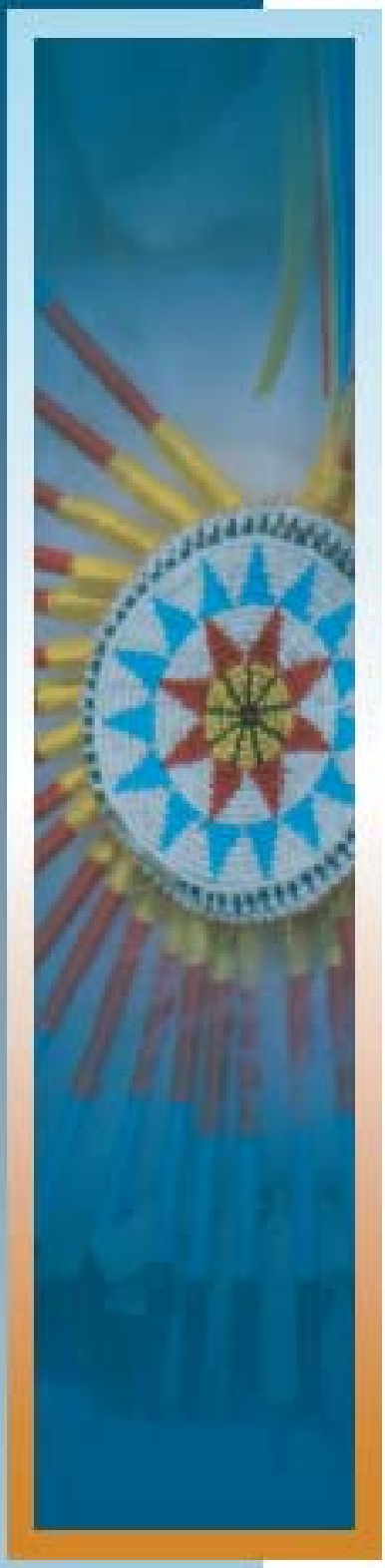

INDIAN HEALTH DIABETES BEST PRACTICE

Cardiovascular Health and Diabetes

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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http://www.ihs.gov/MedicalPrograms/Diabetes/

Table of Contents

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

Key Recommendations for Cardiovascular Health and Diabetes Best Practice. 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.

Lifestyle Management

1. Assess smoking status, provide counseling, and implement a smoking cessation program.
2. Assess lifestyle factors and provide medical nutrition therapy (MNT).
3. Assess body mass index (BMI) and assist with weight management.
4. Assess activity levels and recommend physical activity.

Behavioral Health

5. Assess emotional health and provide indicated services.

Clinical Management

6. Assess and treat high blood pressure (hypertension) to appropriate targets.
7. Assess and treat lipids to appropriate targets.
8. Assess and treat albuminuria to appropriate targets.
9. Assess and treat blood glucose to appropriate targets.
10. Provide aspirin and antiplatelet therapy for appropriate individuals.
11. Assess and treat anemia related to chronic kidney disease to appropriate targets.
12. Identify and treat sleep apnea.

Key Measures for Cardiovascular Health and Diabetes Best Practice. 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 indicated * Measures. Programs may report on other measures as well.

1. *Percent of diabetes patients with documented smoking status in the past twelve months.
2. *Percent of diabetes patients who smoke who received tobacco cessation intervention(s) in the past twelve months.
3. *Percent of diabetes patients who smoke who quit smoking in the past twelve months.
4. *Percent of diabetes patients who had most recent blood pressure in the past twelve months at target.
5. *Percent of diabetes patients with documented cardiovascular disease (CVD) or hypertension education in the past twelve months.
6. Percent of diabetes patients who had most recent lipid measurements in the past twelve months at target.
7. Percent of diabetes patients with a positive assessment for albuminuria (i.e., measures of albuminuria) who received treatment in the past twelve months.
8. Percent of target population with improvements in A1C in the past twelve months.

PART 1 Essential Elements of Implementing this Best Practice

Purpose and Target Population

This best practice describes cardiovascular disease (CVD) risk reduction and care recommendations for any person with type 1 or type 2 diabetes, regardless of age or duration of diabetes.

Intended Users of this Best Practice

- Primary care team members
- diabetes education and care team members, 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 Cardiovascular Health in the Care of People with Diabetes

Cardiovascular disease (CVD) is a major cause of morbidity and mortality for individuals with diabetes. Addressing lifestyle factors, hypertension, and dyslipidemia is critical, given that lowering blood glucose alone is not adequate to fully address CVD risk in diabetes. Patients with type 2 diabetes have an increased prevalence of hypertension and lipid abnormalities, including small dense LDL particles, high triglycerides, and low levels of high-density lipoprotein cholesterol (HDL) that contribute to the higher rates of CVD. Management of hypertension and lipids results in significant CVD risk reduction for adults with diabetes.

Action! See Part 3 – Appendix A. for more information on the importance of cardiovascular health in the care of people with diabetes.

Goals of This Best Practice

The overall goal of the Cardiovascular Health and Diabetes Best Practice is to provide guidelines and clinical resources to identify, effectively manage, and educate patients regarding CVD risk and diabetes.

Key Recommendations

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

Key Recommendations for Cardiovascular Health and Diabetes Best Practice. These are evidence-based actions that will lead to improved outcomes in the community.

Lifestyle Management

1. Assess smoking status, provide counseling, and implement a smoking cessation program.
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10. Provide aspirin and antiplatelet therapy for appropriate individuals.
11. Assess and treat anemia related to chronic kidney disease to appropriate targets.
12. Identify and treat sleep apnea.

Action! See Part 2 for details on the implementation of each key recommendation.

Planning For Your Program and Evaluation

Key Action Steps

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 reach blood pressure target goal.

    - Increase the number of people who receive cardiovascular disease and diabetes 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 percent of people with diabetes who had most recent blood pressure in the past twelve months at target from 55% to 60% by the end of the fiscal year.

- Increase the percent of people with diabetes with documented cardiovascular disease education in the past twelve months from 50% to 60% 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

Key Measures of Cardiovascular Health and Diabetes Best Practice. 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 indicated * Measures. Programs may report on other measures as well.

1. *Percent of diabetes patients with documented smoking status in the past twelve months.
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7. Percent of diabetes patients with a positive assessment for albuminuria (i.e., measures of albuminuria) who received treatment in the past twelve months.
8. Percent of target population with improvements in A1C in the past 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 Part 3 – Appendix A. Supplemental Information for more ideas for monitoring progress and outcomes of this Best Practice.

Action! Link to 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 – Appendix C. *Improving Cardiovascular Disease and Diabetes Programs Example* to assist you with applying Key Recommendations and Key Measures to a program plan.

Action! You can also link to an online training and a workbook to get more ideas about setting goals and objectives, and developing a program plan. (See pages 23-28.) Available from: 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. Assess smoking status, provide counseling, and implement a smoking cessation program.

Why?

Smoking is a well-defined cardiovascular disease (CVD) risk factor in its own right, but in the context of diabetes acts synergistically along with hyperglycemia to increase CVD risk. Smoking cessation is a primary, safe, and cost-effective intervention (Schroeder, 2005; ADA, 2009). Cessation of tobacco is a critical factor in lowering the global risk of CVD in patients with diabetes.

How to Implement the Key Recommendation

Implement the "Five As":

Ask the patient about smoking status.

Assess the patient's interest in quitting.

Advise all patients with diabetes who smoke that it is important for them to quit.

Assist all patients who smoke to quit by setting a quit date, providing information about how to prepare for the quit date, and offering counseling and medication assistance.

Arrange for follow-up with the patient through a phone call or an appointment after the quit date:

- Develop and implement a formal smoking cessation program.
- Consider medication, such as nicotine supplements like Chantix, or Bupropion.
- Record smoking status on the patient's chart to increase identification of current tobacco users.

Team Notes:

Key Recommendation 2. Assess lifestyle factors and provide medical nutrition therapy (MNT).

Why?

Medical nutrition therapy (MNT) can help reduce the risk for heart disease and stroke (ADA 2008).

How to Implement the Key Recommendation

- **Initial:** Consultation with a registered dietitian every four to six weeks until reaching therapeutic goals.
- **Reassess:** Every three to six months after initial consultation.

A. **Refer the patient** to a registered dietitian (RD) for MNT. The treating physician must provide the referral.

B. **The RD will provide MNT** and counsel the client on behavioral and lifestyle changes.

C. **MNT is an essential component in treatment** of lipids, BP control, glycemic/A1C control, and weight management.

D. **Medical Nutrition Therapy includes**:

- Performing a comprehensive nutrition assessment determining the nutrition diagnosis.
- Planning and implementing a nutrition intervention using evidence-based nutrition practice guidelines.
- Monitoring and evaluating an individual's progress over subsequent visits with the RD.

E. **General Nutrition and Other Therapeutic Lifestyle Changes**.

- In addition to MNT, other nutrition and lifestyle changes are beneficial for CVD risk reduction.

Action! See Part 3 – Appendix D. for detailed information and recommendations on General Nutrition and Other Therapeutic Lifestyle Changes.

Team Notes:

Key Recommendation 3. Assess body mass index (BMI) and assist with weight management.

Why?

Elevated Body Mass Index (BMI) is common and increasingly prevalent among American Indians and Alaska Natives with diabetes. In people who have diabetes, elevated BMI can worsen complications and make diabetes management more difficult by increasing insulin resistance and raising blood glucose levels. Lifestyle changes are the core components of weight management and are essential for the management of diabetes and its comorbidities of hypertension, dyslipidemia, and CVD.

How to Implement the Key Recommendation

A. **It is highly recommended that weight management counseling be provided by a multi-disciplinary team approach and include a registered dietitian or a public health nutritionist.** Patients who are overweight (BMI 25.0-29.9 kg/m2) or obese (BMI ≥ 30 kg/m2) should be referred to community- or clinic-based structured programs where weight loss is addressed. Such programs should emphasize goal setting, coaching and motivational interviewing, education and skills development, physical activity, self-monitoring, problem solving, behavioral change, stress and stimulus control, the importance of social support, and the use of community resources. The role of the clinician is to educate, monitor, and support the patient during these processes.

B. **Goals of weight management counseling**:

Body mass index (BMI) < 25
Reduce body weight by 5-10% from baseline in the first six months.

C. **For individuals with a BMI over 25**, assess them for complications and comorbidities, provide counseling, and identify patients for referral to resources that promote personalized weight management. **Note!** See MNT recommendations in Key Recommendation 2.

D. **Assess needed calories** and match the intake of total energy (calories) to overall energy needs.

E. **Encourage the patient to lose one-two pounds per week** through energy expenditure or calorie restriction of at least 500 kcal per day, in general.

F. **Promote exercise**. Recommend higher levels of physical activity, up to 90 minutes daily.

G. **Refer to a registered dietitian** and follow guidelines as outlined above for medical nutrition therapy (NHLBI, 2002; ADA, 2008; Stevens et al., 2001).

Action! See *Indian Health Diabetes Best Practice on Adult Weight and Cardiovascular Risk Management*.

Action! See the *IHS Standards of Care for Adults with Type 2 Diabetes*, March 2011 at: http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Tools/ClinicalGuidelines/Standards_Care_0309.pdf

Action! See Diabetes Prevention Program (DPP) Lifestyle Balance Program Materials at: http://www.bsc.gwu.edu/dpp/lifestyle/dpp_part.html

Action! See *IHS Division of Diabetes Promoting a Healthy Weight in Children and Youth: Clinical Strategies, Recommendations and Best Practices*. 2008 at: http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Tools/ClinicalGuidelines/Promoting_Healthy_Weight_1208.pdf

Team Notes:

Key Recommendation 4. Assess activity levels and recommend physical activity.

Why?

Physical activity reduces CVD risk and may improve outcomes (Oguma and Shinoda–Tagawa, 2004; Wessel et al., 2004; Stewart, 2002; Tanasescu et al., 2002; Lakka et al., 2001). The benefits of exercise training extend beyond blood glucose control and blood pressure reduction (Wessel et al., 2004; Stewart, 2002; Dunn et al., 1999). While there is good evidence for CVD risk factor reduction with increased physical activity, the data showing improved outcomes is derived from epidemiologic studies (Bassock, Manson, 2008).

How to Implement the Key Recommendation

A. Physical Activity Goals*:*

- The primary goals for physical activity include 150 minutes of moderate to vigorous aerobic exercise distributed over a minimum of three to five days of the week, with no more than two consecutive days between sessions of aerobic activity.

- Optimally, aerobic sessions should be 30 minutes or more, but can be divided into ten- to fifteen-minute sessions two to three times in the day. Up to 60 minutes a day may be required if relying on physical activity for weight loss.

- Moderate to vigorous resistive exercises provide an additional benefit when performed two-three days of the week. (Colberg et al 2010)

B. Assess CVD status and the need for ECG exercise stress testing.

While universal ECG stress testing is not recommended, before undertaking a physical activity program more intense than brisk walking, sedentary persons with diabetes should be evaluated by a medical provider (Colberg S and Associates, ADA and ACSM Joint Position Statement, 2010). Concerning signs or symptoms should prompt consideration of stress testing and providers should use their clinical judgment in this regard as the area of screening of asymptomatic patients with diabetes remains unclear. Other conditions that may preclude more vigorous activity include, but are not limited to, uncontrolled hypertension, significant autonomic or peripheral neuropathy, foot lesions or abnormalities with a history of ulceration, and proliferative retinopathy. (ADA Standards of Care, 2009).

C. Individualize and negotiate goals for physical activity. Supportive social situations and structured group settings may improve success rates.

Action! See the *Indian Health Diabetes Best Practice on Physical Activity*

Action! See the *IHS Standards of Care for Adults with Type 2 Diabetes,* March 2011 http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Tools/ClinicalGuidelines/Standards_Care_0309.pdf

Team Notes:

Key Recommendation 5. Assess emotional health and provide indicated services.

Why?

Depression, substance abuse, and related mental health issues affect self-management and lifestyle behaviors, and therefore need to be addressed in the context of diabetes care and CVD risk factor reduction. In some instances, these issues must be addressed before meaningful change can be accomplished in terms of self-care and other risk reduction. (ADA, 2009).

How to Implement the Key Recommendation

A. Follow depression screening recommendations and guidelines.

Use a screening tool that is simple to administer and assess such as the Patient Health Questionnaire (PHQ) screening tool. This assesses DSM-IV criteria and is designed for use in the primary care setting. The PHQ-2 is a basic screening tool that asks the following two questions:

Over the last two weeks, have you been bothered by any of the following problems:

A. Little interest or pleasure in doing things?
B. Feeling down, depressed, or hopeless?

If the patient responds "yes" to either question, either administer the PHQ-9, which asks seven additional questions or perform a more detailed review of systems in regard to depression.

Action! See the *Indian Health Diabetes Best Practice on Depression Care.*

Other screening tools are available for depression as well as self-management coping assessment.

For example:

Diabetes can be a challenge and frustrating to live with for anyone. Please indicate how you feel in answering the next two questions.

Feeling	**Not A Problem**	**Moderate Problem**	**Serious Problem**
Feeling overwhelmed by the demands of living with diabetes.	1 2	3 4	5 6
Feeling that I am often failing with my diabetes regimen.	1 2	3 4	5 6

B. Provide timely diagnostic and therapeutic services for anyone with a positive screen.

Action! See the *Indian Health Diabetes Best Practice* on Depression Care.

C. Providers should assess all adults with diabetes for alcohol and other substance use. Use "CAGE" or similar screening tools.

Action! See www.carolinashealthcare.org/servies/behavioral/tests/cage.cfm

Providers should also counsel all patients on the appropriate use of alcohol:

A. Recommend limiting alcoholic beverage consumption to one serving per day for adult women and two servings per day for adult men. (One serving = a twelve-ounce beer, five-ounce glass of wine, or one- and one-half ounce distilled spirits e.g., vodka, whiskey, gin, etc.).

B. Advise abstention from alcohol for people with medical problems such as liver disease, pancreatitis, advanced neuropathy, severe hypertriglyceridemia, or alcohol abuse.

C. Refer patients with alcohol or substance abuse to the appropriate behavioral health staff or treatment program.

Team Notes:

Key Recommendation 6. Assess and treat high blood pressure (hypertension) to appropriate targets.

Why?

While some agents have certain benefits in diabetes (see section C below), blood pressure (BP) control is a priority for CVD risk reduction; choice of agent is secondary (Snow et al., 2003; ADA, 2009).

How to Implement the Key Recommendation

A. **Blood Pressure Goals** (ADA, 2009; Snow et al., 2003; Hansson et al., 1998):

Patients should be treated to a systolic blood pressure of ≤ 130 mmHg.

Patients should be treated to a diastolic blood pressure of ≤ 80 mmHg.

For CVD outcomes, recent studies have not shown significant additional benefit when achieving blood pressure reduction below 130/80 (ACCORD Study Group, 2010). Goals should be individualized based on the patient's age, comorbidities, and other characteristics such as response to therapy.

Lower blood pressure goals may offer additional benefit in the setting of kidney disease.

Action! See *Indian Health Diabetes Best Practice Chronic Kidney Disease* for recommendations.

B. **Screen for blood pressure (BP) and diagnose.**

1. Measure blood pressure at every visit. If blood pressure is > 130 mmHg or diastolic > 80 mmHg, reconfirm blood pressure on a separate day.

2. Orthostatic measurement of blood pressure should be done when clinically indicated to assess for presence of autonomic neuropathy or if patient reports orthostatic symptoms, especially in the elderly.

C. **Follow the Indian Health Diabetes Algorithm Card for Treatment of Type 2 Diabetes and Hypertension:**

Action! See the *Type 2 Diabetes and Hypertension Algorithm Card* http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Resources/DiabetesTopics/Treatment/hypertension_text.doc

Action! See the *IHS Standards of Care for Adults with Type 2 Diabetes,* March 2011 at: http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Tools/ClinicalGuidelines/Standards_Care_0309.pdf

1. Patients with systolic blood pressure of 130-139 mmHg or a diastolic blood pressure of 80-89 mmHg should be treated with lifestyle and behavioral therapy for a maximum of three months. If the target BP is not achieved within that time, treat with medications.

2. Major lifestyle modifications have been shown to lower BP. These include weight reduction in overweight or obese individuals and adoption of the *Dietary Approaches to Stop Hypertension (DASH)* eating plan. The DASH eating plan emphasizes consuming foods rich in potassium and calcium, reducing dietary sodium, increasing physical activity, and cutting down on alcohol consumption.

Action! Link to DASH Eating Plan to Lower Your Blood Pressure at:
http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/new_dash.pdf

3. Patients with systolic blood pressure > 140 mmHg or diastolic blood pressure > 90 mmHg should be treated with medications plus lifestyle and behavioral approaches.

4. Multiple medications are often required to attain blood pressure goals.

D. **All patients with sustained high blood pressure (> 140 / > 90 mmHg) should be treated with an angiotensin-converting enzyme (ACE) inhibitors or an angiotensin receptor blocker first line.** A thiazide diuretic or a calcium channel blocker should be added if blood pressure does not come into target range within one to three months. Basis for these recommendations comes from the American Society of Hypertension recommendations for those with diabetes. (Bakris, 2008)

Further support comes from the following:

- The HOPE and Micro-Hope study trials support incorporation of ACE inhibitor into the treatment regimen (Snow et al., 2003; Gerstein, 2002).
- The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT) emphasized blood pressure treatment over specific medication use and avoiding alpha blockers first line (Snow et al., 2003; Cushman et al., 2002).
- If ACE inhibitor is used, monitor kidney function and serum potassium levels.
- The ACCOMPLISH trial indicated that combining a dihydropyridine calcium channel blocker with an ACE Inhibitor offers similar if not improved CVD outcomes compared to an ACE Inhibitor plus a thiazide diuretic for patients with HTN and diabetes. (Jameson K et al, 2008)
- Angiotensin receptor blockers (ARBs) are suitable alternatives if ACE inhibitor is not tolerated.

Team Notes:

Key Recommendation 7. Assess and treat lipids to appropriate targets.

Why?

There is a direct association between blood lipid levels and the incidence of CVD. Elevated total cholesterol and low-density lipoprotein cholesterol levels increase the risk of coronary heart disease; this risk is further intensified by the presence of diabetes, high blood pressure, or smoking (ADA, 2004; Kannel, 2000).

How to Implement the Key Recommendation

A. **Lipid Goals**

Primary goal: LDL-C < 100 mg/dL. If CVD present, lower LDL < 70 mg/dL

HDL target: > 40 mg/dL in men and > 50 mg in women

Secondary goals:

- Triglycerides: < 150 mg/dL
- Non-HDL: < 130 mg/dL, if no CVD; < 100 mg/dL, if CVD; Non-HDL = total cholesterol minus HDL.

B. **Screen for lipids.**

Measure lipids at least annually, and more often as needed, to achieve goals.

More detailed and targeted risk assessment is possible through use of the Strong Heart Study risk calculator. This is also a valuable patient education tool.

Action! Link to:
http://strongheart.ouhsc.edu/CHDcalculator/calculator.html

C. **Follow the *Indian Health Diabetes Algorithm Cards for Type 2 Diabetes and Management of Hyperlipidemias***

Action! See the *Type 2 Diabetes and Management of Hyperlipidemias* .
http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Resources/DiabetesTopics/Treatment/lipids.doc

1. Rule out secondary causes of dyslipidemia (e.g., hypothyroid, familial, etc.).

2. Encourage lifestyle modification, including reduction of saturated fat and cholesterol intake, weight loss, increasing physical activity, and smoking cessation. For patients who cannot achieve goals with lifestyle modification alone, use medication therapy.

3. Along with lifestyle modifications, use statins to lower LDL cholesterol and reduce macrovascular complications in patients (both men and women). Statins may help patients with diabetes and CVD risk factors if their total cholesterol is >135 mg/dL with *any* LDL level. LDL lowering is highly effective at lowering CVD risk overall, and if statins are not an option, all other pharmacologic means should be considered,

although the best evidence- based outcomes to date for persons with diabetes are with the statins.

4. Use lipid-lowering therapy for secondary prevention of cardiovascular mortality and morbidity for all patients (both men and women) who have known coronary artery disease and type 2 diabetes. The LDL goal may be lower in these patients: <70 mg/dL.

5. Using non-HDL cholesterol to predict CVD risk:

    - The Strong Heart Study showed that among American Indian populations, non-HDL cholesterol was a better predictor of CVD than: (1) LDL and triglyceride levels in men and women, and (2) total cholesterol/HDL in women.

    - Non-HDL cholesterol (total cholesterol minus HDL) can be performed in the *non-fasting* state and is especially useful in patients with higher triglyceride levels (200 mg/dL or higher).

    - Non-HDL cholesterol goals are 30 mg/dL higher than standard LDL goals (Lu et al., 2003).

Team Notes:

Key Recommendation 8. Assess and treat albuminuria to appropriate targets.

Why?

Albuminuria reflects diffuse vascular disease particularly at the level of the endothelium and should be addressed as a CVD risk factor *in addition* to its role in nephropathy (Miettinen et al., 1996). The recommendations here reflect how albuminuria affects cardiovascular risk; additional information regarding how this pertains to chronic kidney disease (CKD) can be found in the Chronic Kidney Disease and Diabetes best practice. Estimated GFR using serum Creatinine should be used to assess for CKD as a substantial portion of diabetes patients with CKD do not have albuminuria. However, with respect to albuminuria, the treatment approach is virtually the same for both processes.

How to Implement the Key Recommendation

A. **Follow the Indian Health Diabetes Algorithm Cards for Type 2 Diabetes and Chronic Kidney Disease**

Action!
http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Resources/DiabetesTopics/Treatment/kidney_disease.doc

1. Conduct annual (at minimum) screening of urine to detect microalbuminuria or proteinuria. Albumin to creatinine ratio is a validated method for determining albuminuria (ADA, 2004b).

2. Treat with ACE inhibitors. ARBs are a suitable alternative with a similar evidence base, but are not considered the agent of first choice in Indian health care settings (Brenner et al., 2001; Parving et al., 2001).

3. While stringent targets for albuminuria levels have not been substantiated, some suggest that reducing abnormal albuminuria (< 30 mg/g) to the normal or near-normal range may improve renal and cardiovascular prognosis, but this approach has not been formally evaluated in prospective trials. Alternative goals with higher levels of albuminuria include lowering the level from baseline, or halting the rise in levels of albuminuria.

4. Consider more stringent high blood pressure control (blood pressure < 125/75) with overt proteinuria.

Action! See the *Indian Health Diabetes Best Practice on Chronic Kidney Disease.*

Team Notes:

Key Recommendation 9. Assess and treat blood glucose to appropriate targets.

Why?

CVD risk increases as blood glucose (glycemic) control deteriorates. However, little evidence to date demonstrates that blood glucose control alone significantly improves CVD outcomes in type 2 diabetes. Therefore, blood glucose control is essential, but not solely sufficient for addressing CVD risk (Nathan et al., 2003).

How to Implement the Key Recommendation

A. **Ages and Stages Approach**

Recent **randomized** *controlled* **trials** *and follow-up studies to earlier trials such as the UKPDS have not shown consistent improvement in CVD outcomes based on improved blood glucose control alone. Therefore an "ages and stages" individualized approach may be the most desirable. While a target A1C of 6.5% may be appropriate for a younger patient with no comorbidities, a higher A1C goal of 7% to 7.5% or even higher may be appropriate for older patients, especially those with cardiovascular comorbidities based on current analysis of studies such as the ACCORD trial. Optimal goals through audit and other monitoring procedures should still use an A1C of 7.0% as a benchmark for their diabetes population at this time.*

B. **A1C Goals**

Table 1. A1C Goal

Goal	A1C %	Clinical Circumstance
Optimal goal	<6.5	Early in disease, younger, no comorbidities
Basic goal	<7	Most patients with diabetes
Individualized goal	>7	Advanced age, comorbidities

C. **Estimated Average Glucose (eAG)**

Estimated Average Glucose (eAG) is reported together with A1C by some labs. The eAG is reported in the same units as blood glucose meters, mg/dl. This can help the person with diabetes and the diabetes care team better understand what the A1C result is saying about the achievement of target blood glucose goals.

Table 2. Correlation of A1C and Estimated Average Glucose (eAG) (ADA, 2011)

A1C %	eAG mg/dL
5.0	97
5.5	111
6.0	126
6.5	140
7.0	154
7.5	169
8.0	183
8.5	197
9.0	212
9.5	226
10.0	240
10.5	255
11.0	269
11.5	283
12.0	298

Action ! A calculator for converting A1C results into estimated average glucose (eAG), in either mg/dL or mmol/L, is available at http://professional.diabetes.org/eAG.

D. **Frequency of A1C Measurement**

- Measure A1C *at least* two times a year in patients who have stable blood glucose levels and are meeting treatment goals.

- Measure A1C quarterly in patients who do not have stable blood glucose levels or are changing treatment.

Action! See the *IHS Standards of Care for Adults with Type 2 Diabetes*, March 2011 http://care.diabetesjournals.org/content/34/Supplement_1/S11.full.pdf+html

Action! For a detailed guideline on recommendations for attaining individualized Blood Glucose targets, refer to the Indian Health Diabetes Algorithm Cards: http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Resources/DiabetesTopics/Treatment/glucose_control_text.doc

Team Notes:

Key Recommendation 10. Provide aspirin and antiplatelet therapy for appropriate individuals.

Why?

Aspirin and antiplatelet use is beneficial in secondary prevention of cardiovascular disease. However, the recommendations to use aspirin for primary prevention of CVD in diabetes have changed based on recent studies.

How to Implement the Key Recommendation

A. **Recommendations for Use of Aspirin Therapy**

The current American Diabetes Association recommendations (ADA, 2011) are as follows:

> **Consider aspirin therapy (75–162 mg/day) as a primary prevention strategy** in those with type 1 or type 2 diabetes at increased cardiovascular risk (10-year risk > 10%). This includes most men > 50 years of age or women > 60 years of age who have at least one additional major risk factor (family history of CVD, hypertension, smoking, dyslipidemia,or albuminuria). For men under 50 and woman under 60 individual risk must be taken into account before starting aspirin or anti-platelet therapy as the potential adverse effects from bleeding may offset the potential benefits.

B. **Recommend aspirin therapy dosages** of 75-162 mg per day, or for those with aspirin allergy or intolerance not related to bleeding, 75 mg of clopidogrel daily; however, when patients are on antiplatelet therapy, the most important factor is that patients take their antiplatelet therapy on a daily basis.

C. **Recommend aspirin or antiplatelet therapy for secondary CVD prevention** in *all* patients without contraindication (ADA, 2004).

Team Notes:

Key Recommendation 11. Assess and treat anemia related to chronic kidney disease to appropriate targets.

Why?

Anemia from chronic kidney disease is related to CVD outcomes. Therefore, anemia must be identified and treated (Levin et al., 1999; Erslev, 1991; U.S. Recombinant Human Erythropoietin Predialysis Study Group, 1991).

How to Implement the Key Recommendation

A. Treat anemia with therapy directed at erythrocyte production. This may include iron replacement therapy by the oral or intravenous route, or erythrocyte stimulating hormonal therapy such as erythropoietin.

B. Evaluate and treat anemia from any cause.

Action! See the *Indian Health Diabetes Best Practice on Chronic Kidney Disease* for specific assessment and treatment recommendations.

Team Notes:

Key Recommendation 12. Identify and treat sleep apnea.

Why?

Sleep apnea exacerbates risk factors related to CVD such as high blood pressure and blood glucose control (Babu et al., 2005; Cooper et al., 2005; Dhillon et al., 2005).

How to Implement the Key Recommendation

A. **Include sleep apnea assessment, evaluation, and treatment in a CVD risk reduction program.**

Action! Epworth Sleepiness scale and other rapid identifiers are available at http://www.stanford.edu/~dement/epworth.html)

B. **Identify sleep apnea and make referral as appropriate** if treatment capabilities do not exist at the treating facility.

Team Notes:

Working Together with your Community and Organization

In addition to implementing the **Key Recommendations**, programs need to work on broader community and organizational support of the goals they are trying to achieve.

Organization Recommendations

Organization Recommendation 1. Use an integrated approach to cardiovascular health in diabetes care.

Why?

Patients with diabetes who receive education and support for cardiovascular and diabetes care and self-management through a multidisciplinary team will have improved glucose control, improved blood pressure control, and improved lipids control.

How to Implement the Recommendation

Provide care through a multidisciplinary team:

- Primary care team members (physician, nurse practitioner, physician's assistant, nurse practitioner), diabetes education and care team members (registered dietitian, nurse, diabetes educator, pharmacist, behaviorist), and others should provide patient education and clinical care to optimize diabetes control, and prevent and reduce adverse cardiovascular disease health outcomes.

- A multidisciplinary team which includes members from the disciplines stated above will result in the greatest success regarding lifestyle and behavioral changes.

- While not all programs will have each discipline represented, the greater involvement and integration of team members from different disciplines, the greater the overall benefit.

Team Notes:

Organizational Recommendation 2. Support diabetes team members to implement system and programmatic changes.

Why?

Changes in health care systems and programs have been associated with increased delivery of appropriate diabetes care.

How to Implement the Recommendation

The evidence suggests that the following activities may help improve cardiovascular and diabetes care:

A. Use clinical practice guidelines to facilitate evidenced-based clinical decision making and improve diabetes outcomes.

B. Use electronic record analysis whenever possible. Work with IT staff on ways to best capture, analyze, and evaluate data. Utilize case management and standing orders to improve implementation and documentation of appropriate care.

C. Provide training and continuing education to all members of the health care team to help improve cardiovascular care.

D. Provide community cardiovascular education (e.g., smoking cessation education programs) to help increase community awareness.

E. Consider use of pharmacist directed hypertension (HTN) and lipid management programs. These can be established using protocols (Gerrald K.R. et al., 2010; Simpson SH, et al., 2011). These allow for greater flexibility and education, as well as more efficient use of clinical time for sites with trained and available pharmacy staff. This can enhance your ability to achieve blood pressure and lipid goals substantially.

Team Notes:

PART 3 Appendices, Tools, and Resources

Appendix A. Supplemental Information

1. Importance of Cardiovascular Health in the Care of People with Diabetes

Cardiovascular disease (CVD) is a major cause of morbidity and mortality for individuals with diabetes. Addressing lifestyle factors, hypertension, and dyslipidemia is critical, given that lowering blood glucose alone is not adequate to fully address CVD risk in diabetes. Patients with type 2 diabetes have an increased prevalence of hypertension and lipid abnormalities, including small dense LDL particles, high triglycerides, and low levels of high-density lipoprotein cholesterol (HDL) that contribute to the higher rates of CVD. Management of hypertension and lipids results in significant CVD risk reduction for adults with diabetes.

The Strong Heart Study, a study of cardiovascular disease and its risk factors among American Indians, is the largest epidemiologic study of American Indians to date. Supported by the National Heart, Lung, and Blood Institute (NHLBI), the Strong Heart Study began in 1998 and has included longitudinal analysis on thirteen American Indian Tribes in Arizona, North and South Dakota, and Oklahoma. Based on information collected over a ten-year period in American Indians over the age of 30, a "risk calculator" to predict the risk of coronary heart disease (CHD) has been developed for this diverse American Indian population with high rates of diabetes and albuminuria (defined as the ratio of urinary albumin and creatinine ≥30).

Action! The Strong Heart Risk Calculator is available at:
http://strongheart.ouhsc.edu/CHDcalculator/calculator.html

A significant finding is that albuminuria is an independent risk factor for development of heart disease. In addition, the effects of diabetes may be stronger in the American Indian population than in the general population.

Consider these facts (Howard et al., 1999; Kannel, 1985):

- People with diabetes are at two to four times higher risk for heart disease as compared with people without diabetes. They also are more likely to die after a first heart attack. 70% to 80% of mortality associated with diabetes is cardiovascular in nature.
- People with CVD and diabetes have higher rates of case fatality, silent heart attacks, and mortality before reaching care facilities.
- 75% of CVD deaths are related to coronary heart disease (CHD). 25% of CVD deaths are related to peripheral vascular disease (including CVA).
- Unlike for other ethnic groups, the incidence of coronary heart disease is increasing in American Indians and Alaska Natives, possibly because of the increasing prevalence of diabetes in this population.
- Diabetes accounts for the majority of the attributable risk for CVD in American Indian and Alaska Native populations.
- Women are disproportionately affected by CVD in diabetes.
- In the general U.S. population, the rising prevalence of obesity and diabetes may reverse the decline in CVD death rates.

CVD risk reduction is critical to reducing morbidity and mortality, and improving health and quality of life in American Indians and Alaska Natives. Indian health programs should implement effective intervention programs to address CVD and diabetes.

2. Health Questions Addressed by Best Practice

This best practice addresses the following questions:

1. What are the key clinical recommendations for treating people with diabetes and CVD risk?
2. What interventions effectively prevent and reduce adverse diabetes and CVD health outcomes?
3. What organizational recommendations will improve your success?
4. What key measures will indicate progress and assist in evaluating your best practice?

3. Sustaining a Cardiovascular Disease Program

Often, for CVD and diabetes goals to be reached, programs must be in place for more than a few years. Use tools such as a CVD curriculum like the Healthy Heart Curriculum.

Note! See Part 3—Tools and Resources may help build an infrastructure for a program that is sustainable through staff changes and similar challenges facing IHS and Tribal facilities. Here are some helpful tips for sustaining your program:

- Document improved outcomes, long-term cost-savings, and effectiveness to justify the continuation of your program.
- Commit Special Diabetes Programs for Indians (SDPI) funds to CVD risk reduction.
- Ensure administrative support for committing personnel, resources, time, and space to activities that support CVD risk reduction.
- Help Tribal leadership and community members understand CVD issues, and obtain their commitment to address CVD locally.
- Report outcomes to stakeholders on a routine and regular basis.

4. Monitoring Progress and Outcomes

The following measures can be used to monitor the effects of implementing the cardiovascular disease (CVD) best practice:

- Use data systems to monitor and evaluate CVD risk factors among people with diabetes. Ongoing surveillance data are necessary to monitor risk factors in the population. For example, blood pressure, blood lipids, A1C levels, and BMI are important to monitor and evaluate.
- Use audit data for each CVD risk factor to examine the trends in levels of assessment, determine the level of treatment for each risk factor, determine reasons for sub-optimal results, identify ways to improve, and set goals.
- Measure CVD morbidity and mortality rates in the local region or community before and after instituting interventions and programs, to determine (or measure) the effect of interventions and programs.

Appendix B. Key Measures Example

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

Cardiovascular disease is increasing among people with diabetes in our community. Our health care center and community are concerned about the increasing number of cases of heart disease.

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

Identified sources of data. Local data included:

- Audit data that includes smoking status, body mass index (BMI), blood pressure, lipid levels, protein level in the urine, A1C, and aspirin use:
  - 50% of patients with diabetes have elevated blood pressure (over 130/80).
  - There is no documentation of diabetes patients receiving CVD education.
  - 25% of patients with diabetes had documented smoking in the past year.
  - 80% of patients with diabetes had a BMI of more than 30 in the past year.
  - 55% of patients with diabetes had documented hypertension in the past year.

Selected suitable Best Practice. After thinking carefully about our goals and resources, and reviewing data, we decided the Cardiovascular Disease Best Practice was a good fit for us. We chose to work on four of the Key Recommendations: assessing smoking status and providing a cessation program as needed, assessing lifestyle factors and BMI, and providing medical nutrition therapy along with physical activity and assessing, and treating hypertension to appropriate targets.

Identified Target Population. We decided to start implementing this Best Practice by applying the key recommendations to the current patients listed in our diabetes registry.

Identified Program goals:

- To decrease the number of diabetes patients with high blood pressure.
- To begin documenting diabetes patients who have received CVD education.
- To decrease the number of people with diabetes who smoke.
- To increase the number of people with diabetes who are assessed for smoking.
- To decrease the number of diabetes patients who are overweight or obese.
- To increase the number of people with diabetes who are assessed for overweight and obesity.

Identified SMART objectives based on our resources and data:

- The percent of diabetes patients with documented smoking assessment in the past twelve months will increase from 52% to 75% in the next twelve months.

- The percent of diabetes patients who smoke who received tobacco cessation intervention(s) will increase from baseline (0%) to 20% in the next twelve months.
- The percent of diabetes patients who smoke that have quit smoking will increase from baseline (0%) to 10% in the next twelve months.
- The percent of diabetes patients who had their most recent blood pressure in the past twelve months at target (less than 130/80) will increase from 50% to 65% in the next twelve months.
- The percent of diabetes patients with documented CVD education will increase from baseline (0%) to 50% in the next twelve months.
- The percent of diabetes patients who have documented BMIs of 30 or higher will decrease from 80% to 75% 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 3. Selected Key Measures

A. Measure	B. Baseline or beginning value and date (collected prior to starting activities)	C. Most recent value and date (if applicable)	D. Data source (where did these numbers come from)
1. * Percent of diabetes patients with a documented smoking assessment	52% as of 2/16/2011	55% as of 4/25/2011	RPMS/tracking logs
2. * Percent of diabetes patients who smoke who received tobacco cessation intervention(s)	0% as of 2/16/2011	15% as of 4/25/2011	RPMS/tracking logs
3. * Percent of diabetes patients who smoke that have quit smoking	0% as of 2/16/2011	2% as of 4/25/2011	RPMS/ tracking logs
4. * Percent of diabetes patients with blood pressure at target (less than 130/80)	50% at 2/16/2011	52% at 4/25/2011	RPMS
5. * Percent of diabetes patients with documented CVD education	0% as of 2/16/2011	10% as of 4/25/2011	RPMS/tracking logs
6. Percent of diabetes patients who have documented BMIs of 30 or higher	80% as of 2/16/2011	78% as of 4/25/2011	RPMS

* Required Key Measure

Appendix C. Improving Cardiovascular Disease Programs in the Indian Health System

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 *examples* of some possible answers are:

1. Who is the target population?

- Persons with type 1 or type 2 diabetes.

2. What are you trying to do?

- Improve cardiovascular care and outcomes for people with diabetes.

3. How will you know if what we 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:
    - Over one year, 90% of people with diabetes will have blood pressure measurements that meet current clinical goals as demonstrated in annual Diabetes Audit results.
    - Within six months, a 25% increase in the number of patients who receive appropriate education related to reducing cardiovascular disease risk will be documented.

4. What can we do to make things better?

- Receive leadership support to improve effective cardiovascular care approaches.
- Diabetes team members can identify gaps in assessing cardiovascular care and identify realistic solutions.

Appendix D. General Nutrition and Other Therapeutic Lifestyle Changes.

Note! The following recommendations are from the American Heart Association (AHA). Some of the recommendations, such as physical activity and smoking cessation, are explored in more detail in the Key Recommendations in **Part 2**.

AHA 2006 Diet and Lifestyle Goals for Cardiovascular Disease Risk Reduction

- Consume an overall healthy diet.
- Aim for a healthy body weight.
- Aim for recommended levels of low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, and triglycerides.
- Aim for a normal blood pressure.
- Aim for a normal blood glucose level.
- Be physically active.
- Avoid use of and exposure to tobacco products.

AHA 2006 Diet and Lifestyle Recommendations for Cardiovascular Disease Risk Reduction

- Balance calorie intake and physical activity to achieve or maintain a healthy body weight.
- Consume a diet rich in vegetables and fruits.
- Choose whole-grain, high-fiber foods.
- Consume fish, especially oily fish, at least twice a week.
- Limit your intake of saturated fat to < 7% of energy, *trans fat* to < 1% of energy, and cholesterol to < 200 mg per day by
  - choosing lean meats and vegetable alternatives;
  - selecting fat-free (skim), 1%-fat, and low-fat dairy products; and
  - minimizing intake of partially hydrogenated fats.
- Minimize your intake of beverages and foods with added sugars.
- Choose and prepare foods with little or no salt.
- If you consume alcohol, do so in moderation.
- When you eat food that is prepared outside of the home, follow the AHA Diet and Lifestyle Recommendations.

Practical Tips to Implement AHA 2006 Diet and Lifestyle Recommendations

Lifestyle

- Know your caloric needs to achieve and maintain a healthy weight.
- Know the calorie content of the foods and beverages you consume.
- Track your weight, physical activity, and calorie intake.
- Prepare and eat smaller portions.
- Track and, when possible, decrease screen time (e.g., watching television, surfing the Web, playing computer games).
- Incorporate physical movement into habitual activities.
- Do not smoke or use tobacco products.
- If you consume alcohol, do so in moderation (equivalent of no more than one drink in women or two drinks in men per day).

Food choices and preparation

- Use the nutrition facts panel and ingredients list when choosing foods to buy.
- Eat fresh, frozen, and canned vegetables and fruits without high-calorie sauces or added salt and sugars.
- Replace high-calorie foods with fruits and vegetables.
- Increase fiber intake by eating beans (legumes), whole-grain products, fruits, and vegetables.
- Use liquid vegetable oils in place of solid fats.
- Limit beverages and foods high in added sugars. Common forms of added sugars are sucrose, glucose, fructose, maltose, dextrose, corn syrups, conc. fruit juice, and honey.
- Choose foods made with whole grains. Common forms of whole grains are whole wheat, oats/oatmeal, rye, barley, corn, popcorn, brown rice, wild rice, buckwheat, triticale, bulgur (cracked wheat), millet, quinoa, and sorghum.
- Cut back on pastries and high-calorie bakery products (e.g., muffins, doughnuts).
- Select milk and dairy products that are either fat free or low fat.
- Reduce salt intake by comparing the sodium content of similar products (e.g., different brands of tomato sauce) and choosing products with less salt;
- Choosing versions of processed foods, including cereals and baked goods, that are reduced in salt; and limiting condiments (e.g., soy sauce, ketchup).
- Use lean cuts of meat and remove skin from poultry before eating.
- Limit processed meats that are high in saturated fat and sodium.
- Grill, bake, or broil fish, meat, and poultry.
- Incorporate vegetable-based meat substitutes into favorite recipes.
- Encourage the consumption of whole vegetables and fruits in place of juices.

Therapeutic Lifestyle Changes (TLC)

What are TLC? The TLC are diet and lifestyle recommendations to lower cholesterol and reduce cardiovascular risk. The TLC are based on the Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III [ATP III]. The TLC replaced the previously used AHA Step II Diet.

Table. Essential components of TLC

Component	Recommendation
LDL-raising nutrients	
Saturated fats*	Less than 7% of total calories
Dietary cholesterol	Less than 200 mg/day
Therapeutic options for LDL-lowering	**Recommendations**
Plant stanols/sterols	2 grams per day
Increased viscous (soluble) fiber	10–25 grams per day
Total calories (energy)	Adjust total caloric intake to maintain desirable body weight/prevent weight gain
Blood Pressure	Less Than 1500 mg/day
Physical activity	Include enough moderate exercise to expend at least 200 kcal per day

* Trans fatty acids also raise LDL and should be kept at a low intake.

Table. TLC Diet in ATP III

Nutrient	Recommended Intake as Percent of Total Calories
Total Fat[1]	25–35%
Saturated	Less than 7%
Polyunsaturated	Up to 10%
Monounsaturated	Up to 20%
Carbohydrate[2]	50–60% of total calories
Protein	Approximately 15%
Cholesterol	Less than 200 mg per day
Sodium	Less than 1500 mg per day
Total Calories[3]	Balance energy intake and expenditure to maintain desirable body weight and prevent weight gain

1. The 25–35% fat recommendation allows for increased intake of unsaturated fat in place of carbohydrates in people with the metabolic syndrome or diabetes.

2. Carbohydrate should come mainly from foods rich in complex carbohydrates. These include grains (especially whole grains), fruits and vegetables.
3. Daily energy expenditure should include at least moderate physical activity (contributing about 200 Kcal a day).
4. Options include adding 10–25 grams of viscous (soluble) fiber; 2 g/day of plant-derived sterols or stanols. Soy protein may be used as a replacement for some animal products.

Action! See the DASH Eating Plan Lower Your Blood Pressure.
http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/new_dash.pdf

Action! See the *IHS Standards of Care for Adults with Type 2 Diabetes,* March 2009.
http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Tools/ClinicalGuidelines/Diabetes_Standards_Care_508Rev2.pdf

Action! See! the *Indian Health Diabetes Best Practices on Adult Weight Management and Nutrition*.

Action! See *Diet and Lifestyle Recommendations Revision 2006: A Scientific Statement From the American Heart Association Nutrition Committee: Circulation* 2006;114;82-96; originally published online Jun 19, 2006

Action! See *Implementing American Heart Association Pediatric and Adult Nutrition Guidelines: A Scientific Statement From the American Heart Association*: *Circulation* 2009;119;1161-1175

Appendix E. Descriptions and Examples of Cardiovascular Disease Best Practice Program Components

A. Basic Cardiovascular Disease Programs

Community resources and policies

Identify, inventory, and utilize community resources (e.g., smoking cessation programs).

Establish a unified referral mechanism (e.g., referral system for stress testing and cardiology consultation).

Organization leadership

Obtain evidence of commitment (e.g., through policies, resolutions, resource allocation) by clinic leadership and health care staff to provide a consistent message about: (1) the relationship between diabetes and CVD risks, as well as morbidity and mortality rates; and (2) best practice approaches to improving care.

Commit to the goals of: (1) promoting CVD risk reduction activities; and (2) decreasing CVD risk among people with diabetes.

Develop a strategic plan with specific goals and objectives, timelines, and regular assessment of adherence.

Patient self-management support

Offer risk-appropriate self-care education.

Delivery system design: Services, programs, systems, and procedures

Use a case management approach (e.g., regular review of CVD risk clinical profiles to make recommendations on focus of care).

Establish a multi-disciplinary team that plans and implements programs.

Assign health care workers to perform necessary functions (e.g., perform self-management training when other desirable disciplines are not available).

Regularly follow-up on CVD risk, complications, and diabetes care, plus provide care for acute problems and prevention.

Identify and use appropriate and competent outside consultation with timely feedback.

Decision support: Information and training for providers

Adopt and use practice guidelines.

Train providers on practice guidelines.

Clinical information systems: Collecting and tracking information

Establish a patient referral system, preferably electronic.

Establish a current and complete CVD risk reduction registry that includes risk and complication identification.

B. Intermediate Cardiovascular Disease Programs: Basic program plus the following:

Community resources and policies

Train field health personnel in CVD assessment and education.

Organization leadership

Obtain evidence of commitment by Tribal leadership, clinic leadership, the community, and health care staff to provide a consistent message about: (1) the relationship between diabetes and CVD risks, morbidity, and mortality rates; and (2) best practice approaches to improving care.

Patient self-management support

Provide education within the framework of an IHS-certified (or equivalent) curriculum.

Delivery system design: Services, programs, systems, and procedures

Designate a full-time case manager to review the CVD risk clinical profiles regularly and make recommendations on focus of care.

Establish a well-integrated, multi-disciplinary team that plans and implements programs with regular meetings, minutes, and a defined method for communicating plans among themselves and to the entire clinic staff.

Prioritize the patient population according to risks and complications to facilitate optimal use of limited resources.

Decision support: Information and training for providers

Place focused attention on practice guidelines, with revision as indicated.

Provide opportunities for training in self-management education, medical nutrition therapy (MNT), diabetes education, case management, and clinical care.

Clinical information systems: Collecting and tracking information

Establish a patient referral system with tracking mechanisms, preferably electronic.

Establish a current and complete CVD risk registry that includes risk and complications identification with the ability to generate process data.

C. Comprehensive Cardiovascular Disease Programs: Basic and intermediate programs plus the following:

Community resources and policies

Coordinate community resources and clinic-based programs.

Organization leadership

Provide time, resources, funding, and personnel to CVD and diabetes programs.

Patient self-management support

Use patient feedback mechanisms to recognize patient success at increasing self-care management and improving clinical outcomes.

Use provider profiles, provider specific audits (i.e., "report cards"), or other means to provide patients with feedback on their adherence to practice guidelines.

Delivery system design: Services, programs, systems, and procedures

Ensure that the CVD case management team is dedicated to the case management approach (i.e., regular review of the CVD risk clinical profiles to make recommendations and referrals, provide highly focused individual care plans, and ensure follow-through).

Ensure that specialist services, including cardiology, non-invasive peripheral vascular disease assessment, stress testing, and other appropriate referral services, are readily available.

Establish a pharmacy, interdisciplinary-directed lipid and/or hypertension management program.

Hire or contract with an exercise physiologist.

Clinical information systems: Collecting and tracking information

Establish an electronic, integrated patient referral system with timely tracking mechanisms on results, treatment, and follow-up.

Establish a current and complete CVD risk registry that includes risk and complication identification with the ability to generate process and outcome data.

Examples

Community resources and policies

- Identify smoking cessation resources that are available in the community (e.g., local American Lung Association and American Cancer Society programs).
- Establish referral systems for stress testing and cardiology consultation.
- Ask providers to help develop a seamless referral process that they will use.
- Work with recreation centers, gyms, and fitness programs.

Organization leadership

- Conduct presentations to the community, health care staff, and Tribal leaders to emphasize the link between diabetes and CVD, and the importance of using best practice approaches to care.
- Allot adequate resources, staff time, and clinic space.

Patient self-management support

- Provide home blood pressure monitors, pedometers, and other "trackers" for activity and food intake.
- Provide education with a certified diabetes educator.
- Develop interactive, ongoing programs.
- Ask community members or community health representatives to lead physical activity programs.
- Use RPMS and relevant audit data (e.g., CVD risk factors) to help follow-up with patients.
- Consider patient challenges and barriers to care, such as transportation, childcare, job, and communication.
- Conduct community-wide education programs that tie CVD and smoking to diabetes.
- Modify snack and beverage choices at schools, Head Start programs, and senior centers.
- Provide information on the long-term benefits of fitness.
- Provide information on the relative safety of statins.
- Use motivational interviewing techniques and readiness for change assessments.
- Use culturally appropriate materials, such as *Honoring the Gift of Heart Health Curriculum*.
- Offer diabetes peer support groups.

Delivery system design: Services, programs, systems, and procedures

- Dedicate a portion of a certified diabetes educator or primary care physician's time to program development and communication.
- Integrate education and clinical aspects into the care team by including an educator (e.g., a registered dietitian or nurse who is also a certified nurse educator), behaviorist, clinical provider, pharmacist, exercise specialist, administrator, client representative, and ancillary services representative.
- Use diabetes standards of care, best practices, and other evidence-based practice guidelines.
- Use electronic medical records and patient management systems.
- Triage acute patients (e.g., patients with chest pain, claudication, or any CVD).
- Establish protocols or systems for appropriate follow-up and change in therapy for high blood pressure, dyslipidemia, abnormal electrocardiograms (ECGs), and smoking cessation.
- Establish clinical goals to emphasize treating to target by implementing therapeutic measures according to standards and evidence.

Decision support: Information and training for providers

- Use the *IHS Standards of Care for Diabetes.* Negotiate, customize, and agree upon the issues that are not specific to the Standards of Care.
- Use the five A's (i.e., **A**sk, **A**ssess, **A**dvise, **A**ssist, and **A**rrange).
- Use Joint National Committee (JNC VII) guidelines on the prevention, detection, evaluation, and treatment of high blood pressure; American College of Physicians (ACP) clinical practice guidelines; and National Cholesterol Education Program's guidelines on the detection, evaluation, and treatment of high blood cholesterol in adults.
- Identify mentors for emulation.
- Attend CVD and lipid training programs.
- Develop simply illustrated, disease-specific patient handouts that describe disease processes.
- Use curricula, such as the *Honoring the Gift of Heart Health Curriculum* and the *Balancing Your Life and Diabetes Curriculum*.

Clinical information systems: Collecting and tracking information

- Use RPMS and other electronic health record systems.
- Use risk factor stratification (e.g., stage complications and prioritize management).
- Use health care summaries in RPMS or other electronic flags to identify patients and coordinate care.
- Use provider report cards to give specific feedback on provider performance and patient accomplishment.
- Negotiate specific treatment targets and medication use.

Tools and Resources

Curricula

Honoring the Gift of Heart Health. A comprehensive culturally appropriate, user-friendly ten- lesson course on heart health education for the American Indian community. Filled with skill-building activities, reproducible handouts, and idea starters.
http://www.nhlbi.nih.gov/health/prof/heart/other/aian_manual/ai_manual.pdf

Patient Handouts

Multiple resource materials are available from NHLBI on Heart and Vascular Diseases.
http://www.nhlbi.nih.gov/health/public/heart/index.htm#hbp

Aim for a Healthy Weight. http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/index.htm

“Take care of your heart. Manage your diabetes: blood glucose, blood pressure, cholesterol”
http://www.ndep.nih.gov/media/TCH_AmIndian_flyer.pdf

"Make the Link! Diabetes, Heart Disease and Stroke," Information for people with diabetes.
http://www.diabetes.org/type-1-diabetes/well-being/link-patient.jsp

Your Guide to Lowering High Blood Pressure. http://www.nhlbi.nih.gov/hbp/index.html

The Healthy Heart Handbook for Women
http://www.nhlbi.nih.gov/educational/hearttruth/downloads/pdf/handbook-for-women.pdf

Provider Resources

Clinical Guidelines Resource. IHS Standards of Care for Patients with Type 2 Diabetes (6/5/2009 - PDF – 597 KB) – Updated clinical guidelines for providers. Revised March 2009.
http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Tools/ClinicalGuidelines/Standards_Care_0309.pdf

The Indian Health Diabetes Algorithm Cards were developed to provide clinicians with a quick reference to treatment algorithms based on national guidelines and the IHS Standards of Care for Patients with Type 2 Diabetes Mellitus
http://www.ihs.gov/MedicalPrograms/diabetes/index.cfm?module=resourcesDTTreatmentAlgorithm The Algorithm cards are under the tool menu on the left.

Strong Heart Study Calculator: Estimated Risk of Developing CHD in 10 Years. The risk calculator below uses research data from the Strong Heart Study http://strongheart.ouhsc.edu/chdcalculator/calculator.html. (Citation: Circulation 2006; 113; 2897 – 2905; http://circ.ahajournals.org/cgi/content/full/113/25/2897) to estimate a person’s chance of having CHD (Coronary Heart Disease) in the next ten years. It is designed for the American Indians of age 30 and older

ASH Position Paper: Treatment of Hypertension in Patients With Diabetes—An Update; George L. Bakris, MD;1 James R. Sowers, MD;2 on behalf of the American Society of Hypertension Writing Group. The Journal Of Clinical Hypertension Vol. 10, NO. 9 September 2008. Available free online: http://onlinelibrary.wiley.com/doi/10.1111/j.1751-7176.2008.00012.x/pdf

Diabetes Numbers At-a-Glance 2009 http://www.ndep.nih.gov/media/NumAtGlance_Eng.pdf

Diabetes: Cardiovascular Toolkit—The American Diabetes Association, American College of Cardiology and Preventive Cardiovascular Nurses Association is offering a free kit of patient tools to assist with your educational efforts. This kit contains reproducible handouts on 26 topics related to diabetes and cardiovascular disease. To view the kit, visit http://professional.diabetes.org/Default.aspx Then look under "Professional Resources" for the Reducing Cardiometabolic Risk: Patient Education Toolkit

Treating Tobacco Use and Dependence: 2008 Update. Quick Reference Guide for Clinicians. U.S. Department of Health and Human Services. Public Health Service, Rockville, MD, April 2009. http://www.ahrq.gov/clinic/tobacco/tobaqrg.htm

Organizational Tools

IHS Division of Diabetes Treatment and Prevention [Internet]. A workbook (with online training course) on effective program planning and evaluation. [Developed 2009, July] Creating Strong Diabetes Programs: Plan a Trip to Success. http://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Training/WebBased/Basics/Creating/Workbook.pdf

IHS Division of Diabetes Treatment and Prevention [Internet]. An online training course on effective program planning and evaluation. [Developed 2009 July] Creating Strong Diabetes Programs: Plan a Trip to Success. http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=trainingBasicsCreating

Making Your Meetings Work. An online training on making your small, large, or even staff meetings more effective. http://www.ihs.gov/MedicalPrograms/diabetes/index.cfm?module=trainingCommSkillsMeetings

Web-based Resources

The Division of Diabetes Treatment and Prevention is regularly adding and updating resources and links to other resources: http://www.ihs.gov/MedicalPrograms/Diabetes/

American College of Physicians http://www.acponline.org

American Diabetes Association http://www.diabetes.org/

Dietary Guidelines for Americans 2005 http://www.healthierus.gov/dietaryguidelines/

The Heart Truth Campaign: Serious Messages about Women's Heart Health
The Heart Truth is a national awareness campaign for women about heart disease sponsored by the National Heart, Lung, and Blood Institute. This Toolkit is designed to help you bring women and heart disease to center stage in your community through *The Heart Truth* campaign and its Red Dress Project.
http://www.nhlbi.nih.gov/educational/hearttruth/about/index.htm

Honoring the Gift of Heart Health Curriculum
http://www.nhlbi.nih.gov/health/prof/heart/other/aian_manual/index.htm

IHS Division of Diabetes Treatment and Prevention
http://www.ihs.gov/MedicalPrograms/Diabetes/

IHS Tobacco Cessation
http://www.ihs.gov/NonMedicalPrograms/HPDP/index.cfm?module=focus&option=tobacco&suboption=Tpractices&suboption2=newquery=1

Joint National Commission on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC VII) http://www.nhlbi.nih.gov/guidelines/hypertension/

National Center for Biotechnology Information http://www.ncbi.nlm.nih.gov/

National Cholesterol Education Program http://www.nhlbi.nih.gov/about/ncep/index.htm

National Cholesterol Education Program *Evaluation and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III)*
http://www.nhlbi.nih.gov/guidelines/cholesterol/atp3xsum.pdf

National Diabetes Education Program (NDEP)
http://www.ndep.nih.gov/
http://www.cdc.gov/diabetes/ndep
http://www.diabetesatwork.org
http://www.betterdiabetescare.nih.gov
http://www.YourDiabetesInfo.org

The National Diabetes Education Program (NDEP) brings together public and private partners to improve treatment and outcomes for people with diabetes, promotes early diagnosis, and prevents the onset of type 2 diabetes. NDEP promotes awareness and education activities and quality care. The Website provides tools for educating health care providers and patients and offers numerous materials on diabetes prevention and control tailored to American Indians and Alaska Natives.

National Diabetes Information Clearinghouse http://diabetes.niddk.nih.gov 800-860-8747. This NIDDK Clearinghouse is an information and referral service designed to increase knowledge about diabetes among patients and their families, health care professionals, and the public.

National Heart, Lung, and Blood Institute (NHLBI) http://www.nhlbi.nih.gov/index.htm

NHLBI Clinical Practice Guidelines and Reports in Development:

Pediatric Cardiovascular Risk Reduction http://www.nhlbi.nih.gov/guidelines/cvd_ped/index.htm

Cardiovascular Disease Risk Reduction in Adults
http://www.nhlbi.nih.gov/guidelines/cvd_adult/index.htm

Cholesterol Guidelines – Update ATP IV
http://www.nhlbi.nih.gov/guidelines/cholesterol/atp4/index.htm

JN 8 Hypertension Guidelines Update
http://www.nhlbi.nih.gov/guidelines/hypertension/jnc8/index.htm

Obesity Guidelines Update Adult http://www.nhlbi.nih.gov/guidelines/obesity/obesity2/index.htm

NHLBI Health Assessment Tools:

Body Mass Index (BMI) Calculator (in English and Metric) http://www.nhlbisupport.com/bmi/

Menu Planner http://hp2010.nhlbihin.net/menuplanner/menu.cgi

Portion Distortion Quiz http://hp2010.nhlbihin.net/portion/

10-Year Heart Attack Risk Calculator:

For Health Professionals http://hp2010.nhlbihin.net/atpiii/calculator.asp?usertype=prof

For Patients and the Public http://hp2010.nhlbihin.net/atpiii/calculator.asp?usertype=pub

Download our Spreadsheet-based 10 year Risk Assessment Tool
http://hp2010.nhlbihin.net/atpiii/riskcalc.html

National Kidney Disease Education Program (National Institute of Diabetes and Digestive and Kidney Diseases) http://www.nkdep.nih.gov/

National Kidney Foundation Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines
http://www.kidney.org/professionals/KDOQI/index.cfm

National Lipid Education Council http://www.lipidhealth.org

Strong Heart Study Calculator: Estimated Risk of Developing CHD in 10 Years. The risk calculator below uses research data from the Strong Heart Study (Citation: Circulation 2006; 113; 2897 – 2905) to estimate a person's chance of having CHD (Coronary Heart Disease) in the next ten years. It is designed for the American Indians of age 30 and older.
http://strongheart.ouhsc.edu/chdcalculator/calculator.html

U.S. Department of Agriculture Food Guidance System http://www.ChooseMyPlate.gov/

Examples of Current Best Practice Programs

Lower Elwha Klallam Tribe
Amy Ward, Health Director
2851 Lower Elwha Road
Port Angeles, WA 98363
(360) 452-8471
amy.ward@elwha.nsn.us

This program has strong collaborations and partnerships to support healthy lifestyle and CVD prevention. Lower Elwha's trademark is their Traditional foods and gardening project. To learn more see website: http://www.elwha.org/

Additional Contacts

Contacting other people involved in diabetes cardiovascular disease care is important because they can help you get started. Your peers at other health care organizations can share their expertise, materials, and ideas, and can also tell you what has worked for them and what has not. This can help you avoid reinventing the wheel. Persons or programs that sites might contact for further ideas and assistance include:

IHS Area Diabetes Consultants

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

PART 4 References

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