Multidisciplinary Burn Care & Rehabilitation

Allied Health Members | NSW Statewide Burn Injury Service
Rehabilitation: A Team Effort

- Physical Abilities
- Functional Activities
- Psychosocial Issues
- Nutritional Needs
- Communication and Swallowing Problems
Which Burns Scar?

- Epidermal/Superficial dermal: Heal in < 14 days
- No scarring: Sun care and moisturise
Which Burns Scar?

- Mid dermal depth
- Healed 14-21 days = *may* scar/pigmentation changes
- > 21 days *will* scar
- in children and a flag
- for adults
Which Burns Scar?

- Full thickness
- usually grafted
- will scar
Scar Prediction: Who is at Higher Risk?

- **Age:** $\downarrow$ age $= \uparrow$ in scar activity

- **Skin type:** $\uparrow$ skin pigment $= \uparrow$ in scar activity (e.g. Mediterranean, Asian)

- **Genetic predisposition**

- **Length of time to heal:** the longer to heal the more active the scarring process
How do scars develop?

- Initially healed burn is pink flat soft
- The healed burn goes into state of "over drive"
- There is a period of increased vascularity
- New tissue develops in a distorted knotty fashion e.g. fibrocytes and collagen
A Hypertrophic Scar Is:

- Red or purple
- Raised above level of surrounding skin
- Hard (firm to touch) and dry
- Has strong contractile forces
Hypertrophic Scars
Red, Raised and Hard
Poor outcomes
Poor outcomes
Hypertrophic Scars

- Can impact on self image and appearance
- Restrict range of movement
- Limit functional independence
- Affect psychological health
# Treatment Principles

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Compression

- Reduces vascularity - limits deposition of scar tissue
- Controls oedema
- Used continuously
  - garments
  - bandages
  - tubular stretchy bandage
Compression
Compression Garments
Softening

Contact media e.g. silicone gel sheeting or hydrocolloid dressing

Silicone gel sheeting

Hydrocolloid sheeting
Softening

Massage

- Break collagen bundles
- Massage with moisturiser
- Firm pressure
- Patient/carer participation
Extra Pressure & Softening Options
Moisturising

- Deep burns can lose sebaceous and sweat glands
- Moisture replaced with water based moisturiser
Stretching

- *Position of comfort is position of contracture*

- Need to counter the contractile forces of active scar tissue
Position of Comfort/Contracture
Stretching

- Positioning
- Splints
- Exercises
Body Positioning
Stretching - Positioning
Splinting

- Immobilise (post grafting)
- Stretch
- Position
- Oedema management
- Prevent deformity
- Correct deformity (serial, dynamic)
Stretching with Splints
Stretching – Mouth Splints
Stretching – Passive Exercise

Stretching during dressing changes

Continue daily stretching months after burn has healed
Stretching – Active Exercise
Immature scar under good control
Instead of
Mature scars:

- Pale, Soft, Flat
Good Result Mature Scars:

- Full Range of Movement
Instead of
Problem Areas

- Flexor surfaces of all joints
- Hands (many moving parts)
- Axillas
- Mouths/faces
- Necks
- Feet/toes
- Elbows and knees
Hand Burns
Without therapy
Combination of Exercises and Splinting

- Children:
  - Splinting more intensive.
  - Exercises only for the hours that the splint can be left off and range maintained.
  - Joint stiffness not as much of a concern
Adults:
- Splint overnight (functional position)
- Exercise+++ by day
- Functional activity encouraged
Position of comfort/deformity
Correct hand positioning

For dorsal or circumferential burns
Hand Splints
Compression
Exercising
Desired Outcome
Scar Complications

- Pigmentation changes
  - Hyperpigmentation
  - Hypopigmentation
Course of Treatment

- Continues until optimal ROM achieved
- Scar management continues until pale soft flat
- Continues with reconstructive surgery
- Children reviewed until fully grown
Return to Usual Activities and Roles

- Common **functional issues** include:
  - Self-care
  - Home duties
  - Community access
  - Return to work/school
  - Sexual needs
  - Leisure activities
Early Intervention – Activities of Daily Living
Early Intervention – Mobility
Maximum Function
Complications

Common problems:
- Deconditioning
- Loss of hand function
- Loss of AROM
- Altered sensation
- Hypersensitivity to sun
- Folliculitis

Severe burn injuries can result in:
- Impaired thermoregulation
- Loss of digits/limbs
- Heterotrophic ossification
- Decreased function
- Chronic skin breakdown
Psycho-Social Adjustment

The impact of a severe burn can affect the patient and family’s ability to reintegrate back into their pre-burn life.
Psycho-Social Adjustment

- Risk factors resulting in loss of independence after burn injury:
  - Elderly
  - Multi-traumatic injuries
    - e.g. loss of digits / limbs, fractures
  - Pre-existing mental health problems
  - Other co-morbidities
    - e.g. DM, IHD, DD
Psycho-Social Adjustment

- Changed body image
- Developmental issues
- Relationship issues
- Reintegration
Psycho-Social Adjustment

- Psychological trauma associated with the burn and acute treatment e.g. post traumatic stress disorder (PTSD)

- **Compliance** with physical treatment requirements
Psycho-Social Adjustment

- May need supported care to return home / work / school
- May need placement in low or high level care facility for the elderly patient
- Support to reintegrate into life after burn E.g. social life, leisure, community
Life After a Burn Injury!
Nutrition

- A burn injury can result in significantly increased nutrient requirements
- For a large burn:
  - Energy requirements up to 2 x Normal
- Adults with >20% and children >15% TBSA will likely need **enteral feeds** to meet their requirements
- In a large burn these requirements may continue for 6 months or more
Nutrition

- Burns to face, hands and inhalation injuries may also need nutritional support
- Many factors are used to estimate the nutritional requirements:
  - Age
  - %TBSA and site of injury
  - Anthropometry
  - Body temperature, ventilation, activity
  - Previous nutritional status, pain control, medications, pre-existing conditions.
Nutrition

- Patients will use their muscle mass instead of their fat stores as a preferred energy source because of the effects of the burn injury.

- Inadequate nutrition leads to poor wound healing and weight loss.
Nutrition

- As time progresses nutritional requirements decrease.
- Patients may need to be monitored for unacceptable weight gain and diets modified appropriately.
- Follow up is on an outpatient basis as necessary.
Speech Pathology in Burns

Communication
Swallowing

Physical abilities
Functional activities
Psychosocial issues
Nutritional needs

Critical care
Acute care
Rehabilitation
Long term outpatient

Outpatient
Indicators for Speech Pathology

- Facial & inhalation burns
- Intubation / tracheostomy
- Loss of anatomical structure / function
- Psychological stress
- Deconditioning
- Sepsis
- Prolonged sedation
Communication Disorders

- Contractures - facial & inhalation burns
- Intubation / tracheostomy - voice, loss of oral communication
- Loss of anatomical structure / function - reconstructive
- Psychological stress - exacerbated, interferes with speech/lang development
- Distress assoc with AAC
Swallowing

- Airway protection compromised
  - Medical equipment
  - Sedation / narcotics
  - Oral secretions
- Altered physiology
- Deconditioning / sepsis
- Increased nutrition need
Please Keep Communication Open

Contact the Burns Unit

- The Children’s Hospital at Westmead
  9845 1114
- Concord Repatriation General Hospital
  9767 7776
- Royal North Shore Hospital
  9463 2112
- NSW Statewide Burn Injury Service
  9463 2105
ACI Statewide Burn Injury Service
02 9463 2105