

# WOUND DRESSING IN DIABETIC FOOT ULCER WITH LIMITED RESOURCES



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**MD(UKM) OSH(NIOSH) OHD(DOSH) CMIA (MAL)  
POST GRAD IN WOUND HEALING & TISSUE REPAIR (CARDIFF , UK )  
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MALAYSIA**

**ADJUNCT PROFESSOR, DEPT OF SURGERY, INSTITUTE OF  
MEDICAL SCIENCES, BHU, INDIA**



# KUALA LUMPUR HOSPITAL



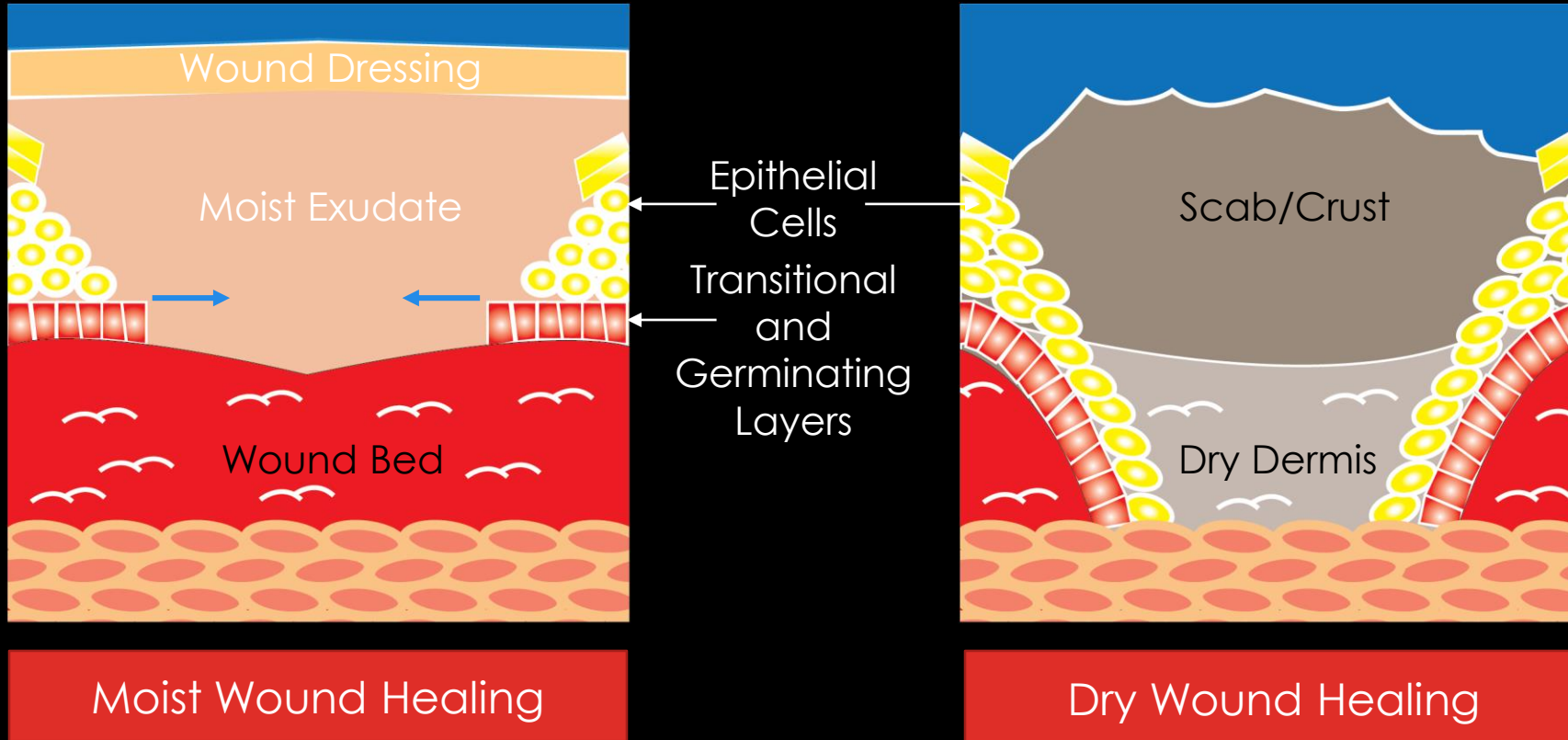
KOMPLEKS  
PILAR &  
RAWATAN  
HARAPAN



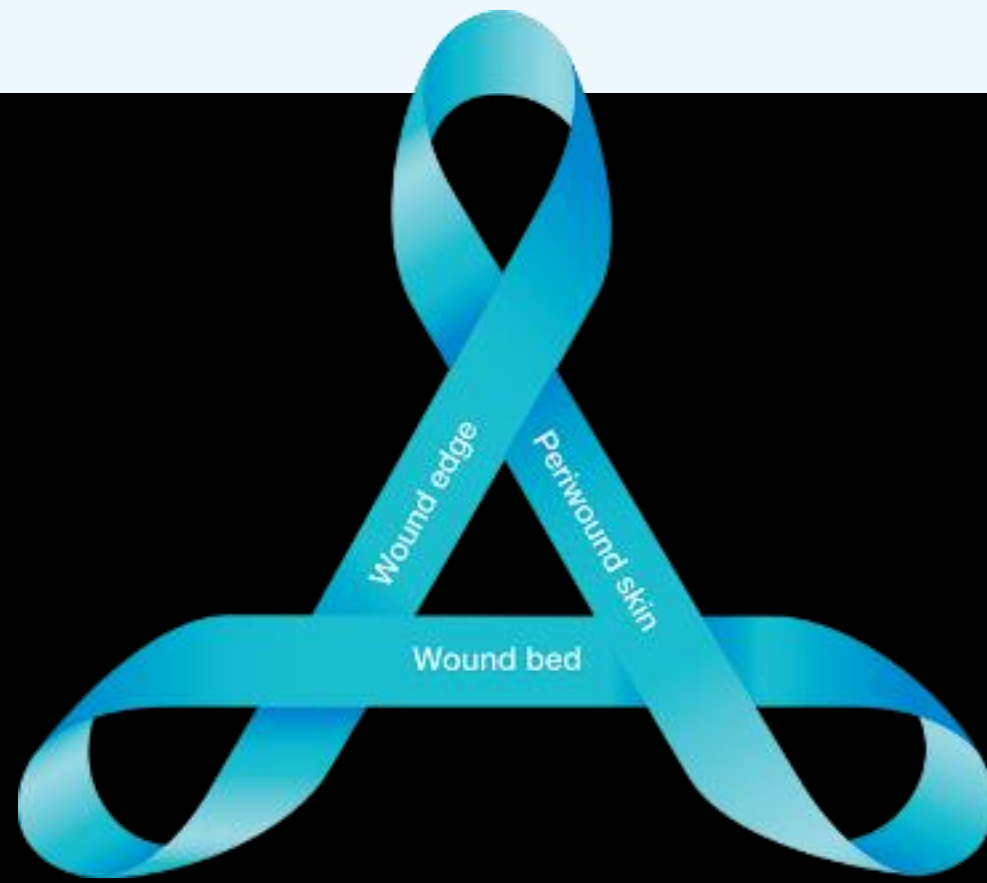
**SAWADEEKAAP**



# MOISTURE: DRY VS MOIST WOUND HEALING

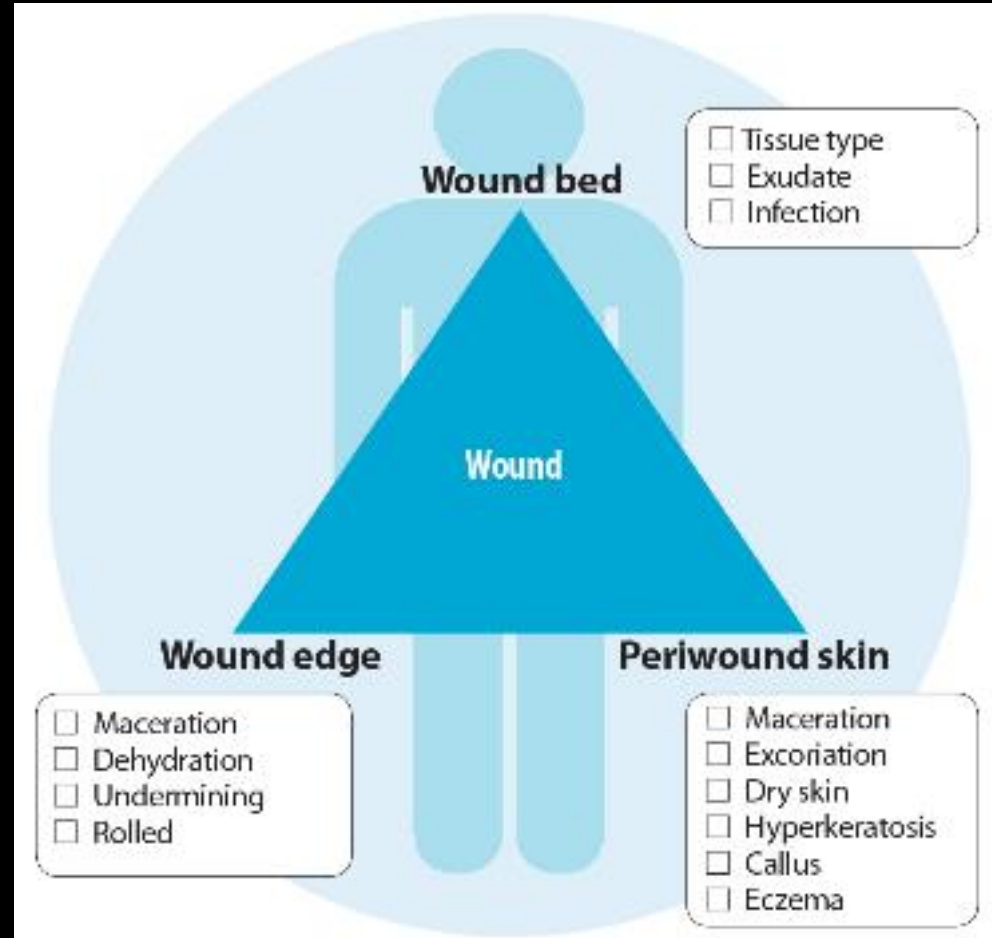






## TRIANGLE OF WOUND ASSESSMENT













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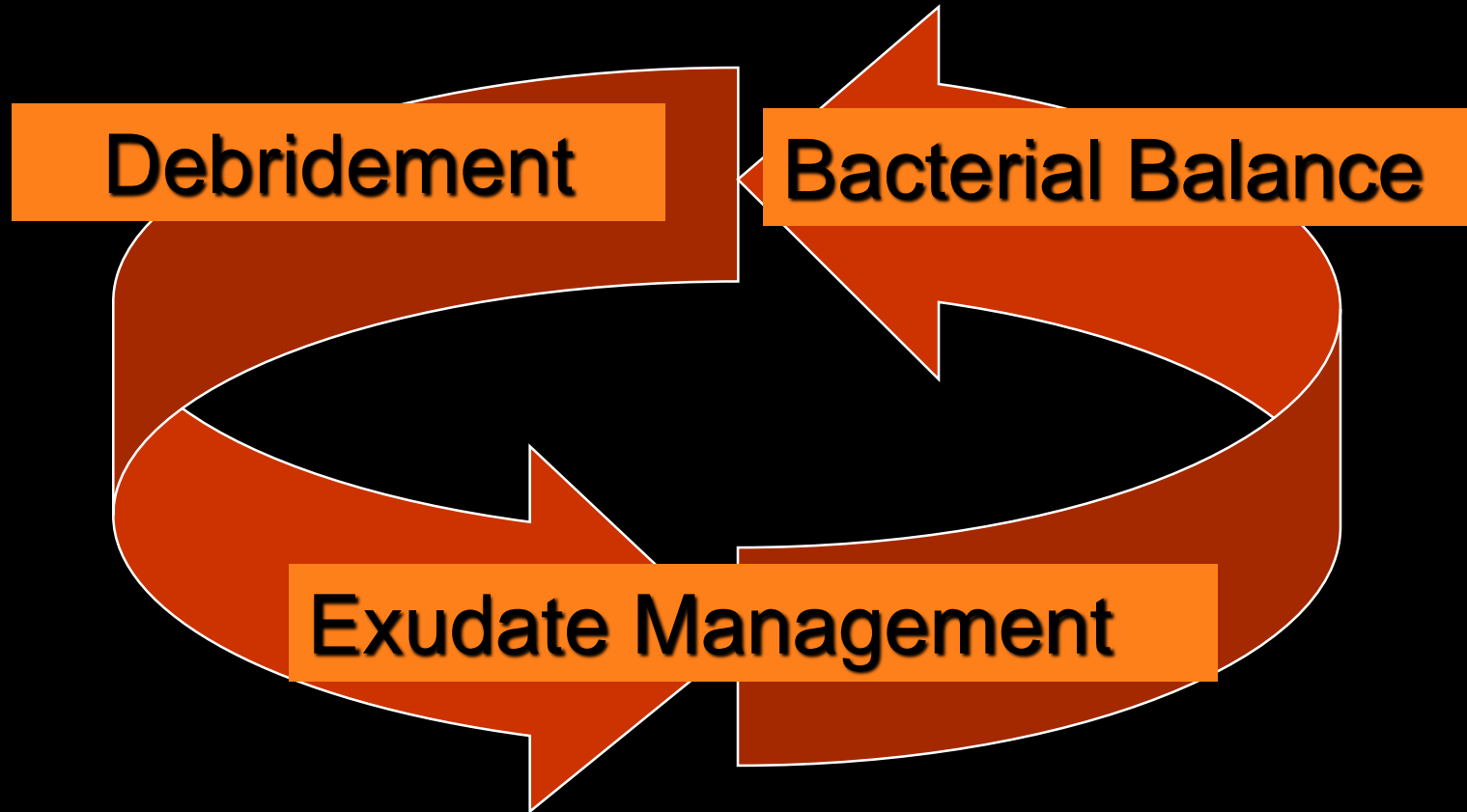
Dowsett C et al. Triangle of Wound Assessment Made Easy. *Wounds International* 2015

# TRIANGLE OF WOUND ASSESSMENT – WOUND BED

Record wound size: length \_\_cm width \_\_cm depth \_\_cm  
Record wound location

| Tissue type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Exudate                                                                                             | Infection                                                                      |                                                                                            |                              |                                                                                           |                              |                                                                                               |                              |                                                                                                   |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   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| Please tick all <input type="checkbox"/> that apply                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                     |                                                                                |                                                                                 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| <table border="1"> <thead> <tr> <th></th> <th>Please tick <input type="checkbox"/></th> </tr> </thead> <tbody> <tr> <td>Necrotic </td> <td><input type="checkbox"/> __%</td> </tr> <tr> <td>Sloughy </td> <td><input type="checkbox"/> __%</td> </tr> <tr> <td>Granulating </td> <td><input type="checkbox"/> __%</td> </tr> <tr> <td>Epithelialising </td> <td><input type="checkbox"/> __%</td> </tr> </tbody> </table> |                                                                                                     | Please tick <input type="checkbox"/>                                           | Necrotic  | <input type="checkbox"/> __% | Sloughy  | <input type="checkbox"/> __% | Granulating  | <input type="checkbox"/> __% | Epithelialising  | <input type="checkbox"/> __% | <table border="1"> <thead> <tr> <th>Level</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>Dry <input type="checkbox"/></td> <td>Tric/watery <input type="checkbox"/></td> </tr> <tr> <td>Low <input type="checkbox"/></td> <td>Fric <input type="checkbox"/></td> </tr> <tr> <td>Medium <input type="checkbox"/></td> <td>Cloudy <input type="checkbox"/></td> </tr> <tr> <td>High <input type="checkbox"/></td> <td>Purulent (yellow/brown/green) <input type="checkbox"/></td> </tr> <tr> <td></td> <td>Pink/red <input type="checkbox"/></td> </tr> </tbody> </table> | Level                    | Type                 | Dry <input type="checkbox"/> | Tric/watery <input type="checkbox"/> | Low <input type="checkbox"/> | Fric <input type="checkbox"/> | Medium <input type="checkbox"/> | Cloudy <input type="checkbox"/> | High <input type="checkbox"/> | Purulent (yellow/brown/green) <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                     | Pink/red <input type="checkbox"/> | <table border="1"> <thead> <tr> <th>Local</th> <th>Spreading/systemic</th> </tr> </thead> <tbody> <tr> <td> <table border="1"> <tbody> <tr><td>↑ Pain or new onset</td><td><input type="checkbox"/></td></tr> <tr><td>Erythema</td><td><input type="checkbox"/></td></tr> <tr><td>Swelling</td><td><input type="checkbox"/></td></tr> <tr><td>Local warmth</td><td><input type="checkbox"/></td></tr> <tr><td>↑ Exudate</td><td><input type="checkbox"/></td></tr> <tr><td>Delayed healing</td><td><input type="checkbox"/></td></tr> <tr><td>Bleeding/haemorrhage</td><td><input type="checkbox"/></td></tr> <tr><td>granulation tissue</td><td><input type="checkbox"/></td></tr> <tr><td>Numbness</td><td><input type="checkbox"/></td></tr> <tr><td>Pocetting</td><td><input type="checkbox"/></td></tr> </tbody> </table> </td> <td> <table border="1"> <tbody> <tr><td>As for local, plus:</td><td></td></tr> <tr><td>↑ Erythema</td><td><input type="checkbox"/></td></tr> <tr><td>Pyrexia</td><td><input type="checkbox"/></td></tr> <tr><td>Malaise/pain</td><td><input type="checkbox"/></td></tr> <tr><td>Wound breakdown</td><td><input type="checkbox"/></td></tr> <tr><td>Cellulitis</td><td><input type="checkbox"/></td></tr> <tr><td>General malaise</td><td><input type="checkbox"/></td></tr> <tr><td>Raised WBC count</td><td><input type="checkbox"/></td></tr> <tr><td>Lymphangitis</td><td><input type="checkbox"/></td></tr> </tbody> </table> </td> </tr> <tr> <td>Record tissue types and % of tissue visible in the wound bed</td> <td>Record level and type (e.g. consistency and colour)</td> <td>Record signs and symptoms. These may be aetiology-specific</td> </tr> <tr> <td>Aim to remove non-viable tissue (e.g. reduce infection risk)<br/>Protect and promote new tissue growth</td> <td>Aim to treat cause (e.g. compression therapy) and manage moisture balance (exception: dry gangrene)</td> <td>Aim to identify infection<br/>Manage bioburden to treat infection/control odour</td> </tr> </tbody> </table> | Local                    | Spreading/systemic | <table border="1"> <tbody> <tr><td>↑ Pain or new onset</td><td><input type="checkbox"/></td></tr> <tr><td>Erythema</td><td><input type="checkbox"/></td></tr> <tr><td>Swelling</td><td><input type="checkbox"/></td></tr> <tr><td>Local warmth</td><td><input type="checkbox"/></td></tr> <tr><td>↑ Exudate</td><td><input type="checkbox"/></td></tr> <tr><td>Delayed healing</td><td><input type="checkbox"/></td></tr> <tr><td>Bleeding/haemorrhage</td><td><input type="checkbox"/></td></tr> <tr><td>granulation tissue</td><td><input type="checkbox"/></td></tr> <tr><td>Numbness</td><td><input type="checkbox"/></td></tr> <tr><td>Pocetting</td><td><input type="checkbox"/></td></tr> </tbody> </table> | ↑ Pain or new onset | <input type="checkbox"/> | Erythema        | <input type="checkbox"/> | Swelling   | <input type="checkbox"/> | Local warmth    | <input type="checkbox"/> | ↑ Exudate        | <input type="checkbox"/> | Delayed healing | <input type="checkbox"/> | Bleeding/haemorrhage | <input type="checkbox"/> | granulation tissue | <input type="checkbox"/> | Numbness | <input type="checkbox"/> | Pocetting | <input type="checkbox"/> | <table border="1"> <tbody> <tr><td>As for local, plus:</td><td></td></tr> <tr><td>↑ Erythema</td><td><input type="checkbox"/></td></tr> <tr><td>Pyrexia</td><td><input type="checkbox"/></td></tr> <tr><td>Malaise/pain</td><td><input type="checkbox"/></td></tr> <tr><td>Wound breakdown</td><td><input type="checkbox"/></td></tr> <tr><td>Cellulitis</td><td><input type="checkbox"/></td></tr> <tr><td>General malaise</td><td><input type="checkbox"/></td></tr> <tr><td>Raised WBC count</td><td><input type="checkbox"/></td></tr> <tr><td>Lymphangitis</td><td><input type="checkbox"/></td></tr> </tbody> </table> | As for local, plus: |  | ↑ Erythema | <input type="checkbox"/> | Pyrexia | <input type="checkbox"/> | Malaise/pain | <input type="checkbox"/> | Wound breakdown | <input type="checkbox"/> | Cellulitis | <input type="checkbox"/> | General malaise | <input type="checkbox"/> | Raised WBC count | <input type="checkbox"/> | Lymphangitis | <input type="checkbox"/> | Record tissue types and % of tissue visible in the wound bed | Record level and type (e.g. consistency and colour) | Record signs and symptoms. 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| Necrotic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> __%                                                                        |                                                                                |                                                                                            |                              |                                      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| Sloughy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> __%                                                                        |                                                                                |                                                                                            |                              |                                      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| Granulating                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/> __%                                                                        |                                                                                |                                                                                            |                              |                                      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| Epithelialising                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> __%                                                                        |                                                                                |                                                                                            |                              |                                      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| Dry <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Tric/watery <input type="checkbox"/>                                                                |                                                                                |                                                                                 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| Low <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Fric <input type="checkbox"/>                                                                       |                                                                                |                                                                                 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| Medium <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Cloudy <input type="checkbox"/>                                                                     |                                                                                |                                                                                 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| High <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Purulent (yellow/brown/green) <input type="checkbox"/>                                              |                                                                                |                                                                                 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type="checkbox"/> | Bleeding/haemorrhage | <input type="checkbox"/>     | granulation tissue                   | <input type="checkbox"/>     | Numbness                      | <input type="checkbox"/>        | Pocetting                       | <input type="checkbox"/>      | <table border="1"> <tbody> <tr><td>As for local, plus:</td><td></td></tr> <tr><td>↑ Erythema</td><td><input type="checkbox"/></td></tr> <tr><td>Pyrexia</td><td><input type="checkbox"/></td></tr> <tr><td>Malaise/pain</td><td><input type="checkbox"/></td></tr> <tr><td>Wound breakdown</td><td><input type="checkbox"/></td></tr> <tr><td>Cellulitis</td><td><input type="checkbox"/></td></tr> <tr><td>General malaise</td><td><input type="checkbox"/></td></tr> <tr><td>Raised WBC count</td><td><input type="checkbox"/></td></tr> <tr><td>Lymphangitis</td><td><input type="checkbox"/></td></tr> </tbody> </table> | As for local, plus: |                                   | ↑ Erythema                                                  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| Delayed healing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/>                                                                            |                                                                                |                                                                                 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| Malaise/pain                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/>                                                                            |                                                                                |                                                                                 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              |              |                          |                                                              |                                                     |                                                            |                                                                                                       |                                                                                                     |                                                                                |
| Wound breakdown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/>                                                                            |                                                                                |                                                                                            |                              |                                                                                           |                              |                                                                                               |                              |                                                                                                   |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   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              |              |                          |                                                              |                                                     |                                                            |                                                                                                       |                                                                                                     |                                                                                |
| Cellulitis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/>                                                                            |                                                                                |                                                                                            |                              |                                                                                           |                              |                                                                                               |                              |                                                                                                   |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   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              |              |                          |                                                              |                                                     |                                                            |                                                                                                       |                                                                                                     |                                                                                |
| General malaise                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/>                                                                            |                                                                                |                                                                                            |                              |                                                                                           |                              |                                                                                               |                              |                                                                                                   |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   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              |              |                          |                                                              |                                                     |                                                            |                                                                                                       |                                                                                                     |                                                                                |
| Raised WBC count                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/>                                                                            |                                                                                |                                                                                            |                              |                                                                                           |                              |                                                                                               |                              |                                                                                                   |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   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| Lymphangitis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/>                                                                            |                                                                                |                                                                                            |                              |                                                                                           |                              |                                                                                               |                              |                                                                                                   |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   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              |              |                          |                                                              |                                                     |                                                            |                                                                                                       |                                                                                                     |                                                                                |
| Record tissue types and % of tissue visible in the wound bed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Record level and type (e.g. consistency and colour)                                                 | Record signs and symptoms. These may be aetiology-specific                     |                                                                                            |                              |                                                                                           |                              |                                                                                               |                              |                                                                                                   |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                           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                 |            |                          |                 |                          |                  |                          |              |                          |                                                              |                                                     |                                                            |                                                                                                       |                                                                                                     |                                                                                |
| Aim to remove non-viable tissue (e.g. reduce infection risk)<br>Protect and promote new tissue growth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Aim to treat cause (e.g. compression therapy) and manage moisture balance (exception: dry gangrene) | Aim to identify infection<br>Manage bioburden to treat infection/control odour |                                                                                            |                              |                                                                                           |                              |                                                                                               |                              |                                                                                                   |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   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              |              |                          |                                                              |                                                     |                                                            |                                                                                                       |                                                                                                     |                                                                                |

# WOUND BED PREPARATION



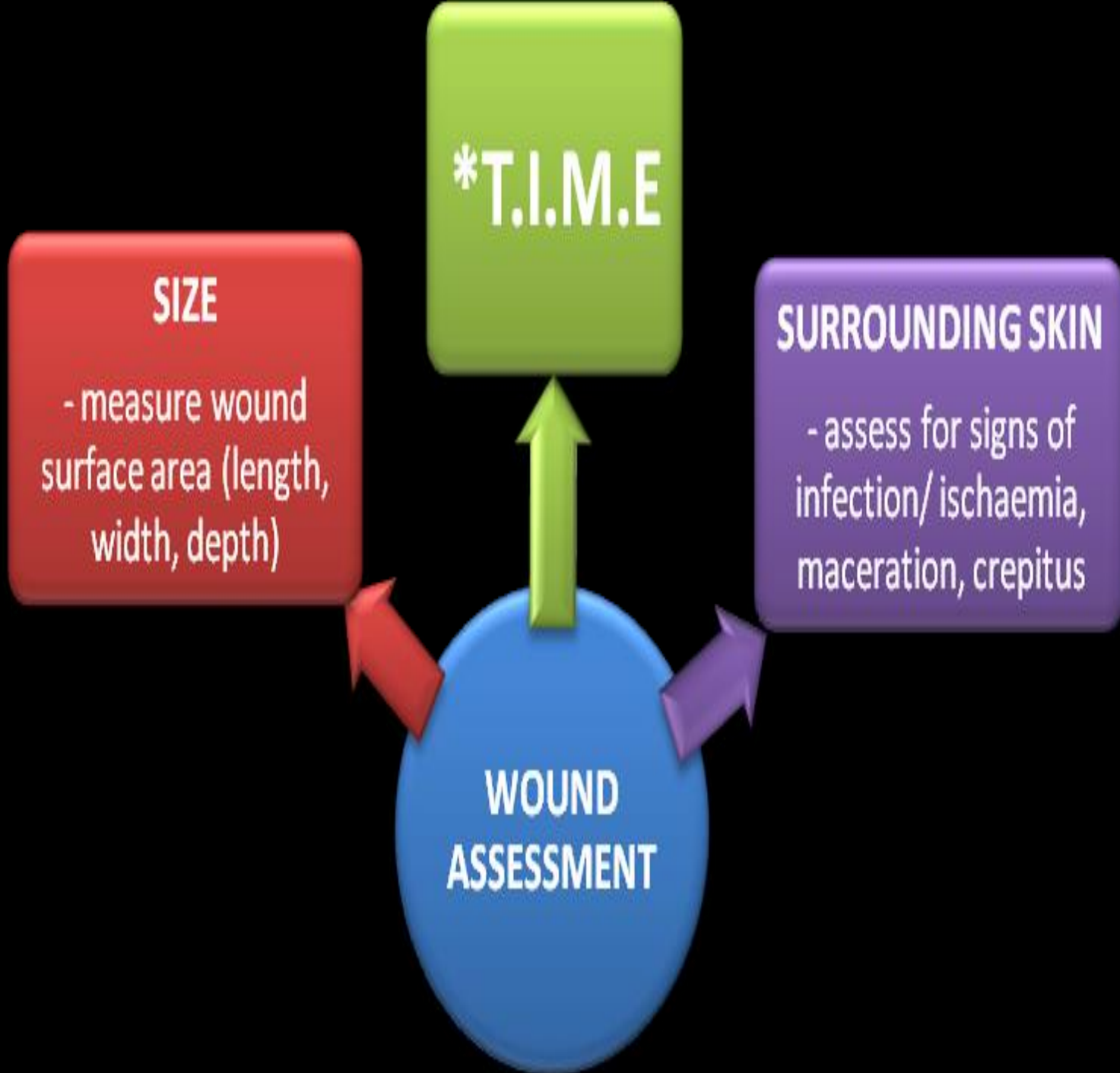
Dr. Gary Sibbald, et al

‘Preparing the wound bed for healing – debridement, bacterial balance & moisture balance’






*Ostomy/ wound management 2000, 46(1)*







# TRIANGLE OF WOUND ASSESSMENT – WOUND EDGE

| Maceration                                                                            | Dehydration                                                                        | Undermining                                                                                                                 | Rolled edges                                                                        |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Please tick all <input type="checkbox"/> that apply                                   |                                                                                    |                                                                                                                             |                                                                                     |
|      |  |                                          |  |
| <input type="checkbox"/>                                                              | <input type="checkbox"/>                                                           | <input type="checkbox"/>  extent ____ cm | <input type="checkbox"/>                                                            |
| Assess edge of the wound for moisture level                                           | Assess edge of the wound for moisture level                                        | Use dock positions to record position<br>Record extent of undermining                                                       | Assess amount of rolling (may be associated with thickening)                        |
| Aim to establish cause and correct<br>Address patient concerns<br>Refer to specialist | Aim to establish cause and correct (e.g. rehydrate)<br>Refer to specialist         | Aim to reduce the amount of undermining/allow the edge to reattach (e.g. stimulate granulation)                             | Aim to return the wound edge to a condition that will permit epithelial advancement |



# TRIANGLE OF WOUND ASSESSMENT – PERIWOUND SKIN

Maceration

Excoriation

Dry skin

Hyperkeratosis

Callus

Eczema

Please tick all  that apply



\_\_-\_\_cm



\_\_-\_\_cm



\_\_-\_\_cm



\_\_-\_\_cm



\_\_-\_\_cm



\_\_-\_\_cm

Assess periwound skin and record extent of any problems, e.g. <1–4cm of the wound edge

**Aim to protect periwound area and maintain intact healthy skin**  
Establish cause and correct, e.g. minimise contact with moisture or rehydrate periwound skin

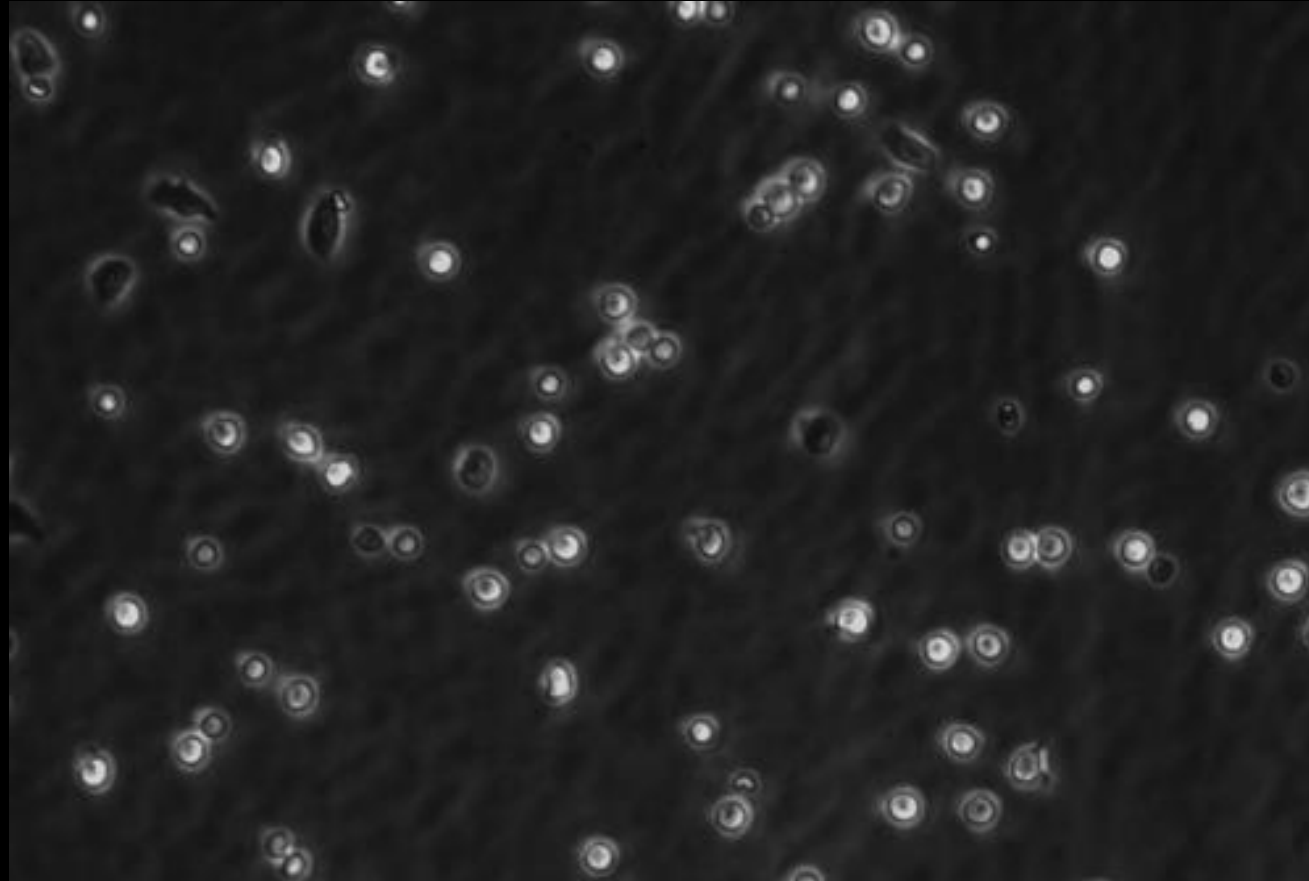
**Aim to remove hyperkeratotic skin plaques and rehydrate**

**Aim to remove callus and offload to prevent recurrence**

**Aim to relieve symptoms and avoid allergens**

# MIGRATION FOR HEALTHY SKIN

Option to use  
these both..  
One here, one  
at the end of  
slides as  
closing?



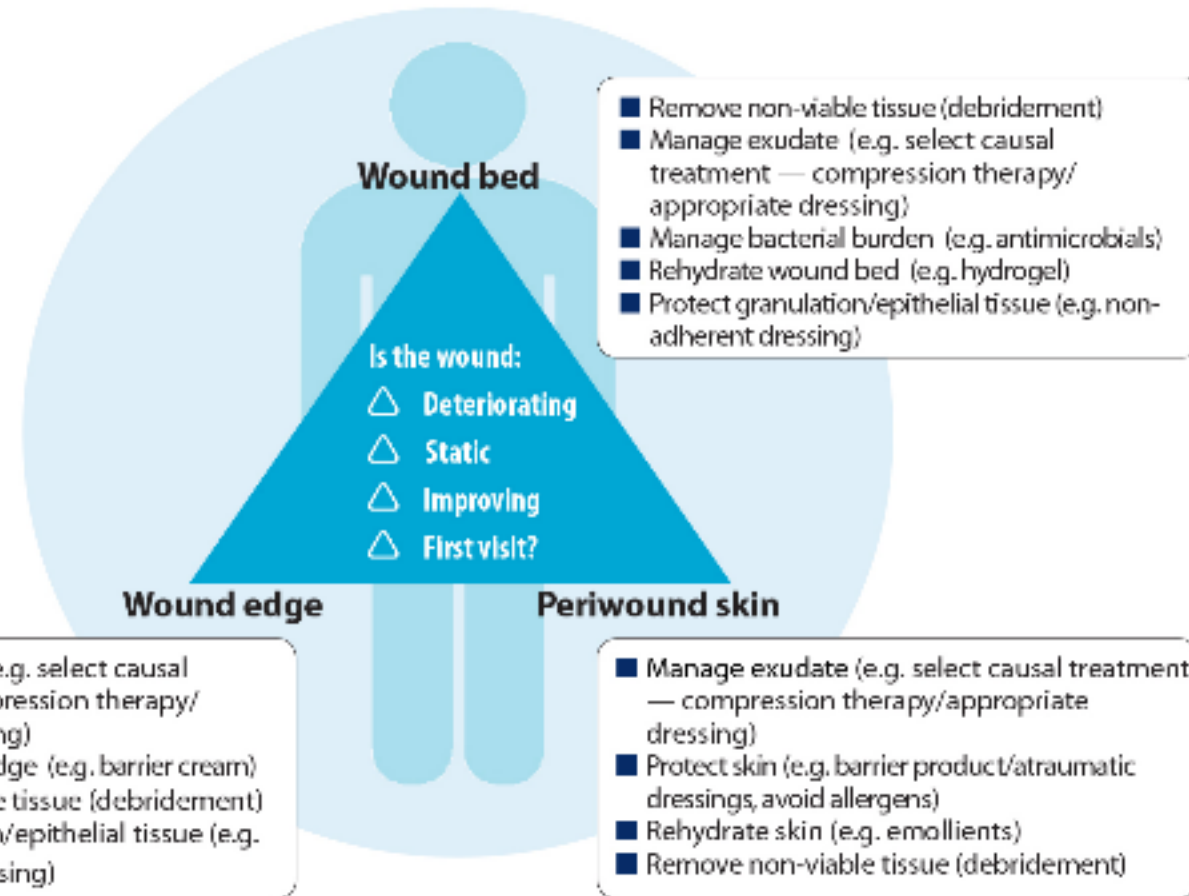
<https://incem.rwth-aachen.de/beneficiaries.html>



# TRIANGLE OF WOUND ASSESSMENT – MANAGEMENT PLAN

Accurate and timely wound assessment is important to ensure correct diagnosis and for developing a plan of care to address patient, wound and skin problems that impact on healing.

Identify treatment goal, e.g. 100% granulation tissue/ healed wound. **If no signs of improvement after 2–4 weeks, review treatment plan/refer to specialist**









# ***TYPE OF DRESSINGS***



# DRESSING - PURPOSE

- Protect wound from
  - **trauma**
  - **microbial contamination**
- Reduce pain
- Maintain temperature & moisture of wound
- Absorb drainage & debride wound
- Control & Prevent haemorrhage (pressure dressing)
- Provide psychological comfort





# DRESSING CATEGORIES

- Traditional
- Conventional
- Advanced
  - Advanced/environmental dressings are more expensive
  - can leave in situ for several days



# DRESSING CATEGORIES

## • Traditional

- spider web (1346 AD)
- poultices
- leaves & herbs
- honey





# Honey dressing



**CASE -HONEY DRESSING -PH - INCISION WOUND ON THE ABDOMEN**



8.10.13





8.10.13



24.10.13

## Case Study -honey ( Diabetic Foot, Streptococcus B, E.Coli )

Case studies done by : **Dr Harikrishna K.R.Nair, MD**; Wound Care Clinic, Hospital Kuala Lumpur, Malaysia

**45 yrs old woman, T2D, referred for amputation but she insisted NO**



Prior to the treatment in Diabetic Foot Clinic, the wound was dressed with; hydrogel ( Intrasite gel ), alginate ( Kaltostat ), film dressing ( Melolin ), and paraffin gauze ( Jelonet ). Patient presented the wound at the DFC on 26/11/08 as we can see pic 1 and 2, prior treatment has had **No Effect**.



# Diabetic Foot

continued



**19 Dec**, Fully debrided, healing of new tissue



**31 Dec**, Wound and surrounding tissue is healed. Pt regain sensation and amputation avoided.

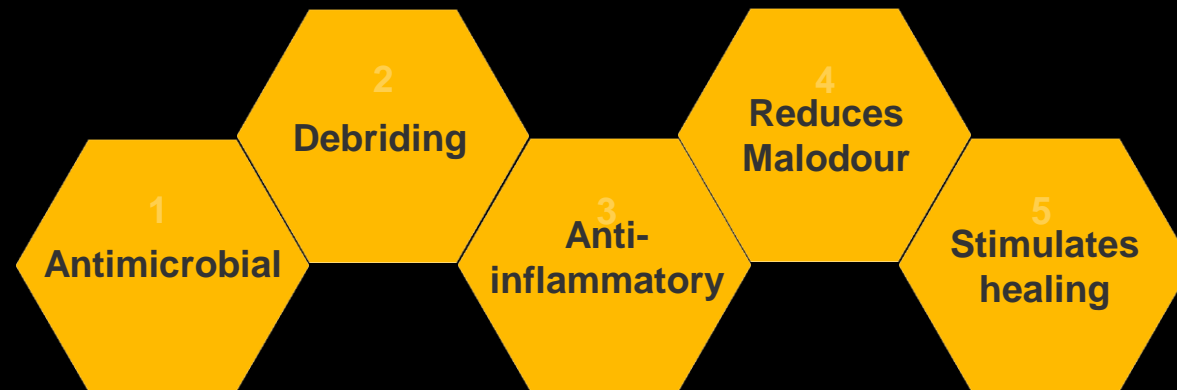


The Streptococcus B group and E.Coli infections were successfully managed without the use of antibiotics.

Due to the treatment with honey-based ointment, amputation of the 2<sup>nd</sup> toe of this Diabetic Type 2 patient was avoided.

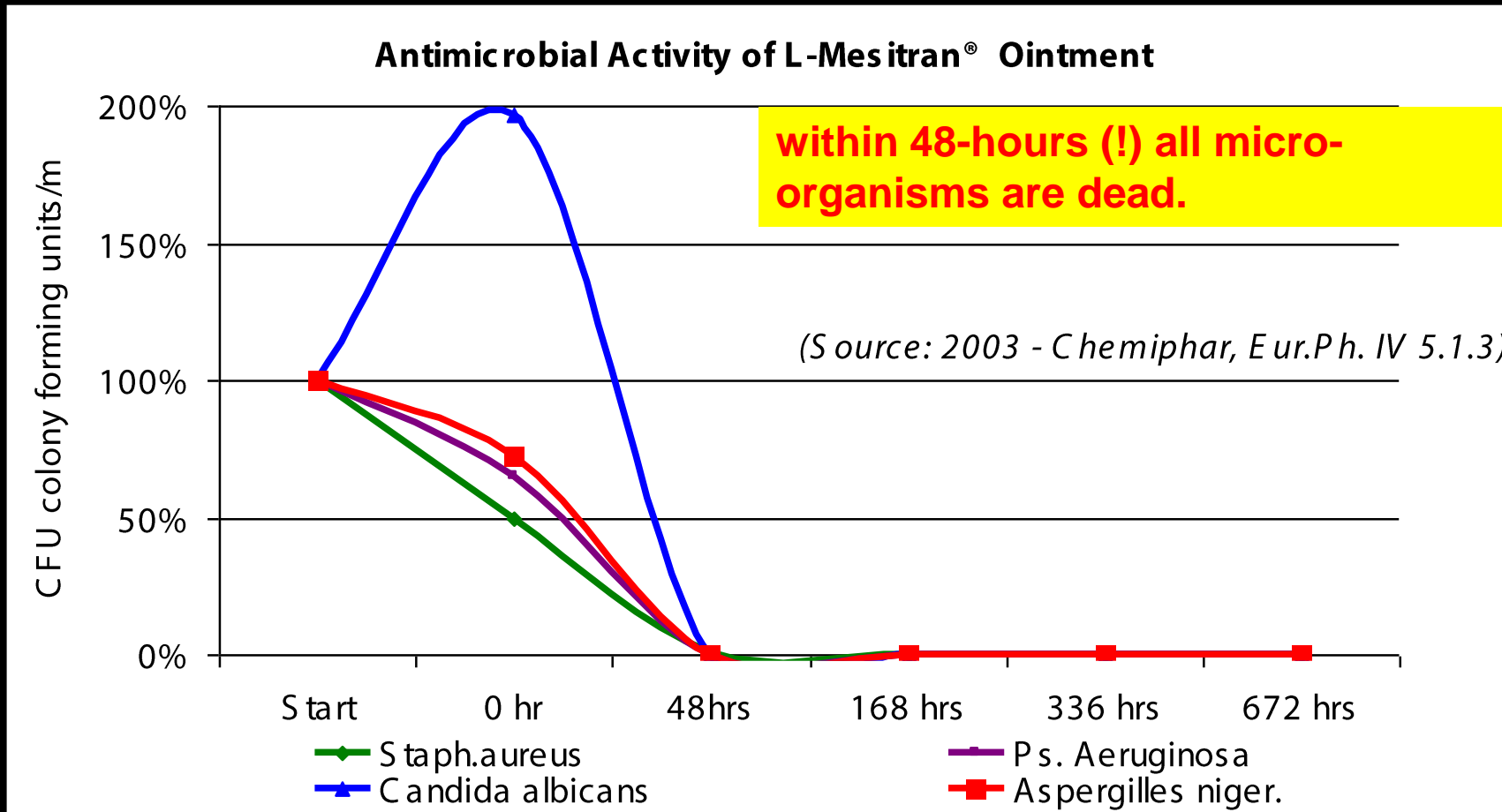
The 2 wounds on the left foot of this 45 yrs woman, healed successfully in 43 days, no adverse effect was observed.

# Wound Healing with MEDICATED HONEY



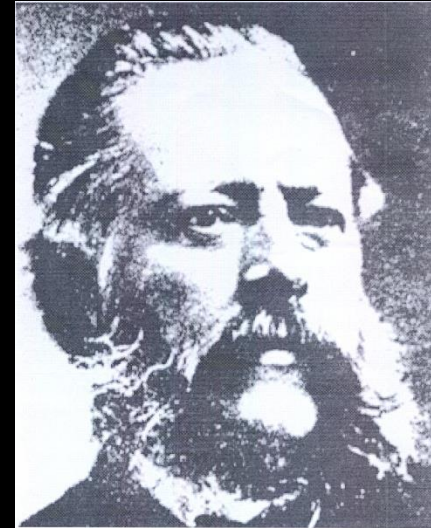


# IN-VITRO STUDY (TRITICUM, 2003)



# DRESSING CATEGORIES

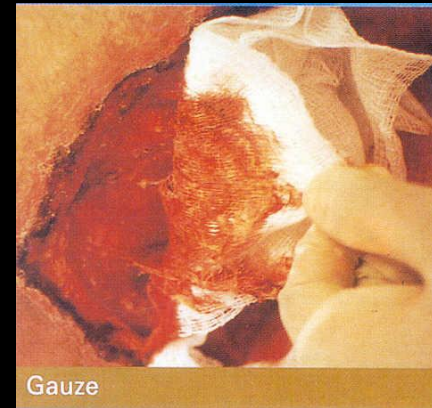
- **Conventional**
  - Gauze
  - Gamgee
  - Melolin
  - Primapore
  - Opsite post Op





# PROBLEMS - SOME DRESSINGS

- Adherence to wound
- Dehydration of wound
- Fiber shed
- 'Strikethrough'



Gauze



# IDEAL/OPTIMUM DRESSING

- Remove excess exudate
- Maintain moist wound healing environment
- Allows gaseous exchange if appropriate
- Provide barrier to pathogens
- Provide thermal insulation
- Waterproof
- Trauma protection
- Non adherent
- Safe & easy to use

## · Theory of moist healing

· “a moist environment created beneath a semi permeable membrane allows optimal conditions for the re-epithelization of wounds”

· (Winter 1962)





# DRESSING CATEGORIES

## ● Advanced

- **Films** - e.g. Opsite, Tegederm, Suprasorb F
- **Hydrogels** - e.g. Duoderm Gel, Intrasite Gel, Suprasorb G, Purilon Gel
- **Hydrocolloids** - e.g. Duoderm CGF, Extra thin, Comfeel, Suprasorb H, Cutinova Hydro
- **Alginates** - e.g. Kaltostat, Suprasorb A, Algisite, Seasorb
- **Foams** - e.g. Allevyn, Tielle, Suprasorb F, Mepilex, Biatain
- **Charcoals** - e.g. CarboFlex, Actisorb Plus
- **Silver** - e.g. Aquacel Ag, Biatain Ag, Acticoat, Polymem Silver, Seasorb Ag
- Polymer – gold dust
- Collagen – stimulen , suprasorb C
- Polymeric membrane dressings – Polymem
- Honey – medihoney, algivon , altivon
- Iodine based dressings- iodisorb , inadine



# The 5 “A” of Dressing Choice!



Dr. Harikrishna K.R.Nair

- Availability
- Accessibility
- Affordability
- Applicable
- Advantages



# Modern/ Advanced/ Active Dressings

| DRESSINGS | PURPOSE                                                                                                                                 | ADVANTAGES                                                                                                            | DISADVANTAGES                                                                                   | PRACTICAL USAGE                                                                                                                                                                                                          |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Film   | <p>Protect against contamination and friction</p> <p>Maintain moist surface</p> <p>Prevent evaporation</p> <p>Facilitate assessment</p> | <p>Adherent</p> <p>Transparent with measurement grid</p> <p>Bacterial barrier</p> <p>Waterproof</p> <p>Breathable</p> | <p>Fluid collection</p> <p>Possibility of stripping away newly formed epithelium on removal</p> | <p>Apply the film over the site making sure there is no air under it</p> <p>To remove the film, stretch the film and pull slowly from the edges</p> <p>Frequency of dressing change: 2-5 days depending on the wound</p> |



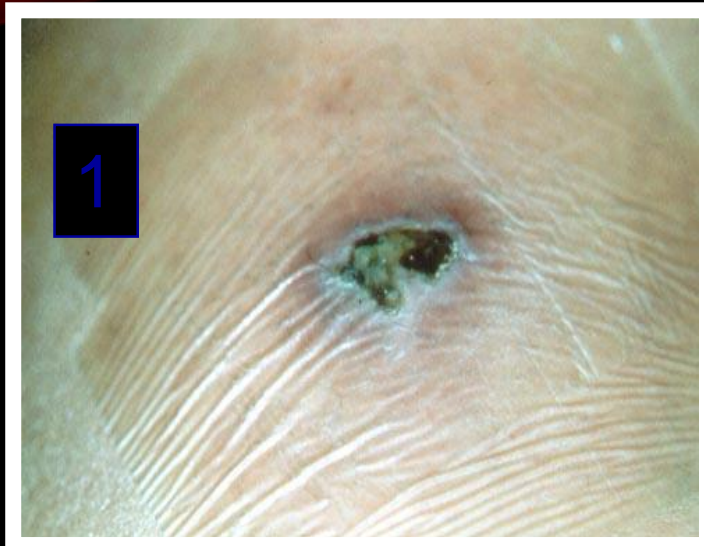
|                 |                                                                                                                                    |                                                                                                                                                                                |                                                                                                  |                                                                                                                                           |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydrogel</b> | <b>Rehydrate ,<br/>debride and<br/>deslough the<br/>wound</b><br><br><b>Promote moist<br/>healing</b><br><br><b>Cavity filling</b> | <b>Comfortable</b><br><br><b>Provide moist<br/>environment and<br/>reduce pain</b><br><br><b>Rehydrate eschar</b><br><br><b>Desloughing agent<br/>Promotes<br/>granulation</b> | <b>Need<br/>secondary dressing</b><br><br><b>Maceration of<br/>the skin around the<br/>wound</b> | <b>Apply the hydrogel<br/>on the wound bed<br/>as a primary<br/>dressing</b><br><br><b>Frequency of<br/>dressing change:<br/>2-3 days</b> |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|



# HYDROGELS

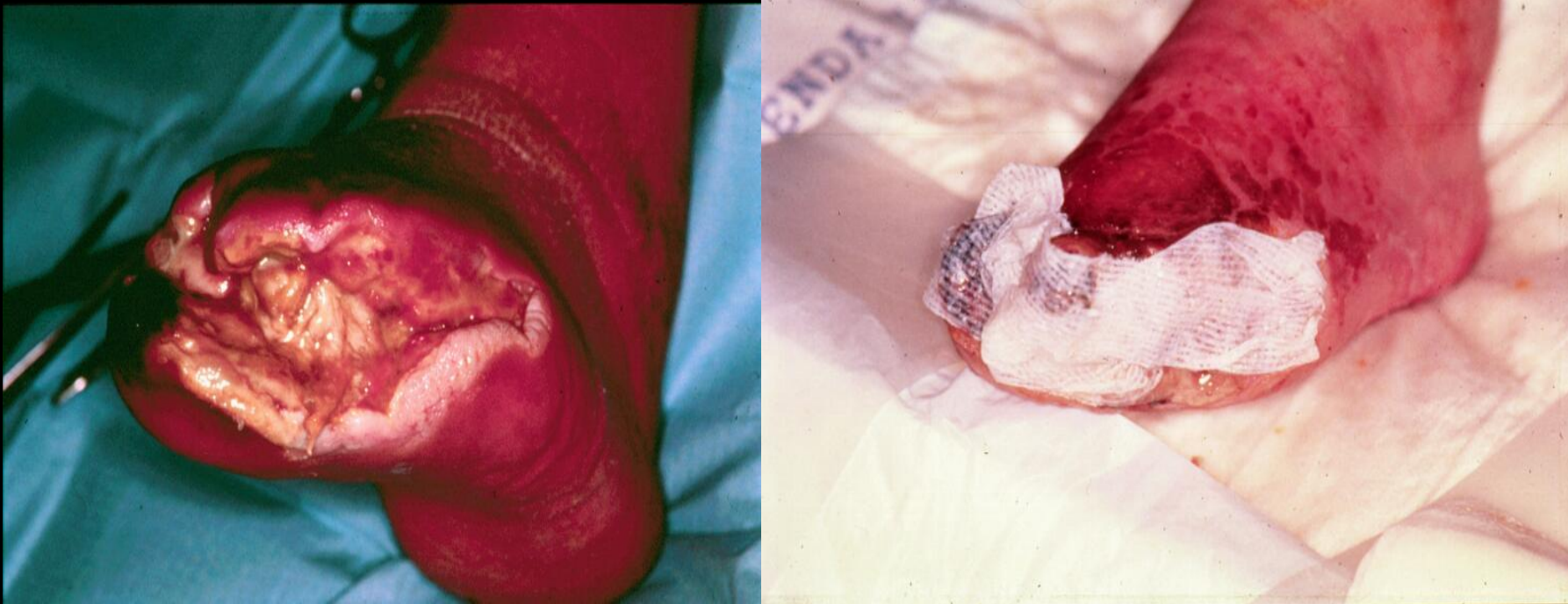


# AUTOLYTIC DEBRIDEMENT





# AUTOLYTIC DEBRIDEMENT – HYDROGEL



\* As a selective type of debridement, autolysis removes only necrotic tissue

# MODE OF ACTION –HYDROGEL

Contains:

Cross-linked  
carboxymethylcellulose  
2.3%

Propylene Glycol USP  
20.0%

Purified Water  
77.7 %



- Gently rehydrates  
dry necrotic tissue

- Provides moist  
wound healing  
environment



- Softens necrotic  
tissue



|                             |                                                                                                       |                                                                                                                                                                                                                                     |                                                                                                                                                                 |                                                                                                                                                                                                                                                 |
|-----------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Hydro-colloid</b></p> | <p><b>Provide moist environment</b></p> <p><b>Absorb exudates</b></p> <p><b>Bacterial barrier</b></p> | <p><b>Cleans and debrides by autolysis</b></p> <p><b>Easy to use</b></p> <p><b>Cost effective</b></p> <p><b>Promotes granulation tissue</b></p> <p><b>Effective for low to moderate exuding wounds</b></p> <p><b>Waterproof</b></p> | <p><b>Unpleasant odour</b></p> <p><b>Forms a yellow liquid gel</b></p> <p><b>Difficult to use in cavities</b></p> <p><b>Maceration of skin around wound</b></p> | <p><b>Apply the adhesive side onto the wound without touching the wound bed</b></p> <p><b>A yellow liquid is seen after the dressing is left in situ which needs to be cleansed</b></p> <p><b>Frequency of dressing change: 2 to 5 days</b></p> |
|-----------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# HYDROCOLLOID DRESSING



|                         |                                                    |                                                                                              |                                                                     |                                                                                                                                                                                                                                      |
|-------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Calcium Alginate</b> | <b>Absorb wound exudates and maintain moisture</b> | <b>Economical and easy to apply</b><br><b>Biodegradable</b><br><b>Haemostatic properties</b> | <b>Not helpful for dry wounds</b><br><b>Need secondary dressing</b> | <b>Available in sheet or rope form</b><br><b>Effective to stop bleeding</b><br><b>The residue of the biodegradable product has to be washed off during the cleansing process</b><br><b>Frequency of dressing change: 2 to 5 days</b> |
|-------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

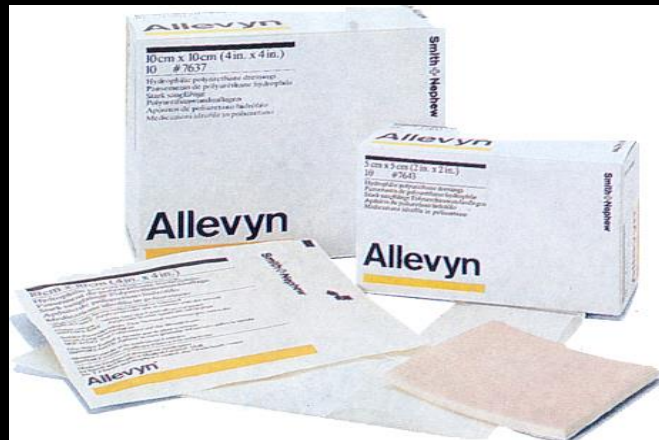


# CALCIUM ALGINATE



|              |                                       |                                                                                                                                                                   |                                                   |                                                                                                                                                                |
|--------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Foams</b> | <b>Absorbent</b><br><b>Cushioning</b> | <b>Conforms to body contours</b><br><b>Designed for cavity wounds</b><br><b>Highly absorbent</b><br><b>Provides protection</b><br><b>Bacterial and waterproof</b> | <b>Can adhere to wounds if exudates dries out</b> | <b>Foam dressing is used as a secondary dressing or as cavity fillers.</b><br><br><b>Frequency of dressing change: 2 to 3 days or longer if for offloading</b> |
|--------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|

# FOAMS



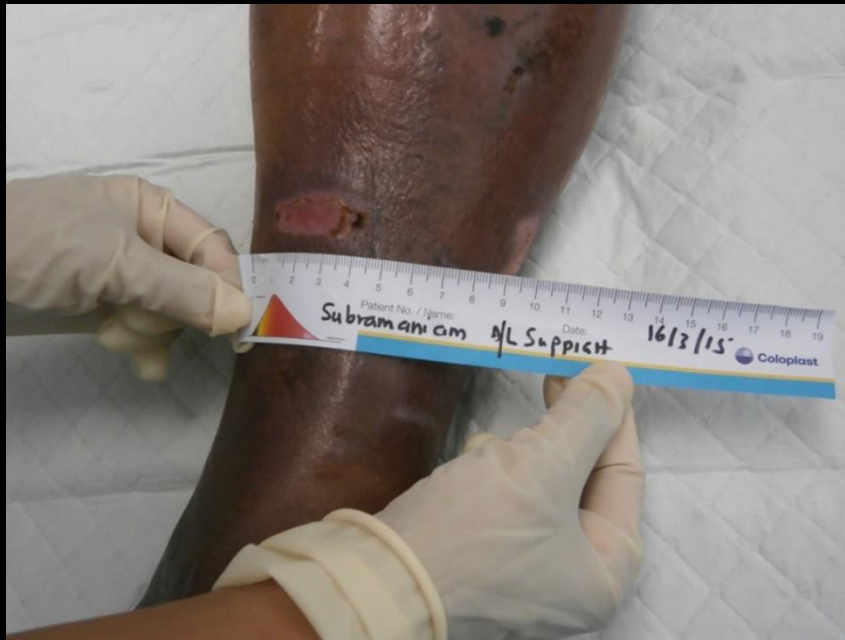


**CASE – SS, 68 year old male**  
**Product Use : Foam**

1<sup>st</sup> visit : 12/3/15



2<sup>nd</sup> visit : 16/3/15



3<sup>rd</sup> visit : 23/3/15

Discharge



# Clinical Case



BKA-(Below Knee Amputation) dressed with foam with silicone

Foam with silicone vertical absorbent helps to minimize maceration





|                   |                                                                                      |                                                                                                                                                                      |                                                                           |                                                                                                                                      |
|-------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hydrofibre</b> | <b>Manage heavy exuding wounds</b><br><br><b>Maintains moist healing environment</b> | <b>Longer wear time</b><br><br><b>Comfortable and non traumatic upon removal</b><br><br><b>Reduce risk of maceration</b><br><br><b>Can be use on infected wounds</b> | <b>Not helpful for dry wounds</b><br><br><b>Needs secondary dressings</b> | <b>The hydrofibre will become gel-like layer which can be easily removed</b><br><br><b>Frequency of dressing change: 2 to 5 days</b> |
|-------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|

# HYDROFIBRE



# CASE - Planned for Ray Amputation Of Lt Toe







On probing



Incised & Calcium  
Alginate applied





**Severe Skin Maceration. Hydrofiber applied**





# Biofilm



Before Removal Of Biofilm



Before Removal Of Biofilm



After Removal Of Biofilm



After Removal Of Biofilm







# Probing & Inspecting Wound









## Wound Healing Progress







**Ulcer Healed & Saved From Amputation**





|                 |                            |                      |                                         |                                                     |
|-----------------|----------------------------|----------------------|-----------------------------------------|-----------------------------------------------------|
| <b>Charcoal</b> | <b>Odour<br/>absorbent</b> | <b>Reduces odour</b> | <b>Needs<br/>secondary<br/>dressing</b> | <b>Frequency of<br/>dressing change:<br/>2 days</b> |
|-----------------|----------------------------|----------------------|-----------------------------------------|-----------------------------------------------------|

# CARBON DRESSINGS





|               |                                                         |                                                                                    |                                                     |                                                                                                                                  |
|---------------|---------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Silver</b> | <b>To reduce bacterial bioburden in infected wounds</b> | <b>Locally acting</b><br><br><b>No known resistance</b><br><br><b>Bactericidal</b> | <b>Some silver dressings do discolour the wound</b> | <b>Place the dressing with the side with silver facing the wound bed</b><br><br><b>Frequency of dressing change: 2 to 3 days</b> |
|---------------|---------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|

# SSD & HA – Infected Wound Post Radiation Therapy and Mastectomy for Breast Cancer

- A 63 year old Indian lady had a history of right breast carcinoma.. She went for right mastectomy in 2002 and completed chemoradiotherapy. Currently she is having a right infected wound. Sought treatment at Dermatology Ward, HKL but problem is still not resolved. On discharge was referred to the Wound Care Unit.
- On assessment, right breast wound with granulation with thick biofilm and moderate yellowish exudate.

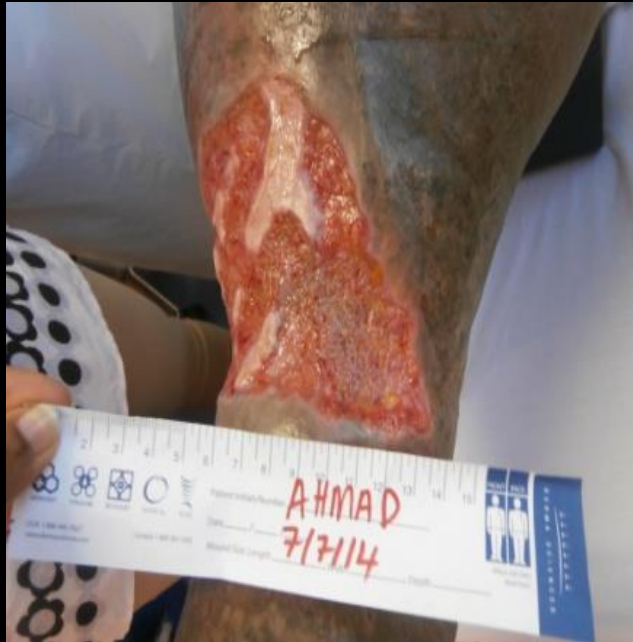


**19 December 2013**



**3 April 2014**

# TRI-IONIC COMPLEX SILVER DRESSING AND SUPER ABSORBENT POLYMER IN THE MANAGEMENT OF CHRONIC COMPLEX WOUND





# CASE -RIGHT DORSAL ASPECT DIABETIC FOOT ULCER – TREATED WITH FOAM AG



- 29 Oct 2014 (Day 1)



- 2 Dec 2014 (Day 35)

|                                                               |                                                            |                                                                                                                                               |                                          |                                                  |
|---------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------|
| <b>Multi-function dressing (Polymeric membrane dressing )</b> | <b>To manage moisture imbalance (from dry to moderate)</b> | <b>Antiseptic property</b><br><br><b>Has surfactant which helps to cleanse the wound when it is applied</b><br><br><b>Offloading property</b> | <b>Not for heavily exudative wounds.</b> | <b>Frequency of dressing change: 2 to 5 days</b> |
|---------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------|



DiGi 3G

14:51

86%

All Photos

Today

Done

14:51



Edit







|                                                                                 |                                                         |                      |                                                               |                                                          |
|---------------------------------------------------------------------------------|---------------------------------------------------------|----------------------|---------------------------------------------------------------|----------------------------------------------------------|
| <b>Composite dressing<br/>(combination of 2 or<br/>more dressing materials)</b> | <b>According to<br/>components of<br/>the materials</b> | <b>multifunction</b> | <b>Same as<br/>individual<br/>components listed<br/>above</b> | <b>Frequency of<br/>dressing change: 2<br/>to 5 days</b> |
|---------------------------------------------------------------------------------|---------------------------------------------------------|----------------------|---------------------------------------------------------------|----------------------------------------------------------|



# CASE –PS

- 30 years old, Male
- Post-MVA, developed a huge hematoma as patient was on warfarin due to valvular heart disease
- The wound was over the left thigh
- Size: 16.5cm x 15cm
- Assessment date: 12<sup>th</sup> January 2015
- Dressing used previously includes : honey gel, collagen, foam
- Highly exudative
- Biofilm noted





# DURAFIBER AG 1<sup>ST</sup> VISIT – 16 MARCH 2015



- Size – 9.5cm x 6.5cm
- Exudate level : High
- Biofilm suspected

# DURAFIBER AG 13<sup>TH</sup> – 27 APRIL 2015



- Size – 7.5cm x 2.5cm
- Exudate level : Low
- Study in progress

**Other advanced dressings**

**Not widely used – some may be used in specialised center  
e.g Collagen, matrix and regenerative dressings, cultured epidermis, growth factors , stem cells**



# Efficacy Of Collagen And Glycerine Based Lotion In Treating Diabetic Skin Disorders In Two Wound Care Units



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Presented at:

## International Wound Conference 2013

Organized by Malaysian Society of Wound Care Professionals

18-20 October, 2013 • Royale Chulan Hotel, Kuala Lumpur

## Treatment of Diabetic Skin Disorders



Stimulen Lotion

Product used

# USE OF A COLLAGEN AND GLYCERINE-BASED GEL FOR HEALING OF DIABETIC FOOT ULCERS

Dr.Harikrishna K.R. Nair MD, FMSWCP

Diabetic Foot Care Unit , Kuala Lumpur Hospital , Malaysia

*Presented at*  
**SAWC AND WHS**  
THE SYMPOSIUM ON ADVANCED WOUND CARE  
**2013**



**Speedy Wound Closure**



Before

After 1 week



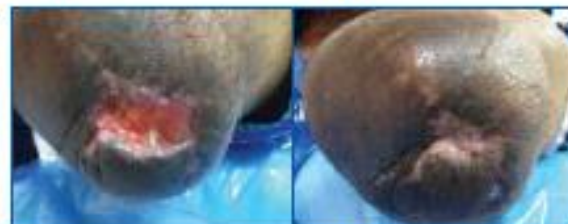
Before

After 2 weeks



Before

After 1 month



Before

After 1 month



Before

After 1.5 months



Before

After 2 months



**58 years old male  
1.5 months old Accident / Comatose patient with Pressure Ulc**



**23.4.13 - BEFORE**

Started Gold Dust daily dressing for 3 days  
then alternate days

**NOTE:**

Heavily exuding, sloughy,  
very bad odour (mixed with feces)

**History:**

Duoderm Gel, Purilon, Aquacel AG



**27.5.13 – After 34 days**

Gold Dust: Starts Apr 23; Ends May 5 (12  
days )

Stimulen Gel: Starts Apr 27. Ongoing



**27.4.13 – After 5 days**

Mild odour, less slough. Mild exudate  
Good tissue growth and granulation  
Started Stimulen Gel plus Gold Dust



**29.4.13 – After 7 days**

Nicely granulating, no odour. Mild exudate  
Continued Stimulen Gel & Gold Dust  
(sloughy area only)



**13.5.13 – After 20 days**



58 years old male  
1.5 months old Accident / Comatose patient with Sacral Ulcer)

## HOME CARE BY PATIENT'S WIFE

- Discharged after 1 month in hospital
- Used Stimulen Gel daily dressing at home



23.4.2013



27.5.2013 (34 days)  
Patient discharged home  
Given Stimulen Gel  
Daily dressing



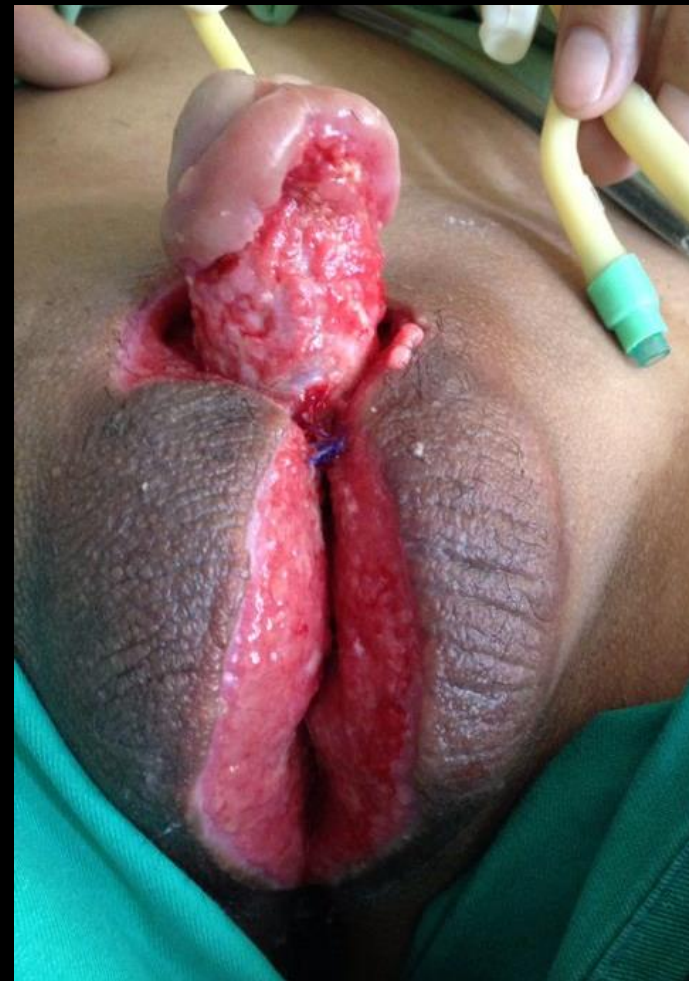
18.9.2013 (5 months)  
Patient still bed-ridden



**22 years old male  
1.5 years old Fournier's Gangrene  
(Necrotising Fasciitis)**



**Before**



**After 2 Application of Gold Dust  
4 days**

**47 years old male  
1.5 mths old Necrotising Fasciitis**



**Before Stimulen Gel**



**After 21 days of Stimulen Gel  
7 applications  
Patient READY for Skin Graft**







# WOUNDS MALAYSIA : KUALA LUMPUR INTERNATIONAL CONFERENCE 2017

ROYALE CHULAN KUALA LUMPUR  
29<sup>TH</sup> SEPTEMBER - 1<sup>ST</sup> OCTOBER 2017  
[www.woundconference.com.my](http://www.woundconference.com.my)

# THANK YOU FOR YOUR KIND ATTENTION

