



# DRESSING WOUND KIT DISASTER



# OUTLINE

**1**

**Introduction  
Disaster in  
Indonesia**

**2**

**7 Step Disaster  
Management**

**3**

**Wound  
Dressing  
Package**

**4**

**Conclusion**

# INTRODUCTION

- The National Disaster Management Agency (BNPB) noted that in 2020 there have been 2,925 natural disaster events which were dominated by hydro-meteorological natural disasters such as floods, flash floods, landslides, tornadoes, droughts to karhutla.
- According to a report by the National **Disaster** Management Agency (BNPB), during the period January 1–18 October 2022 there were **2,860 natural disaster events in Indonesia** , with the number of victims affected 3,593,497 people
- Traumatic wounds may damage bone and/or internal organs, are not created surgically, and always are viewed as **CONTAMINATED AND AT RISK FOR INFECTION**
- **Contamination of wounds with water (fresh or sea water) can lead to infections caused by waterborne organisms and foreign body.**

# NATURAL DISASTER IN INDONESIA

- The InWCCA in conjunction with the local government helped people at the following disasters:
- Earthquake Pidie Aceh Jaya (December 2016); Earthquake in Sinabung – Medan North Sumatera (March 2018); Wildfires in Preulak – Aceh (July 2018); Earthquake in Lombok – Nusa Tenggara (July 2018); Earthquake and Tsunami in Palu – Sigie – Donggala – ParigiMoutong, Central of Sulawesi (October 2018); Tsunami Banten – Lampung (December 2018); Floods in SamarindaKalimantanTimur (June 2019); Floods in JakartaBogor (January 2020).
- The types of wounds of the 765 cases we encountered during these disasters, included:
  - Traumatic wounds (66%)
  - Open fractured wounds (19%)
  - Burns (8%)
  - Diabetic foot ulcer (2%)
  - Stoma (colostomy – ileostomy) (2%)
  - Animal bites (1.5%)
  - Wound cancer (1%)
  - Pressure injury (0.5%).



# 7 STEP DISASTER MANAGEMENT

Remember that disaster situations are not easy to handle and that sudden events can disrupt everything. Each step contains basic instructions and recommended actions on what to do. Describes the stages of the disaster management process as follows :

- Prevention of risks of emergency situations (A);
- Plan preparation and management wound care (B) (C) (D) (E);
- Evaluation Step (F)
- Multidisciplinary collaboration (G)



# PLAN PREPARATION AND MANAGEMENT WOUND CARE (B) (C) (D) (E)

The second stage is the preparation plan and procedure for wound care are **efficient and useful for measuring wound conditions and wound healing processes, as well as for minimizing the risk of infection with choose dressing ideal and effectiveness for situation disaster** including the following :

- Code B: Baseline wound assessment
- Code C: Cleansing
- Code D: Dressing and documentation
- Code E: Evacuation and transfer



Wound scoring - Range of scores: 1 Point To 5

ITEMS	Assessment	Scores
1. Wound dimension	1= P X L < 5 sq. cm 2= P X L 5 < 20 sq. cm 3= P X L 15 < 40 sq. cm 4= P X L 40 < 85 sq. cm 5= P X L > 85 sq. cm	
2. Wound Stages	1= stage 1 2= stage 2 3= stage 3 4= stage 4 5= un-stage-able	
3. Wound base for Granulation tissue	1= intact skin – stage 1 2= Red – granulation tissue 100 % 3= Red 50 % and yellow/black 50 % 4= Red 25 % 5= Slough/necrotic tissue – 100 %	
4. Type of exudate	1= Bloody 2= Serouseanguinose 3= serous 4= purulent 5= Foul purulent	
5. Amount of exudate	1= dry 2= moist 3= mild / small 4= moderate 5= large	

ITEMS	Assessment	Scores
6. Skin colour of Surrounding wound	1= pink or normal 2= red bright 3= hypopigmentasi 4= dark red 5= hyperpigmentation – black or grey	
7. Surrounding skin	1= soft and healthy 2= visible, fused with the base of the wound 3= visible, not fused to the base of the wound 4= clear, not fused to the base of the wound, thick 5= fibrotic, hyperkeratosis	
8. Epithelisation	1= 75% - 100 % epithelisation 2= 50% - 75% epithelisation 3= 25% - 50% epithelisation 4= < 25 % epithelisation 5= none	
9. Oedematous	1= no swelling or Oedema 2= Oedema - non pitting oedema 3= pitting oedema < 4 cm 4= pitting oedema > 4 cm 5= crepitus	
10. Wound tunnels	1= None 2= < 2.5 cm – All round 3= 2.5-3.5 cm < 50 % 4= 3.5 – 4.5 cm > 50% 5= > 4.5 cm – all round	
TOTAL SCORE		

Expected Date of wound healing (N)= (TOTAL SCORE x 12) / 55

Note. Range= 12 (WBP 4 weeks / Granulation 3 weeks / Epithelisation 2 weeks / systemic balance 3 weeks)  
Divide = (10% x 50) + 50 = 55 (10% - unexpected)  
\* Absolute value

# CODE B: BASELINE WOUND ASSESSMENT

# CODE C: CLENASING

Table 6: Cleansing solutions and gels				
Solution	Type	Cytotoxicity	Effect on biofilm	Comments
Sterile normal saline	Isotonic <sup>105</sup>	None	None	<ul style="list-style-type: none"> <li>■ Sterile, non-antiseptic solution<sup>103</sup></li> </ul>
Sterile water	Hypotonic	None	None	<ul style="list-style-type: none"> <li>■ Sterile, non-antiseptic solution<sup>103</sup></li> </ul>
Potable tap water	Varies in content	Unknown/variable	None	<ul style="list-style-type: none"> <li>■ Not sterile<sup>103</sup></li> </ul>
Polyhexa-methylene biguanide (PHMB)	Surfactant antimicrobial	Low to none <sup>23</sup>	Surfactant qualities disrupt biofilm attachments <sup>23, 106</sup>	<ul style="list-style-type: none"> <li>■ Available in gel and irrigation preparations that can be used together or separately</li> <li>■ Lowers liquid surface tension, allowing greater spread and facilitating separation of non-viable tissue<sup>23</sup></li> <li>■ Does not promote bacterial resistance<sup>23</sup></li> </ul>
Octenidine dihydrochloride (OCT)	Surfactant antimicrobial	<ul style="list-style-type: none"> <li>■ Good tissue tolerability has been demonstrated; not shown to disrupt healing</li> <li>■ Lack of absorption suggests no systemic effects<sup>107</sup></li> </ul>	<ul style="list-style-type: none"> <li>■ Prevents formation of new biofilm for at least 3 hours<sup>108</sup></li> <li>■ Inhibits planktonic and bacterial biofilm growth for up to 72 hours<sup>108</sup></li> </ul>	<ul style="list-style-type: none"> <li>■ Available in gel and irrigation preparations that can be used together or separately</li> <li>■ Lowers liquid surface tension allowing greater spread and facilitating separation of non-viable tissue<sup>108</sup></li> </ul>
Hypochlorous acid (HOCL) and sodium hypochlorite (NaOCL)	Antiseptic	May vary depending on concentrations	<ul style="list-style-type: none"> <li>■ Penetrates biofilm rapidly, killing formations from within<sup>103</sup></li> <li>■ Does not promote resistant bacteria strains<sup>103</sup></li> </ul>	<ul style="list-style-type: none"> <li>■ Purported to provide desloughing and antimicrobial activity</li> <li>■ Available in gel and irrigation preparations that can be used together or separately</li> </ul>
Povidone iodine	Antiseptic	Varies depending on concentrations <sup>108</sup>	<ul style="list-style-type: none"> <li>■ Inhibits development of new biofilm<sup>110</sup></li> <li>■ Eradicates young biofilm colonies<sup>110</sup></li> <li>■ Significantly reduces mature biofilm colonies<sup>110</sup></li> </ul>	<ul style="list-style-type: none"> <li>■ Modulates redox potentials and enhances angiogenesis, thereby promoting healing</li> <li>■ May inhibit excess protease levels in chronic wounds<sup>111</sup></li> </ul>



# CODE C: CLENASING

**Antiseptic solution** should be used for up **5 days** no longer than **14 days**. Re-assessed sign of improvement.

- **PHMB solution 0,01-0,2%** recommended for **critical colonized** or **local wound infection**
- **PHMB 0,04%** recommended **heavily colonized** and **clinical infected wounds** – contact time **15 min** for all strengths of solution recommended
- **100g** solution of **octenidine dihydrochloride** contains **0,1g** of octenidine recommended minimum **contact time of 1 min**
- **Hypochlorous acid 0,01%** recommended for **local wound infection** or **critical infection** minimum **contact time of 10-15 min**
- **Super Oxidized solution** recommended for **contamination, local wound infection** or **clinical infection wounds** contact time of **30 second**.

(Brown, 2018, Weir and Swanson, 2019a, Babalska, et al., 2021)

# CODE D: DRESSING AND DOCUMENTATION

Dressing selection of the "ideals" in Woundcare

- Flexible (not impede the patient's movement), providing elasticity to avoid pulling the skin or blistering (e.g. particularly over knee joints)
- Well fixed to the skin on application, even if the wound has been disinfected shortly before
- Absorbent, able to handle exudate
- Skin protective (e.g. reduce the risk of blistering or irritation, not excessively adhesive)
- Waterproof: providing a good seal/barrier function and enabling the patient to shower
- Eliminate dead space where necessary



# CODE D: DRESSING AND DOCUMENTATION

**MOISTURE  
BALANCE**

**AUTOLYSIS  
DEBRIDMENT**

: the lysis, or  
breakdown, of  
damaged tissue at a  
wound site by the  
body's natural defense  
system by enzymes

Acceleration  
**Wound  
Healing**

# DRESSING WOUND KIT DISASTER



# Simple Dressing Selection in Disaster Situation



REGULER

Mendukung autolysis debridement



RED

Mengikat kelembaban pada luka



SILVER

Antimikrobia untuk luka infeksi  
Nanosilver 50 ppm



# CODE D: DRESSING AND DOCUMENTATION



# CODE E: EVACUATION AND TRANSFER

- Base camp
- Hospital camp
- Hospital

Pre-hospital care is important in patients with sign can't open large wounds or crush injuries. Early administration of intravenous or oral antibiotics prescribed by medical health officers might be needed to control the risk of infection.



# CONCLUSION

Clinical challenges of managing wounds and choosing wound dressing as a wound package among survivors of natural and man-made disasters is important. We also provide evidence of suboptimal wound management in recent disasters, noting that these wounds could have been better managed with adherence to some key principles of 7 step disaster wound management.



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