Diabetes Foot Care

Presented by IHS Division of Diabetes Treatment and Prevention
November 2009
Indian Health Service (IHS)
Best Practice for Diabetic Foot Care
A Strategy for Primary Care Clinicians

Stephen Rith-Najarian, MD
Captain, USPHS
Area Diabetes Consultant
Bemidji Area Indian Health Service
Learner Objectives

1. List risk four factors for diabetic foot complications
2. Be able to conduct a complete diabetic foot exam
3. List three interventions associated with decreased risk for foot complications
4. State four educational objectives for patients at high risk for foot complications
5. Describe four components of the chronic care model related to improving diabetic foot care
Protecting the Diabetic Foot
A Strategy for Primary Care Clinicians

• Screening for High Risk Patients

• Practical Interventions

• Implementation into Practice
Why is Foot Care Important for People with Diabetes?

- ~40% will develop peripheral neuropathy
- ~20% have an acute foot problem on foot exam
- ~15% will develop an ulceration (cost ~ $13–30K each)
- 5–10% progress to amputation (cost ~$50K/yr each)
- 43% with ulcer and 47% with amputation die in 5 yrs
- Most amputations can be prevented with resources currently available in primary care
- Most patients with diabetes get their care from primary care providers

CDC, 2008; Harris, 1993; Kumar, 1994; Borrsen, 1990; Reiber, 1999; Stockl, 2004; Rith-Najarian, 2001; Moulik, 2003
## Foot-Related Risk Factors for Ulceration

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Ulcer</th>
<th>LEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuropathy</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Deformity</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Limited Joint Mobility</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Prior Ulcer/LEA</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>PVD</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Onychomycosis</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

Pham, 2000; Lavery, 1998; Rosenbloom, 1996; Walters, 1992; Kumar, 1994; Fernando, 1991; Rith-Najarian, 1992; Mayfield 1996; Alder, 1999, Boyko, 2006
<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Ulcer</th>
<th>LEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Sex</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Duration DM</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>hyperglycemia</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>hypertension</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>dyslipidemia</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>smoking</td>
<td>±</td>
<td>±</td>
</tr>
<tr>
<td>Vision &lt; 20/40</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Other complications</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
Simple Criteria to Identify High-Risk Feet in People with Diabetes

• Insensate to 10-gram monofilament
  
or  Insensate to 128-Hz tuning fork

• Foot deformity

• Prior ulcer or amputation

• Absent pulse or abnormal ABI pressure

Diabetes Care, 31:1679-85, 2008; Diabetes Res Clin Pract, 70:8-12, 2005
Feet Can Last a Lifetime, NIH/NIDDK, 2002
Press perpendicular to point of bending, hold one second and release (demonstrate on hand)

Patient Closes Eyes, and acknowledges sensation of pressure with a “yes”

Test Both Feet, four sites each: Great toe and 1st 3rd 5th metatarsal heads (not heel or dorsum)

Insensate in one or more area confers risk

Perkins, Diabetes Care 2001;24:250-256
Diabetes Care, 1992;15:1386-89
IHS Division of Diabetes
November 2009
Vibration Sensation testing
128 Hz tuning Fork

- Tested over the tip of the great toe bilaterally

- An abnormal response can be defined as when the patient loses vibratory sensation and the examiner still perceives it while holding the fork on the tip of the either toe

*Singh JAMA 293:217–228, 2005*
Development of Foot Deformities

Bunions – hallux valgus

IHS Division of Diabetes
November 2009
Foot Deformities associated with risk for Amputation

Bunions – hallux valgus

Preulcer
Foot Deformities Associated with Risk for Amputation
Foot Deformities associated with risk for Amputation

Charcot Foot
## Selected Clinical Assessments of Peripheral Arterial Vascular Status and Abnormal Thresholds

<table>
<thead>
<tr>
<th>Vascular Test</th>
<th>Abnormal Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedal Pulses:</td>
<td>absent</td>
</tr>
<tr>
<td>Ankle Brachial Index (ABI):</td>
<td>&lt; 0.8</td>
</tr>
<tr>
<td>Toe BI:</td>
<td>&lt; 0.6</td>
</tr>
</tbody>
</table>

Pham Diabetes Care 2000;23:606-11  
Wang, Circulation 2005;112:3501-3508  
Arterial Anatomy of the Foot

Dorsalis Pedis artery

Posterior tibial artery
Ankle Brachial Index

1. Measure Doppler brachial pressures in each arm

2. Measure Doppler pressure in each ankle

3. Calculate ABI: \( \text{ABI} = \frac{\text{Ankle BP}}{\text{Brachial BP}} \)

Divide the ankle pressure by the greater of the two brachial pressures

from Hurley et al, The Diabetic Foot, 1993
Correlation of POAD Symptoms by ABI Category

<table>
<thead>
<tr>
<th>Severity Category</th>
<th>ABI Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>1.0–1.4</td>
</tr>
<tr>
<td>Borderline</td>
<td>0.90-0.99 or &gt;1.4</td>
</tr>
<tr>
<td>Mild</td>
<td>0.70–0.89</td>
</tr>
<tr>
<td>Moderate</td>
<td>0.40–0.69</td>
</tr>
<tr>
<td>Severe</td>
<td>&lt; 0.40</td>
</tr>
</tbody>
</table>

Wang, *Circulation* 2005;112:3501-3508
Protecting the Diabetic Foot
A Strategy for Primary Care Clinicians

• Screening for High Risk Patients
• Practical Interventions
• Implementation into Practice
Component Causes Present in Causal Pathways Leading to Foot Ulcers in Persons with Diabetes

A + B + C → Ulcer

<table>
<thead>
<tr>
<th>Component Cause</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuropathy</td>
<td>78</td>
</tr>
<tr>
<td>Minor Trauma</td>
<td>77</td>
</tr>
<tr>
<td>Deformity</td>
<td>63</td>
</tr>
<tr>
<td>Edema</td>
<td>37</td>
</tr>
<tr>
<td>Callus</td>
<td>30</td>
</tr>
<tr>
<td>Infection</td>
<td>1</td>
</tr>
<tr>
<td>Ischemia</td>
<td>35</td>
</tr>
</tbody>
</table>

Reiber, Diabetes Care, 1999;22:157-62

IHS Division of Diabetes
November 2009
### Strategies to Prevent or Delay Development of Common Component Causes of Foot Ulceration and Amputation

<table>
<thead>
<tr>
<th>Component Cause</th>
<th>Intervention Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuropathy</td>
<td>Good glycemic control, education on risk for foot injury</td>
</tr>
<tr>
<td>Minor Trauma</td>
<td>Clear walking space, nightlights, protective footwear</td>
</tr>
<tr>
<td>Deformity</td>
<td>Accommodative footwear, education to support footwear</td>
</tr>
</tbody>
</table>
| Edema           | Footwear accommodative to of edema  
|                 | Reduce edema: pharmacologically, compression stockings |
| Callus          | Regular removal of callus  
<p>|                 | Footwear that minimizes callus development |
| Infection       | Education on reporting problems early |
| Ischemia        | Reduce risk for atherosclerosis (hypertension, and lipid control, smoking cessation). Revascularize for critical ischemia |</p>
<table>
<thead>
<tr>
<th>Program</th>
<th>Reduction in LEA Rate</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veterans, Tucson USA</td>
<td>70%</td>
<td>Malone, 1989</td>
</tr>
<tr>
<td>Kisa, Sweden</td>
<td>80%</td>
<td>Larrson, 1995</td>
</tr>
<tr>
<td>Kings College, London</td>
<td>44%</td>
<td>Edmonds, 1999</td>
</tr>
<tr>
<td>Geneva, SZ</td>
<td>85%</td>
<td>Assal, 1993</td>
</tr>
<tr>
<td>Madrid, Spain</td>
<td>50%</td>
<td>Calle-Pascual, 2001</td>
</tr>
</tbody>
</table>
Evidence-Based Education and Treatment
Objectives for All Patients with Diabetes

*Low-Risk Feet*

- Control glucose
- Control blood pressure
- Control lipids
- Smoking cessation

Evidenced-Based Footcare Educational Objectives for Patients with Diabetes

High-Risk Feet

• Daily washing and inspection
• Clear walking area of dangerous objects
• Appropriate footwear (selection, fitting, and use)
• Use slippers indoors – no bare feet
• Proper Nail and Callus Care (no bathroom surgery)
• Avoid Extreme Temperatures
• Avoid Soaking
• Report Problems Promptly (infections, ulcers, cuts that do not heal)

Calle-Pascual, 2001; Reiber, 1999; Ward, 1999; Barth, 1991; Malone, 1989; Edmonds, 1986
IHS Patient Education Materials on Footcare
Pretested for learner comprehension

Taking Care of Your Feet
Indian Health Service Division of Diabetes Treatment and Prevention

“Each day I look at my feet, and check between my toes.”

What should you look for?
You can prevent damage to your feet by looking for
- blisters
- cuts
- scratches
- red or black spots
- ingrown toenails
- dryness.

Look at your feet and between your toes.
If you see any damage to your feet, show your health care provider the changes.


http://www.ihs.gov/MedicalPrograms/Diabetes/RESOURCES/Catalog/rde/index.cfm?module=catalog

IHS Division of Diabetes
November 2009
Foot Wear and Prevention of Foot Lesions

- Reduced Peak Planter Pressures > 50%
- Reduced callus formation > 30%
- Ulcer recurrence rates reduced > 50%
- LEA rates reduced > 70%

Viswanathan Diabetes Care 2004;27:474-477
Chanteleau, Diabet Med 1994;11:114-6
Ashry, J Foot Ankle Surg 1997;36:268-71
Edmonds, Q J Med 1986;60:763-71

IHS Division of Diabetes
November 2009
Footwear Anatomy 101

- Collar
- Upper
- Toe Box
- Heel Counter
- Insert
- Shank
- Sole
- Added Depth
- Rocker Sole

IHS Division of Diabetes
November 2009
Footwear Selection

• Normal feet: Standard shoes

• Insensate feet: Quality walking shoe or added depth shoe
  • Adjustable upper
  • Firm heel counter
  • Padded insert and collar
  • Broad sole with nominal lift
  • Insensate feet + Minor deformity: Added depth shoe + custom insert
  • Major Deformities: Custom molded shoes

Tovey, Diabet Med 1984;1:69-71;
Dahmen, Diabetes Care.
2001;24:705-9

IHS Division of Diabetes
November 2009
Custom-Molded Inserts and Extra-Depth Shoes
Fitting Shoes

- Select shoes that match the shape of the foot
- Measure both feet while standing
- Fit while wearing standard socks
- Fit largest foot
- 1 cm length between longest toe and shoe tip
Footwear Precautions

• **Break-in:**
  - Start $\frac{1}{2}$-hr on first day
  - Then ↑ by $\frac{1}{2}$-hr increments per day
  - Inspect for redness after wearing

• **Change shoes 1–2 x daily**

• **Check for foreign bodies**

• **Replace when worn out**
Foot Wear for People With Diabetes

Here are Some Tips for Buying New Shoes to Help You Protect Your Feet?

- Buy shoes in the afternoon. Most people’s feet will be swollen by the afternoon.
- Tell the salesperson you have diabetes.
- Have the shoe salesperson measure both feet.
- Test the shoe fit by wearing them for at least 5 minutes in the store.
- If shoes hurt when you try them on, do not buy them.
- Break in new shoes by wearing them for 1-2 hours at a time for the first few days.
- Never wear new shoes all day.
- Check your feet for redness or irritation. If the shoes are causing redness or irritation, return them as soon as possible.
Medicare Therapeutic Footwear Benefit

Three Steps:

1. Physician certification for therapeutic footwear (MD, DO)
2. Footwear prescription (usually a Podiatrist)
3. Fitting and dispensing (usually a Pedorthist)

Routine Podiatry Care for People with Diabetes

Associated with:

*Increased self-foot-care knowledge and 30% reduction in callus*  Ronnemaa Diabetes Care, 1997;20:1833-1837

*54% reduction in ulceration rates in case control study of 91 diabetic patients with a history of foot ulcers*  Plank, Diabetes Care 2003;26:1691-1695

*75% reduction in LEA rates in Medicare patients with diabetes and high-risk feet who received palliative podiatry foot care services*  Sowell, J Am Podiatr Med Assoc 1999;89:312-7
Principles of Podiatry Care for People with Diabetes

• Lubricate Skin
• Trim Nails
• Reduce Callus

Suico, 1998; Murray, 1996; Murray, 1996
• Autonomic neuropathy contributes to dry skin
• Instructed Patients to apply a moisturizing lotion daily
• Oil or water based lotions are a matter of patient preference
• May need care giver to assist
Lubricate Dry Skin
Nail Trimming: Normal Nails

• Use nail nippers, straight or curved.

• Good lighting, comfortable position, safety glasses

• Stabilize the toe with one hand, cut with the other

• Start at one edge and follow the curve

• File any sharp edges with emery board
Nail Trimming: Normal Nails
Nail Trimming: Curved Nails

- Use nail nippers, strait
- Good lighting, comfortable position, safety glasses
- Start at one edge and follow the curve
- Avoid cutting into corners
- File any sharp edges with emery board
Nail Trimming: Thick Mycotic

- Tend to be very brittle
- Can use nail nippers or dremel to trim off sharp edges
- Best to refer to a podiatrist or certified foot care nurse
Callus Debridement

- Good lighting, gloves, alcohol swab, and #15 disposable scalpel
- Wipe with alcohol swab, callus tissue will turn white
- Shave or pare down callus gradually
- Palpate intermittently to feel when you are close to pliable “normal” tissue, then stop.
Callus Debridement
Principles of Wound Care

• Assessing foot wounds
• Classifying foot wounds
• Management of uncomplicated wounds
• Vascular assessment
• When to refer
Assessing Foot Wounds

Begin by assessing the following criteria:

• Wound dimensions
• Quality of the wound bed and edges
• Surrounding erythema and cellulites
• Penetration to deep structures (fascia, tendon, bone, FB)
• Lower extremity blood flow
• Signs of systemic infection (Temperature, WBC)
# Standard Classification Foot Wounds

**University of Texas Wound Classification**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>A No infection or ischemia</td>
</tr>
<tr>
<td>1</td>
<td>B Infection</td>
</tr>
<tr>
<td>2</td>
<td>C Ischemia</td>
</tr>
<tr>
<td>3</td>
<td>D Infection and ischemia</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>IHS Division of Diabetes</td>
</tr>
</tbody>
</table>

Armstrong, Diabetes Care 1998; 21:855-859
Management Principles
Uncomplicated Wounds

- Clean and moist environment:
  - Wound debridment
  - Regular dressing changes
- Off loading
- Oral antibiotics directed by culture
- Monitoring of size
- Outpatient management appropriate
- May need to hospitalize for off loading
- Limited use of adjunctive healing agents
- Control glucose
Dressing Principle

- Wet to dry saline gauze dressing daily is the main stay.
- Adsorbent compounds are useful for soupy wounds
- Hydrocolloid gels and occlusive dressings have a role in dry wounds.
- Enzymatic debridement may be useful to soften eschar
Nutrition and Wound Healing

- Positive Nitrogen Balance for Anabolic State
- Vitamin C 500mg daily
- ZnSO$_4$ 220mg Daily $\times$ 10d then MVI with trace minerals QD

Heyman, J Wound Care. 2008;17:476-8, 480
Desneves, Clinical Nutrition, 2005 Dec;24:979-87
Simple Wound: Debridement
Management Principles Complicated Wounds

- Inpatient management appropriate initially
- Initial surgical wound debridement
- Vascular assessment and appropriate intervention
- Clean and moist environment:
  - Regular dressing changes
  - Consider negative pressure wound therapy
- Parental antibiotics directed by culture
- Off loading
- Monitoring of size
- Consider use of adjunctive healing agents
### Factors Associated with Diabetic Foot Wound Healing

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Adjusted Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1.14 (1.08, 1.20)</td>
</tr>
<tr>
<td>Age</td>
<td>1.01 (1.00, 1.01)</td>
</tr>
<tr>
<td>Grade *</td>
<td>1.93 (1.82, 2.05)</td>
</tr>
<tr>
<td>Wound duration *</td>
<td>1.30 (1.27, 1.32)</td>
</tr>
<tr>
<td>Wound size*</td>
<td>1.32 (1.30, 1.34)</td>
</tr>
</tbody>
</table>

* P <0.0001  
*Margolis, Diabetes Care 25:1835-1839, 2002*

**PATIENCE!**

<25% ulcers healed at 12 weeks

*Margolis Diabetes Care, 1999;22:692-695*
Offloading with commercial healing shoes

Half-Shoes
~$50–80

Removable Cast Walkers
~$150–500

70% patients did not increase activity and used device only 28% of time
30% patients record more activity, but only use device 60% of time

Armstrong, Diabetes Care 26:2595-2597, 2003
Adjunctive Wound Healing Therapy

- All associated with higher and faster healing rates
  - Growth factors (~15–25%)
  - Skin graphs (~50%)
  - Hyperbaric oxygen (~20%)
  - Electro-stimulation (?)
  - Maggot therapy (~50%)
- Dependant on adequate vascular supply and clean wound
- High cost and not always covered by insurance

Adjunctive Wound Healing Therapy
A Rational Approach

• Ensure the basics first: clean wound, off loading, control infection, good nutrition, metabolic control, assess circulation.

• Monitor healing, if less than 50% reduction in size after 4 weeks, chances of healing < 10%. Consider adjunctive agents as resources permit. Sheehan, Diabetes Care 2003;26:1879–1882; Margolis, Diabetes Care 26:1696–1700, 2003

• Some adjunctive treatments require large capital expenditures. Resources may be better spent on a case manager that can improve all aspects of diabetic care.
Criteria for Vascular Evaluation in the Diabetic Foot

- Ulcer with clinical signs of ischemia
- Nonhealing ulcer
- Rest pain
- Nocturnal pain
- Lifestyle limiting claudication
Remove Shoes Every Visit
Inspect Feet for Acute Problems

No Ulcer

Annual Foot Exam
Test SWM, inspect for deformity, prior ulcer or amputation

Low Risk
Normal Exam
Education and care stressing: control blood sugar and blood pressure, smoking cessation
Follow-up yearly

High Risk
Abnormal Exam
Patient education protective shoes, podiatry care plus measures for low-risk patients
Follow-up every 2-3 months

Ulcer

Assess Ulcer
Debridement, blood count, temperature, wound culture, assess circulation

Uncomplicated Ulcer
<2 cm, no deep tissue involved, no major infection and adequate circulation
Outpatient Care
Weekly debridement, daily dressing changes, non-weight bearing, oral antibiotics if limited infection
Weekly visits until healed, then treat as high-risk, failure to improve in 4 weeks, treat as complex ulcer

Complicated Ulcer
>2 cm, deep tissue involved, major infection or inadequate circulation
Hospital Care
Surgical debridement, dressing changes, IV antibiotics, vascular assessment and treatment
Daily visits until infection controlled, circulation restored and ulcer size reduced, then treat as simple ulcer.
Protecting the Diabetic Foot: A Strategy for Primary Care Clinicians

- Screening for High Risk Patients
- Practical Interventions
- Implementation into Practice
Chronic Care Model–Diabetic Foot Care Best Practice

Reiber, Lancet, 2005;366:1676-7
http://www.ihs.gov/MedicalPrograms/diabetes/resources/bestpractices.asp
System Redesign: Foot Care Team

Physician/PCP
Nurse Educator
PHN
CHR
Registrar and Patient Scheduling
Podiatrist
Surgeon
Clinic Administration and Leadership

IHS Division of Diabetes
November 2009
Decision Support
Foot Care Guidelines

Diabetic Foot: Master Decision Path

Upon Assessment

Low Risk Normal Foot
- Ulcer prevention in normal foot:
  - Patient self-care education
  - Any change in status reclassify foot
  - See Foot Assessment and Treatment

High Risk Abnormal Foot
- Ulcer prevention in abnormal foot:
  - Protective footwear, self-care education,
    palliative podiatry care
  - Any change in status reclassify foot
  - See Foot Assessment and Treatment

Abnormal Foot
- Previous ulcer, insensitive to 10-gm monofilament,
- or deformities present

Active Ulcer
- Superficial involvement,
  - < 2 cm diameter and < 0.5 cm deep

High Risk Simple Ulcer
- Treat simple ulcer:
  - Debridement, wound care, non-weight bearing
  - Failure to improve in 2 weeks, refer to specialist
    or obtain consultation
  - See Foot Ulcer Treatment

Active Ulcer
- Extensive involvement, systemic findings:
  - > 2 cm diameter or > 0.5 cm deep

High Risk Complex Ulcer
- Treat complex ulcer:
  - Hospitalize, debridement, vascular evaluation,
    antibiotics directed by culture
  - Refer to specialist or obtain consultation
  - See Foot Ulcer Treatment

Healed

Improved

Staged Diabetes Management
©1986, International Diabetes Center

Rith-Najarian, J Fam Pract 1998;47:128-132
IHS Division of Diabetes
November 2009
1994–1996 System Redesign
Foot Care Team

Moving the Guideline to Practice

Team Coordination

• Input from the team to customize guidelines
• Delineation of roles
• Documentation
• Training needs
• Measures for monitoring and evaluation
Example of Customization Questions

Remove Shoes Every Visit
Inspect Feet for Acute Problems

**No Ulcer**

**Ulcer**

Annual Foot Exam

- Low Risk: Routine Education and Yearly Screen
- High Risk: Intensive Foot Care Education, Podiatry Referral, Follow up 3 mo

Annual Foot Exams are performed by:

_____________________________

_____________________________

Documented on Form______
Form is located ___________
Information from exam goes to
_____________________________

Staff trained to perform exam and refer high risk and acute problems
_____________________________
1994–1996 System Redesign
Reminders and Documentation forms

<table>
<thead>
<tr>
<th>Exam and Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
</tr>
<tr>
<td>Treatment Plan</td>
</tr>
<tr>
<td>Referrals</td>
</tr>
</tbody>
</table>

IHS Division of Diabetes
November 2009

**Exam and Risk Factors**

**Assessment**

**Treatment Plan**

**Referrals**
<table>
<thead>
<tr>
<th>Visit Date</th>
<th>Exams</th>
<th>Result</th>
<th>Comments</th>
<th>Provider</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/01/2008</td>
<td>HEART EXAM</td>
<td>NORMAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>07/25/2007</td>
<td>INTIMATE PARTNER VIOLENCE</td>
<td>UNABLE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01/22/2007</td>
<td>INTIMATE PARTNER VIOLENCE</td>
<td>UNABLE</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Exam Selection

<table>
<thead>
<tr>
<th>Code</th>
<th>Exams</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>DIABETIC FOOT EXAM, COMPLETE</td>
</tr>
<tr>
<td>31</td>
<td>AUDITORY EVOKED POTENTIAL</td>
</tr>
<tr>
<td>30</td>
<td>DENTAL EXAM</td>
</tr>
<tr>
<td>36</td>
<td>DEPRESSION SCREENING</td>
</tr>
<tr>
<td>03</td>
<td>DIABETIC EYE EXAM</td>
</tr>
<tr>
<td>35</td>
<td>ALCOHOL SCREENING</td>
</tr>
<tr>
<td>23</td>
<td>AUDIOMETRIC SCREENING</td>
</tr>
</tbody>
</table>

### Patient Information

- **Zany, Adult Male**
- **26572**
- **24-Feb-1983 (25)**
- **Diabetes**
- **Rith Najarian, Stephen J MD, Ambulatory**
- Primary Care Team Unassigned

---

**IHS Division of Diabetes**

**November 2009**
DIABETES CURRICULUM EDUCATION-FOOT CARE

OUTCOME:

The individual/family will understand the importance of foot care for people with diabetes.

STANDARD:

FTR-1 State one or more reasons to check feet every day.
FTR-2 Identify two or more risk factors for foot problems.
FTR-3 List two or more daily self-care actions to prevent foot problems.
FTR-4 Describe how to cut toenails correctly.
FTR-5 Describe two or more things to look for when choosing proper footwear.
FTR-6 State two or more signs and symptoms of foot and skin infections.
FTR-7 State the reason for routine foot exams at each clinic visit and yearly foot screening.
FTR-8 Demonstrate a personal foot exam and state a personal foot care plan.
FTR-9M Behavior goal set (follow-up)
FTR-10M Behavior goal was met (follow-up)
Foot and Nail Care Certification
Wound, Ostomy, and Continence Nurses Certification Board

Exam Eligibility Requirements
• Current RN license, and either #2 or #3:
• Completion of formal foot and nail program including five hours didactic; three hours of clinical practice with direct foot and nail care; or
• Completion of experiential pathway including five hours CE, plus eight hours of clinical practice (under supervision of expert).


Information Technology
Electronic Diabetes Registry

IHS Division of Diabetes
November 2009
### National Performance Measures data from CRS 2007

Current as of: Apr 03, 2008 07:41 PM

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>HRN</th>
<th>Age</th>
<th>Foot Exa</th>
<th>Next Appt Clinic</th>
<th>Next Appt Prov</th>
<th>Diabetes</th>
<th>Poor Glyc</th>
<th>Controlled</th>
<th>LDL A1c</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>45 YRS</td>
<td>NO</td>
<td></td>
<td></td>
<td>YES</td>
<td>YES</td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>43 YRS</td>
<td>NO</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35 YRS</td>
<td>NO</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>75 YRS</td>
<td>NO</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>63 YRS</td>
<td>NO</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>41 YRS</td>
<td>NO</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>73 YRS</td>
<td>NO</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>42 YRS</td>
<td>NO</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>32 YRS</td>
<td>NO</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>57 YRS</td>
<td>YES</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>61 YRS</td>
<td>YES</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>54 YRS</td>
<td>YES</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>51 YRS</td>
<td>YES</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>56 YRS</td>
<td>YES</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>64 YRS</td>
<td>YES</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>78 YRS</td>
<td>YES</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>64 YRS</td>
<td>YES</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>61 YRS</td>
<td>YES</td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>
Community Linkages:
Referrals for Therapeutic Footwear

If you or someone you know has diabetes, this Medicare benefit can improve comfort and health.

Therapeutic Shoes & Custom-Made Insoles

IHS Division of Diabetes
November 2009
Community Linkage:
Wound Care Outreach Clinic
Average Annual Incidence Lower Extremity Amputations (LEA) among Diabetic Patients according to Chronic Care Model Intervention Period in an Indian Health Service Primary Care Setting

![Bar Chart]

- 80% p < 0.01

- **Baseline + IT 1986-89**
- **Self-Mgt Ed 1990-92**
- **above Engaged Leadership + System Redesign & Decision Support 1994-96**
- **above + community linkage 1997-99**
- **Sustainability Phase, 2000-05**


IHS Division of Diabetes
November 2009
Stepped Approach for IHS “Best Practice” for Diabetic Foot Care

Comprehensive Program
Includes all of the previous elements plus …
- footcare team
- Wound healing
- Outreach services
- track outcomes

Intermediate Program
Includes all of the previous elements plus…
- Footcare CPGs
- Podiatry and Footwear available
- Field Health trained
- Track care process

Basic Program
- DM Team adopts standards of care
- DM Registry
- Annual Foot screening
- Risk Appropriate Foot Education
- Podiatry, footwear & field health referrals
- Annual Diabetes Audit

Is Your Program Ready?
Do we have the following items in place?
- Perceived need by providers & community
- Administrative Support for CQI
- Functional IT support
- Access to Footcare services
- Functional Diabetes team

http://www.ihs.gov/MedicalPrograms/diabetes/resources/bestpractices.asp

IHS Division of Diabetes
November 2009
Selected Internet Resources for Diabetic Foot Care

• IHS Best Practices–Foot Care

• Feet Can Last a Lifetime–NIH
  http://www.ndep.nih.gov/resources/feet/index.htm

• Lower Extremity Amputation Prevention Program (LEAP)–HRSA
  http://bphc.hrsa.gov/leap/default.html