management: Wound Care Product Selection

Aim: To choose the most suitable wound care product to reduce infection, promote wound healing, and minimize scarring.

8.1.1 SILVER

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
Acticoat/Acticoat 7 <ul style="list-style-type: none"> 2 layered/3 layered nanocrystalline Ag coated mesh with inner rayon layer. Silver ions released with greater surface area + increased solubility 	<ul style="list-style-type: none"> Broad spectrum antimicrobial protection Decreases exudate formation Decreases eschar autolysis 	<ul style="list-style-type: none"> Partial to full thickness Grafts & donor sites Infected wounds Over Biobrane & Integra TENS & SJS 	<ul style="list-style-type: none"> Moisten Acticoat with H₂O; remove excess and apply blue side down Moistened secondary dressing to optimise desired moisture level Replace 3-4 days (Acticoat) or 7 days (Acticoat 7) 	<ul style="list-style-type: none"> Initial stinging on application – provide prophylactic pain relief Temporary skin staining Maintain normothermia – use warm blankets.
Mepilex Ag <ul style="list-style-type: none"> Hydrophilic polyurethane foam with soft silicone layer and waterproof outer layer 	<ul style="list-style-type: none"> Absorb exudate from wound bed 	<ul style="list-style-type: none"> Superficial to mid-dermal burns. Low to moderately exuding wound 	<ul style="list-style-type: none"> Apply to clean wound bed Cover with fixation/retention dressing 	
Aquacel Ag <ul style="list-style-type: none"> Sodium carboxymethylcellulose (CMC) & 1.2% ionic Ag in fibrous material Silver ions released with greater surface area + increased solubility 	<ul style="list-style-type: none"> Broad spectrum antimicrobial protection Facilitates debridement Decreases exudate formation Absorbs exudate 	<ul style="list-style-type: none"> Partial to deep partial thickness burn Moderately exuding wound Moderate bacterial load 	<ul style="list-style-type: none"> Apply to clean wound bed Cover with fixation/retention dressing 	<ul style="list-style-type: none"> Exudate level indicates frequency of dressing change

Silvazine (SSD) <ul style="list-style-type: none"> Silver Sulphadiazine 1% and Chlorhexidine Gluconate 0.2%. 	<ul style="list-style-type: none"> Reduces infection Enhances healing 	<ul style="list-style-type: none"> Partial to full thickness Infected wounds 	<ul style="list-style-type: none"> Apply generous amount to sterile handtowel to ease application Apply to wound Cover with secondary dressing 	<ul style="list-style-type: none"> Change daily, remove old cream Contraindicated during first trimester of pregnancy
AtraumanAg Coarsely woven water-repellent polyamide xudate coated with metallic silver	<ul style="list-style-type: none"> Broad spectrum antimicrobial protection Low cytotoxicity 	<ul style="list-style-type: none"> Partial to full thickness Grafts & donor sites Moderately infected wounds TENS & SJS 	<ul style="list-style-type: none"> Apply directly to wound Cover with appropriate secondary dressing Leave intact up to 7 days, dependent on the wound 	<ul style="list-style-type: none"> Do not use with paraffin dressing
Contreet H <ul style="list-style-type: none"> Sodium carboxymethylcellulose (CMC) & 1.2% ionic silver wafer Silver ions released with greater surface area + increased solubility 	<ul style="list-style-type: none"> Broad spectrum antimicrobial protection Facilitates debridement Decreases exudate formation 	<ul style="list-style-type: none"> Low to moderate exuding wounds Partial thickness burns Donor sites Infected wounds. 	<ul style="list-style-type: none"> No secondary dressing Change if leaking or when exudate is at edge of dressing. Can remain intact up to 7 days. Overlap dressing 1.5 cm from wound perimeter. 	<ul style="list-style-type: none"> Not evaluated for pregnancy or on children. Consult with RMO prior to application. To be removed if radiation, ultrasonic, diathermy or microwaves treatment applied.
Contreet <ul style="list-style-type: none"> Polyurethane Foam wound dressing with 1.2% ionic silver. Silver ions released with greater surface area + increased solubility 	<ul style="list-style-type: none"> Broad spectrum antimicrobial protection Absorbs exudate Decreases exudate formation 	<ul style="list-style-type: none"> Partial thickness burns Donor sites Highly exuding wounds 	<ul style="list-style-type: none"> Overlap dressing so that that it is 2cm from edge of wound Change if leaking or when exudate is at edge of dressing. Can remain intact 7 days Retention dressing 	<ul style="list-style-type: none"> Has not been evaluated during pregnancy or on children. Consult with RMO prior to application. To be removed if radiation, ultrasonic, diathermy or microwaves treatment applied.

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
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Flammacerium NB Only to be used by burn units under order by a treating burn specialist	<ul style="list-style-type: none"> Creates dry inactive wound Decreases bacterial load 	<ul style="list-style-type: none"> Burns Specialist to decide application. Early application Consult with RMO for repeat application at 48 hrs 	<ul style="list-style-type: none"> Apply to body pad or combine dressing then onto wound 	
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8.1.2 GAUZE (moist)

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
Bactigras <ul style="list-style-type: none"> Chlorhexidine impregnated vas gauze 	<ul style="list-style-type: none"> Non adherent antiseptic dressing 	<ul style="list-style-type: none"> Partial thickness wounds 	<ul style="list-style-type: none"> Apply directly to wound 2 layers for acute wounds, 1 layer for almost healed wounds Cover with appropriate secondary dressing Change every 1-3 days 	
Jelonet, Adaptic, Curity <ul style="list-style-type: none"> Petrolatum/Vaseline impregnated gauze 	<ul style="list-style-type: none"> Non adherent conservative dressing 	<ul style="list-style-type: none"> Clean Partial thickness wounds. 	<ul style="list-style-type: none"> As above 	
Xeroform <ul style="list-style-type: none"> Mesh gauze impregnated with 3% Xeroform (Bismuth Tribomophophenate) 	<ul style="list-style-type: none"> Non adherent 	<ul style="list-style-type: none"> Partial thickness wounds Light exudating wounds 	<ul style="list-style-type: none"> Secondary dressing to optimise desired moisture level 	

8.1.3 FILM & HYDOCOLLOID

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
Tegaderm, Opsite, IV3000 <ul style="list-style-type: none"> Adhesive, conformable film dressing 	<ul style="list-style-type: none"> Barrier to contaminants 	<ul style="list-style-type: none"> Small isolated wounds Some blisters 	<ul style="list-style-type: none"> Apply directly to wound No secondary dressing required 	<ul style="list-style-type: none"> Only use when surrounding tissue not compromised
Comfeel <ul style="list-style-type: none"> Hydrocolloids contain carboxymethylcellulose (CMC). Hydrocolloid wafer Hydrocolloid paste 	<ul style="list-style-type: none"> CMC combines with exudate to aid autolysis of devitalised tissue. Provides moist wound environment Absorbs exudate. 	<ul style="list-style-type: none"> Devitalised tissue, sloughy wounds Low to moderately exuding wounds 	<ul style="list-style-type: none"> Allow 2cm margin around wound. Can remain intact 2-3 days Wafers up to 5 days if no signs infection. 	
Duoderm <ul style="list-style-type: none"> Hydrocolloid wafer 	<ul style="list-style-type: none"> Provides moist wound environment Absorbs exudate. Assists scar management in healed wounds 	<ul style="list-style-type: none"> Exuding wounds Scars 	<ul style="list-style-type: none"> Apply directly to area No secondary dressing required 	<ul style="list-style-type: none"> Only use when surrounding tissue not compromised

8.1.4 FOAM

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
Lyof foam <ul style="list-style-type: none"> Two layer polyurethane foam 	<ul style="list-style-type: none"> Absorb exudate from wound bed 	<ul style="list-style-type: none"> Pads areas such as behind ears to protect delicate tissues. Secondary dressing over Omiderm 	<ul style="list-style-type: none"> Apply shiny side down, over primary dressing 	<ul style="list-style-type: none"> N/A
Mepilex Transfer <ul style="list-style-type: none"> Hydrophilic polyurethane foam with soft silicone layer 	<ul style="list-style-type: none"> Absorb exudate from wound bed and transfers to outer dressing 	<ul style="list-style-type: none"> Superficial to mid-dermal burns. 	<ul style="list-style-type: none"> Apply to clean wound bed Cover with absorbent secondary dressing 	<ul style="list-style-type: none"> Avoid use on infected wounds
Mepilex Lite <ul style="list-style-type: none"> Hydrophilic polyurethane foam with soft silicone layer and waterproof outer layer 	<ul style="list-style-type: none"> Absorb exudate from wound bed 	<ul style="list-style-type: none"> Superficial to mid-dermal burns. 	<ul style="list-style-type: none"> Apply to clean wound bed Cover with fixation/retention dressing 	<ul style="list-style-type: none"> Avoid use on infected wounds
Mepilex Border <ul style="list-style-type: none"> Hydrophilic polyurethane foam with soft silicone layer and adhesive external layer and border 	<ul style="list-style-type: none"> Absorb exudate from wound bed 	<ul style="list-style-type: none"> Superficial to mid-dermal burns. 	<ul style="list-style-type: none"> Apply to clean wound bed No need for secondary dressing 	<ul style="list-style-type: none"> Avoid use on infected wounds
Biatain <ul style="list-style-type: none"> Foam dressing 	<ul style="list-style-type: none"> Highly absorbent foam that absorbs exudate 	<ul style="list-style-type: none"> Highly exuding wounds 	<ul style="list-style-type: none"> Retention dressing to secure Change when exudate approaches 2 cm from the edge of the dressing 	<ul style="list-style-type: none"> Remove if radiation, ultrasonic, diathermy or microwaves treatment.
Allevyn <ul style="list-style-type: none"> Non-adherent hydrocellular foam 	<ul style="list-style-type: none"> Absorb exudate from wound bed 	<ul style="list-style-type: none"> Exuding wounds Granulation 	<ul style="list-style-type: none"> Use as primary or secondary dressing, white side down Retention dressing to secure 	<ul style="list-style-type: none"> Avoid use with oxidising agents

			<ul style="list-style-type: none"> • Change when exudate approaches 2 cm from the edge of the dressing 	
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9.1.5 ABSORBENT

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
Exudry <ul style="list-style-type: none"> Non-adherent, highly absorbent, permeable dressing. 	<ul style="list-style-type: none"> Absorbs high exudate Protects against shearing 	<ul style="list-style-type: none"> Over primary dressing 	<ul style="list-style-type: none"> Apply appropriate primary dressing Then apply outer absorbent dressing 	
Mesorb <ul style="list-style-type: none"> Sterile absorbent pad 	<ul style="list-style-type: none"> Absorbs exudate 	<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> As above 	
Webril <ul style="list-style-type: none"> Cotton wool bandage 	<ul style="list-style-type: none"> Protective 	<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> May adhere if inappropriate primary dressing
Telfa, Melolite <ul style="list-style-type: none"> Non-adherent, absorbent wound dressing pad 	<ul style="list-style-type: none"> Non-adherent 	<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> As above 	
Combine <ul style="list-style-type: none"> Absorbent pad 	<ul style="list-style-type: none"> Absorbs exudate 	<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> May adhere if inappropriate primary dressing
Kaltostat, Algisite, Algoderm <ul style="list-style-type: none"> Calcium sodium alginate wound dressing 	<ul style="list-style-type: none"> Absorbent dressing Moist wound environment Haemostatic 	<ul style="list-style-type: none"> Donor sites Granulating wounds Excessively bleeding wounds 	<ul style="list-style-type: none"> <i>Apply directly to wound</i> 	<ul style="list-style-type: none"> Replace when exudates no longer absorbed or infection evident. Donor site leave intact at least 10 days

9.1.6 SKIN / DERMAL SUBSTITUTES

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
Cultured Epithelial Autograft (CEA) / Keratinocyte Spray Only used in specialist Burn Unit	<ul style="list-style-type: none"> Assists with skin closure Reduces need for extensive donor skin harvesting 	<ul style="list-style-type: none"> Burns Medical Specialist will indicate application Excised full thickness and deep partial thickness burns. 	<ul style="list-style-type: none"> Used in conjunction with autograft 	<ul style="list-style-type: none"> Only used in specialist Burn Unit
Biobrane <ul style="list-style-type: none"> Biosynthetic dressing made up of collagen coated nylon bonded to silicone. 	<ul style="list-style-type: none"> Temporary skin cover Decreases risk of infection Reduces evaporative water loss. 	<ul style="list-style-type: none"> If limited donor skin available or loss Applied over debrided wound bed Generally in theatres 	<ul style="list-style-type: none"> Appropriate secondary dressing 	<ul style="list-style-type: none"> Granulation may incorporate Biobrane into regenerating skin layer
Integra <ul style="list-style-type: none"> Bovine tendon collagen and glycosaminoglycan cross linked fibres with a silastic top layer. 	<ul style="list-style-type: none"> Dermal replacement. The matrix layer allows the infiltration of fibroblasts, macrophages, lymphocytes and capillaries to generate the new dermis. 	<ul style="list-style-type: none"> Surgical indication and application by Burns Medical Specialist Full thickness burns over a flexor joints 	<ul style="list-style-type: none"> Burn debrided, <i>Integra</i> applied, 3 weeks silastic layer peeled off and SSG applied. <i>Acticoat applied over Integra</i> Area immobilised and splint applied. If <i>Integra</i> lifting consult with RMO, remove affected <i>Integra</i>, cleans gently (saline) and apply <i>Acticoat</i>. 	<ul style="list-style-type: none"> No paraffin, moisturisers, <i>Silvazine</i> dressings or water as this will lift <i>Integra</i>. Not to be applied to people with known sensitivities to collagen, silastic.

9.1.7 SILICONE (use in consultation by specialist therapists)

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
Mepitel <ul style="list-style-type: none"> Transparent, open mesh, polyamide net, coated with soft silicone layer 	<ul style="list-style-type: none"> Non stick dressing Exudate moves vertically 	<ul style="list-style-type: none"> Painful open granulating wounds Partial thickness burns Skin tears 	<ul style="list-style-type: none"> Can be left intact 2 – 3 days if exudates minimal Secondary dressing to optimise desired moisture level 	<ul style="list-style-type: none"> Do not apply if sensitive to silicone.
Cica Care <ul style="list-style-type: none"> Silicone sheet 	<ul style="list-style-type: none"> Scar softening 	<ul style="list-style-type: none"> Reduces effects of scar 	<ul style="list-style-type: none"> Apply to affected area as instructed by therapist 	<ul style="list-style-type: none"> Strict initial usage regime to assess sensitivity Avoid if allergic to silicone
Mepiform <ul style="list-style-type: none"> Silicone sheet 	<ul style="list-style-type: none"> Scar softening 	<ul style="list-style-type: none"> Reduces effects of scar 	<ul style="list-style-type: none"> Apply to affected area as instructed by therapist Can be used up to 23 hours/day 	<ul style="list-style-type: none"> Avoid if allergic to silicone

9.1.8 OTHER

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
Surfasoft <ul style="list-style-type: none"> Woven polyamide transparent dressing. 	<ul style="list-style-type: none"> Reduces friction rub over graft allowing it to 'take'. Exudate able to pass through dressing Easy to view graft. 	<ul style="list-style-type: none"> Applied in the OT over meshed grafts. 	<ul style="list-style-type: none"> Surfasoft applied wet (sterile normal saline) Leave intact 5 days unless infection evident. 	<ul style="list-style-type: none"> Apply olive oil prior to day of removal (day 4 usually). Peel off gently. If adhered reapply oil.
Solosite, Intrasite, Purilon <ul style="list-style-type: none"> Hydrogels 	<ul style="list-style-type: none"> Re-hydrate wounds and absorbs some exudate into the gel. 	<ul style="list-style-type: none"> Dry, necrotic Low exudating Cavity wounds. 	<ul style="list-style-type: none"> Apply directly onto wound, cover with Tegaderm Apply onto Lyofoam Bactigras, Kerlix or Exudry 	
Saline Dressings	<ul style="list-style-type: none"> Draws exudate away from wound 	<ul style="list-style-type: none"> Granulating wounds Sloughy wounds 	<ul style="list-style-type: none"> Bactigras, saline soaked Kerlix, Webril or body pad TDS or re-irrigating TDS. 	<ul style="list-style-type: none"> Do not allow dressing to dry out or it will adhere to wound
Iodine Betadine	<ul style="list-style-type: none"> Anti microbial agent 	<ul style="list-style-type: none"> Wounds infected with gram +ve & -ve bacteria, spores, fungi, viruses and proteus. 	<ul style="list-style-type: none"> Dab onto wound 	<ul style="list-style-type: none"> Avoid use if sensitive to iodine, or thyroid condition. Iodine toxicity may occur, consult RMO prior to application
Hydrocortisone Cream eg Betnovate, Diprosone	<ul style="list-style-type: none"> Reduces blood flow to hypergranulated wound 	<ul style="list-style-type: none"> Hypergranulating wounds 	<ul style="list-style-type: none"> Apply direct to wound or to dressing 	<ul style="list-style-type: none"> Change daily Short term usage only
Silver Nitrate Cauterizing agent	<ul style="list-style-type: none"> Cauterises hypergranulated wound 	<ul style="list-style-type: none"> Hypergranulating wounds 	<ul style="list-style-type: none"> Apply direct to affected area 	<ul style="list-style-type: none"> Single application, can be repeated if necessary
Bepanthen Antiseptic cream	<ul style="list-style-type: none"> Antiseptic with moisturising 	<ul style="list-style-type: none"> Superficial burns Newly healed partial 	<ul style="list-style-type: none"> Apply thin film to wound For hand burns cover with 	<ul style="list-style-type: none"> Do not apply too thick layer

	capabilities	thickness burns	cotton glove	<ul style="list-style-type: none">• Do not use longer than 7 days
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9.1.9 MOISTURISER

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
Dermaveen Bath and Shower oil <ul style="list-style-type: none"> Oatmeal based oil 	<ul style="list-style-type: none"> Helps to remove and clean devitalised tissue and exudate when massaged onto wounds. Can relieve pruritus 	<ul style="list-style-type: none"> Epithelialised, dry skin Folliculitis 	<ul style="list-style-type: none"> Massage onto wounds and healed areas. Wash with warm water and pat dry. 	<ul style="list-style-type: none"> Do not apply if known sensitivities to oatmeal.
Paraffin	<ul style="list-style-type: none"> Prevents wound from drying out 	<ul style="list-style-type: none"> Face / lips Superficial and Partial thickness burns 	<ul style="list-style-type: none"> Apply layer to affected area, do not rub in 	
Lacrilube	<ul style="list-style-type: none"> Prevents wound from drying out 	<ul style="list-style-type: none"> Burns around the eye 	<ul style="list-style-type: none"> As Above 	
Lanolin	<ul style="list-style-type: none"> Moisturiser 	<ul style="list-style-type: none"> Burnt Lips dry, healing wounds 	<ul style="list-style-type: none"> As Above 	
Sorbolene <ul style="list-style-type: none"> Sorbolene + 10% Glycerin 	<ul style="list-style-type: none"> Can be used as a moisturiser or 'soap' 	<ul style="list-style-type: none"> Dry, healing exudating and devitalised tissue 	<ul style="list-style-type: none"> Massage small amount into required areas of healing wound. 	
Dermaveen <ul style="list-style-type: none"> Oatmeal based moisturiser 	<ul style="list-style-type: none"> Rehydrates new epithelium, may relieve pruritus 	<ul style="list-style-type: none"> Epithelialised wounds Grafts and donor sites 	<ul style="list-style-type: none"> Massage onto healing wound 	<ul style="list-style-type: none"> Do not apply if known sensitivities to oatmeal.

9.1.10 RETENTION / FIXATION

Wound Care Product What?	Function Why?	Indications When?	Application How?	Note / Precautions
Hypafix, Fixamul, Mefix <ul style="list-style-type: none"> Adhesive non woven fabric 	<ul style="list-style-type: none"> Stabilises primary and secondary dressings Protects epidermis whilst healing and initially after epithelialisation 	<ul style="list-style-type: none"> Superficial partial thickness (skin intact) Stabilising external dressing layer 	<ul style="list-style-type: none"> Remove 7 – 10 days when epithelialised. Removed easily with De-Solve-It (immediate) or olive oil (takes 30-60mins). 	<ul style="list-style-type: none"> DO NOT use on open areas as primary dressing Do not apply to people who may have delayed healing or fragile skin (eg the elderly).
Tubigrip <ul style="list-style-type: none"> Tubular pressure bandage 67% cotton and 30% rayon. 	<ul style="list-style-type: none"> Tissue support Pressure to healing and epithelialised wounds. 	<ul style="list-style-type: none"> Healing or epithelialised wounds 	<ul style="list-style-type: none"> Measuring tapes to be used to decide appropriate size and pressure. Utilise rings for application. 	<ul style="list-style-type: none"> Avoid application to upper arms and upper thighs, as soft tissue damage may occur. Remove if painful/tingling
Coban <ul style="list-style-type: none"> Self adherent wrap bandage 	<ul style="list-style-type: none"> Stabilises primary and secondary dressings Pressure to wounds. 	<ul style="list-style-type: none"> Healing or epithelialised wounds 	<ul style="list-style-type: none"> Adheres to itself but not the skin Apply with gentle stretch only 	<ul style="list-style-type: none"> Do not apply with full stretch as this may impair blood flow to peripheries

9.1.11 SUPPLIERS

Company	Products	Website
Smith & Nephew	Acticoat, Silvazine, Bactigras, Jelonet, Allevyn, Exudry, Melolite, Algisite, Cica Care, Solosite, Intrasite, Hypafix	http://wound.smith-nephew.com/au/node.asp?NodeId=3820
Molnlycke	MepilexAg, Mepilex Transfer, Mepilex Lite, Mepitel, Mepiform, Mefix, Lyofoam, Tubigrip, Lyofoam	http://www.molnlycke.com/item.asp?id=39328&lang=2&si=336
Convatec	Aquacel Ag, Duoderm, Kaltostat	http://www.convatec.com
Tyco	Curity, Mesorb, Webril, Telfa, Surfasoft	www.tycohealthcare.com.au
3M	Tegaderm, Coban	www.3m.com/intl/au
Coloplast	Comfeel Wafer, Comfeel Paste, Biatain	www.coloplast.com.au
Hartman	AtraumanAg	www.hartmann-online.com.au
Mylan Laboratories	Biobrane	www.mylan.com
SSL	Tubigrip	www.sslaustralia.com.au

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