



# Working Together to Manage Diabetes: A Toolkit for Pharmacy, Podiatry, Optometry, and Dentistry

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.





# Agenda



- Background
- The Pharmacy, Podiatry, Optometry, and Dentistry (PPOD) Toolkit and Guide
  - PPOD Specialty Sections
  - Implementation Strategies
  - Resources for Patients



**National Diabetes Education Program**

A program of the National Institutes of Health and the Centers for Disease Control and Prevention

# Background



- National Diabetes Education Program (NDEP)
- Diabetes Overview
- PPOD and Why It's Important

## What Is NDEP?

- Established in 1997 as an initiative of the U.S. Department of Health and Human Services to:
  - Promote early diagnosis.
  - Improve diabetes management and outcomes.
  - Prevent/delay the onset of type 2 diabetes in the United States and its territories.
- Jointly sponsored by Centers for Disease Control and Prevention (CDC) and National Institutes of Health (NIH).
- Involves 200+ federal, state, and private sector agency partners.



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## How Big Is the Problem?

### **FAST FACTS ON DIABETES**

***Diabetes affects 29 million people—  
9.3% of the U.S. population***

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**DIAGNOSED**  
***21.0 million people***

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**UNDIAGNOSED**  
***8.1 million people***

All ages, 2012

# What Is Diabetes?

High blood sugar occurs in those with diabetes because:

- The pancreas does not make enough insulin

**OR**

- The cells of people with diabetes do not respond to insulin normally.





# Diabetes Is a Serious Disease

- Diabetes is one of the top 10 leading causes of death in the United States.
- Diabetes is a leading cause of:
  - Blindness
  - Nontraumatic lower-leg amputation
  - Stroke
  - Heart attack
  - Kidney damage
  - Periodontitis



## Every 24 Hours...

- 4557 adults are diagnosed with diabetes.
- 136 people begin treatment for end-stage renal disease.
- 200 nontraumatic lower-limb amputations are performed.
- 641 people die from diabetes, or diabetes is a contributing cause of their death.





# Diabetes Complications

- The risk of periodontal disease is two to three times higher in adults with diabetes.
  - About one third of people with diabetes have severe periodontal disease.
- 60%–70% of people with diabetes have mild to severe nervous system damage.
  - Almost 30% of people ages 40 and over with diabetes have impaired sensation in their feet.
- Diabetes is the leading cause of new cases of blindness among adults ages 20–74 years.

## Medication Costs

- Medications for diabetes—including prescription medications, insulin, and other antidiabetic agents—represent more than 28% of all health expenditures attributed to diabetes.
- Of the projected \$286 billion in national cost for medications:
  - \$77 billion (27%) is incurred by people with diabetes.
  - \$50 billion of that is attributed to their diabetes.

American Diabetes Association. Economic costs of diabetes in the U.S. in 2012. *Diabetes Care* 2013;36(4):1033–46.

Herman WH, Hoerger TJ, Brandle M, et al. The cost-effectiveness of lifestyle modification or metformin in preventing type 2 diabetes in adults with impaired glucose tolerance. *Ann Intern Med.* 2005; Mar 1;142(5):323–32. Available at <http://www.ncbi.nlm.nih.gov/pubmed/15738451>.



# What Is PPOD?

PPOD is a collaborative team approach that:

- Engages many health care providers who treat patients with diabetes.
- Reinforces consistent diabetes messages across four disciplines:
  - Pharmacy
  - Podiatry
  - Optometry
  - Dentistry

# What Can PPOD Providers Do?

PPOD providers can:

- Embrace a team approach to diabetes care.
- Recognize signs of diabetes and systemic concerns across all PPOD areas.
- Reinforce the importance of annual screenings and healthy habits.
- Educate patients about diabetes.
- Encourage self-management.
- Provide treatment.





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## Why Do We Need PPOD?

- PPOD makes a difference for patients with diabetes.
- A team approach to diabetes care:
  - Reduces risk factors.
  - Improves diabetes management.
  - Lowers the risk for chronic disease complications.



# A PPOD Provider May Be the First to See a Person Having a New Problem

- Patients may consult a PPOD provider about new symptoms that may be diabetes-related before consulting with a primary care provider.
- Regular communication provides an opportunity to keep diabetes on the patient's radar screen.





# **A PPOD Provider May Be the First to See a Person Having a Problem**

- PPOD providers are well positioned to advise and educate their patients about diabetes control and prevention.
- All providers need to give consistent messages, recognize early danger signs, and promote the team approach.



## Benefits to Patients

- Access to integrated diabetes care across specialty and primary care areas.
- Regular communication among your team of health care providers.
- Strong focus on preventive care.





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# The PPOD Guide





# Working Together to Manage Diabetes

- Offers an overview of team approach to care.
- Includes details for each PPOD specialty area on:
  - Current data and trends
  - Common diabetes-related complications
  - Assessment techniques
  - Key warning signs
  - Patient education information
- Serves as a “cross-education” resource, **not** a comprehensive guide to subspecialty care.



# Working Together to Manage Diabetes: Considerations

- Guide provides a “quick course” on each specialty and its relation to diabetes.
- Each section is written for providers OUTSIDE of the specialty to read.
- Your own specialty section may seem “simplistic.”
- The goal of the PPOD Guide is to relay consistent messages across the disciplines.

# Key Message to Prevent Diabetes Complications: Control the ABCs

- **A1c:** Blood glucose control
- **B:** Blood pressure control
- **C:** Cholesterol (Blood lipid) control
- **S:** Smoking (and use of other tobacco products) cessation (and don't start)
  
- Preventive care practices for eyes, kidneys, feet, teeth, and gums



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# PPOD Specialty Sections



What PPOD Specialists Want Other Members of the Team to Know About Their Specialties

# Medication Therapy Management and Diabetes



More than:

- 50% of patients with chronic disorders do not take medication properly.
- 60% of people with diabetes do not have their blood glucose in goal range.





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# Medication Therapy Management and Diabetes Complications

Medication-related complications can include:

- Serious illness, long-term disability, death
- Inability to achieve desired results
- Inefficient use of money



## Role of Pharmacists

Pharmacists are unique members of the health care team because:

- Patients often see their pharmacist ***seven times more often*** than their doctor.
- Pharmacists are often available all day and into evenings and weekends—with no appointment needed.



## Role of Pharmacists (cont.)

- Monitor drug regimens.
- Work with patients to develop a plan to reduce risk of side effects and drug interactions.
- Advise patients on how to take medications properly.
- Provide other information to help control diabetes.
- Communicate with health care team.



# Key Questions to Ask Your Patients About Medication Therapy Management

**Patients should be referred to a pharmacist if the answers to these questions are “no” or “unsure”:**

- Do you have a list of all your medicines, vitamins, and supplements?
- Do you know the reason why you take each medicine?
- Have you reported any side effects from your medicines to your pharmacist?



## Example: PPOD in Action

- 40-year-old woman notices blurry vision and asks her pharmacist about reading glasses.
- Pharmacist discovers that patient was diagnosed with diabetes last year but did not return for follow-up appointment.
- Pharmacist advises that changes in vision may be a sign of diabetes, not a need for reading glasses.
- Pharmacist arranges primary care visit and eye care visit for follow-up.
- Pharmacist also refers her to the NDEP website at [www.cdc.gov/diabetes/ndep](http://www.cdc.gov/diabetes/ndep) for more materials.



# Foot Health and Diabetes

- More than 60% of nontraumatic lower-limb amputations occur in people with diabetes.
- Patients with diabetes are 15–26 times more likely to have an amputation than patients without diabetes.
- Up to 20% of diabetes patients who participate in routine foot care will have a treatable foot care problem.



# Foot Exams

Annual comprehensive exams:

- Help determine risk for developing foot complications.
- Educate high-risk patients on how to properly care for their feet.
- Prevent low-risk patients from becoming high-risk.





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# Key Questions to Ask Your Patients About Foot Health

**Patients should be referred to a podiatrist if the answers to these questions are “no” or “unsure”:**

- Do you get a full foot exam by a podiatrist at least once a year?
- Do you know how diabetes can affect your feet?
- Do you know how to check your feet every day?



## Example: PPOD in Action

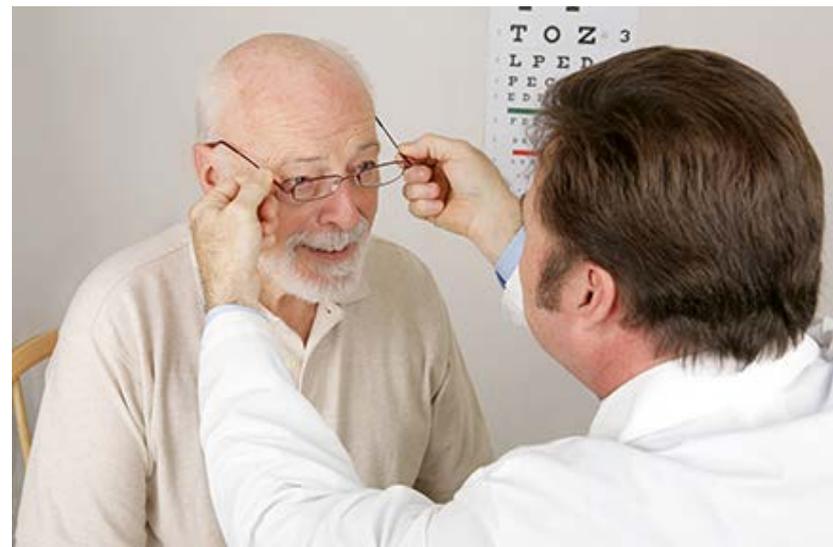
- A 70-year-old man consults a podiatrist because of corns on his feet, which he says have caused him not to walk much.
- The podiatrist explains that regular exercise has many benefits, including diabetes prevention and management.
- The podiatrist shares the PPOD fact sheet for patients, *Diabetes and You: Your Feet Matter!*, and points out the website and toll-free number for more resources.





# Eye Health

- 11% of U.S. adults with diabetes have a form of visual impairment.
- Adults with visual function loss are at least 90% more likely to have depression than those without visual function loss.



CDC. National diabetes fact sheet: National estimates and general information on diabetes and prediabetes in the United States, 2011. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011. Available at <http://www.cdc.gov/diabetes/pubs/factsheet11.htm>.  
Zhang, X, Bullard, KM, Cotch, MF, et al. Association between depression and functional vision loss in persons 20 years of age or older in the United States, NHANES 2005–2008. *JAMA Ophthalmol.* 2013; 131(5): 573–81. Doi: 10.1001/jama ophthalmol.2013.2597. Available at <http://archophth.jamanetwork.com/mobile/article.aspx?articleid=1660943>.



# Eye Exams

Annual comprehensive vision evaluations with a dilated retinal examination:

- Educate high-risk patients on how to care for and monitor their eye health.
- Prevent low-risk patients from becoming high-risk.



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# Key Questions to Ask Your Patients About Eye Health

**Patients should be referred to an optometrist if the answers to these questions are “no” or “unsure”:**

- Do you get a full eye exam with dilated pupils at least once a year?
- Do you know how diabetes can affect your eyes?
- Do you know what to do if you have vision changes?



## Example: PPOD in Action

- A 45-year-old African American woman brings her mother for her annual comprehensive diabetes eye exam.
- The eye care provider asks if she has ever considered that she, too, is at risk for developing type 2 diabetes.
- The provider gives the woman *NDEP's Am I At Risk?* brochure and points out the NDEP website and toll-free number for more information and resources.
- The provider suggests the woman make a follow-up appointment with her own primary care provider.



## Oral Health and Diabetes

- 85% of patients with type 2 diabetes report that they have received no information on the association between diabetes and oral health.
- Periodontal disease has been associated with poor glycemic control.
- Tobacco use and poor nutrition are risk factors for compromised oral health.



# Oral Health Exams

- Encourage regular (annual or more frequent) oral examinations.
- Educate patients about:
  - The link between diabetes and oral health.
  - Self-management skills to properly care for teeth.
- Prevent low-risk patients from becoming high-risk.



# Key Questions to Ask Your Patients About Oral Health

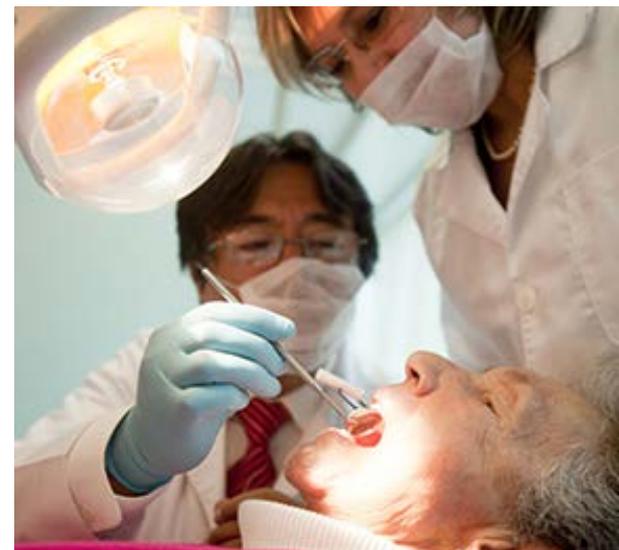
**Patients should be referred to a dentist if the answers to these questions are “no” or “unsure”:**

- Do you visit your dental provider at least once a year for a full mouth exam?
- Do you know how diabetes can affect your teeth and gums?
- Do you know the early signs of tooth, mouth, and gum problems?

## Example: PPOD in Action



- A dental patient is scheduled for a procedure, but she doesn't understand how to manage the timing of her insulin injections.
- The dentist arranges a pharmacy consultation for the patient.
- The patient and pharmacist develop an individualized medication schedule together.





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# Implementation



- What Is Included in the PPOD Toolkit?
- Other NDEP Resources
- How to Get Started

## What Is Included in the PPOD Toolkit?

- *Working Together to Manage Diabetes: A Guide for Pharmacy, Podiatry, Optometry, and Dentistry*
- Patient education sheet and patient care checklist
- Patient fact sheet series:
  - *Diabetes and You: Your Eyes Matter!*
  - *Diabetes and You: Your Teeth Matter!*
  - *Diabetes and You: Your Feet Matter!*
  - *Diabetes and You: All Medicines Matter!*
- PPOD PowerPoint presentation
- PPOD promotional materials
- *Working Together Medications Supplement*





# PPOD Multidisciplinary Patient Care Checklist

- Promotes increased collaboration among all members of the health care team.
- Documents key exam measures for sharing with providers and patients.

During pilot test of checklist, 74.3% of providers stated they were likely to change their practice to more of a team approach.

**Diabetes Head to Toe Checklist Examination Report**  
Your organization's name here

From: _____		To: _____	
<b>Patient Information:</b>			
Name: _____		DOB: _____	
Diabetes: <input type="checkbox"/> Type 1 <input type="checkbox"/> Type 2 <input type="checkbox"/> Gestational <input type="checkbox"/> Prediabetes		HbA1c Goal: _____ < 6 months <input type="checkbox"/> ≥ 6 months <input type="checkbox"/> Unknown	
Duration of Diabetes (in years): _____		Current Diabetes Therapy: <input type="checkbox"/> Insulin <input type="checkbox"/> Oral Hypoglycemic <input type="checkbox"/> Diet Control <input type="checkbox"/> None	
Results of Last Finger-stick blood glucose reading (per patient): _____		Patient reports under control <input type="checkbox"/> Yes <input type="checkbox"/> No	
Dietary Counseling <input type="checkbox"/> Yes <input type="checkbox"/> No		Type of Diet: _____	
<b>MEDICINES</b>		<b>Home Glucose Monitoring Frequency:</b>	
Date: _____		<input type="checkbox"/> once daily	
Patient has a written med list <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> twice daily	
OTC Meds Used: (if none, <input type="checkbox"/> )		<input type="checkbox"/> 3-4 times daily	
Herbal Meds Used: (if none, <input type="checkbox"/> )		<input type="checkbox"/> Other: _____	
Pharmacist reviewed meds on (date): _____		If on insulin, list current dose: _____	
Patient has Rx for: (provide reason if "no")		List dosing times: _____	
Aspirin <input type="checkbox"/> Yes <input type="checkbox"/> No		Does patient know their current:	
Cholesterol med <input type="checkbox"/> Yes <input type="checkbox"/> No		A1c? <input type="checkbox"/> Yes <input type="checkbox"/> No Goal A1c: <input type="checkbox"/> Yes <input type="checkbox"/> No	
ACE Inh or ARB <input type="checkbox"/> Yes <input type="checkbox"/> No		LDL? <input type="checkbox"/> Yes <input type="checkbox"/> No Goal LDL: <input type="checkbox"/> Yes <input type="checkbox"/> No BP? <input type="checkbox"/> Yes <input type="checkbox"/> No Goal BP? <input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>ROCKET/HEALTH/VASCULAR</b>		Smoking status: (circle all that apply)	
Date: _____		Never <input type="checkbox"/> Former <input type="checkbox"/> Current <input type="checkbox"/> Willing To Quit <input type="checkbox"/>	
Risk factors in addition to diabetes: _____		Assessments: (give dates for all)	
Blood Pressure: Goal: _____ Measured: _____		Urine albumin-to-creatinine ratio: _____	
Total LDL and HDL cholesterol, triglycerides: (LDL goal and measured values for all)		Serum creatinine and estimated GFR: _____	
Potassium: _____		History of myocardial infarction, heart failure, or stroke: _____	
Hemoglobin: _____		Heart or brain testing (e.g. stress test, echo, angiogram, CT scan, ultrasound, MRI): _____	
		History of dialysis or kidney transplant: _____	
		Kidney tests (ultrasound, CT Scan, Angiogram): _____	
<b>FEET</b>		<b>Pedal Pulses</b> - "P" for present or "A" for absent	
Date: _____		Posterior tibial Left _____ Right _____ Dorsalis pedis Left _____ Right _____	
Current ulcer or history of a foot ulcer? <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Risk Categorization</b> check appropriate box.	
Foot Exam: Skin, Hair and Nail Condition		<input type="checkbox"/> Low Risk Patient <input type="checkbox"/> High Risk Patient	
Is the skin thin, fragile, shiny and hairless? <input type="checkbox"/> Yes <input type="checkbox"/> No		All of the following: _____	
Are the nails thick, too long, ingrown, or infected with fungal disease? <input type="checkbox"/> Yes <input type="checkbox"/> No		One or more of the following: _____	
<b>Note Musculoskeletal Deformities</b>		<input type="checkbox"/> Intact protective sensation <input type="checkbox"/> Loss of protective sensation	
<input type="checkbox"/> Toe deformities <input type="checkbox"/> Bunions (Hallus Valgus) <input type="checkbox"/> Charcot foot		<input type="checkbox"/> Pedal pulses present <input type="checkbox"/> Absent pedal pulses	
<input type="checkbox"/> Foot drop <input type="checkbox"/> Prominent Metatarsal Heads		<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	
<b>EYES</b>		<b>Visual Acuity (best corrected)</b> Right: _____ Left: _____	
Date: _____		Plan: _____	
Intraocular Pressure: Right: _____ Left: _____		<input type="checkbox"/> Monitor Only <input type="checkbox"/> Repeat Dilated Exam In _____ months	
<input type="checkbox"/> Dilated Fundus Exam Performed		<input type="checkbox"/> Additional Testing/Treatment Recommended:	
Diagnosis: _____		Proliferative Diabetic Retinopathy <input type="checkbox"/> Yes <input type="checkbox"/> No	
No Diabetic Retinopathy <input type="checkbox"/> Yes <input type="checkbox"/> No		Clinically Significant Macular Edema <input type="checkbox"/> Yes <input type="checkbox"/> No	
Non-Proliferative Diabetic Retinopathy <input type="checkbox"/> Yes <input type="checkbox"/> No			
<b>MOUTH</b>		<b>Examination Findings</b>	
Date: _____		Xerostomia: _____	
Intraoral/Extraoral: _____		Fungal infection: _____	
Caries: _____		Parotid gland changes: _____	
Periodontal (health, abscesses, gingivitis, periodontitis): _____			
Functional (eating, swallowing, etc) concerns: _____			
Additional Testing/Treatment Recommended: _____			
Refer to Specialist: _____		Re-evaluate in _____ month(s)	
<b>Management:</b>			
<input type="checkbox"/> Follow-up: _____ months <input type="checkbox"/> Patient education/discussion <input type="checkbox"/> Information pamphlet given			

# PPOD Patient Fact Sheets

- Created a general diabetes PPOD fact sheet for patients.
- Pilot tested with patients.
- Reviewed content for health literacy.
- Developed four new fact sheets—one for each PPOD specialty area.




**I Can Control My Diabetes**  
By Working With My Health Care Team!




**To team up with my pharmacist, I will—**

- Make a list of all my medicines, the exact doses, and include over-the-counter medicines, vitamins, and herbal supplements.
- Update and review the list with my pharmacist every time there is a change.
- Ask how to take my medicine and use supplies to get the best results at the lowest cost.
- Ask about new medicines that I can talk about with my doctor.

**To team up with my podiatrist, I will—**

- Get a full foot exam by a podiatrist at least once each year.
- Learn how to check my feet myself every day.
- See my podiatrist right away if I develop any foot pain, redness, or sores.
- Ask about the right shoes for me.
- Make sure my feet are checked at every health care visit.

**To team up with my eye care provider, I will—**

- Ask for a full eye exam with dilated pupils each year.
- Ask how to prevent diabetic eye disease.
- Ask what to do if I have vision changes.

**To team up with my dental provider, I will—**

- Visit my dental provider at least once a year for a full mouth exam.
- Learn the best way to brush my teeth and use dental floss.
- Ask about the early signs of tooth, mouth, and gum problems.
- Ask about the link between diabetes and gum disease.

**To control my diabetes every day, I will—**

- Be more active—walk, play, dance, swim, and turn off the TV.
- Eat a healthy diet—choose smaller portions, more vegetables, and less salt, fat, and sugar.
- Quit if I smoke or use other tobacco products—tobacco use increases the risk of health problems from diabetes. To quit, call: 1-800-QUIT-NOW (1-800-784-8689).
- Ask all my providers to share my exam results with my other health care providers.
- Learn about managing my diabetes by visiting [www.yourdiabetesinfo.org](http://www.yourdiabetesinfo.org).
- Control my ABCs of diabetes:
  - ▶ **A1c.** This test measures average blood sugar levels over the last 3 months. The goal is less than 7% for many people but your health care provider might set different goals for you.
  - ▶ **Blood Pressure.** High blood pressure causes heart disease. The goal is less than 130/80mm Hg for most people.
  - ▶ **Cholesterol.** Bad cholesterol or LDL (Low Density Lipoprotein) builds up and clogs your arteries. The goal is an LDL less than 100 mg/dL.

For more **FREE** information on how to prevent and control diabetes call the National Diabetes Education Program (NDEP) at 1-866-698-NDEP (6337), TTY 1-866-569-1162, or visit [www.yourdiabetesinfo.org](http://www.yourdiabetesinfo.org).




NDEP is a partnership of the Centers for Disease Control and Prevention, the National Institutes of Health, and more than 200 public and private organizations.

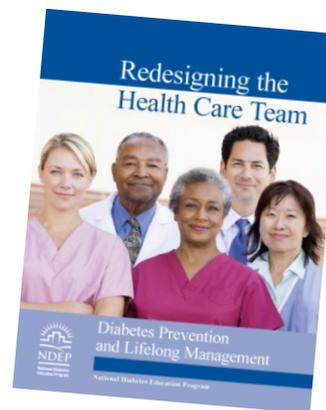
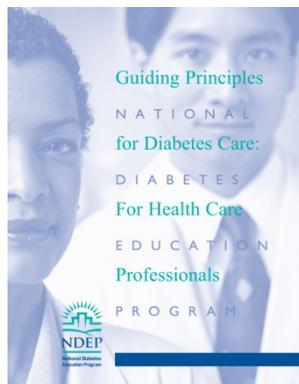
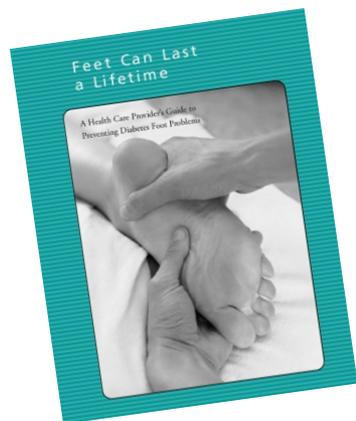
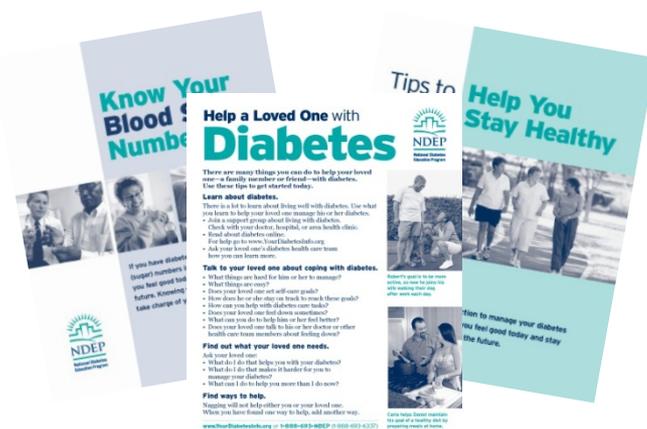



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# Other NDEP Resources Available Online

Resources available for many audiences:

- Individuals with all types of diabetes
- Individuals at risk for type 2 diabetes
- Health care professionals



## PPOD: How to Get Started

- **Review and download** the PPOD Guide and other Toolkit materials at [www.cdc.gov/diabetes/ndep](http://www.cdc.gov/diabetes/ndep).
- **Review and identify best strategies** to implement PPOD in your practice.
- **Share a consistent message** with your patients about controlling their ABCs.
- **Pay attention** to signs of problems in other PPOD areas and **make referrals**.



# Practice True Multidisciplinary Team Care!

- **Collaborate** with other health care providers, including podiatrists, pharmacists, optometrists, and dentists, primary care physicians, nurse practitioners, diabetes educators, physician assistants, and community health workers.
- **Network** with local associations and local chapters of national associations.
- Consider creating a **local PPOD coalition** in your state or community.
- **Tailor and use PPOD materials** for patients in your practice and providers in your coalition.



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# Thank you!



Visit [www.cdc.gov/diabetes/ndep](http://www.cdc.gov/diabetes/ndep)  
for more resources for health care  
professionals *and* patients.



# NDEP **National Diabetes Education Program**

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For more information, call 1-800-CDC-INFO (800-232-4636)

TTY 1-888-232-6348 or visit [www.cdc.gov/info](http://www.cdc.gov/info).

To order resources, visit [www.cdc.gov/diabetes/ndep](http://www.cdc.gov/diabetes/ndep).



National Institutes  
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CENTERS FOR DISEASE  
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