



RSBCIHI DIABETES PROGRAM

Kendall Shumway DPM
Riverside – San Bernardino County
Indian Health Inc.
Banning, California

Statistics

- 29.1 million people or 9.3% of the population have diabetes.(CDC 2014)
- Approximately 12% of U.S. adults with diabetes have a history of foot ulcer.
 - MMWR November 14, 2003 / 52(45);1098-1102
- Amputation rates among American Indians are 3 to 4 times higher than those for the general population. Levels of Diabetes-Related Preventive-Care Practices — United States, 1997-99," *MMWR Weekly* 49 (42): 954-8.

Statistics (cont.)

- About 60% of non-traumatic LEA caused by diabetes. (CDC 2014)
- 5 year survival rate ~50% for BKA
- ~50% of diabetics with LEA require 2nd LEA within 5 years of initial amputation.

How Do Amputations Happen?

- Usually caused by a foot injury.
- The injury becomes infected.
- Infection spreads.
- Gangrene may set in.
- Amputation stops the infection from spreading to the rest of the body.

Amputations

(Things Which Increase Risk!)

- Diabetes > 10 years
- Men > women
- Poor blood sugar control
- Eye or kidney problems
- Neuropathy
- Previous amputation

Multifactorial Etiology For Ulcers

- Neuropathy
- Vascular Disease
- Abnormal Weight Bearing
- Limited Joint Mobility
- Inadequate Shoe-gear
- Diabetes Education
- Diabetes Control
- Social History
- Vision Loss
- History of Foot Ulceration
- Nutritional Status

Screening to Prevent Amputation

- Visual Exam (Skin)
- Changes in the Circulation
- Changes in the Nerves
- Deformities: a change in the muscles or bones of the foot. (Musculoskeletal)

Three Minute Foot Exam

3-Minute Diabetic Foot Exam

Every 20 seconds, someone loses a limb to diabetes. Most of these amputations are preventable if patients are diagnosed and get proper medical care sooner. This brief exam will help you to quickly detect major risks and prompt you to refer patients to appropriate specialists.

0:01

What to Ask

Does the patient have a history of:

- Previous leg/foot ulcer or lower limb amputation/surgery?
- Prior angioplasty, stent, or leg bypass surgery?
- Foot wound?
- Smoking or nicotine use?
- Diabetes? (if yes, what are the patient's current control measures?)

Does the patient have:

- Burning or tingling in legs or feet?
- Leg or foot pain with activity or at rest?
- Changes in skin color, or skin lesions?
- Loss of lower extremity sensation?

Has the patient established regular podiatric care?

0:02

What to Look For

Dermatologic exam:

- Does the patient have discolored, ingrown, or elongated nails?
- Are there signs of fungal infection?
- Does the patient have discolored and/or hypertrophic skin lesions, calluses, or corns?
- Does the patient have open wounds or fissures?
- Does the patient have interdigital maceration?

Neurologic Exam:

- Is the patient responsive to light touch (protective sensation) on the feet?

Musculoskeletal Exam:

- Does the patient have full range of motion of the joints?
- Does the patient have obvious deformities? If so, for how long?
- Is the midfoot hot, red, or inflamed?

Vascular Exam:

- Is the hair growth on the foot dorsum or lower limb decreased?
- Are the dorsalis pedis AND posterior tibial pulses palpable?
- Is there a temperature difference between the calves and feet or between the left and right foot?

0:03

What to Teach

Recommendations for daily foot care:

- Visually examine both feet, including the sole and between the toes. If the patient can't do this, have a family member do it.
- Keep feet dry by regularly changing shoes and socks; dry feet after baths or exercise.
- Report any new lesions, discolorations, or swelling to a health care professional.

Education regarding shoes:

- Educate the patient on the risks of walking barefoot, even when indoors.
- Recommend appropriate footwear, and advise against shoes that are too small, tight, or rub against a particular area of the foot.
- Suggest yearly replacement of shoes—most frequently if they exhibit high wear.

Overall health risk management:

- Recommend smoking cessation (if applicable).
- Recommend appropriate glycemic control.

Time for a specialist? Mapping out a treatment and follow-up plan*

Priority	Indications	Timeline	Suggested follow-up
URGENT (active pathology)	<ul style="list-style-type: none"> • Open wound or ulcerative area, with or without signs of infection • New neuropathic pain or pain at rest • Signs of active Charcot deformity (red, hot, swollen midfoot or ankle) • Vascular compromise (pulsus absent or D/PT pulses or gangrene) 	Immediate referral/consult	As determined by specialist
HIGH (ADA risk category 1)	<ul style="list-style-type: none"> • Presence of diabetes with a previous history of ulcer or lower extremity amputation • Chronic venous insufficiency (skin color change, or temperature difference) 	Immediate or "next available" outpatient referral	Every 1-2 months
MODERATE (ADA category 2)	<ul style="list-style-type: none"> • Peripheral artery disease +/- LOPS • D/PT pulse diminished or absent • Presence of swelling or edema 	Referral within 1-3 weeks (if not already receiving regular care)	Every 2-3 months
LOW (ADA risk category 2)	<ul style="list-style-type: none"> • LOPS +/- nonprogressing, nonchanging deformity • Patient requires prescriptive or accommodative footwear 	Referral within 1 month	Every 4-6 months
VERY LOW (ADA risk category 3)	<ul style="list-style-type: none"> • No LOPS or peripheral artery disease • Patient seeks education regarding foot care, gait/ice training, appropriate footwear, preventing injury, etc. 	Referral within 1-3 months	Annually at minimum

*All patients with diabetes should be seen at least once a year by a foot specialist.

ADA, American Diabetes Association LOPS, loss of protective sensation
DF, dorsalis pedis PT, posterior tibial

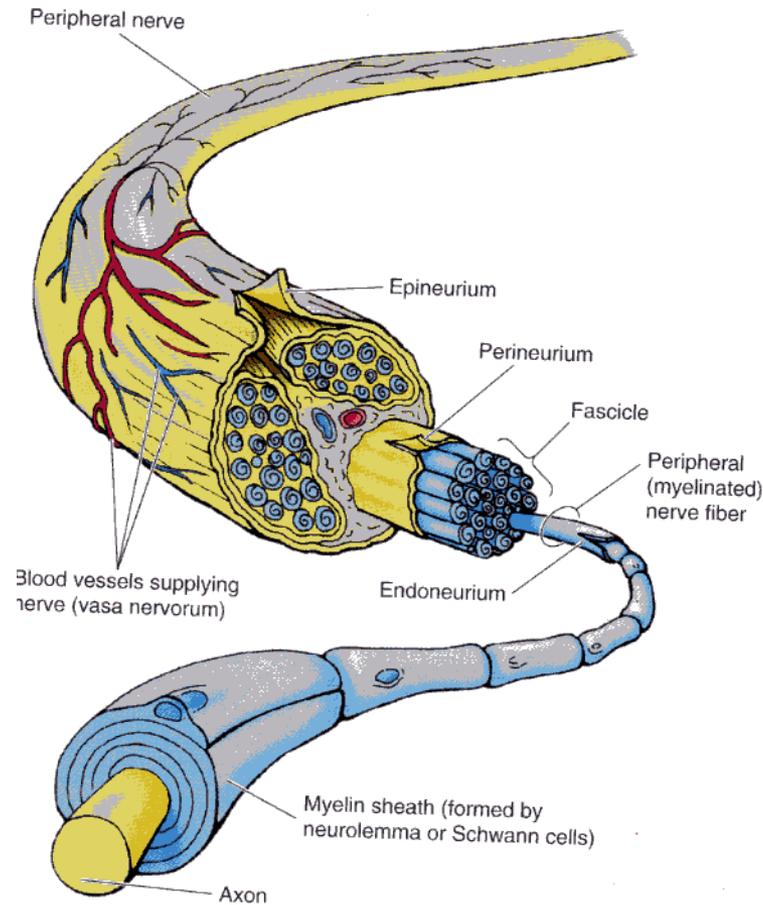


Download a copy of the guide: <http://www.acfhas.org/resources>

PERIPHERAL NEUROPATHY

WHAT IS IT?

Peripheral Nervous System



Types of Neuropathy

Motor Nerve Damage



Sensory Nerve Damage



Charcot Arthropathy



Autonomic Nerve Damage

- Dry Skin
- Forms callus easier
- Fungus starts easier
- Crack more easily
- ***Easier to break open and allow infection***

Symptoms of Neuropathy

- Burning
- Numbness
- Tingling
- Pins and Needle Sensation
- Loss of Feeling

Example - Dorsal Ulcers from Boots



HOW DO YOU PREVENT NEUROPATHY?

GLUCOSE

PERIPHERAL ATERIAL DISEASE

WHAT IS IT?

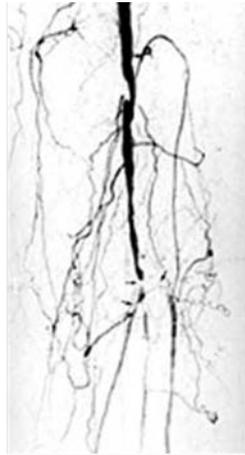
Forest Fires



Forest Fires (cont.)



Am Fam Physician. 2001 Dec 15;64(12):1965-1973



Heart Disease

Diabetes may increase your risk of heart disease. High glucose levels may damage blood vessels over time. High levels of fat and cholesterol in the blood vessels can gradually reduce or block blood flow to the heart.

Reduced blood flow

Plaque buildup

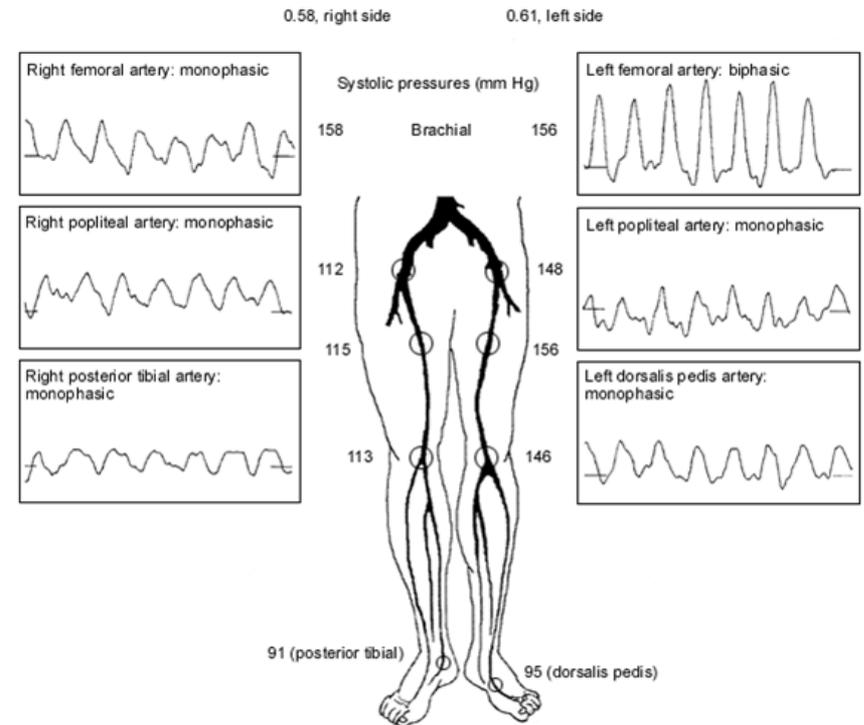
People with diabetes are 2-4 times more likely to die from heart disease.

Your physician should check your blood pressure every visit (at least every 3 months), and check your cholesterol at least once a year.

The diagram shows a 3D anatomical view of the heart with a callout showing a cross-section of a coronary artery. The artery is partially blocked by a red, irregular mass labeled "Plaque buildup". This blockage is labeled "Reduced blood flow".



ABI and Plethysmography Wave Forms



How do you Prevent Vascular Disease?

- Exercise
- Control Cholesterol
- Don't smoke
- Control Blood Pressure
- (Sounds like preventing heart disease doesn't it?)

Ulcer and Wound Care

- What you put on versus what you take off a wound.

Deep Callus with Underlying Bruise



Deep callus with underlying bruise

Amputation Prevention

- Non-healthy tissue
- Pressure and friction
- Drainage

What Do You Take Off the Wound?

What Do You Take Off the Wound?

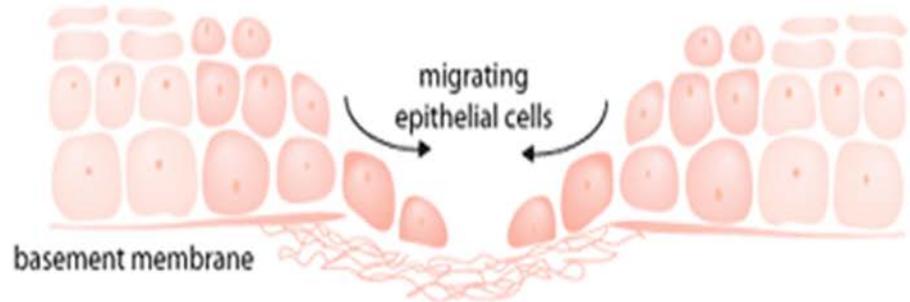


What Do You Take Off the Wound? (cont.)



**WHAT DO YOU PUT ON THE
WOUND?**

What Do You Put on the Wound? (cont.)



Riverside San Bernardino County Indian Health Inc. (RSBCIHI)

- April of last year
 - 49% DM Foot Screening Rate
 - 907 in Registry
 - Of those 461 had a podiatry visit

Riverside San Bernardino County Indian Health Inc. (cont.)

- IPC Team Meetings
- Sign placed in Exam Rooms

Do You Have DIABETES?  American Diabetes Association.

Take Off Your Shoes & Socks

TODAY:
Ask Your Healthcare Provider To Check Your Feet:
Report any changes in how your feet look or feel

EVERY DAY:

- 1 Wash your feet thoroughly
- 2 Dry your feet thoroughly (between the toes)
- 3 Apply moisturizer to your feet (not between the toes)
- 4 Wear moisture resistant socks
- 5 Never walk barefoot
- 6 Wear shoes that fit well

ALSO:

- Check your feet for sores, cuts, blisters, corns and redness
- DO NOT soak your feet
- DO NOT smoke

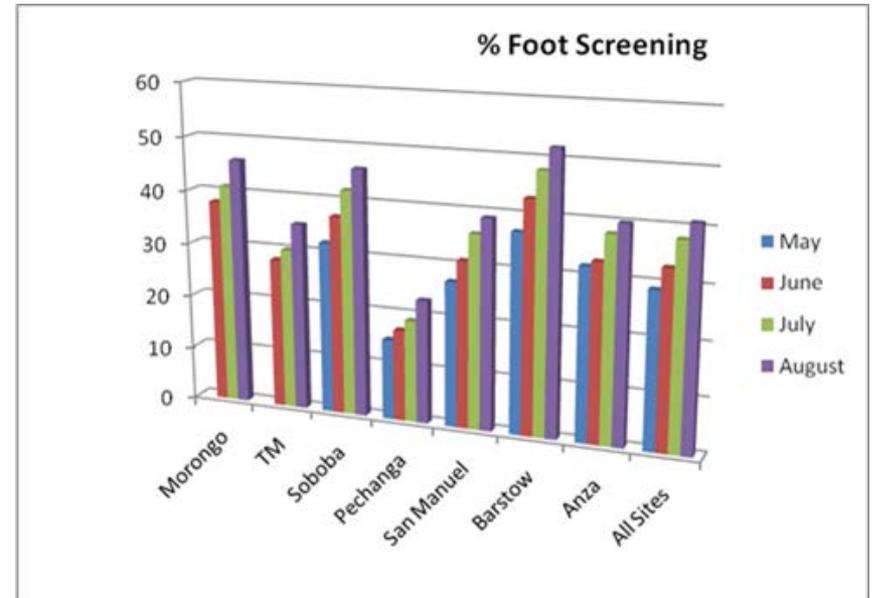
Support of these resources made possible by


**Stop Diabetes®
from Knocking
You Off
Your Feet**

Illustrations © 2011 Janssen Publishing Ltd. EB Green 10/09. S. 018

RSBCIHI

- Regular Feedback



RSBCIHI – Where to Find Foot Exam Status

Reminders

The screenshot shows the EHR interface for patient DEMO, Patient John (30222). The Reminders tab is active, displaying a table of reminders:

Reminder	Date	Status
DM Foot Exam	07-Oct-2011 12:00	DUE NOW
DM HgbA1c	DUE NOW	
DM HgbA1C Control		

Other tabs visible include Active Problem List, Medication List, Appointments/Visits, Vitals, Adverse Reactions, and Alerts.

Wellness Tab

The screenshot shows the EHR interface for patient DEMO, Patient John (30222). The Wellness tab is active, displaying the Education and Health Factors sections. The Exams table is also visible:

Visit Date	Exam	Result	Comments	Prov
08/06/2013	DEPRESSION SCREENING	Considered and not done		TRUI
12/11/2012	DIABETIC FOOT EXAM, COMPLETE	Refused		BOUF
12/07/2012	DEPRESSION SCREENING	NORMAL/NEGATIVE		BOUF
03/05/2011	DIABETIC EYE EXAM	NORMAL		NAUJ
01/06/2011	FOOT EXAM - GENERAL	NORMAL/NEGATIVE		SHUJ
10/07/2010	DIABETIC FOOT EXAM, COMPLETE	Refused		SHUJ
08/31/2010	FALL RISK	NORMAL/NEGATIVE		MAR
09/10/2009	INTIMATE PARTNER VIOLENCE	Refused		DEMI
05/22/2009	INTIMATE PARTNER VIOLENCE	Considered and not done		DEMI
03/05/2009	ALL PARTS OF EXAM	Considered and not done		DEMI

The Exams table shows a 'Diabetic Foot Exam' entry with a result of 'NORMAL' and a provider of 'rpd'. An orange arrow points to this entry.

Foot Exam PDSA

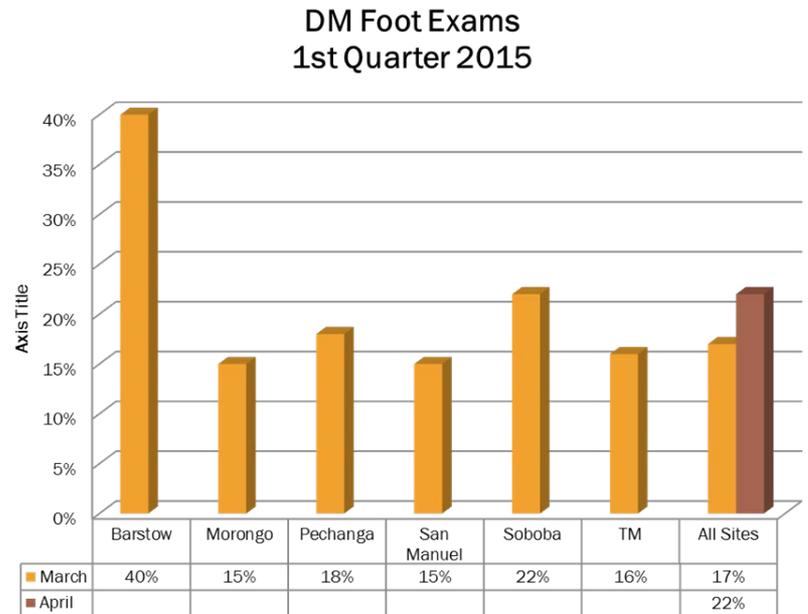
Foot Exam PDSA (cont.)

The screenshot displays a medical software interface with a patient list on the left and a detailed view of a patient group on the right. The patient list includes various panels such as 'Diabetics Mon 8/13', 'Diabetics on June 30', and 'Di. Magbanus'. The detailed view shows a table of patient data for 'DM Foot Exams'.

DM Foot Exams	DM Eye Ex.	Dental Ex.	Last Diet.	Seasonal	Pn
8/77 7/13/2015 26/81 1/17/2014 33/75 9/10/2014	NO	YES	05/31/2013	NO	03/
6/62 9/03/2015 3/64 8/25/2015 21/70 8/18/2015	YES (Problem List)	NO	08/25/2014	NO	11/
8/99 9/03/2015 51/90 7/13/2015 30/90	YES (Problem List)	NO	08/25/2010	NO	08/

RSBCIHI (more)

- DM Audit
 - 2014- 46%
 - 2015- 54%



Screening to Prevent Amputation (cont.)

- Visual Exam (Skin)
- Changes in the Circulation
- Changes in the Nerves
- Deformities: a change in the shape of the muscles or bones of the foot.
(Musculoskeletal)

Foot Care For All People with Diabetes

- Foot check every visit
- Annual diabetic foot exam – in clinic
- Referral when new serious foot problem discovered
- Patient Education

Special Foot Care for People with Diabetes Who Have *Insensitive Feet*

- Check the feet twice a day.
- Check temperature of water with elbow before putting feet in.
- Dry feet very well especially between toes.
- Apply lotion, cream, oil, or Vaseline twice a day.
- For cold/numb feet, wear extra socks-avoid heating pads, hot water bottles, and stoves.
- Wear proper shoes/socks.

Special High-Risk Feet

- *Insensitive* feet only – complete foot exam every 6 months
- ***Insensitive*** feet and foot ***deformity*** – complete foot exam every 4 months
May need extra depth shoes with special insole called an orthotic.

Special High-Risk Feet (cont.)

- ***Insensitive*** feet *and* a ***foot ulcer or amputation*** in the past – complete foot exam every two to three months.

Have special extra depth or custom made shoes as well as custom insole called an orthotic.

Visual Exam

- Look at the lower leg, the ankle, the heel, the top and bottom of the foot, and the toes. (Don't forget between the toes).

Look at Toes and Toenails

- Thickened nails – fungal infections, trauma often the cause – can easily catch and be pulled off – pressure from shoes can cause an ulcer beneath nail
- Ingrown nails – edges of nails may become infected – red, hot, and very painful
- Infected toe webs – fungal infection, poor foot care and hygiene, moisture between toes, skin cracks and bacteria can get into the skin

Athletes Foot



Look at Toes and Toenails (cont.)



Ingrown Toenail



Look for Calluses and Corns

- What is a callus – callus (or corn) happens when the skin tries to protect itself for constant pressure – the skin grows thicker and thicker and becomes hard.
- Think – why did this callus develop? - what is causing the pressure: deformed bones, toenail, tight shoes, problem inside shoes?

Corn

- A callus that forms on the top or end of a toe
- Or between two toes
- Result of a bony prominence on the toe or toes



Calluses and Corns



Calluses and Corns (cont.)



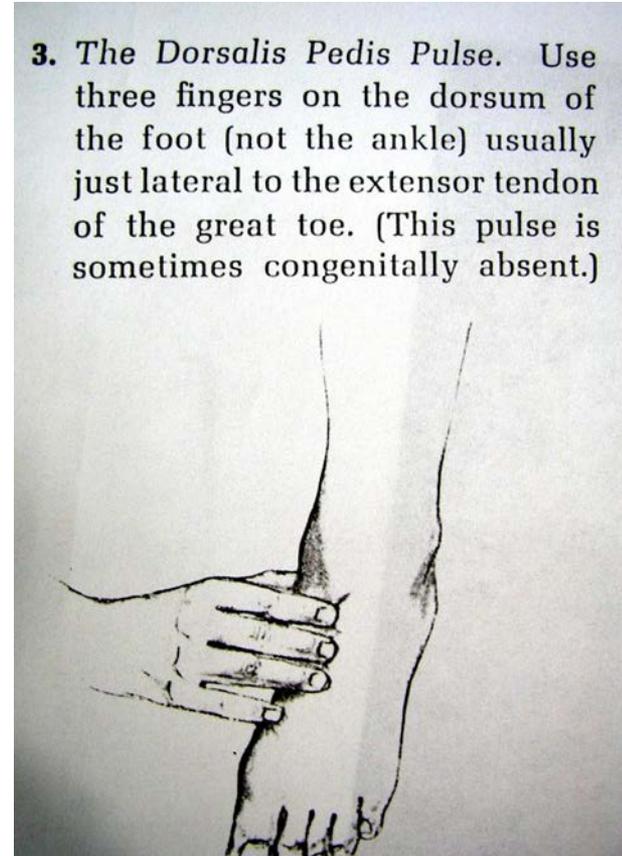
Foot Pulses

- Evaluate circulation in the feet by feeling for pulses
- Dorsalis Pedis pulse
- Posterior Tibial pulse
- Capillary Refill

Dorsalis Pedis Pulse

- Top of the foot
- Use three fingers
- Feel just lateral to the extensor tendon of the big toe
- Sometimes absent (congenitally)

3. *The Dorsalis Pedis Pulse.* Use three fingers on the dorsum of the foot (not the ankle) usually just lateral to the extensor tendon of the great toe. (This pulse is sometimes congenitally absent.)



Posterior Tibial Pulse

4. *The Posterior Tibial Pulse.*
Curve your fingers behind and slightly below the medial malleolus of the ankle. (This pulse may also be congenitally absent.)



- Inside of the ankle
- Use three fingers
- Curve the fingers just behind the medial (inside) ankle bone
- May also be absent (congenitally)

Monofilament Testing

- Important test to determine if *protective sensation intact, or insensitive feet*
- 5.07 (10 gm) monofilament used
- Touch foot lightly with the monofilament causing it to just bend—if felt by patient then *protective sensation is intact*

Look for Deformities

- Deformity - a change in the shape of the muscle or bones of the foot – may cause stress and pressure leading to callus and/or ulcers.
- Common deformities seen:
 - Hammertoes
 - Claw toes
 - Bunion
 - Amputation

Bunion

- A bony prominence of the big toe joint or the 5th toe joint.



Hammertoe

- A buckling of a toe producing a bony prominence on the top of the toe.



Patient Education - Diabetes

- Stop smoking
- Check feet daily
- Wash feet daily
- Do not soak feet except to soften nails for trimming
- Do not go barefoot- Even in the House
- Never use hot water bottles, heating pads, or hot water
- Do not use chemicals to remove corns/warts
- Pick proper shoes and socks

Medicare Shoe Benefit



Nike Native N7

