

Diabetic Foot Care

Mahnaz Ghannadiasl

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INTRODUCTION

- **15% Diabetic patients will suffer foot problems.**
- **Risk factors: Majority of patients with type 2 DM and long standing type 1 DM.**
- **45% of all major amputation: caused by diabetic foot syndrome**
- **Death caused of foot diabetic: 17-32%**
- **Good diabetic food care will decreased amputation in 1/2- 3/4 cases.**

Epidemiology

- **Cellulitis occurs 9 times more frequently in diabetics than non-diabetics**
- **Osteomyelitis of the foot 12 times more frequently in diabetics than non-diabetics**
- **Foot ulcerations and infections are the most common reason for a diabetic to be admitted to the hospital**

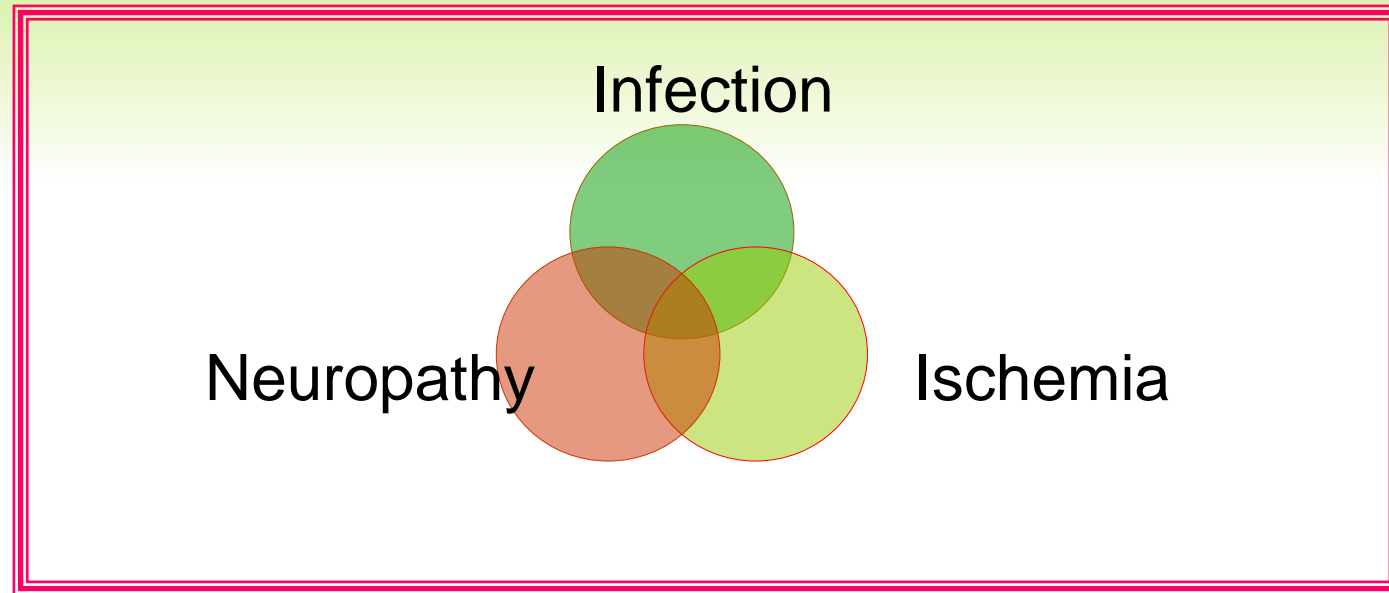
Epidemiology

- **25 % of diabetics will develop a foot ulcer**
- **40-80% of these ulcers will become infected**
- **25 % of these will become deep**
- **50 % of patients with cellulitis will have another episode within 2 years**

Epidemiology (of amputation)

- **25-50 % of diabetic foot infections lead to minor amputations**
- **10-40 % require major amputations**
- **10-30 % of patients with a diabetic foot ulcer will go on to amputation**

DEFINITION OF DIABETIC FOOT SYNDROME



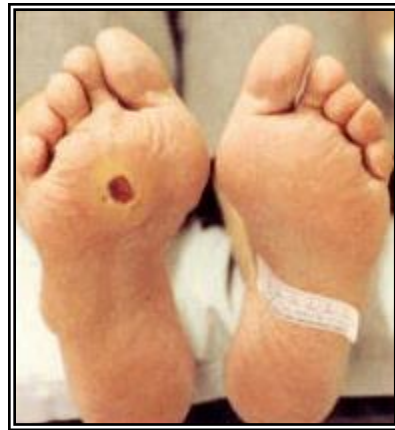
COMMON FOOT PROBLEMS



HAMMER TOE



CHARCOT JOINT



ULCER



HALUX VALGUS



INGROWN TOENAILS



CORN & CALLUS

Foot Care Checklist

- **EDUCATE** about proper foot care
- **EXAMINE** for structural, vascular, neuropathy problems
- **DO** a 10 gram monofilament assessment
- **IDENTIFY** those at high risk of foot ulcers and educate, assess more frequently, and consider appropriately fitted footwear
- **REFER** persons with foot ulcers and other complications to those specialized in foot care

Principles

- **Prevention through education**
- **Proper risk assessment**
- **Early and aggressive treatment**

Educate People with Diabetes on Proper Foot Care – The “DO’ s”

DO ...

Check your feet **every day** for cuts, cracks, bruises, blisters, sores, infections, unusual markings

Use a **mirror** to see the bottom of your feet if you can not lift them up

Check the **colour** of your legs & feet – seek help if there is swelling, warmth or redness

Wash and dry your feet every day, especially between the toes

Apply a good **skin lotion every day** on your heels and soles. Wipe off excess

Change your socks every day

Trim your **nails straight across**

Clean a cut or scratch with **mild soap and water** and **cover** with dry dressing

Wear good supportive shoes or professionally fitted shoes with low heels (under 5cm)

Buy shoes in the late afternoon since your feet swell by then

Avoid extreme cold and heat (including the sun)

See a foot care specialist if you need advice or treatment

Educate People with Diabetes on Proper Foot Care – The “DON'Ts”

DO NOT ...

Cut your own **corns** or **callouses**, nor treat your own **in-growing toenails** or **slivers** with a **razor** or **scissors**.
See your doctor or foot care specialist

Use over-the-counter medications to treat corns and warts

Apply heat with a hot water bottle or electric blanket – may cause burns unknowingly

Soak your feet or use **lotion between your toes**

Take very **hot baths**

Walk **barefoot** inside or outside


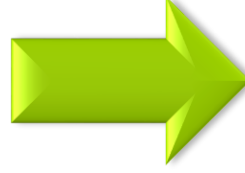
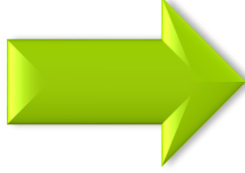
Wear **tight socks, garter or elastics or knee highs**

Wear over-the-counter insoles – may cause blisters if not right for your feet

Sit for long periods of time

Smoke

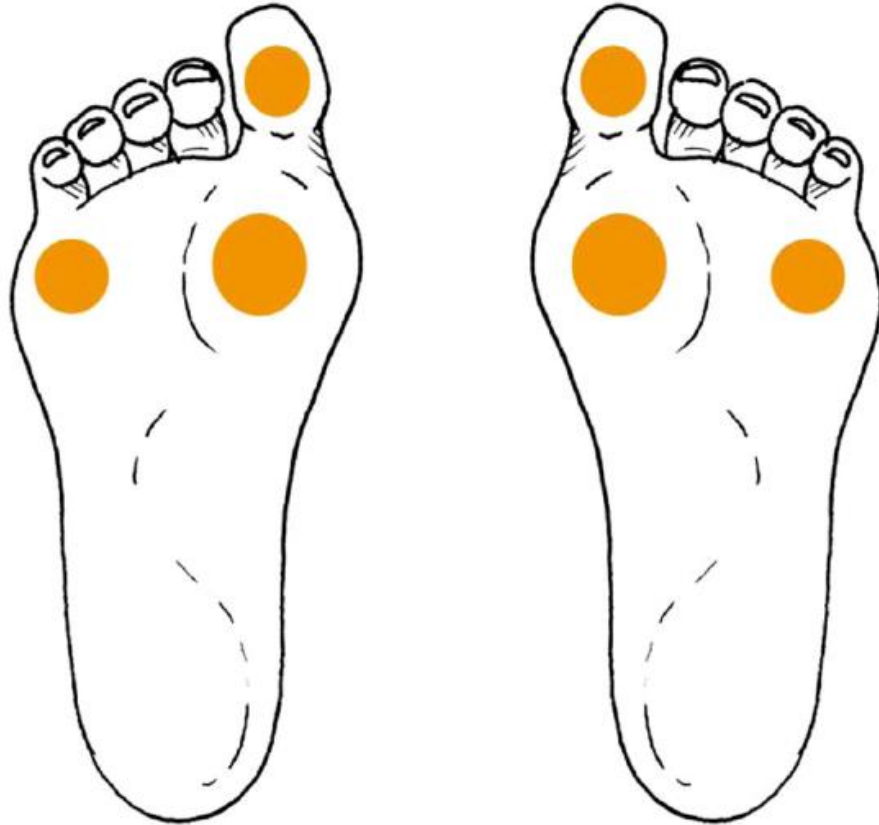
How to Perform Proper Foot Examination

Structural Abnormalities		<ul style="list-style-type: none">• Skin changes• Evidence of infection• Callous or ulcer• Range of motion• Charcot foot
Peripheral Arterial Assessment		<ul style="list-style-type: none">• Temperature• Skin changes• Ankle Brachial Index
Neuropathy Assessment		10 gram monofilament

Key Elements of the Physical Examination

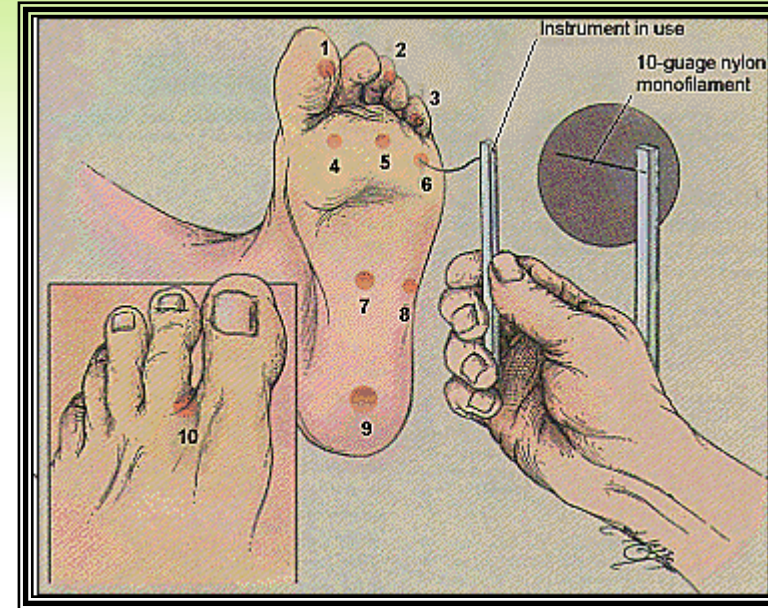
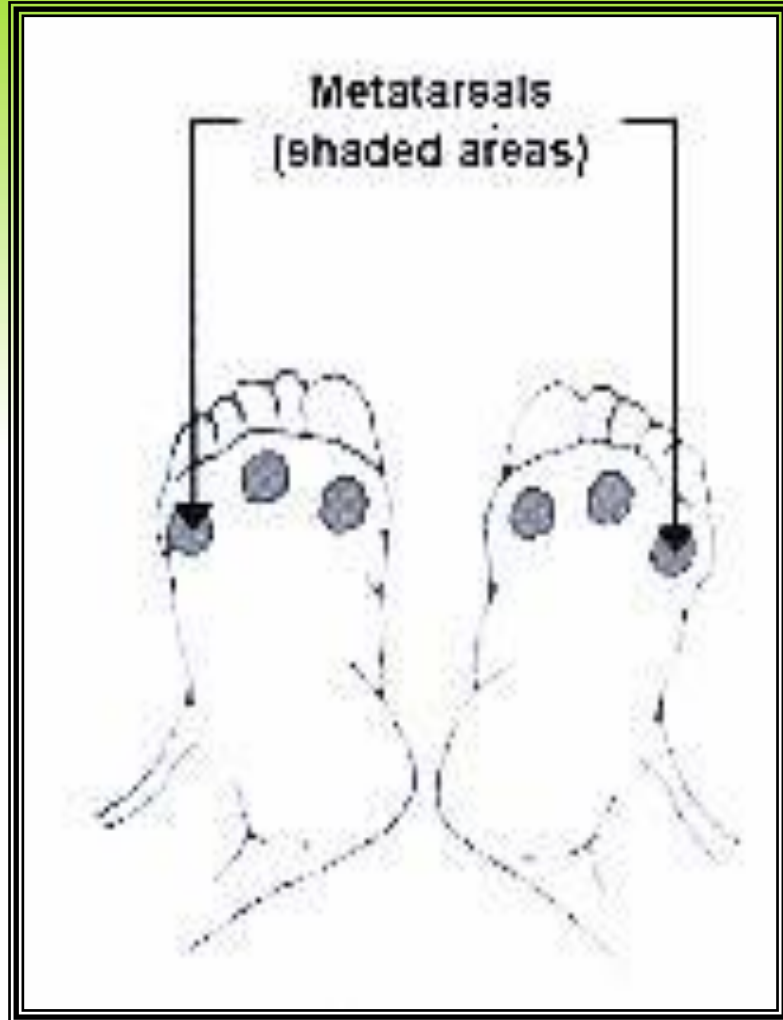
Element	Parameter
Inspection	<ul style="list-style-type: none">• Gait• Foot morphology• Toe morphology• Skin: blisters, abrasions, calluses, subkeratotic hematomas or hemorrhage, ulcers, absence of hair, toe nail problems, edema, abnormal color• Status of nails• Foot hygiene (cleanliness, tinea pedis)
Palpation	<ul style="list-style-type: none">• Pedal pulses• Temperature (increased or decreased warmth)
Protective sensation	<ul style="list-style-type: none">• Sensation to 10 gram monofilament
Footwear	<ul style="list-style-type: none">• Exterior: signs of wear, penetrating objects• Interior: signs of wear, orthotics, foreign bodies

Screening for Protective Sensation Using The 10 gram Monofilament



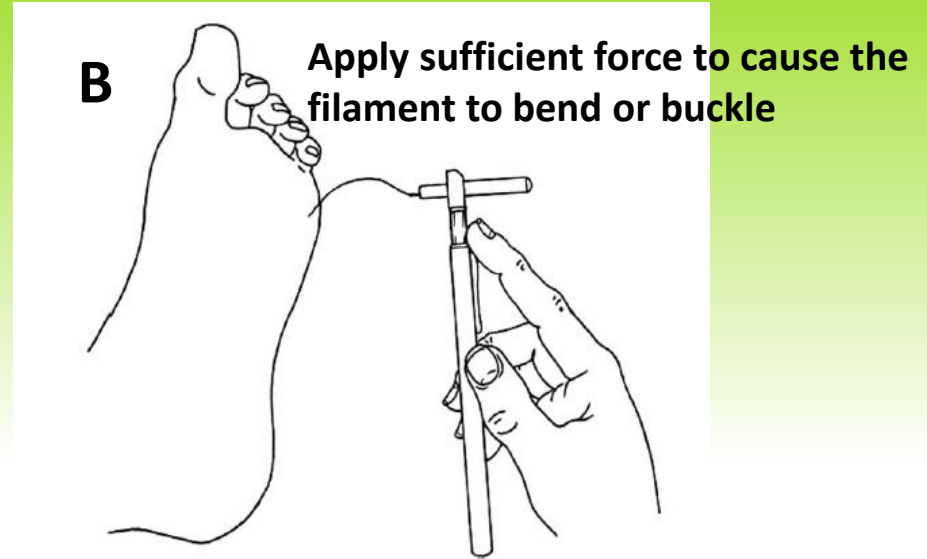
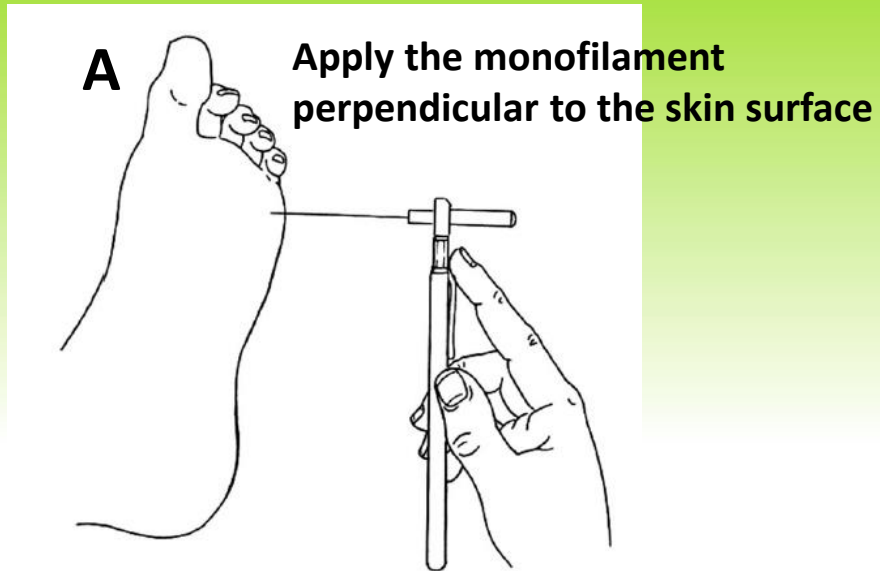
How to perform the sensory examination:

- Conduct in a quiet and relaxed setting.
- Begin by applying the monofilament to the hands, elbow or forehead so that patient what to expect.
- Ensure that the patient can not see whether or where the monofilament is being applied.
- Test the three sites on both feet shown in the figure.



MONOFILAMENT TEST

Screening for Protective Sensation Using The 10 gram Monofilament



How to Apply the monofilament:

- Repeat the application twice at the same site, but alternate the application with at least one 'mock' application in which no filament is applied (total three questions per site).
- Protective sensation is present at each site if the patient correctly answers two out of three applications. Incorrect answers – the patient is then considered to lack protective sensation and is at risk of foot ulceration.

NEUROPATI



DEEP TENDON REFLEX TEST






TUNING FORK – VIBRATORY SENSE

Who is at High Risk of Developing a Foot Ulcer?

- Peripheral neuropathy
 - **Loss of protective sensation using 10 gram monofilament**
- Previous ulceration or amputation
- Structural deformity or limited joint mobility
- Peripheral arterial disease
- Microvascular complications
- Elevated A1C

When Should a Foot Exam be Performed?

Low Risk		Annually
High risk for ulcer		More frequent e.g. Every 3-6 months
Foot ulcer present		Refer to an interprofessional team with expertise in foot ulcers

Foot Ulcer: Interprofessional Team Approach



MANAGEMENT GOAL FOR DIABETIC FOOT

- **ACUTE :**

- ✓ WOUND HEALING

- ✓ SAFE THE FOOT FROM AMPUTATION

- **CHRONIC :**

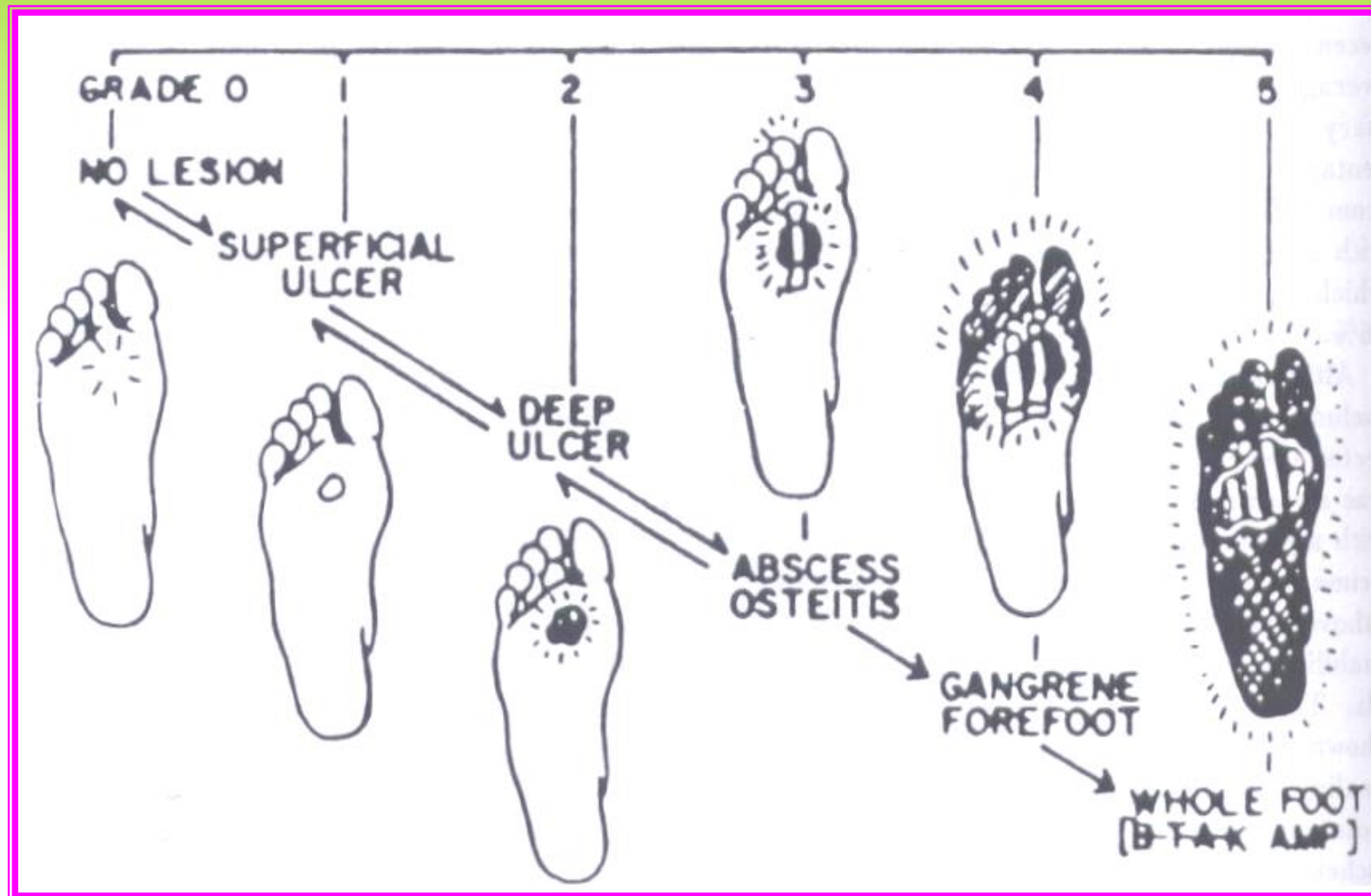
- ✓ TO PREVENT RECURRENENCY OF WOUND

WAGNER'S CLASSIFICATION OF DIABETIC FOOT ULCERS		
GRADE	DESCRIPTION	
0	No ulcer, but high risk foot (e.g. deformities, callus, insensitivity)	
1	Superficial, full-thickness ulcer	
2	Deeper ulcer, penetrating tendons, without bone involvement ¹⁵ <small>Photo courtesy of The Royal Free Vascular Unit Image Library. Available at: http://www.royalfreevascularunit.nhs.uk/library%20arterial.htm. Accessed January 30, 2004</small>	
3	Deeper ulcer with bone involvement, osteitis	
4	Partial gangrene (e.g. toes, forefoot)	
5	Gangrene of whole foot	

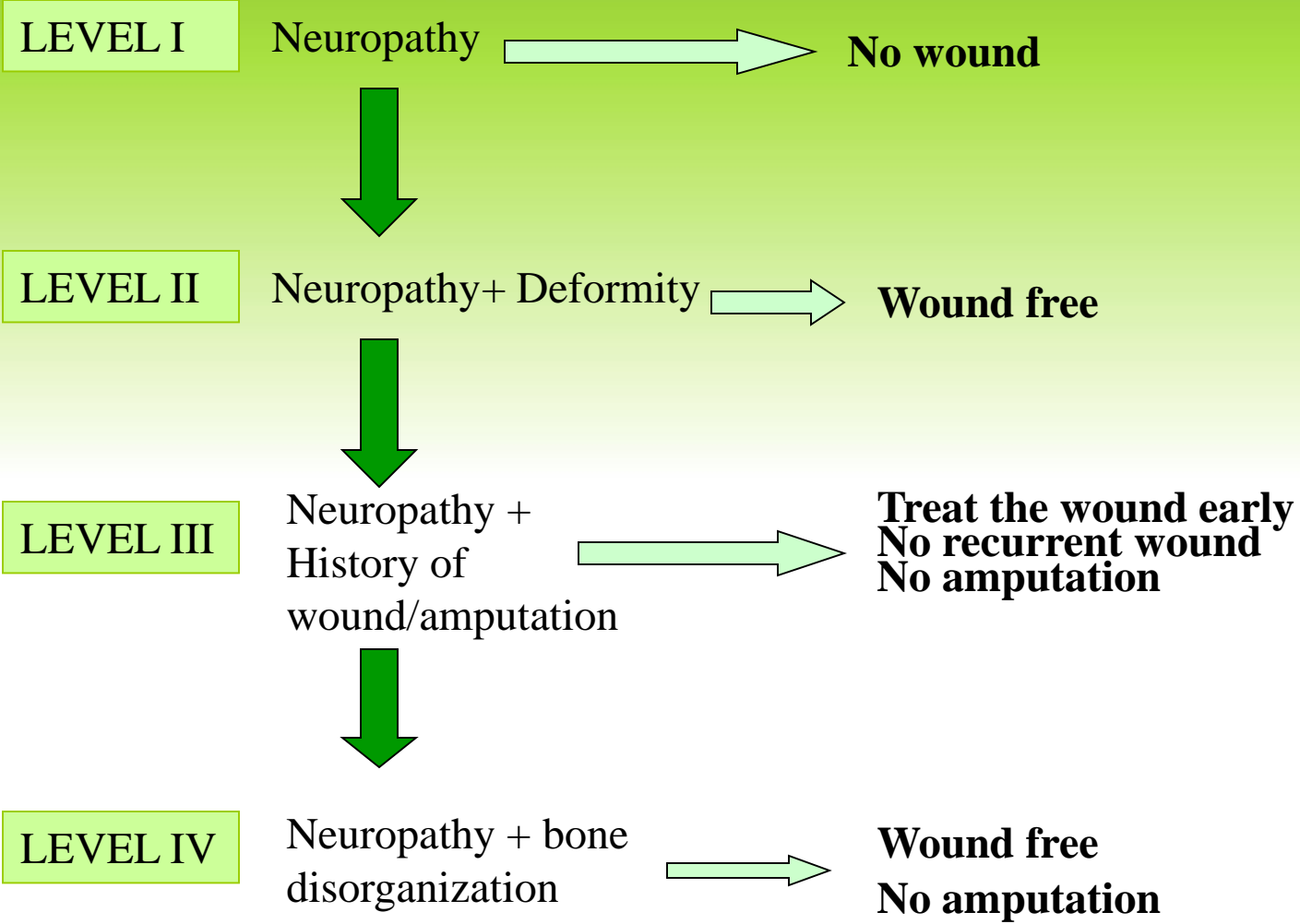
GRADING ULCER

(WAGNER CLASSIFICATION)

DIABETIC FOOT LESION GRADING SYSTEM - WAGNER



OBJECTIVE

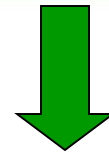


LEVEL I

Neuropathy

Objective : No wound

Intervention and plan of treatment



- * **General foot care**
- * **Appropriate foot wear**

LEVEL II

Neuropathy + Deformity

OBJECTIVE : WOUND FREE

Intervention and plan of treatment

- * Foot care**
- * Preventive surgery**
- *Protective foot wear**

LEVEL III

Neuropathy + History of wound/amputation

Objective: Treat wound early, no recurrent wound & no amputation

Intervention and plan of treatment

*** Foot care**

***Treat the wound by off loading Tech.**

***Surgery (for complicated wound)**

LEVEL IV

Neuropathy + Bone Disorganization

Objective : Wound free & No Amputation

Intervention and plan of treatment

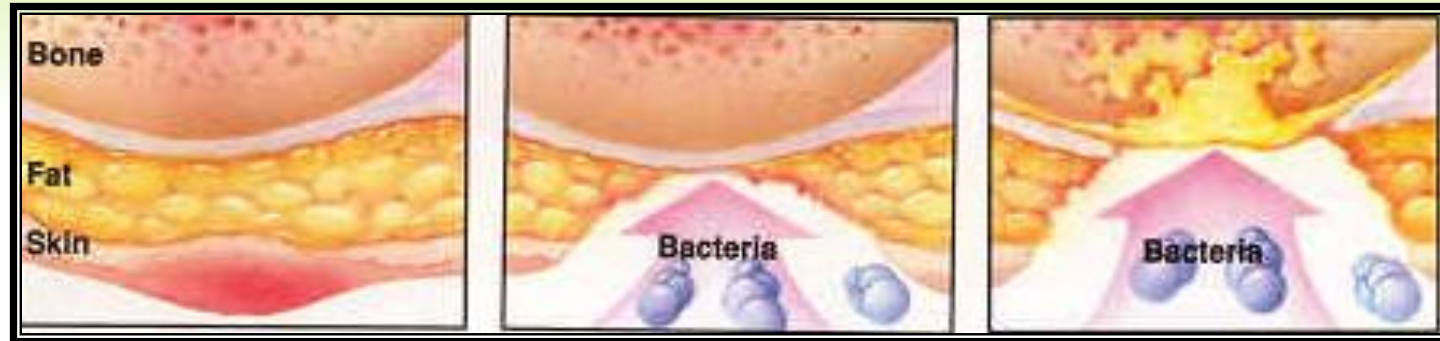
- * **Intensive foot care**
- * **Rehabilitation :**
 - a. **Conservative treatment**
 - b. **Reconstructive Surgery**
- * **Protective footwear**

LONG TERM CARE

- **TO PREVENT RECURRENT WOUND :**
 - * **EDUCATION**
 - * **DIABETIC FOOT CARE**

DIABETIC FOOT CARE

DIABETES REDUCES SENSATION
WHICH CAN LEAD TO INJURIES



Blisters or Calluses start as red or warm spots. They are often caused by unrelieved skin pressure



Ulcers (sores) may result if blisters or calluses reach the skin's inner layers. Ulcers may become infected.



Bone Infection may occur if infected ulcers spread. Untreated bone infections may lead to loss of foot.

DIABETIC FOOT CARE AND EDUCATION

- CHECK YOUR FEET EVERY DAY
- DO YOU SEE RED SPOTS ?
- DO YOU HAVE BLISTERS OR CALLUSES ?



CARE AND EDUCATION



IRRITATIONS, SKIN LESIONS

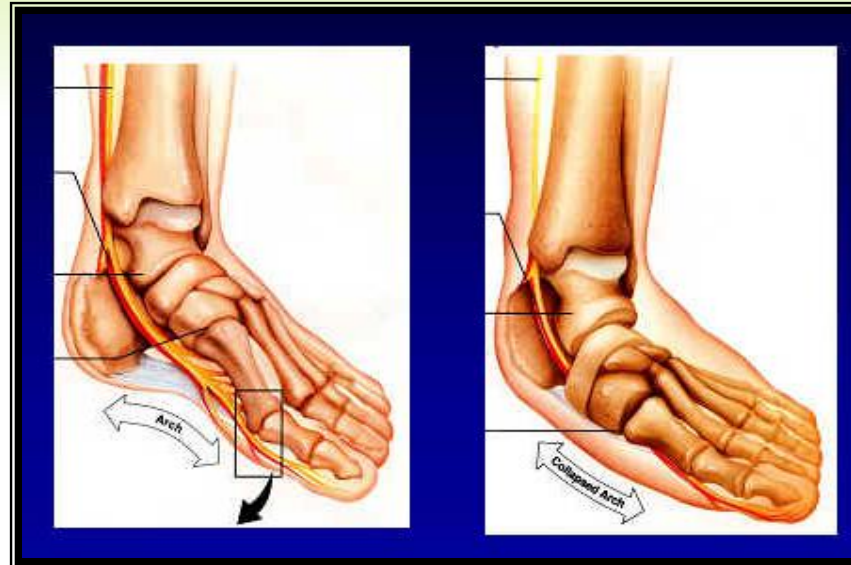


BLISTER



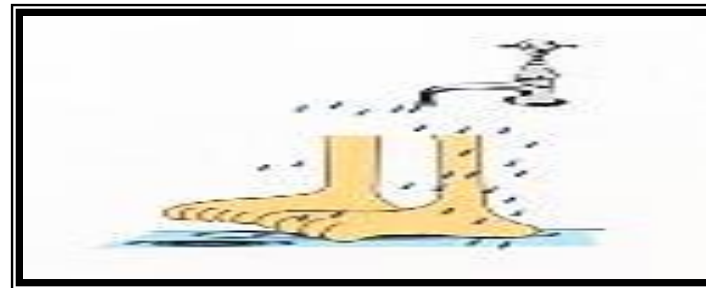
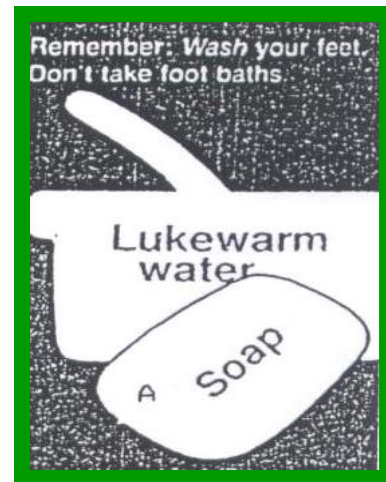
CUTS BETWEEN YOUR TOES

- DO YOU FEEL TINGLING?
- ARE YOUR FEET COLD?
- ARE YOUR FEET NAILS INGROWN?
- HAS YOUR ARCH DECREASED?



CARE AND EDUCATION

- TEST THE TEMPERATURE OF THE WATER BEFORE PUTTING YOUR FEET
- WASH YOUR FEET WITH LUKEWARM WATER AND MILD SOAP

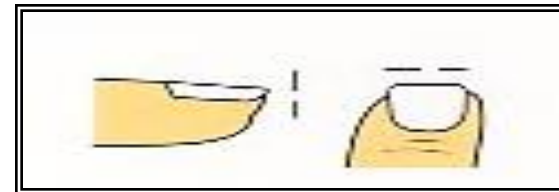


CARE AND EDUCATION

- KEEP SKIN SUPPLE & MOISTURISED

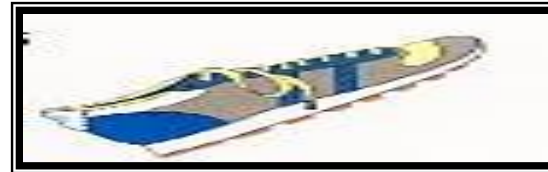


- CUT YOUR NAIL CORRECTLY
Do not cut the corner of your toe nails



CARE AND EDUCATION

- DO NOT WALK BARE FOOT

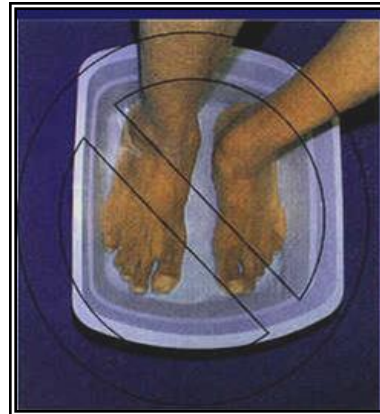


EXAMINE YOUR FEET DAILY

- **DRY YOUR FEET PROPERLY**



- **DO NOT SOAK MORE THAN 5 MINUTES**

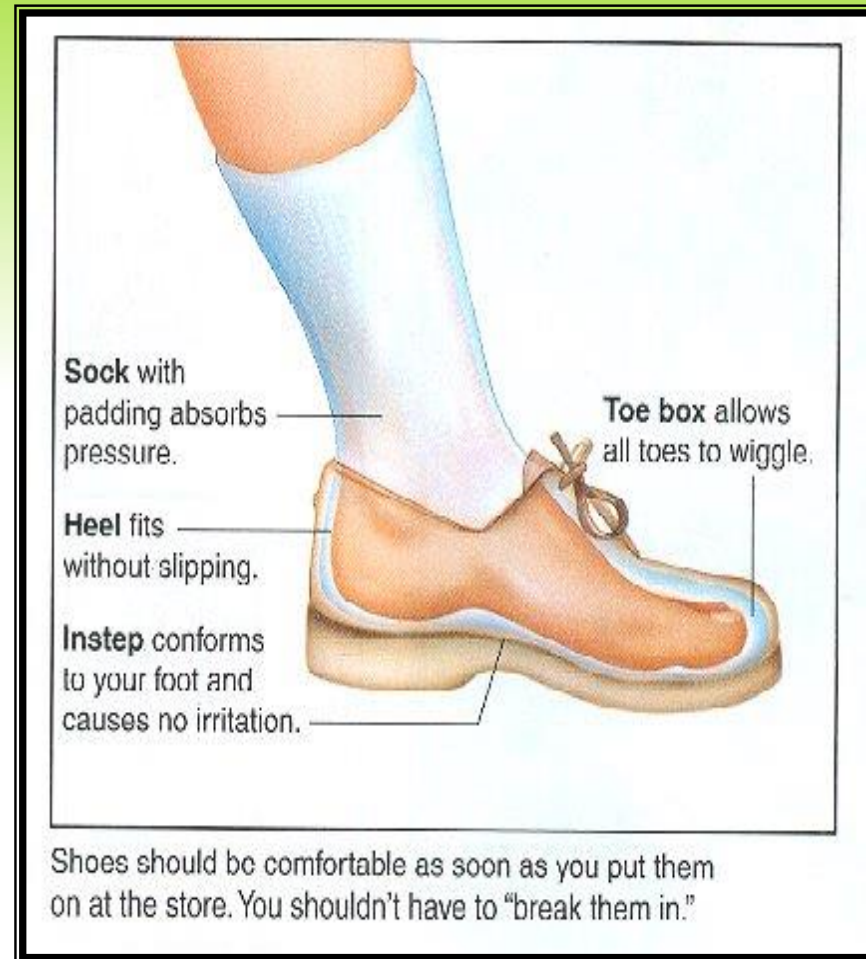




DIABETIC SHOES

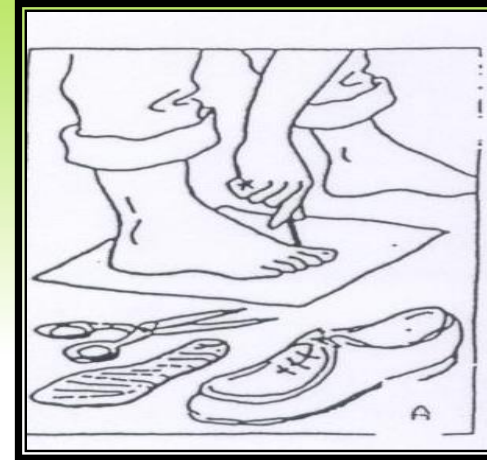


How To Select The Right Shoes?



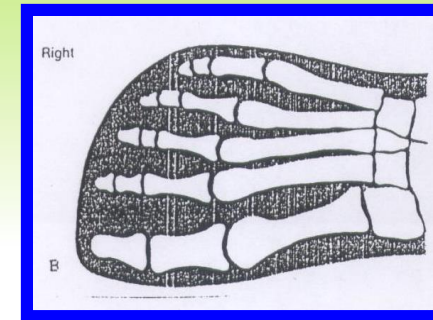
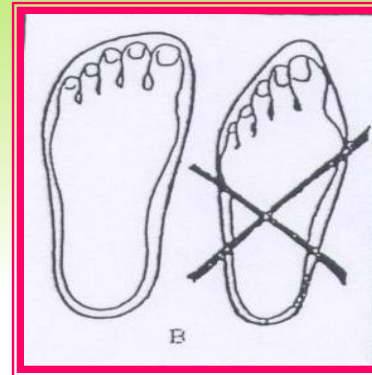
GOOD DIABETIC SHOES.....

- Both feet measures
- Deep and wide toes box
- Flexible rubber soles
- Cushioned insole, 0.5-1 cm thick and softness



GOOD DIABETIC SHOES.....

- Deep & wide enough to accommodate the foot
- A firm heel counter/Back strap
- Adjustable by laces/velcro fasteners to keep the shoe on the foot securely
- Acceptable to the patient in appearance, cost & function



TYPE OF FOOTWEAR



Custom Molded Shoes With Insoles

TYPE OF FOOTWEAR



Molded Sandal

REMEMBER.....

- EXAMINE YOUR SHOES
BEFORE PUTTING THEM ON



- DON'T ATTEMPT SELF TREATMENT
- SEEK IMMEDIATE MEDICAL ATTENTION

