When Routine Care is Not Routine

David M Davidson, DPM
Desert Foot 2014
Disclosure:

Speakers Bureau for:

Integra
KCI
Organogenesis
Smith & Nephew
Vilex
Epidemiology of the Diabetic Foot

A lower extremity ulcer develops in about 15% of patients with diabetes during their lifetime. Cumulative risks for ulceration include neuropathy, foot-ankle deformity, high pressure, poor glucose control, and previous ulceration.
Who is at Risk for Diabetic Foot Ulceration?

Diabetic foot complications are the single most common cause of non-traumatic lower extremity amputations in the industrialized world.

Individuals with diabetes have a 15 to 46 fold greater risk of high level lower extremity amputation than those without diabetes.

The most common component in the pathway to amputation is the diabetic neuropathic foot ulcer.

Who is at Risk for Diabetic Ulceration?

The infected foot ulcer is the most common reason for hospitalization among patients with diabetes, accounting for up to 25% of all hospital admissions in the United States and Britain.

Unfortunately, of patients admitted to the hospital for diabetic foot complications, less than 14% receive an adequate lower extremity evaluation.

It has been estimated that with appropriate knowledge of risk factors and subsequent application of evidence-based multidisciplinary treatment, up to 85% of diabetic foot amputations can be prevented.

“Every thirty seconds a limb is lost somewhere in the world because of diabetes”
“Pain is the greatest gift to mankind”
Paul Brand, MD
The Stairway to Amputation*

Diabetes
Neuropathy
Ulceration
Vascular Disease
Infection
Amputation

*Lee Rogers, DPM
Goals of Care:

- Reduce complications including ulcerations, hospitalizations and ultimately amputations
- Improve quality of life for people with diabetes
- Significantly reduce health care costs associated with diabetes and lower extremity complications
- Significantly reduce non-health care costs associated with lower extremity complications from diabetes
The Value of Care by a Podiatrist

Results of The Thompson Reuters Healthcare Study
Details of the Study

- TRH using their Marketscan Data Base examined claims from 316,527 patients with commercial insurance and 157,529 patients with Medicare (and employer sponsored secondary insurance)
- Study focused on one specific aspect of diabetic foot care – those patients that developed a foot ulceration
- A comparison was then made by looking at the year preceding the ulceration to see if any care from a podiatrist was provided to the patient
The Results

- Average savings over a three-year period (year before ulceration and two years after ulceration)
  - Commercial insurance – Savings of $19,686 per patient if they had at least one visit to a podiatrist
  - Medicare: Savings of $4,271 per patient if they had at least one visit to a podiatrist
Amputation Reduction: Limbs Saved

<table>
<thead>
<tr>
<th>Commercial</th>
<th>Podiatry Group</th>
<th>Medicare</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.82%</td>
<td>8.49%</td>
<td>6.04%</td>
<td>4.69%</td>
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Difference = 2.67%

Difference = 1.35%
Receipt of Care and Reduction of Lower Extremity Amputations in a Nationally Representative Sample of U.S. Elderly

Frank A. Sloan, Mark N. Feinglos, and Daniel S. Grossman

Objective. To determine effectiveness of receipt of care from podiatrist and lower extremity clinician specialists (LEC specialists) on diabetes mellitus (DM)-related lower extremity amputation.


Study Design. Individuals with DM-related lower extremity complications (LECs) were followed 6 years. Visits with podiatrists, LEC specialists, and other health professionals were tracked to ascertain whether receipt of such care reduced the hazards of an LEC amputation.

Data Collection. Individuals were stratified based on disease severity, Stage 1—neuropathy, paresthesia, pain in feet, diabetic amyotrophy; Stage 2—cellulitis, charcot foot; Stage 3—ulcer; Stage 4—osteomyelitis, gangrene.

Principal Findings. Half the LEC sample died within 6 years. More severe lower extremity disease increased risk of death and amputation. Persons visiting a podiatrist and an LEC specialist within a year before developing all stage complications were between 31 percent (ulceration) and 77 percent (cellulitis and charcot foot) as likely to undergo amputation compared with individuals visiting other health professionals.

Conclusions. Individuals with an LEC had high mortality. Visiting both a podiatrist and an LEC specialist in the year before LEC diagnosis was protective of undergoing lower extremity amputation, suggesting a benefit from multidisciplinary care.

Key Words. Diabetes mellitus, amputation, podiatrist, mortality
OBJECTIVE

To determine effectiveness of receipt of care from podiatrists and lower extremity clinician specialists (LEC) on diabetes mellitus – related lower extremity amputation
Conclusions

- Visiting both a podiatrist and an LEC specialist in the year before LEC diagnosis was protective of undergoing lower extremity amputation, suggesting a benefit from multidisciplinary care.

- The results were most favorable to a pattern of care involving a combination of podiatrists and lower extremity specialists.
Both studies demonstrated that care by podiatrists of persons with diabetes resulted:

- in decreased lower extremity complications and amputations
- significant cost savings
Vital Podiatry Services

- Evaluation & screening
  - Neuropathy
  - PAD
  - Deformity

- Management
  - Ulceration treatment
  - Infection treatment
  - Nail and skin treatment
  - Diabetic shoes
  - Surgical correction of deformity

- Education
  - Diet, glycemic control, foot care, risk avoidance
Skin and Nail Findings

- Atrophy – Thin skin
- Callus
- Thick nails
- Blisters
- Red areas
Secondary Infections in Diabetics With Onychomycosis

Adapted from Doyle JJ et al. Onychomycosis among diabetic patients: prevalence and impact of nonfungal foot infection. Presented at the American Diabetes Association 60th Scientific Session; June 9-13, 2000; San Antonio, TX.
Nail Care – Who Qualifies?

- **Class A Findings (1 needed)**
  - non-traumatic amputation of foot or integral skeleton portion thereof

- **Class B Findings (2 needed)**
  - 1. Absent posterior tibial pulse
  - 2. Absent dorsalis pedis pulse
  - 3. Advanced trophic changes; three of the following are required:
    - hair growth (decrease or absence)
    - nail changes (thickening)
    - pigmentary changes
    - skin texture (thin, shiny)
    - skin color (rubor or redness)

- **Class C Findings (1 Class B, 2 Class C needed)**
  - 1. Claudication
  - 2. Temperature changes
  - 3. Edema
  - 4. Paresthesia
  - 5. Burning

CPT Codes, descriptions and numeric modifiers are copyrighted 2006 AMA. All rights reserved.
The Podiatric Comprehensive Diabetic Foot Examination

- Risk Identification
- Education
- Treatment of ALL non-ulcerative pathology
What Happens When You Put This Toe in a Shoe?
Nail Care – Why Not Dremel?

- Electrical debridement and associated hazards and risks:
  - The turbines of the drills used to reduce nails create an aerosol of bacteria that remain in the air for up to 30 minutes.
  - The high speed rotation of podiatry drill burrs can potentially expose the healthcare worker to aerosols containing blood born pathogens such as Hep B, Hep C and HIV.

Burrow, McLarnon, 2006
Nail Care – Why Not Dremel?

- The Tynall lamp technique clearly shows the nail dust produced by using a high speed rotating drill burr.
- These nail dust particles are small enough to deposit in alveoli, bronchioles and throughout the respiratory system.
Nail Care – Why Not Dremel?

- Podiatrists have 4 times the national prevalence of asthma (Burrow, McLarnon, 2006)

- Miller postal questionnaire
  - 39% known allergies (rhinitis)
  - 51% eye problems (conjunctivitis)
  - 18.6% chest complaints (bronchitis)
  - 22.6% skin problems
Infection Prevention &
Control Guidelines
for
Foot Care Settings
2008

Contact Information
Pierce County Antibiotic Resistance Task Force
Infection Control and Prevention Committee

Gwenda Felizardo, RN, BSN, CIC
Group Health Cooperative, Infection Control
Felizardo.g@ghc.org
Phone: (253) 383-6374
Co-Chair, Infection Control and Prevention Committee, Pierce County Antibiotic Resistance Task Force

Marcia Patrick, RN, MN, CIC
MultiCare Health System
Director of Infection Control
marcia.patrick@multicare.org
Phone: (253) 403-1108
Co-Chair, Infection Control and Prevention Committee, Pierce County Antibiotic Resistance Task Force

Lois Lux, MSN, RN
Tacoma-Pierce County Health Department
Nurse Epidemiologist
llux@tpchd.org
Phone: (253) 798-6416

Stephen Fuson, DPM, Tacoma, WA
sfuson@pacificpodiatrygroup.com

Susan Scanlan, DPM, Executive Director,
Washington State Podiatric Medical Association (WSPMA) www.WSPMA.org
NWPODIATRY@aol.com
Phone: (206) 922-3587

John Furman, CIC, COHN-S
Washington State Department of Labor
360-902-5686
Purpose:

To provide up-to-date information to ambulatory clinics and/or podiatry offices performing foot care who are responsible for providing a safe patient and employee environment that eliminates or minimizes the risk of transmission of pathogens and infection.

These guidelines are targeted to the general family practice clinic or podiatry office where routine foot care is performed. The Centers for Medicare and Medicaid Services (CMS) defines routine foot care as “the cutting or removal of corns or calluses, the trimming of nails or other routine hygiene care.”
Room Appropriateness For Foot Care:

Routine Foot Care: Any room is appropriate for routine foot care (trimming of nails, corns, calluses)

Sanding/Burring: A room dedicated to sanding/burring is recommended. Sanding/burring procedures generate dust aerosolization, contaminating the environment, equipment and supplies in that room, increasing pathogen transmission.

Room Set-Up: Assure room is visually clean and organized. Nail dust aerosolization is an environmental contaminate that can transmit organisms either through direct contact or indirect contact with the environment.

  Cover exposed items when sanding/burring procedures are anticipated.
  Remove or minimize room equipment
  Turn on air filter cleaner if available
  Use sanding/burring vacuum (if available)
It is Time to Put The Dremel Back in The Tool Shed
Most Important: The right bur

- Passive safety to avoid bleeding injuries!

- Special “Diabetes Set”: (Carbide / Diamond burs)
- FDA registration – for your legal protection
Advantages of Micro Motor Vacuum

Debris and nail dust collection rate above 90%
Auto gripping
Light weight
High RPM variable
Kink free flexible vacuum hand piece hose
Highest vacuum strength
Clear digital display
Professional design
Sealed dust collection bag
STANDARDS OF MEDICAL CARE IN DIABETES—2014
For all patients with diabetes, perform an annual comprehensive foot examination to identify risk factors predictive of ulcers and amputations

- Inspection
- Assessment of foot pulses
- Test for loss of protective sensation: 10-g monofilament plus testing any one of
  - Vibration using 128-Hz tuning fork
  - Pinprick sensation
  - Ankle reflexes
  - Vibration perception threshold

ADA. VI. Prevention, Management of Complications. Diabetes Care 2014;37(suppl 1):S47
Recommendations: Foot Care

- To perform the 10-g monofilament test, place the device perpendicular to the skin, with pressure applied until the monofilament buckles.
- Hold in place for 1 second and then release.
- The monofilament test should be performed at the highlighted sites while the patient’s eyes are closed.

Initial screening for peripheral arterial disease (PAD)

- Include a history for claudication, assessment of pedal pulses
- Consider obtaining an ankle-brachial index (ABI); many patients with PAD are asymptomatic

Refer patients with significant claudication or a positive ABI for further vascular assessment
- Consider exercise, medications, surgical options
Recommendations: Foot Care

Provide general foot self-care education

Use multidisciplinary approach
- Individuals with foot ulcers, high-risk feet; especially prior ulcer or amputation

Refer patients to foot care specialists for ongoing preventive care, life-long surveillance
- Smokers
- Loss of protective sensation or structural abnormalities
- History of prior lower-extremity complications
Ongoing Preventive Care

- Inspection of skin
- Offloading plantar pressure
  - Debriding callus
  - Orthotics/shoes
- Debriding hypertrophic nails
- Patient education
References


The Ocular Risks of Human Nail Dust in Podiatry, Millar, N.A., PhD Thesis, Glasgow, Caledonian University, 2000

The Effectiveness of Dust Extraction Systems of Podiatric Nail Drills, Burrow, J.G., J British Podiatric Medicine, 1999, 5453-60


To Discover a Possible Route for Cross-Infection from Podiatric Drill Handpieces, Sherrard-Brisley, J., The Foot, 1997, 71-5.5

The Role of Podiatry in Treating Patients with Diabetes, Wienke, JC, Sanford Podiatry, PPT Presentation
World at work: Evidence based risk management of nail dust in chiropodists and podiatrists


Decontaminating Dental Instruments, Sanchez, E., J Am Dental Assoc., 1995, 126 (3): 359-366

Thank you!