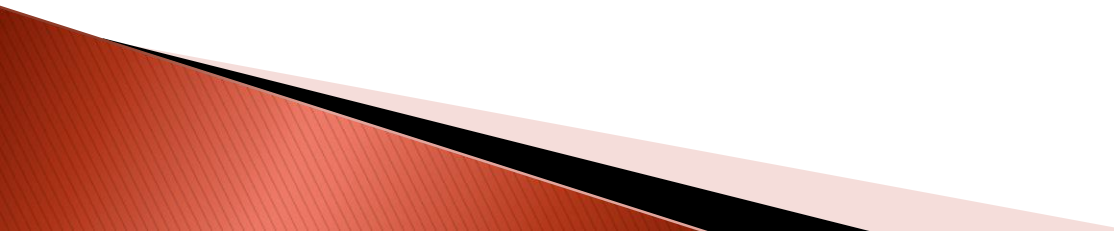


NZWCS: Minor burns

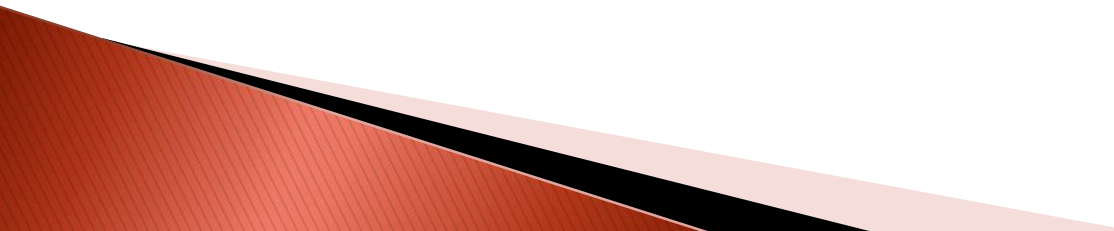


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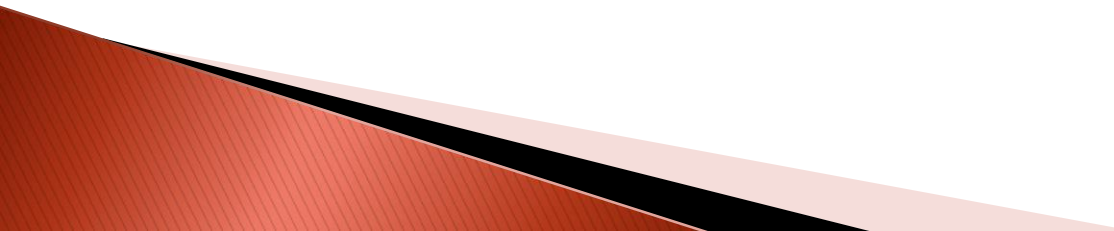
Overview

- ▶ Epidemiology & Aetiology of burns
 - ▶ Local & general response to burn injury
 - ▶ Emergency management
 - ▶ Burn assessment
 - ▶ Referral criteria to burns unit
 - ▶ Burn wound management
- 


Burns

- ▶ A Wound is disruption of the tissue architecture & cellular process
 - ▶ In a Burn the denaturing of proteins and disruption of cellular structures is due to thermal insult (either hot or cold), electricity, chemical action or radiation
 - ▶ Burns are significant because they interfere with all seven major functions of the skin
- 

Seven major functions of skin

- ▶ Temperature regulator
 - ▶ Sensory interface
 - ▶ Immune response
 - ▶ Protection from bacterial invasion
 - ▶ Control of fluid loss
 - ▶ Metabolic function
 - ▶ Psycho-social function
- 

What is a minor burn?

- ▶ NZ: Minor burns is a superficial or partial thickness burn with a TBSA of <10% in adults and <5% in children
 - ▶ Internationally: “Minor Burns are burns <5% TBSA that are superficial or superficial dermal in depth and are non-complex.”
 - ▶ These can be managed in the community at a primary care level
- 

Epidemiology of burns

- ▶ 1% of Aus & NZ suffer burns each year
- ▶ Approx. 286,000 people
- ▶ Only 10% require hospitalisation
- ▶ 90% managed in community

Location injury sustained	Children	Adults
Home	84%	64%
Work	–	16%
Outdoors	8%	9%
Roadway	3%	7%
Institution/school	1%	1%
Other	4%	3%

(ANZBA, 2015)

Aetiology of burns

- ▶ Flame burns most common in adults
- ▶ Scald burns most common in children

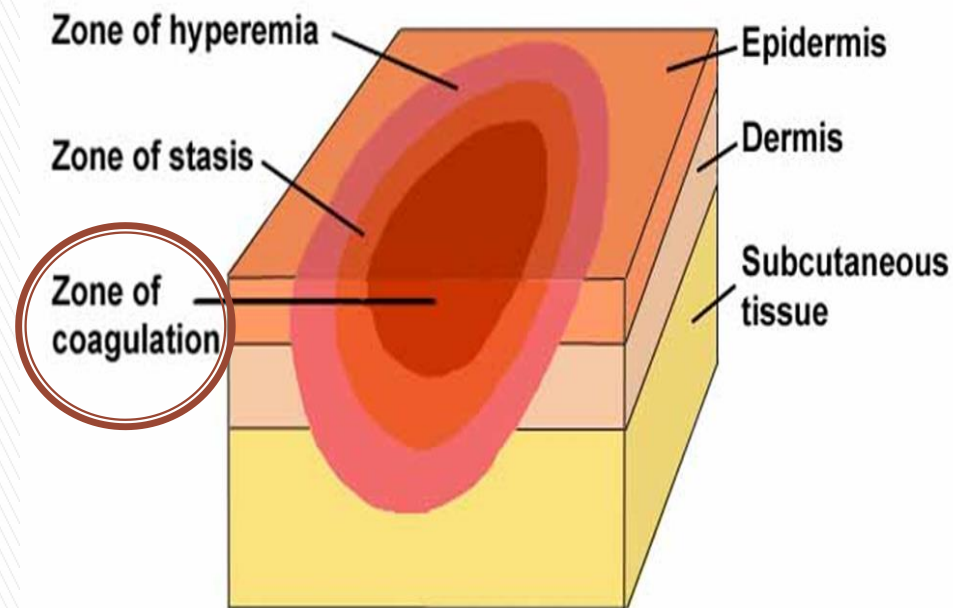
Causes of burn	Children	Adults
Scald	57%	28%
Contact	20%	14%
Flame / explosion	11%	44%
Friction	9%	4%
Chemical	1%	6%
Electrical	1%	2%

Local response to burn injury

Zone of Coagulation

- ▶ Nearest to heat source
- ▶ Heat cannot be conducted away rapidly enough
- ▶ Coagulation of cellular proteins
- ▶ Rapid cellular death

Jacksons Burn Wound Model

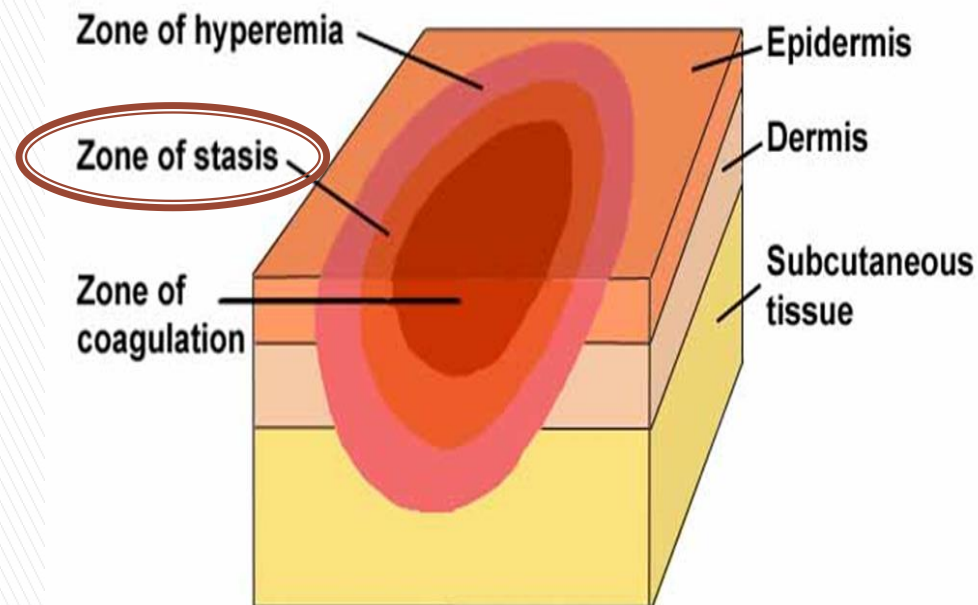


Local response to burn injury

Zone of Stasis

- ▶ Damage less severe
- ▶ Immediate cell death does not occur
- ▶ Circulation in this area is compromised due to damaged microcirculation
- ▶ Burn depth can progress if untreated

Jacksons Burn Wound Model

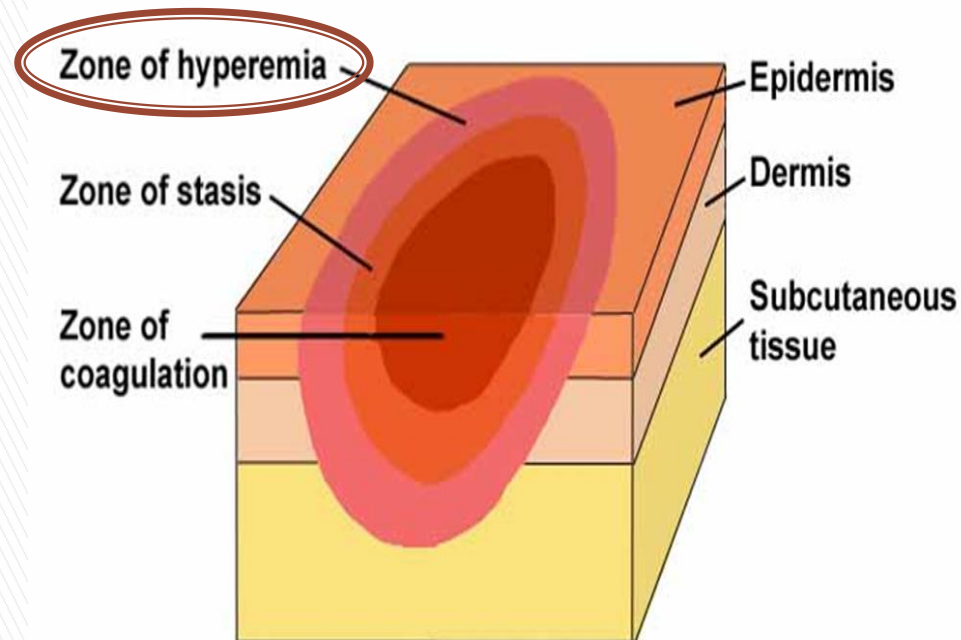


Local response to burn injury

Zone of Hyperaemia

- ▶ Damage to tissue causes production of inflammatory mediators
- ▶ Wide spread dilation of blood vessels
- ▶ Tissue in this area can return to normal

Jacksons Burn Wound Model

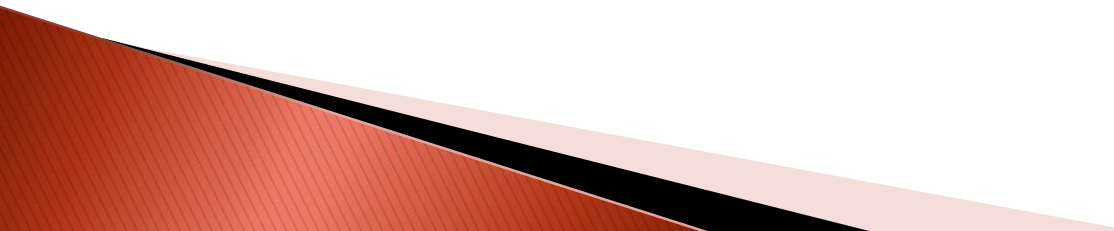


General response to a burn injury

- ▶ In a burn greater than 20% TBSA virtually every organ in the body is effected
- ▶ Hypovolaemia is the most immediate result
 - Loss of protein & fluid into interstitial space
 - Loss of albumin alters capillary exchange
- ▶ A hypermetabolic response occurs with near doubling of cardiac output and resting energy expenditure
- ▶ The gut, hormone levels, immune responses, lungs are all affected

First aid

Stop the burning process

- ▶ Stopping the burning reduces tissue damage
 - ▶ **Fire:** stop, drop, cover(face) & roll
 - Remove all hot charred clothes ASAP
 - ▶ **Scald:** remove clothing soaked with hot liquid
 - Acts a reservoir of heat
 - ▶ Remove jewellery
 - ▶ Cool the burn
- 

Cooling a burn



- ▶ Cooling burns prevents progression of a burn injury & limits the tissue damage
- ▶ All burns should be COOLED in running tap water (8–15°C) for at least 20mins
- ▶ “Cool the burn warm the patient”
- ▶ Don't use ICE
- ▶ Effective up to 3 hours after injury
- ▶ Irrigate chemical burns with water for at least 1 hour
- ▶ Elevate limbs

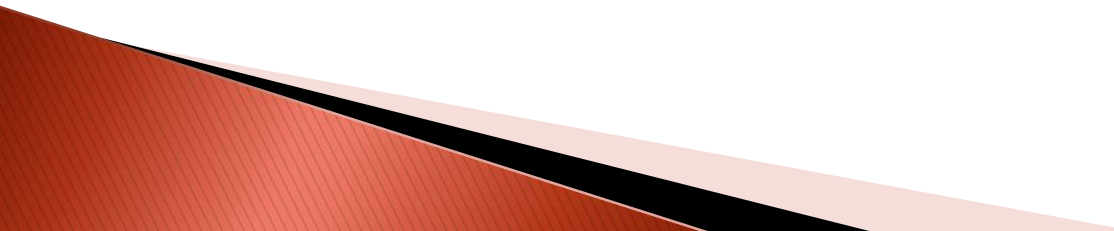
First aid

- ▶ “Glad wrap”: can be layered on the wound (non-circumferentially) following cooling as **temporary** cover for transit
- ▶ Avoid topical treatments until the depth of the burn has been assessed.
- ▶ Tetanus: give if required (as per NZ imms. schedule)
- ▶ Analgesia: prior to assessment & dressing the burn



Burn assessment

History

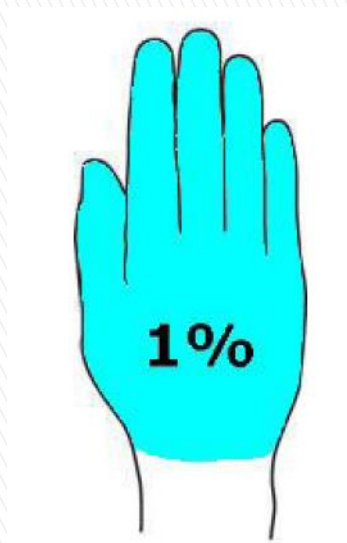
- ▶ Events and circumstances related to the injury
 - ▶ Temperature or strength of causative agent
 - ▶ Length of time agent contacted the skin
 - ▶ First aid received (cooling)
 - ▶ Past medical history
 - ▶ Allergies
 - ▶ Medications
- 

Assessing burn size



Patients hand

- ▶ The palmer surface of the PATIENTS HAND is approx. 1% TBSA
- ▶ Simple estimation of burn size

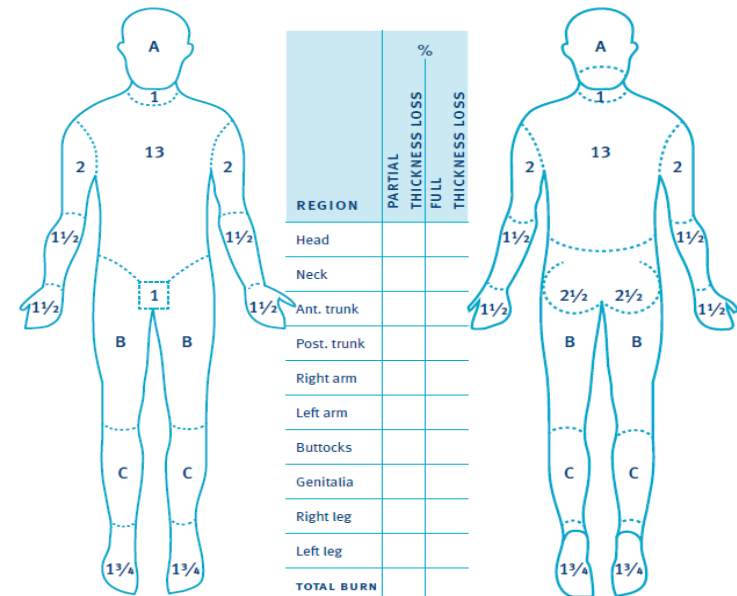


Lund and Browder chart

Assessment of burn size: Lund and Browder chart

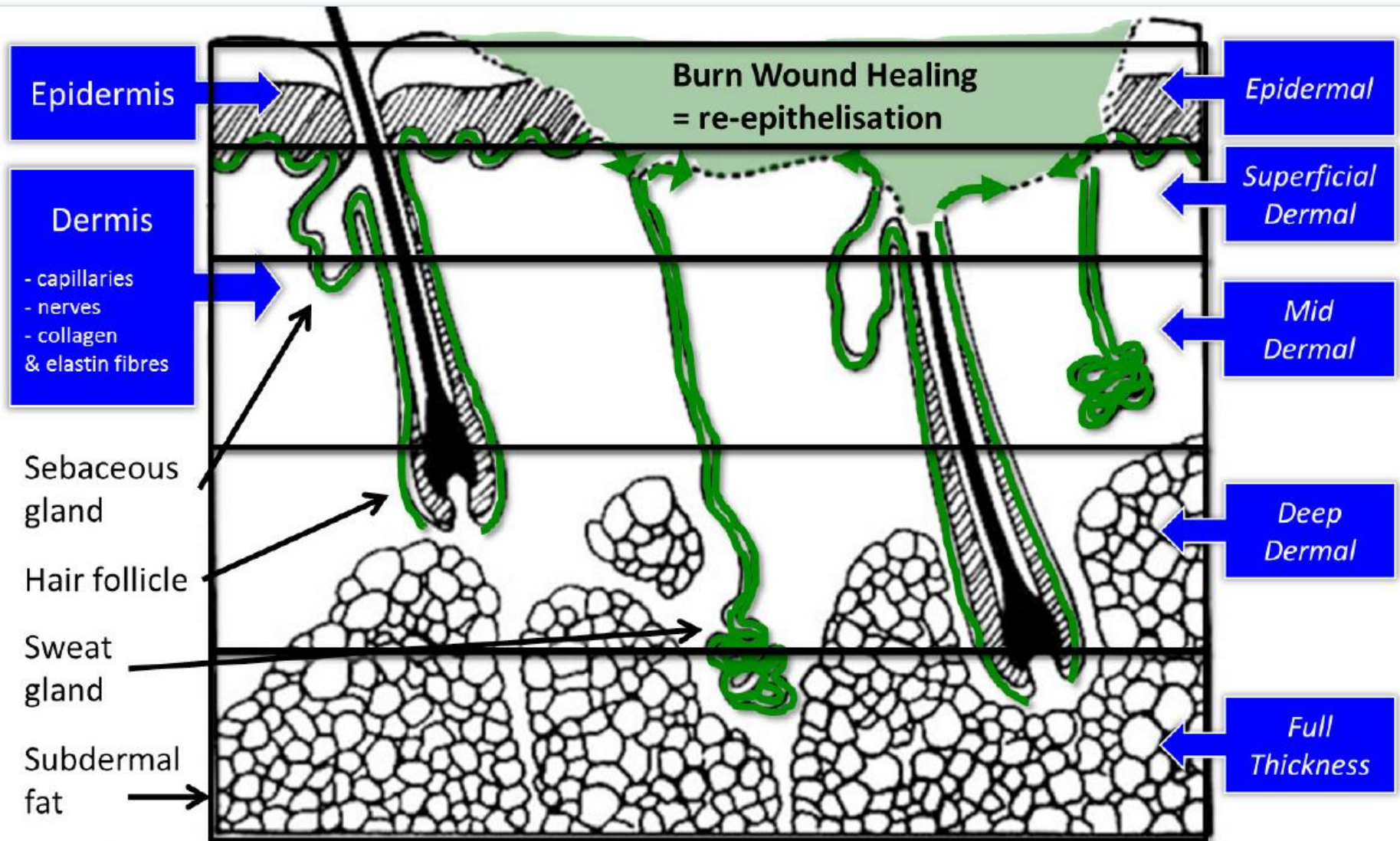
% total body surface area burn

Be clear and accurate, and do not include erythema



AREA	AGE 0	1	5	10	15	ADULT
A = 1/2 of head	9 1/2	8 1/2	6 1/2	5 1/2	4 1/2	3 1/2
B = 1/2 of one thigh	2 3/4	3 3/4	4	4 1/2	4 1/2	4 3/4
C = 1/2 of one lower leg	2 1/2	2 1/2	2 3/4	3	3 1/4	3 1/2

Depth of burn injury



Diagnosis of burn depth

Depth	Colour	Blister	Capillary Refill	Sensation	Healing
Epidermal	Red	No	Present	Present Painful	Yes
Superficial Dermal	Pale Pink	Small	Present	Painful	Yes
Mid-Dermal	Dark Pink	Present	+/-	+/-	Usual
Deep-Dermal	Blotchy Red	+/-	Absent	Absent	No
Full Thickness	White	No	Absent	Absent	No

Epidermal burns

TABLE: CLASSIFICATION OF BURNS BASED ON DEPTH

ANZBA 2004 CLASSIFICATION	Epidermal	
FORMER CLASSIFICATION	Superficial epidermal	
EXAMPLE	UV light, very short flash	
APPEARANCE	Dry and red, blanches with pressure, no blisters	
SENSATION	May be painful	
HEALING TIME	Within seven days	
SCARRING	No scarring	

Superficial dermal burns

ANZBA 2004 CLASSIFICATION	Superficial dermal
FORMER CLASSIFICATION	Superficial partial thickness
EXAMPLE	Scald (spill or splash), short flash
APPEARANCE	Pale pink with fine blistering, blanches with pressure
SENSATION	Usually extremely painful
HEALING TIME	Within 14 days
SCARRING	Can have colour match defect Low risk of hypertrophic scarring



Mid dermal burns

ANZBA 2004 CLASSIFICATION	Mid dermal
FORMER CLASSIFICATION	Partial thickness
EXAMPLE	Scald (spill), flame, oil or grease
APPEARANCE	Dark pink with large blisters Capillary refill sluggish
SENSATION	May be painful
HEALING TIME	14–21 days
SCARRING	Moderate risk of hypertrophic scarring



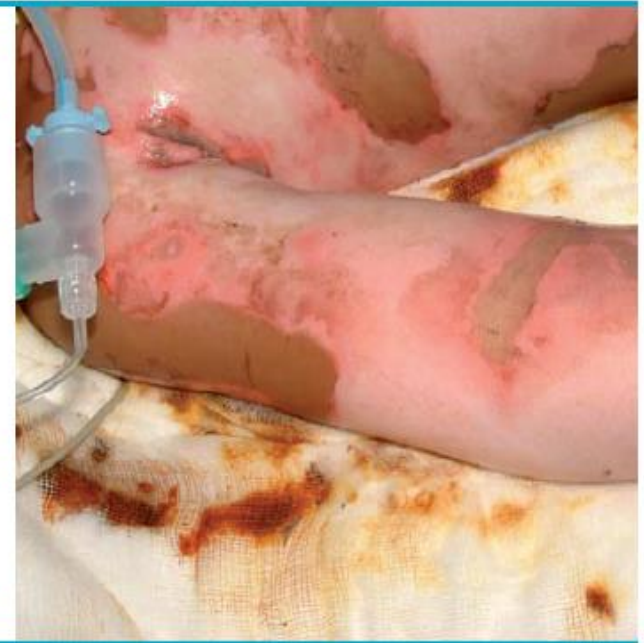
Deep dermal burns

ANZBA 2004 CLASSIFICATION	Deep dermal
FORMER CLASSIFICATION	Deep partial thickness
EXAMPLE	Scald (spill), flame, oil or grease
APPEARANCE	Blotchy red, may blister, no capillary refill In child, may be dark lobster red with mottling
SENSATION	No sensation
HEALING TIME	Over 21 days: grafting probably needed
SCARRING	High risk of hypertrophic scarring



Full thickness burns

ANZBA 2004 CLASSIFICATION	Full thickness
FORMER CLASSIFICATION	Full thickness
EXAMPLE	Scald (immersion), flame, steam, oil, grease, chemical, high-volt electricity
APPEARANCE	White, waxy or charred, no blisters, no capillary refill May be dark lobster red with mottling in child
SENSATION	No sensation
HEALING TIME	Does not heal spontaneously, grafting needed if >1cm
SCARRING	Will scar



Adapted from: Australian and New Zealand Burn Association Limited. *Emergency Management of Severe Burns*. 8th Edition; 2004.

Burn management

Referral Criteria

ANZBA referral criteria	
Size	> 10% TBSA
	> 5% TBSA in children
	> 5% TBSA full thickness
Person	Pre-existing illness
	Pregnancy
	Extremes of age
Area	Face/hands/feet/perineum/major joints
	Circumferential (limb or chest)
	Lungs (inhalation)
Mechanism	Chemical / electrical
	Major trauma
	Suspected NAI

- ▶ Any burn which has failed to heal with conservative management after 2 weeks

Blisters...

- ▶ Deroof or not?



Dressing selection

- ▶ The characteristics of a good burn wound dressing is a dressing that;
 - Maintains a moist wound environment
 - Contours easily
 - Non-adherent to protect delicate skin
 - Retains close contact with the wound bed
 - Easy to apply and remove
 - Painless on application and removal
 - Protects against infection
 - Cost-effective.

Dressing selection

- ▶ ACC guideline (2007) recommends:
 - Dressing with antimicrobial should be used on all burns for the first 72 hours
- ▶ ANZBA guidelines (2015) Initial management of small burns
- ▶ What dressing to select...?



ANZBA guidelines

BURN	EPIDERMAL	SUPERFICIAL DERMAL	MID DERMAL	DEEP DERMAL	FULL THICKNESS
					
ASSESS DEPTH	Painful Epidermis damaged but intact Red	Blistered, painful raw Pale pink/red Brisk capillary return within burn wound	Sluggish capillary return Less painful Dark pink to red	Deep red or white Dull sensation Severely delayed or absent capillary return	No sensation No capillary return Leathery white/black or yellow
INITIAL PRIMARY DRESSING	Gels to soothe <ul style="list-style-type: none"> Soothing moisturisers Vaseline 	Absorbent dressings <ul style="list-style-type: none"> Foams Alginates Paraffin gauze Silicone dressings <ul style="list-style-type: none"> Mepilex Silver products if contaminated	Silver products <ul style="list-style-type: none"> Acticoat Acticoat Absorbent Mepilex Ag Aquacel Ag Flamazine Biatain Ag Allevyn Ag Antimicrobial <ul style="list-style-type: none"> Flaminal Silicone dressings <ul style="list-style-type: none"> Mepilex 	Silver products <ul style="list-style-type: none"> Acticoat Acticoat Absorbent Mepilex Ag Aquacel Ag Flamazine 	Silver products <ul style="list-style-type: none"> Acticoat Acticoat Absorbent Aquacel Ag Flamazine

Acticoat



- ▶ Contains nanocrystalline silver
- ▶ Kills broad range of bacteria within 30 minutes.
- ▶ Maintains moist wound environment
- ▶ Available in 3 or 7 day product
- ▶ Must be wet with drinkable water TDS (not saline)
- ▶ May cause transient stinging on application
- ▶ Secure with hyperfix/fixamol
- ▶ Cost: 10x10cm piece = \$20.97

Mepilex Ag



- ▶ Antimicrobial silver foam dressing
- ▶ Suitable for low to medium exudating partial thickness burns
- ▶ Inactivate wound pathogens (bacteria & fungi) within 30 minutes
- ▶ [Safetac](#)[®] – Silicone contact layer.
- ▶ Less pain during dressing changes
- ▶ Can last upto 7 days
- ▶ No need to wet dressing to activate silver
- ▶ Cost: 10x10cm piece = \$14.50

Aquacel Ag



- ▶ Sodium carboxymethylcellulose with 1.2% ionic silver fibres.
- ▶ Gels when contacts wound fluid
- ▶ Broad spectrum of activity
- ▶ Aids in autolytic debridement of the wound
- ▶ Requires secondary dressing
- ▶ Can last up to 3 days
- ▶ Cost: 10x10cm piece = \$21.70

Flamazine

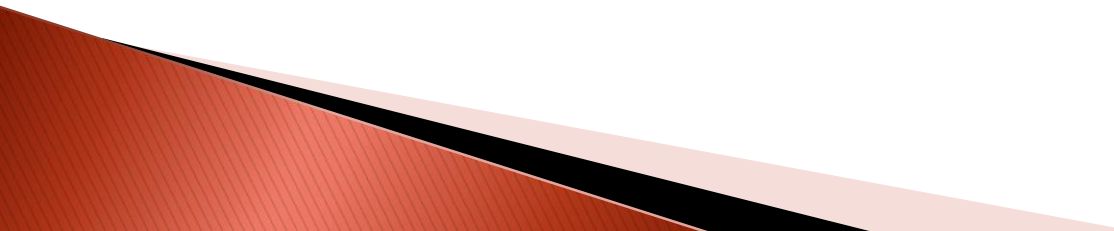


- ▶ 1% SSD
- ▶ Converts burn into moist wound with khaki coloured exudate (pseudo-eschar)
- ▶ Makes it difficult to inspect the wound bed
- ▶ Requires daily application
- ▶ Requires secondary dressing
- ▶ Ok to use in special areas – Genitalia, Ears
- ▶ Prophylactic SSD cream not recommended for non-infected wounds

Infection

- ▶ Monitor closely for signs of infection
- ▶ Treat with slow release silver dressing if:
 - Signs of infection
 - Contaminated at time of injury
 - Contaminated during cooling
- ▶ Invasive burn wound sepsis is dermal wounds usually produces a deep dermal or full thickness injury
- ▶ Consider systemic antibiotics
- ▶ Refer to regional burn unit

Once wounds have healed

- ▶ **Hypo allergenic moisturisers:** keep skin supple, to allow movement, improve cosmetic outcome
 - ▶ **Suncare;** keep out of direct sunlight and high factor sunblock
 - ▶ **Physiotherapy;** prevent contractures
 - ▶ **Scar management OT:** if likely to develop hypertrophic scars
- 

Any Questions??

Feel free to contact me:

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