

INDIAN HEALTH DIABETES BEST PRACTICE

Foot Care

Revised April 2011

Note! Please review the Best Practice Addendum, which provides the most current information on the Required Key Measures along with examples of ways to obtain the measures. The Best Practice Addendum can be found here: http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Tools/BestPractices/BP_2011_Table_RKM_508c.pdf

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Instructions for Using This Best Practice

The Best Practices are organized into topics on how to plan for and successfully implement a Best Practice in your community.

- **Part 1** provides background information on planning for your program and evaluation, Key Recommendations, and Key Measures.
- **Part 2** provides details on implementation of the Key Recommendations.
- **Part 3** includes appendices, tools, and resources.
- **Part 4** provides a list of references.

As you prepare to select, implement, and evaluate a Best Practice, consider these planning guidelines:

- Meet with your diabetes team to discuss which Best Practice(s) is best suited for your situation and resources.
- Use data from your *Diabetes Care Outcomes and Audit* and/or from a community needs assessment to guide your selection of the Best Practice(s).
- Determine your program goal(s) as a team. For example, your team may decide to work toward increasing the number of people who receive eye exams.
- Print out at least Part 1 of the Best Practice(s) your team feels is most appropriate to implement.
- Work with your diabetes team to review and discuss the Best Practice(s). You may choose to read it together as a team.
- Choose at least one Best Practice after carefully considering your goals and resources (funding, staff, and time).
- **Review the entire Best Practice(s) you have selected with your diabetes team:**
 - Confirm that you have selected a Best Practice(s) appropriate for your community needs and resources and that you are confident that your team can successfully implement, evaluate (measure), and document progress and outcomes.
 - Target the population your team wants to improve outcomes for with the Best Practice(s). Remember, you probably do not have resources to do everything for everyone.
 - Carefully consider the Key Recommendations. The recommendations are based on evidence and have been proven to be effective. You may already be doing some of the recommendations and can easily fit these into your plan, or you may want to consider some new recommendations to enhance and strengthen your program. Identify those your team can implement.
 - Carefully review the Key Measures. Choose those that best fit with your goals and the Key Recommendations you have chosen to implement.
 - If one Best Practice does not fit, then review another Best Practice until you find one that fits.

Throughout the document you will find links that draw your attention to important items within the Best Practice pdf. Here is a list of the items:

- **Action!** Indicates a **link**. Please use the link to access more detailed descriptions.
- **Note!** Indicates an **important** item. Pay special attention to this **important** item.

Summary of Key Recommendations and Key Measures

These are evidence-based actions that will lead to improved outcomes in the community. **Action!** See [Part 2](#) for details on the implementation of each key recommendation.

For Your Patients with Diabetes:

1. Conduct an annual foot examination in all patients with diabetes regardless of risk status.
2. Provide risk-appropriate foot care self-management education.
3. Recognize when it is appropriate to refer for or provide podiatry care.
4. Provide expertise in footwear selection and footwear modification to ensure safe ambulation and exercise.
5. Recognize when to refer patients for vascular assessment and augmentation procedures.

In addition, for people with diabetes-related foot complications:

6. Diagnose and treat foot ulcers.
7. Diagnose and treat neuropathic foot pain.

For Your Health Care System:

8. Develop a team **approach to diabetes care that includes foot care.**
9. Train clinic staff and field health personnel to perform and document foot risk assessments and risk-specific foot care education.
10. Cascade clinic foot care objectives into clinic's annual performance plans.
11. Develop a mechanism for providing basic podiatry care.
12. Develop clear mechanisms for referring patients to home care, field health workers, podiatry care, footwear specialists, and surgery.

These are specific measures that can be used to document changes in outcomes related to implementing the Best Practice.

Note! All SDPI grant programs that choose this Best Practice must report **as required in the terms and conditions attached to the notice of award** on the **indicated Measures**. Programs may report on other measures as well.

* The following measures are of primary importance:

1. *Percent of diabetes patients with documented foot exams in the past twelve months.
2. *Percent of diabetes patients with documented risk-appropriate foot care education in the past twelve months.
3. Percent of diabetes patients with foot ulcers who received treatment in the last twelve months.

PART 1 Essential Elements of Implementing This Best Practice

Purpose and Target Population

This Best Practice describes foot care guidelines for clinical providers caring for persons with type 1 or type 2 diabetes. The target population to be covered by this Best Practice is persons with type 1 or type 2 diabetes.

Intended Users of this Best Practice

- Primary health and foot care teams
- community workers who provide foot care education, evaluation, and treatment; and
- leaders of health care organizations.

Action! See Part 3 – [Appendix A](#). Supplemental Information for discussion of the benefits and risks of implementing this Best Practice.

Importance of Foot Care

People with diabetes have special issues with their feet. Diabetes can cause nerve damage that reduces sensation in the feet and blood flow to the feet and legs. This can make it harder for open wounds to heal. For these reasons, foot care is an essential element of a diabetes program.

Action! See Part 3 – [Appendix A](#) for more information on the Importance of Foot Care

Goals of this Best Practice

- To increase knowledge of the risk factors for diabetes-related foot complications.
- To increase percent of comprehensive diabetic foot examinations conducted.
- To increase the percent of risk-appropriate foot care education provided.
- To increase use of evidence-based interventions that are associated with decreased risk for foot complications.
- To decrease number of people with diabetes who are at high risk for foot complications (foot ulcers and amputations).

Key Recommendations

These are evidence-based actions that can lead to improved outcomes for persons with type 1 or type 2 diabetes.

These are evidence-based actions that will lead to improved outcomes in the community.

For Your Patients with Diabetes:

1. Conduct an annual foot examination in all patients with diabetes regardless of risk status.
2. Provide risk-appropriate foot care self-management education.
3. Recognize when it is appropriate to refer for or provide podiatry care.
4. Provide expertise in footwear selection and footwear modification to ensure safe ambulation and exercise.
5. Recognize when to refer patients for vascular assessment and augmentation procedures.

In addition, for people with diabetes-related foot complications:

6. Diagnose and treat foot ulcers.
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For Your Health Care System:

8. Develop a team approach to diabetes care to include foot care.
9. Train clinic staff and field health personnel to perform and document foot risk assessments and risk-specific foot care education.
10. Cascade clinic foot care objectives into clinic's annual performance plans.
11. Develop a mechanism for providing basic podiatry care.
12. Develop clear mechanisms for referring patients to home care, field health workers, podiatry care, footwear specialists, and surgery.

Action! See [Part 2](#) for details on the implementation of each key recommendation.

Planning for Your Program and Evaluation

Key Action Steps include:

1. **Identify your program's goal(s).** There are many program goals consistent with the Key Recommendations of this practice. Examples of Program Goals include:
 - Increase the number of people who receive foot exams.
 - Increase the number of people who receive risk-appropriate foot care education.
2. **Define program objectives that will be met to reach the program goal(s) in the SMART format (specific, measurable, action-oriented, realistic, and time-bound).**

Examples of SMART objectives for this Best Practice:

- Increase the number of people with documented foot exams in the past twelve months from 75% to 85% by the end of the fiscal year.
- Increase the number of people with documented risk-appropriate foot care education from 60% to 85% by the end of the fiscal year.

3. **Use Key Measures.** The following Key Measures can be used to monitor progress and the effectiveness of implementing this Best Practice. Results of measures will indicate the degree of success in implementing the **Key Recommendations** and meeting program goals.

Measures of progress need to occur before the intervention (baseline) and at designated times thereafter. Measurement needs to be frequent enough to provide meaningful information for planning and evaluation.

Key Measures

Foot Care Key Measures
<p>Note! All SDPI grant programs that choose this Best Practice must report as required in the terms and conditions attached to the notice of award on the indicated Measures. Programs may report on other measures as well.</p>
<p>* The following measures are of primary importance:</p> <ol style="list-style-type: none">1. *Percent of diabetes patients with documented foot exams in the past twelve months.2. *Percent of diabetes patients with documented risk-appropriate foot care education in the past twelve months.3. Percent of diabetes patients with foot ulcers who received treatment in the last twelve months.

4. **Collect, record, and analyze data** on an ongoing basis; share with the team and the organization leadership.

5. **Use creative ways to display data and measure outcomes, such as graphs or charts.** This helps the team understand the data and know whether there are improvements.

6. **Think about what the data are telling you.** What changes are you seeing? Are they improvements? Use data for planning next steps.

Action! See the following resources to help your program improve.

See Part 3 – [Appendix B. Key Measures Example](#) to assist you with identifying ways to choose Key Measures that incorporate your community data.

See Part 3 on page 31 – [Appendix C. Improving Foot Care Programs Example](#) to assist you with applying Key Recommendations and Key Measures to a program plan.

Action! See [online training](#) and a **[workbook](#)** to get more ideas about setting goals and objectives, and developing a program plan. Available from: (see pages 23-28.)
<http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Training/WebBased/Basics/Creating/Workbook.pdf>

Team Notes:

PART 2 Key Recommendations

Note! Part 2 provides **important** detail on the ‘Why?’ and ‘How?’ of implementation of each Key Recommendation.

Key Recommendation 1. Conduct a comprehensive annual foot examination in all patients with diabetes regardless of risk status

Why?

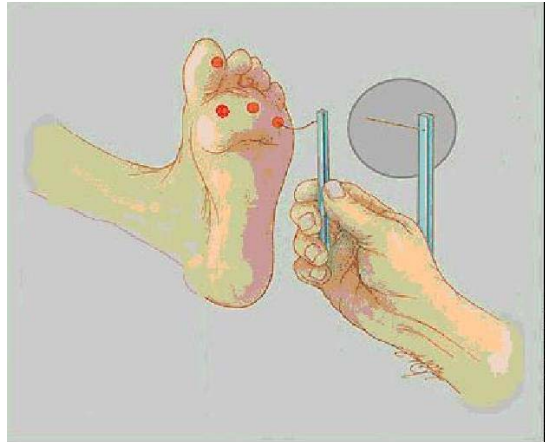
Early recognition and management of independent risk factors for foot ulcers and amputations can prevent or delay the onset of adverse outcomes.

How to Implement the Key Recommendation

Table 1. Simple Criteria to Identify High Risk Feet in People with Diabetes

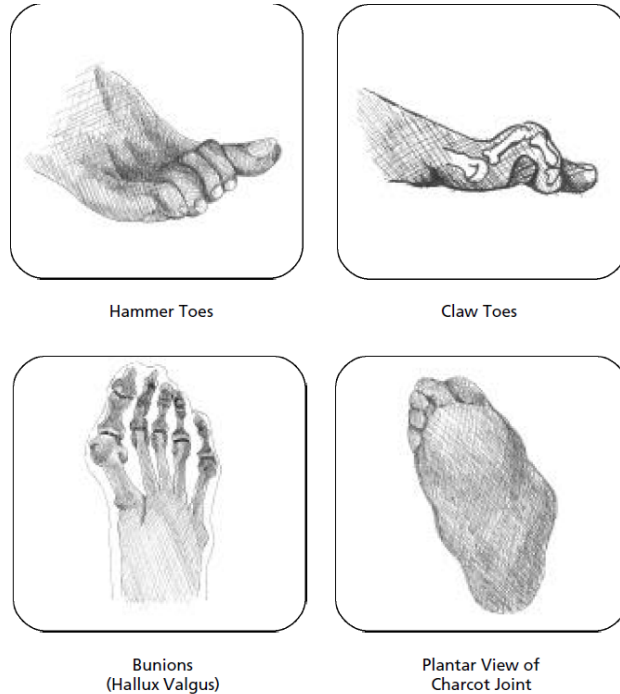
Simple Criteria to Identify High Risk Feet
<ul style="list-style-type: none">• insensate to ten-gram monofilament* testing• foot deformity is present• prior ulcer or amputation, and• absent pulse or abnormal Ankle-Brachial Index (ABI) pressure.
<p>* Consider additional sensory testing to the monofilament. Most experts agree that a reliable screening test should detect at least 90% of people at risk, or have a sensitivity of 90%. Prospective studies have shown that monofilament testing has a sensitivity of 63-86% for detecting those who will develop a foot ulcer, and this is below a reliable screening threshold. Accordingly, the American Diabetes Association recommends supplementing the monofilament sensory examination with at least one other test including 128 Hz tuning fork, ankle reflex, vibration perception threshold, pin prick and/or proprioception. The 128 Hz tuning fork is probably the most cost effective of these five supplemental tests, but combinations of these tests have not been evaluated prospectively. A rational approach may be to use a 128 Hz tuning fork exam in patients who are sensate to the monofilament to help identify additional patients at high risk. The IHS considers these other tests optional because when the monofilament exam is combined with the other simple criteria of deformity and history of ulcer/LEA (lower extremity amputation), the sensitivity is 90% (specificity 70%). (Rith-Najarian, 1995).</p>

- A. **Test for “protective sensation” with a ten-gram (5.07) monofilament on the plantar aspect of the first, third, and fifth digits and metatarsal heads of each foot.** If the patient has no sensation on one or more of the tested sites, he or she is at high risk of developing an ulcer.
- Press perpendicular to point of bending, hold one second and release. (Demonstrate procedure first on patient’s hand.)



- Patient closes eyes and acknowledges sensation of pressure with a “yes.”
- Test both feet, four sites each: great toe and first, third and fifth metatarsal heads (not heel or dorsum).
- Insensate in one or more areas confers risk.

B. Inspect the foot for deformities and altered biomechanics including hammer or claw toe deformities, bunions, Charcot foot, any bony prominences, and excessive pronation or supination (see drawings below). The patient is at high risk of developing an ulcer if he or she has any of these.



Source: *Feet Can Last a Lifetime: A Health Care Provider's Guide to Preventing Diabetes Foot Problems.* National Diabetes Education Program. November 2002.

C. Conduct a vascular assessment by feeling for dorsalis pedis and posterior tibial pulses on each foot. If one or more of the pulses is absent in either foot, the patient is at high risk of developing an ulcer.



An audible assessment may help with locating a pulse if not able to palpate. Alternatively, assess vascular status with an Ankle-Brachial Index (ABI). Although commonly cited in medical literature, an ABI is not commonly performed unless the examiner is comfortable with the assessment. An ABI ratio of < 0.9 indicates high risk.

D. Review the chart and ask the patient about prior ulceration or non-traumatic amputations. A history of either event confers high risk of developing an ulcer.

Team Notes:

Key Recommendation 2. Provide risk-appropriate foot care self-management education.

Why?

Foot care education in conjunction with foot risk assessment has been associated with a 25-50% reduction in amputations in Indian Health settings. (Schraer, 2004; Rith-Najarian, 2001)

How to Implement the Key Recommendation

The goals and content of the education for *low risk* patients are:

- Directing patient education at controlling blood glucose, blood pressure, and lipids, to prevent neuropathy and peripheral vascular disease (PVD), and
- tobacco cessation for those who use tobacco.

Table 2. Education and Treatment Approaches for All Patients With Diabetes

Evidence-based Education and Treatment Approaches for All Patients With Diabetes – Low Risk and High Risk
<ul style="list-style-type: none">• controlling glucose• controlling blood pressure• controlling lipids• smoking cessation

The goal and content for *high risk* patients should address:

- **Wash and inspect feet on a daily basis.** Patients should be instructed to wash feet daily with soap and water, and inspect for redness, cracking, and sores. If feet are dry before washing, apply a moisturizing lotion after washing. If it is difficult for the patient to reach or see the feet, enlist a family member or caregiver to assist with washing, moisturizing, and inspection.
- **Clear all walking areas of dangerous objects.** *Minor foot trauma from bumping into objects is the most common event leading to foot ulcers.* This often happens when someone is getting out of bed in the dark to go to the bathroom, and can be prevented by using nightlights and providing a clear path.
- **Select and use appropriate and properly fitted footwear.**

Action! See [Key Recommendation 4](#).

- **Use slippers indoors** (i.e., no bare feet).
- **Provide proper nail and callus care** (i.e., no bathroom surgery).
- **Avoid extreme temperatures.** Patients with neuropathy can be unaware of thermal injury.

- **Avoid soaking feet.** Patients with neuropathy may have impaired sweat gland function and dry feet. This can lead to fissures and cracking of the skin.
- **Promptly report problems such as infections, ulcers, and cuts that do not heal.** Advise the patient who to call and when to call. Deep cuts and any wounds with redness, drainage, swelling, pain or dark discoloration should be reported promptly to a primary care provider and evaluated the same day.

Table 3. Foot Care Education Approaches for Patients with Diabetes and High Risk Feet

Evidence-based Foot Care Education Approaches for Patients With Diabetes and High Risk Feet
<ul style="list-style-type: none"> • daily washing and inspection • keeping walking areas clear of dangerous objects • appropriate footwear (selection, fitting, and use) • using slippers indoors—no bare feet • proper nail and callous care—no bathroom surgery • avoiding extreme temperatures • avoiding soaking, and • report foot problems promptly (infections, ulcers, and cuts that do not heal).

- A. Offer annual foot care self-management education and reinforce this education during follow-up visits.
- B. Base the goals and content of foot care education on the patient’s risk status as summarized above in [Key Recommendation 1](#).

Team Notes:

Key Recommendation 3. Recognize when it is appropriate to refer for or provide podiatry care.

Why?

Podiatry care in patients with diabetes and high risk feet has been associated with increased self-care knowledge, a 54% reduction in ulceration rates, and a 61-75% reduction in lower extremity amputation rates. (*Ronnemaa, 1997; Plank, 2003; Sowell, 1999; Lipscombe, 2003*)

How to Implement the Key Recommendation

- A. Include nail trimming, callus reduction, skin care, and reinforcement of education principles in basic podiatry care.
- B. Provide a baseline podiatry assessment, with follow-up care directed by clinical findings for all high-risk patients.
- C. See patients with sensory loss but otherwise normal feet every six months. Follow-up with patients who have callus and nail deformities every one to three months.

Team Notes:

Key Recommendation 4. Provide expertise in footwear modifications to ensure safe ambulation and exercise.

Why?

The use of protective footwear in patients with diabetes and high-risk feet has been associated with reduced plantar pressures, reduced callus formation, and reduced ulceration and amputation rates.

How to Implement the Key Recommendation

A. Match choice of footwear to risk status and identified problems:

- Low risk patients may use standard, commercially available footwear.
- Patients with sensory loss and normal shaped feet may use standard shoes with a stable heel counter and padded insert.
- Patients with moderate deformities should use extra- or super-depth shoes with a custom molded inner-sole (also called a supportive 'footbed').
- Patients with advanced deformity may require custom molded shoes and orthopedic inserts (orthotics).

B. Instruct all high risk patients on footwear selection, fitting, and break-in time:

- Reassess shoes and orthotics for excessive internal and external wear every three to six months and replace as needed.

Team Notes:

Key Recommendation 5. Recognize when to refer patients for vascular assessment and augmentation procedures.

Table 4. Criteria for Vascular Evaluation of the Foot

Criteria for Vascular Evaluation of the Foot
<ul style="list-style-type: none">• ulcer with clinical signs of ischemia• non-healing ulcer for more than six weeks• rest pain• nocturnal pain, and/or• lifestyle-limiting claudication.

Why?

There is insufficient evidence supporting the use of vascular surgery for ulcer prevention in patients with diabetes.

How to Implement the Key Recommendation

Generally, limit referral for definitive vascular assessment and augmentation procedures in the non-ulcerated diabetic foot to patients with rest pain, night pain, or claudication that limits quality of life.

Team Notes:

Note! Provider Recommendations for People with Diabetes who have related Foot Complications

Key Recommendation 6. Diagnose and treat (assess, classify, and manage) foot ulcers.

A. Assess the ulcer.

Why?

Evidence suggests that assessment and active management of wounds reduces the progression to more severe complications up to and including amputations.

How to Implement the Key Recommendation

Begin the management of wounds by assessing the following criteria:

- lower-extremity blood flow
- wound dimensions
- quality of the wound bed and edges
- surrounding erythema and cellulitis
- quantitative assessment of foot temperature
- mechanism of injury
- penetration to deep structures, including fascia and bone
- signs of systemic infection (temperature and white blood cell count [WBC])
- blood glucose control
- other health risk factors, such as alcohol and tobacco use
- type and amount of drainage, and
- hematocrit, hemoglobin, albumin and/or pre-albumin, protein, complete blood count (CBC).

B. Classify the ulcer.

How to Implement the Key Recommendation

Classify the wound as Uncomplicated or Complicated based on the following clinical findings:

Table 5. Classification of Foot Wounds (Consistent With IDSA Guidelines for Clinical Classification of Diabetic Foot Infection)

Characteristic	Uncomplicated	Complicated*
Wound size	≤ 2 cm (diameter) or ≤ 0.5 cm (deep)	> 2 cm (diameter) or > 0.5 cm (deep)
Deep space involved?	No	Yes
Margin of erythema	≤ 2 cm	> 2 cm
Systemic infection?	No	Yes
Vascular insufficiency?	No	Yes

* Wound is considered complicated if any of the criteria are present.

C. Manage the ulcer.

Why?

Consistent application of evidence-based wound management is associated with improved foot wound outcomes.

How to Implement the Key Recommendation

Manage simple and complex ulcers in accordance with the following general guidelines:

Uncomplicated ulcer:

- Provide debridement as needed and measure the wound.
- Limit weight-bearing (e.g., bed rest, wheelchair, crutches, healing shoe, and total contact cast).
- Perform daily dressing changes, using specialized dressing materials as needed.
- Provide an appropriate wound healing environment.
- Use oral antibiotics in the presence of signs and symptoms of infection, after obtaining appropriate wound cultures; avoid surface swabs.

- Reinforce the care plan through patient education.
- Provide home care follow-up every one to three days to assess compliance with the care plan.
- Monitor healing through weekly medical follow-up in the clinic and modify patient's care plan as needed.

Complicated ulcer:

- Provide wide surgical debridement, including cultures of excised tissue or bone.
- Perform daily post-operative dressing changes, using appropriate dressing materials to provide optimal wound healing environment.
- Promote strict non-weight bearing with use of crutches, wheelchairs, and bed rest, or off-load the wound with adaptive devices such as total contact cast or wound-healing boots.
- Optimize glycemic control (for uncomplicated ulcers also).
- Provide parenteral antibiotic therapy for deep space infection (e.g., abscess or osteomyelitis) that is directed by wound culture sensitivity results.
- Refer patients with signs or symptoms of ischemia to definitive vascular evaluation and treatment.
- Provide patient education to promote required self-care practices following hospital discharge.
- Include frequent outpatient visits for wound care and monitoring of progress in the post-hospital care plan; modify plan as needed.
- There are a wide range of adjunctive wound healing measures that have been associated with improved wound healing in settings where the basic measures have been provided including off loading, infection control, debridement and dressing changes, vascular assessment, and metabolic control. These measures are relatively costly, time consuming for both patients and providers, and require specialized skills and equipment. Consider adjunctive wound healing measures once all of the basic measures have been provided as resources permit. Promising therapies include:
 - o Negative pressure wound therapy (NPWT) has been found to be an effective adjunctive modality for treating Complicated and Uncomplicated appropriately-debrided diabetic foot wounds. NPWT can be used on any size wound and has been shown to be especially effective on deep, complicated, non-healing wounds of mixed etiologies. NPWT promotes wound healing by angiogenesis and development of granular tissue in Complicated wounds, including diabetic wounds.
 - o Hyper-Baric Oxygen Therapy (HBOT) in some studies has been associated with increased initial wound closure rates, increased ulcer healing and reduced major lower extremity amputation rates compared with controls.
 - o Bioengineered Skin (BES) has been associated with faster wound healing and closure rates, and decreased amputation rates.

- o Centers for Medicare and Medicaid Services (CMS) currently provides reimbursement for NPWT, HBOT, and BES when there are no measurable signs of healing comprehensive standard therapy and the patient is under the care of a comprehensive diabetes management program.
- o Consider the patient as high risk for re-ulceration once the foot ulcer has healed. Provide vigilant follow-up with special attention to preventive measures.

Team Notes:

Key Recommendation 7. Diagnose and treat neuropathic foot pain.

Why?

Neuropathic foot pain is common. It can limit an individual's activity and may be responsive to treatment.

How to Implement the Key Recommendation

- A. Non-diabetic etiologies should be excluded.**
- B. Glycemic control needs to be optimized.**
- C. Consider non-pharmacological, topical, or physical therapy means for treatment, such as capsaicin or acupuncture.**
- D. Other pharmacologic options include:**
 - Tricyclic drugs (e.g., Amitriptyline 25-150 mg before bed).
 - Anticonvulsants (e.g., Gabapentin, typically titrated up to a dose of 1.5 g total daily).
 - Opiates or opioid-like drugs in selected patients, with appropriate management.
- E. If available, consider pain clinic referral (Boulton, 2005).**

Team Notes:

Note! Recommendations For Your Health Care System

Key Recommendation 8. Develop a team approach to diabetes care that includes foot care.

Why?

A team-based approach to diabetes care can improve outcomes for the patient. (Sumpio, 2010; Sanders, 2010)

How to Implement the Recommendation

- A. **Form a foot care team.** This could be a separate team or a sub-group of your health care systems diabetes team, or quality improvement team.
- B. **The team should have a coordinator, meet regularly and maintain minutes.** Meetings can be face to face and/or virtual.
- C. **Functions of the team include:**
 - Setting goal(s) with SMART objectives
 - Developing implementation work plan and time line
 - Identifying staff training and resource needs
 - Negotiating who, what, when, and where
 - Collecting, analyzing, and reporting on data measurements

Team Notes:

Key Recommendation 9. Train clinic staff and field health personnel to perform and document foot risk assessments and risk-specific foot care education.

Why?

People with diabetes receive care from different types of clinical providers in a range of settings, and the foot exam can provide a teachable moment self-management education. Therefore, a wide range of staff should be skilled in performing a complete foot exam and providing foot care self-management education. Both the exam and the education need to be documented in a way that is accessible to the other care providers.

How to Implement the Recommendation

- A. **The skills for performing a complete foot exam and foot care self-management education** can be easily acquired readily available online training.

Action! See Part 3 [Tools and Resources](#) – training resources.

- B. **For health care systems using the IHS electronic health record (EHR)**, documentation of the foot exam and self-management education is entered in the Wellness Exam and Education sections respectively. Field Health staff may need to be granted remote access to the EHR from the clinic IT site manager.

Action! See online video instruction on documentation.

<http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=toolsFCDocumentation>

- C. **For those health systems using paper records**, **Action!** See Part 3 – [Appendix D](#). for forms for documenting foot exams and education.

Team Notes:

Key Recommendation 10. Cascade clinic foot care objectives into clinic's annual performance plans.

Why?

Annual performance plans can provide a roadmap for clinical improvement goals. Appropriate measures should be developed for clinical objectives related to these goals. Cascading these objectives into annual performance plans for employees in the organization responsible for foot care can enhance accountability for achieving improvement goals and serve as a basis for appropriate recognition.

How to Implement the Recommendation

- A. **Using a consensus process of organization and clinic leadership, develop appropriate strategic foot care-related goals** for your organization, such as developing a basic foot care program. Then, develop specific process and outcome objectives. For example: In six months, the organization will have a nurse foot care clinic one day a week, and foot exam rates will increase from X% to Y% in one year.
- B. **Negotiate with clinic staff on how changes to their specific roles will help meet these goals**; select appropriate objectives and measures to be included in their annual performance evaluations. For example, the nurse selected to run the foot care clinic may set foot care training as a process objective and the process measure would be a certificate of training. An objective for a supply officer might be that podiatry equipment and supplies are ordered and in stock 95% of the time.
- C. **Decide upon the frequency of evaluation.**
- D. **Include all stakeholders** in review of these measures.
- E. **Continue to evaluate outcomes** such that they inform providers and organizational Leaders of foot care challenges and successes.

Team Notes:

Key Recommendation 11. Develop a mechanism for providing basic podiatry care.

Why?

While podiatry care has been associated with improved foot care outcomes in patients with diabetes, access to podiatry services are frequently limited in many Indian Health settings.

How to Implement the Recommendation

- A. **Incorporate proper foot care** into routine diabetes care.
- B. **Make podiatry care available on-site or through a referral mechanism** that is easy for the patient to use and ensures communication back to the primary care provider.
- C. **If podiatry services are not available in the facility, establish referral mechanisms** and have this information available on the patient's record.

Team Notes:

Key Recommendation 12. Develop clear mechanisms for referring patients to home care, field health workers, podiatry care, footwear specialists, and surgery.

Why?

Comprehensive foot care requires services provided outside of the clinic in the community. Patient care coordination with clear referral mechanisms to these services have been associated with improved documentation of foot care services. (Wilson, 2005)

How to Implement the Recommendation

- A. **Designate a person/group responsible for ascertaining what is available in the community** and engaging community stakeholders who have an interest or ability to interact with patients on education, diagnosis, and treatment.
- B. **Reinforce specific clinic-community linkages**, including:
 - **Field health** – Develop referral mechanism and coordinated services for public health nurses, community health representatives (CHRs), and home care personnel. Screening, education, nail care, and wound care can be provided and/or reinforced in the field. Training may be required.
 - **Footwear** – Consider conducting an assessment of appropriate footwear that is available in local community stores and compile a list that can be made available to patients. Explore feasibility of outreach clinics by regional specialized footwear vendors such as Certified Prosthetist-Orthotists (CPO), pedorthists.
 - **Surgery** – Explore feasibility of outreach clinics by regional wound care and vascular surgery consultants.
 - **Podiatry** – If podiatry services are not available at the clinic, explore feasibility of outreach clinics by regional podiatry consultants.
 - **Renal dialysis programs** – Patients on dialysis are at extreme risk for foot complications and their care is often divided among local primary care clinics and nephrologists from regional hospitals supporting the local dialysis program. Local primary care staff should meet with their regional counterparts to define patterns of referral for patients with acute foot care problems.
- C. **Establish written or electronic referral mechanisms** to optimize communication among clinic and community programs.
- D. **Evaluate outcomes regularly** and modify referral mechanisms if needed.

Team Notes:

PART 3 Appendices, Tools, and Resources

Appendix A. Supplemental Information

1. Importance of a Foot Care Program

Foot ulcers and amputations are a major cause of complications and disability for people with diabetes; however, they are among the most common *preventable* problems. Consider these facts:

- Approximately 40% of patients with diabetes will develop peripheral neuropathy. (Karvestedt, 2011)
- Approximately 8% of patients with diabetes have acute foot problems when they come in for a routine clinical exam. (Lauterbach, 2010)
- Most foot and lower limb amputations begin as foot ulcers. Between 5% and 15% of patients who develop diabetic foot ulcers will experience an amputation in their lifetime.

2. Benefits and Risks of Implementing This Best Practice

The cost of performing a annual complete foot examination is approximately five minutes of provider time, has no risk to patients; the benefit of implementing this Best Practice is that more than half of diabetes foot complications are preventable through primary care interventions.

3. Health Questions Addressed by Best Practice

Questions addressed include:

1. Is foot care important in a person with diabetes?
2. What can be done to decrease the chance of foot complications?
3. How can an organization improve its foot care delivery system?
4. What is the importance of community health workers in foot care?
5. How can an organization and community know that it is providing optimal health services to individuals with diabetes?
6. How can an organization measure predict outcomes associated with a diabetic foot care program?

4. Sustaining a Foot Care Program

Often, to reach care goals, programs must be in place for more than a few years. The following are some helpful tips for sustaining your program:

- Bill for podiatry, education, and home care services.
- Obtain third-party reimbursement for footwear.
- Establish contracts with footwear vendors to provide services at Medicare and Medicaid negotiated rates.
- Report your success to the local community through a newsletter that includes educational messages.
- Offer walk-in podiatry and wound care services, and make your services user-friendly.
- Have the clinic director establish an “internship” program with the local podiatrist. The podiatrist could train local clinic providers such as nurses or physicians in basic nail, callus, and ulcer care.
- Encourage clinics to share their expertise through regional workshops and invite other clinics to make site visits to observe their model clinic at work.
- Track and report clinical outcomes and share your successes with the clinic and other providers.
- Establish referral systems with regional wound care centers.

Appendix B. Key Measures Example

Remember—this is an example! Apply this process to your community using your data.

Diabetes foot ulcers are increasing. Our health care center and community are concerned about the increasing number of cases of foot ulcers.

Diabetes team takes action. Our diabetes team talked about addressing this problem and whether the diabetes team could be more involved. We read the *Foot Care Best Practice* document and talked about the Key Recommendations.

Identified sources of data. Local data included:

- Audit and RPMS data that includes foot care examination and education:
 - 27% of patients with diabetes had a foot exam in the past year.
 - 27% of patients with diabetes had foot care education in the past year.
- Contract health data that included information on referral to podiatry for foot ulcers
 - 23% of patients with diabetes have foot ulcers.
 - of the patients listed above, 30% received treatment for their foot ulcers.

Selected suitable Best Practice. After thinking carefully about our goals and resources, and reviewing data, we decided the Foot Care Best Practice was a good fit for us. We chose to work on three of the Key Recommendations: conducting foot examinations, providing foot care education, and providing podiatry care. We plan to hire a podiatrist two days a week to work in the diabetes clinic.

Identified Target Population. We decided to start implementing this Best Practice by applying the examination, education, and podiatry care to the current patients listed in our diabetes registry.

Identified Program goals:

- To increase the number of people who have foot exams.
- To increase the number of people who have foot care education.
- To decrease the number of people with foot ulcers.
- To increase the number of people with foot ulcers who receive treatment.

Identified SMART objectives based on our resources and data:

- The percent of patients who receive an annual comprehensive foot exam will increase by 30% over baseline within the next twelve months.
- The percent of diabetes patients who have documented risk-appropriate foot care education will increase by 30% over baseline from 50% to 60% within the next twelve months.
- The percent of diabetes patients who have foot ulcers will decrease from 23% to 15% in the next twelve months.
- The percent of diabetes patients who have foot ulcers who receive treatment will increase from 30% to 50% within in the next twelve months.

Selected Key Measures. We chose the corresponding Key Measures for these Objectives and Key Recommendations. Data will be collected and reviewed at baseline and mid-year.

Table 6. Selected Key Measures

A. Measure	B. <u>Baseline</u> or beginning value and date (collected prior to starting activities)	C. Most recent value and date (if applicable)	D. Data source
1. * Percent of diabetes patients with documented foot exams in the past twelve months.	27% as of 1/01/2011	32% as of 4/05/2011	<i>Diabetes Care and Outcomes Audit Report</i>
2. * Percent of diabetes patients with documented risk-appropriate foot care education in the past twelve months. Data will be reviewed.	27% as of 1/01/2011	32% as of 4/05/2011	Charts, Nursing Logs, RPMS
3. Percent of diabetes patients with foot ulcers who received treatment	30% as of 1/01/2011	40% as of 4/05/2011	Contract Health Data

* Required Key Measure

Appendix C. Improving Foot Care Programs Example

Remember—this is an example! Ask these questions in your community, thinking about your local needs, resources, and tracking systems.

There are four fundamental questions to ask as you plan and implement your best practice. These questions (and sample answers) are:

1. Who is your target population?

- The target population to be covered by this Best Practice is persons with type 1 or type 2 diabetes.

2. What are you trying to accomplish by implementing this Best Practice?

- Improve foot care and services for people with diabetes and at risk of diabetes, to improve foot care outcomes.

3. How will you know if what you do makes things better?

- Collect and display data on an ongoing basis; analyze the data and use it to plan next steps.
- Improved data results suggest that things are getting better. Examples:
 - o Over six months, there is a 15% increase in documented completed foot exams.
 - o Within one year, there is a 10% decrease in foot amputations.

4. What can you do to make things better?

- Enlist leadership support to improve diabetes foot health care.
- Develop clear mechanisms for referring patients to home care, field health workers, podiatry care, footwear specialists, vascular assessment, and surgical consultation.
- Develop a team approach to diabetes care to include foot care and develop a mechanism to measure the team approach success.

Appendix D. Diabetes Foot Exam Form

National Diabetes Education Program's *Feet Can Last a Lifetime: A Health Care Provider's Guide to Preventing Diabetic Foot Problems* http://ndep.nih.gov/media/feet_hcguide.pdf

Annual Comprehensive Diabetes Foot Exam Form

Name: _____ Date: _____ ID#: _____

I. Presence of Diabetes Complications

1. Check all that apply.
- Peripheral Neuropathy
 - Nephropathy
 - Retinopathy
 - Peripheral Vascular Disease
 - Cardiovascular Disease
 - Amputation (Specify date, side, and level)

Current ulcer or history of a foot ulcer?
Y ___ N ___

For Sections II & III, fill in the blanks with "Y" or "N" or with an "R," "L," or "B" for positive findings on the right, left, or both feet.

II. Current History

1. Is there pain in the calf muscles when walking that is relieved by rest?
Y ___ N ___

2. Any change in the foot since the last evaluation? Y ___ N ___
3. Any shoe problems? Y ___ N ___
4. Any blood or discharge on socks or hose? Y ___ N ___
5. Smoking history? Y ___ N ___
6. Most recent hemoglobin A1c result
____% _____ date

III. Foot Exam

1. Skin, Hair, and Nail Condition

- Is the skin thin, fragile, shiny and hairless? Y ___ N ___
- Are the nails thick, too long, ingrown, or infected with fungal disease? Y ___ N ___

Measure, draw in, and label the patient's skin condition, using the key and the foot diagram below.

C=Callus U=Ulcer PU=Pre-Ulcer
F=Fissure M=Maceration R=Redness
S=Swelling W=Warmth D=Dryness

2. Note Musculoskeletal Deformities

- Toe deformities
- Bunions (Hallus Valgus)
- Charcot foot
- Foot drop
- Prominent Metatarsal Heads

3. Pedal Pulses

Fill in the blanks with a "P" or an "A" to indicate present or absent.

Posterior tibial Left ___ Right ___
Dorsalis pedis Left ___ Right ___

4. Sensory Foot Exam

Label sensory level with a "+" in the five circled areas of the foot if the patient can feel the 5.07 (10-gram) Semmes-Weinstein nylon monofilament and "-" if the patient cannot feel the filament.

Notes



Right Foot

Notes



Left Foot

IV. Risk Categorization

Check appropriate box.

- | | |
|------------------------------------------------------|-------------------------------------------------------|
| <input type="checkbox"/> Low Risk Patient | <input type="checkbox"/> High Risk Patient |
| All of the following: | One or more of the following: |
| <input type="checkbox"/> Intact protective sensation | <input type="checkbox"/> Loss of protective sensation |
| <input type="checkbox"/> Pedal pulses present | <input type="checkbox"/> Absent pedal pulses |
| <input type="checkbox"/> No deformity | <input type="checkbox"/> Foot deformity |
| <input type="checkbox"/> No prior foot ulcer | <input type="checkbox"/> History of foot ulcer |
| <input type="checkbox"/> No amputation | <input type="checkbox"/> Prior amputation |

V. Footwear Assessment

Indicate yes or no.

1. Does the patient wear appropriate shoes? Y ___ N ___
2. Does the patient need inserts? Y ___ N ___
3. Should corrective footwear be prescribed? Y ___ N ___

VI. Education

Indicate yes or no.

1. Has the patient had prior foot care education? Y ___ N ___
2. Can the patient demonstrate appropriate foot care? Y ___ N ___
3. Does the patient need smoking cessation counseling?
Y ___ N ___
4. Does the patient need education about HbA1c or other diabetes self-care? Y ___ N ___

Provider Signature _____

VII. Management Plan

Check all that apply.

1. Self-management education:

- Provide patient education for preventive foot care. Date: _____
- Provide or refer for smoking cessation counseling. Date: _____
- Provide patient education about HbA1c or other aspect of self-care. Date: _____

2. Diagnostic studies:

- Vascular Laboratory
- Hemoglobin A1c (at least twice per year)
- Other: _____

3. Footwear recommendations:

- | | |
|------------------------------------------------|---------------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> Custom shoes |
| <input type="checkbox"/> Athletic shoes | <input type="checkbox"/> Depth shoes |
| <input type="checkbox"/> Accommodative inserts | |

4. Refer to:

- | | |
|------------------------------------------------|--------------------------------------------|
| <input type="checkbox"/> Primary Care Provider | <input type="checkbox"/> Endocrinologist |
| <input type="checkbox"/> Diabetes Educator | <input type="checkbox"/> Vascular Surgeon |
| <input type="checkbox"/> Podiatrist | <input type="checkbox"/> Foot Surgeon |
| <input type="checkbox"/> RN Foot Specialist | <input type="checkbox"/> Rehab. Specialist |
| <input type="checkbox"/> Pedorthist | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Orthotist | |

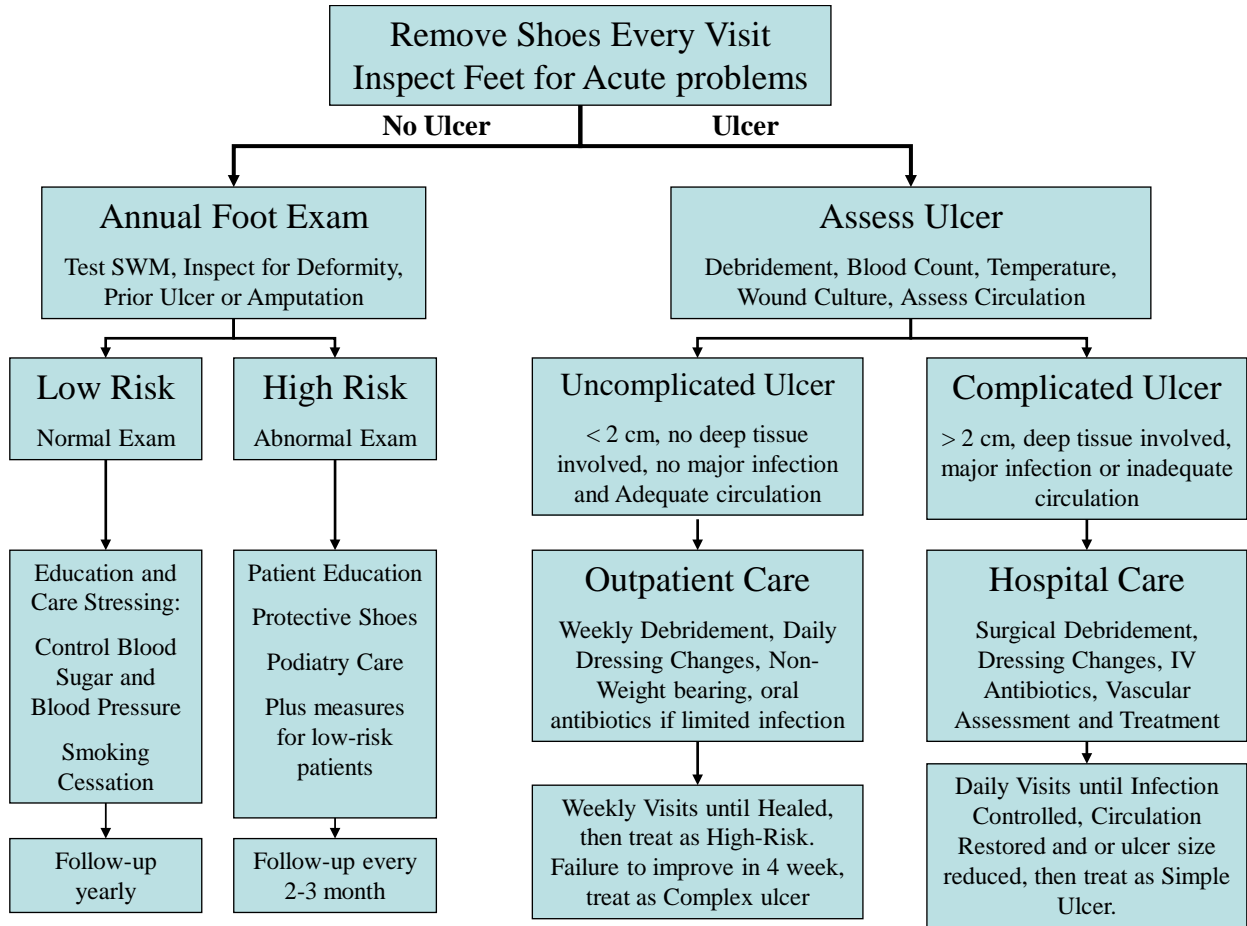
5. Follow-up Care:

Schedule follow-up visit. Date: _____

Detach and reproduce for your practice

Appendix E. Foot Care in Type 2 Diabetes

Evaluation and intervention for wounds is summarized using an algorithm.



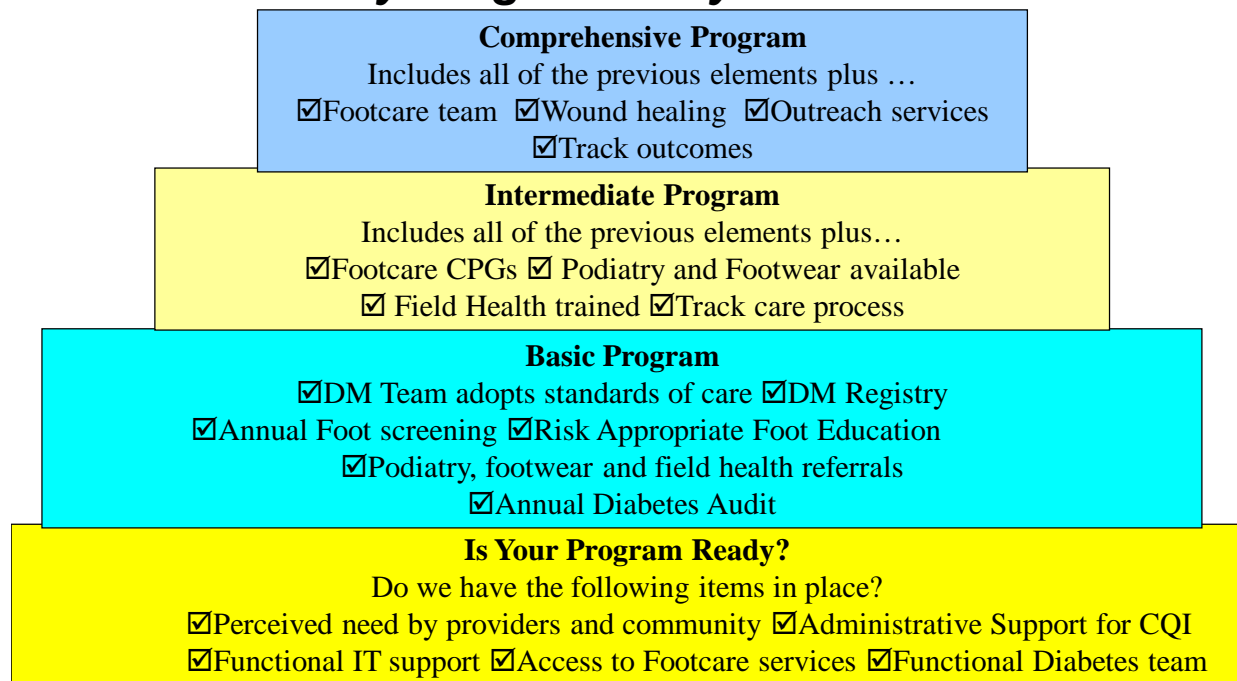
J.Fam Pract;1998(47):127-132

Appendix F. Stepped Approach to Implementing IHS Best Practice for Diabetic Foot Care

The diagram illustrates details of the levels for diabetic foot care programs: Basic, Intermediate, and Comprehensive. Required elements are listed for each program level in the stepped approach to implementation of the foot care Best Practice.

Stepped Approach for IHS Diabetes Best Practice for Foot Care

Set your goals for your clinic



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

Appendix G. Foot Care Quick Guide Cards and Other Web-based Resources

The IHS Division of Diabetes Treatment and Prevention’s “Quick Guide: Foot Care” is a part of the IHS Division of Diabetes web-based training portal and includes an overview on diabetic foot care, and instructional “How to” video modules on foot exams, basic podiatry care, basic wound care, and documentation in the IHS EHR.

Available from:

<http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=toolsFCQuickGuides>

Additional foot care material on the website can be found by clicking on LEARN: Diabetes Foot Care Hub portal – where you will find mobile CME/CE course, podcasts, mobile and links to clinical standards and patient education resources.

http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=learn_fc

Web-based Resources

IHS Division of Diabetes Treatment and Prevention. *Creating Strong Diabetes Programs: Plan a Trip to Success*. This 38 page workbook and one page Appendix (with online training course) provides guidance on effective program planning and evaluation. [Updated 2009 April 27; cited 2009 June]. Available from:

<http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Training/WebBased/Basics/Creating/Workbook.pdf>

IHS Division of Diabetes Treatment and Prevention. *Creating Strong Diabetes Programs: Plan a Trip to Success*. This online training course provides guidance on effective program planning and evaluation. [Internet]. [Updated 2009 July; cited 2009 June] Available from:

<http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=trainingBasicsCreating>

HRSA’s Lower Extremity Amputation Prevention (LEAP) program is a comprehensive, five-step program that can dramatically reduce lower extremity amputation in individuals with decreased sensation in their feet. <http://www.hrsa.gov/leap>

The National Diabetes Education Program’s *Feet Can Last a Lifetime: A Health Care Provider’s Guide to Preventing Foot Problems* is a comprehensive guide to foot care that includes a quick-reference card for conducting a foot exam, a monofilament for sensory testing, and templates for waiting room posters and medical record stickers.

http://ndep.nih.gov/media/feet_kit_eng.pdf

The California Diabetes Program, a partnership between the California Department of Public Health and the University of California, San Francisco, provides a wealth of information and tools on their website. <http://www.caldiabetes.org>

Tools and Resources

Action! See [Appendix D.](#), [Appendix E.](#), and [Appendix F.](#), for more clinical practice tools and resources.

Examples of Current Best Practice Programs

Alaska Native Medical Center (ANMC) Podiatry Program

Charles Edwards, DPM
(907) 729-3927
cedwards@anthc.org

Program includes a podiatrist, case manager, certified pedorthist, and the ANMC DM team. The program has demonstrated decreased rates of amputations through its comprehensive program. See *International Journal of Circumpolar Health* (Schraer, 2004).

Phoenix Indian Medical Center (PIMC)

Eugene Dannels, DPM
(602) 263-1200
eugene.dannels@ihs.gov

PIMC has vast clinical experience and a comprehensive foot care program.

Quentin N Burdick Memorial Health Center

Shirley Butts, RN, BSN Diabetes Nurse Educator
(701) 477-8451
shirley.butts@ihs.gov

QNBMHC in Belcourt, North Dakota, has implemented the “Happy Feet Program” a comprehensive nurse-managed foot care program in collaboration with the center’s DM team.
<http://www.csc.ihs.gov/docs/OutcomesOfANursingFootCareClinic.pdf>

Red Lake Hospital

Charmaine Branchaud, RN, CDE
(218) 679-3912
charmaine.branchaud@ihs.gov

Red Lake Hospital has achieved successful outcomes in a primary care setting.

Urban Inter-Tribal Center of Texas (UITCT)

Rodney Stapp, DPM, CEO
(214) 941-1050
rodney.stapp@uitct.com

UITCT has successfully implemented shoe and basic foot care awareness programs.

Whiteriver Indian Hospital

CAPT Scott Gaustad, PT, CWS, FCCWS, GCS, OCS, SCS, CSCS
(928) 338-3610
scott.gaustad@ihs.gov

CAPT Gaustad, coordinator of the Wound Care Team, has extensive clinical experience in care of the diabetic foot, as well as care of other Complicated and Uncomplicated wounds.

Area Diabetes Consultants website:

<http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=peopleADC>

CAPT Stephen Rith-Najarian, MD

USPHS Diabetes Consultant, Bemidji Area HIS

(218) 444-0454

stephen.rithnajarian@ihs.gov

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