

# Every Wound Has A Story



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# Approaches to Wound Healing

- Wound healing process
- Factors affecting wound healing
- Nutrition
- Wound assessment
- Selecting wound dressing
- Chronic diseases
- Psychosocial
- Patient education

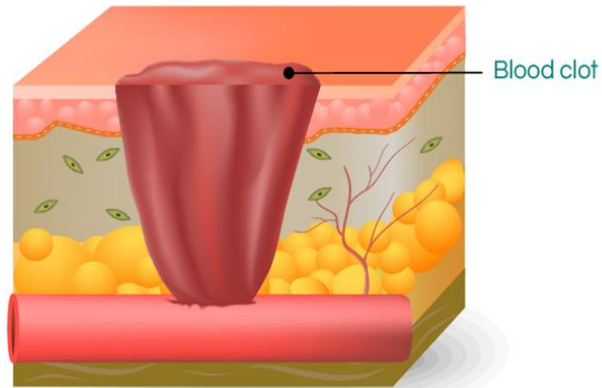


# Wound Healing

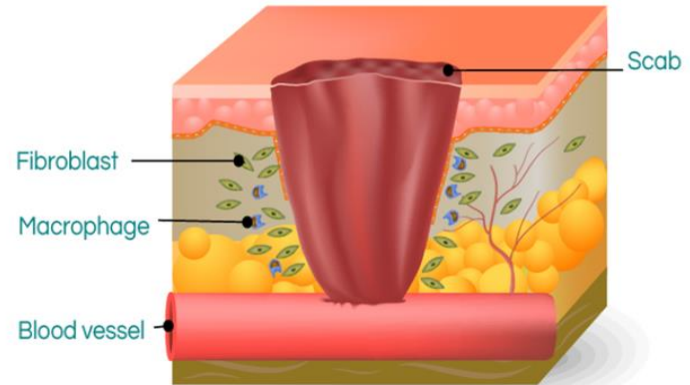
- Video on Wound Healing      Wound Healing.mp4
- <http://nortonsafe.search.ask.com/search?geo=&prt=cr&o=apn10506&chn=&ver=&q=wound+healing&tpr=10&ctype=videos>
- Video on Haemostasis
- <http://www.youtube.com/watch?v=u7Ryg9nVFLI&feature=share&list=PL34A507B4063B335D>
- How a wound heals itself
- <http://nortonsafe.search.ask.com/search?geo=&prt=cr&o=apn10506&chn=&ver=&q=wound+healing&tpr=10&ctype=videos>
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# Phases of Wound Healing

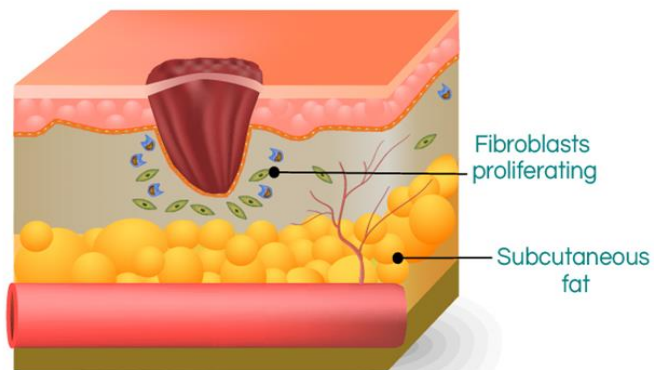
## 1. Hemostasis



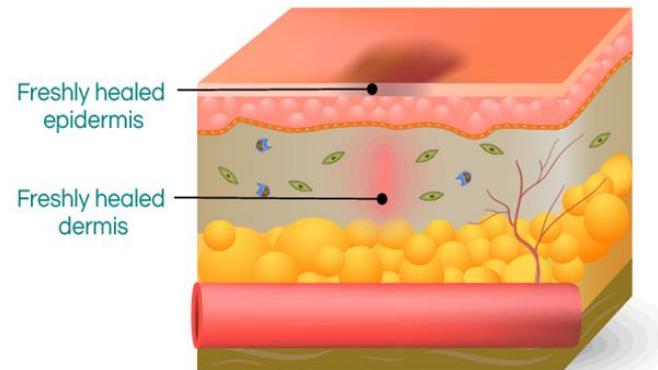
## 2. Inflammatory



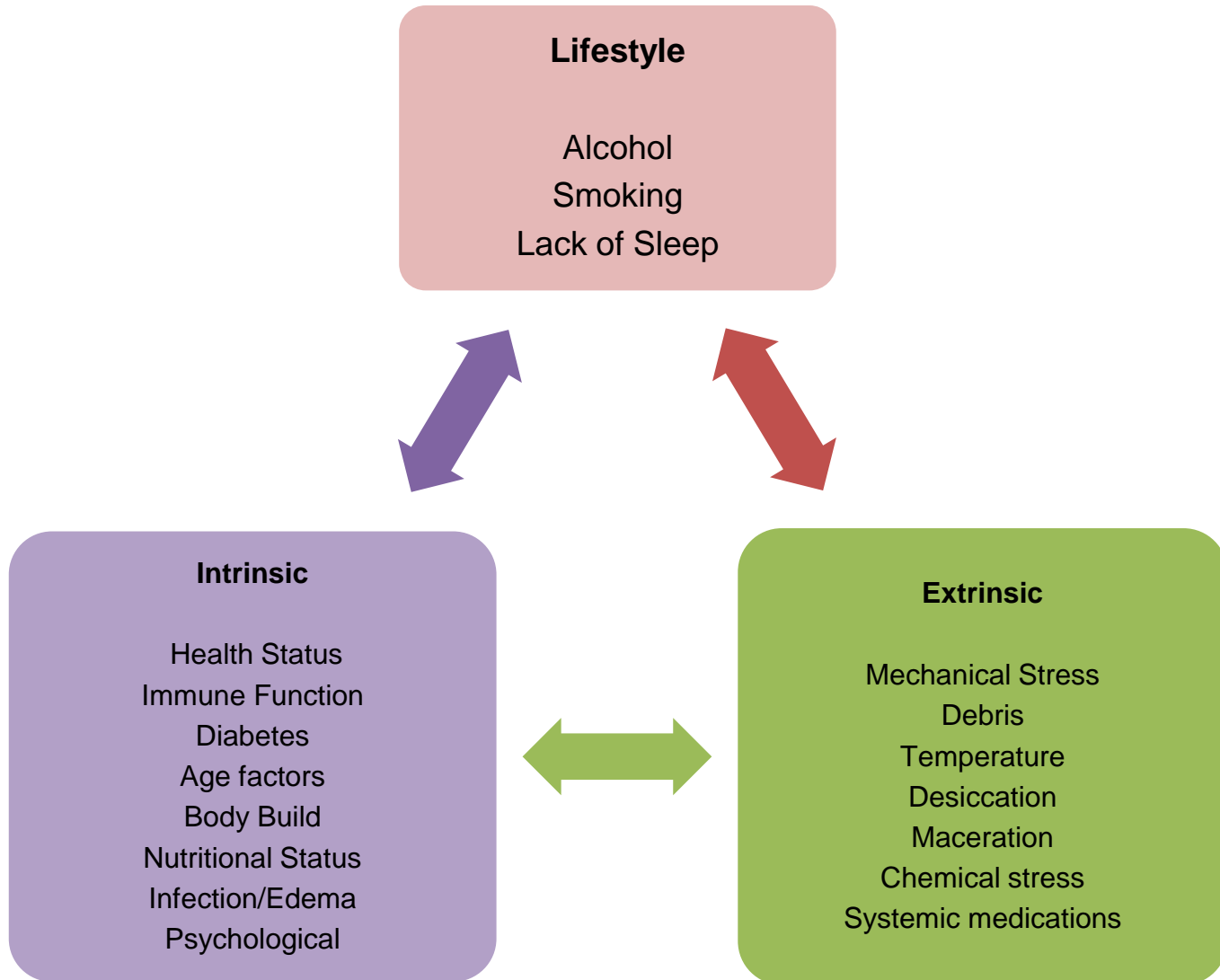
## 3. Proliferative



## 4. Remodeling



# Factors Affecting Wound Healing



# Nutrition In Wound Healing

- **Protein** - promotes normal protein synthesis and wound healing
- **Energy intake** - provide energy and prevent protein being used as a source of energy
- **Fluid** - prevent skin dehydration
- **Vitamin A** - promotes epithelization and granulation of healing wounds
- **Vitamin C** - required for collagen synthesis and aids iron absorption
- **Zinc** - essential in collagen synthesis, epithelization and cell proliferation
- **Iron**
  - ✓ Required for collagen formation
  - ✓ Prevent anemia. Anemia reduced transport of oxygen to damaged tissue which delay wound healing



# Wound Assessment



M

E

A

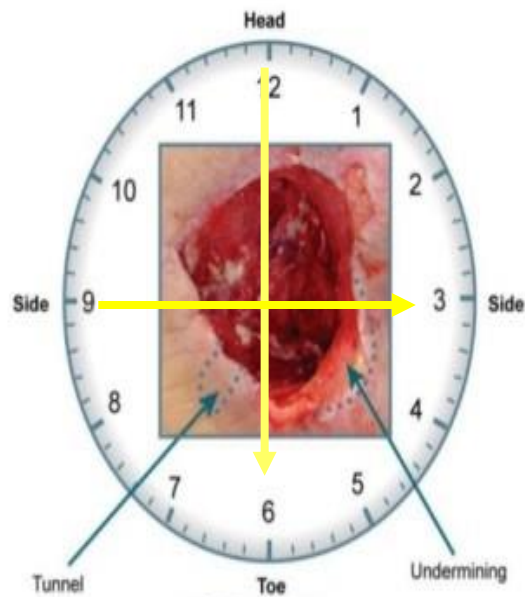
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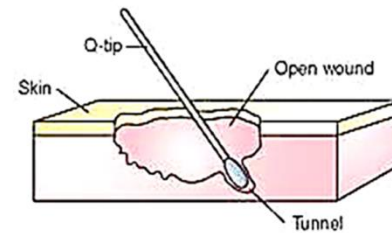
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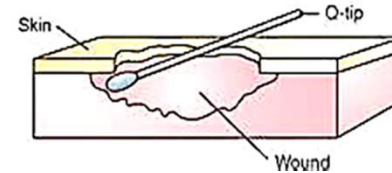
# M E A S U R E



A. Tunneling







B. Undermining



# M E A S U R E

## Exudate –

### Know Your Exudate

Serous	
Haemoserous	
Sanguineous	
Purulent	

### Odor in Infected Wound

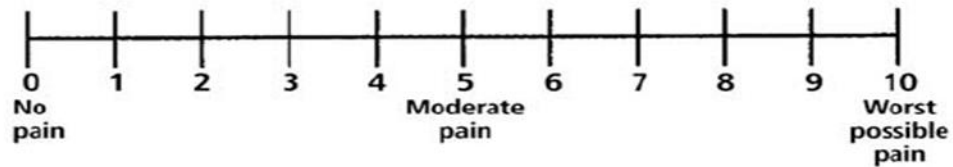
Infection	
Necrotic tissue	
Wound drainage	

# M E **A** S U R E



# MEASURE

**Numeric Pain Rating Scale**

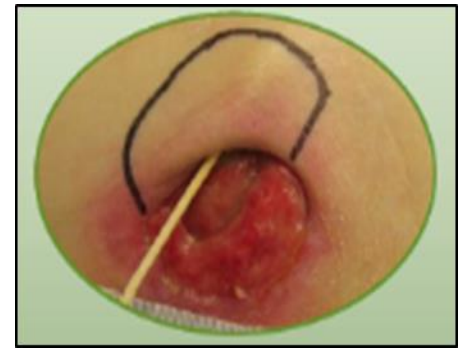


**Wong-Baker FACES Pain Rating Scale**



# MEASURE

- Undermining and Tunneling



# M E A S U R E

- Re-evaluate



# M E A S U R E

## Edge



**Epithelialised**



**Rolled**



**Erythema**



**Macerated**



**Undermining**



**Callus**

# Selection of Wound Cleansing Solution



**Normal saline 0.9%**



**Chlorhexidine 0.05%**



**Povidone iodine**

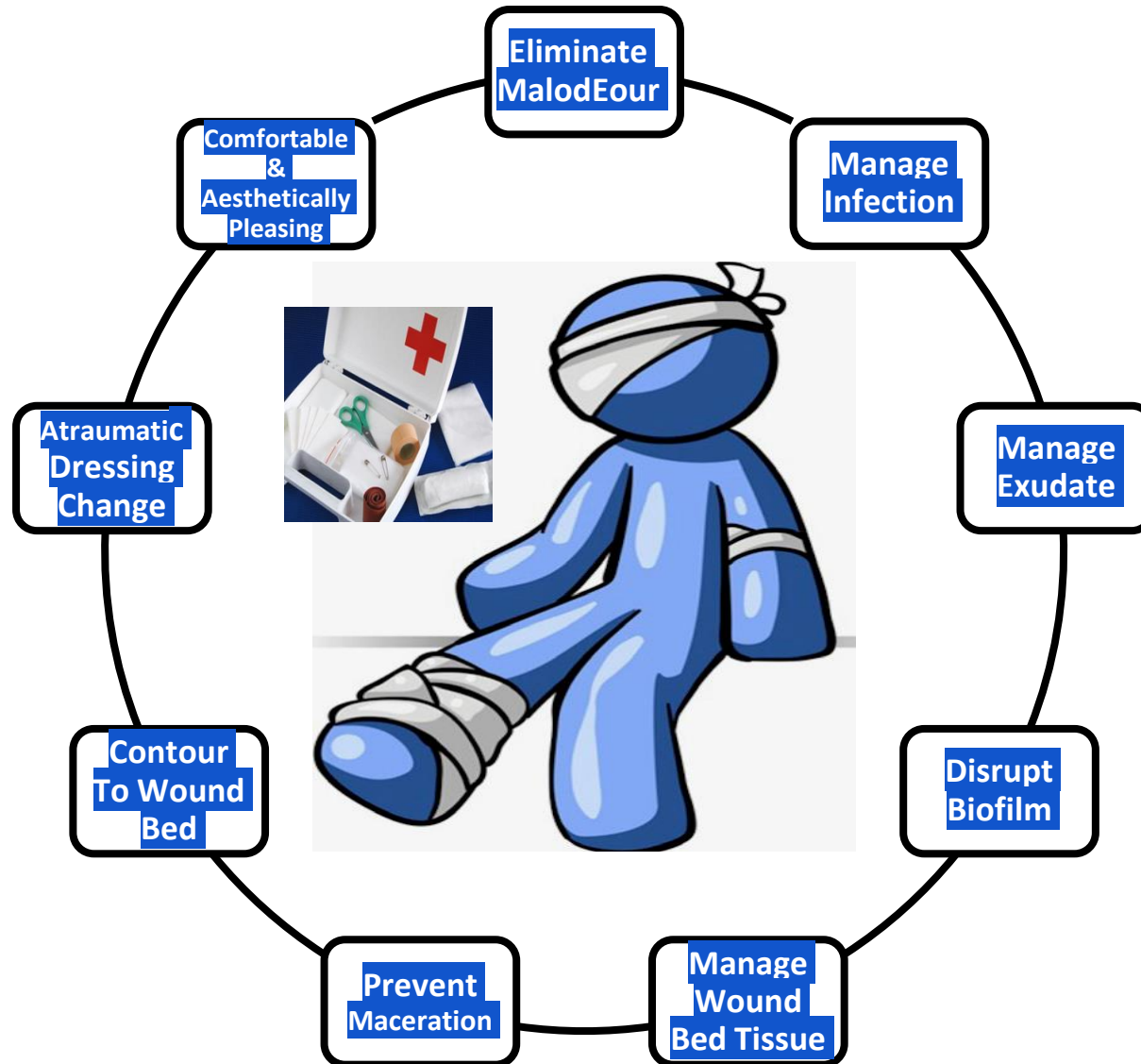


**Prontosan**



**Octenisept**

# Selection of Wound Dressings



# Wound Product Information

Types of Dressing	Information	Wound Products
Alginate Dressing	Seaweed derivatives For moderate to highly exuding wound Fibers convert to hydrophilic gel when contact with exudates	Kaltostat flat sheet/rope Seasorb Biatain Alginate
Foam Dressing	Cushion, conform to shape/size Create moist environment Highly absorbent Barrier against bacteria	Allevyn Biatain Mepilex
Hydrocolloid Dressing	Waterproof Absorb fluid/exudate Promote autolytic environment	Comfeel (wafer) Duoderm
Hydrofiber Dressing	Lesion or Cavity Heal by secondary intention Absorb exudates, provides moist environment	Aquacel
Hydrogel Dressing	Create moist environment Promote autolytic debridement, epithelialization, granulation Dry necrotic slough	Purilon gel Duoderm Hydroactive gel Intrasite
Antimicrobial Dressing	Reduce bacteria/ infection/ inflammation	Iodosorb powder/ointment Inadine dressing Silver dressing foam: Aquacel/Algisite/Melgisorb
Odour Absorbing Dressing	For malodorous wounds Odour absorption Fungating wounds	Actisorb Plus Carboflex
Hypertonic Saline Impregnated Dressing	Stimulates cleansing heavily discharge infected wound Not suitable for potential bleeding wound/ expose tendon, bone, muscle	Mesalt
Skin Barrier & Protectants	Protects skin from harmful stimuli Creates barrier	Cavilon cream Secura protective cream
Non-Adherent Wound Dressing	Does not stick to wound bed Comes off easily during dressing Allow tissue to grow	Melolin Mepitel
Collagen Dressing	Support development of new cells, provide natural scaffolding Encourage debridement, angiogenesis, & reepithelialization Not suitable for 3 <sup>rd</sup> degree burns/ dry eschar	Promogran Prisma
Medioney	Helps to prepare wound bed Reduce oedema, debride slough/eschar Promotes optimal wound healing	Medihoney gel/ Sheet

# Case Study 1

- Mr A
- 65 years old male taxi driver
- Medical history
  - ☐ Hyperlipidemia
  - ☐ DM Type 2, Hba1c 8.0%
  - ☐ Obese BMI 34
  - ☐ Chronic smoker (20 pack year)
- Post repair para umbilical hernia surgery
- Poor union post STO, gaping wound
- Pain score 6/10



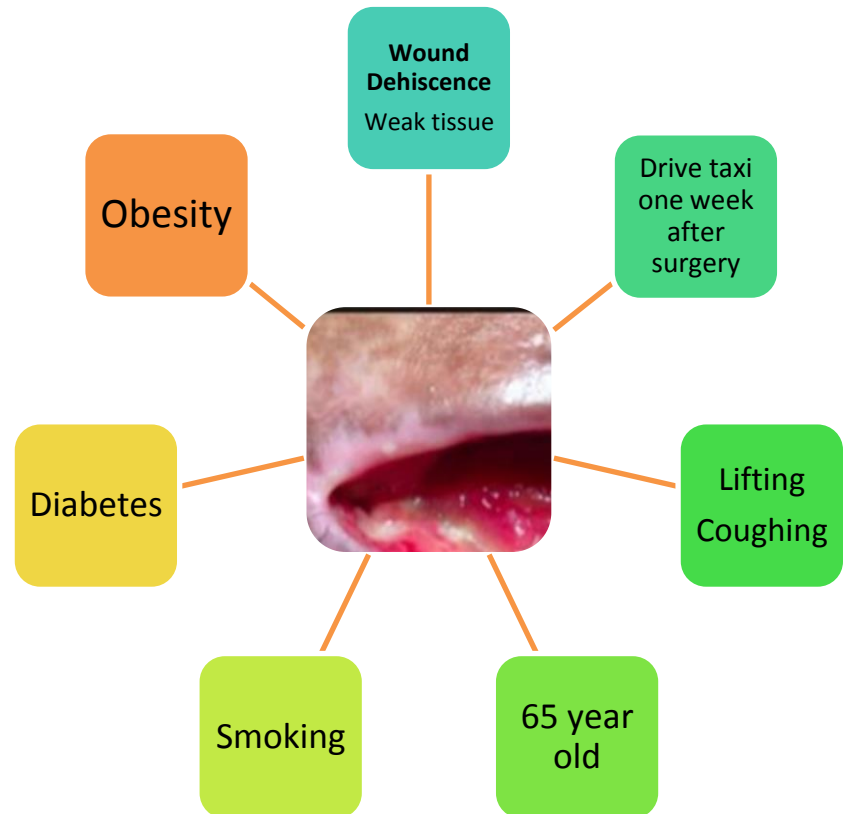


# Cavity Wound

## Track Causes

- Increase abdominal pressure
- Infection causing incision vulnerable to injury/ weaken newly formed tissue
- Obesity
- Poor healing seen in patient with chronic disease, HIV, renal disease, undergoing chemo/radiotherapy
- Age
- Intra operative, suturing
- Smoking
- Nutritional deficiencies
- Prior scarring at wound site

## Mr A: Possible Causes



# Holistic Approach - Cavity Wound

## Dressing

Assist in autolytic debridement

Facilitate free drainage/absorb of exudates

Maintain moisture balance

Dressing should not shed fibres

Management for Mr A: Hydrofiber/Alginate  
Extra

Frequency: changed every day for first 2 weeks  
then 2-3 days

Wound assessment - MEASURE

Patient/ education on wound care

## Other Interventions

Explore patient's ideas, concern & expectation

Pain relief prior to dressing

Weight Management

Control diabetes

- ✓ Refer Family Physician
- ✓ Refer Nurse Counsellor
- ✓ Refer Dietician

Smoking Cessation

Nutrition (Vitamin A/C, iron, etc.)

Explore psychosocial issues

Avoid pressure – constipation, coughing, lifting





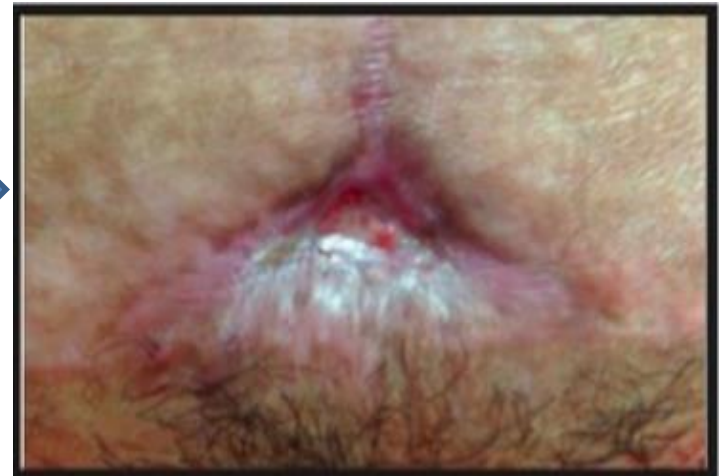
# Wound Healing Outcome

- **7.3.2019 (Initial visit)**

6.5 x 3cm (2cm depth)

- **8 weeks later**

Healed



# Case Study 2

- Mr B, 76 years old
  - ☐ Retired/ Single/ Stay alone
  - ☐ Lives in rental flat
  - ☐ Poor social & financial support
  - ☐ Smoker 50 pack years
  - ☐ Default vascular
- Medical History:
  - ☐ PVD on aspirin
  - ☐ Hyperlipidemia on medications
  - ☐ Hypertension on medications
- Left dorsum foot abcess b/g PVD
- Pain score 6/10





# Effects of Over Granulating Wound

## **In normal healing**

- Granulation consist of matrix of many capillaries that indicates wound is healing
- Tissue grows from the base of wound upwards until reach the surface

## **In some cases granulation continue to grow above skin level:**

- Proud flesh - Red or purple, friable, shiny and soft in appearance that protrudes above the surrounding skin
- May bleed easily, painful
- Hard to treat, delayed healing
- Produce exudates leading to maceration, excoriation, infection
- Results in scarring
- Frustration



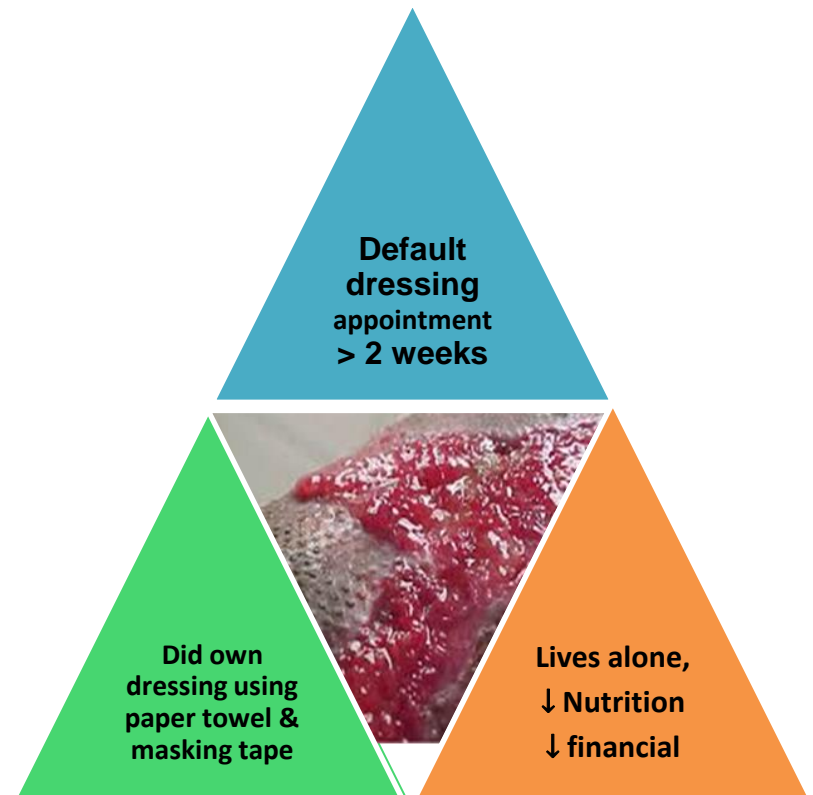


# Over Granulating Wound

## Track Causes

- Secondary intention ( due to process of granulation, contraction & epithelialization)
- Chronic inflammation
- Wound hypoxia – occluded wound
- High bacterial burden
- Increased moisture
- Excessive angiogenesis (development of new blood vessels)
- Trauma or friction on wound surface
- Foreign body eg tubes/ overuse of occlusive dressing

## Mr B: Possible Causes



# Holistic Approach – Over Granulating Wound

## Dressing

Avoid occluded wound environment

Avoid friction/ trauma or infections

Close monitoring & assessment

Advice compliant dressing frequency

Many treatment options:

1. Silver Nitrate
2. Sharp debridement
3. Steroid cream
4. Compression bandage
5. Topical tape

Dressing option for Mr B in OPS:

1. Flat foam to flatten overgranulation
2. Paraffin gauze and apply pressure bandage



## Other Intervention

Explore patient's ideas, concern & expectation

Fast Track vascular

Refer for wound inspection

Refer MSW – poor financial & social support

- Meals on wheels
- Wound dressing product
- Community Nursing (home visit)

Smoking Cessation

Diet advice to promote healing (good nutrition)

Education on self care/ hygiene  
& proper wound care



## Wound Healing Outcome

- **Initial visit (5.2.2019)**

6cm x 4cm dressed with Aquacel AG Extra



Compliant for 2 months

- **Default 2 weeks & came on 25.4.2019**

New overgranulation tissues



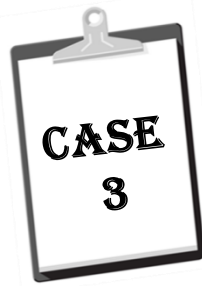
- **12 weeks after management of overgranulation**



# Case Study 3

- Mr C
- 56 years old, married
- Security guard in industrial area  
12 hours shift
- Medical History:
  - ☐ DM - Hba1c 12.0%
  - ☐ Hypertension
  - ☐ Hyperlipidemia
- Post abscess saucerization back  
carbuncle October 2018.
- Pain Score : 4/10



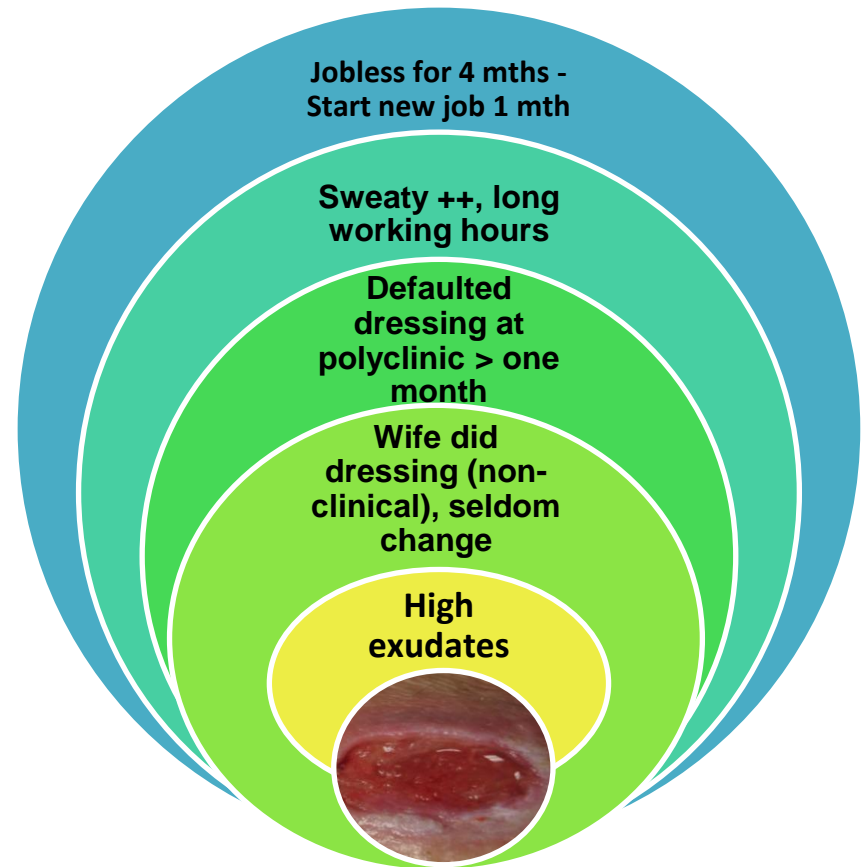


# Macerated Wound

## Mr C: Possible Causes

### Track Causes

- Soft, white, deteriorating skin around the site of original injury, breakdown easily
- Too much moisture trapped between the wound and its bandage
- Makes healing more difficult
- Excessive amounts of exudate cause maceration and breakdown
- Bacteria, specific proteins, proteolytic enzymes & exudates greatly reduce the barrier function □ maceration
- Due to aggressive removal of adhesive wound dressings □ stripping away parts of epidermis



# Holistic Approach – Macerated Wound

## Dressing

Aim: To reduce exudate production

Dressing depending on the moist healing wound  
– lightly or heavily exuding: Use  
occlusive/hydrofiber dressing

Monitor wound area routinely for changes in skin  
condition

Apply barrier film/skin protectant to peri wound

Advice compliant to daily/EOD dressing

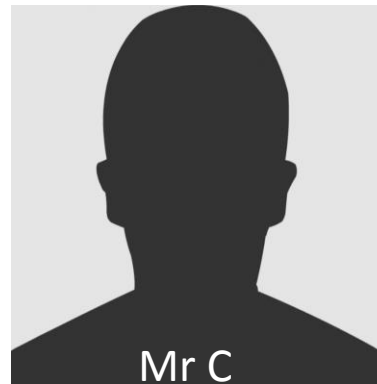
Product:

Primary dressing: hydrofibre

Secondary dressing: pending on volume of  
exudates (gauze/gamgee/foam)

## Other Intervention

Explore patient's ideas, concern & expectation



Refer MSW

☐ Financial

☐ Suitable job placement

Poorly controlled DM

☐ Family Physician Clinic

☐ Nurse Counsellor

☐ Dietician

Educate on self care (chronic disease)

Encourage good nutrition

Educate on proper wound care



## Wound Healing Outcome

- **Initial Visit October 2018**

Post abscess saucerization back carbuncle



Compliant for 3 months

- **Came on 3.2.2019 after default ► One month**

Macerated wound



- **16 weeks after management of maceration**



## Summary of Principles for Wound Assessment

1. Use mnemonic M.E.A.S.U.R.E. for assessment

1. Assess risk factors

- ✓ Smoking
- ✓ Chronic disease care (dietician/ nurse counsellor/ doctor)

2. Psychosocial aspects (holistic)

- ✓ Refer MSW if there is financial difficulty/ social issue
- ✓ Caregiver support

4. Wound care

- ✓ Control infection
- ✓ Pressure relief
- ✓ Selection of appropriate dressing product
- ✓ Identify and optimize underlying causes for poor wound healing
- ✓ Appropriate follow-up
- ✓ Close monitoring
- ✓ Wound care education

# References

Wound Management & Dressing Selection.

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