

RELIABLE CLINICAL APPROACH FOR MANAGING THE DIABETIC WOUND: The W.O.U.N.D.S. Method

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In the US, diabetes is the leading cause of nontraumatic lower extremity amputation (LEA). The 5-year survival rate for diabetics following a major LEA is lower than the survival rate for most malignancies. A major risk factor for LEA is the presence of diabetic foot ulceration. Approximately 20% of diabetic foot ulcerations result in amputation. Despite several grim statistics associated with the presence of a diabetic foot ulcer, there is at least one hopeful statistic: the Centers for Disease Control and Prevention estimates that up to 85% of diabetic lower extremity amputations are preventable (1-3). The question that needs to be answered is: how does a physician help prevent LEAs in their diabetic patients?

Preventing the formation of a diabetic foot ulcer (DFU) is the key starting point towards LEA prevention. This level of intervention is best achieved by improving diabetic foot self-care through a motivational physician-directed patient education program, and may be realized through several key actions (Table 1). This level of

intervention is best achieved by improving foot self-care in the diabetic patient (4). The podiatric physician is in an ideal position to both educate and motivate the diabetic patient in preventing and recognizing foot problems. These preventative actions need to be reviewed with diabetic patients during the initial and subsequent annual visits.

Critical to preventing DFUs and LEAs is the early detection of foot problems. Early detection is best achieved through a daily foot examination, which can be performed by instituting a daily regimen of moisturizing. This simple act is perhaps the most effective means of preventing diabetic foot ulcers. This foot care regimen accomplishes two goals: pedal skin becomes more pliable, and problem areas are detected early.

Interestingly, there is only one study that has focused upon patient behavior and diabetic skin lesions. This study by Suico, Marriott, Vinicor, and Litzelman evaluated the presence of pedal skin lesions in diabetic patients who rarely moisturized their feet. They found that patients who rarely lubricated their feet were at an increased risk of foot lesions. These researchers concluded that the regular use of emollients may be the key step to preventing diabetic skin lesions (5).

Once a DFU is detected, the focus upon LEA prevention shifts to the rapid and long-term resolution of the ulceration. Towards healing DFUs the scientific literature uniformly affirms the interdisciplinary team approach. Specifically, this approach involves the synergistic and collaborative efforts of several specialists to potentiate diabetic wound healing (6, 7). The interdisciplinary approach addresses several wound healing elements simultaneously (Table 2).

While there are numerous scientific articles, textbooks, and meetings expounding the benefits of the interdisciplinary team approach, there are few practical clinical tools available to the wound care provider for the effective implementation of this preferred approach. The purpose of this paper is to present a practical and reliable evidence-based clinical method towards healing the diabetic ulcer. The method recommended herein is this author's approach and involves the utilization of a specific clinical tool that ensures interdisciplinary team inclusion for patients with a diabetic ulceration (Figure 1).

Table 1

DIABETIC FOOT ULCER PREVENTION

Patient Education
Educate the neuropathic patient
-pain is no longer a reliable symptom of pedal injury
Delineate for patients the early signs of DFU formation/infection:
-red, warm, swollen areas
-thick calluses and blisters
-the presence of drainage
Accessibility
-instruct patients seek help at the first signs of any foot problem especially DFU/infection
Foot care
-schedule annual podiatric visits
-recommend/prescribe therapeutic foot wear
-recommend/prescribe moisturizers for daily use
Review the importance of euglycemia
Risk Assessment
Specialist referral for the at risk patient

Table 2

THE INTERDISCIPLINARY APPROACH TO HEALING DIABETIC WOUNDS

Wound care management
Vascular status
Diabetes management
Infection management
Off-loading methods
Nutrition status

LAUNCHING THE INTERDISCIPLINARY TEAM APPROACH FOR DIABETIC WOUND HEALING

The method of launching the interdisciplinary team approach differs among in-patient and out-patient settings. For example, a DFU patient with an acute infection and/or overt vascular compromise will require hospital admission. As an in-patient the interdisciplinary team may be easily assembled to provide coordinated patient care while the patient is admitted. Following patient discharge, the continuity of this established collaborative approach can be easily continued.

In contrast, a patient with a low acuity DFU will be treated as an out-patient. In this setting the interdisciplinary team is not as easily assembled as the patient is required to visit several providers. The easiest method to enroll an out-patient in the team approach may be through wound center referral. However, a wound center may not be either available to the patient or clinically proficient in wound healing. When the clinician is presented with this dilemma their responsibility is to ensure patient inclusion within the interdisciplinary team approach.

W.O.U.N.D.S. FORM AND THE 4-WEEK MILESTONE VISIT

The self-explanatory W.O.U.N.D.S. form (Figure 1) is a clinical tool used during the initial DFU visit. This approach both actively involves diabetic foot ulcer patients in the process of healing and establishes a measurable 4-week goal. Functionally, the physician and patient complete, sign, and date this form, and a copy is given to the patient. Particular wound care regimens are recommended, based on wound conditions, and explained to the patient. The W.O.U.N.D.S. approach implies good clinical wound care and includes frequent debridement, functional off-loading,

and moist dressings. Specialist referrals and appointments are made as indicated. As part of the patient's medical record, the W.O.U.N.D.S. form is referenced at subsequent visits.

In addition to initiating the interdisciplinary team approach, utilizing the W.O.U.N.D.S. form establishes baseline wound measurements. This initial wound measurement is critical as it provides a reference for evaluating the current wound healing approach. The key time-frame for evaluating the likelihood of DFU healing is 4 weeks.

In a 2003 prospective, randomized controlled trial, involving 276 patients from 11 US centers, Sheehan et al concluded that if the area (length x width) of a wound does not decrease by 53% in 4 weeks there is a 91% chance of it not healing in 12 weeks. Conversely, if the area of a wound decreases by 53% in 4 weeks, there is a 58% chance of healing in 12 weeks (8). The importance of this study is two-fold: the establishment of a 4-week objective upon which vital clinical decisions can be based, and the separation of DFU patients into 2 groups: those who will heal with good clinical care from those in whom healing will be difficult.

For patients who are predicted to have difficulty in wound healing, a re-evaluation and modification of the current wound healing method is indicated. Revisions to the method include: 1) ensuring the interdisciplinary team approach inclusion, 2) reconsidering the diagnosis (e.g., the presence of infection/ osteomyelitis or peripheral arterial disease), 3) changing the wound care regimen (e.g., incorporating negative pressure wound therapy, hyperbaric oxygen therapy, living skin equivalents, platelet rich plasma, etc.), and 4) reassess the off-loading method (e.g., more aggressive conservative or surgical off-loading).

CONCLUSION

The prevention of lower extremity diabetic amputations begins with preventing the formation of diabetic foot ulceration. Foot care education and preventative therapy is a good starting point towards preventing DFU. Once a foot ulcer is detected timely treatment is paramount to preventing further complications.

Enrollment in a comprehensive interdisciplinary team approach wound healing program optimizes DFU healing. Proper utilization of the W.O.U.N.D.S. method simultaneously forms the interdisciplinary team, involves the patient in healing, and establishes baseline wound measurements for the 4-week milestone visit. This evidence-based clinical tool may have significant impact upon preventing diabetic lower extremity amputations.

W.O.U.N.D.S.

PATIENT NAME:
DATE:

W---WOUND CARE

- Current wound size (L x W):
- Wound care plan:
 - clean wound with _____
 - apply _____ to wound.
 - cover wound with _____
 - change dressing every _____ day(s)
 - Keep dressing clean and dry. Protect wounded area.
- Provider(s) of wound care (circle): patient, family member, our office, home health, wound center, other _____

O---OFF-LOADING Keep pressure off of the wound.

- Wear postop shoe, boot, or other prescribed/applied dressing or device.
- Use wheelchair, walker, crutches or other assistive device if prescribed.
- See off-loading specialist (if recommended) _____

U---ULTIMATE BLOOD FLOW (CIRCULATION)

- Elevate foot, but not above heart. Reduce swelling.
- See Dr. _____ for vascular evaluation.

N---NUTRITION

- See primary doctor, wound center, and/or nutritionist
- Supplements: Glucerna, Vitamins, other _____

D---DRUGS (ANTIBIOTICS)

- Take antibiotics as prescribed.
- See Dr. _____ for infection management.

S---SUGAR

- Optimal blood sugar control.
- See Dr. _____

***Target date for >50% reduction in size (4 weeks under current regimen):** _____

Signatures: Patient _____ Date _____
Physician _____ Date _____

Figure 1. W.O.U.N.D.S form.

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