

# Wound Care in the Community

Lisa Sutherland MSc

Tissue Viability Senior Lead

Ipswich Hospital & Community NHS Trusts

# What are the key elements?

- ▶ What is the patient's goal or aim for the wound?
- ▶ What are the difficulties or barriers in helping them achieve this?
- ▶ What are the holistic factors involved?
- ▶ How do these different factors also impact on the goal or aim?
- ▶ TIME assessment
- ▶ Availability of resources to support the **agreed** plan.

# What is the Patient's/Your Aim?

- ▶ Preventative?
- ▶ Healing?
- ▶ Management pending surgery or treatment?
- ▶ Long term management if unable to heal?
- ▶ Palliative Management?

# Barriers or Issues?

- ▶ Cognitive Capacity
- ▶ Practical Issues
- ▶ Family input or support
- ▶ PMH or co-morbidities
- ▶ Underlying cause
- ▶ Age

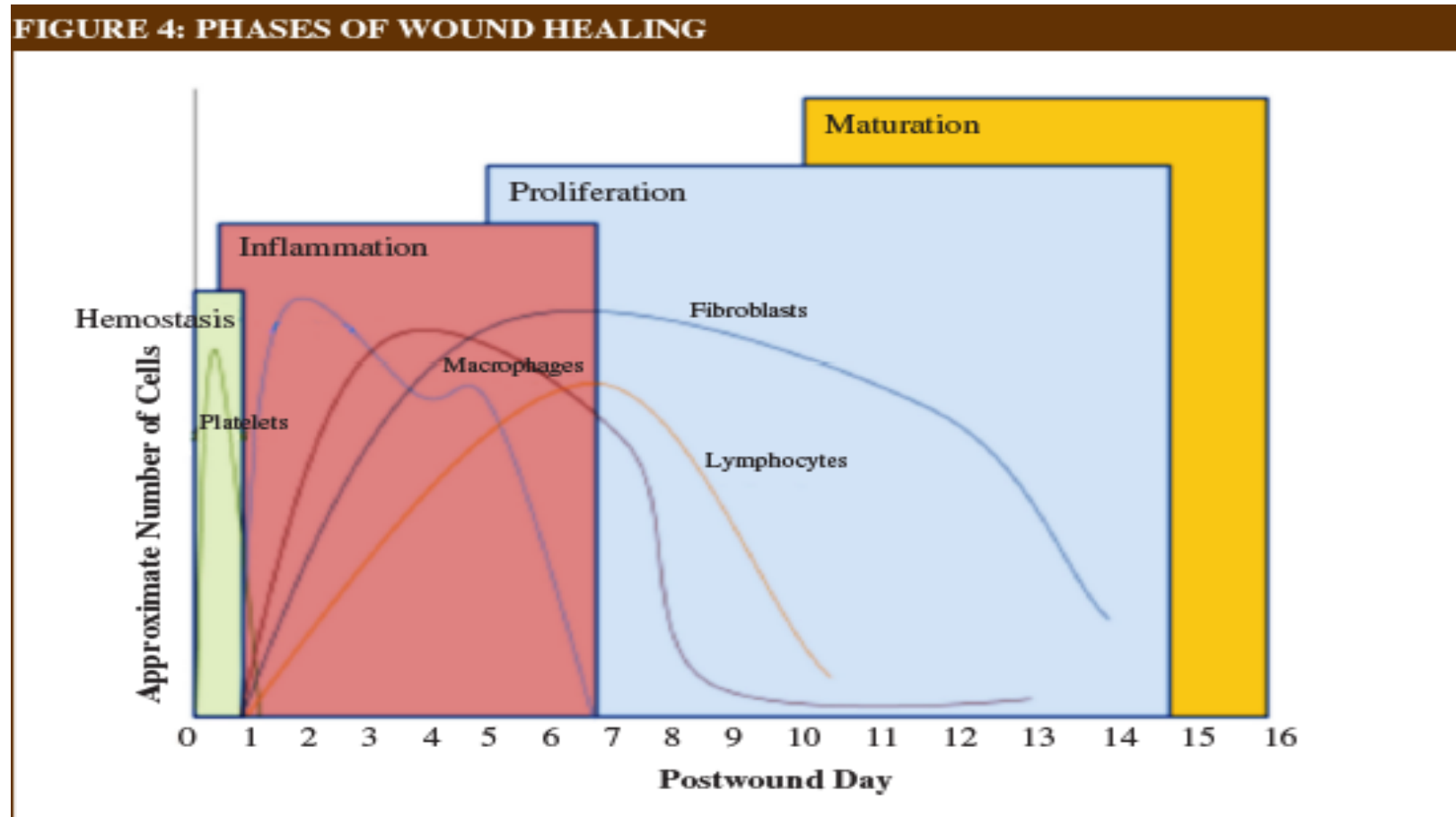
# Holistic Assessment

- ▶ PMH
- ▶ Medication
- ▶ History of Wound
  - ▶ How and when did it occur?
  - ▶ How has it been treated to date?
  - ▶ Who has been involved to date – who needs to be involved?
  - ▶ Allergies
- ▶ Nutrition and Hydration
- ▶ Mobility
- ▶ Mental Capacity

# Impact Potentials

- ▶ Have we reduced potential barriers?
- ▶ Have maximised all opportunities?
  - ▶ OT
  - ▶ Physio
  - ▶ Specialist Referrals or support
  - ▶ Other AHP

# Phases of Wound Healing



# Phases of Healing

## HAEMOSTASIS

- Initial Injury.
- Forms a clot.
- Platelets release cytokines which gather other cells to initiate the next phases of healing.



## ➤ INFLAMMATION

- lasts 4-6 days and is a defensive or reaction phase.
- Inflammatory cells flood site, destroy bacteria, cleanse debris, trigger stimulation of other repair cells, create amino acids and sugars necessary for healing.
- **Normal signs:** Redness and/or Swelling with some Heat and/or Pain.
- **Abnormal Signs:** Wound Breakdown; Bleeding; Increased Pain; Pus or unusual discharge; Spreading redness around surrounding skin; Flu like symptoms.

## ▶ PROLIFERATION

- Regenerative or Connective phase lasts several weeks.
- Open wounds – granulation tissue forms red beefy buds of tissue which are stable and not easily triggered to bleed.
- As wound fills with this margins pull together decreasing wound's surface.
- Final phase see is then epithelialization which closes off the wound (this can only occur in the presence of ***viable vascular tissue*** and often leaves a scar.

- **MATURATION**

- Occurs from 21 days onwards depending on depth of wound.
- Collagen fibers recognise, remodel and mature the skin until it reaches about 80% of the skin's original (uninjured) strength. But this reduces with age.
- Can take up to 18 months for wound healing to be finalised

# Wound Assessment - TIME

- ▶ T = tissue type present and which process of the wound healing phase
- ▶ I = Infection or inflammation
- ▶ M = Moisture levels
- ▶ E = Edge of the wound

# Tissue Types - Granulation Tissue



# Slough Tissues



# Eschar and Necrotic Tissue



# Epithelial





# Macerated Tissues



Photo courtesy of Eric Espouses, DPM



# Other Tissues



# Infection versus Inflammation

- ▶ Infection is caused by micro-organisms
    - ▶ healing is disturbed and wound tissues are damaged (**critical colonisation / local infection**).
    - ▶ micro-organisms may cause problems to nearby tissues (**spreading infection**).
- Or
- ▶ cause a systemic illness (**systemic infection**).

# Inflammation or Infection?

Localised Colonisation	Critical Colonisation or localised infection	Infection
<ul style="list-style-type: none"><li>• Micro-organisms present</li><li>• They multiply</li><li>• No immune response or clinical signs of infection, (Host reaction).</li><li>• No damage to wound tissue</li><li>• Wound on 'Normal' healing process</li></ul> <p>Treatment: reduction of bacterial load and exudate plus or minus debridement.</p>	<ul style="list-style-type: none"><li>• Multiplication of micro-organisms delay healing</li><li>• No systemic host reaction.</li><li>• No microbial invasion of wound tissue</li><li>• Subtle signs of infection may/may not be present.</li></ul> <p>Treatment: debridement and topical antimicrobials</p>	<ul style="list-style-type: none"><li>• Multiplication of micro-organisms cause a host (systemic) reaction.</li><li>• Healing is disrupted</li><li>• Wound tissue destruction</li></ul> <p>Clinical signs and symptoms of infection may or may not be present in varying degrees!</p> <p>Treatment: Oral antibiotics to prevent systemic infection/Sepsis <b>with</b> topical antimicrobials</p>

# Moisture

- ▶ Ideal Environment - Moist wound healing
- ▶ What is in exudate?
- ▶ Too much or too little
- ▶ Although a moist environment is necessary for optimal wound healing, conditions of extreme wetness or dryness may adversely affect healing.
- ▶ Knowledge of the level and type of wound exudate is extremely important as it, in conjunction with the type of tissue on the wound bed, will influence dressing choice.

# What is exudate?

- ▶ Serous fluid that has passed through the walls of a damaged or overextended vein.
- ▶ Exudate often contains growth factors when the wound is acute.
- ▶ Exudate may contain bacteria, dead white cells, etc. in chronic wounds.
- ▶ Bacteria indirectly cause vaso-permeability, which can result in an increase in exudate production.
- ▶ Exudate varies from a thin watery fluid to a thick viscous fluid.
- ▶ Some exudate is necessary to promote a moist wound healing environment

# Too much exudate

- ▶ Too much saturates tissues
- ▶ Protease enzymes can cause break down of cells (proteins) if in contact with healing skin for too long
- ▶ Can block or restrict proliferation by Keratin and endothelia cells
- ▶ Suppresses cell division (wound drowns)
- ▶ Increases ideal environment for bacteria to replicate

# Why is it needed?

- **During the normal inflammatory stage of healing, exudate plays a key role in 'normal' wound healing**
- **Supports a moist environment**
- **Provides a natural cleansing process by removing debris and bacteria**
- **Contains growth factors, enzymes and nutrients essential to the healing process**
- **Carries fibrin and other materials to aid repair to the site of injury**
- **Facilitates migration of cells involved in tissue repair**
- **Acute wound fluid stimulates fibroblasts and production of endothelial cells**
- **Acute wound fluid is pale yellow or 'straw' in colour**
- **As the wound processes to heal, exudate production will decrease if no complications, such as infection occur.**



# Edge – is this healthy or undermining?

- ▶ When the epidermal margins of a wound fail to migrate across the wound bed or the wound edges fail to contract and reduce in size.
- ▶ Additionally:
  - ▶ –Is there Hyperproliferation at the wound edges?
  - ▶ –Is there any undermining (this is indicative of chronicity)
- ▶ Excoriation and Maceration around the edge (peri-wound) of the wound are common problems in wound care.

# Healthy -v- Undermining edges



# Burns

- ▶ Planning Treatment for burn:
  - ▶ Cause or Type of Burn
  - ▶ Grading and Extent of burn
  - ▶ Location of burn
  - ▶ Function of area involved
  - ▶ Fluid management
  - ▶ Vital observation
  - ▶ Nutrition and Pain

# Types of Burns

Type	Examples	Factors Impacting Severity
THERMAL	<ul style="list-style-type: none"><li>➤ Direct exposure to naked flame, hot liquid or steam</li><li>➤ Indirect Exposure to naked flame, hot liquid or steam</li><li>➤ Direct exposure to extreme cold</li></ul>	<ul style="list-style-type: none"><li>➤ Contact Time</li><li>➤ Temperature</li><li>➤ Type of Insult</li></ul>
CHEMICAL	<ul style="list-style-type: none"><li>➤ Acids</li><li>➤ Bases</li><li>➤ Industrial Accidents</li><li>➤ Assaults</li></ul>	<ul style="list-style-type: none"><li>➤ Alkalis more severe</li><li>➤ Contact time</li><li>➤ Chemical Concentration</li><li>➤ Amount of Chemical</li></ul>
ELECTRICAL	<ul style="list-style-type: none"><li>➤ Low Voltage</li><li>➤ High Voltage</li></ul>	<ul style="list-style-type: none"><li>➤ AC burns more severe</li><li>➤ Contact Time</li><li>➤ Voltage</li></ul>

# Pathophysiology of Burns

## ▶ THERMAL

- ▶ Burns occur when energy is transferred from a heat source to a body
- ▶ If heat absorption is greater than the rate of dissipation it causes the cell temperature to rise leading to cell death and necrosis
- ▶ Thermal is most common type of burn seen

## ▶ **CHEMICAL**

- ▶ There is a production of thermal energy when strong acids or alkalis react with body tissues.
- ▶ Tend to be smaller in size but much deeper or full thickness.
- ▶ The thermal reaction continues until chemical is removed or diluted.
- ▶ Acids tend to be neutralised by proteins in skin so coagulate in tissues causing limited necrosis
- ▶ Alkali's tend to denature proteins causing tissues to liquify and so deeper necrosis and damage.

## ▶ **ELECTRICAL**

- ▶ Dry skin, bone and muscles have a high resistance to electrical flow so often appear to have less obvious damage.
- ▶ Wet/moist skin, blood vessels and nerves have a low resistance to electrical flow, therefore get more immediate damage.
- ▶ Results in outward appearance seeming to be minor or superficial whilst internal damage is significant.
- ▶ Tend to get small entry wound and larger exit wound from current.
- ▶ Causes contraction of muscles which resists flow of current, so slowing dissipation and resulting in significant damage such as fractures, cardiac dysrhythmias, cardiac arrests, respiratory arrest, organ failure.
- ▶ Can have post event symptoms days, month, years later eg Carpel tunnel

# Grading of Burns

- ▶ Superficial
- ▶ Partial thickness:
  - ▶ Epidermal partial thickness
  - ▶ Superficial dermal partial thickness
  - ▶ Mid-dermal partial thickness or deep partial thickness
- ▶ Full thickness and/or Subdermal Thickness



# Issue With Burns

- ▶ ABC
- ▶ Inflammatory response
- ▶ Shock
- ▶ Hypovolaemia
- ▶ Hypothermia due to too rapid fluid resuscitation
- ▶ Death increases with following:
  - ▶ Age over 60 years
  - ▶ TBSA of burn over 40%
  - ▶ Inhalation Injury

# Issues Continued ....

- ▶ Burnt or tissue damaged via a burning incident dries out very quickly.
- ▶ Oedema pools in damage and surrounding tissue due to inflammatory response causing pain and swelling.
- ▶ These two factors combine to cause contraction of limbs or body areas which impair function which can be life limiting (eg chest area impeded breathing). Often need to have escharotomy to release tight tissues.
- ▶ Necrotic and oedematous tissue ideal for bacteria which in turn trigger prolonged inflammatory response.

# Treatment needs

- ▶ Fluids to manage those being lost due to oedema, blisters and exposed tissues.
- ▶ Nutrition and inflammatory response is prolonged causes increase in catabolism so higher energy need for body and healing processes.
- ▶ Pain management
- ▶ Dressing consideration
- ▶ Possible medium and long term planning for treatment
- ▶ Scar formation and issues
- ▶ Psychological support

# Thank you for Listening

- ▶ Contact Details:

- ▶ **Email:** [lisa.sutherland@ipswichhospital.nhs.uk](mailto:lisa.sutherland@ipswichhospital.nhs.uk)

- ▶ **Telephone:** 01473 702019 Tissue Viability Team at Ipswich Hospital.