Diabetes Education Services Presents:

3 Steps to DeFeet Amputation
Assess, Screen, & Report

Advanced Level & Specialty Topics | Level 4 | Class 3 | 2024

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Pronouns: She, her, hers
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Land Acknowledgment

- We acknowledge and are mindful that Diabetes Education Services stands on lands that were originally occupied by the first people of this area, the Mechoopda, and we recognize their distinctive spiritual relationship with this land, the flora, the fauna, and the waters that run through this area.

We are Here to Help!

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If you have questions, you can chat with us at www.DiabetesEd.net
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Based on the IDEA Initiative inspired by CDR

- Inclusion
- Diversity
- Equity
- Access

- We are committed to promoting diversity and inclusion in our educational offerings.
- We recognize, respect, and include differences in ability, age, culture, ethnicity, gender, gender identity, sexual orientation, size, and socioeconomic characteristics.
- Our goal is to promote equity and access, acknowledging historical and institutional inequities.
- We are committed to practicing cultural humility and cultivating our cultural competence.
- We wish to create a safe space within our community where one's beliefs, experiences, identity, and differences in ability, age, size, socio-cultural/socioeconomic characteristics, and political affiliations are considered and respected.

Coach Bev has no Conflict of Interest

- She's not on any speaker's bureau
- Does not invest or have any financial relationships with diabetes related companies.
- Gathers information from reading package inserts, research and articles
- The ADA Standards of Medical Care is main resource for course content

Learning Objectives/Program Overview

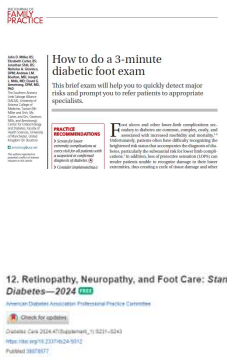
1. Describe risk factors for lower extremity complications.
2. Discuss prevention strategies.
3. Demonstrate steps involved in lower extremity assessment.
4. State actions we can all take to protect lower extremities.

Comprehensive Foot Exam


AMERICAN DIABETES ASSOCIATION

FOOT EXAMINATION POCKET CHART

THE DIABETIC FOOT EXAMINATION


JOURNAL OF FAMILY PRACTICE

How to do a 3-minute diabetic foot exam

This brief exam will help you to quickly detect major risks and prompt you to refer patients to appropriate specialists.


Reviews/Commentaries/ADA Statements

Comprehensive Foot Examination and Risk Assessment

A report of the Task Force of the Foot Care Interest Group of the American Diabetes Association, with endorsement by the American Association of Clinical Endocrinologists

12. Retinopathy, Neuropathy, and Foot Care: *Standards of Care in Diabetes—2024*

American Diabetes Association Professional Practice Committee

Check for updates

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Notes from Beverly

Lower extremity care is complex.

Some of these images may be difficult to view.

Diabetes and Amputations

- Rate declined 43% - 2000 – 2009
- **Increased 50% from 2009-2015**
  - 2.1 per 1000 then up to 4.2 per 1000
  - Driven by a 62% increase in minor amputations (toes)
  - Highest rates in young and middle age adults (18- 64 years).
- 130,000 adults annually with diabetes have lower extremity amputations NIDDK /NIH
- This number equates to **five out of every 1,000** people with diabetes.

Health Disparities and Lower Extremity Amputations

- Black Americans and people of color have 3-4 times the rate of amputation, compared to White Americans
- 60% of amputations in 7% of population
- Amputations cost $30,000 – 60,000
- More amputations performed on people of color
- Associated w/ earlier death compared to revascularization

Poll Question 1

- Which of the following factor(s) increase risk for amputation in diabetes?

A. Socioeconomic status
B. Cigarette smoking
C. Previous amputation
D. Age and ethnicity
E. All of the above

Racial Disparities and Amputations


Diabetes Discoveries & Practice Blog

Reducing Disparities in Diabetic Amputations

April 21, 2021 0 Comments

Tagged: Complications of Diabetes / Social Determinants of Health

Learn about how diagnosing and treating peripheral arterial disease in people with diabetes can help prevent amputations.

Foluso A. Fakorede, MD, a cardiologist in Bolivar County, MS, has used prevention, screening, and treatment strategies to reduce amputations by 88% in the Mississippi Delta area where he practices. Here, Dr. Fakorede discusses risk factors for peripheral arterial disease (PAD) and amputation in patients with diabetes, and how to reduce disparities in diabetic amputations.

Risk for amputation? Consider these factors:

- **region.** People who live in the southern United States have the highest rates of amputation. They also have the lowest rates of revascularization.
- **race.** Most people receiving amputations are minorities: Black Americans, Hispanics/Latinos, and American Indians.
- **age.** Many people who receive amputations are older. PAD may be missed in older adults because the symptoms are attributed to arthritis or gout. Also, primary care doctors may not know about PAD and may not screen patients for PAD early. Patients undergo an amputation when they are older because PAD was missed.
- **socioeconomic status.** Poorer patients and those living in poorer regions of the country have less access to quality health care and have the highest amputation rates. Unfortunately, many of these patients are minorities with low incomes.
- **hospital volume of vascular procedures.** Hospitals are better at preventing amputation if they can assemble a team of specialists proficient in aggressive limb salvage, wound care, nutritional care, and diabetes management and treatment. Rural areas, such as those in the southern U.S. don't have a significant number of these specialists.

High Risk of Ulcers Amputation

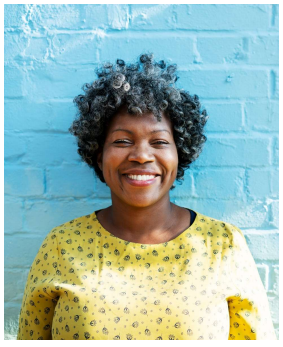
Elevated glucose levels	• Peripheral Arterial Disease
Peripheral neuropathy with LOPS	• History of foot ulcer
Cigarette smoking	• Amputation
Foot deformities	• Visual impairment
Preulcerative callus or corn	• Chronic kidney disease (especially if on dialysis)

Poll Question 2

- Which of the following is true about diabetes and lower extremities?
  - A. Over 30% of people with diabetes experience amputation.
  - B. Over 50% of amputations could have been avoided.
  - C. Most amputations happen before the age of 70
  - D. The rate of amputations continues to decrease.

Foot Care Standards - ADA

- Perform a comprehensive foot evaluation at least annually to identify risk factors for ulcers and amputations.
- Provide general preventive foot self-care education to all people living with diabetes.
- Sensory loss or prior ulceration or amputation?
  - inspect feet at every visit.
- High-risk may need specialized therapeutic footwear:
  - If severe neuropathy, foot deformities, ulcers, callous formation, poor peripheral circulation, or history of amputation.

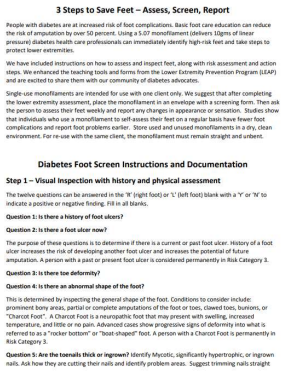


Lower Extremities

- Lift the Sheets and Look at the Feet



Foot Toolkit: For Health Care Professionals



3 Steps to Save Feet – Assess, Screen, Report

People with diabetes are at increased risk of foot complications. Basic foot care education can reduce the risk of amputation by over 50 percent. Using a 5.07 monofilament (delivers 10gms of linear pressure) diabetes health care professionals can immediately identify high-risk feet and take steps to protect lower extremities.

We have included instructions on how to assess and inspect feet, along with risk assessment and action steps. We enhanced the teaching tools and forms from the Lower Extremity Prevention Program (LEAP) and are excited to share them with our community of diabetes advocates.

Single-use monofilaments are intended for use with one client only. We suggest that after completing the lower extremity assessment, place the monofilament in an envelope with a screening form. Then ask the person to assess their feet weekly and report any changes in appearance or sensation. Studies show that individuals who use a monofilament to self-assess their feet on a regular basis have fewer foot complications and report foot problems earlier. Store used and unused monofilaments in a dry, clean environment. For re-use with the same client, the monofilament must remain straight and unbent.

Diabetes Foot Screen Instructions and Documentation

Step 1 – Visual Inspection with history and physical assessment

The twelve questions can be answered in the 'R' (right foot) or 'L' (left foot) blank with a 'Y' or 'N' to indicate a positive or negative finding. Fill in all blanks.

Question 1: Is there a history of foot ulcers?

Question 2: Is there a foot ulcer now?

The purpose of these questions is to determine if there is a current or past foot ulcer. History of a foot ulcer increases the risk of developing another foot ulcer and increases the potential of future amputation. A person with a past or present foot ulcer is considered permanently in Risk Category 3.

Question 3: Is there toe deformity?

Question 4: Is there an abnormal shape of the foot?

This is determined by inspecting the general shape of the foot. Conditions to consider include: prominent bony areas, partial or complete amputations of the foot or toes, clawed toes, bunions, or "Charcot Foot". A Charcot Foot is a neuropathic foot that may present with swelling, increased temperature, and little or no pain. Advanced cases show progressive signs of deformity into what is referred to as a "rocker bottom" or "boat-shaped" foot. A person with a Charcot Foot is permanently in Risk Category 3.

Question 5: Are the toenails thick or ingrown? Identify Mycotic, significantly hypertrophic, or ingrown nails. Ask how they are cutting their nails and identify problem areas. Suggest trimming nails straight

Question 1 and 2

- **Question 1: Is there a history of foot ulcers?**
- **Question 2: Is there a foot ulcer now?**
  - History of a foot ulcer increases the risk of developing another foot ulcer and increases the potential of future amputation.
  - A person with a past or present foot ulcer is considered permanently in Risk Category 3.

Question 3 – Deformity?

Question 3: Is there toe deformity?

Question 4: Is there an abnormal shape of the foot?

- Look for prominent bony areas,
- Partial or complete amputations of the foot or toes
- Clawed or hammer toes
- Bunions, or "Charcot Foot".

Question 3 and 4 – Charcot Foot

Question 3: Is there toe deformity?

Question 4: Is there an abnormal shape of the foot?

A Charcot Foot is a neuropathic foot that may present with:

- swelling,
- increased temperature,
- and little or no pain.
- Advanced cases show progressive signs of deformity into what is referred to as a "rocker bottom" or "boat-shaped" foot.
- A person with a Charcot Foot is permanently in Risk Category 3.

Q5 - Toenails

Question 5: Are the toenails thick or ingrown?

- Identify Mycotic, significantly hypertrophic, or ingrown nails.
- Ask how they are cutting their nails and identify problem areas.

Consider Podiatry Referral and Treatment

Q6: Callus Buildup

Question 6: Is there callus buildup?

- Identify focal and/or heavy callous.
- Determine cause and provide coaching.

Assess if the person is self-treating calluses (with a razor or other tools) and encourage them to see a foot specialist to prevent complications.

Q7: Assess for Swelling

Question 7: Is there swelling?
Swelling may stem from a variety of causes such as a Charcot fracture, infection, or "venous stasis".

Assess for potential causes and encourage the person to elevate extremities and receive treatment.

Q8- Check for Elevated Skin Temp

Question 8: Is there elevated skin temperature?

Elevated, localized skin temperature can indicate

- excessive mechanical stress,
- bone fracture
- or infection and requires further evaluation.

A temperature elevation of greater than 2 degrees centigrade or a noticeable difference by touch when compared with the contralateral foot is considered clinically significant and requires follow-up.

Q9 – Muscle Weakness

Question 9: Is there muscle weakness?

A manual muscle test of foot and great toe dorsi and plantar flexion. Weakness or inflexibility is associated with diabetes neuropathy and increases the risk of injury.

Prayer Sign

Q10 - See Bottom of Feet?

Question 10: Can the person see the bottom of his/her feet?

- Extra weight and/or lack of flexibility can make it difficult for people to visually assess their feet.
- Self-inspection and foot care are also difficult.

Q11 & 12 – How do the Shoes Fit?

Question 11: Are they wearing improperly fitted shoes?

- Can create foot pressures that lead to further complications.
- Sensory loss often results in wearing shoes that are too short and/or narrow resulting in ischemic ulcers on the medial or lateral metatarsal heads or the toes of a foot with claw toe deformity.
- Properly sized added depth shoes with soft custom molded insoles are usually indicated for those with loss of sensation and deformity to prevent ulceration.
- **Question 12: Is the footwear appropriate for their category?**

Poll question #3

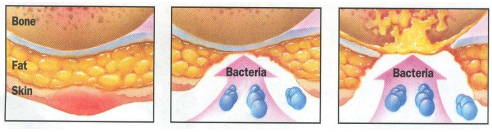
- What is the most common cause of ulcers?

A. Dr. Scholl's corn pads
B. Minor trauma
C. Trimming calluses
D. Burns from hot water

Common Causes of Ulcers

- Tight shoe and minor trauma
- Neuropathy and peripheral vascular disease
  - Autonomic: blood pooling, swelling
  - Motor: atrophic musculature, deformity, joint stiffness
  - Resulting increased plantar pressure, trauma

Foot Wounds



Blisters
Calluses

Ulcers

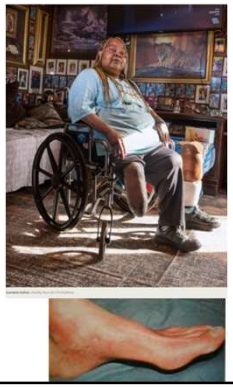
Bone infection

Risk Factors for Peripheral Arterial Disease

- Risk factors include:
  - diabetes
  - over the age of 60
  - hypertension,
  - hyperlipidemia,
  - who smoke, are at higher risk for PAD.

Black Americans have 3-4 times increased risk of PAD

Careful screening and appropriate intervention for these higher risk groups is imperative.



Symptoms of Peripheral Arterial Disease

What are symptoms of PAD?

- The classic symptom of PAD is pain in the legs with physical activity, such as walking, that gets better after rest.
- However, up to 4 in 10 people with PAD have no leg pain.
- Symptoms of pain, aches, or cramps with walking (claudication) can happen in the buttock, hip, thigh, or calf.

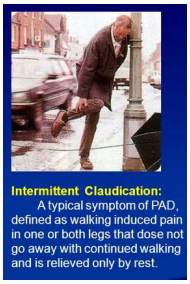
Signs of Peripheral Arterial Disease

Physical signs

- include leg muscle atrophy (weakness);
- hair loss; smooth, shiny skin;
- skin that is cool to the touch, especially if accompanied by pain while walking (that is relieved by stopping walking);
- decreased or absent pulses in the feet;
- sores or ulcers in the legs or feet that don't heal; and cold or numb toes.

Peripheral Arterial Disease Intermittent Claudication

- Physical Exam – Skin
  - Pale or blue, purple
  - Dependent rubor, blanching when elevated
  - Cool to touch, loss of hair, nonhealing wounds, gangrenous
  - Diminished pulses
- Treatment = Protect feet
  - Avoid constriction, increase walking, stop smoking, get ABI, medications and/or surgery

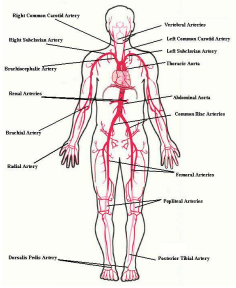


Intermittent Claudication: A typical symptom of PAD, defined as walking induced pain in one or both legs that dose not go away with continued walking and is relieved only by rest.

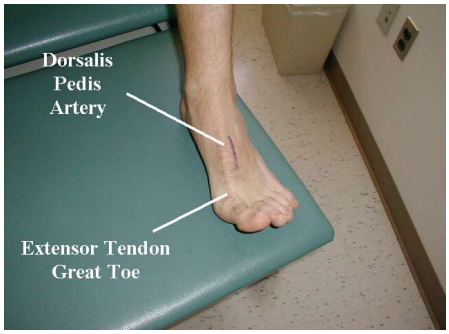
Half-Way Stretch

Vascular Status Assessment

- Posterior tibial pulse
- Dorsalis pedis pulse
- Temperature
- Appearance

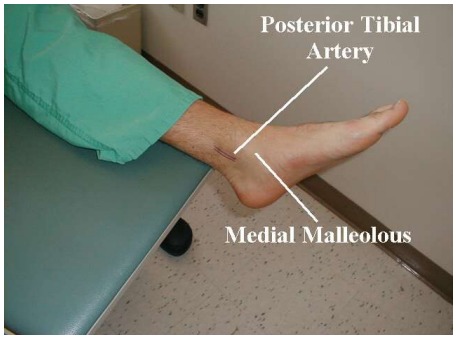


Dorsalis Pedis Pulse



Taking the Dorsalis Pedis Pulse

Posterior Tibial Pulse



Taking the Posterior Tibial Pulse

Refer. Include Multi-Disciplinary Team

- **If claudication or decreased/absent pedal pulses**
  - refer for ankle-brachial index and for further vascular assessment
- **Foot ulcers and high-risk feet**
  - Refer to multidisciplinary team(e.g., dialysis, Charcot foot, prior ulcers or amputation
- **Foot care specialists recommended:**
  - those who smoke
  - histories of prior lower-extremity complications
  - loss of protective sensation
  - structural abnormalities
  - peripheral arterial disease
- **Ongoing preventive care lifelong surveillance.**

Using the ABI: An Example

ABI=ankle-brachial index; DP=dorsalis pedis; PT=posterior tibial; SBP=systolic blood pressure

Interpreting the Ankle-Brachial Index

ABI	Interpretation
1.00–1.29	Normal
0.91–0.99	Borderline
0.41–0.90	Mild-to-moderate disease
≤0.40	Severe disease
≥1.30	Noncompressible

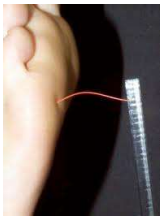
Loss of Protective Sensation (LOPS)

"I didn't notice"

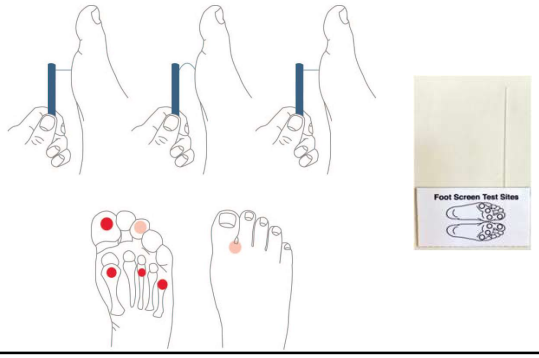
- Needle in foot
- Pebble in shoe
- Stepped on a nail
- Cut too deep
- Shoes were rubbing
- Others?

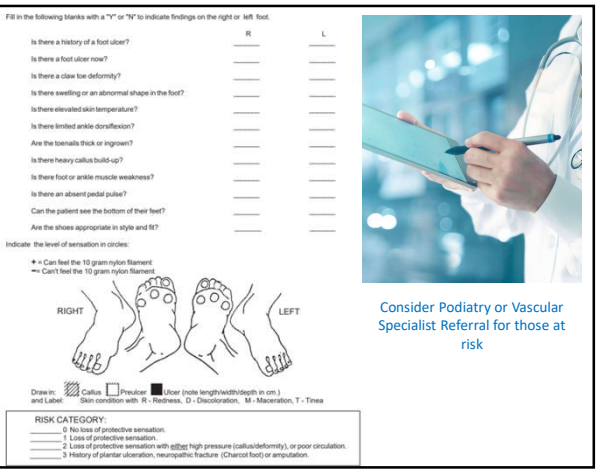
Loss of Protective Sensation

- Monofilament Testing
  - 5.07 touched to plantar surface and top of foot
  - C shape delivers 10 gms pressure
  - Test four sites
    - Plantar surfaces of
      - Each great toe
      - 1st, 3rd and 5th metatarsal head



5.07 monofilament delivers 10gms linear pressure





Fill in the following blanks with a "Y" or "N" to indicate findings on the right or left foot.

	R	L
Is there a history of a foot ulcer?		
Is there a foot ulcer now?		
Is there a claw toe deformity?		
Is there swelling or an abnormal shape in the foot?		
Is there elevated skin temperature?		
Is there limited ankle dorsiflexion?		
Are the toenails thick or ingrown?		
Is there heavy callus build-up?		
Is there foot or ankle muscle weakness?		
Is there an absent pedal pulse?		
Can the patient see the bottom of their feet?		
Are the shoes appropriate in style and fit?		

Indicate the level of sensation in circles:

+ = Can feel the 10 gram nylon filament
− = Can't feel the 10 gram nylon filament

RIGHT LEFT

Draw in: Callus Preulcer Ulcer (note length/width/depth in cm.)
and Label: Skin condition with R - Redness, D - Discoloration, M - Maceration, T - Tinea

RISK CATEGORY:
_____ 0 No loss of protective sensation.
_____ 1 Loss of protective sensation.
_____ 2 Loss of protective sensation with either high pressure (callus/deformity), or poor circulation.
_____ 3 History of plantar ulceration, neuropathic fracture (Charcot foot) or amputation.

Consider Podiatry or Vascular Specialist Referral for those at risk

Risk Category & Action

Step 3: Report Risk Category

- The higher the Risk Category, the higher the risk there is of recurrent foot ulceration, progressive deformity, and ultimately, amputation of the foot.

Risk Category Description for people with Diabetes

- 0 - No loss of protective sensation in feet or Peripheral Arterial Disease (PAD).
- 1 - Loss of Protective Sensation (LOPS) or PAD
- 2 – LOPS + PAD, or LOPS + foot deformity, or PAD + foot deformity
- 3 –LOPS or PAD plus history of foot ulcer, amputation or ESRD

Step 3: Risk Action

0 – Education emphasizing diabetes management, proper fitting footwear, self-inspection, skin/nail/callus care, and early reporting of foot injuries. **Follow-up yearly for foot screen.**

1 – Daily foot care and early reporting of foot injuries. Proper fitting/design footwear with soft inserts/soles. Surgery for deformities. **Routine follow-up every 6 -12 mos**

2 - Depth-inlay footwear, molded/modified orthotics; modified shoes as needed. Consider vascular consultation. **Routine follow-up 3-6 months**

3 - Depth-inlay footwear, molded/modified orthoses; modified/custom footwear, ankle-foot orthoses as needed. Consider vasculature consultation if PAD present.
Routine follow-up 1 – 3 months. Foot Clinic visit frequency may vary based on individual needs.

No DE-FEET

FREE Feet Teaching Sheets

Steps to Healthy Feet

Since you have diabetes, you may have decreased blood flow to your feet. Decreased blood flow and elevated blood sugars can damage nerves which leads to numbness in your feet. When your feet are numb, you may injure them without even knowing it. This can result in infections and sores which don't heal well. Taking good care of your feet every day is the best way to prevent problems and keep healthy.

How to Take Care of Your Feet

- ✓ Check and wash your feet daily. If you have trouble bending, use a mirror to see the bottom of your feet. Make sure to dry well and check in between toes.
- ✓ Let your provider know right away if you discover any sores, red areas, calluses, drainage, or unusual foot odor.
- ✓ Prevent dry skin and cracks by applying lotion or petroleum jelly to the top and bottom of your feet a few times a week.
- ✓ Avoid going barefoot, even inside, to avoid accidental injury.
- ✓ Buy new shoes at the end of the day when your feet are most swollen.
- ✓ Break-in new shoes gradually by wearing them for a few hours each day (1 hour the first day, 2 hours the second day, etc.).
- ✓ Inspect shoes for rough spots, torn linings, or other objects which could injure your feet. Make sure there is enough room to wiggle your toes.
- ✓ Use diabetes socks that are free of seams and not too tight around the calf.
- ✓ Since your feet may not sense temperatures that are too hot or cold, you need to protect them. Wear warm socks or lined shoes if your feet become cold. Avoid

Foot Care Teaching Sheet

Foot Care Teaching Sheet **(in Spanish)**

Steps to Healthy Feet. This handout covers the important elements of foot care for people living with diabetes with simple and straightforward language.

https://diabetesed.net/coach-bevs-diabetes-cheat-sheets/

Poll Question 4

JR has dry skin cracks in the back of their heel. What is the best action?

A. Gently scrape the dead skin with a razor
B. Apply moisturizer daily
C. Walk barefoot to promote healing
D. Wear white cotton socks

Check Feet Daily

- ✓ Check and wash your feet daily. If you have trouble bending, use a mirror to see the bottom of your feet. Make sure to dry well and check in between toes.
- ✓ Let your provider know right away if you discover any sores, red areas, calluses, drainage, or unusual foot odor.
- ✓ Prevent dry skin and cracks by applying lotion or petroleum jelly to the top and bottom of your feet a few times a week.

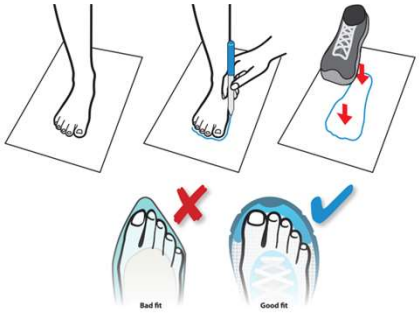
Education Points – Wear Shoes

- ✓ Avoid going barefoot, even inside, to avoid accidental injury.
- ✓ Buy new shoes at the end of the day when feet are most swollen.
- ✓ Break in new shoes gradually by wearing them for a few hours each day (1 hour the first day, 2 hours the second day, etc.).
- ✓ Inspect shoes for rough spots, torn linings, or other objects which could injure your feet. Make sure there is enough room to wiggle your toes.

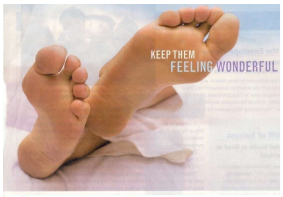
ADA Standards - Shoes

- Broad and square toe box
- Laces with 3-4 eyes per side or Velcro straps
- Padded tongue
- Quality lightweight materials
- Sufficient depth to accommodate a cushioned insole
- Custom shoes as needed
- Medicare approves 1 pair of custom shoes and 3 inserts yearly.

Make Sure There is Enough Room



Shoes



Therapeutic shoes or inserts

If you have Part B, have diabetes, and meet certain conditions (page 14), Medicare will cover therapeutic shoes if you need them.

The types of shoes that are covered each year include **one** of these:

- One pair of depth-inlay shoes and 3 pairs of inserts
- One pair of custom-molded shoes (including inserts) if you can't wear depth-inlay shoes because of a foot deformity, and 2 additional pairs of inserts

Note: In certain cases, Medicare may also cover separate inserts or shoe modifications instead of inserts.

Therapeutic shoes or inserts (continued)

How do I get therapeutic shoes?

For Medicare to pay for your therapeutic shoes, the doctor treating your diabetes must certify that you meet these 3 conditions:

1. You have diabetes.
2. You have at least one of these conditions in one or both feet:
   - Partial or complete foot amputation
   - Past foot ulcers
   - Calluses that could lead to foot ulcers
   - Nerve damage because of diabetes with signs of problems with calluses
   - Poor circulation
   - A deformed foot
3. You're being treated under a comprehensive diabetes care plan and need therapeutic shoes and/or inserts because of diabetes.

Medicare also requires:

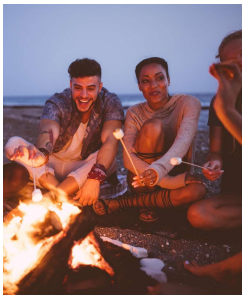
- A podiatrist or other qualified doctor prescribes the shoes.
- A doctor or other qualified individual like a pedorthist, orthotist, or prosthetist fits and provides the shoes.

Medicare and Custom Shoes

- The doctor who treats diabetes must certify need for therapeutic shoes or inserts and be a Medicare provider.
- A podiatrist or other qualified doctor must prescribe the shoes or inserts, and ind must get the shoes or inserts from one of these:
  - A podiatrist
  - A pedorthist
  - Another qualified individual
  - A prosthetist
  - An orthotist

Foot Care Tips – Check Temp

- ✓ Avoid heating pads, Jacuzzis and hot water bottles. Use sunscreen to avoid sunburn.
- ✓ Since feet may not sense temperatures that are too hot or cold, you need to protect them. Wear warm socks or lined shoes if feet become cold.
- ✓ Use diabetes socks that are free of seams and not too tight around the calf.
- ✓ No bathroom surgery (this includes trimming calluses with a razor or liquid corn and callus removers). This can lead to injury.

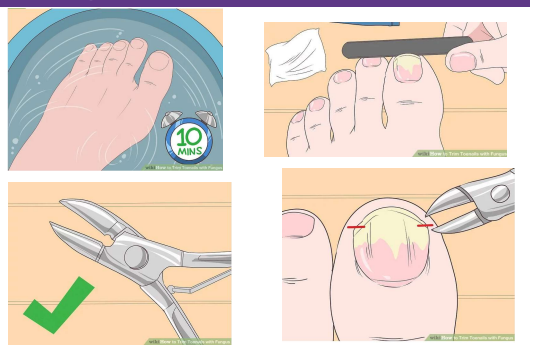


Diabetes Socks

- Seamless
- Not too tight at calf
- Good cushion
- Cotton/poly blend
- Affordable

No Bathroom Surgery

Cutting Thick Toenails



https://www.wikihow.com/Trim-Toenails-with-Fungus

Get Help and Prevent Injury

- Have a foot doctor trim toenails if cannot see or feel your feet, you cannot reach your feet, your toenails are thick or yellowed or your nails curve and grow into the skin.

We Can Make A Difference

- Assess and Coach
  - Proper Footwear & avoid barefoot (even indoors)
  - Daily foot inspection - in between toes and sole
  - Report any foot lesions, discoloration, swelling
- Other observations
  - Skin and nail condition
  - Who trims nails?
  - Shoe fit and condition
  - Skin care and vascular health

Lower Extremities

- **"If there is ANY foot problems, take off your shoes and socks and show your feet!"**
- Complete foot exam annually
- More frequent checks on those at high risk
- Keep close eye if loss of protective sensation, foot deformities, or a history of foot ulcers

Thank You

- Questions? We are here to help!
- Email info@diabetesed.net
- Call 530/ 893-8635
- www.diabetesed.net