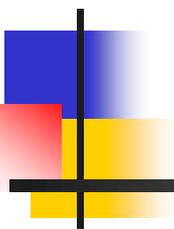


# Feet Can Last A Lifetime: Primer for Screening the Diabetic Foot



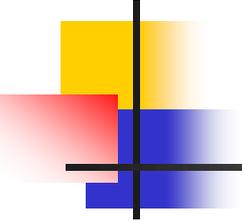
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Janet Simon, DPM, C.Ped

New Mexico Podiatric Medical Association

Podiatry Associates of New Mexico

Sole Comfort Shoes, Inc.

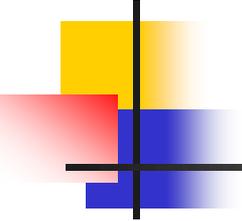


**Objectives:** As a result of completing this DVD session, the health care provider will develop a better understanding of the following:

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1. The effects of diabetes on the systems of the foot.
2. The risk categories associated with the diabetic foot.
3. Patient self-monitoring methods and problem awareness.
4. Accessing and making proper foot care referrals for your diabetic patients.

# Prevalence Stats



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- Current estimates – 20.8 million US residents have Diabetes.

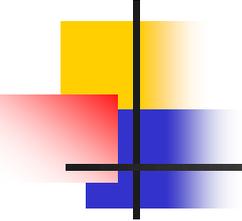
**Diagnosed:** 14.6 million people

Type 1 diabetes accounts for 5 – 10%

Type 2 diabetes accounts for 90 – 95%

**Undiagnosed:** 6.2 million people

- Predicted to more than double to 43 million by 2040.



# Hispanic/Latino Americans and Diabetes

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- **9.5 percent of all Hispanic/Latino Americans have diabetes.**
- **Mexican Americans are 1.7 times as likely to have diabetes as non-Hispanic whites**



# **American Indians and Alaska Natives and Diabetes**

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- **12.8 percent of American Indians and Alaska Natives had diabetes in 2003**
- **2.2 times as likely to have diabetes as non-Hispanic whites**



# Diabetic Foot/Leg Problems

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- **Peripheral Neuropathy** - ~40% of patients will develop PN.
- **Peripheral Arterial Disease** – 1 in 20 adults over 50. 20% increase in DM population.
- **Ulcerations** – neuropathic, ischemic, venous.
- **Foot deformities** – bunions, hammertoes, arch pathologies.
- **Charcot Arthropathy** – Occurs in 2.5% of DM population.
- **Skin/Bone infections**

# Foot Complications



- Estimated 25% of patients (1 out of 4) with diabetes will develop a foot ulcer during their lifetime.
- Annual incidence rate of ulceration is between 2% - 6.8%.
- Annual incidence rate of lower-extremity amputation is 5-8 per 1,000 people with diabetes.



Foot ulcers and infections account for 20% of all diabetic hospital admissions.

More hospital-bed days are spent treating diabetic foot problems than all other diabetic complications.



# Financial Impact

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- Foot ulcers cost between \$7500 - \$21,000 per episode.
- Major limb amputation direct costs are estimated to be \$70,434 (adjusted for 2007 health-care inflation).
- Lifetime projected cost of a major amputation can be as much as \$500,000.



## More \$\$ stats...

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- Estimated \$19 billion was spent on care of diabetic foot ulcers in 2007.
- Estimated expenditures for amputations related to diabetic complications to be \$11.7 billion.

# Relationships

- 85% of diabetes-related lower extremity amputations (DRLEA) are preceded by a foot ulcer.





# What effect does Diabetes have on the systems of the foot?

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All systems are effected:

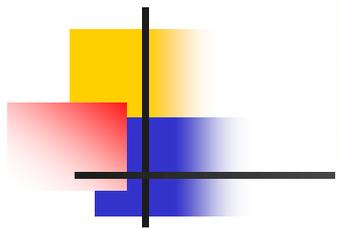
- Vascular
- Neurological
- Dermatological
- Musculoskeletal



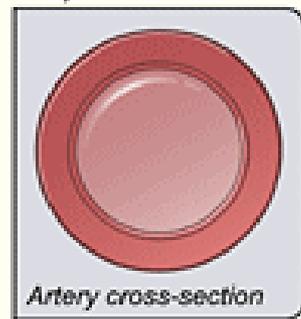
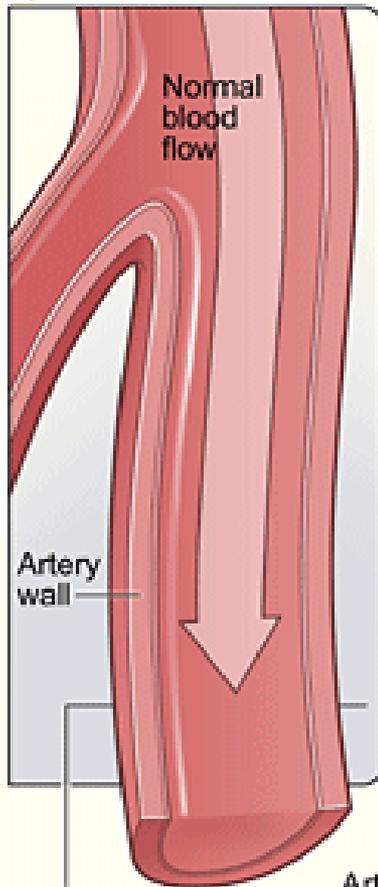
# Vascular

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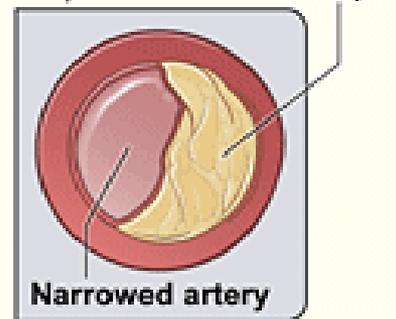
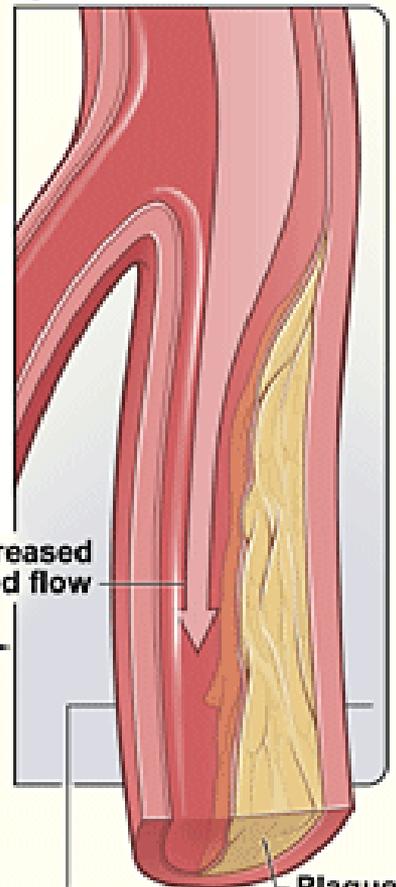
- ★ A build up of plaque on the artery walls in the legs is Peripheral Arterial Disease (PAD).
- ★ PAD is a component cause in approximately one third of foot ulcers and is often a significant risk factor associated with recurrent wounds



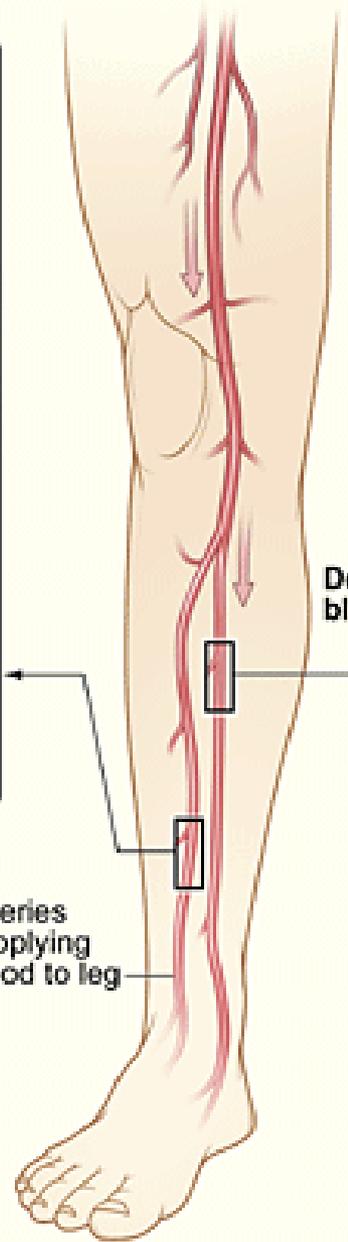
**A** Normal artery



**B** Atherosclerotic artery



Arteries supplying blood to leg





# Neurological

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- Peripheral neuropathy is the commonest component cause in the pathway to diabetic foot ulceration.
- The clinical exam with a monofilament, however, is designed to identify loss of protective sensation (LOPS) rather than early neuropathy.

# Dermatological



- Changes in skin temperature and texture on the feet can herald infection and ulceration.
- Abnormalities in the toenails increase risk of infections as does presence of corns and calluses.



## Musculoskeletal



- Common forefoot deformities (Hammertoes, Bunions) increase plantar foot pressures and the risk of skin breakdown and ulceration.
- Charcot arthropathy is frequently misdiagnosed since it mimics an infection process.

# Dermatological



- Changes in skin temperature and texture on the feet can herald infection and ulceration.
- Abnormalities in the toenails increase risk of infections as does presence of corns and calluses.



# Charcot Feet





# Charcot Foot - Symptoms

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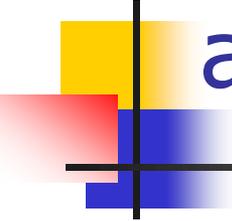
- Acutely swollen, warm foot or ankle that may have history of increased activity or trauma.
- Skin commonly intact without ulceration.
- Err in being suspicious !



# Management of Charcot Foot

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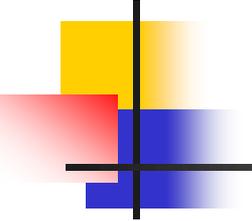
- Immediately off-load foot of weight (Immobilizer boot, crutches, walker, wheelchair).
- Obtain x-rays of foot.
- Refer to specialist for continuing care.



# Is prevention of foot complications and amputations obtainable?

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Foot ulcer recurrence rates were found to decrease by **48%** with a multidisciplinary approach and **4** podiatry visits yearly; by **50%** with custom off-loading footwear; and by **73%** with the use of a dermal thermometer and education.



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The commonest triad of causes that interact and ultimately result in ulceration has been identified as comprising **neuropathy, deformity** and **trauma**. Identification of those patients at risk of foot problems is the first step in preventing such complications.



# Risk factors for foot ulcers

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- \* Previous amputation
- \* Past foot ulcer history
- \* Peripheral neuropathy
  - \* Foot deformity
- \* Peripheral vascular disease
  - \* Visual impairment
- \* Diabetic nephropathy – especially patients on dialysis
  - \* Poor glycemic control
  - \* Cigarette Smoking



# Components of a Foot Exam

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## 1) History Taking

Note the presence of any diabetic complications (eye, kidney, nerve, vascular).

Obtain smoking history.

**Current Status** – Pain in calf muscles with walking; Any noticed changes since last exam; HbA1C results.



# Foot exam

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Condition of skin, hair and toenails

Presence of Musculoskeletal deformities

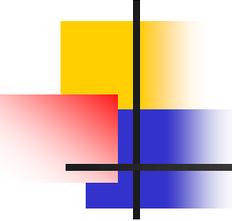
Pedal pulses (Present or Absent)

ABI (Ankle-Brachial Index), if indicated

Sensory Exam=**10 g monofilament** + one of the following four:

- ⑩ Vibration using 128 Hz tuning fork
- ⑩ Pin prick sensation
- ⑩ Ankle reflexes
- ⑩ Vibration Perception Threshold

Footwear Exam



# Risk Categorization

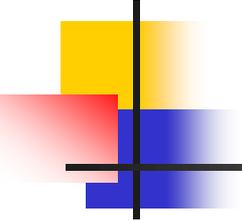
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Based on the Hx and foot exam a risk category is determined:

**Risk Categorization 0 = No LOPS, no PAD, no deformity**

Patient education including advice on appropriate footwear.

Frequency of Evaluations: Annually (by generalist and/or specialist)



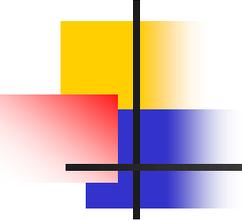
## **Risk Categorization 1 = LOPS ± deformity**

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Consider prescriptive or accommodative footwear.

Consider prophylactic surgery if deformity is not able to be safely accommodated in shoes.  
Continue patient education.

Frequency of Evaluations: Every 3-6 months (by generalist or specialist)



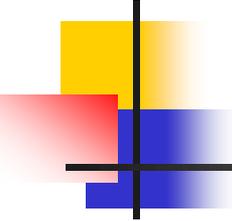
## **Category 2 = PAD ± LOPS**

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Consider prescriptive or accommodative footwear

Consider vascular consultation for combined follow-up.

Frequency of Evaluations: Every 2-3 months (by specialist)



## **Category 3 = History of Ulcer or Amputation**

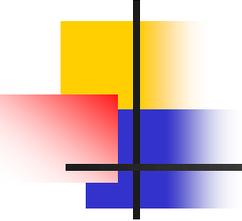
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Consider prescriptive or accommodative footwear.

Consider prophylactic surgery if deformity is not able to be safely accommodated in shoes. Continue patient education.

Consider vascular consultation for combined follow-up if PAD present

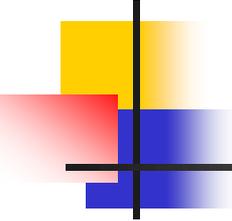
Frequency of Evaluations: Every 1-2 months (by specialist)



# Management Guidelines for Active Ulcer or Foot Infection

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- Never let patients with an open plantar ulcer walk out in their own shoes. Weight relief must be provided. (Post-op shoe or immobilizer, cane, crutches, walker)
- Refer to specialists for active care of the ulcer.
- Certify Medicare patients for therapeutic footwear benefits.



# Specialists to refer your patients to for Foot Care:

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- **Podiatrists** – Physicians trained in all aspects of foot and ankle care. Many podiatrists are subspecialized in wound care and reconstructive surgery. Podiatrists attend 4 yrs of medical school followed by 2-3 yrs residency training.
- **Pedorthists** – Professionally trained to fit and modify shoes and orthotics.

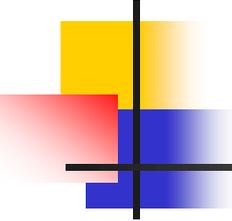
# Prevention Services



- Regular foot care services for high risk diabetic patients provided by podiatric physician.

Current Medicare policy allows for foot care (nail and callus care) q 60 days with documented Class Findings.

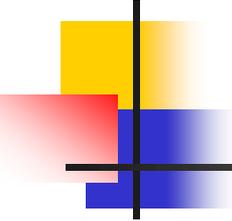
Class findings are documented vascular, neurologic or past Hx of amputation(s).



# Therapeutic Footwear

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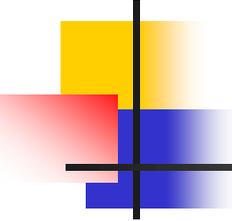
- Medicare provides coverage for depth-inlay shoes, custom-molded shoes and inserts under Part B.
- Statement of Certifying Physician is needed to be signed by provider (M.D. or D.O.) overseeing the diabetes treatment.
- Prescription for the footwear can be completed by M.D., D.O., or D.P.M.



# Self-monitoring

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- Detailed foot care recommendations and demonstrations including washing, drying, and inspecting the feet daily; applying an emollient daily and usage of appropriate footwear and socks.
- Identification of other family or household members to assist with self monitoring. (i.e. performing monofilament testing monthly)



# Patient Foot Care Recommendations

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- Inspect bare feet daily to identify cuts, blisters, red or discolored areas and swelling.
- Use a mirror or ask family member for help if seeing the bottoms of the feet is not easy to do.
- Wash feet daily in warm water and dry well.
- Rub a thin coat of skin lotion or cream on the feet.
- If your doctor advises use a sanding device for corns and callused skin.
- If your doctor advises trim your toenails straight across and file.
- Never walk barefoot.
- Inspect your shoes prior to putting them on each time.
- Protect your feet from hot and cold.
- Keep the blood flowing to your feet.

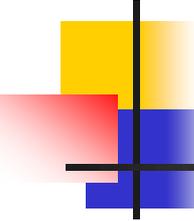
# Monthly testing recommended.



- Apply the monofilament perpendicular to the skin's surface with sufficient force to cause bending.
- Test 5 sites on each foot with patient not watching.

# New Technologies for self-monitoring





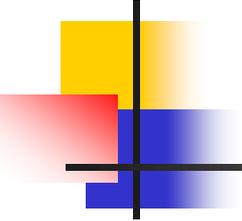
# Insight

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The Insight Foot Care scale is a unique bathroom scale designed to help people with diabetes check their feet everyday.

It has specially designed, magnified mirrors that allow you to see the bottoms of your feet without having to stretch or strain.

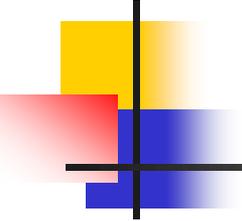


# Barriers to Prevention

## Patient's Perspective

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- Costs –No health benefits; additional copays, deductibles, non-covered services w/ health insurance.
- Limited access to trained foot care providers.
  - NM has less than 100 podiatrists.**
- Limited access to therapeutic footwear.



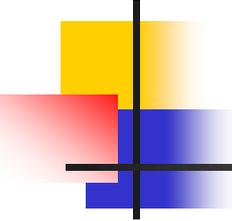
# Barriers to Prevention Providers' Perspectives

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- Lack of identification of high risk patients.
- Limited multidisciplinary TEAM treatment approach.
- Pivotal prevention services are not reimbursed adequately or at all.
- Limited access to inexpensive tools (Dermal thermometers) and therapeutic footwear.

These can be prevented.

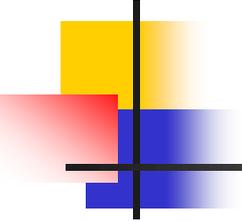


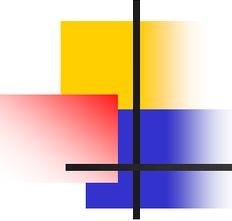


# What can be changed?

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- Improve PCP screening for high risk patients.
- Increase access to vascular specialists.
- Increase access to current wound care therapies
  - Advanced moist wound therapy (AMWT), bioengineered tissue/skin substitutes, growth factors, electric stimulation, negative pressure wound therapy (NPWT)

- 
- 
- Increase access to trained foot care specialists
    - **Reform referral process**
    - **Reform Insurance regulations that limit patient access**
    - **Reimburse for preventative diabetic foot care at a frequency that depends on the overall risk category of the patient.**
  - Improve access to inexpensive detection tools and footwear.

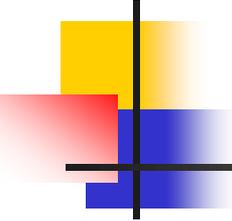


# Monofilaments for Sensory Testing

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- Free monofilaments available (maximum 50) through the Lower Extremity Amputation Program

<http://www.hrsa.gov/leap/>



# Resource List

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- National Diabetes Education Program (NDEP)  
**Feet Can Last a Lifetime materials.**

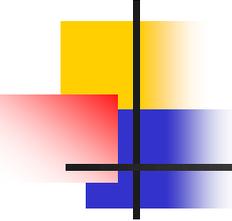
<http://ndep.nih.gov>

- National Diabetes Information Clearinghouse (NDIC)

[www.niddk.nih.gov/health/diabetes/ndic](http://www.niddk.nih.gov/health/diabetes/ndic)

- American Podiatric Medical Association

[www.apma.org](http://www.apma.org)



# Contact information

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