2023 Toronto Geriatrics Virtual Update Course

Workshop #2 : Wound Care

Carol Ott MD FRCPC Geriatrician, Baycrest Hospital, Women's College Hospital

Karen Chien MD MSc CCFP (COE, PC) FCFP Hospitalist, Sinai Health, Hennick Bridgepoint Hospital, Women's College Hospital

Shana Peiser NP-Adult MN MA GNC(C) Attending Nurse Practitioner, Kensington Health

Alana Miller MD. FRCPC Geriatrician, Sinai Health, University Health Network



- No financial disclosures.
- Generic names will be used, brand names may also appear to support identification.
- Wound care is complex medicine, both empiric- and evidence-based.



Wound Care teaching enabler

https://1drv.ms/b/s!AooCISog8BQSkH6J15NAQ9vcfUst?e=KrKu1U

Look in chat!







- 1. To review skin function, wound healing and how this may differ in the older person.
- 2. To review an evidence-based approach to wound care and identify key factors that affect healing potential.
- To gain familiarity with basic wound care products including wound cleansers, primary and secondary dressings and how to write a local wound care order
- 4. To discuss some local wound care learning opportunities



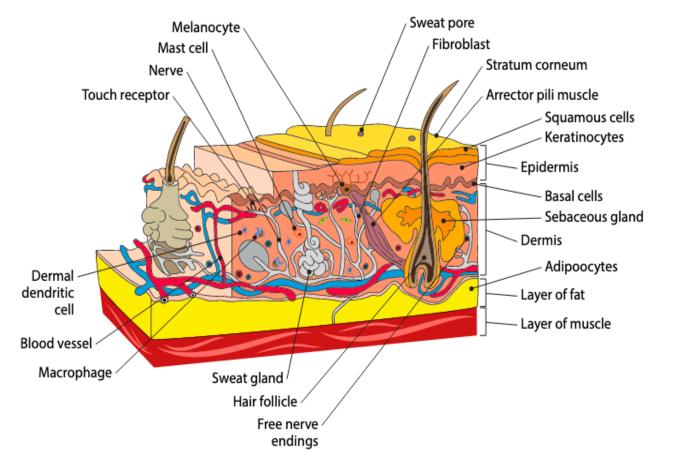


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Skin review



Orstead et al. Foundations of Best Practice for Skin and Wound Management. Skin: Anatomy, Physiology and Wound Healing. Wounds Canada, 2017.

Sinai Healthy Ageing UHN Toronto General Toronto Western and Geriatrics

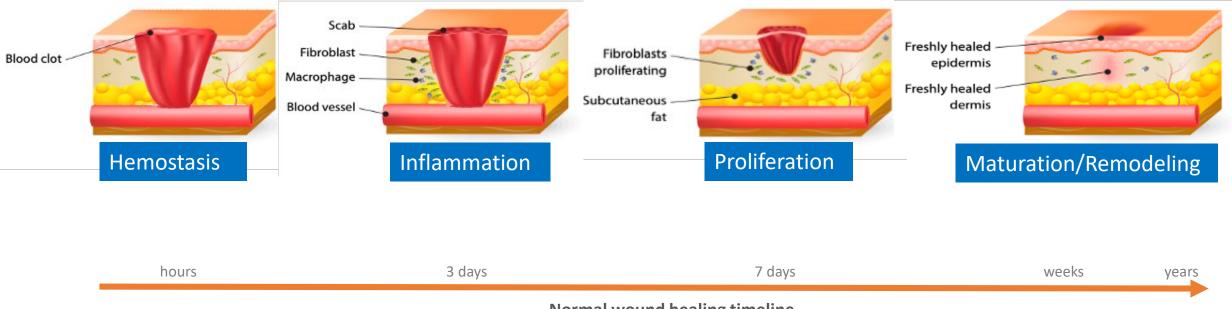
• Epidermis

- protective
- relies on diffusion of O2, nutrients from deeper layers
- regenerates every 4-6 weeks

• Dermis

- collagen, elastin, ECM for strength, pliability
- blood, lymphatics for nutrition. waste removal
- nerve fibres, hair follicles, sweat glands
- Hypodermis (subcutaneous tissue)
 - insulates, absorbs shocks
 - adipose, connective tissue

Four phases of wound healing



Normal wound healing timeline

Orstead et al. Foundations of Best Practice for Skin and Wound Management. Skin: Anatomy, Physiology and Wound Healing. Wounds Canada, 2017.



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Poll (#1): What is unique to the care of wounds in the elderly?

Choose the *best* answer:

- 1. Age itself means that wounds cannot be healed.
- 2. There are more wounds in the older person as they have fragile skin and are more prone to injuries.
- 3. The older person may appear to have more wounds due to expected skin changes associated with aging that result in slowed wound healing.
- 4. With ageing, the skin undergoes changes that both increase the risk of wound development and impair healing.







Poll (#1): What is unique to the care of wounds in the elderly?

Choose the best answer :

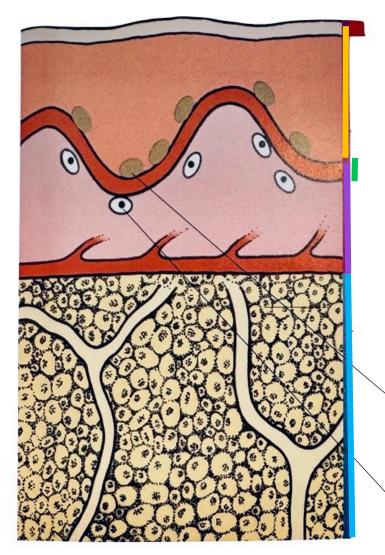
- 1. Age itself means that wounds cannot be healed.
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Younger skin



Burghardt et al. Wound care 2nd ed. Lippincott Williams Wilkins. 2012.

Healthy Ageing and Geriatrics

Health

Stratum corneum 50% reduced cell turnover

Epidermis Progressively thins

Papillary dermis Flattens, reducing contact between epidermal and dermal layers

Dermal thickness declines 20%

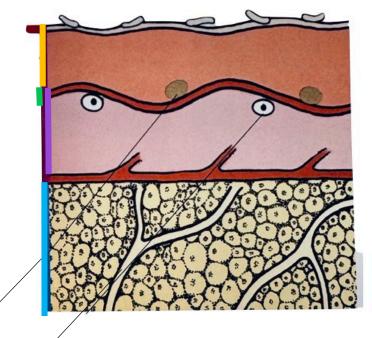
Deep vascular plexus declines, reducing blood flow to the skin

Subcutaneous tissue fewer fat cells

Melanocytes Decrease, causing pigmentation irregularities, increased risk of skin cancer

Mast cells Decline 50%, reducing inflammatory response As skin changes with ageing, there is increased risk of developing wounds and impaired healing

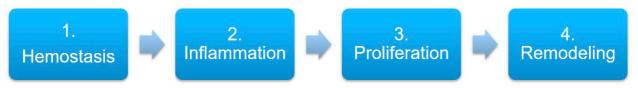
Older skin



Definition of a chronic wound

• Wounds that fail to proceed through normal phases of wound healing in an orderly and timely manner

• Often, stalled in the inflammation phase of healing



- Differing length of time in the literature
 - 3 months

Frykberg RG, Banks J. Challenges in the Treatment of Chronic Wounds. Adv Wound Care (New Rochelle). 2015 Sep 1;4(9):560-582.



Health system impact of chronic wounds

- Prevalence increases with age
- 1-2% will have a chronic wound in their lifetime
- Major public health challenge to individuals/health care/society¹
- 2% to 3% of the healthcare budgets in developed countries²
- Worldwide costs estimated at \$15 billion USD in 2022

3. (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10111378/#B15). 2022 Nov 14



^{1.} Prevalence and incidence of chronic wounds and related complications: a protocol for a systematic review. Syst Rev 5, 152 (2016).

^{2.} Canadian Agency for Drugs and Technologies in Health. Optimal Care of Chronic, Non-Healing, Lower Extremity Wounds: A Review of Clinical Evidence and Guidelines. Ottawa, ON, Canada, 2013

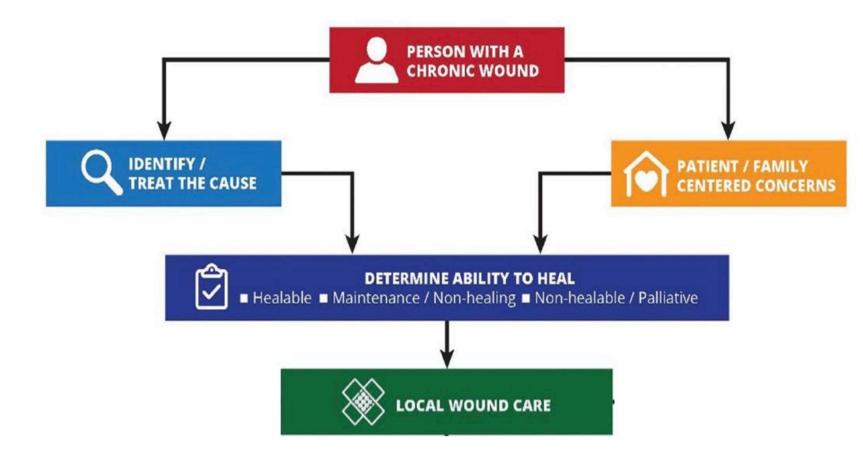
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Wound Bed Preparation

An evidence-based approach to the management of chronic wounds



Wound Bed Preparation 2021. Sibbald et al. Advances in Skin & Wound Care: April 2021 - Volume 34 - Issue 4 - p 183-195



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Case study: Mr Arthur Di Abetica

You are the primary care provider for this 89-year-old gentleman.

He was recently hospitalized for pneumonia with ICU stay and after a lengthy stay is newly bedbound with functional decline.

PMH Mild cognitive impairment MI with CABG 12 years ago Left hip arthroplasty post fall/fracture Hypertension Type 2 Diabetes 2002

Meds ASA Metoprolol Amlodipine Metformin Gabapentin





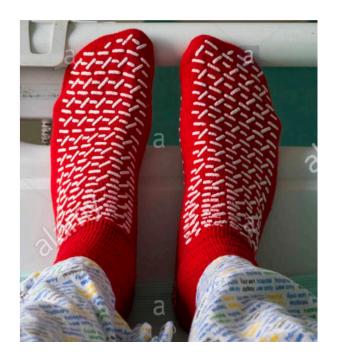




It was noted just before discharge that Mr Di Abetica has a **wound on his right heel**.

As his primary care provider, you are being asked to assess.

What would you like to do??





Poll (#2): When notified that your patient has a wound, what do you do next?

Choose the correct answer:

- a. Look at the wound (be brave)
- b. Identify and assess the potential underlying issues causing the wound.
- c. Talk to your patient and their loved ones, be curious about their experience, understanding, expectations and limits of care.
- d. Assemble your care team.
- e. All of the above.



Poll (#2): When notified that your patient has a wound, what do you do next?

Choose the correct answer:

- a. Look at the wound (be brave)
- b. Identify and assess the potential underlying issues causing the wound.
- c. Talk to your patient and their loved ones, be curious about their experience, understanding, expectations and limits of care.
- d. Assemble your care team.
- e. All of the above.



Case study: Mr Arthur Di Abetica



You perform a physical exam

R heel wound is 7x5cm Dried black eschar with discrete flat borders Minimal surrounding erythema, warmth Non-tender

Difficult to palpate dorsalis pedis, tibialis posterior pulse Dystrophic elongated nails Hairless toes, cool to touch with slowed distal cap refill Leg, malleolar varicosities present Hemosiderin staining Mild pitting edema L>R



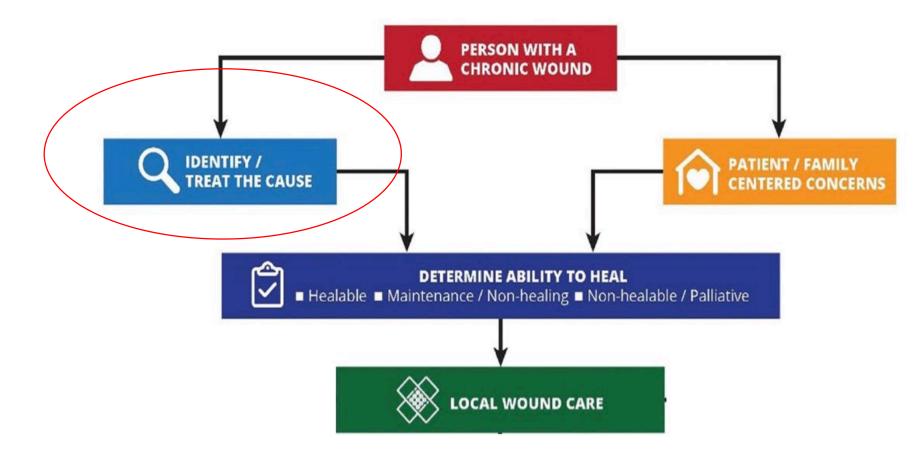


- What causes for his wound are you concerned about?
- Are there any additional bedside tests that you would like to do?



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Need to identify root and contributing causes for this wound





Given Mr Di Abetica's past history of T2D - this is a **Diabetic foot ulcer**.

For next steps assessment: THINK VIP

V Vascular

I Infection

P Pressure/Neuropathy



What further bedside tests could you do?

V: Handheld Doppler

If biphasic waveform detected, ABI>0.9 (adequate bloodflow)¹

I: Infrared Thermometry

If >4F elevation vs contralateral side, likely to have deep infection²

P: Semmes-Weinstein 10 g monofilament

If unable to detect over any of 10 sites, probable loss of protective sensation at that site ³









^{1.} Alavi, Afsaneh, et al. Audible handheld Doppler ultrasound determines reliable and inexpensive exclusion of significant peripheral arterial disease. Vascular 2015;23(6): 622-629.

^{2.} Sibbald, R.G., Mufti, A. and Armstrong, D.G., 2015. Infrared skin thermometry: an underutilized cost-effective tool for routine wound care practice and patient high-risk diabetic foot self-monitoring. Advances in skin & Wound care, 28(1), pp.37-44.

^{3.} Mayfield JA, Sugarman JR. The use of the Semmes-Weinstein monofilament and other threshold tests for preventing foot ulceration and amputation in persons with diabetes. J Fam Pract 2002;49(Suppl 11):S17-29.

Case study: Mr Arthur Di Abetica



Physical exam

R heel wound 7x5cm Dried black eschar with discrete flat borders Minimal surrounding erythema, warmth Non-tender

Difficult to palpate dorsalis pedis, tibialis posterior pulse Dystrophic elongated nails Hairless toes, cool to touch with slowed distal cap refill Leg, malleolar varicosities present Hemosiderin staining Mild pitting edema R>L

Monophasic waveform at R TP 2F Dermatemp difference 6/10 negative monofilament sites





Choose the correct answer:

- A. Diabetic foot ulcer
- B. Peripheral vascular disease mixed
- C. Neuropathic ulcer
- D. Pressure injury
- E. A + B + C + D



Choose the correct answer:

- A. Diabetic foot ulcer
- B. Peripheral vascular disease mixed
- C. Neuropathic ulcer
- D. Pressure injury

$E. \quad A + B + C + D$



In older patients, all 4 etiologies must be considered

- Peripheral vascular disease
 - Increases with age
- Diabetes
 Increases with age
- Venous issues
 Increases with age

Sinai Healthy Ageing and Geriatrics A wound can have multiple contributing factors that will make it difficult to heal



- A. CRP/ESR
- B. HbA1c
- C. Wound Swab for C&S
- D. Vascular studies
- E. X-ray R foot

Choose the correct answer below:

- 1. A,B,C
- 2. A,B,D,E
- 3. All of the above



- A. CRP/ESR
- B. HbA1c
- C. Wound Swab for C&S
- D. Vascular studies
- E. X-ray R foot

Choose the correct answer below:

1. A,B,C

2. A,B,D,E

3. All of the above





What investigations would you do?

ESR, CRP: Inflammatory markers

Trend of values can suggest whether wound likely to heal or stagnate¹

HbA1C: Blood glucose control

>8% associated with poor outcomes, include lower leg amputation²

X-Ray: Imaging

Confirm advanced osteomyelitis (poor sensitivity for early osteo), look for FB, rule out other causes³

Vascular Study: Ankle-Brachial Index

Follow up from handheld bedside doppler In patients with diabetic foot ulcers, up to 50% can have PAD⁴

1. van Asten et al. *International wound journal*, *14*(1), 142-148. 2017.

- 3. Lane et al. *Journal of Diabetes and its Complications*, 34(10), p.107638 2020.
- 4. Prompers et al . Diabetologia 50: 18-25, 2007.



^{2.} Llewellyn et al. *European journal of radiology*, 131, p.109215. 2020.



Physical exam:

R heel wound is 7x5cm Dried black eschar with discrete flat borders Minimal surrounding erythema, warmth Non-tender

Difficult to palpate DP, TP pulse Dystrophic elongated nails Hairless toes, cool to touch with slowed distal cap refill Leg, malleolar varicosities present Hemosiderin staining Mild pitting edema L>R

Monophasic waveform at TP 2F dermatemp difference 6/10 negative monofilament sites



Investigations:

ESR 12, CRP 2 HbA1c = 8.9 Vascular study: R ABI =0.55, no DVT X-ray : No calcaneal osteomyelitis, no FB



Physical exam:

R heel wound is 7x5cm Dried black eschar with discrete flat borders Minimal surrounding erythema, warmth Non-tender

Difficult to palpate dorsalis pedis, tibialis posterior pulse Dystrophic elongated nails Hairless toes, cool to touch with slowed distal cap refill Leg, malleolar varicosities present Hemosiderin staining Mild pitting edema L>R

Monophasic waveform at TP 2F Dermatemp difference 6/10 negative monofilament sites



Investigations:

ESR 12, CRP 2 HbA1c = 8.9 Vascular study: R ABI =0.55, no DVT X-ray : No calcaneal osteomyelitis, no foreign bodies

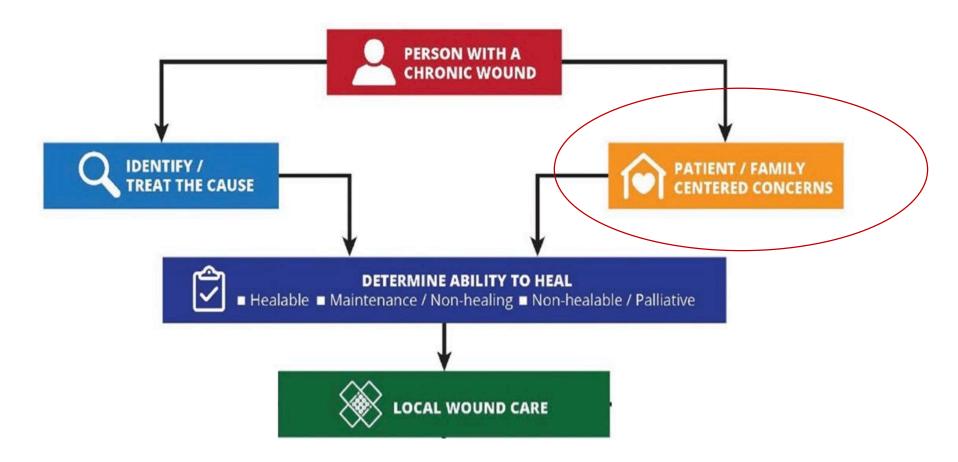
Impression:

89M with poorly controlled T2D with non-infected R heel DFU in context of severe PAD

Is he a candidate for surgical revascularization?

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An evidence-based approach to the management of chronic wounds



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Understanding our patient

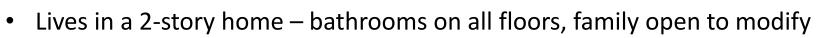


- What are our patient's values and needs?
- How is our patient coping?
- Costs of care:
 - Physical
 - Psychological
 - Social
 - Financial Are there adequate supports?
- Establishing expectations and goals of care



89-year-old male – family is concerned about his decline

- Now bedbound
- Family notes cognition/mood declined
- Physically weak and cannot walk due to pain in foot.



- Prior to hospitalization gardening, golf, taking grandchildren for walks
- Patient goals:

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- gain strength and mobility
- attend his granddaughter's wedding next summer



Goals of Care determined by patient

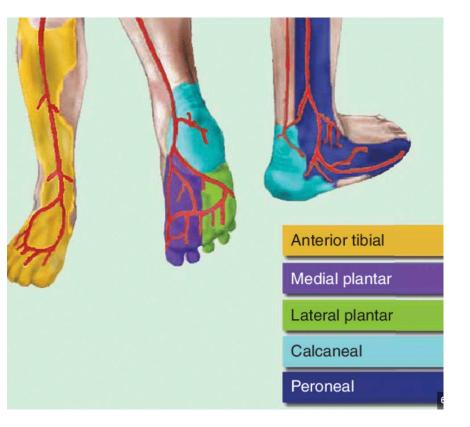
- Discussed with patient and family
 - Expect prolonged wound healing
 - Family supportive
 - Patient hoping to return to his previous function
 - Patient keen to participate in his care







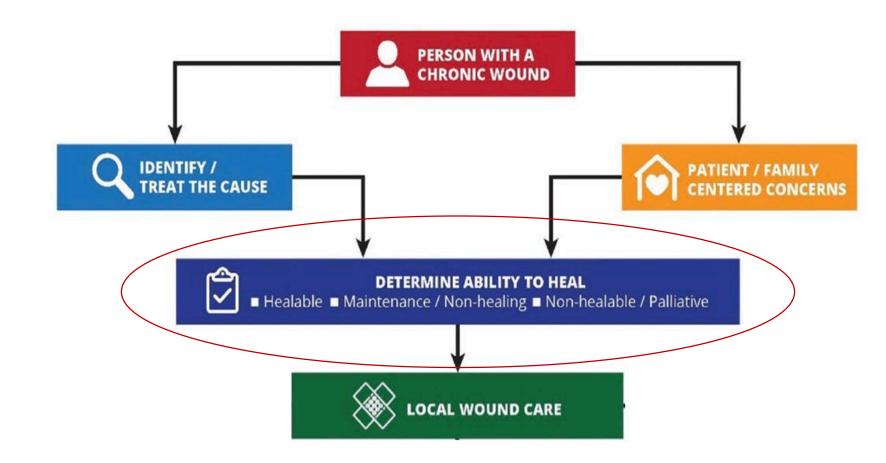
- You refer him to Vascular Surgery
- Angioplasty is performed on R posterior tibial artery
 ABPI increased from 0.55 to 0.92





Wound Bed Preparation

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Choose the correct answer:

- A. Healable
- B. Maintenance/Non-healing
- C. Non-healable/Palliative



Poll (#5): How would you classify Mr Di Abetica's wound?

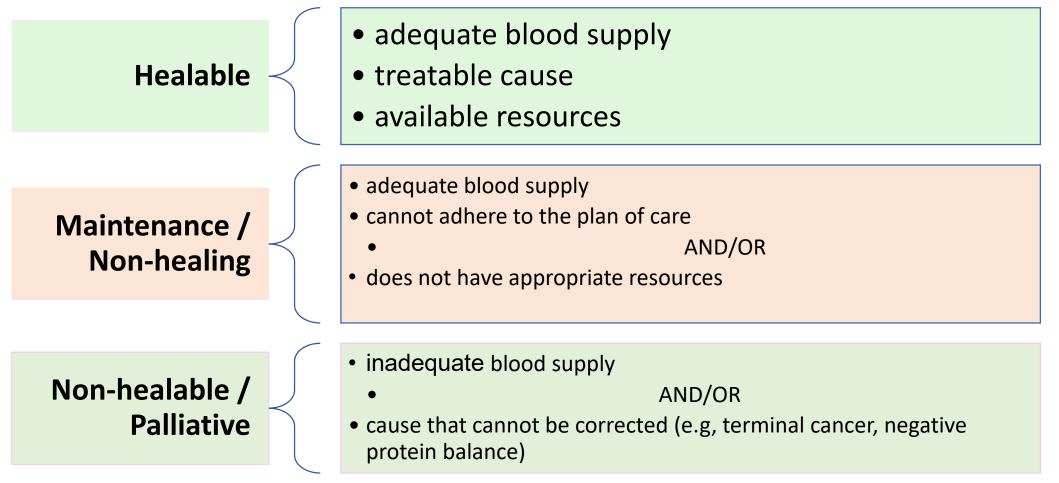
Choose the correct answer:

A. Healable

- B. Maintenance/Non-healing
- C. Non-healable/Palliative







Wound Bed Preparation 2021. Sibbald et al. Advances in Skin & Wound Care: April 2021 - Volume 34 - Issue 4 - p 183-195





Post - Angioplasty Offload Pressure Control sugars, infection risk Compression, mobilize Motivated patient

*** Must consider QUALITY OF LIFE







Choose all the correct answers:

- A. Stay in bed
- B. Nutritional evaluation
- C. All meals in bed
- D. Catheter needed
- E. Mobilization
- F. Offloading
- G. Local wound care orders





Poll (#6): What are the next steps to support Mr Di Abetica's healing?

Choose all the correct answers:

- A. Stay in bed
- B. Nutritional evaluation
- C. All meals in bed
- D. Catheter needed
- E. Mobilization
- F. Offloading

G. Local wound care orders







Further medical optimization to address underlying issues :

- improve glycemic control, consider Endocrinology
- nutritional assessment, support
- consider compression (start Tubigrip[™]) to address edema, stasis post-angiopathy
- OT/PT for offloading, safety set-up assessment and to mobilize
- Chiropody for foot care, offloading footwear



Case study: Mr. Arthur Di Abetica



Some common offloading options











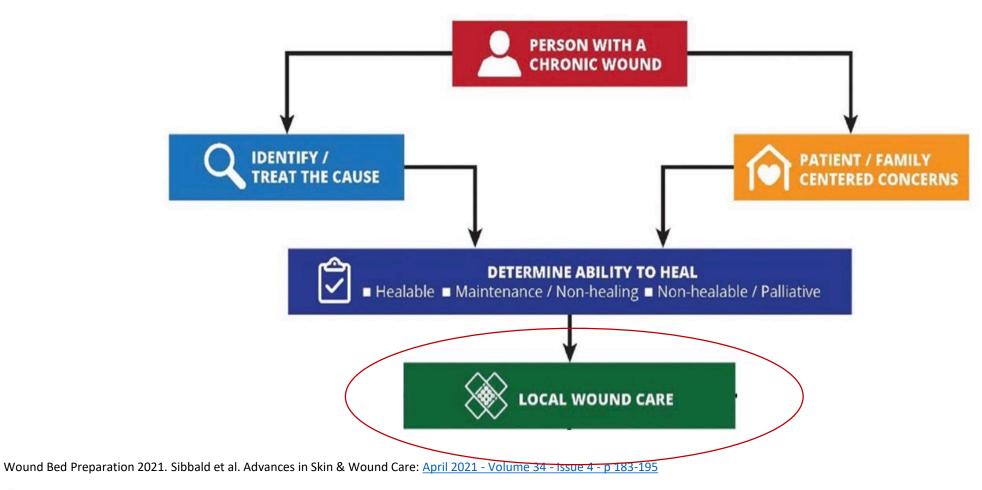
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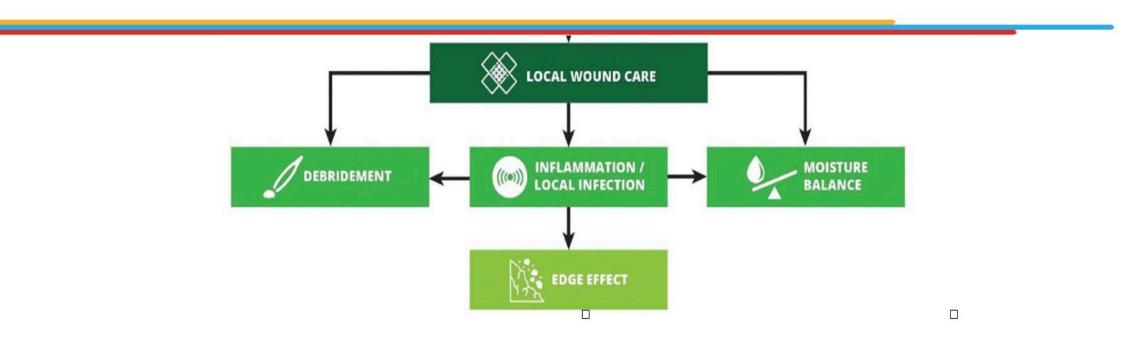
Wound Bed Preparation

An evidence-based approach to the management of chronic wounds





Developing a wound care order



T or D	1. Management of dead tissue (Debri	dement)
1	2. Management of infection/inflamm	ation
Μ	3. Moisture balance	
E	4. Edge Effect	

Wound Bed Preparation 2021. Sibbald et al. Advances in Skin & Wound Care: <u>April 2021 - Volume 34 - Issue 4 - p 183-195</u>



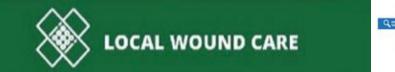


- **1.** Cleanse instructions
- 2. Primary Dressing contact layer +/- antimicrobial
- 3. Secondary Dressing "cover layer" moisture balance
- 4. Securement tape, wrap
- 5. +/- Compression
- 6. Frequency of dressing changes

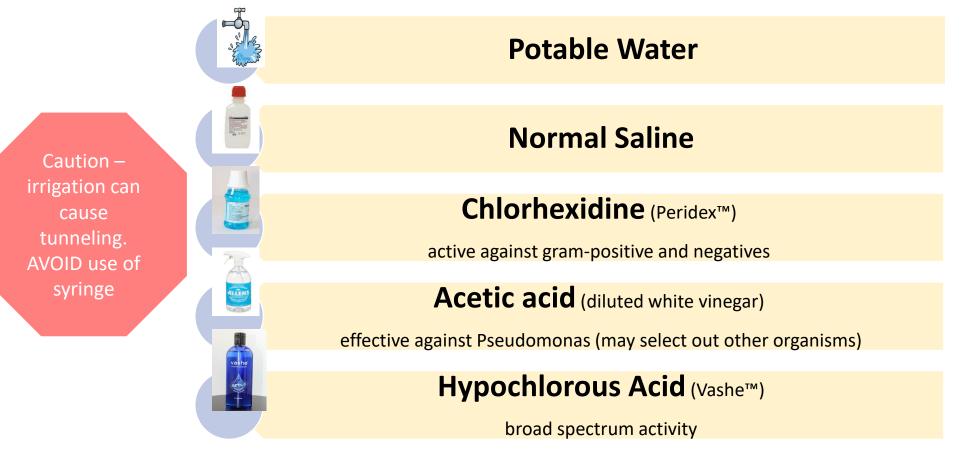
Sample order:

Local wound care for R venous leg ulcer

- 1. Cleanse with NS and pat dry
- Apply non-adherent chlorhexidine mesh (eg Bactigras™)
- 3. Cover with silicone foam
- Apply double layer size F Tubigrip[™] from base of toes to just below knees for compression
- 5. Change qMon and qThurs, and prn







No difference in rates of infection or healing between tap water and normal saline in the cleansing of acute and chronic wounds¹.



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• Sharp / Surgical



• Autolytic (eg hydrogel)







Primary Dressing (Contact Layer)

 No infection only need a nonadhering contact layer

 Local infection, inflammation management



Healthy Ageing and Geriatrics Toronto Western Princess Margaret Toronto Rehab

Sina

ealtr







Secondary Dressings (moisture balance)



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Dressings – NO RCT EVIDENCE ONE IS BETTER THAN ANOTHER

Vermeulen H, van Hattem JM, Storm-Versloot MN, Ubbink DT, Westerbos SJ. Topical silver for treating infected wounds. Cochrane Database of Systematic Reviews 2007, Issue 1. Art. No.: CD005486. DOI:

Shi J, Gao Y, Tian J, Li J, Xu J, Mei F, Li Z. Negative pressure wound therapy for treating pressure ulcers. Cochrane Database of Systematic Reviews 2023, Issue 5. Art. No.: CD011334. DOI: 10.1002/14651858.CD011334.pub3. Accessed 04 November 2023.

There is some evidence that the treatment may reduce time to healing as part of a treatment that includes a punch skin graft transplant. Dumville JC, Land L, Evans D, Peinemann F. Negative pressure wound therapy for treating leg ulcers. Cochrane Database Syst Rev. 2015 Jul 14;2015(7):CD011354.

Moore ZEH, Webster J. Dressings and topical agents for preventing pressure ulcers. Cochrane Database of Systematic Reviews 2018, Issue 12. Art. No.: CD009362. DOI: 10.1002/14651858.CD009362.pub3. Accessed 04 November 2023.

Walker RM, Gillespie BM, Thalib L, Higgins NS, Whitty JA. Foam dressings for treating pressure ulcers. Cochrane Database of Systematic Reviews 2017, Issue 10. Art. No.: CD011332. DOI: 10.1002/14651858.CD011332.pub2. Accessed 04 November 2023.

Westby MJ, Dumville JC, Soares MO, Stubbs N, Norman G. Dressings and topical agents for treating pressure ulcers. Cochrane Database of Systematic Reviews 2017, Issue 6. Art. No.: CD011947. DOI: 10.1002/14651858.CD011947.pub2. Accessed 04 November 2023.

Broderick C, Pagnamenta F, Forster R. Dressings and topical agents for arterial leg ulcers. Cochrane Database of Systematic Reviews 2020, Issue 1. Art. No.: CD001836. DOI: 10.1002/14651858.CD001836.pub4. Accessed 04 November 2023.

Dumville JC, O'Meara S, Deshpande S, Speak K. Hydrogel dressings for healing diabetic foot ulcers. Cochrane Database of Systematic Reviews 2013, Issue 7. Art. No.: CD009101



How We Decreased the Costs of Wound Care Supplies at a Hospital and Long-term-care Home

By Carol L. B. Ott, MD FRCPC, Lilibeth Jones-Lim, RN(EC) MN GNC (C), Aysha Bandali, RN(EC) MN GNC (C), and Sue Calabrese, RN(EC) MN

Wound Care Canada Volume 16, Number 2 · Winter 2018

Case study: Mr. Arthur Di Abetica

Sinai

Health

Healthy Ageing and Geriatrics



Wound Care R heel	Pain	Pressure Management	IP Care Team
qMWF 1. Cleanse with NS 2. Apply non-adherent PVP-I mesh (eg Inadine) 3. Cover with superabsorbent (eg. Mesorb™) 4. Skin protectant to periwound 5. Secure with paper tape	Add Acetaminophen 1 gram PO TID Reassess often and consider adjuvants	Appropriate footwear Offloading in bed	PT Mobilization OT Ax Equipment and safety set-up Nutrition and diet Social Work Chiropody

Toronto General Toronto Western Princess Margaret Toronto Rehab Thanks to the fabulous multi-disciplinary care, Mr. Di Abetica's foot went on to heal and he and his wife live happily ever after!









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Wound Care Education



Wound Care Champion Program: An Innovation in Wound Education



#WoundCareChampion #ItsTimeWCCP







Please help us improve!

 <u>https://forms.office.com/Pages/ResponsePage.aspx?id=DQSIkWdsW0yxEjajBLZtr</u> <u>QAAAAAAAAAAAAFJEFDUcpRUMjVSTFAxMFdEMDBD0E9ENVBZM1haS1FTNC4u</u>

> Wound Care Workshop Needs Assessment - Final





