WORKSHOP PENCEGAHAN KECELAKAAN DAN PERAWATAN LUKA

FAHNI HARIS

BACKGROUND

- Luka kronik

→Luka yang karena beberapa sebab tidak bisa sembuh (bulan, tahun)[1]

→Luka yang mengalami keterlambatan proses penyembuhan (tidak tambah kecil, tidak tambah dangkal) walaupun dasar luka berwarna merah[2]

1 Semer, Nadine B (2003). The HELP Guide to Basics of Wound Care. Global HELP Organization. Los Angeles
2 Judd H. (2003. Wound Care Made Incredibly Easy 1st ed. Lipincott Williams & Wilkins: Philadelphia

BACKGROUND

- Dipengaruhi oleh umur, nutrisi, imunologi, obat-obatan dan kondisi metabolik[3] → rata2 haji: usia lanjut
- Haji → tawaf, sa'i, lempar jumrah, cuaca panas → resiko terjadi luka
- Luka paling sering: luka ekstremitas bawah (98%) → berhubungan dengan DM dan pembuluh darah[4]

(DM, HT, jantung, PPOK, penyakit hati dan pencernaan, penyakit tulang dan sendi, *post stroke*)

[3] Gitarja, WS. 2008. Seri Perawatan Luka Terpadu: Perawatan Luka Diabetes. Wocare Publishing. Bogor
[4] Wound Healing Society. 2006. guidelines fot the best care of chronic wounds. *Wound Repair Regen*. 2006; 14:647-710

KOMPETENSI TKHI

- Identifikasi faktor risiko
- Pemetaan
- Pemantauan
- Pengendalian faktor risiko

KOMPETENSI[5]

- Perlu pencegahan dan penanganan luka yang tepat → kunci sukses "WOUND CARE"
- Pencegahan: disini
- Mampu dan mengenal dalam manajemen luka pada pemilihan dressing atau topical terapi dengan berbasis bukti (evidence based)

Suriadi, Supriadi, Haryanto, Syabariah. 2016. Level dan Kompetensi Perawat Bidang Keilmuan Luka. InWOCNA

DRESSING

- Tahap penutupan luka (prinsip: mempertahankan fisiologi moist) [6]
- Tujuan
  - Mengurangi bau
  - Mengurangi nyeri
  - Mencegah infeksi
  - Menampung eksudat
  - Alasan kosmetik

[6] Baranoski & Ayello. 2012. *Wound Care Essensials Practice Principles*. Lippincott Williams & Wilkins: Philadelphia

KATEGORI DRESSING[7]

- Primary dressing

Terapeutik, protektif, mengenai luka langsung (proses penyembuhan luka)

- Secondary dressing

Support (meningkatkan kemampuan proses penyembuhan luka dengan melindungi primary dressing)

- Semi occlusive dressing

Melindungi luka dan sekitar luka dari mikroba, mengontrol suhu, bau dan tekanan dengan perlekatan ke kulit

[7] Istanti, Haris dan Primanda. 2016. Buku panduan blok elektif wound care. PSIK FKIK UMY

- Memilih agen topical dan dressing → **holistically,** perencanaan yang baik dan memiliki proses yang terstruktur (kolaborasi dokter dan perawat atau dengan tenaga kesehatan lain)
- **Ketahui prinsip dressing**
- Pertimbangkan faktor:
  - Keadaan umum pasien
  - Keadaan, lingkungan luka, wound bed
  - Bahan dressing

Sood, et al. 2014. Wound Dressing and Comparative Effectiveness Data. *Advances in Wound Care Journal*, vvol 3, number 8. Wound Healing Society

KEADAAN UMUM PASIEN

- Intake nutrisi adekuat
- Koreksi anemia dan ketidakseimbangan elektrolit
- Kontrol glikemik/diabetes
- Penggunaan alat bantu pencegah tekanan
- Kelola infeksi sistemik
- Remove jaringan debris
- Kontrol peripheral edema
- Berhenti merokok

Sood, et al. 2014. Wound Dressing and Comparative Effectiveness Data. *Advances in Wound Care Journal*, vvol 3, number 8. Wound Healing Society

PROPERTIES OF THE 'IDEAL' WOUND DRESSING

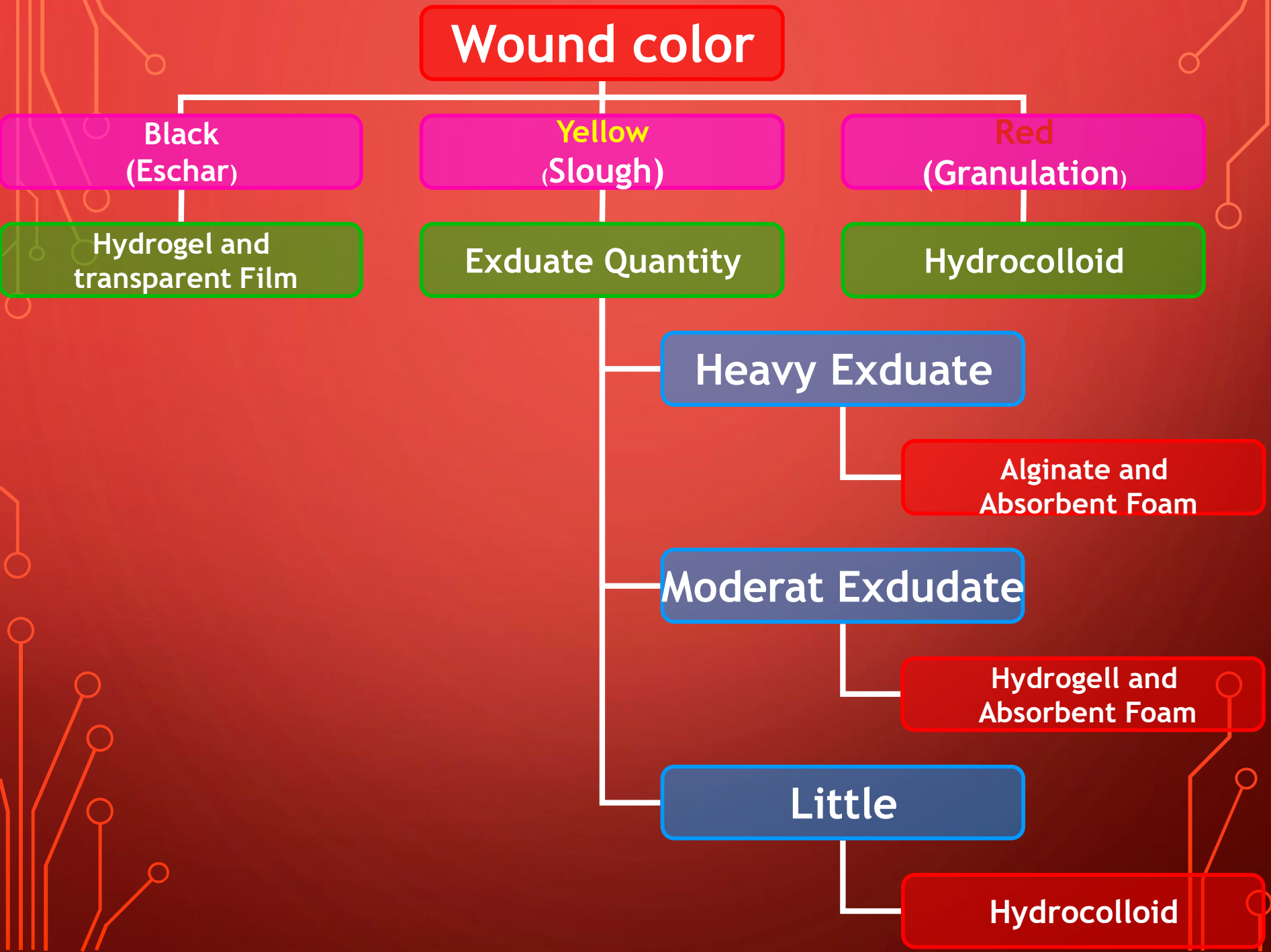
- Menjaga suasana lembab
- Mengurangi/menghilangkan eksudat berlebih
- Difusi gas
- Perlindungan dari foreign bodies (mikroorganisme)
- Provides mechanical protection
- Controls local temperature and pH

Sood, et al. 2014. Wound Dressing and Comparative Effectiveness Data. *Advances in Wound Care Journal*, vvol 3, number 8. Wound Healing Society

CONT..

- Mudah dan nyaman saat dilepas/ganti balut
- Mengurangi nyeri
- Kontrol bau
- Non/hipo alergenik
- Cost effectiveness

Sood, et al. 2014. Wound Dressing and Comparative Effectiveness Data. *Advances in Wound Care Journal*, vvol 3, number 8. Wound Healing Society


Wound color
Black
(Eschar)
Yellow
(Slough)
Red
(Granulation)
Hydrogel and transparent Film
Exduate Quantity
Hydrocolloid
Heavy Exduate
Alginate and Absorbent Foam
Moderat Exdudate
Hydrogell and Absorbent Foam
Little
Hydrocolloid

PRIMARY DRESSING

- Silver dressing
- Hydrogels
- Hydrofibres
- Tulle
- Alginate (Ca-Alginate)
- CAM (Complementary Alternative Medicine)
  - Honey
  - Enzyme (bromelain)
  - Maggots

SECONDARY & OCCLUSIVE DRESSING

- Gauze
- Low adherence dressing
- Foam
- Film (transparent dressing)

SILVER DRESSING

- Mengandung nano kristal silver (antimikroba)
- Mengurangi infeksi (proteolysis → lisis sel bakteri)
- Efektif mengurangi MRSA
- Barier penetrasi bakteri
- Low adherent
- Tahan lama

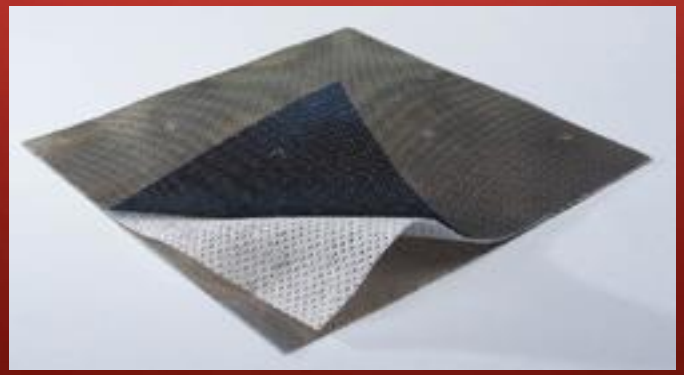


Table 3. Distribution of patients in whom microorganisms were isolated from wound culture

Microorganisms	Study groups: NPWT + silver dressing ($n = 10$)	Study groups: NPWT alone (controls) ($n = 7$)
Pseudomonas spp.		
Baseline	0	2
At 3 weeks	0	2
At 6 weeks	0	1
Staphylococcus spp.		
Baseline	1	0
At 3 weeks	1	1
At 6 weeks	0	0
Streptococcus spp.		
Baseline	1	0
At 3 weeks	0	0
At 6 weeks	0	0
Gram-negative pathogens		
Baseline	3	3
At 3 weeks	5	6
At 6 weeks	6	6

Data as number of patients.

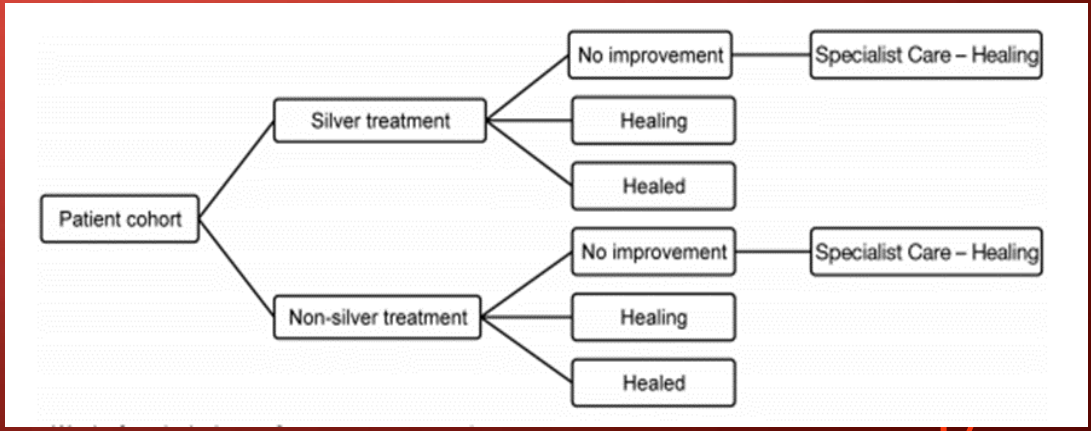
Saez-Martin, et al. 2015. Negative pressure and nanocrystalline silver dressings for nonhealing ulcer: A randomized pilot study. *Wound Repair and Regeneration. Wound Rep Reg (2015) 23 948-952. Wound Healing Society.*

Saez-Martin, *et al* (2015)

- VAC + silver dressing (intervensi 10 responden) dengan VAC saja (7 responden)
- Rata-rata pasien vascular (58,8%)
- Diikuti sampai 6 minggu, final assessment bulan ke 3
- Munculnya gram negative → pengaruh tekanan dan menurunnya (deprivasi) oksigen

Jemec, *et al* (2014)

- Cost effectiveness of silver dressing
- Menghemat £141.57 (2,25 juta) per 4 minggu WC
- Rata-rata sembuh (10.1 minggu), N=293 dibanding non silver dressing (12.8 minggu), N=209
- Meta-analysis N=369 (healing ulcer: 79.4%), N=290 (healing ulcer: 72.1%)



Jemec, et al. 2014. Cost-Effective Use of Silver Dressing for the Treatment of Hard-to-Heal Chronic Venous Leg Ulcer. Journal PLOS ONE.

HYDROGELS (INTRASITE™, NU-GEL™, CUTIMED GEL, AQUAFORM™)

- Consist of water (>90%)
- Autolysis debridement for necrotic tissue that difficult to be removed (hard, dry)
- Limited absorbency
- Not useful on bleeding wounds
- Need secondary dressing

Sood, *et al.* 2014

- RCT (90 pasien dengan 129 luka tekan)
- 62 (hydrogel), 67 (hydrocolloid) lama 60 hari
- Perkembangan luka
  - Hydrogel (90%)
  - Hydrocolloid (74%)
- Luka sembuh (60 hari)
  - Hydrogel (43%)
  - Hydrocolloid (24%)

Sood, et al. 2014. Wound Dressing and Comparative Effectiveness Data. *Advances in Wound Care Journal*, vvol 3, number 8. Wound Healing Society

TULLE DRESSINGS

(PARATULLE™, SOFRATULLE, BACTIGRAS™, JELONET™)

- Superficial clean wound
- Sterile cotton or gauze with paraffin (antiseptic or antibiotic may also be incorporated)
- Must often be replaced (adhesion with wound bed)
- Usually cause allergies include pain or irritation
- Need secondary dressing

LOW-ADHERENCE DRESSINGS (MELOLIN™, MEPORE™, MEPITEL™, CUTIMED® LA, TELFA AMD®)

- Polyester fabric
- Reduce adherence between the dressing and the wound surface
- Removal is easy with little or no trauma
- Have minimal absorptive capacity
- Applied as primary or secondary dressing


smith&nephew
MELOLIN
STERILE
20cm x 10cm
8in. x 4in.

- Muangman, Nitimonton & Aramwit. 2011
- 32 pasien donor site, skin grafting (random) → compare tulle & low-adherence dressing
- Analisa re-epitelisasi, nyeri, infeksi dan cost evectiveness
- Umur, donor site, LoS (tidak ada perbedaan, $p>0.05$)
- **Signifikan** pada jaringan **re-epitelisasi** (90%) dan **penurunan nyeri** (hari ke 1, 3, 7 dan 14-21 perawatan luka) dgn menggunakan **low-adherence dressing**

Muangman *et al*. 2011. Comparative Clinical Study of Bactigras and Telfa AMD for Skin Graft Donor-Site Grafting. *International Journal of Molecular Sciences*. *Int. J. Mol. Sci.* **2011**, *12*, 5031-5038; doi:10.3390/ijms12085031

Table 1. Demographics data of patients in each group.

Demographics Data	Paraffin Tulle + Chlorhexidine Dressing (Bactigras®) (Range)	Cotton Fiber + PHMB (Telfa AMD®) (Range)	*p*-Value
Gender (male:female)	14:2	8:8	0.02 *
Age (years)	36.19 ± 19.81 (16–78)	29.13 ± 12.55 (17–50)	0.24
Area of donor sites (cm^2)	1,016.38 ± 498.56 (336–2,340)	935.83 ± 436.47 (270–2,052)	0.63
Length of hospital stays (days)	53.63 ± 36.22 (9–126)	47.69 ± 31.30 (13–124)	0.62

* indicates significant difference ($p < 0.05$).

Muangman *et al*. 2011. Comparative Clinical Study of Bactigras and Telfa AMD for Skin Graft Donor-Site Grafting. *International Journal of Molecular Sciences*. *Int. J. Mol. Sci.* **2011**, *12*, 5031-5038; doi:10.3390/ijms12085031

Table 2. Efficacy of Bactigras® and Telfa AMD® in donor site wounds.

	Paraffin Tulle + Chlorhexidine Dressing (Bactigras®) (Range)	Cotton Fiber + PHMB (Telfa AMD®) (Range)	*p*-Value
Day of reepithelization (≥90%)	14.00 ± 3.05 (9–21)	9.25 ± 1.88 (7–13)	<0.001 *
Pain score	4.70 ± 1.16 (2.20–6.64)	1.57 ± 0.55 (0.57–2.57)	<0.001 *
Number of infection site	1	0	–
Cost of treatment (USD)	4.64 ± 1.97 (2.12–9.55)	5.72 ± 2.54 (1.73–12.09)	0.19

* indicates significant difference ($p < 0.05$).

Muangman *et al*. 2011. Comparative Clinical Study of Bactigras and Telfa AMD for Skin Graft Donor-Site Grafting. *International Journal of Molecular Sciences*. *Int. J. Mol. Sci.* **2011**, *12*, 5031-5038; doi:10.3390/ijms12085031

Table 3. Average grade for the assessment of the pain in treatment with Bactigras® and Telfa AMD®.

Pain Score	Paraffin Tulle + Chlorhexidine Dressing (Bactigras®) (Range)	Cotton Fiber + PHMB (Telfa AMD®) (Range)	*p*-Value
First day	6.81 ± 1.17 (5–9)	2.56 ± 1.41 (0–5)	<0.001 *
Third day	6.38 ± 1.45 (4–9)	1.88 ± 1.20 (0–4)	<0.001 *
Seventh day	5.13 ± 2.03 (0–8)	1.13 ± 1.15 (0–4)	<0.001 *
14th–21st day	1.88 ± 2.33 (0–7)	0 0	<0.001 *

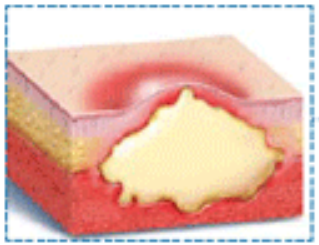
* indicates significant difference ($p < 0.05$).

Muangman *et al*. 2011. Comparative Clinical Study of Bactigras and Telfa AMD for Skin Graft Donor-Site Grafting. *International Journal of Molecular Sciences*. *Int. J. Mol. Sci.* **2011**, *12*, 5031-5038; doi:10.3390/ijms12085031

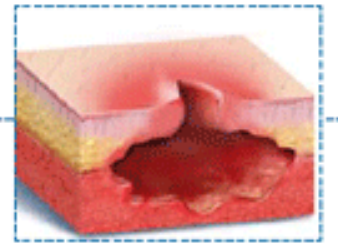
HYDROFIBRES (AQUACEL™)

- Bentuk gel ketika kontak dengan wound bed, bentuk asli serat/fiber
- Absorb eksudat (heavy), bercampur membentuk gel (mengurangi bio burdent)
- Gel → moist (proses debridemen mekanik) dan less trauma (nyeri) saat ganti balut
- Mengisi defect luka
- Calcium-Alginate (**Kaltostat®**) → hemostatic

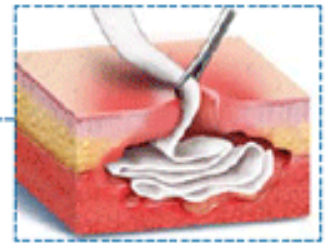
AQUACEL® Ag Ribbon dressing application instructions‡



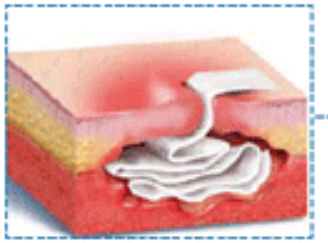
Cleanse with a gentle, non-toxic cleanser, such as Shur-Clens® wound cleanser (20% Poloxamer 188).



Abscess: Post Incision and Drainage

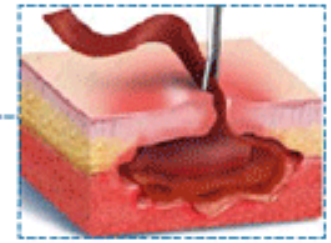


Pack wounds only up to 80%, as AQUACEL® Ag dressing will expand to fill the wound space as it absorbs exudate.



Leave at least 2.5 cm (about 1") outside the wound for easy retrieval.

Secure AQUACEL® Ag dressing with cover dressing (e.g. VERSIVA® XC® Gelling Foam Dressing) Dressings may be left in place for 7 days or changed as frequently as needed.



AQUACEL® Ag ribbon dressing is designed to provide non-traumatic removal.

FILMS (SEMI OCCLUSIVE DRESSING) (OPSITE™, TEGADERM™, BIOCLUSIVE™)

- Film polyurethane (-NH-CO-O-)
- Thin and occlusive
- Transparent > to monitor wound base
- Shower proof
- Vapor – permeable > gas diffusion
- Minimal (absorbent)
- Applied for superficial wound, epithelial wound stage
- Not for high exudates wound

- Penggunaan hydrofibre + transparent dressing (D1) versus low adherence/semi occlusive dressing (D2) pada operasi lutut dan panggul
- 183 pasien bangsal orthopedic (random trial)
- Odds rasio 5.8 → 5.8 kali D1 tidak beresiko terjadi komplikasi (blister) daripada D2 (p=0.00001)
- Kejadian blister
  - D1 → 2.4%
  - D2 → 22.5%

Ravenscroft, MJ., Harker J & Buch KH. 2006. **A prospective, randomised, controlled trial comparing wound dressings used in hip and knee surgery: Aquacel and Tegaderm versus Cutiplast.** *Ann R Coll Surg Engl* 2006; **88**: 18–22. England

Table 1 Wound dressing and outcome

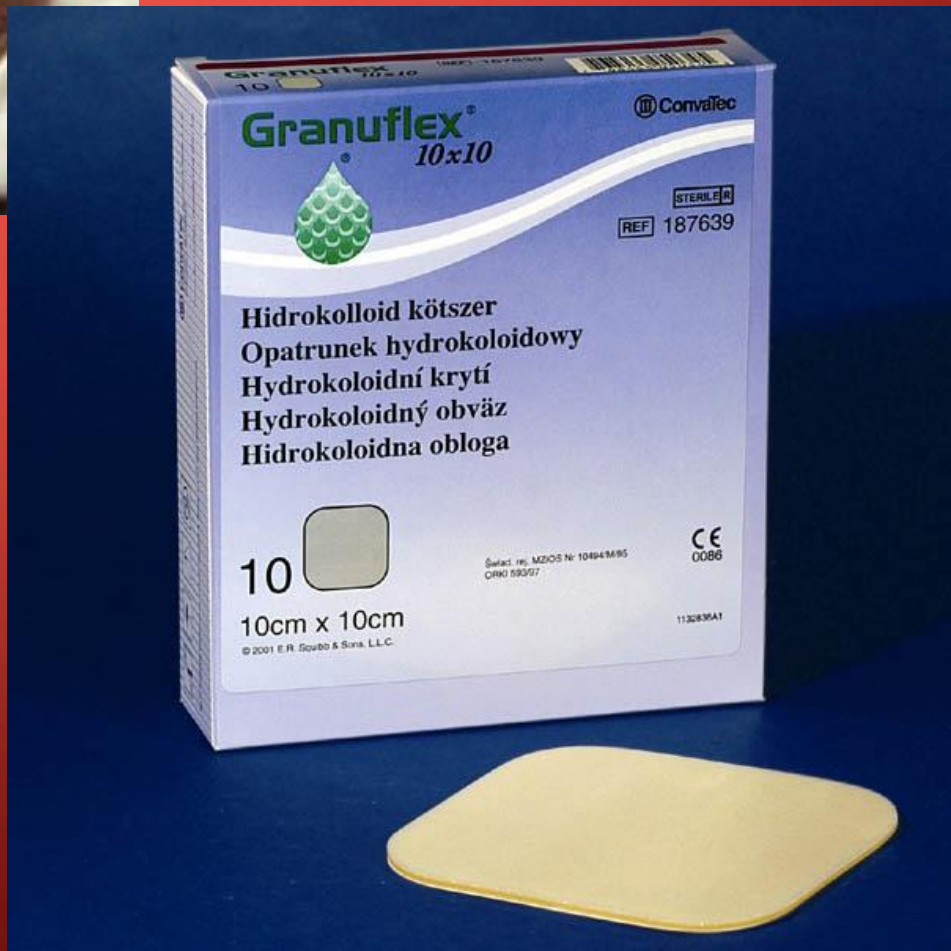
	Cutiplast	Aquacel/Tegaderm	Totals
Dressing failed	53	15	68
Wound healed	45	70	115
Totals	98	85	183

Odds ratio = 5.8 (95% CI 2.8–12.5; $P < 0.00001$). Dressing failure if strike through of wound fluids across the dressing occurred on two successive occasions, skin blisters occurred, or any signs infection.

Ravenscroft, MJ., Harker J & Buch KH. 2006. **A prospective, randomised, controlled trial comparing wound dressings used in hip and knee surgery: Aquacel and Tegaderm versus Cutiplast.** *Ann R Coll Surg Engl* 2006; **88**: 18–22. England

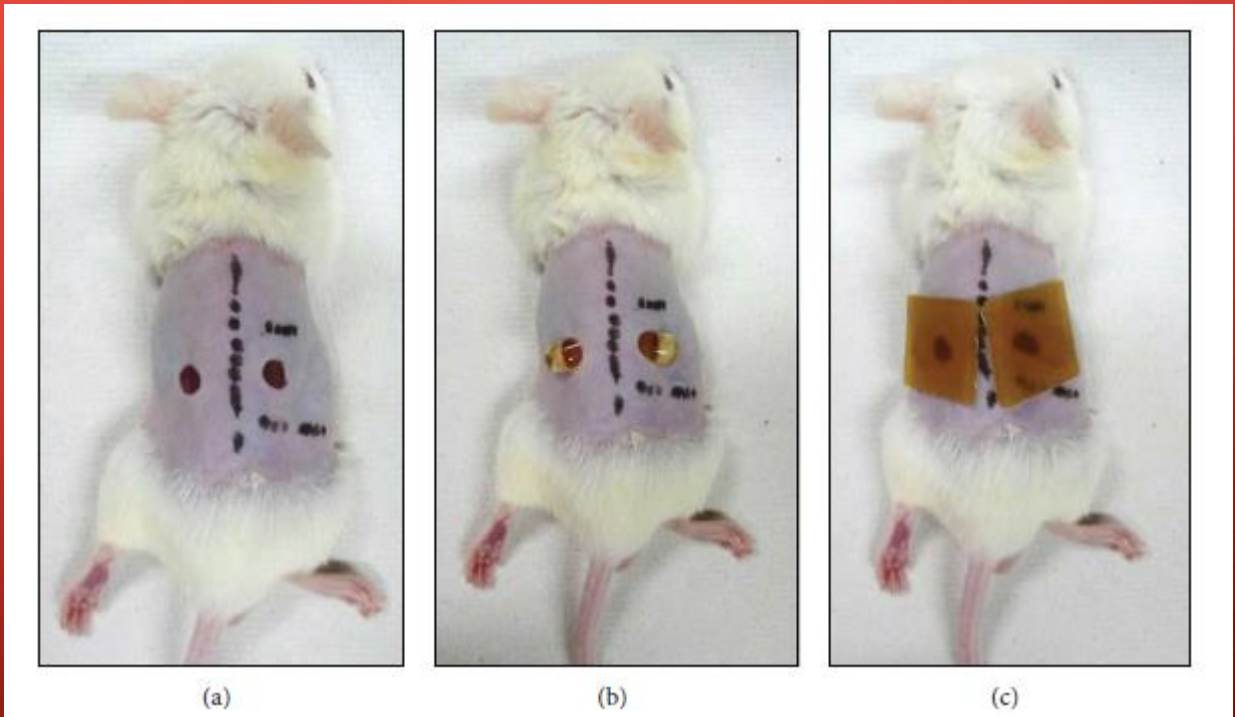
HYDROCOLLOIDS
(GRANUFLEX™, COMFEEL™, TEGASORB™)

- Consist of gelatin, pectin and cellulose in the form of waterproof adhesive dressing.
- Absorb light-to-moderate levels of exudates
- Usually do not require a secondary dressing
- Shower-proof
- Superfisial wound (wound bed: granulasi)


Granuflex
10x10
ConvaTec
STERILE R
REF 187639
Hidrokolloid kötszer
Opatrunek hydrokoloidowy
Hydrokoloidní krytí
Hydrokoloidný obväz
Hidrokoloidna obloga
10
10cm x 10cm
CE
0086

- Hydrocolloid (HCD) efektif menyembuhkan luka per kutan pada tikus dibandingkan dengan 3 madu + HCD
- Penelitian menggunakan tikus (luka 4 mm)
- 4 grup
  - Acacia (*Robinia pseudoacacia*) + HCD
  - Manuka (*Leptospermum scoparium*) + HCD
  - Chinese milk vetch (*Astragalus sinicus*)+ HCD
  - HCD (kontrol)
- Komposisi madu 17.3% air, 82.1-82.7 % karbohidrat total, 0.2-0.4% protein, and 0.2% arang, 0-0.1 % lipid dan densitas energi 330-333 kkal/100 g

•Mukai et al. 2015. Evaluation of the Effects of a Combination of Japanese Honey and Hydrocolloid Dressing on Cutaneous Wound Healing in Male Mice. Hindawi Publishing Corporation Evidence-Based Complementary and Alternative Medicine.



•Mukai et al. 2015. Evaluation of the Effects of a Combination of Japanese Honey and Hydrocolloid Dressing on Cutaneous Wound Healing in Male Mice. Hindawi Publishing Corporation Evidence-Based Complementary and Alternative Medicine.

DISKUSI

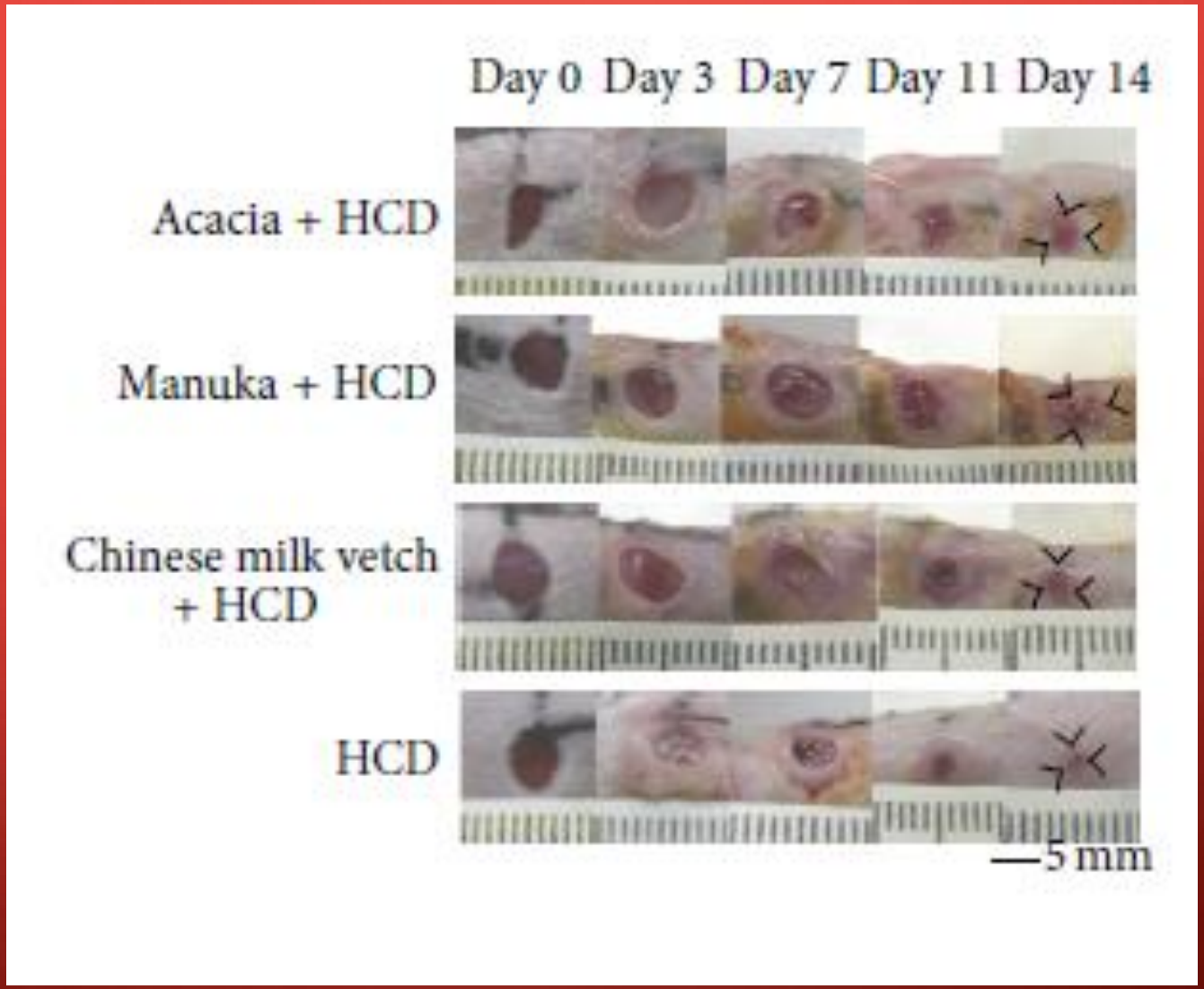
EKSPERIMEN

- Mudah dilepas
- Episode inflamasi berulang
- Bahan HCD menghambat fungsi anti-inflamasi dari madu
- Penggunaan campuran madu + hydrocolloid tidak dianjurkan

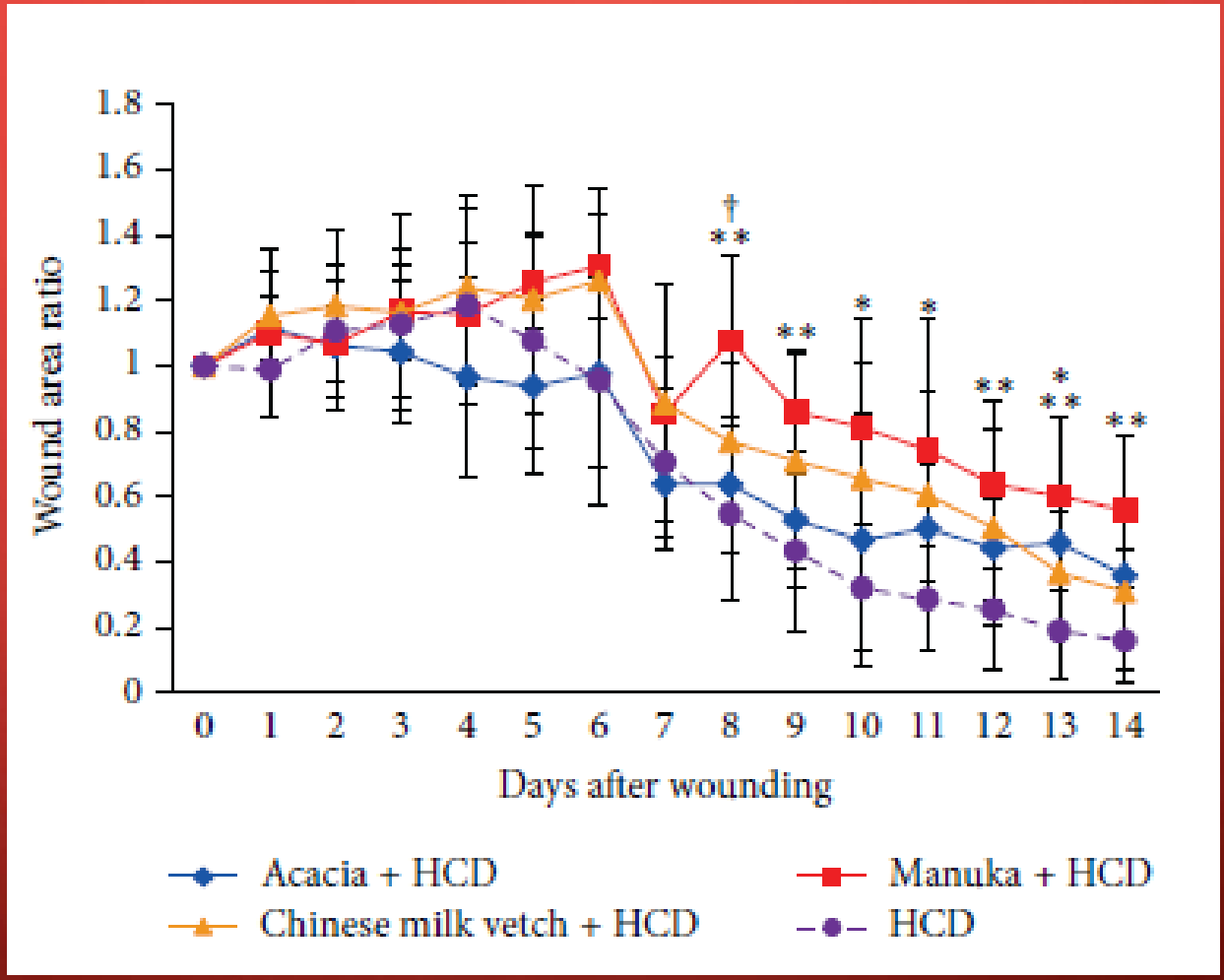
KONTROL

- HCD control susah → menempel di tepi luka (scar)
- Makrofag dan re-epitelisasi lebih banyak di kelompok control

•Mukai et al. 2015. Evaluation of the Effects of a Combination of Japanese Honey and Hydrocolloid Dressing on Cutaneous Wound Healing in Male Mice. Hindawi Publishing Corporation Evidence-Based Complementary and Alternative Medicine.



•Mukai et al. 2015. Evaluation of the Effects of a Combination of Japanese Honey and Hydrocolloid Dressing on Cutaneous Wound Healing in Male Mice. Hindawi Publishing Corporation Evidence-Based Complementary and Alternative Medicine.



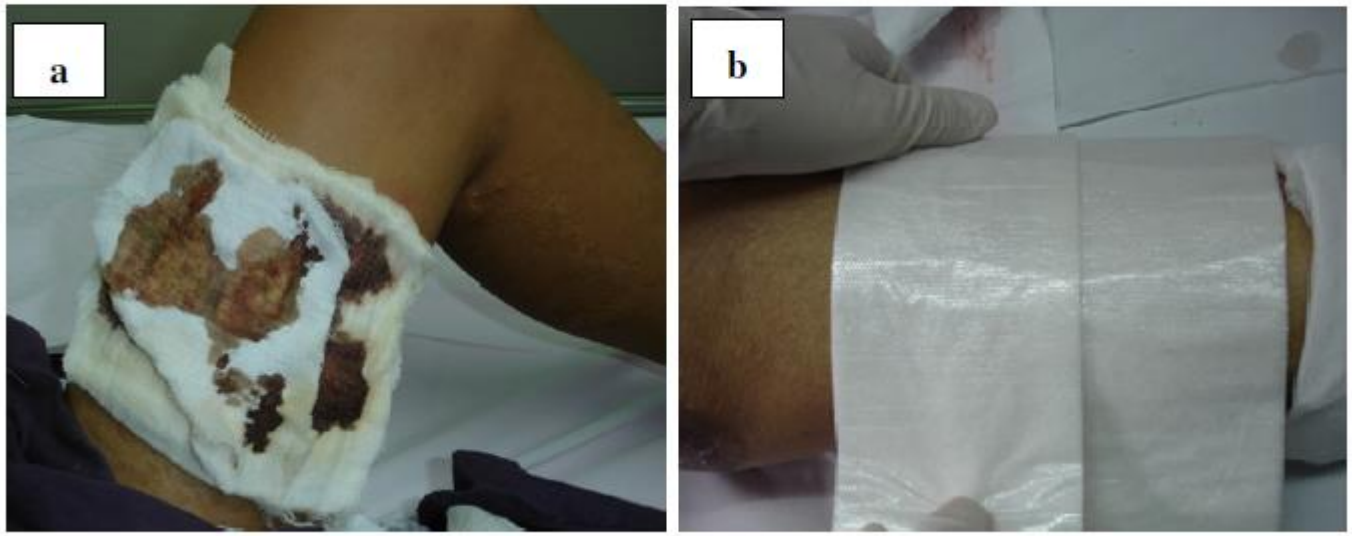
•Mukai et al. 2015. Evaluation of the Effects of a Combination of Japanese Honey and Hydrocolloid Dressing on Cutaneous Wound Healing in Male Mice. Hindawi Publishing Corporation Evidence-Based Complementary and Alternative Medicine.

GAUZE

- Kassa steril (1891)
- Familiar, murah, mudah didapat, highly absorbent
- Kurang optimal (trauma, nyeri, cepat menguap)
- Wet to dry → reflek vasokonstriksi, hipoksia jaringan, gangguan kerja leukosit dan fagosit
- Waktu dan cost effectiveness → sehari 3x ganti balut
- In vitro study → bakteri dapat menembus 64 lapisan kassa

Sood, et al. 2014. Wound Dressing and Comparative Effectiveness Data. *Advances in Wound Care Journal*, vvol 3, number 8. Wound Healing Society

Figure 1. New donor sites treated with Bactigras® (**a**) and Telfa AMD® (**b**), respectively.



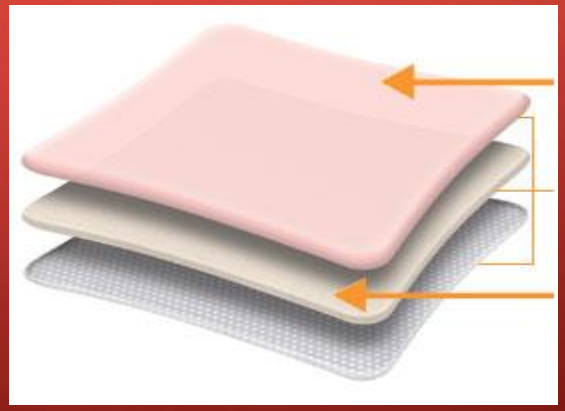
Muangman *et al*. 2011. Comparative Clinical Study of Bactigras and Telfa AMD for Skin Graft Donor-Site Grafting. *International Journal of Molecular Sciences*. *Int. J. Mol. Sci.* **2011**, *12*, 5031-5038; doi:10.3390/ijms12085031

FOAM DRESSINGS (LYOFOAM™, ALLEVYN™, TIELLE™)

- Polyurethane
- Absorb (moderate-high) exudates
- Applied as secondary dressing
- Permeable to both gases and water vapor
- Not recommended for eschar and dry wound, arterial wound

CONT..

- Atraumatic removal
- Up to 4-7 days stay on the wound bed (should be changed when saturated with exudates)



DRESSING CHOICE BY WOUND APPEARANCE

Wound Type (Color/Exudates)	Goal	Wound Depth	
		Superficial	Cavity
Black/low exudates	Rehydrate/debridement	•Hydro gel •Hydrocolloid •Gauze •Enzyme	•Hydrogel •Hydrocolloid •Gauze •Enzyme
Yellow/high exudates	Remove slough Control exudate	•Hydrocolloid •Exudate Absorbers •Enzymes •Gauze	•Hydrocolloids (paste, granules, powder) •Exudate Absorbers •Enzymes •Foam cavity dressings
Yellow/low exudates	•Remove slough •Control exudates	•Hydrogel •Hydrocolloid •Enzymes •Film •Gauze	•Hydrocolloids (paste, granules, powder) •Hydro gel •Gauze •Enzyme •Foam cavity dress
Red/high exudates	•Absorb exudate, maintain moist environment, promote granualtion and epithelialization	•Foams •Hydrocolloid •Exudate Absorbers	•Hydrocolloids (paste, granules, powder) •Exudate Absorbers •Foam cavity dressings
Red/low exudates	•maintain moist environment, promote granulation and epithelization	•Hydro gel •Hydrocolloid (thin) •Enzymes •Film •Non-adherent	•Hydrocolloids (paste, granules, powder) •Hydro gel •Foam cavity dressing

Thank you