งานประชุมวิชาการส่วนภูมิภาค ประจำปี พ.ศ. 2568
สมาคมแพทย์อุบัติเหตุแห่งประเทศไทย
ร่วมกับ โรงพยาบาลมหาราชนครศรีธรรมราช

18-20 สิงหาคม 2568

FUTURE TRENDS IN TRAUMA CARE

# Update Wound Care

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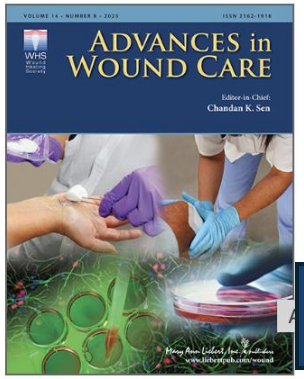
1045-1130,18 Aug 2025

# Disclosure

- No conflict of interest to declear

# Outline

- Latest Consensus for management of Acute Wound
- Quick review with Hard-to-Heal wound
- Re-introduction **of** WOUND HYGIENE
- My experience of the application of WOUND HYGIENE




# Management of Acute Wounds—Expert Panel Consensus Statement

**Authors**: Oluyinka O. Olutoye, Elof Eriksson, Alicia D. Menchaca, Robert S. Kirsner, Rica Tanaka, Greg Schultz, Dot Weir, … Akingba | AUTHORS INFO & AFFILIATIONS

Nov 2024

- **An acute wound**
  - damage to the skin that frequently heals completely within a predictable time range, depending on the wound depth, size, and the magnitude of the damage
- Intention of Healing
  - Secondary: without intervention >> scaring issue
  - Primary: intervention to close the wound initially
  - Tertiary: purposefully delayed intervention to close the wound

# Wound infection Risk: IWII


| CONTAMINATION | COLONISATION | LOCAL WOUND INFECTION | | SPREADING INFECTION | SYSTEMIC INFECTION |
|---|---|---|---|---|---|
| | | COVERT (subtle) | OVERT (classic) | | |
| • Microorganisms are present within the wound but are not proliferating<br>• No significant host reaction is evoked<br>• No delay in healing is clinically observed | • Microorganisms are present and undergoing limited proliferiation<br>• No significant host reaction is evoked<br>• No delay in wound healing is clinically observed | • Hypergranulation<br>• Bleeding, friable granulation<br>• Epithelial bridging and pocketing in granulation tissue<br>• Increasing exudate<br>• Delayed wound healing beyond expectations | • Erythema<br>• Local warmth<br>• Swelling<br>• Purulent discharge<br>• Wound breakdown and enlargement<br>• New or increasing pain<br>• Increasing malodour | • Extending induration<br>• Spreading erythema<br>• Lymphangitis<br>• Crepitus<br>• Wound breakdown/ dehiscence with or without satellite lesions<br>• Inflammation, swelling of lymph glands | • Malaise<br>• Lethargy or nonspecific general deterioration<br>• Loss of appetite<br>• Fever/pyrexia<br>• Severe sepsis<br>• Septic shock<br>• Organ failure<br>• Death |

# Indication for microbial studies

(1) evidence of local spread or systemic infection

(2) failure to respond to antimicrobial intervention or clinical deterioration despite appropriate antimicrobial treatment

(3) surveillance of drug-resistant microbial species

(4) identification of species that may be less amenable to surgical intervention

# Effective Wound Pain Management

- Nociceptive
- Inflammatory
- Neuropathic
- Background pain
- Incident or cyclic pain
- Procedural or non-cyclic pain

# Belief and Current Fact about Laceration

- Old concept : duration > 8 hrs >> Left open management
- Current: duration < 24 hrs >> closed approximation management
  - Critical aesthetic area like face
  - Aligned edges
  - Excision of edges
  - Well irrigation technique with NSS
  - ≥ 250 mL
  - low-pressure technique

# Choice of suture material in each area

**Table 3.** *Choice of suture and duration of use*

| *Area of the Body* | *Transcutaneous Suture* | *Deep Dermal Suture* | *Recommended Day(s) of Suture Removal* |
|---|---|---|---|
| Scalp | 4-0 to 5-0 Monofilament | 3-0 to 4-0 Polydioxanone, Poliglecaprone | 6 to 8 |
| Eyebrow | 5-0 to 6-0 Monofilament | 5-0 Absorbable | 3 to 5 |
| Eyelid | 6-0 to 7-0 Monofilament | Not applicable | 3 to 4 |
| Nose | 6-0 Monofilament | 5-0 Absorbable | 3 to 5 |
| Other areas of the face | 6-0 to 7-0 Monofilament | 5-0 Absorbable | 3 to 4 |
| Lip | 6-0 to 7-0 Monofilament | 5-0 Absorbable | 3 to 4 |
| Trunk | 4-0 to 5-0 Monofilament | 3-0 Absorbable or 3-0 to 4-0 Polydioxanone | 7 to 10 |
| Hand | 5-0 Monofilament | 5-0 Absorbable | 8 to 10 |
| Limbs | 4-0 to 5-0 Monofilament | 4-0 Absorbable | 8 to 10 |
| Areas of the foot | 3-0 to 4-0 Monofilament | 4-0 Absorbable | 12 to 14 |


2020

# Cool Running Water First Aid Decreases Skin Grafting Requirements in Pediatric Burns: A Cohort Study of Two Thousand Four Hundred Ninety-five Children

Bronwyn R. Griffin, Grad Dip Emerg Nursing, PhD*; Cody C. Frear, BA*; Franz Babl, MD; Ed Oakley, MBBS; Roy M. Kimble, DMed(res), MBChB

- 2,494 pediatric burns
- ≥ 20 mins cool running tap water VS none

| | Adequate First Aid (n=1,780) | | | Inadequate First Aid (n=715) | | | Difference | |
|---|---|---|---|---|---|---|---|---|
| **Outcome** | **n*** | **%** | **SD/IQR** | **n** | **%** | **SD/IQR** | **%** | **95% CI** |
| **Skin grafting** | 139 | 7.8 | (0.6) | 97 | 13.6 | (1.3) | -5.8 | (-4.5 to -7.0) |
| **Full-thickness depth** | 47 | 2.7 | (0.4) | 53 | 7.6 | (1.0) | -4.7 | (-3.7 to -6.1) |
| **Hospital admission** | 234 | 13.2 | (0.8) | 129 | 18.0 | (1.4) | -4.9 | (-3.7 to -6.15) |
| **Operating room intervention** | 178 | 10.0 | (0.7) | 107 | 15.0 | (1.3) | -5.0 | (-3.7 to -6.2) |

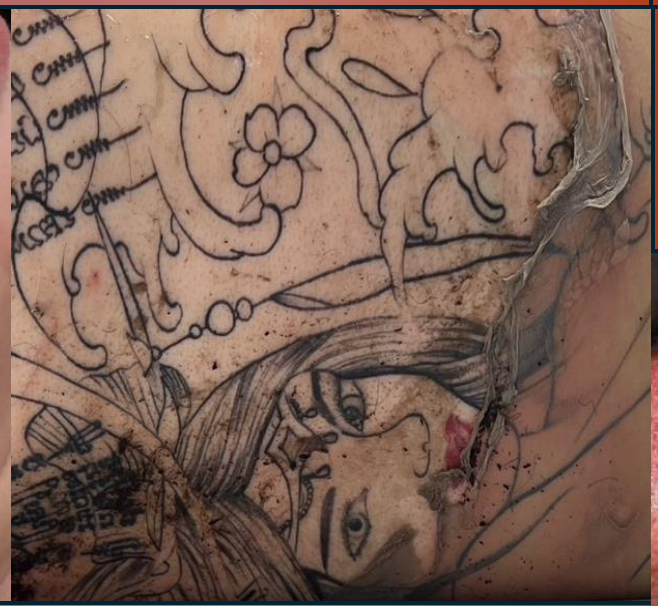
# Overview of Burn Classification

First degree

Superficial burns

5-10 days

Partial thickness burns



Second degree

2 – 3 wks

> 3 wks

> 8 wks

Full thickness burns

Third degree

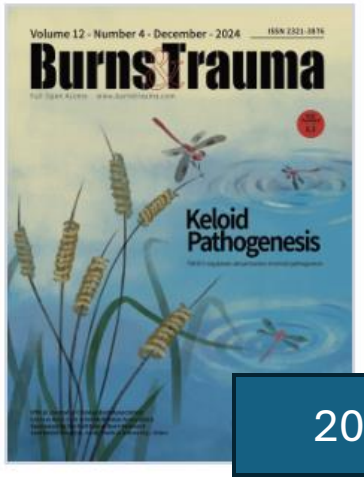
Warby R, Maani CV. Burn Classification. [Updated 2023 Sep 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK539773/

# Spectrum of second degree burn

Area 2

Area 1-2

Area 1




2024

JOURNAL ARTICLE

# Consensus on the treatment of second-degree burn wounds (2024 edition)

Shizhao Ji ✉ , Shichu Xiao ✉ , Zhaofan Xia ✉ ,

Chinese Burn Association Tissue Repair of Burns and Trauma Committee, Cross-Straits Medicine Exchange Association of China

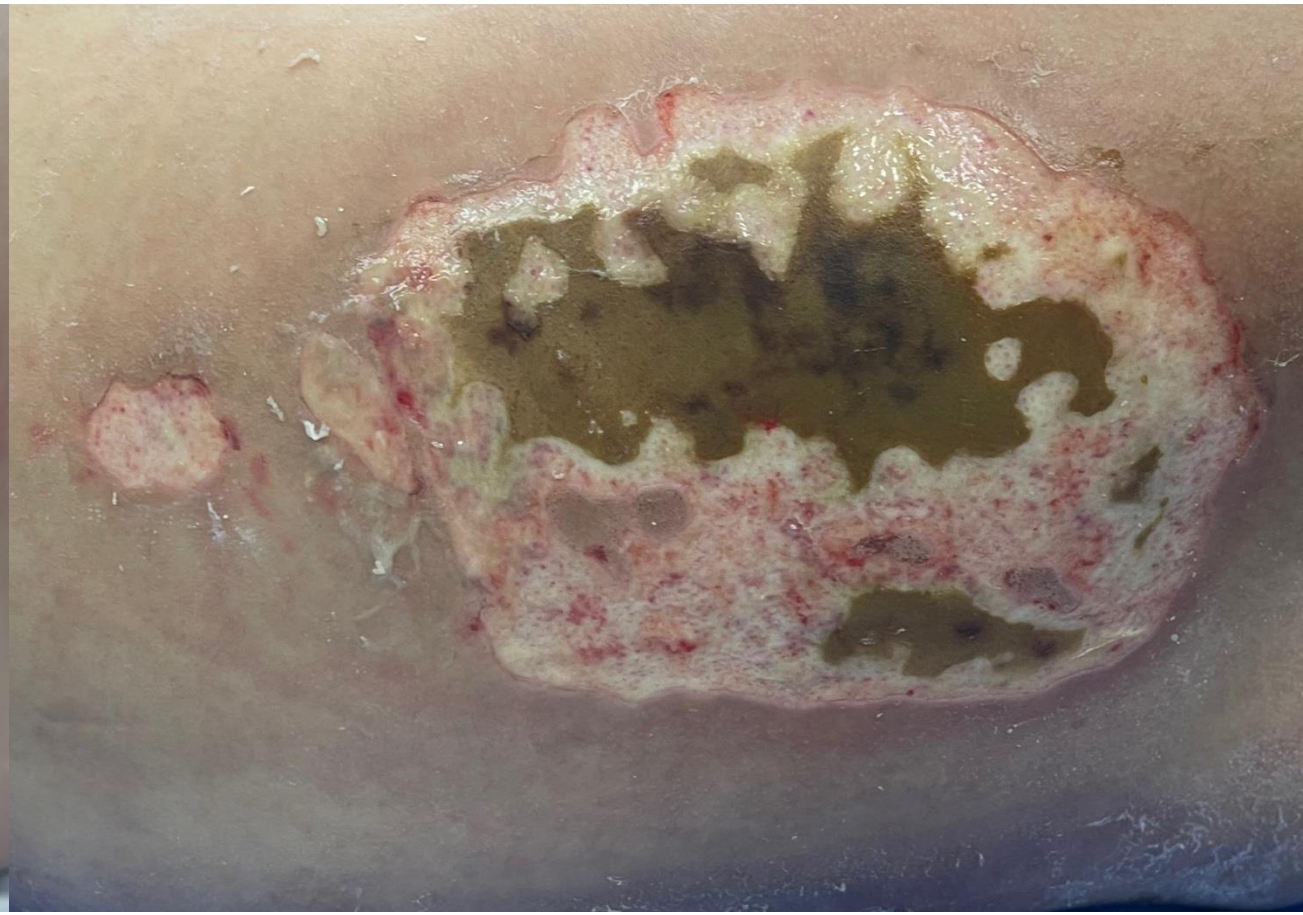
| Burn depth | Damaged tissue level | Wound appearance | Tactile feature | Healing time | Scar |
|---|---|---|---|---|---|
| Superficial second-degree burn wounds | Area 1 | Erythema, blisters, moist wound base, exudation. | Significant pain and whitening of the wound base on pressure. | <2 weeks | Generally no scar. |
| Shallow deep second-degree burn wounds | Area 1-2 | Deep pink, blisters, wet or dry wound base. | Pain or nociception absent, no whitening of the wound base on pressure. | 2–3 weeks | The incidence of scars is about 30%. |
| Profound deep second-degree burn wounds | Area 2 | Red and white alternating, blisters may be present, and the wound base may be wet or dry. | Pain or pain sensation disappears, and the wound base does not turn white on pressure. | Mostly >3 weeks | The incidence of scars ranges from 70% to 80%. |

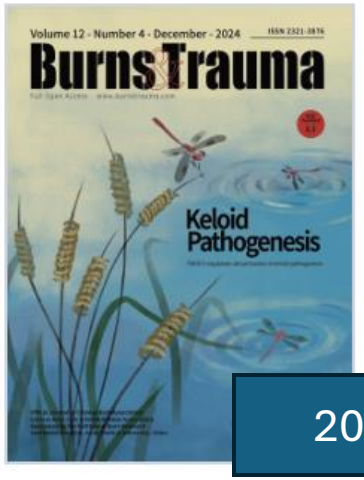
# Spectrum of second degree burn

# Spectrum of second degree burn

# Spectrum of second degree burn

# Spectrum of second degree burn



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| Burn depth | Damaged tissue level | Wound appearance | Tactile feature | Healing time | Scar |
|---|---|---|---|---|---|
| Superficial second-degree burn wounds | Epidermis and upper dermis | Erythema, blisters, moist wound base, exudation. | Significant pain and whitening of the wound base on pressure. | <2 weeks | Generally no scar. |

**Indeterminate second-degree burn wound**

# Minor Burn Classification by ABA

| *Percentage* | *Depth* | *Age (Years)* |
|---|---|---|
| <10% TBSA | Partial Thickness | 10–50 |
| <5% | Partial thickness | <10 and >50 |
| <2% TBSA | Full thickness | Any age (without other injury) |

Lesion must be an isolated injury that does not involve the face, hands, perineum, or feet, does not cross major joints, or involve the entire circumference of a body region

Can be treated outside burn center

# Blister Management

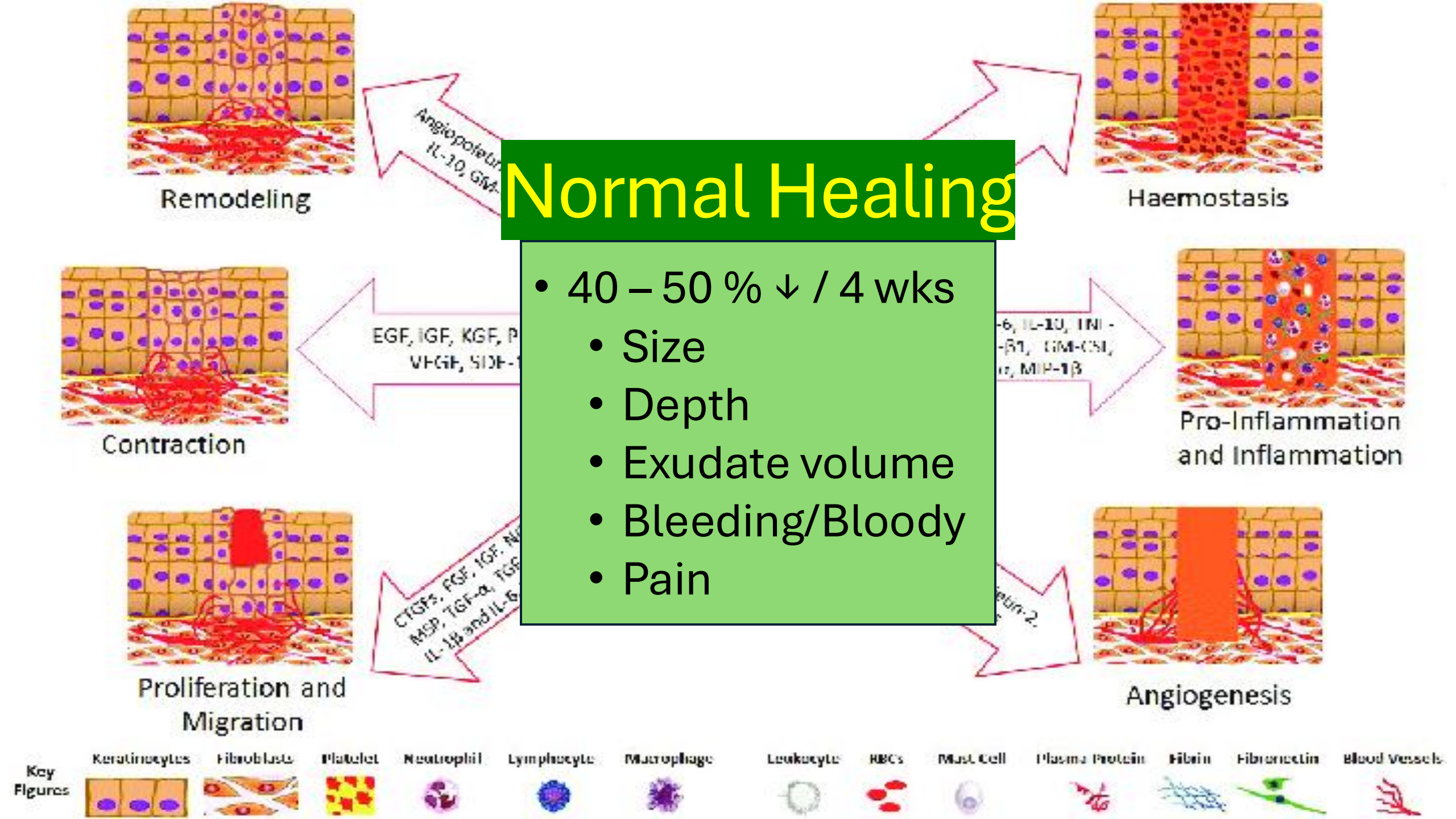
Debrided or Removed

- Already ruptured
- Suspected infection

- Keep intact
  - Size < 2 cm
  - Non-expanding
  - Not impairing of ROM function

# Outline

- Latest Consensus for management of Acute Wound
- Quick review with Hard-to-Heal wound
- Re-introduction **of WOUND HYGIENE**
- My experience of the application of WOUND HYGIENE




# Normal Healing

- 40 – 50 % ↓ / 4 wks
  - Size
  - Depth
  - Exudate volume
  - Bleeding/Bloody
  - Pain

# Hard-to-Heal wound

- 4 weeks
- Standard treatment
- Failure of normal healing
  - Non-progression of size
  - Slough or necrotic tissue always stays
  - Too easy to get bleeding
  - Periwound maceration is still on the go
  - Infection off and on
  - Pain is a best friend to the patient

Atkin L, et al. J Wound Care 2019;28(3 Suppl 3):S1-S49.

# Hard-to-Heal wound

**Delayed presentation**
**Acute wound**

Diabetic foot ulcer

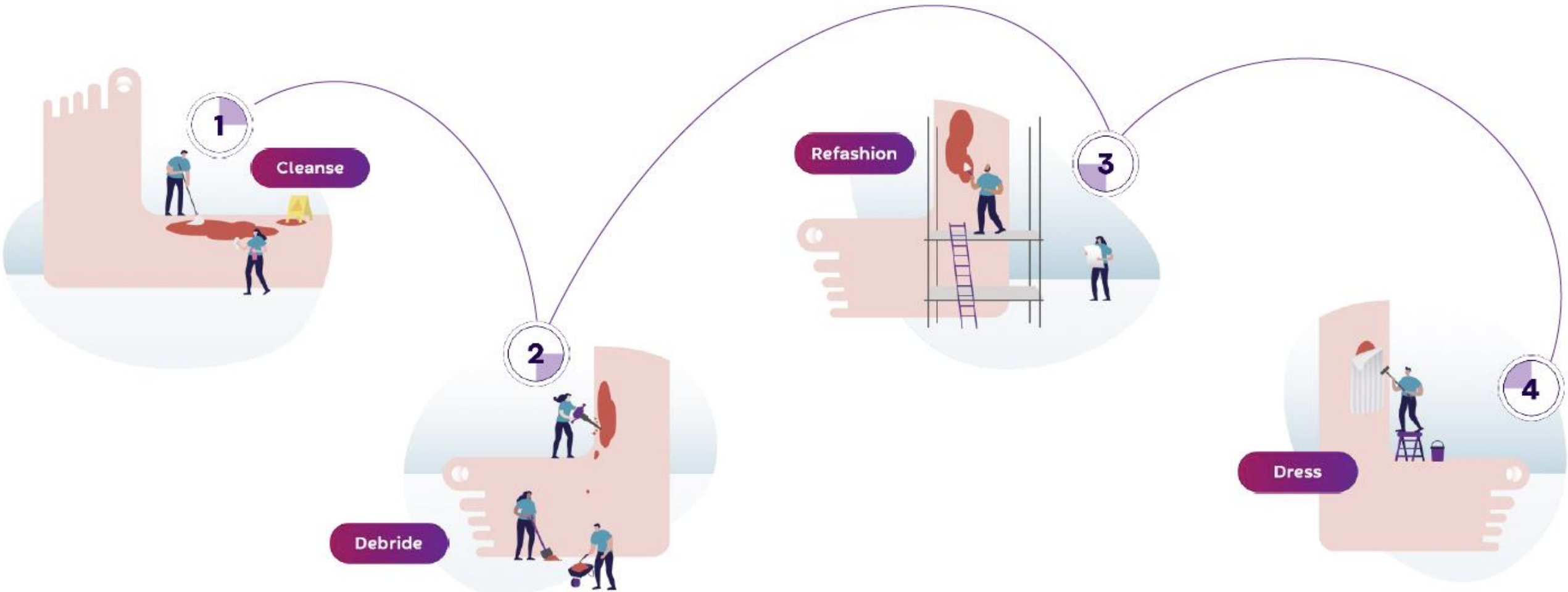
Vascular ulcer

Pressure ulcer

# Outline

- Latest Consensus for management of Acute Wound
- Quick review with Hard-to-Heal wound
- Re-introduction **of** **WOUND HYGIENE**
- My experience of the application of WOUND HYGIENE

# Wound Hygiene



# Wound Hygiene; The Journey

Wound Hygiene

2019

2020 — 1st consensus document

2021

2022 — 2nd consensus document

2023

2024 — 3rd consensus document

Ref: 1

Ref: 2

Ref: 3

Ref: 4

Ref: 5


Ref: 6

Ref: 8

Ref: 7

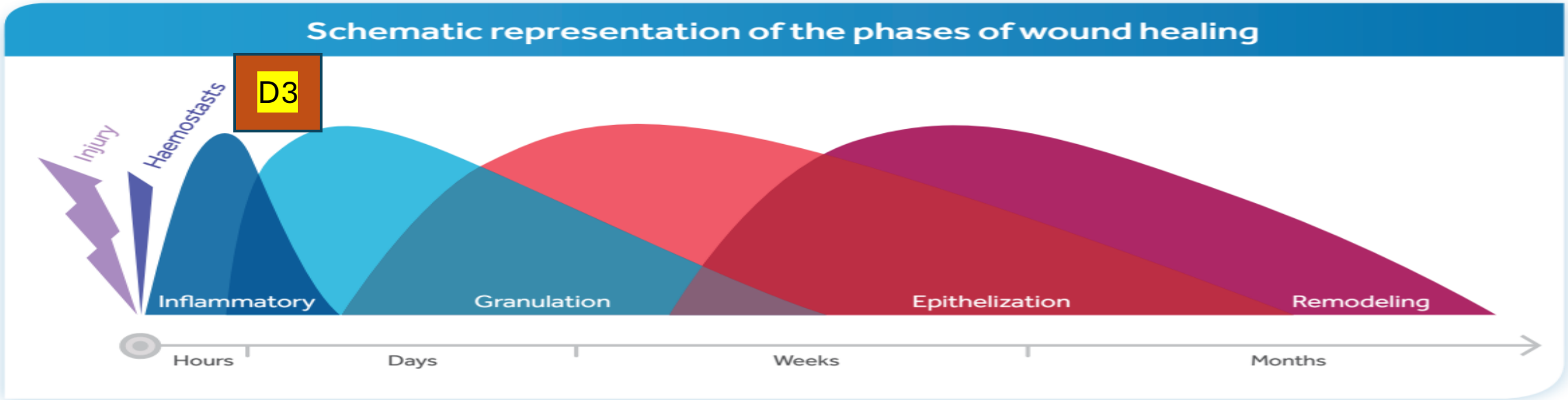
Ref: 9

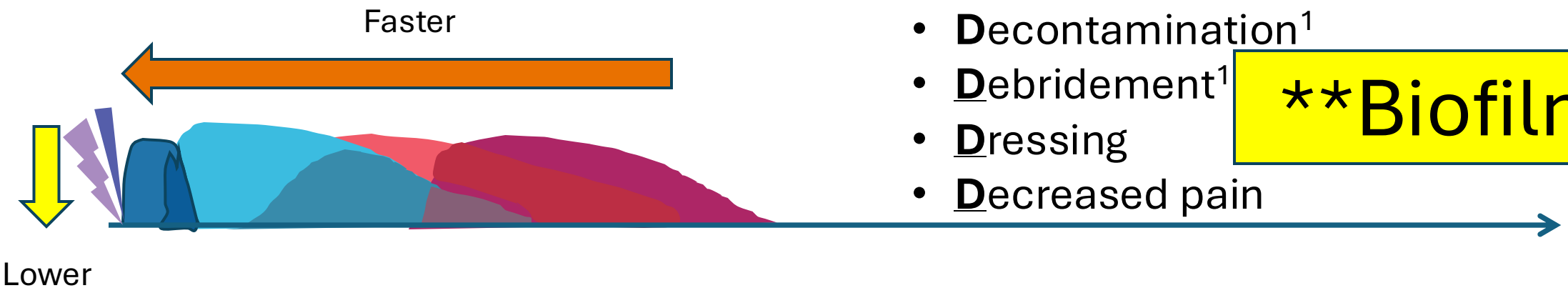
Ref: 10


1: Murphy C, Atkin L, Dissemond J et al. Defying hard-to-heal wounds with an early antibiofilm intervention strategy: "wound hygiene." J Wound Care 2019;28:818–22. https://doi.org/10.12968/jowc.2019.28.12.818
2: Murphy C, Atkin L, Swanson T, Tachi M, Tan YK, Vega de Ceniga M, Weir D, Wolcott R. International consensus document. Defying hard-to-heal wounds with an early antibiofilm intervention strategy; wound hygiene. J Wound Care 2020; 29 (Suppl 3b):S1-28.
3: Murphy C, Atkin L, Hurlow J, Swanson T, Vega de Ceniga M, Wound hygiene survey: awareness, implementation, barriers and outcomes; J Wound Care, Vol 30. No 7 July 2021.
4: Murphy C et al; Implementation of Wound Hygiene in clinical practice: early use of an antibiofilm strategy promotes positive patient outcomes J Wound Care Vol 31 , No 1 , Suppl 1 , Jan 2022
5: Murphy C, Atkin L, Vega de Ceniga M, Weir D, Swanson T. International consensus document. Embedding Wound Hygiene into a proactive wound healing strategy. J Wound Care 2022;31:(No 04):S1–S24
6: A guide to Implementing the Wound Hygiene Protocol of Care in Pressure Ulcers J Wound Care Vol 32, No 3, Suppl 4, March 2023
7: A guide to Implementing the Wound Hygiene Protocol of Care in Diabetic Foot Ulcers. J Wound Care Vol 32, No 6, Suppl 8, June 2023
8: A guide to Implementing the Wound Hygiene Protocol of Care in Leg Ulcers. J Wound Care Vol 33, No 8, Suppl 8b, Aug 2023
9: Murphy C, Banasiewicz T, Duteille F, Ferrando PM, González JA, Koullias G, Long Z, Nasur R, Salazar Trujillo MA, A proactive healing strategy for tackling biofilm-based surgical site complications: Wound Hygiene Surgical. J Wound Care 2024; 33 (Suppl 5d):S1- 29
10:Torkington-Stokes R, Moran K, Sevilla Martinez D, Cesura Granara D, Metcalf DG, Improving outcomes for patients with hard-to-heal wounds following adoption of the Wound Hygiene Protocol: real-world evidence. J Wound Care; Vol 33, No 5, May 2024


convatec
forever caring

# How to optimize healing process ???



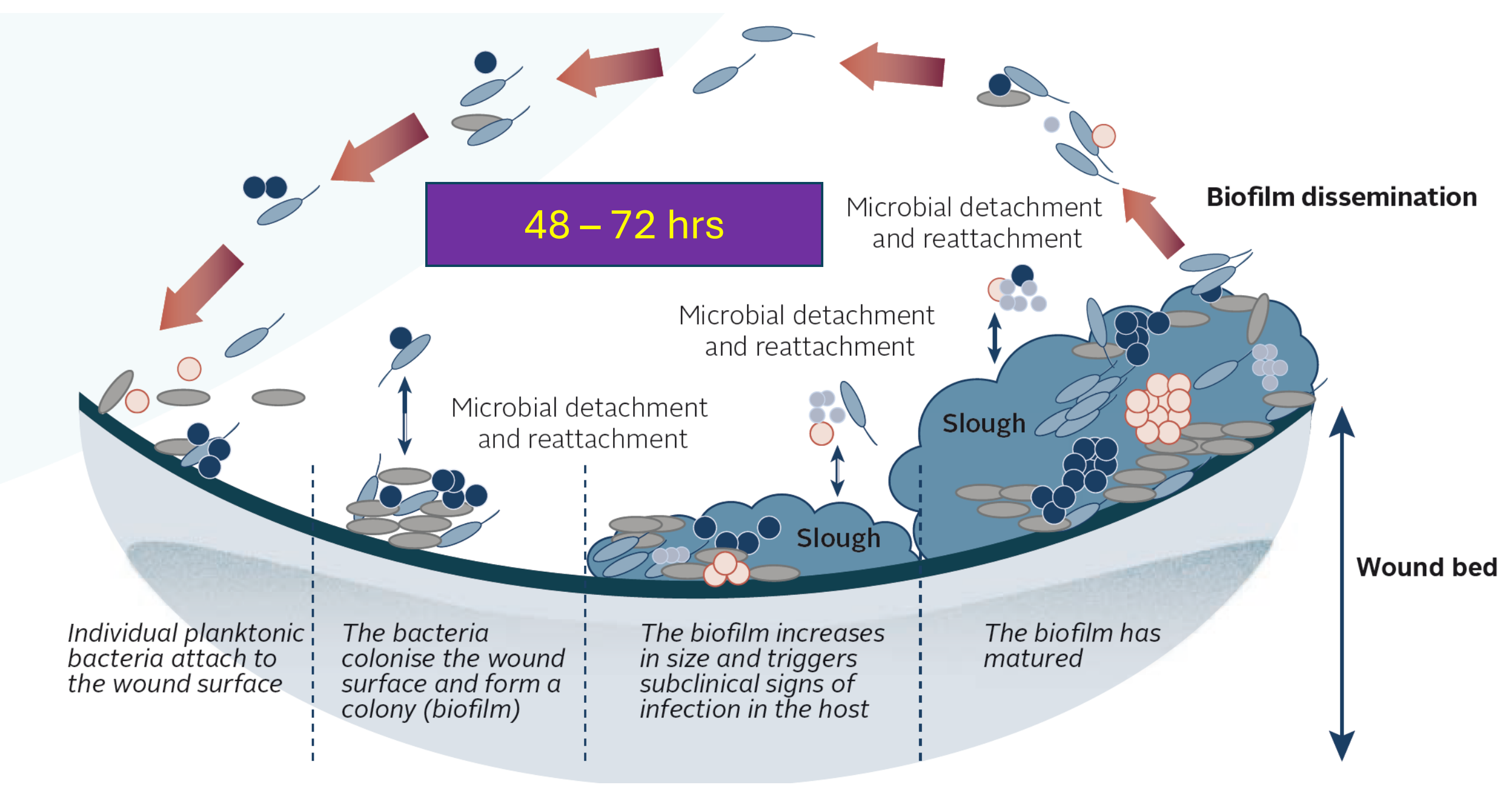




**4D**

- **D**econtamination[1]
- **D**ebridement[1]
- **D**ressing
- **D**ecreased pain

**Biofilm**

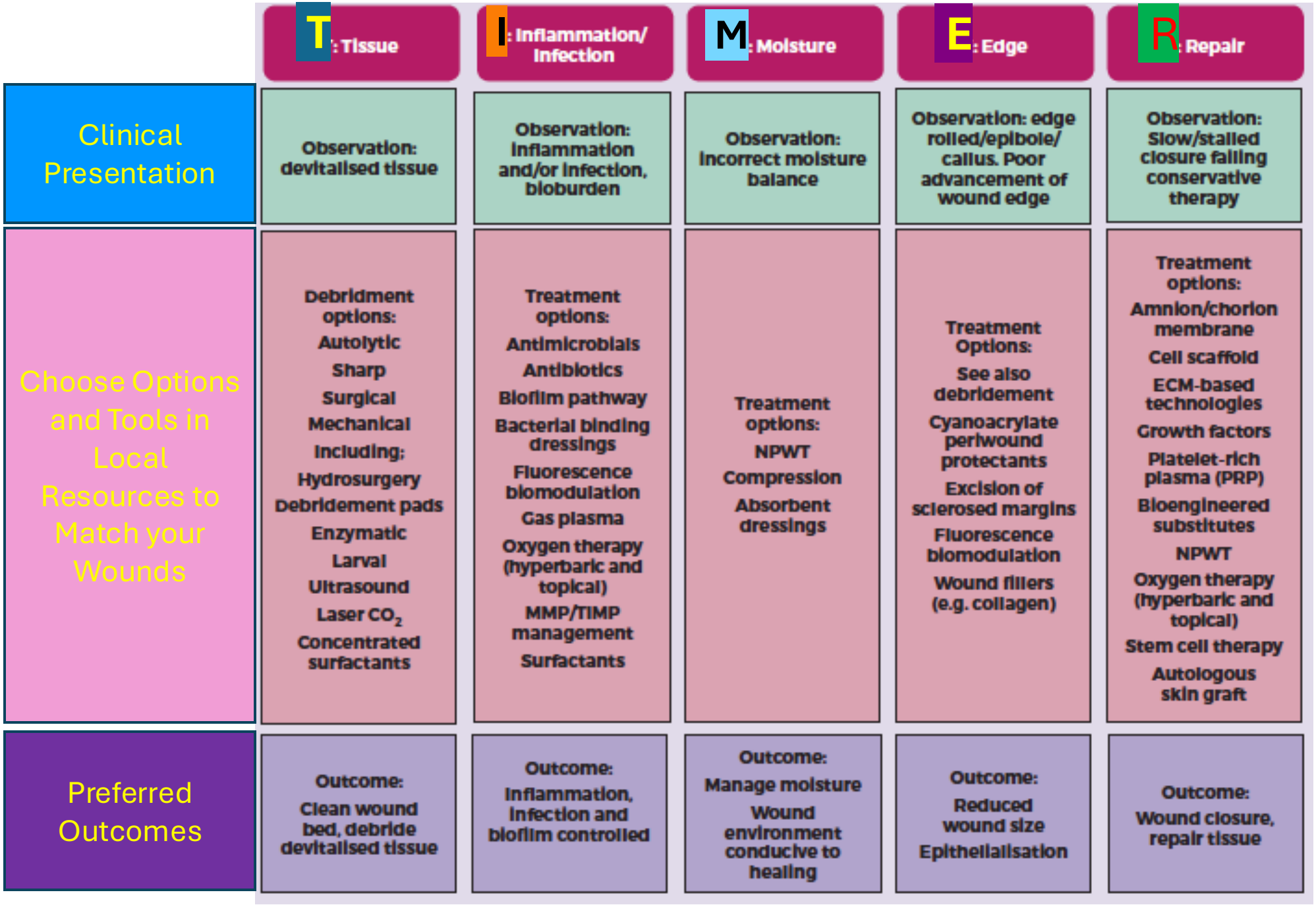
1.Bowler PG, et al. *Clin Microbiol Rev*. 2001;14(2):244-269.




Murphy C, et al. J Wound Care 2020; 29(Suppl 3b):S1–28.

# How to use ???


Assess
Manage
1
Cleanse
2
Debride
3
Refashion
4
Dress
Monitor




Atkin L, et al. J Wound Care 2019;28(3 Suppl 3):S1-S49.

# Hygienic Wound Care Concepts


**Clean**
**= T + I + E**

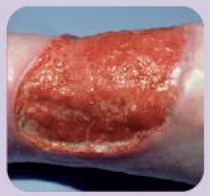
**Debride =**
**T + I**

**Refashion**
**=**
**I + E**

**Dress**
**= I + E + M + R**

James GA, et al. J Wound Care. 2020:1;29(Sup3b):S1-S26.

# Let’s speak in the same language!!!

| Tissue types | | |
|---|---|---|
| **Necrotic tissue** |  | Black or brown; can be adherent (hard, dry or leathery) or soft and wet |
| **Slough** |  | Yellow or white; usually wet, sometimes dry and adherent; thick patches or thin coat |
| **Unhealthy granulation** |  | Typically dark red; often bleeds when touched; can be friable |
| **Healthy granulation** |  | Newly formed tissue; bright red, moist and shiny; cobblestone-like |
| **Epithelial** |  | Pale pick or white; migrates across wound surface from the edges; initially, can be fragile |

**Covert signs of local infection[11]**

- Hypergranulation (excessive vascular tissue)
- Bleeding, friable granulation
- Epithelial bridging/pocketing in granulation tissue
- Wound breakdown and enlargement
- Delayed wound healing
- New or increasing pain
- Increasing malodour

**Overt signs of local infection[11]**

- Erythema (redness)
- Local warmth
- Swelling
- Purulent discharge
- Delayed wound healing
- New or increasing pain
- Increasing malodour

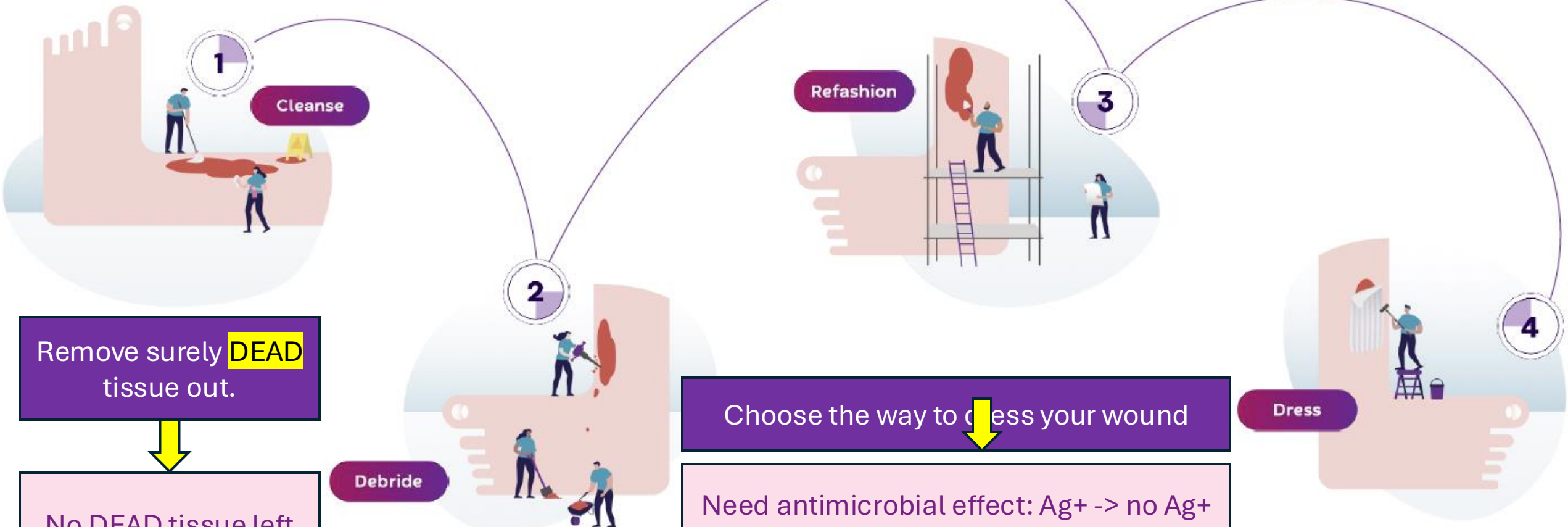
# How to use wound hygiene in the traumatic wound?

Wound irrigation
Decontamination

Clean wound base
No Foreign body left

Repair &
Reapproximate in
optimum time

Immediate VS Delay
Layer by Layer vs big bite




Remove surely DEAD tissue out.

No DEAD tissue left

Choose the way to dress your wound

Need antimicrobial effect: Ag+ -> no Ag+
OD VS non-OD method

# How to use wound hygiene in the burn wound?

Scrub burn
Unroof big bleb

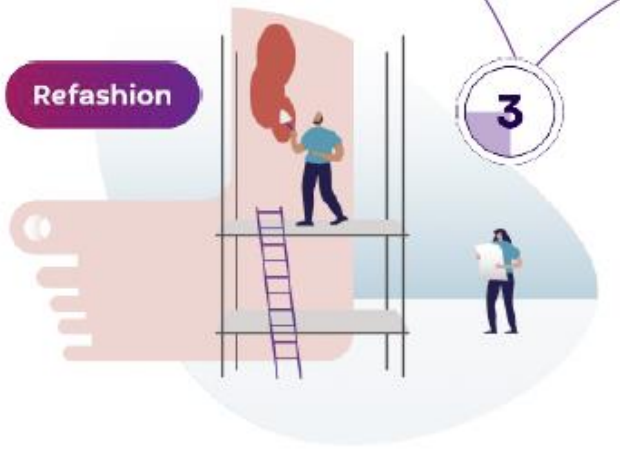
Clean wound base
Complete wound evaluation

Grafting &
Reconstruction
optimum time

Immediate VS Delay
Graft VS Flap


1.Early tangential debridement
2.Subfascial excision
3.Amputation

Punctate bleeding
Good viable base/stump


Choose the way to dress your wound

Need antimicrobial effect: Ag+
OD VS non-OD method

# How to use wound hygiene in the DFU wound?

Whole foot cleansing

Clean foot
Correct Self foot care

Neuropathy foot surveillance
or Vascular assessment

Specific foot ware
Vascular intervention


Callus trimming
Wound base re-vitalize

No callus
Vitalize wound base



Choose the way to dress your wound

Need antimicrobial effect: Ag+ ?
OD VS non-OD method

# Improving outcomes for patients with hard-to-heal wounds following adoption of the Wound Hygiene Protocol: real-world evidence

**Authors**: Rachel Torkington-Stokes, MSc, Medical Affairs Dir
Specialist, Diego Sevilla Martinez, MSc, Staff Nurse, Deborah
R&D Director, Advanced Wound Care | AUTHORS INFO & AF

JWC 2024

| | Wounds (n=693) |
|---|---|
| **Patient age, median (range)** | 74 (18–101) |
| **Sex, n (%)** | |
| Male | 310 (45) |
| Female | 380 (55) |
| Missing data | 3 (0.4) |
| **Country, n (%)** | |
| Italy | 197 (28) |
| Spain | 178 (26) |
| UK | 144 (21) |
| Poland | 116 (17) |
| The Netherlands | 52 (8) |
| Portugal | 6 (1) |

| | Wounds (n=693) |
|---|---|
| **Health professional, n (%)** | |
| General nurse | 349 (50) |
| Advanced HP/nurse practitioner | 260 (38) |
| Physician | 36 (5) |
| Podiatrist | 27 (4) |
| Healthcare assistant | 8 (1) |
| Other | 7 (1) |
| Missing data | 6 (1) |
| **Clinical setting, n (%)** | |
| Patient home | 190 (27) |
| Community clinic | 186 (27) |
| Outpatient clinic | 124 (18) |
| Hospital | 98 (14) |
| Post-acute facility | 62 (9) |
| Care home | 20 (3) |
| Physician office | 13 (2) |
| Other | 7 (1) |

# Improving outcomes for patients with hard-to-heal wounds following adoption of the Wound Hygiene Protocol: real-world evidence

**Authors**: Rachel Torkington-Stokes, MSc, Medical Affairs Director, Advanced Wound Care ✉, Kate Moran, BSc, T Specialist, Diego Sevilla Martinez, MSc, Staff Nurse, Deborah Cesura Granara, Wound Care Specialist Nurse, and R&D Director, Advanced Wound Care | AUTHORS INFO & AFFILIATIONS

JWC 2024

| Wound type, n (%) | Wounds (n=693) |
|---|---|
| **Leg ulcer** | **272 (39)** |
| Venous | 183 (26) |
| Arterial | 11 (2) |
| Mixed | 50 (7) |
| Unknown | 28 (4) |
| **Pressure ulcer/injury** | **120 (17)** |
| Stage 1 | 0 (0) |
| Stage 2 | 28 (4) |
| Stage 3 | 50 (7) |
| Stage 4 | 32 (5) |
| Unstageable | 1 (0.1) |
| Deep tissue injury | 9 (1) |
| Diabetic foot ulcer | 66 (10) |
| **Surgical wound** | **59 (9)** |
| Closed | 11 (2) |
| Open | 15 (2) |
| Dehisced | 33 (5) |
| Traumatic wound | 81 (12) |
| Cavity wound | 16 (2) |
| Malignant wound | 4 (1) |
| Moisture lesion | 4 (1) |
| Weeping oedema | 4 (1) |
| **Skin tear** | **33 (5)** |
| Type 1 | 3 (0.4) |
| Type 2 | 9 (1) |
| Type 3 | 21 (3) |
| Other | 34 (5) |

# Improving outcomes for patients with hard-to-heal wounds following adoption of the Wound Hygiene Protocol: real-world evidence

**Authors**: Rachel Torkington-Stokes, MSc, Medical Affairs Director, Advanced Wound Care ✉, Kate Moran, BSc, T Specialist, Diego Sevilla Martinez, MSc, Staff Nurse, Deborah Cesura Granara, Wound Care Specialist Nurse, and R&D Director, Advanced Wound Care | AUTHORS INFO & AFFILIATIONS

JWC 2024

| Wound duration, n (%) | Wounds (n=693) |
|---|---|
| <7 days | 56 (8) |
| 7–14 days | 47 (7) |
| 2–4 weeks | 92 (13) |
| 4–8 weeks | 95 (14) |
| 2–3 months | 95 (14) |
| 3–6 months | 88 (13) |
| 6–12 months | 74 (11) |
| >12 months | 143 (21) |
| Missing data | 3 (0.4) |

# Improving outcomes for patients with hard-to-heal wounds following adoption of the Wound Hygiene Protocol: real-world evidence

**Authors**: Rachel Torkington-Stokes, MSc, Medical Affairs Director, Advanced Wound Care ✉, Kate Moran, BSc, T Specialist, Diego Sevilla Martinez, MSc, Staff Nurse, Deborah Cesura Granara, Wound Care Specialist Nurse, and R&D Director, Advanced Wound Care | AUTHORS INFO & AFFILIATIONS

JWC 2024

| | Wounds (n=693) | | | |
|---|---|---|---|---|
| **Parameter** | **Baseline** | **Observed value** | **Change from baseline*** | **Percentage reduction from baseline†** |
| **Wound volume (cm³)** | | | | |
| n | 661 | 658 | 646 | 501 |
| Mean±SD | 57.8±184.0 | 17.2±187.5 | -41.3±243.6 | 79.8±31.0 |
| Median | 4.5 | 0.0 | -3.0 | 95.7 |
| Interquartile range | 0.1, 25.0 | 0.0, 1.80 | -20.4, 0.0 | 70.0, 100.0 |
| Range | 0.0, 2100.0 | 0.0, 4500.0 | -1929.0, 4500.0 | -100.0, 100.0 |
| 95% CI‡ | – | – | -60.1, -22.5 | 77.1, 82.6 |
| P-value§ | – | – | <0.001 | <0.001 |

# Improving outcomes for patients with hard-to-heal wounds following adoption of the Wound Hygiene Protocol: real-world evidence

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**Fig 3.** Exudate levels at baseline and

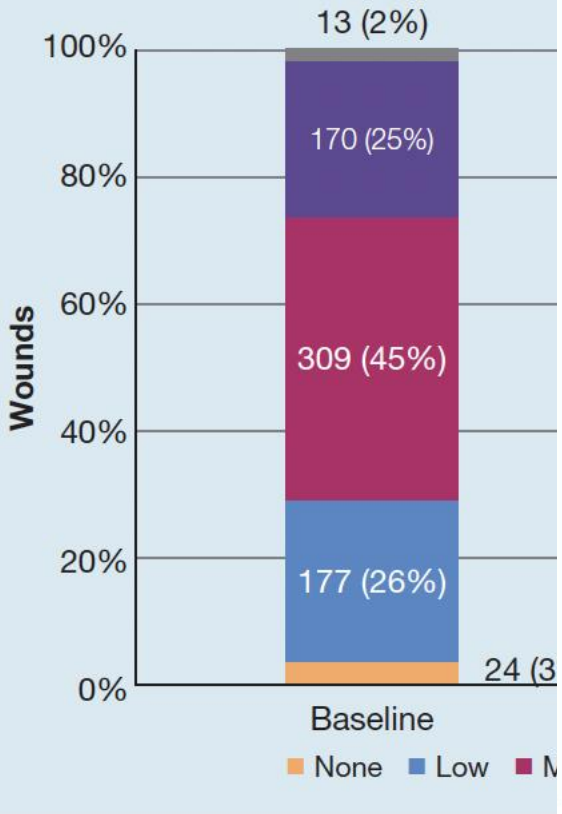
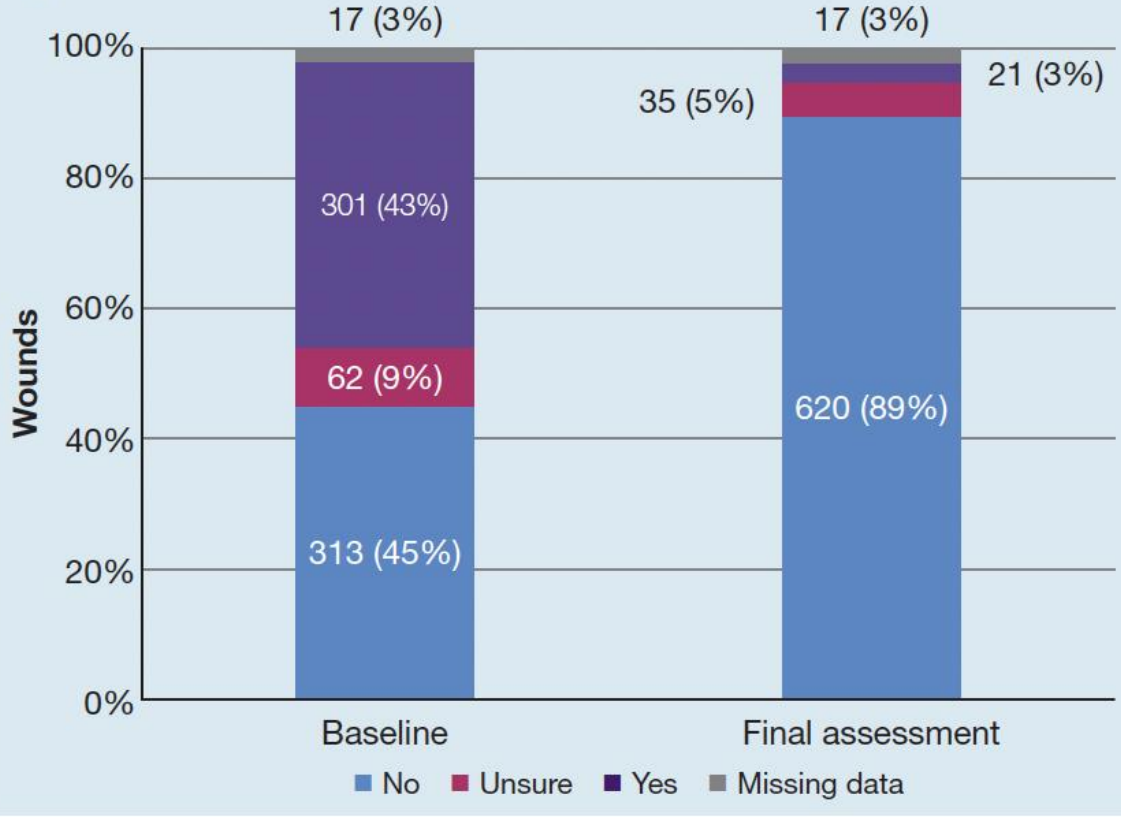
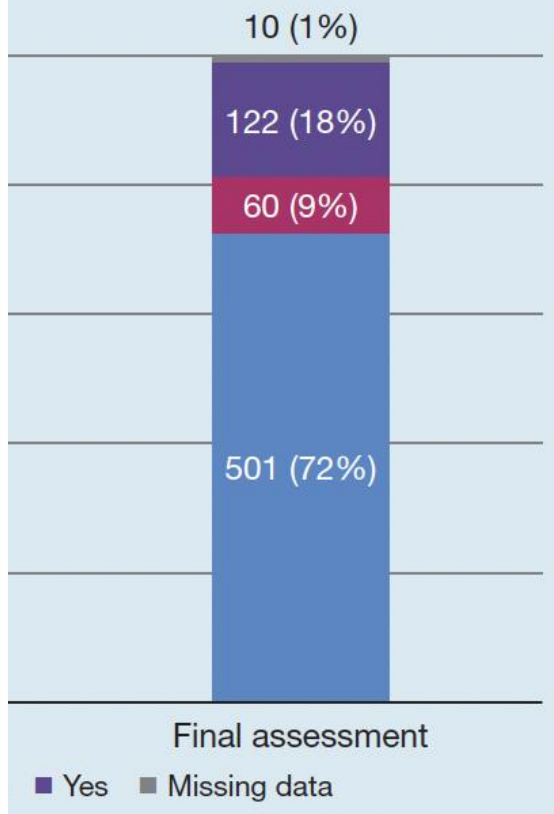



**Fig 5.** Infection status at baseline and final assessment




nd final assessment



# Outline

- Latest Consensus for management of Acute Wound
- Quick review with Hard-to-Heal wound
- Re-introduction **of WOUND HYGIENE**
- My experience of the application of WOUND HYGIENE

Any question,
Any comment,
Speak up!!!