

BURN INJURY MANAGEMENT

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BURN INJURY

A burn is defined as damage to the skin and underlying tissues caused by heat, chemicals, radiation, or electricity.

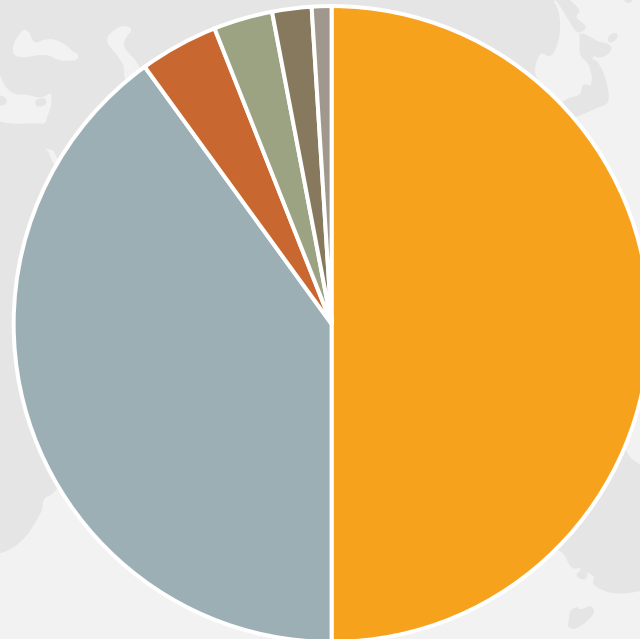
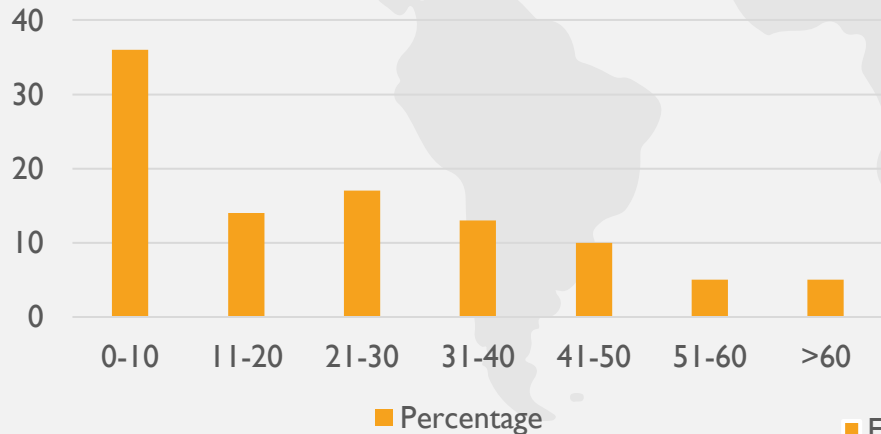


EPIDEMIOLOGY

Mechanism of Injury:

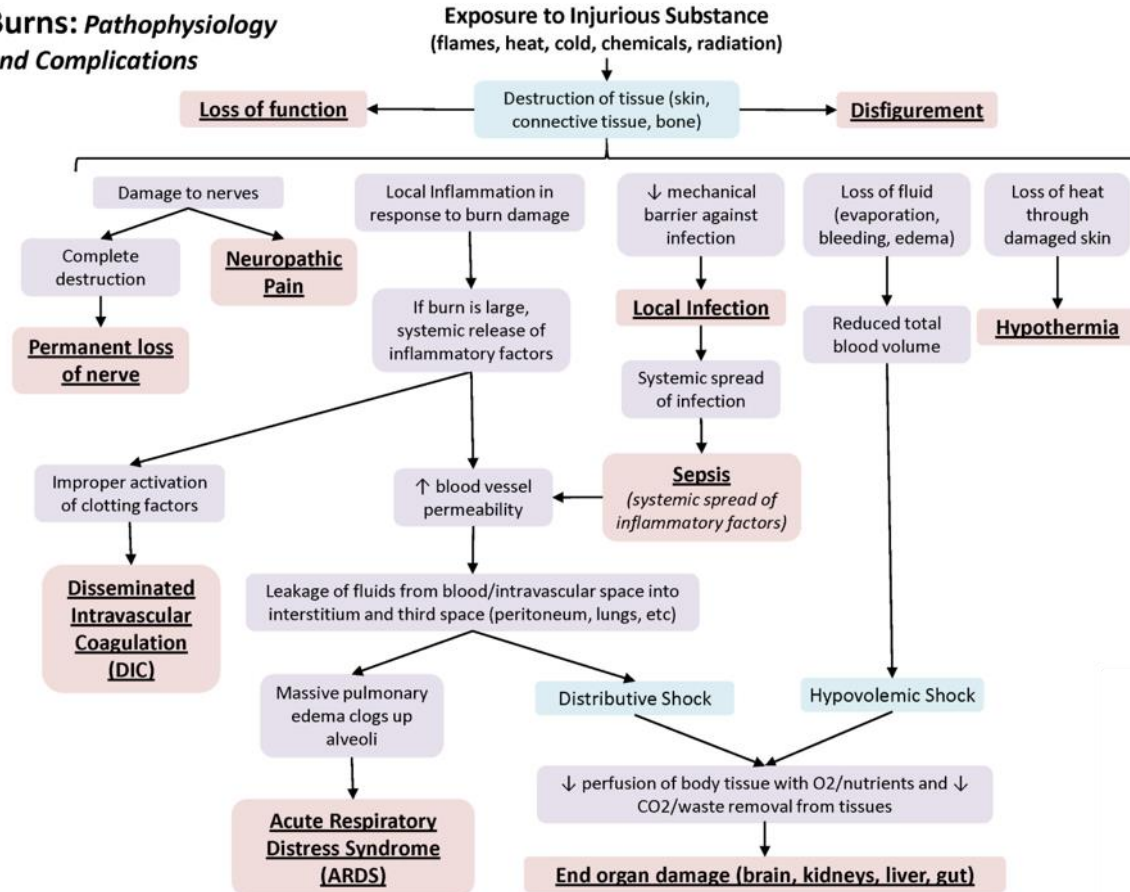
Children of <10 years accounted for 36% of admissions

Age

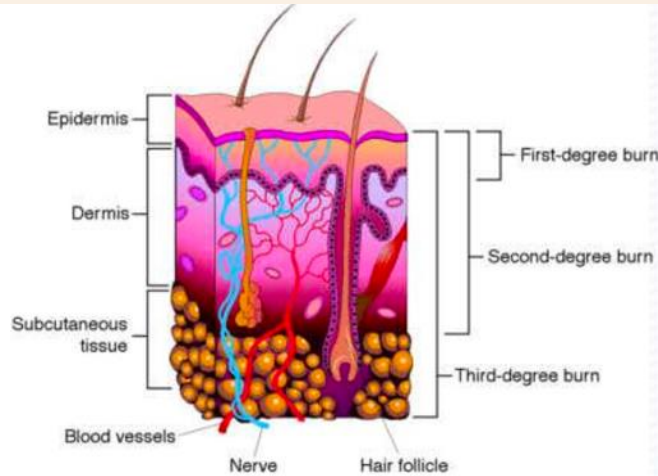





PATHOPHYSIOLOGY

Burns: Pathophysiology and Complications

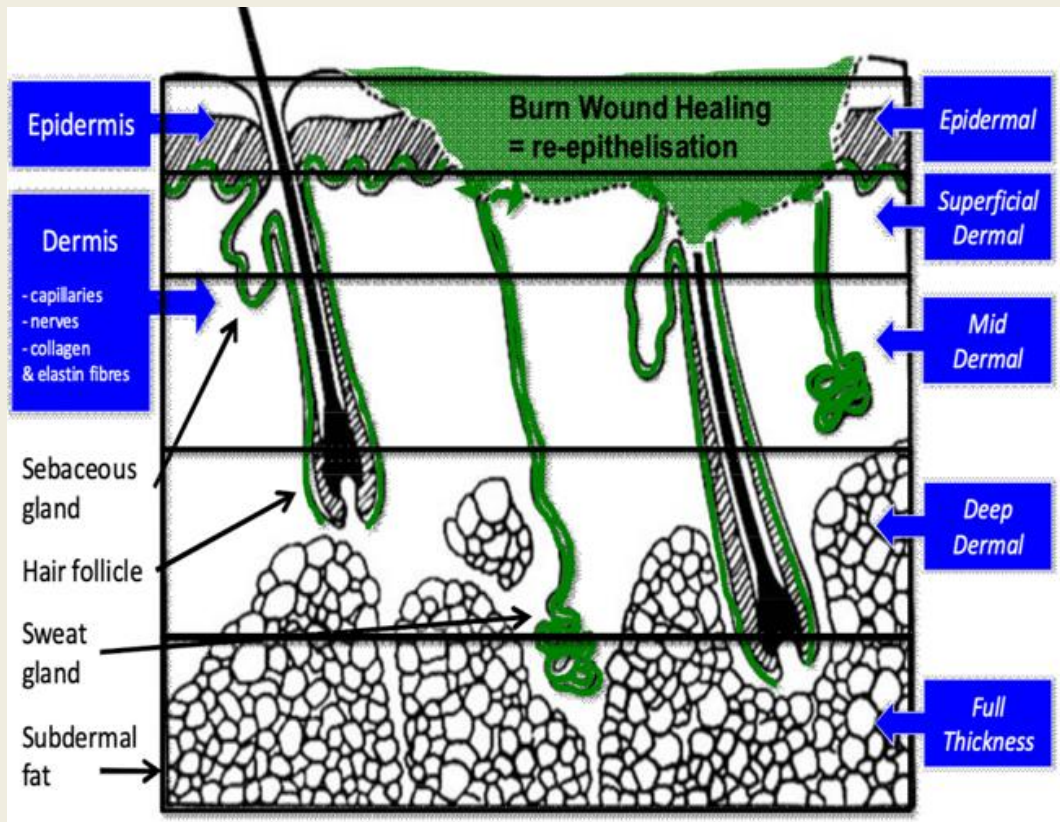


BURN DEPTH (AMERICAN BURN ASSOCIATION)



Degree/Depth	Mechanisms of Injury	Layer of Skin Involved	Appearance	Pain	Scar	Healing Time	Examples
Superficial (1 st)	Sun exposure, hot liquids (with low viscosity and short exposure)	Epidermis only	Pink-red, moist, no blisters	Mod-severe	None	3-7 days	
Superficial partial (2a)	Hot liquids, chemical burns (with weak acids/alkali), flash	Superficial (papillary) epidermis	Blisters, red, moist, intact epidermal appendages, blanches to pressure	Severe	Minimal	1-3 weeks (? Long term pigment changes)	
Deep partial (2b)	Flame, electrical, hot liquid (high viscosity)	Deeper layer (reticular) dermis	Dry, white, non-blanching, loss of all epidermal appendages	Minimal	High risk scarring and contractures	3-6 weeks, with scars	
Deep (3 rd)	Flame, electrical, chemical, blast, self-immolation	Full thickness of skin and into the subcutaneous fat or deeper	Leathery, dry, white or red with <u>thrombosed</u> vessels	None in the zone of coagulation but painful at surrounding tissues	Severe risk scarring and contractures	Do not heal by primary intention, requires skin graft	

BURN DEPTH (AUSTRALIAN & NEW ZEALAND BURN ASSOCIATION)



JACKSON BURN MODEL

Zone of Coagulation:

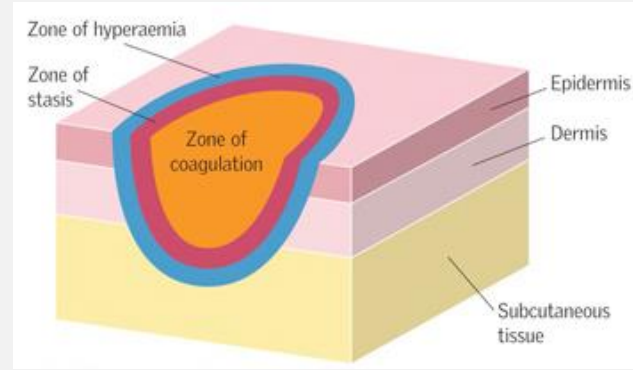
- the point of maximum damage
- Irreversible tissue loss due to coagulation of constituent proteins.

Zone of Stasis:

- Characterised by decreased tissue perfusion
- Potential to rescue the tissue in this zone
- Problems such as prolonged hypotension, infection or oedema can convert this area into one of complete tissue loss

Zone of Hyperaemia:

- The tissue here will invariably recover unless there is severe sepsis or prolonged hypoperfusion.



Zone of Coagulation
Zone of Stasis
Zone of Hyperaemia

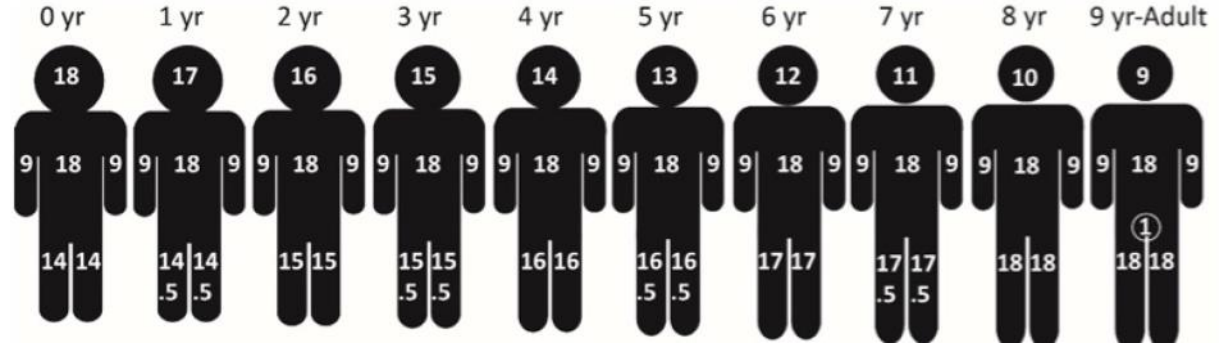
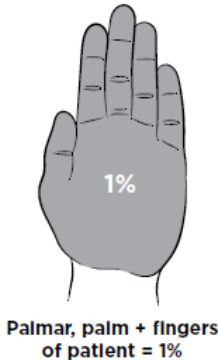
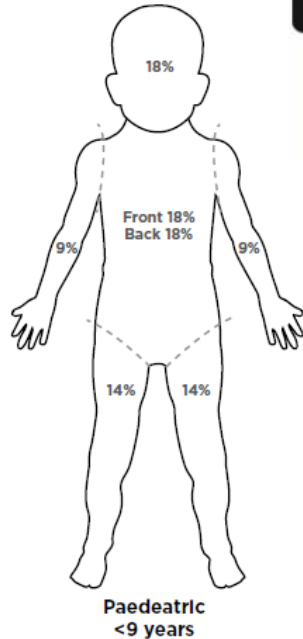
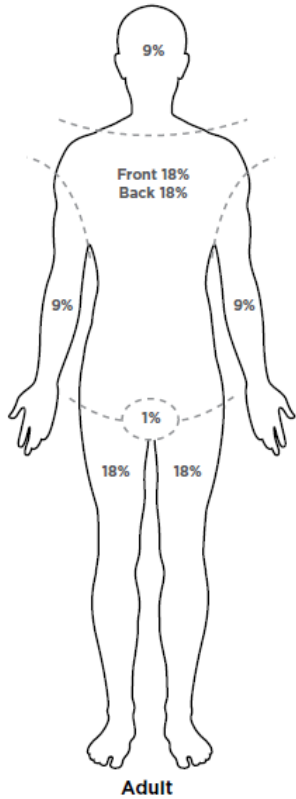
GRADE 2AB BURN INJURY



GRADE 3 ELECTRICAL INJURY



ESTIMATION OF THE AREA OF THE BURN



Children's body surface area proportions differ. To estimate the extent of a child's burn injury, use the 'paediatric rule of nines'. Adjust for age by subtracting 1% of TBSA from the head and adding 0.5% TBSA to each leg for each year of Life.

EARLY MANAGEMENT

L O O K	A I R W A Y	B R E A T H I N G	C I R C U L A T I O N	D I S A B I L I T Y	E X P O S U R E	FLUIDS	A.M.P.L.E. History
						ANALGESIA	Head to Toe Examination
						TESTS	Tetanus
						TUBES	Documentation and Transfer
D O	C spine	O ₂	Haemorrhage control I.V.	AVPU & Pupils	Environmental Control		Support
Primary Survey						First Aid	Secondary Survey

FLUID RESUSCITATION

TABLE 9-1 BURN RESUSCITATION FLUID RATES AND TARGET URINE OUTPUT BY BURN TYPE AND AGE

CATEGORY OF BURN	AGE AND WEIGHT	ADJUSTED FLUID RATES	URINE OUTPUT
Flame or Scald	Adults and older children (≥ 14 years old)	2 ml LR x kg x % TBSA	0.5 ml/kg/hr 30–50 ml/hr
	Children (<14 years old)	3 ml LR x kg x % TBSA	1 ml/kg/hr
	Infants and young children (≤ 30 kg)	3 ml LR x kg x % TBSA Plus a sugar-containing solution at maintenance rate	1 ml/kg/hr
Electrical Injury	All ages	4 ml LR x kg x % TBSA until urine clears	1–1.5 ml/kg/hr until urine clears

LR, lactated Ringer's solution; TBSA, total body surface area

WHEN TO REFER

Remember: **SPAM**

SIZE	PERSON	AREA	MECHANISM
>10% TSBA	Past Medical History	Facial / Hand/ Feet/ Perineum/ Large Joints	Electric/ Chemical
>5% TSBA in Children	Pregnancy	Circumferential	With Major Trauma
>5% TSBA in Full Thickness injury	Extreme Age	Inhalation Injury	Abuse/ Suicide

CASE EXAMPLES

Flame Grade IIA-IIB



Flame Grade IIA-IIIB – Post Debridement



Scalds Burn Grade IIA-IIB



Pre Debridement



Post Debridement day 1



Post Debridement day 8

Contact Burn Grade IIA-IIB



Pre debridement



Post debridement day 1



Wound dressing



Post debridement day 7

Scalds Injury Grade IIA-IIB



Pre debridement



Post debridement day 1



Post debridement day 7



Post debridement day 14



Post debridement day 21

Electrical Burn Grade III



Pre debridement



Post debridement day 1
+ Escharotomy



Post debridement day 7



Post debridement day 14
+ Skin Graft



Post debridement day 21

THANK YOU