Getting that Diabetic Lower Extremity Ulcer to Heal
Cases, Outcomes and Tips from my practice to yours.

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Agenda

- My practice
- Why MEDIHONEY®? What can it do?
- Cases: Diabetic lower extremity ulcers
- Tips, Pointers and Impact to my practice
- Q&A
My Practice

- Based in rural Eastern North Carolina, 1 hour east of Raleigh.
- Wayne County, has a population of 122,000 (as of 2010 census)
- 14% of the population of Wayne County is diabetic
- 60% of patients admitted to Wayne Memorial Hospital have diabetes as a diagnosis, but 80% of the patients in the wound care center are diabetic
- Poor diet, obesity, poverty, and limited education exacerbate the problem
My Practice

• 2 physician providers, 5 full time RNs, 4 part-time RNs, 2 physical therapists
• 120+ patients / week - 80% Diabetic
• In-Patient Consultation- inpatient team consists of a CWOCN nurse and 1 RN
• Care Protocols – Advanced Therapy
• Prevention, Healing, Education, Support
My Practice

**Advanced Therapies**

- **Bioengineered skin products** that can accelerate healing when placed on a wound.
- **Advanced wound care dressings** that work at a microscopic level, regulating interaction between the wound and the dressing to promote healing.
- **Negative pressure therapy** that uses a vacuum to close difficult wounds.
- **Offloading technologies** that reduce pressure on diabetic feet.
- **Hyperbaric therapy** that employs an oxygen rich, pressurized environment to promote healing from both inside and out.
MEDIHONEY®
Promoting Autolytic Debridement through to Healing

• Derived from the pollen and nectar of a specific Leptospermum species of plant in New Zealand

• Unique among honey – maintains its effectiveness even in the presence of wound fluid

• Shown in randomized controlled trial where the mean healing time was significantly faster for wounds treated with MEDIHONEY® impregnated dressings when compared to conventional dressings¹

• Two key mechanisms of action create an optimal environment for wound healing – High Osmolarity and Low pH

High Osmolarity

MEDIHONEY®’s high osmotic potential draws additional fluid from deeper tissue to the wound surface.

Works with the body’s natural processes to promote autolytic debridement to cleanse debris and necrotic tissue from the wound.
Low pH

Wound healing favors an acidic environment

MEDIHONEY® pH 3.5-4.5

Neutral

Chronic wounds have an elevated alkaline pH (between 7.15-8.9)

The low pH of MEDIHONEY® (3.5-4.5) helps to lower the pH within the wound environment\(^2,3\), which has been shown to have wound healing benefits.\(^4\)

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Case 1 – Diabetic Male with Plantar Foot Ulceration

Day 1

- 82 year old type II Diabetic male with a 2 month history of a gradually appearing ulceration of the right plantar hallux
  - Treated by PMD with oral antibiotics with no improvement
- Sharp excisional debridement on DOS, Primary Dressing: MEDIHONEY® gel, Secondary: Foam
- Offloading: Forefoot offloading shoe
- Initial work-up: X-ray with ESR and CRP, HBA1c, ABI (normal)
Case 1 – Diabetic Male with Plantar Foot Ulceration

Day 7

- X-ray with no osseous abnormalities in conjunction with normal ESR and CRP. No further imaging required
- Planned to apply TCC-EZ® but no one to drive him home, cast held. Forefoot offloading shoe continued

Ulcer measurements: 0.8 x 0.6 x 0.3 cm
Case 1 – Diabetic Male with Plantar Foot Ulceration

Day 12

- Significant callus accumulation despite an appropriate offloading device
- TCC-EZ\textsuperscript{®} initiated, MEDIHONEY\textsuperscript{®} Alginate primary dressing

Ulcer measurements: 0.8 x 0.6 x 0.2 cm
Case 1 – Diabetic Male with Plantar Foot Ulceration

Day 22

- No significant change in ulcer size
- Less callus accumulation
- Off loading contribution

Ulcer measurements: 0.9 x 0.6 x 0.1 cm
Case 1 – Diabetic Male with Plantar Foot Ulceration

Day 28

- 2nd week in TCC-EZ®
- 78% reduction in wound volume by week 2

Ulcer measurements: 0.3 x 0.3 x 0cm
Case 1 – Diabetic Male with Plantar Foot Ulceration

Day 35

- Week 3 in TCC-EZ®
- Declared healed at this point but patient kept in a TCC-EZ® for one more week for a more durable closure
Case 1 – Diabetic Male with Plantar Foot Ulceration

Day 49

• Week 4 wound healed.
• Transitioned to forefoot offloading shoe for 3 more weeks, during this time diabetic inserts and shoes ordered and delivered.
Progression of healing contributed to combination of therapies:

- MEDIHONEY® gel, then alginate for more absorption
- SOC sharp debridement
- Offloading in TCC-EZ®
Case 1 – Diabetic Male with Plantar Foot Ulceration

- Blue X - TCC-EZ® application
- Red triangles - Debridement performed

Ulcer volume and area changes during treatment
Case 2 – Traumatic Leg Wound

Day 1

- Traumatic leg wound complicated by venous insufficiency and diabetes mellitus. Occurred 3 weeks prior to our consultation. Managed with antibiotics and wet-to-dry dressings at home prior to our consultation.
- Low grade infection present
- Pre-debridement photo

Ulcer measurements: 9.3 x 0.8 x 0.4 cm
Case 2 – Traumatic Leg Wound

Day 1

- Post-debridement, sharp excisional debridement
- Culture obtained and empiric antibiotics started
- Edema management with elastic stocking
- MEDIHONEY® alginate primary dressing to help with filling the dead space and for exudate management.
Case 2 – Traumatic Leg Wound

Day 8

• Generally looking better
• Continues oral antibiotics and MEDIHONEY® Alginate
• Multilayer compression therapy added (modified 20-30 mmHg)

Ulcer measurements: 7.0 x 0.7 x 0.3 cm
Case 2 – Traumatic Leg Wound

Day 15

- Significant improvement 2 weeks through therapy. Oral antibiotics completed.
- Compression continues

Ulcer measurements:
5.7 x 0.5 x 0.2 cm
Case 2 – Traumatic Leg Wound

Day 22

- Significant, continued improvement noted
- Continue with MEDIHONEY® gel and multilayer compression

Ulcer measurements: 5.5 x 0.3 x 0.1 cm
Case 2 – Traumatic Leg Wound

Day 29
Ulcer measurements:
1 x 0.2 x 0.2 cm

Day 37
Ulcer measurements:
0.2 x 0.1 x 0.1 cm

Day 44
Ulcer measurements:
0.5 x 0.2 x 0.2 cm in aggregate dimension

- Continued compression therapy and MEDIHONEY® gel
Case 2 – Traumatic Leg Wound

Day 51

Healed in 8 weeks
Case 2 – Traumatic Leg Wound
Case 2 – Traumatic Leg Wound

Ulc er volume and area changes during treatment

Red triangles: Debridement performed
Blue X: Compression therapy applied
Case 3 – Complicated Diabetic Foot Wound

Day 1

- Complicated diabetic foot infection (Wagner grade 4) s/p 1st ray resection. Patient does not tolerate the wound VAC due to his cognitive problems.
- Significant exposed bone and cautery artefact
- Measurements: 2.5 x 8 x 1.5 cm
Case 3 – Complicated Diabetic Foot Wound

Day 40

- Not tolerating wound VAC. Patient was dragging the device around the halls of his ALF and immersed his foot in the toilet.
- Switched to MEDIHONEY® gel and foam
Case 3 – Complicated Diabetic Foot Wound

Day 40

Day 47

- 1 week later
- Healthy granulation tissue
Case 3 – Complicated Diabetic Foot Wound

Day 54

- 2 weeks later, slowly improved
- Bone, although exposed focally, is granulating over
Case 3 – Complicated Diabetic Foot Wound

Day 71

- 5 and a half weeks later post VAC. Improving with MEDIHONEY® Gel
Case 3 – Complicated Diabetic Foot Wound

Day 86

Healed in 12 weeks; 8 weeks post VAC with MEDIHONEY® alone
Case 3 – Complicated Diabetic Foot Wound

Healed in 12 weeks; 4 weeks inconsistent VAC use, last 8 weeks on MEDIHONEY® alone
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 1

- Type 1 diabetic female with 3 ulcerations including a left lateral foot, right heel and right hallux amputation site ulceration.
- Poor diabetes control, advanced disease including retinopathy, neuropathy and early CKD.
- Initial work-up including imaging to establish/ rule-out osseous infection.

Ulcer measurements: 7.4 x 4.3 x 1.0 cm
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 8

- Offloading with DH walker boot until imaging completed.
- Topical care with MEDIHONEY® Alginate

Ulcer measurements: 7.5 x 4.2 x 0.7 cm
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 22

- DH walker and MEDIHONEY®

Ulcer measurements: 7.3 x 4.0 x 0.2 cm
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 32

- TCC-EZ® initiated with MEDIHONEY® Alginate and XTRASORB® classic as a secondary dressing.

Ulcer measurements:
7.0 x 4 x 0.2 cm
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 40

- Continued improvement
- Debridement performed and MEDIHONEY® Alginate and TCC-EZ® again applied.

Ulcer measurements: 6.2 x 3.4 x 0.2 cm
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 52

- Overall granulation predominates the wound bed
- Some callus accumulation occurred but minimized when compared to the non-offloaded state

Ulc 600x x 3 0.2 cm
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 61

- Continued improvement
- Debridement performed and MEDIHONEY® Alginate and TCC-EZ® again applied.
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 65

- Debridement performed and MEDIHONEY® Alginate and TCC-EZ® again

Ulcer measurements: 4 x 1.2 x 0.1 cm
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 79

- Completely granular
- Minimal callus
- No maceration noted

Ulcer measurements: 2.5 x 0.6 x 0.1 cm
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 86

- Continued improvement
- Trivial callus

Ulcer measurements: 1.0 x 0.4 x 0.1 cm
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Day 93

- Healed within 3 months of presentation with MEDIHONEY® Alginate, and within 8 weeks of combination therapy with TCC-EZ®
- No HBOT or other advanced modalities employed.
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot

Ulc er volume and area changes during treatment

Red triangle: Debridement
Blue X: TCC-EZ® application
Case 4 – Multiple Ulcers in Neuropathic, Diabetic Foot
• Diabetic male with mild venous disease who sustained a lower leg trauma and developed a hematoma which became secondarily infected.
• He was taken to the OR twice for debridement. He had a primary closure which dehisced.
• Patient presented to our clinic for management 6 days after hospital discharge.
• At the initial visit debridement of the wound performed and MEDIHONEY® started, in conjunction with compression therapy with a 2 layer system.
Case 5 – Lower Leg Trauma

Day 8

- Selective debridement performed
- Continue MEDIHONEY® and compression
Case 5 – Lower Leg Trauma

Day 22

- Wound progressing
- Debridement performed
- Continue MEDIHONEY® and compression

Ulcer measurements: 4.5 x 0.4 x 0.1cm
Case 5 – Lower Leg Trauma

Day 29

- Ulcer measurements: 2 x 0.5 x 0.1 cm

Day 36

- Healed
Case 5 – Lower Leg Trauma

6/27/13

7/4/2013

7/18/2013

7/25/13

8/1/2013
Case 5 – Lower Leg Trauma

- Blue X: Compression wrap therapy
- Red triangle: Debridement

Ulcer volume and area changes during treatment
Tips, Pointers and Impact

• MEDIHONEY® can in the first few applications lead to more exudate
  • Manage with peri-wound skin protection and absorptive dressings
    ➢ Barrier creams- zinc oxide, Drying agents- Xeroform
    ➢ Absorptive dressings – XTRASORB® classic, XTRASORB® foam, others

• Because of it’s pleasant smell it can be considered for malodorous wounds

• Wide range of dressing with Active Leptospermum Honey exist for each unique wound including:
  • Hydrocolloid sheets, Gels, Alginates

• Use MEDIHONEY® products in conjunction with other modalities including compression and offloading devices including TCC-EZ® or Traditional TCC
Thank you!

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