The Diabetic Foot

An Approach to the Diabetic Foot

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Historically:

- Ebers Papyrus in 1500 B.C.
- Chronicles II
- Pryce T.D. (Lancet, 1887)
Why Treat Diabetic Foot Ulcers?

Common: 15% lifetime incidence
- 14-24% of patients with ulcers → amput.
- @ 3500 major amput./year in Canada.

“Downward spiral of clinical consequences”
- 5 yr. contralateral amput. rate of 40 %
- 5 yr. survival rate after amput. of 40%
Key Points:

1. Any patient with evidence of loss of protective sensation should be started on a comprehensive foot care programme.

2. Only 12% of MD’s routinely inspect their diabetic patients feet.

3. Lower extremity education education with reinforcement -> prevention of foot ulceration and limb salvage.
A Comprehensive Diabetic Foot Care Program

Assess patient risk
Education → #1 preventative intervention
Footwear: ≥ 30% callus
Job Retraining
Exercise Recommendations
Skin & Nail Care
Table 2

GENERAL PRINCIPLES OF FOOT-CARE EDUCATION

- Target the level of information in co-ordination with the specific needs of the patient. Those not at risk only require general advice about foot hygiene and footwear.

- Suggest these “dos” rather than “don’ts” in your teaching approach. This will convey foot-care in a positive light and may be more acceptable to the patient.

  DO—inspect the feet daily.

  DO—report any problems immediately (i.e., all skin lesions, including fissures, abrasions, calluses, hot or red spots and web space maceration).

  DO—buy shoes with extra-depth toe boxes and molded rocker soles.

  DO—inspect the inside of shoes for foreign objects everyday before putting them on.

  DO—visit a skilled skin and nail specialist on a regular basis.

  DO—cut your nails straight across and not rounded.

  DO—keep your feet away from heat (fires, radiators, hot water bottles) and check the bath water with a thermometer or your elbow before stepping into it.

  DO—wear something on your feet at all times to protect them and never walk barefoot.

- Repeat this advice at regular intervals and you or your nurse should check that it is being followed at each office visit.

- Disseminate advice to other family members and health-care professionals involved in the care of the patient.
ASSESSING a Patient’s Diabetic Lower Extremity Risk
Management Based on Risk (Carvell)

1. Low Risk
   (Ø loss)
   - Yearly follow up for foot screening
     Education for selection of proper fitting footwear

2. Moderate Risk
   (Ø protective sensation
    +/- abnormal BQ)
   - Follow up every 6 months for foot and shoe examination and patient education
     Properly fitted shoes with custom inserts and sole modifications

3. High Risk
   (Hx: plantar ulcer or neuropathic Fx)
   - Follow up every 2 - 3 months for foot and shoe examination and skin /nail care
     Custom molded orthotics and prescription footwear

(Edmonds, King’s College, 1986 - 83% plantar ulcer recurrence when return to regular shoe use vs 17% with special shoes/plastazote inserts.)
Diabetic Foot Care Programme: (continued)

4. Exercise:  
   i) Encourage a regular walking programme:Ø PN (truncal obesity)
   ii) NWB activities (swimming, biking, rowing, upper body): PVD, PN, insensate foot
   iii) Therapeutic shoes, shorter steps, ↓ overall walking +/- job change:
       Healed neuropathic plantar ulcer

5. Provide vigorous follow up to limit the potential serious problems
Specific Diabetic Lower Extremity Complications

1. Distal Symmetric Polyneuropathy
   - a) Pain (dysesthesia)
   - b) Loss of protective sensation
   - c) Intrinsic muscle imbalance
   - d) Anatomic dysfunction
   - e) Neuropathic Osteoarthropathy (foot/Ankle)

2. Diabetic Foot Ulcers/Acute-chronic OM
Vascular Assessment:

Required: pp, dusky toes, delayed capillary refill, necrotic tissue, heel ulcers *

Investigations: ABI with toe pressures, duplex arterial studies, angiography

Outcome: long term salvage of threatened limb 73% even in high risk patients with aggressive ulcer debridement and revascularization when indicated (Taylor, Porter, J Vasc Surg, 1987)
Pre-ulcerative Lesions

- Callus/corns
- Fissuring: sebaceous gland loss
- Onychomycosis
- Fourth web space tissue breakdown
  (tinea pedis, psoriasis, soft corn, mixed bacterial infection)
Treatment-Based Assessment—Grade 0

Wagner Grade 0

Management Suggestions
- Debridement of calluses
- Properly fitted footwear
- Patient education

Adapted from Wagner, 1981; Boulton, 1998.
Four Factor --> Diabetic Foot Ulcer

1. Neuropathy
2. Vasculopathy
3. Impaired Cell  
   (Neutrophil impairment,  
   Glycosylation: keratin, collagen)
4. Trauma (biomechanical, shoes, environmental)