UPDATES AND INNOVATION IN CHRONIC WOUND MANAGEMENT

Ng Mooi Eng
Clinical Nurse Specialist
Senior Nurse Manager
Wound Management Centre
Diabetic Foot Care Clinic
University Malaya Medical Centre
Kuala Lumpur, Malaysia

WOUNDS

Definition :

A cut or a break in continuity of an organ, tissue or skin

Origin :

Caused by external agent

- **Injury**
- **Surgery**

Localization :

Soft tissue, muscles and sometimes bones may be affected

WOUND HEALING

1. What is the major aetiological factor ?

- 2. What are the contributing factors ?
- 3. Is the ulcer infected ?
- 4. What are the wound characteristics ?
- 5. What regime will suit the patient and the family ?

WOUND HEALING

- **1.** Aetiological diagnosis
- 2. Eliminate or reduce
- 3. Debridement
- 4. Wound assessment
- 5. Causative factors
- 6. Dressing routine
- 7. Pressure Relief
- 8. Treat Infection
- 9. Review
- 10. Healed wound

WOUND HEALING

1. Make a accurate aetiological diagnosis

- Patient health history
- Wound history
- Client related factors
- Diagnostic tests

Patient Health History

- Gender / Age / Occupation / Marital Status
- Types of Diabetes / Duration / Treatment
- Recent Chemistry : HbA1c / Renal Function / Lipid profile
- Smoking status
- Hx of Cardiac/ PVD/ Cerebral Vascular Disease/ Intervention
- Other Medication

Wound History

- When ,Why and how it occurred ?
- Its initial size and location
- What happened to the wound over time ?
- Approaches used to enhance healing
- How well these approaches have worked
- Factors thought to delay healing

Client Related Factors

- No proper change of dressing
- Non compliance to treatment regime

Investigation Options

- Wound culture
- Ulcer biopsy
- ABI / Toe Brachial Pressure Index
- Serum biochemistry
- X- ray - osteomyelitis

WOUND CARE

- Eliminate or reduced the aetiological factors

WOUND ASSESSMENT

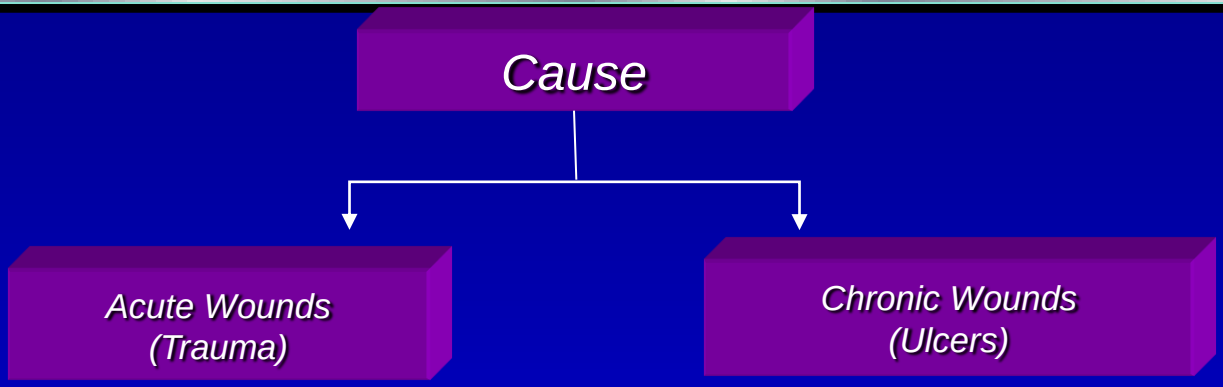
What to observe?

Wound type
Possible cause
Tissue Loss
Location
Size
Wound Bed
Exudates
Periwound Skin
Infection
Overall health

Acute Wounds

It is but the work of a moment

Wound Classification



*Incisional wound

*laceration

*laser resurfacing

*burns

*Diabetic Ulcer

*pressure ulcer

*venous/arterial leg ulcer

*fungating wound

*dehisced wound

TISSUE LOSS

Described according to depth of tissue damaged or stage of destruction

- Superficial : Wounds of epidermis
- Partial : Wounds of epidermis and dermis
- Full : Wounds of epidermis. dermis & sub. Tissue. Muscle, tendon & bone may be involved

OR Stage I - IV

Stage	Description
1 	Ulcer appears as defined area of persistent redness in light skin. In darker skin, ulcer may appear as red, blue or purple hues
2 	Partial thickness skin loss involving epidermis and/or dermis. Ulcer is superficial& presents clinically as abrasion, blister or shallow crater.
3 	Full thickness skin loss involving damage or necrosis of subcutaneous tissue that may extend down to, but not through underlying fascia. Presents as deep crater with/without undermining
4 	Full thickness skin loss with extensive destruction, tissue necrosis or damage to muscle, tendon, bone or supporting structures

University Of Texas Diabetic Wound Classification

- **Classification System**

A. Stages

1. Stage A : No infection or ischemia
2. Stage B : Infection present
3. Stage C : Ischemia present
4. Stage D : Infection and ischemia present

B. Grading

1. Grade 0 : Epithelialized wound
2. Grade 1 : Superficial wound
3. Grade 2 : Wound penetrates to tendon or capsule
4. Grade 3 : Wound penetrates to bone or joint

TYPES OF HEALING

Primary Intention- min. tissue loss
- use clips, sutures, tape

Delayed primary intention- infected / foreign bodies
- closure 3-5 days later

Secondary intention – Delayed healing
- Granulation, contraction, epithelialisation

Skin graft – Partial/ Full Thickness
- Speed up healing process/ ↓ infection risk

Flap – Surgical relocation of skin/ sub. tissue

Assessment of the wound

- Classical Signs of Infection
  - Erythema
  - Edema
  - Pain
  - Heat
  - Loss of Function

Assessment of the wound

Additional Indicators of Wound Infection

- Delayed healing
- Discoloration
- Friable granulation tissue
- Elevated white blood cell count
- Abnormal wound drainage
- Odor

Treat Infection

*Oral antibiotics?

*Systemic Antibiotics?

WOUND CARE

- Debridement

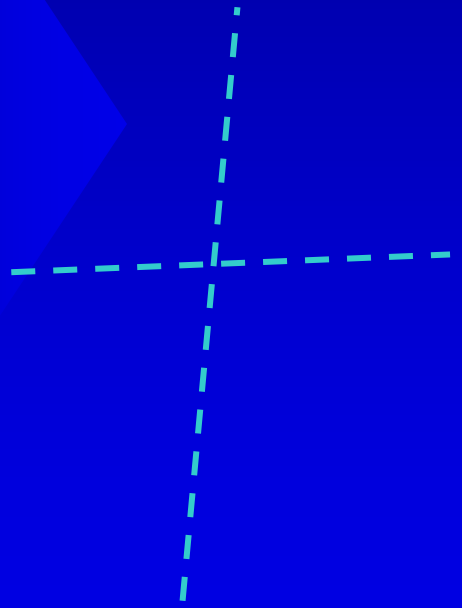
  - necrotic / macerated tissue

  - all callous on foot ulcers regularly

Assessment of wound size

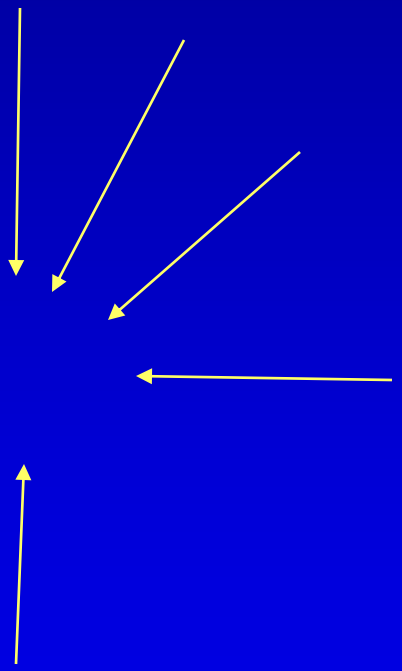
"Extreme Lengths"

"Depth"



Assessment of wound size

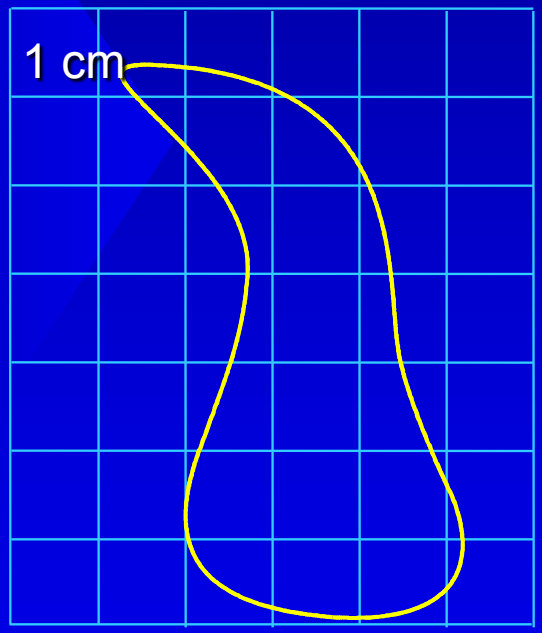
Undermine



Sinus tracts

Documentation of wound size

"Wound Tracings"



"Photography"

Assessment of Periwound Skin

- Maceration
- Inflammation
- Erythema
- Oedema
- Callous
- Exposed tissue
- Surrounding tissue function & status

Provides key information about the risk that the wound will increase in size

Assessment of wound bed

- Necrotic tissue
- Supporting structure
- Granulation tissue
- Epithelium
- Exudate

Assessment of the wound

- Exudate
  - **Volume**
    - Dry
    - Moist
    - Wet
    - Heavily exudative
  - **Color & Consistency**
    - Serous - thin, clear
    - Serosanguineous - thin, pale red
    - Sanguineous - bloody, bright red
    - Purulent - thick & yellow
  - **Odor**

Assessment of the wound

Response to previous

treatment

Wound Care

- **Eliminate or reduce causative factors that contribute to poor progress**

Good Local Wound Care

- Cleansing
- Solutions used must not be detrimental to the healing process

Wound Care

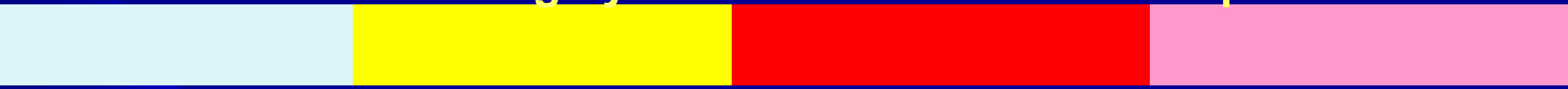
Select an appropriate dressing routine

- **Hydrogels**
- **Hydrocolloid.**
- **Foam**
- **Silver**
- **Alginate**
- **Hydrofiber**
- **Film**
- **Enzymatic**
- **Impregnated Dressings**
- **Collagen**
- **Maggots therapy**
- **Negative Pressure Therapy**

Factors Affecting Choice Of Dressing

- Size of wound
- Amount of exudates
- Infection
- Pain
- Stage of wound healing
- Patient factors
- Availability of product
- Cost of dressing & accessories

Modern Wound Dressing On Healing Process



Necrotic	Sloughly	Granulation	Epithelialization
Dry necrosis	Moist necrosis	Granulation Buds	New epidermis surrounding the wound
To humidify To soften	To absorb	Maintain in a moist environnent, Respect of surrounding skin	Maintain in a moist environment, Respect of surrounding skin
Hydrogels	**Alginates** **Hydrofibers** **Silver ressing**	**Foam dressing** **Alginates** **Hydrocolloids**	**Hydrocolloids** **Foam Dressing**

Wound Treatment Review

♦ Black necrotic	Debride, Rehydrate
♦ Yellow and sloughly	Deslough
♦ Red clean granulating	Protect wound
♦ Pink clean Epithelialization	Protect wound Moisture retention

INNOVATION IN WOUND MANAGEMENT

OFFLOADING FOR PRESSURE ULCER

INNOVATION IN APPLYING WOUND DRESSING

Toes

Cut a “bow-tie” shaped. Often a non-adhesive dressing with separate thin hydrocolloid dressing. Use the slimmest dressing possible considering footwear fixation will work better than an adhesive dressing due to the pressure applied to the feet on walking.

INNOVATION IN APPLYING WOUND DRESSING

Fingers/Toes

Can be used for fingers or toes.
A non-adhesive or soft-hold dressing should be used and additional fixation will be required.

INNOVATION IN APPLYING WOUND DRESSING

Trachea

Cut a slit to the centre of the dressing, then a small circle to allow a tube to pass through.

INNOVATION IN APPLYING WOUND DRESSING

Trachea

Cut a slit to the centre of the dressing, then a small circle to allow a tube to pass through. Additional fixation will be required.

INNOVATION IN APPLYING WOUND DRESSING

Toes

Use for the tip the toes and for inter-digital ulcers, secure with tubular gauze.

If there are signs of local infection, use a silver-containing foam dressing.

INNOVATION IN APPLYING WOUND DRESSING

Bunion

Remember that foot ulcers often are diabetes-related and you may require additional support. With dressing aver a bunion it important to remember the direction of drainage. Exudate will tend to drain towards the plantar (sole) of the foot so the greatest surface area of the dressing should be positioned with this in mind. Additional fixation is required.

LEG OEDEMA

- Compression

  Bandage ?

NUTRIENTS ESSENTIAL FOR WOUND HEALING

NUTRIENT	ROLE IN HEALING
Protein	Collagen formation, wound remodelling
Carbohydrates	Energy
Fat	Cell walls
Vitamin A	Epitheliasation,inflammatory response
B vitamins	Protein synthesis
Vitamin C	Collagen synthesis,fibroblast function
Vitamin D	Calcium metabolism
Vitamin K	Coagulation
Copper	Cross linking of collagen
Iron	Collagen formation
Magnesium	Protein synthesis
Zinc	Collagen formation

Documentation

- Location
- Size/shape
- Colour of wound base
- Presence of necrotic tissue
- Exudate- amount,colour,odour
- Undermining
- Clinical signs of infection
- Response to previous treatment
- Current treatment

Wound Care

- Review
- Monitor regularly
- If the wound / ulcer is not healing,

  Review the aetiological factors

  THEN

  check the dressing selection

OTHER MEASURES

- Patient education
- Support group & help through prolonged periods of inactivity, sick leave /unemployment
- Good glycaemic control
- Regular follow up

Healed wound

- Mantain skin integrity
- Contine to control the aetiological factors

UPDATES AND INNOVATION IN CHRONIC WOUND MANAGEMENT

UPDATES AND INNOVATION IN CHRONIC WOUND MANAGEMENT

- The “ wound man” of army surgeon Hans von Gersdorf (1450-1529) to whom he attributed the following words:

- Although I am full of cuts, blows, crushed and pitiably wounded, I hope to God that learned Hans will restore me through his healing arts

- Today's "wound man" is exposed to a much greater variety of harmful influences. But he has much better chances of survival than his "colleague" from the Middle Ages, even after life-threatening injuries, if
- he .....

- …… receives adequate treatment

Wound Care

- “ ……good wound care is patient centred, holistic, interdisciplinary and evidence based.”

(D.H. Keast et all 1998)

UPDATES AND INNOVATION IN CHRONIC WOUND MANAGEMENT

THANK YOU	TERIMA KASIH
MERCI	ARIGATO
GRAZZIE	SHUKRIYA
GRACIAS	XIE-XIE NI
SPASIBA	KAMSIAH / MMKOI
DANKE	JABAI INAU
MANGE TAK	NGGO BUTE KABU
NAN DHRI	KOP KUN KAH
MEHR BANI	THANVAAD