



**Urban Diabetes Care and Outcomes Audit
Report:** Aggregate Results from Urban Indian
Health Organizations, 2007-2011

May 2012





The mission of the Urban Indian Health Institute is to support the health and well-being of urban Indian communities through information, scientific inquiry and technology.

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The Urban Indian Health Institute would like to thank the staff at the Urban Indian Health Organizations for the excellent work they do daily on behalf of their communities.

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EXECUTIVE SUMMARY

Introduction

The purpose of this report is to provide a description of the annual Indian Health Service (IHS) Diabetes Care and Outcomes Audit data collected by participating IHS funded Urban Indian Health Organizations (UIHOs). This report's format is based on the IHS Diabetes Best Practice Guidelines, first developed in 2001 by a workgroup coordinated by the IHS Division of Diabetes Prevention and Treatment and most recently updated in 2011. Included in the report are selected "key measures" from the Best Practice Guidelines, with accompanying aggregated data from participating UIHOs for the years 2007-2011.

Methods

The data examined for this report were collected for the annual Diabetes Audit of medical records performed at participating UIHOs from 2007 through 2011. The Diabetes Audit data collected and submitted to IHS by participating UIHOs were provided to the Urban Indian Health Institute by the IHS Division of Diabetes Prevention and Treatment for analysis and reporting purposes.

Results

In 2011, 31 urban facilities participated in the Diabetes Audit, representing over 3,500 urban American Indian/Alaska Native (AI/AN) patients with diabetes nationwide. Some key findings for UIHOs include:

- In 2007-2011, over two-thirds of audited urban patients with diabetes were morbidly obese or obese. Fewer than 10% had a normal BMI (BMI < 25).
- Tobacco use has remained stable over the five year period at around 30%, while the percentage of tobacco users receiving cessation counseling has increased by 21%, to result in 69% of users receiving counseling.
- In 2011, 41% of patients assessed for blood pressure had mean blood pressure values considered at goal (<130/80), exceeding the 2011 IHS GPRA goal for 39% to achieve blood pressure control.
- The percentage of patients with a current diagnosis of depression has remained around 29-33% from 2007-2011; however, depression screening among patients without a current diagnosis of depression has increased dramatically, from 46% in 2007 to 77% in 2011.
- While two-thirds of patients received a foot exam in the past year, less than half received dental and eye exams during the Audit period.
- In 2011, over half of all patients (and 65% of patients age 65 and older) were assessed for kidney disease, exceeding the 2011 GPRA goal for 35% of patients to be assessed for nephropathy.

Discussion

This report summarizes the performance of UIHO diabetes programs using Diabetes Audit data to track select key measures. The majority of indicators have remained relatively stable during the past five years with several notable improvements, including increases in tobacco cessation counseling and depression screening. Others have reached or exceeded 2011 IHS GPRA goals, including goals for blood pressure control, glycemic control and kidney disease assessment. These findings can be used to target specific areas of operational need across UIHOs and to identify opportunities for improvements in data collection and reporting. This report highlights areas of growth and continued success in providing diabetes care to urban AI/ANs.

INTRODUCTION

Background

Diabetes Mellitus is a major cause of chronic disease among American Indians and Alaska Natives (AI/AN), and the prevalence of diabetes among AI/AN adults is more than twice that of non-Hispanic white adults.¹ In an effort to reduce the burden of diabetes among AI/ANs, Congress established the Special Diabetes Program for Indians (SDPI) in 1998.² This program provides funding specifically to aid in the prevention and treatment of diabetes in AI/AN communities.

To gain a better understanding of the trends in diabetes services and outcomes among AI/ANs, Indian health agencies nationwide conduct an annual medical chart review, also known as the Indian Health Service (IHS) Diabetes Care and Outcomes Audit (or “Diabetes Audit”). Information collected by these agencies is submitted to the IHS Division of Diabetes Treatment and Prevention (DDTP). This information is used for diabetes surveillance and to help provide a clinical overview of the AI/AN population who receive diabetes care and services through the Indian health system.

The Urban Indian Health Institute (UIHI) developed this report to provide a description of the annual Diabetes Audit data collected by participating SDPI recipients that are part of the network of IHS-funded Urban Indian Health Organizations (UIHOs).

Urban AI/ANs and Urban Indian Health Organizations

American Indians and Alaska Natives are a diverse and growing population. Over the past half-century, AI/ANs have increasingly relocated from rural communities and reservations into urban centers, both by choice as well as by forced relocation resulting from federal policy.³ Approximately 67% of AI/ANs currently live in urban areas,⁴ and that number is growing. Despite this geographical shift, urban AI/ANs have not always been included in the Indian health community, nor are they consistently recognized as a minority population in local and national assessments.³ Data describing health and health care service trends among urban AI/ANs are of great value in the ongoing effort to understand the strengths and needs of the population.

UIHOs are private, non-profit corporations that serve AI/AN people in select cities with a range of health and social services, from outreach and referral to full ambulatory care. UIHOs are funded in part under Title V of the Indian Health Care Improvement Act and receive limited grants and contracts from the IHS. UIHOs are located in 19 states serving individuals in approximately 100 U.S. counties, in which over 1.2 million AI/ANs reside.⁵ UIHOs provide traditional health care services, cultural activities and a culturally appropriate environment for urban AI/ANs to receive health care. While the scope and delivery of health care services vary among facilities, all receive SDPI funding to provide diabetes care.

This care is critical to AI/AN communities who experience a higher prevalence of diabetes, a greater diabetes mortality rate and an earlier age of diabetes onset than the general U.S. population. This also is true among urban AI/ANs, where 12% of AI/ANs in UIHO service areas report being told by a doctor that they have diabetes compared with 8% of the general population.⁶ Poverty, limited access to care and high mobility create challenges for diabetes patients trying to access and receive regular care. In all UIHO service areas combined, significantly more AI/ANs (23%) live below the federal poverty level compared with the general population (14%).⁷ And 74% of AI/ANs in the combined service area report having medical insurance compared with 82% of the general population.⁶

INTRODUCTION

IHS Best Practice Guidelines

This report's format is based on the 2011 IHS Diabetes Best Practice Guidelines.⁸ First developed in 2001 by a workgroup coordinated by the IHS DDTP, Best Practices are based on the latest scientific research as well as diabetes success stories and experiences within AI/AN communities. The IHS Diabetes Best Practices offer guidance to diabetes programs on providing effective services to AI/ANs. The Best Practices are focused on both clinical (e.g. weight management) and community (e.g. school health) settings. Each Best Practice includes guidelines for implementation; key recommendations; information about program planning and evaluation; and additional tools and resources. More about IHS Best Practices can be found here: <http://www.diabetes.ihs.gov/index.cfm?module=toolsBestPractices>.

Methods

Data Collection

The data for this report were obtained from the IHS Diabetes Care and Outcomes Audit performed at UIHOs that receive SDPI funding. The IHS Diabetes Audit is based on consensus-derived standards of care, also known as the IHS Standards of Care for Patients with Type 2 Diabetes.⁹ These standards were first developed in 1986, and are regularly reviewed and updated by the IHS DDTP. Using the Audit, health facilities can assess their performance on a number of key measures relevant to the health of people with diabetes, including demographic characteristics, vital statistics, examinations, educational services, therapy services, immunizations and laboratory data.

Each UIHO maintains a registry for all patients diagnosed with diabetes. Each year UIHOs submit data from AI/AN patients in the registry who received diabetes health care services and had at least one primary care visit during the past 12 months. UIHOs are instructed to exclude any patient who meets any of the following criteria: received primarily referral or contract care paid by IHS, arranged other health care services with non-IHS monies, received most of their primary care at another IHS or tribal facility, lived in a jail or nursing home and received care at those institutions, attended a dialysis unit (if on-site dialysis was not available), had gestational diabetes, had pre-diabetes only, or had moved, died or was not reachable after three contact attempts in 12 months.

Some facilities audit 100% of diabetic AI/AN patients' medical records who meet eligibility criteria, while other facilities use a systematic random sampling scheme to provide estimates.¹⁰ To conduct an audit, data for patients with diabetes are collected at each facility via manual chart review or by extracting data from electronic health record systems. For the manual audit, patient information from medical records is used to complete an audit form and entered into a central database via the IHS WebAudit Data Entry tool. For the electronic audit, data are extracted from an electronic health record system directly into a data file, usually via the IHS Resource Patient Management System (RPMS), which is then uploaded to a central database via the WebAudit's upload tool. RPMS is an integrated electronic system for the management of clinical and administrative information used by IHS.

Starting in 2008, all participating facilities submitted their data via a secure web application (the WebAudit) directly to the IHS DDTP. In previous years, some facilities submitted data to their local IHS Area Office, which then submitted to the IHS DDTP. Partly as a result of this change, more urban facilities are represented in this national report starting in 2008, although they may have collected and submitted data to their local office in previous years. More information about the WebAudit can be found here: <http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=resourcesAudit>.

INTRODUCTION

Data Analysis

The data examined for this report were collected for the annual Diabetes Audit of medical records performed at participating UIHOs from 2007 through 2011. Percentages shown are computed as a proportion of all audited records, unless otherwise specified. Patients with missing values (indicated as “not tested or no valid result” or “not documented”) for a particular measure are included in the denominator. Several measures included in this report were calculated by the IHS DDTP and were not directly reported from the facilities. Statistical tests to compare changes in rates over time were not performed. Because some facilities audit a random sample of their patients with diabetes, a weighting procedure was applied to calculate accurate estimations of Diabetes Audit statistics. This is necessary when combining data from multiple sites and when not all patients are audited. Stata version 10.1 (Stata Corp., College Station, Texas) was used to perform all statistical analyses.

Limitations

This analysis has several limitations. First, only a selection of patients with diabetes is included in the IHS Diabetes Audit each year. This limits the ability to examine trends using these data, as the patient population may be different from year-to-year. Any changes in patient outcomes (e.g. lab values) seen over the years may be a result of changes in the patient population that is audited each year and not necessarily a result of the programs themselves. Provided that patient selection was random, as outlined in the Audit instructions, the patients audited should be representative of the entire population of patients at each facility and there should not be any bias or large effect on the results due to sampling.

Second, the amount of missing information for select variables should be considered in the interpretation of these findings. In our analyses, all percentages are computed as a proportion of all audited records, unless otherwise specified. Some measures have a high portion of missing values; this can affect the results. Reducing the amount of missing data at each site will improve the quality of future reports. The proportion of missing data for a given facility may be related to the scope of health care services offered at a facility. For example, not all facilities provide clinical services and might have challenges capturing data from referrals. Specifically, the availability of laboratory-related services may be either lacking or provided off-site, and retrieving follow up laboratory values may pose challenges.

Third, there are limited demographic data available for registry patients. The Audit does not collect information on socioeconomic indicators such as education, income, employment status or mobility. Understanding the baseline distribution of these variables and changes over time could provide important information concerning the audited population.

Finally, while the Diabetes Audit provides a description of the progress of the urban SDPI programs, there may be important indicators not captured by these systems that better represent their challenges and strengths. Identifying and collecting these additional indicators may provide a more detailed understanding of how UIHOs are doing in meeting goals. Examples of potential indicators include family stability, drug reduction, diet changes, personal goal setting and cultural connectedness.

INTRODUCTION

Report Content

This report uses Diabetes Audit data to track the performance of UIHO diabetes programs in the context of seven clinical Best Practices using select key measures. Since the Diabetes Audit primarily focuses on clinical care outcomes rather than community outcomes, this report provides information about clinical Best Practices only.

The following information is included in the report:

- **Description of the Best Practice topic and its relevance to diabetes:** A brief description of the clinical Best Practice is included at the beginning of each section to provide background on the topic's relevance to diabetes care and diabetes disease outcomes.
- **Key clinical practice recommendations:** A list of the major clinical recommendations in each Best Practice topic area is included in this report. More in-depth information for each can be found in the Best Practice guidelines.
- **Key measures and comparisons:** Measures were selected by the IHS workgroup for each Best Practice topic area as important indicators that can be used to measure a diabetes program's progress and outcomes. When Diabetes Audit data can be used to evaluate these measures, a graph of aggregate urban data is presented, along with a brief description of the results. Other sources of data are needed to measure progress on those key measures not analyzable with Audit data. For one Best Practice topic, an "alternative key measure" is presented graphically using Diabetes Audit data. This alternative measure is based on the key clinical recommendations and offers an additional tracking opportunity. When applicable, 2011 IHS Government Performance Results Act (GPRA) Goals¹¹ and Healthy People 2020 (HP2020) Objectives¹² also were included. These are provided to help describe the UIHO patient population as it compares with national benchmarks. Please note that official GPRA results are prepared and distributed by the IHS Planning and Evaluation office.

Appendix A contains data tables from the urban programs over the past five years (2007-2011).

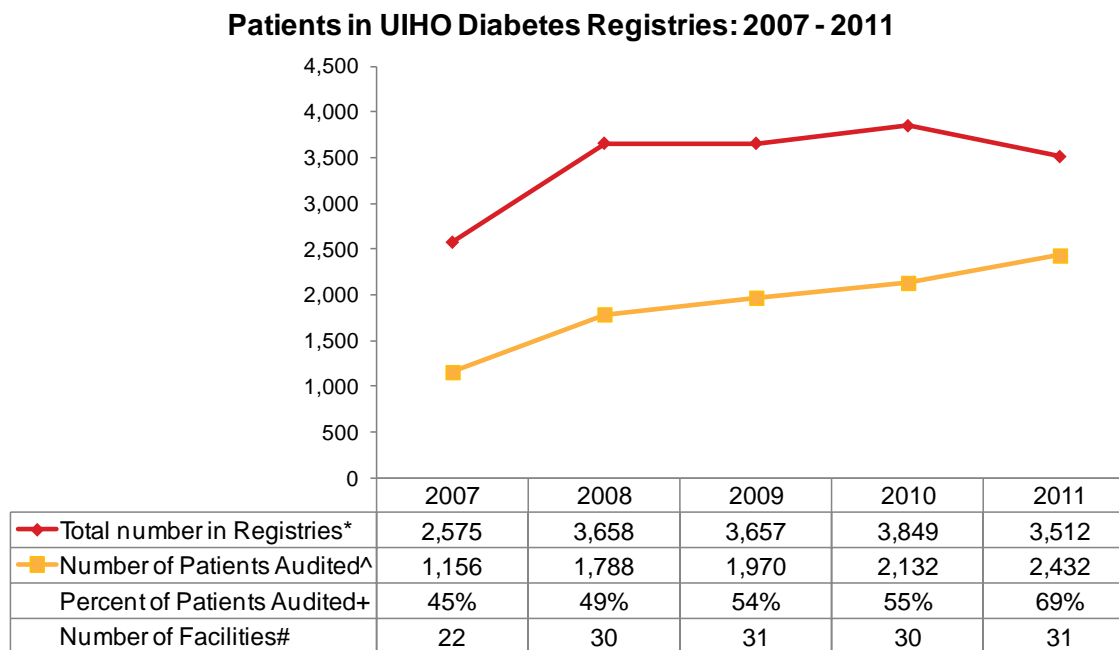
Appendix B contains background information about GPRA and HP2020.

For questions or comments about this Diabetes Audit Report please contact the UIHI at (206) 812-3030 or email elizabethk@uihi.org.

DIABETES REGISTRIES: Urban Indian Health Organizations

The following graph displays the number of urban facilities reporting each year, the number of patients audited and the number of patients included in the diabetes registries from all participating facilities.

FIGURE 1



* Sum of all patients in each registry

^ Sum of all patients in Audit

+ Number of patients audited/number of patients in registry

Number of Urban Indian Health Organizations participating. Data from IHS demonstration sites not included.

Description of Graphic: In 2011, 31 UIHOs participated in the Diabetes Audit. For all sites combined, Audit information was collected from 2,432 patients, 69% of all patients in diabetes registries at these facilities. The number of patients audited from the UIHO registries has more than doubled in the last five years, with 1,156 patients audited in 2007 to 2,432 in 2011. This increase may be attributable in part to changes in the data submission process; starting in 2008, all facilities submitted data via a secure web application directly to the IHS DDTP.

BEST PRACTICE I: Adult Weight Management

Individuals who are overweight or obese have a substantially higher risk of developing diabetes. Overweight and obesity also can lead to poor health outcomes in individuals with diabetes by increasing insulin resistance and raising blood glucose levels. Diet and exercise together provide the best approach for weight loss and maintenance. Modest weight loss amounts of as little as 5% have been shown to help prevent diabetes, reduce insulin resistance and improve health indicators (triglycerides, blood glucose, HDL cholesterol and blood pressure).¹³ On a community level, changes in physical and food environments provide more opportunities to eat healthy foods and to be physically active on a daily basis.¹⁴

Key Clinical Practice Recommendations Related to Adult Weight Management

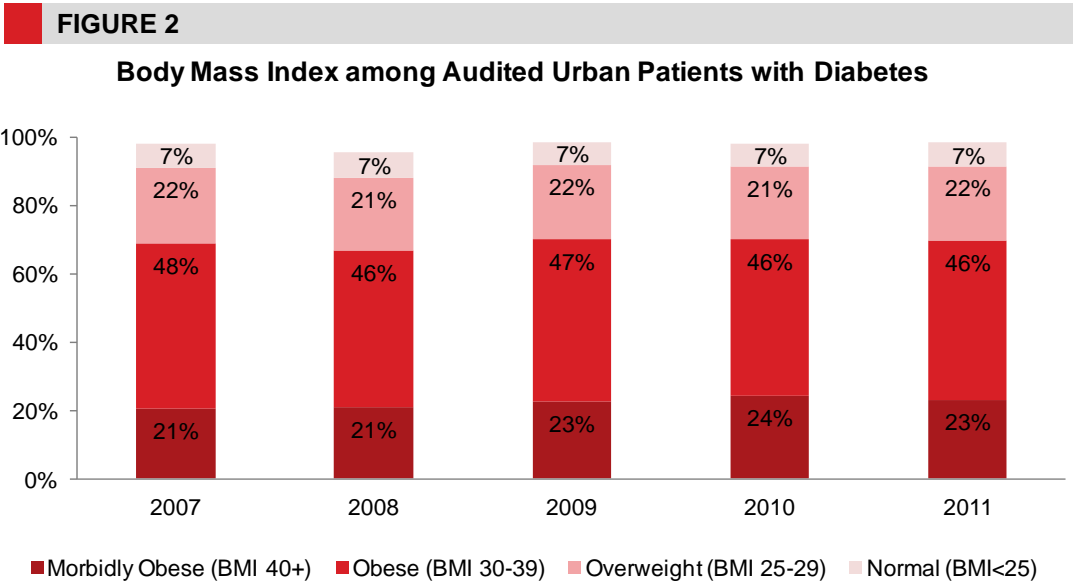
- Ensure providers have a full understanding of the complexity of obesity prevention and care.
- Assess for overweight, obesity and overall cardiometabolic risk.
- Provide nutrition approaches to treat overweight and obesity, and reduce cardiometabolic risk.
- Implement a systematic approach to increasing daily physical activity.
- Provide behavior change approaches to treat overweight and obesity, and reduce cardiometabolic risk.
- Provide medications and supplements as appropriate.
- Consider weight loss surgery as appropriate.
- Provide long-term support to address weight loss maintenance.

BEST PRACTICE I: Adult Weight Management

Measures Used for Tracking Adult Weight Management

KEY MEASURE 1: Percent of diabetes patients with a documented assessment for overweight or obesity in the past 12 months.

Obtaining measures of a patient’s height and weight can help determine individual risk profiles due to overweight/obesity. Regular measures of height and weight can be used to set goals for future weight loss and weight maintenance, and are crucial to successful diabetes care and management.

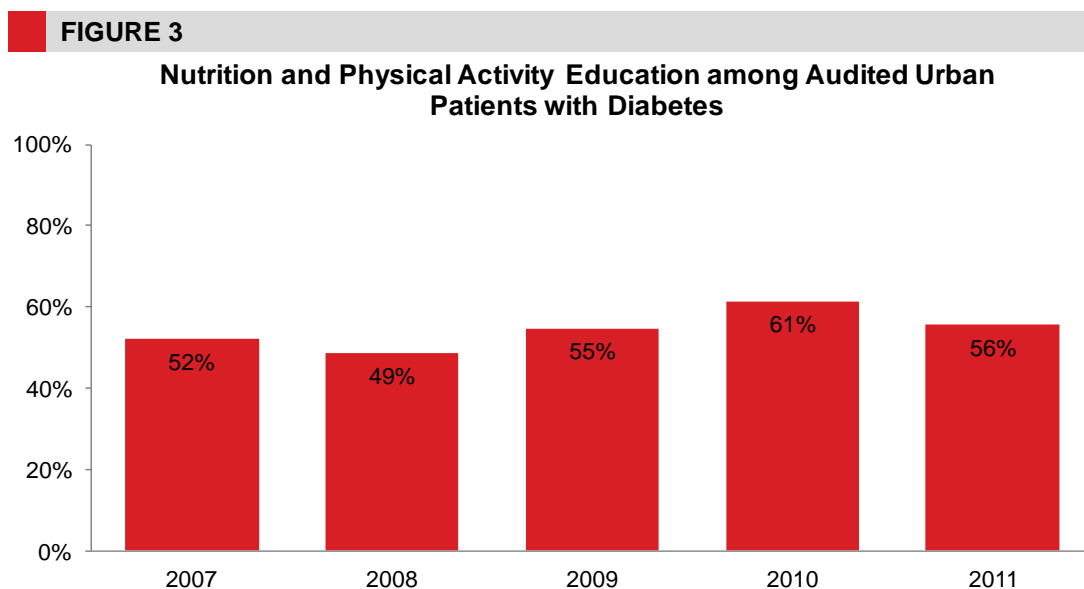


Description of Graphic: Approximately 95-98% of audited urban patients had a record of being assessed for overweight/obesity from 2007-2011. In 2011, 7% of individuals had a normal BMI (<25); 22% were overweight (BMI 25-29); 46% were obese (BMI 30-39); and 23% were considered morbidly obese (BMI 40+). These rates are similar to those from previous years.

BEST PRACTICE I: Adult Weight Management

KEY MEASURE 2: Percent of diabetes patients with documented nutrition and physical activity education by a Registered Dietitian (RD) or other provider in the past 12 months.

Nutrition education provided by a Registered Dietitian or other professional can help patients learn specific methods to safely reduce their caloric intake and make other dietary changes. Dietary changes alone can lead to moderate weight loss, which in turn can significantly improve health outcomes among people with diabetes.



Description of Graphic: In 2011, over half (56%) of audited urban patients had a record of receiving both nutrition and physical activity education, similar to previous years. Sixty-five percent received nutrition instruction from a Registered Dietitian or other provider and 62% received physical activity education in 2011 (data not shown).

KEY MEASURE 3: Percent of all participants who achieved both their nutritional goal(s) and physical activity goal(s) in the past 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

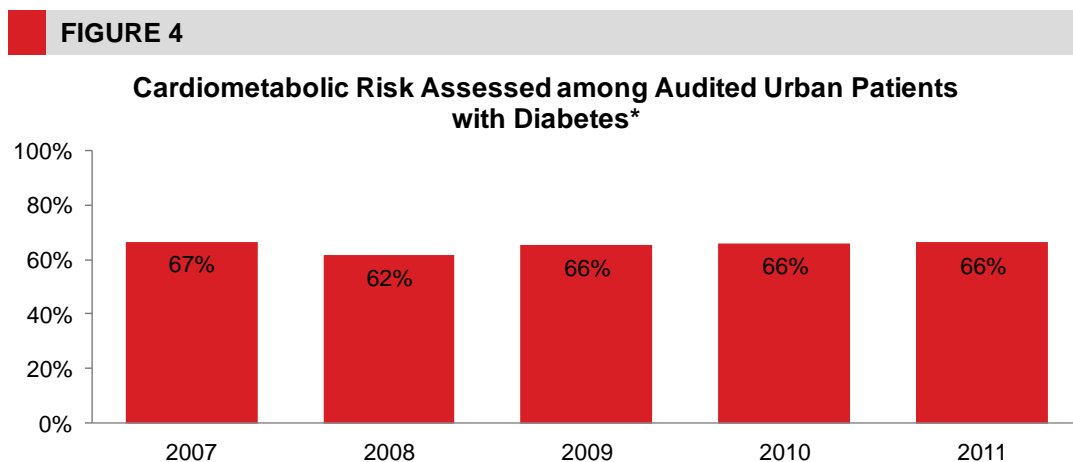
KEY MEASURE 4: Percent of all participants who achieved their weight loss goal in the past 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

BEST PRACTICE I: Adult Weight Management

KEY MEASURE 5: Percent of diabetes patients who had, in addition to measurement of body weight, body mass index (BMI) and blood pressure, documented laboratory measures of cardiometabolic risk including all of the following in past 12 months:

- Non-HDL-cholesterol
- Triglycerides
- LDL- and HDL-cholesterol
- Fasting glucose
- Hemoglobin A1c (HbA1c)



* Does not include fasting glucose.

Description of Graphic: During 2007-2011, 62-67% of audited urban patients had documented laboratory measures of cardiometabolic risk (e.g. blood lipids, HbA1c, etc.) in the past year in addition to measurement of body weight, BMI and blood pressure. In this five year time period, 75-82% received an HDL assessment; 73-78% received an LDL assessment; 76-82% received a triglycerides assessment; 76-81% received a cholesterol assessment and 93-94% received an HbA1c assessment (data not shown).

BEST PRACTICE II: Cardiovascular Disease

Cardiovascular disease (CVD) is the leading cause of death in the United States, and risk of death from CVD worsens with high blood pressure, cigarette smoking and diabetes.¹⁵ Adults with diabetes have heart disease death rates about two to four times higher than adults without diabetes.¹⁶ CVD is the number one killer of AI/AN adults.¹⁷ The risk of developing and dying from CVD would be substantially reduced if major improvements were made in diet and physical activity, control of high blood pressure and cholesterol, smoking cessation and appropriate aspirin use.¹⁸

Key Clinical Practice Recommendations Related to Cardiovascular Disease

Lifestyle Management

- Assess smoking status, provide counseling and implement a smoking cessation program.
- Assess lifestyle factors and provide medical nutrition therapy (MNT).
- Assess BMI and assist with weight management.
- Assess activity levels and recommend physical activity.

Behavioral Health

- Assess emotional health and provide indicated services.

Clinical Management

- Assess and treat high blood pressure (hypertension) to appropriate targets.
- Assess and treat lipids to appropriate targets.
- Assess and treat albuminuria to appropriate targets.
- Assess and treat blood glucose to appropriate targets.
- Provide aspirin and antiplatelet therapy for appropriate individuals.
- Assess and treat anemia related to chronic kidney disease to appropriate targets.
- Identify and treat sleep apnea.

BEST PRACTICE II: Cardiovascular Disease

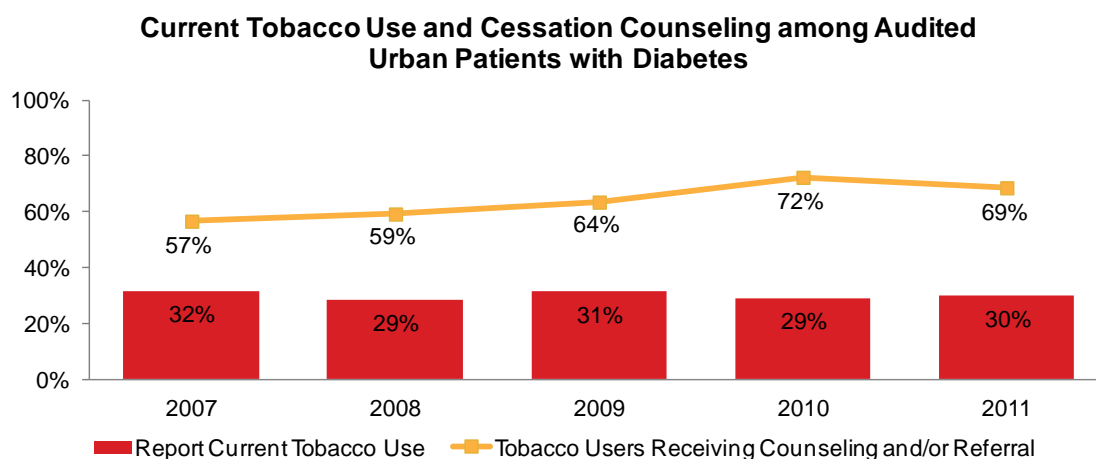
Measures Used for Tracking Cardiovascular Disease

KEY MEASURE 1: Percent of diabetes patients with documented smoking status in the past 12 months.

KEY MEASURE 2: Percent of diabetes patients who smoke who received tobacco cessation intervention(s) in the past 12 months.

One of the key clinical recommendations related to cardiovascular disease is to assess tobacco use and to provide cessation counseling when needed. Smoking is a significant risk factor for CVD and smoking cessation counseling has been shown to be a cost-effective and safe intervention.

FIGURE 5



Description of Graphic: Thirty percent of audited urban patients with diabetes reported current tobacco use in 2011, similar to previous years. Over the five year period, there was an increase in the percentage of tobacco users receiving cessation counseling or referrals, with 57% of tobacco users receiving counseling in 2007 compared with 69% in 2011, a 21% increase. While there is no record in the Diabetes Audit of the number of patients that quit using tobacco, it may be inferred from the constant rates of tobacco use over the five-year period that few patients are quitting.

BEST PRACTICE II: Cardiovascular Disease

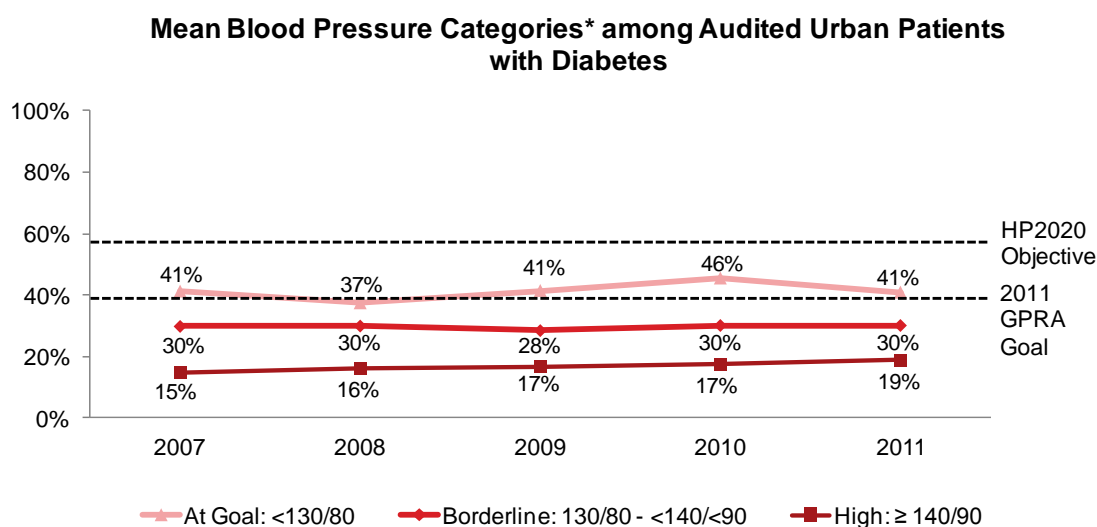
KEY MEASURE 3: Percent of diabetes patients who smoke who quit smoking in the past 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

KEY MEASURE 4: Percent of diabetes patients who had most recent blood pressure in the past 12 months at target.

Reduction of blood pressure through medication and/or lifestyle changes is a key intervention for patients with diabetes and hypertension. Blood pressure should be assessed at each visit to determine if it is being adequately controlled with current interventions.

FIGURE 6



* Average of last three blood pressures for 2007-09. Average of last two or three blood pressures for 2010-11.

2011 IHS GPRA Goal: 39% of patients with diabetes achieve blood pressure control.

HP2020 Objective: 57% of diabetes patients achieve blood pressure control.

Description of Graphic: In 2011, 41% of all audited urban patients assessed for blood pressure had mean blood pressure values less than 130/80 (considered at goal), a slight decrease from 2010 but similar to 2007-2009 Audit years. This exceeds the 2011 IHS GPRA goal for 39% of patients to achieve blood pressure control, but has not yet reached the HP2020 objective for 57% of patients to have controlled blood pressure. Additionally, in 2011 30% of patients had blood pressures considered borderline hypertension (between 130/80 and 140/90) and 19% had high mean blood pressures (≥140/90), similar to previous Audit years. Several years of Audit data during this time period had a high percentage (>10%) of missing data, with 14% of patients missing blood pressure information in 2007; 16% in 2008 and 13% in 2009. This missing data may affect the results of this analysis.

BEST PRACTICE II: Cardiovascular Disease

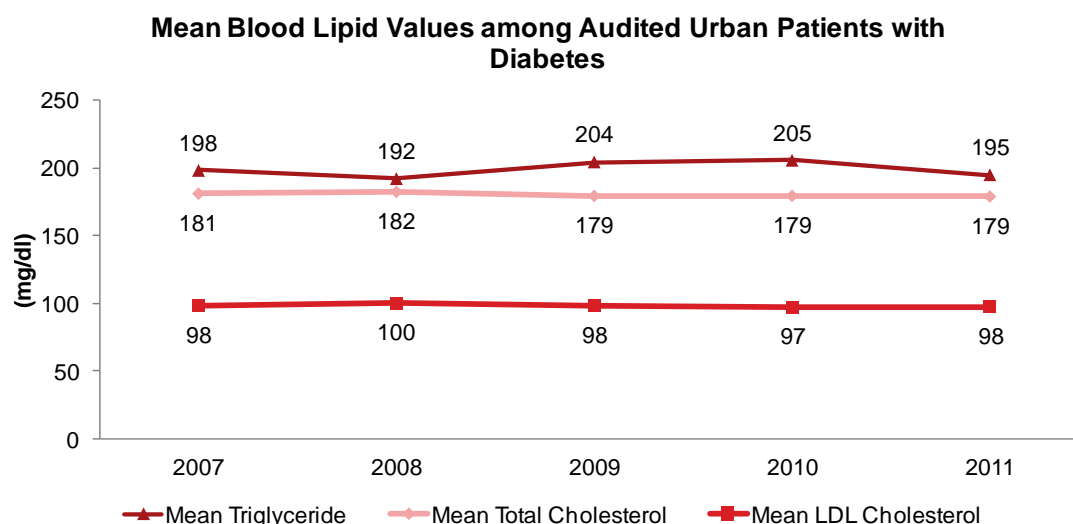
KEY MEASURE 5: Percent of diabetes patients with documented cardiovascular disease (CVD) or hypertension education in the past 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

KEY MEASURE 6: Percent of diabetes patients who had most recent lipid measurements in the past 12 months at target.

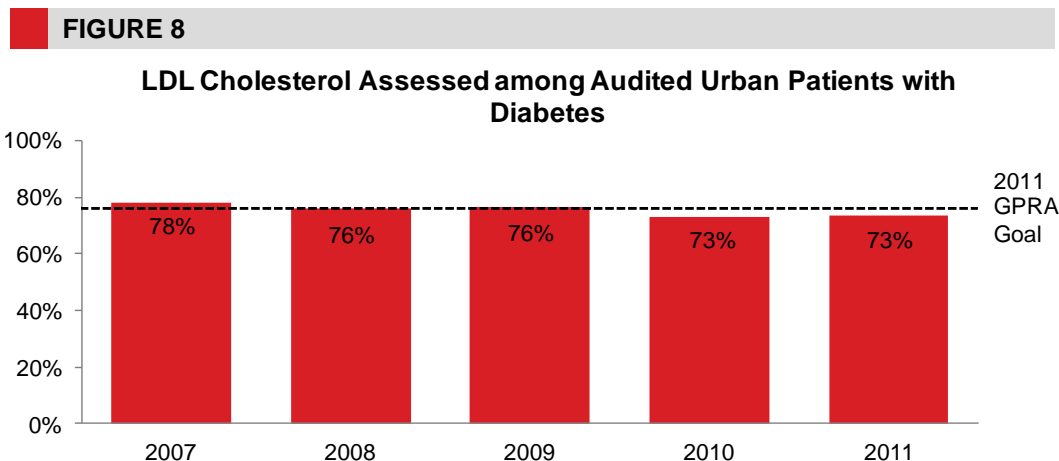
One key clinical Best Practice recommendation related to cardiovascular disease is to measure, evaluate and treat lipids. Lipids, or fats carried in the blood, include total cholesterol, LDL and HDL cholesterol, and triglycerides. While cholesterol is necessary for life, too much can clog arteries and contribute to heart disease. Total cholesterol is a measure of all the cholesterol in the blood, while low-density lipoprotein (LDL) cholesterol is one type (the “bad” type). Triglycerides are another type of lipid that can contribute to cardiovascular disease when levels are too high.

FIGURE 7



Description of Graphic: Mean total cholesterol, LDL cholesterol and triglyceride were not notably different over the past five years. Total cholesterol should ideally be less than 200 mg/dl, and mean total cholesterol values have been below this level (ranging from 179 to 182 mg/dl) throughout the five-year period. Mean LDL cholesterol values have remained at or less than 100 mg/dl, considered the cut-off for ideal LDL cholesterol. Ideal triglyceride values are less than 150 mg/dl; however, mean triglyceride values have remained above 150 mg/dl this during the time period, ranging from 192 to 205 mg/dl. All five years of Audit data during this time period had a high percentage (>10%) of missing blood lipid data. In 2011, 24% of audited patients were missing information about total cholesterol, 27% were missing information about LDL cholesterol and 24% were missing information about triglycerides. This missing data may affect the results of this analysis.

BEST PRACTICE II: Cardiovascular Disease



2011 IHS GPRA goal: 76% of diabetic patients receive at least one assessment of low-density lipoprotein (LDL) cholesterol annually.

Description of Graphic: In 2011, 73% of audited urban patients had their LDL cholesterol assessed, down from 78% in 2007. Rates in 2011 fall only slightly below the 2011 IHS GPRA goal of 76% of diabetic patients receiving an LDL cholesterol assessment.

KEY MEASURE 7: Percent of diabetes patients with a positive assessment for albuminuria (i.e., measures of albuminuria) who received treatment in the past 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

KEY MEASURE 8: Percent of target population with improvements in A1c in the past 12 months.

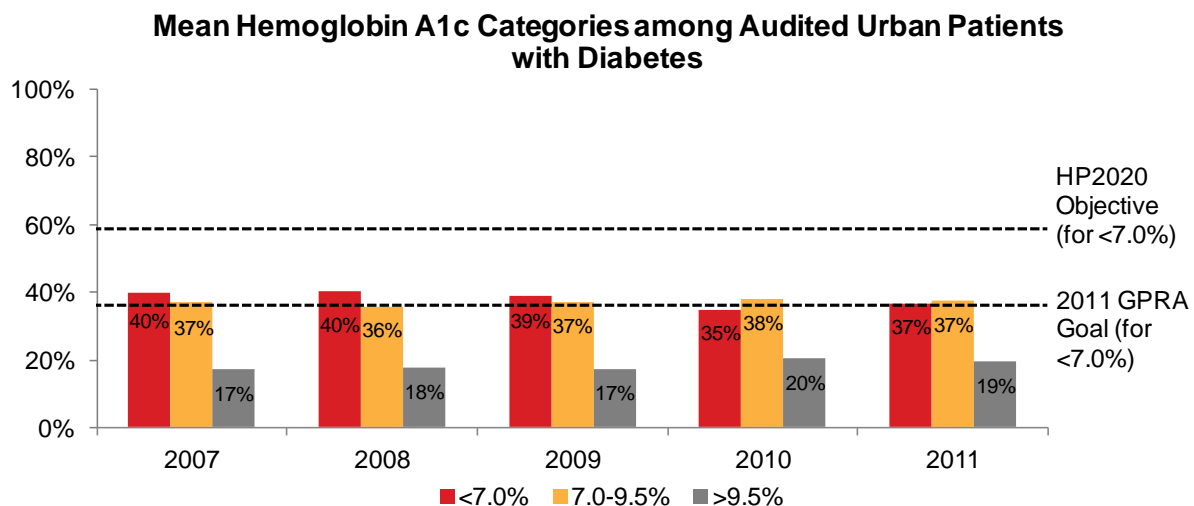
This key measure is not analyzable using current IHS Diabetes Audit data.

BEST PRACTICE II: Cardiovascular Disease

ALTERNATIVE MEASURE 1: Percentage of diabetes patients with ideal glycemic control (A1c <7.0%).

Hemoglobin A1c is a long-term measure of a patient's blood glucose level. It is used to assess the amount of glucose (sugar) that is circulating in the blood over a period of weeks or months. The American Diabetes Association recommends most patients with diabetes maintain their A1c level at less than 7.0% for successful diabetes management and to prevent vascular complications due to diabetes.¹⁹

FIGURE 9



2011 IHS GPRA goal: 36% of diabetic patients show recommended glycemic control (hemoglobin A1c < 7.0%).

2011 IHS GPRA goal: 20% (or less) of diabetic patients have evidence of poor glycemic control (hemoglobin A1c > 9.5%).*

HP2020 Objective: 58.9% of diabetes patients show recommended glycemic control (hemoglobin A1c < 7.0%).

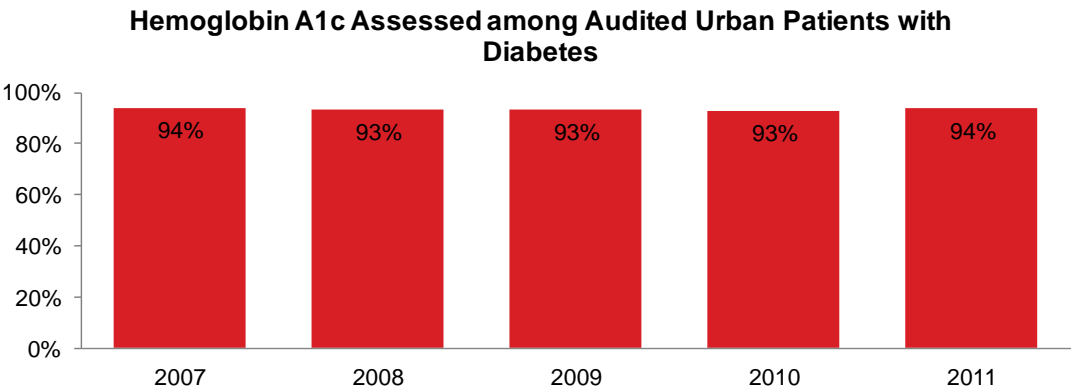
HP2020 Objective: 14.6% of diabetes patients have evidence of poor glycemic control (hemoglobin A1c > 9.0%).*

Description of Graphic: In 2011, 37% of audited patients with diabetes showed recommended glycemic control (A1c < 7.0%), similar to previous years. This meets the 2011 IHS GPRA goal to have 36% of diabetes patients with hemoglobin A1c values less than 7.0%, but is below the HP2020 objective for 59% of patients to have A1c values less than 7.0%. Similar to previous years, 19% of audited patients had evidence of poor glycemic control (A1c>9.5%), which meets the 2011 IHS GPRA goal for 20% or less of diabetes patients to have hemoglobin A1c values greater than 9.5%, but is below the HP2020 objective for only 15% of diabetes to have evidence of poor glycemic control.

* Not shown on graph.

BEST PRACTICE II: Cardiovascular Disease

FIGURE 10



Description of Graphic: In 2011, 94% of audited patients had a record of a recent A1c assessment. These rates were relatively stable over this time period.

BEST PRACTICE III: Chronic Kidney Disease

Chronic Kidney Disease (CKD) is the loss of kidney function, where blood vessels in the kidneys are damaged over time and hinder the kidney's ability to filter blood, increasing waste in the body's blood supply.²⁰ If CKD is not treated it can progress to kidney failure or end stage renal disease (ESRD), which can decrease quality of life and lead to premature death.²¹ Diabetes is the leading cause of kidney disease and kidney failure, accounting for 44% of all new cases of kidney failure in 2008.¹⁶ The threat to those afflicted and their families is great, but CKD also affects allocation of resources: 25% of the Medicare budget is used to treat CKD and ESRD.²² Fortunately, CKD and most health conditions related to diabetes can be managed with diet, exercise and a combination of medications that can help lower and stabilize blood glucose and blood pressure levels.¹⁶

Key Clinical Practice Recommendations Related to Chronic Kidney Disease

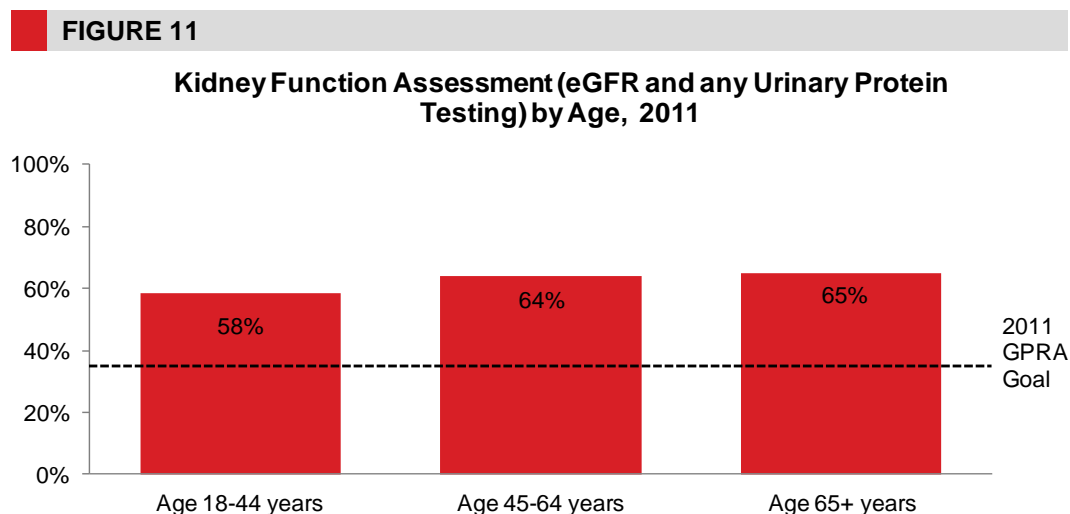
- Perform screening for early detection of chronic kidney disease (CKD) using both a urine albumin to creatinine ratio (UACR) and GFR.
- Provide interventions to delay or prevent chronic kidney disease (CKD):
 - Assess CKD risk factors in patients with diabetes.
 - Initiate or intensify treatment in patients at risk for CKD.
 - Control glucose.
 - Treat hypertension.
 - Target is < 130/80 for most patients, but should be individualized.
 - Use an ACE inhibitor or ARB whenever possible.
 - Reduce associated CVD risks.
 - Provide kidney disease education.

BEST PRACTICE III: Chronic Kidney Disease

Measures Used for Tracking Chronic Kidney Disease

KEY MEASURE 1: Percent of individuals with diabetes who were screened for CKD in the past 12 months as evidenced by both urine albumin to creatinine ratio (UACR) and GFR.

Serious kidney damage can be prevented or delayed if caught early, and there are common laboratory tests available to monitor kidney function. It is recommended that the eGFR be assessed each year in patients with diabetes. In Figures 11 and 12, only 2011 data are presented due to changes in how the information is collected in the Audit.

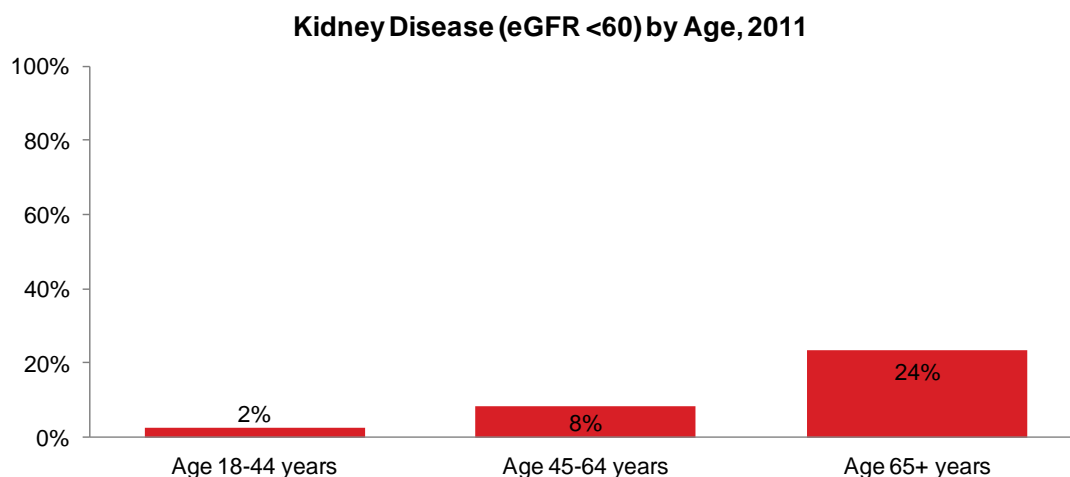


2011 IHS GPRA goal: 35% of diabetes patients are assessed for poor kidney function (eGFR and quantitative urinary protein assessment).

Description of Graphic: In 2011, over half of urban audited patients with diabetes were assessed for kidney disease. Fifty-eight percent of individuals age 18-44, 64% of individuals age 45-64 and 65% of individuals age 65 and older had both a calculated GFR and any urinary protein testing. This exceeds the 2011 GPRA goal for 35% of diabetes patients to be assessed for nephropathy.

BEST PRACTICE III: Chronic Kidney Disease

FIGURE 12



Description of Graphic: In 2011, the percent of urban audited patients with signs of kidney disease (eGFR<60 ml/min) increased with age, where 2% of individuals age 18-44, 8% of individuals age 45-64 and 24% of individuals age 65 and older had an eGFR of less than 60 ml/min.

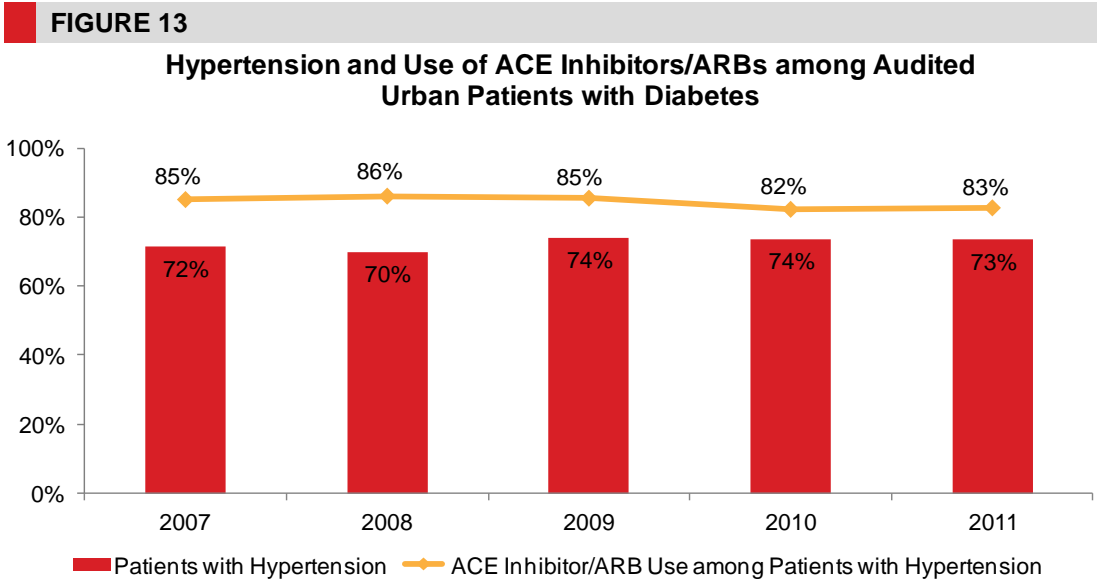
KEY MEASURE 2: Percent of individuals with diabetes who had most recent BP at < 130/80 in the past 12 months (or have comorbidities that dictate a higher target).

See Best Practice II Cardiovascular Disease, Key Measure 4, pg 13 for a similar measure.

BEST PRACTICE III: Chronic Kidney Disease

KEY MEASURE 3: Percent of individuals with diabetes and hypertension who are treated with an angiotensin converting enzyme (ACE) inhibitor or angiotensin II receptor blocker (ARB) (or have a documented allergy/intolerance) in the past 12 months.

Controlling blood pressure is an important means of reducing a patient's risk for kidney disease. Over time, high blood pressure damages small vessels in the kidneys, which are critical to filtering the body's waste products and regulating fluid levels. ACE Inhibitors and ARBs have been shown to protect kidneys more than other types of medication for hypertension.¹⁹



Description of Graphic: During 2007-2011, 70-74% of audited urban patients had a diagnosis of hypertension or were on medication to control blood pressure. Among patients with hypertension, 82-86% had documentation of taking an ACE Inhibitor or ARB during the past year. These numbers, however, should be interpreted with caution. Because the Audit question used to assess hypertension allows the reporter to respond affirmatively if there is a diagnosis or a record of medication, these estimates may overestimate the burden of hypertension in the community if patients were using the medication for prevention of kidney disease rather than treatment of hypertension.

BEST PRACTICE IV: Depression

Although diabetes is associated with an increased risk of depression, depression remains undiagnosed and untreated in about two-thirds of patients who have both conditions.²³ The comorbidity of depression and diabetes is particularly challenging, as the debilitating effects of depression may influence an individual's ability to successfully manage diabetes. Recent studies have suggested that AI/ANs with depression and diabetes have worse glycemic control than AI/ANs with diabetes alone.²⁴ People who are at high risk for developing diabetes may have unmet medical and mental health care needs. Helping these patients address their health concerns, such as high blood pressure, high cholesterol and weight problems, could alter or slow their progression to diabetes and improve their quality of life and mental health.²⁵ Routine depression screening for people with diabetes is recommended, as well as long-term monitoring of depression patients for diabetes or its risk factors.

Key Clinical Practice Recommendations Related to Depression

For Your Patients with Diabetes

- Educate providers on how to screen for and treat depression.
- Screen for depression among patients with diabetes.
- Provide depression care and treatment.
- Recognize when to refer patients for specialist mental health care.

For Your Health Care System

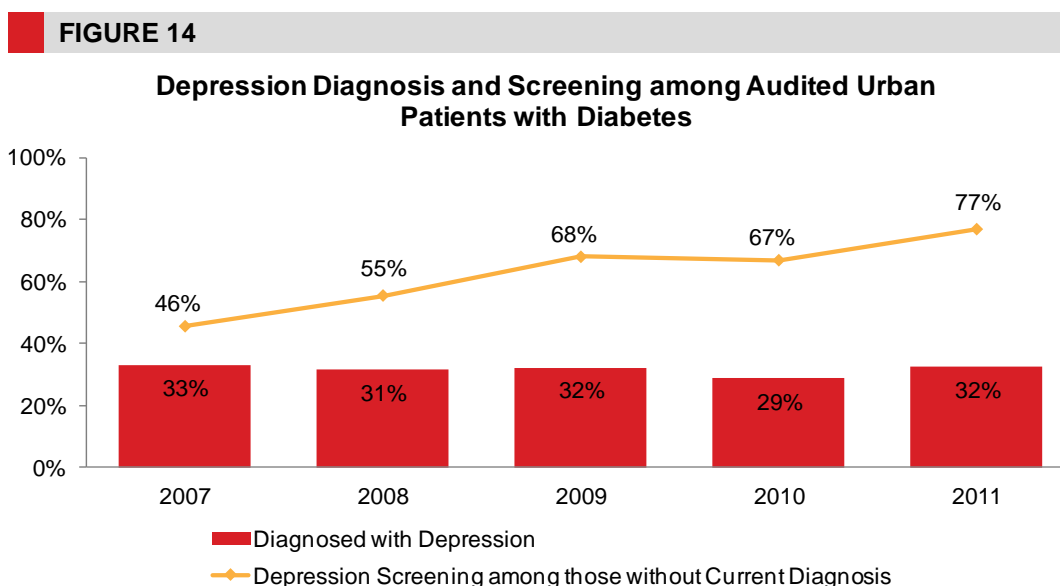
- Commit to improving depression care in people with diabetes.
- Dedicate funds to improve depression care in people with diabetes.
- Coordinate depression care between behavioral and primary care settings.
- Design and implement an education program for the community and help patients connect to community resources.

BEST PRACTICE IV: Depression

Measures Used for Tracking Depression

KEY MEASURE 1: Percentage of diabetes patients who were screened for depression in the past 12 months.

Simple screening tools are available to identify patients who may be at risk for depression. These can be incorporated into a clinic's system of care.



Description of Graphic: In 2011, 32% of audited urban patients had a current diagnosis of depression, similar to previous years. Depression screening among patients without a current depression diagnosis has consistently increased each year, from 46% in 2007 to 77% in 2011.

KEY MEASURE 2: Percentage of diabetes patients with documented depression that received treatment for depression in the past 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

BEST PRACTICE V: Eye Care

Diabetes is the leading cause of new cases of blindness among adults aged 20-74 years old.¹⁶ Diabetes can increase complications with diabetic retinopathy (DR), cataracts, glaucoma and even disrupt brain functions associated with vision that lead to vision loss and blindness.²⁶ Since initial eye damage can occur without symptoms, regular vision screenings and patient education on the importance of regular exams can reduce the risk of vision loss from diabetes.²⁷

Key Clinical Practice Recommendations Related to Eye Care

- Provide a DR education component in all diabetes education programs for patients and family.
- Adhere to the evidence-based accepted standards of care for DR surveillance and use a qualifying examination for DR surveillance:
 - Dilated eye examination by an optometrist or ophthalmologist.
 - Qualifying photographic retinal examination.
 - Dilated seven standard field stereoscopic examination (Early Treatment Diabetic Retinopathy Study (ETDRS) photos).
 - Other photographic method formally validated to ETDRS.
- Recognize early when to refer patient for consideration of treatment.
- Monitor risk factors and treatments.
- Provide ophthalmology referral for all cases determined to be at risk for vision loss and possible candidates for treatment and provide visual rehabilitation for patients with vision loss.

BEST PRACTICE V: Eye Care

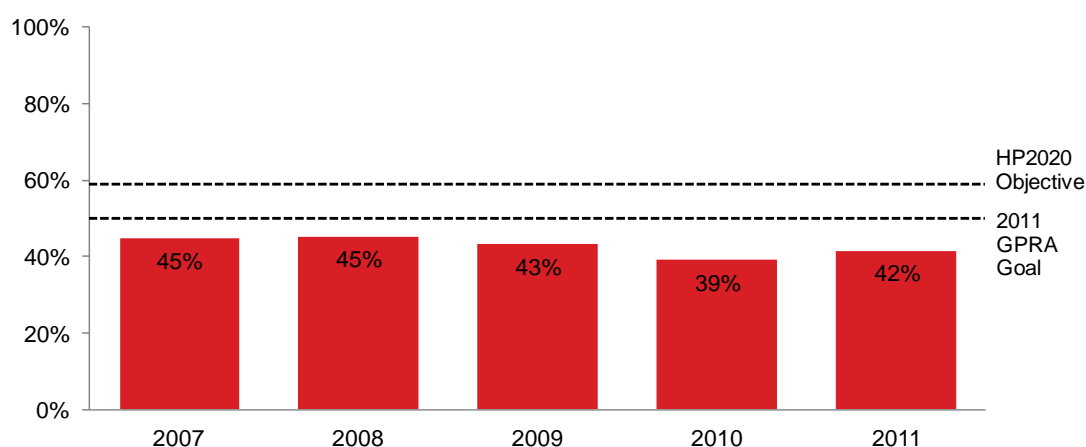
Measures Used for Tracking Eye Care

KEY MEASURE 1: Percentage of diabetes patients with a documented qualifying eye exam in the past 12 months.

Through early detection and treatment, serious vision loss from diabetes can be reduced. Patients with diabetes should receive an examination for retinopathy soon after diagnosis and annually from then on.

FIGURE 15

Eye Exam in Past Year among Audited Urban Patients with Diabetes



2011 IHS GPRA goal: 50.1% of diabetes patients receive an annual eye exam. This includes patients that have a documented visit for a qualified retinal evaluation or documentation of refusing such an exam.

HP2020 Objective: 58.7% of diabetes patients receive an annual eye exam.

Description of Graphic: From 2007-2011, 39-45% of urban audited patients with diabetes had a record of receiving a qualifying eye exam in the past year. In all five years, the percentage of patients receiving this exam is below both the 2011 GPRA goal (50% of patients receive an annual eye exam) and the HP2020 Objective (59% of patients receive an annual eye exam). Access to specialty care, recognized as a serious problem for urban AI/ANs, may be a factor in obtaining an eye exam. Additionally, these figures may underestimate the number of patients that received eye exams if patients received exams outside the UIHOs that were not documented in patient records.

BEST PRACTICE V: Eye Care

KEY MEASURE 2: Percentage of diabetes patients identified as needing retinal treatment (such as retinal laser treatment, intravitreal injection of anti-vascular endothelial growth factor (VEGF) or steroid medications, or vitrectomy procedure) who received it in the past 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

BEST PRACTICE VI: Foot Care

Approximately 40% of patients with diabetes have acute foot problems such as numbness, pain, burning and reduced feeling in the feet and legs.²⁸ Foot ulcers and amputation are common complications from diabetes, yet are fully treatable when identified early. A reliable foot care screening test can detect at least 90% of people at risk, and patient education, when coupled with regular comprehensive foot care programs, can reduce amputation rates by 45% to 85%.¹⁶ Foot complications can be managed and avoided with lifestyle changes in combination with medication that help stabilize glucose levels, blood pressure and lipids.

Key Clinical Practice Recommendations Related to Foot Care

For Your Patients with Diabetes

- Conduct an annual foot examination in all patients with diabetes regardless of risk status.
- Provide risk-appropriate foot care self-management education.
- Recognize when it is appropriate to refer for or provide podiatry care.
- Provide expertise in footwear selection and footwear modification to ensure safe ambulation and exercise.
- Recognize when to refer patients for vascular assessment and augmentation procedures.
- In addition, for people with diabetes-related foot complications, diagnose and treat foot ulcers, and diagnose and treat neuropathic foot pain.

For Your Health Care System

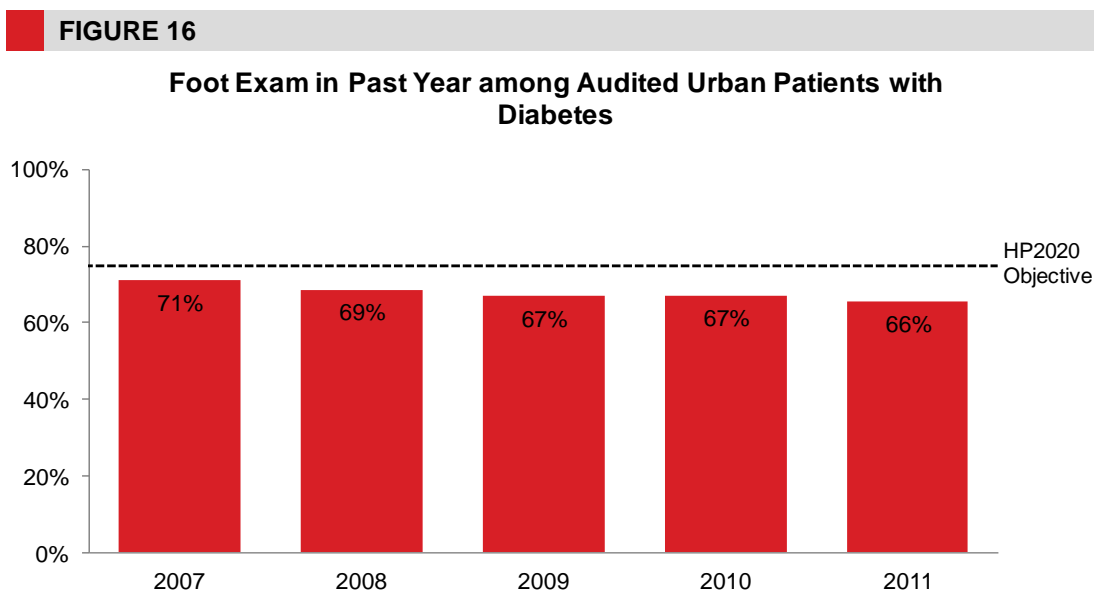
- Develop a team approach to diabetes care that includes foot care.
- Train clinic staff and field health personnel to perform and document foot risk assessments and risk-specific foot care education.
- Cascade clinic foot care objectives into clinics' annual performance plans.
- Develop a mechanism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

BEST PRACTICE VI: Foot Care

Measures Used for Tracking Foot Care

KEY MEASURE 1: Percent of diabetes patients with documented foot exams in the past 12 months.

A trained provider can assess for reduced sensation, physical abnormalities and vascular flow during a foot exam. Finding early signs of reduced circulation or other risks facilitates timely intervention. Education about proper self-care, podiatry care, proper footwear and referrals all can help reduce the chances of serious complications.



HP2020 Objective: 74.8% of diabetes patients receive at least one annual foot exam.

Description of Graphic: In 2011, 66% of audited urban patients had a record of a foot exam in the past year, a slight decrease from 2007. This falls below the HP2020 Objective for 75% of diabetes patients to receive a foot exam each year.

KEY MEASURE 2: Percent of diabetes patients with documented risk-appropriate foot care education in the past 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

KEY MEASURE 3: Percent of diabetes patients with foot ulcers who received treatment in the last 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

BEST PRACTICE VII: Oral Health

Poorly controlled glucose levels can lead to periodontal disease, tooth decay, infections and other serious oral health problems.²⁹ Infection and inflammation associated with periodontitis also can increase risk for diabetes complications such as cardiovascular disease, coronary artery disease and chronic kidney disease.³⁰ Oral health education and regular oral evaluations can prevent, detect and treat periodontal disease and dental caries early.³⁰

Key Clinical Practice Recommendations Related to Oral Health

- Primary care and dental care team members provide patient education to prevent and reduce adverse oral health outcomes.
- Primary care team members evaluate for the presence of periodontal disease and refer for dental examination/treatment as needed.
- Dentist conducts a risk assessment and comprehensive annual dental examination including prevention, early detection, and treatment of periodontal disease and caries in all patients with diabetes.
- Establish priorities for dental treatment and oral health education for people with diabetes.
- Provide dental treatment and periodontal therapy, including:
 - Conducting annual dental examinations and cleanings.
 - Restoring caries in all people with diabetes.
 - Providing recalls (follow-up visits) to maintain periodontal and dental health.

Measures Used for Tracking Oral Health

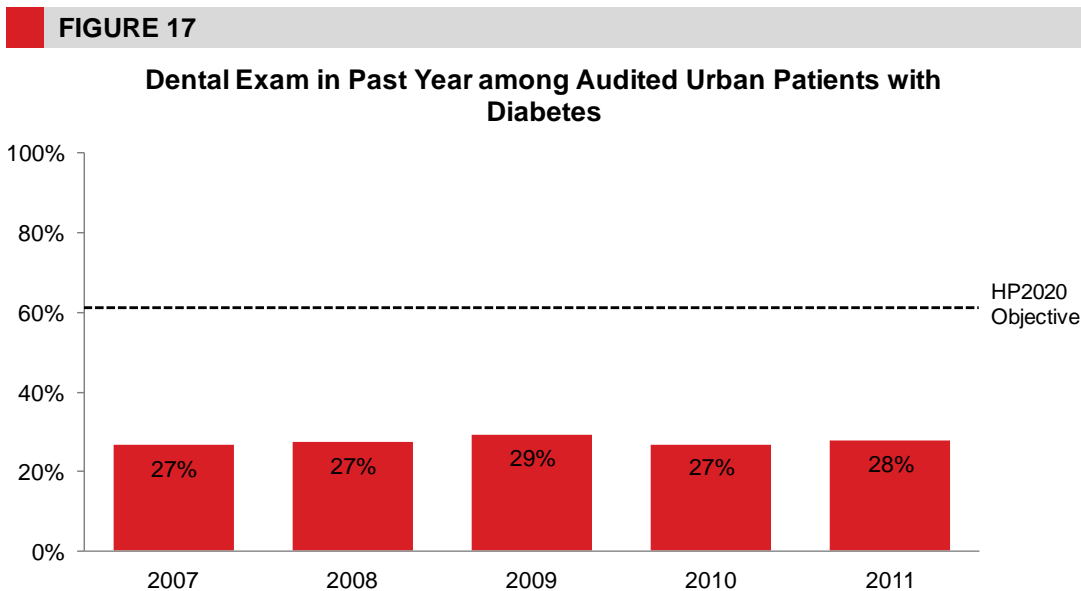
KEY MEASURE 1: Percent of diabetes patients who had documented dental-related patient education in the past 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

BEST PRACTICE VII: Oral Health

KEY MEASURE 2: Percent of diabetes patients who had a documented dental exam in the past 12 months.

Primary care providers play a role in ensuring patients with diabetes receive regular dental exams. A systematic method of documenting patients' reports of dental exams can be maintained and can help providers to encourage patients to follow through on needed exams.



HP2020 Objective: 61.2% of diabetes patients receive an annual dental exam.

Description of Graphic: In 2007-2011, 27-29% of audited urban patients had a record of a recent dental exam. This is lower than the HP2020 Objective for 61% of diabetes patients to receive a dental exam each year. However, these figures may underestimate the number of patients that received dental exams if patients received exams outside the UIHOs that were not documented in patient records. Additionally, access to care may be a significant factor in a patient's ability to obtain dental services.

KEY MEASURE 3: Percent of diabetes patients identified as needing dental treatment (cleaning and caries) who received it in the past 12 months.

This key measure is not analyzable using current IHS Diabetes Audit data.

APPENDIX A

The following tables display urban aggregate data for the years 2007-2011. Both raw numbers and weighted percents are included. Because percents are rounded, the total may not add up to 100%.

Table 1. Demographics of Audited Patients with Diabetes, 2007-2011									
Year		2007		2008		2009		2010	
No. charts audited		1,156		1,788		1,970		2,132	
		No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺
Sex									
Male		451	41%	697	40%	779	41%	852	40%
Female		705	59%	1,091	60%	1,191	59%	1,280	60%
Age									
< 18 years		3	0%	8	0%	5	0%	8	1%
18-44 years		324	27%	497	28%	563	28%	608	28%
45-64 years		637	56%	988	55%	1,095	56%	1,193	56%
≥ 65 years		190	17%	295	16%	307	16%	323	16%
Diabetes Duration									
< 5 years		454	41%	693	39%	703	35%	829	39%
5 – 9 years		300	24%	453	24%	468	25%	506	26%
≥ 10 years		312	27%	465	26%	527	28%	591	29%
Not documented		90	7%	177	11%	272	13%	206	7%
Diabetes Type									
Type 1		29	3%	49	3%	36	2%	46	2%
Type 2		1,125	97%	1,736	97%	1,934	98%	2,086	98%

* Weighted Estimate

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Table 2. Vital Statistics of Audited Patients with Diabetes, 2007-2011										
Year	2007		2008		2009		2010		2011	
No. charts audited	1,156		1,788		1,970		2,132		2,432	
	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺
Body Mass Index (BMI)*										
< 25	75	7%	133	7%	134	7%	139	7%	155	7%
25 - 29	260	22%	377	21%	443	22%	447	21%	542	22%
30 - 40	541	48%	818	46%	918	47%	970	46%	1,121	46%
≥ 40	247	21%	396	21%	438	23%	524	24%	577	23%
Not tested or no valid result	33	2%	64	5%	37	2%	52	2%	37	2%
Hypertension^										
Yes	804	72%	1,248	70%	1,433	74%	1,528	74%	1,778	73%
No	348	28%	528	29%	537	26%	604	26%	654	27%
Not tested or no valid result	4	0%	12	1%	0	0%	0	0%	0	0%
Blood Pressure (mmHg)										
<130/<80	442	41%	666	37%	795	41%	968	46%	988	41%
130/80 - <140/<90	328	30%	505	30%	514	28%	608	30%	750	30%
140+/90+	169	15%	309	16%	331	17%	393	17%	451	19%
Not tested or no valid result	217	14%	308	16%	330	13%	163	7%	243	10%

⁺ Weighted Estimate

*Weight in kilograms/(height in meters)²; normal < 25, overweight 25-29, obese ≥30

[^]Documented diagnosis or taking prescription medication

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Table 3. Exams in Past Year among Audited Patients with Diabetes, 2007-2011										
Year	2007		2008		2009		2010		2011	
No. charts audited	1,156		1,788		1,970		2,132		2,432	
	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺
Eye Exam										
Yes	534	45%	856	45%	886	43%	901	39%	998	42%
No	606	54%	877	51%	1,039	54%	1,166	58%	1,366	55%
Refused	16	1%	40	3%	45	2%	64	3%	68	3%
Not documented	0	0%	15	1%	0	0%	1	0%	0	0%
Foot Exam										
Yes	789	71%	1,210	69%	1,257	67%	1,379	67%	1,626	66%
No	350	28%	557	30%	695	32%	735	32%	789	34%
Refused	15	1%	13	1%	18	1%	17	1%	17	1%
Not documented	2	0%	8	1%	0	0%	1	0%	0	0%
Dental Exam										
Yes	372	27%	535	27%	621	29%	612	27%	710	28%
No	759	72%	1,160	67%	1,269	67%	1,432	70%	1,632	69%
Refused	24	1%	70	4%	80	4%	86	4%	90	3%
Not documented	1	0%	23	2%	0	0%	2	0%	0	0%

⁺ Weighted Estimate

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Year	2007		2008		2009		2010		2011	
No. charts audited	1,156		1,788		1,970		2,132		2,432	
	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺
Diet Instruction										
By registered dietitian only	215	18%	336	20%	326	17%	376	19%	340	16%
By other staff only	426	36%	652	32%	789	36%	942	42%	1,024	41%
By both RD and other	166	10%	187	7%	229	11%	273	13%	249	9%
No diet instruction	338	34%	581	38%	575	32%	493	25%	769	33%
Refused	10	1%	25	2%	51	4%	47	1%	50	2%
Not documented	1	0%	7	1%	0	0%	1	0%	0	0%
Exercise Instruction										
Yes	745	59%	1,099	56%	1,269	61%	1,467	67%	1,511	62%
No	394	40%	655	42%	667	37%	621	32%	844	36%
Refused	16	1%	24	2%	34	2%	43	1%	76	2%
Not documented	1	0%	10	1%	0	0%	1	0%	1	0%
Diabetes Education (other)										
Yes	920	79%	1,317	70%	1,483	71%	1,693	79%	1,909	77%
No	226	21%	433	28%	449	25%	400	20%	483	22%
Refused	10	1%	26	2%	38	3%	38	1%	40	2%
Not documented	0	0%	12	1%	0	0%	1	0%	0	0%

* Weighted Estimate

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Year	2007		2008		2009		2010		2011	
No. charts audited	1,156		1,788		1,970		2,132		2,432	
	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺
Influenza Vaccine in Past Year										
Yes	633	56%	1,099	60%	1,191	60%	1,122	55%	1,360	56%
No	451	39%	557	32%	639	33%	889	40%	909	38%
Refused	70	6%	118	7%	140	7%	119	5%	163	6%
Not tested or no valid result	2	0%	14	1%	0	0%	2	0%	0	0%
Pneumococcal Vaccine Ever										
Yes	682	60%	1,103	62%	1,277	65%	1,351	64%	1,640	67%
No	437	37%	615	34%	618	31%	711	32%	704	30%
Refused	35	3%	51	3%	75	4%	68	3%	87	3%
Not tested or no valid result	2	0%	19	1%	0	0%	2	0%	1	0%
Td Vaccine in Past 10 Years										
Yes	671	63%	1,090	63%	1,207	64%	1,311	66%	1,582	63%
No	463	36%	657	35%	733	34%	780	33%	779	34%
Refused	16	1%	23	1%	30	1%	39	1%	69	2%
Not tested or no valid result	6	0%	18	1%	0	0%	2	0%	2	0%
TB Status (PPD)										
Positive, INH complete	69	5%	66	3%	82	4%	65	3%	87	3%
Positive, not treated	56	5%	78	4%	93	5%	67	3%	106	5%
Negative, up to date	349	27%	482	22%	509	23%	497	22%	592	22%
Negative, outdated	60	5%	65	4%	74	3%	96	4%	116	4%
Negative, date unknown	17	1%	24	1%	58	3%	108	3%	22	1%
Status unknown	605	57%	1,044	64%	1,154	62%	1,299	66%	1,473	63%
Not tested or no valid result	0	0%	29	2%	0	0%	0	0%	36	2%

* Weighted Estimate

Table 6. Laboratory Services among Audited Patients with Diabetes, 2007-2011										
Year	2007		2008		2009		2010		2011	
No. charts audited	1,156		1,788		1,970		2,132		2,432	
	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺
Labs Done in Past Year										
A1c	1,048	94%	1,647	93%	1,806	93%	1,957	93%	2,282	94%
Total cholesterol	911	81%	1,363	78%	1,484	78%	1,577	76%	1,907	76%
LDL cholesterol	863	78%	1,317	76%	1,475	76%	1,542	73%	1,851	73%
Triglycerides	918	82%	1,365	79%	1,501	79%	1,570	76%	1,911	76%

* Weighted Estimate

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Table 7. Laboratory Results among Audited Patients with Diabetes, 2007-2011										
Year	2007		2008		2009		2010		2011	
No. charts audited	1,156		1,788		1,970		2,132		2,432	
	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺
A1c (%)										
<7.0	454	40%	706	40%	742	39%	775	35%	904	37%
7.0 – 9.5	396	37%	626	36%	700	37%	764	38%	907	37%
> 9.5	198	17%	315	18%	364	17%	418	20%	471	19%
Not tested or no valid result	108	6%	141	7%	164	7%	175	7%	150	6%
Mean A1c ⁺	7.8		7.9		7.9		8.0		8.0	
Total Cholesterol (mg/dl)										
< 200	628	57%	937	56%	1,046	57%	1,167	58%	1,434	57%
200 – 239	207	18%	283	15%	296	14%	272	12%	332	14%
≥ 240	76	6%	143	8%	142	6%	138	6%	141	6%
Not tested or no valid result	245	19%	425	22%	486	22%	555	24%	525	24%
Mean total cholesterol ⁺	181		182		179		179		179	
LDL Cholesterol (mg/dl)										
< 100	469	44%	690	41%	800	43%	841	41%	1,053	42%
100 – 129	252	22%	375	22%	417	21%	459	22%	547	22%
130 – 160	101	8%	174	9%	187	9%	177	8%	174	7%
> 160	38	3%	78	4%	71	3%	65	3%	77	3%
Not tested or no valid result	296	22%	471	24%	495	24%	590	27%	581	27%
Mean LDL cholesterol ⁺	98		100		98		97		98	
Triglyceride (mg/dl)										
< 150	405	37%	622	37%	665	36%	717	35%	893	35%
150 – 199	190	18%	284	17%	342	18%	336	15%	377	15%
200 – 400	261	23%	365	21%	380	20%	418	20%	529	21%
> 400	62	5%	94	5%	114	6%	99	5%	112	5%
Not tested or no valid result	238	18%	423	21%	469	21%	562	24%	521	24%
Mean triglyceride ⁺	198		192		204		205		195	

⁺ Weighted Estimate

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Table 8. Use of Standard Therapies among Audited Patients with Diabetes, 2007-2011										
Year	2007		2008		2009		2010		2011	
No. charts audited	1,156		1,788		1,970		2,132		2,432	
	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺
Diabetes Treatment										
Diet/Exercise alone	142	9%	174	8%	214	8%	214	8%	284	10%
Oral/Injectible agent only	647	55%	1,031	56%	1,106	56%	1,154	53%	1,293	52%
Insulin only	122	13%	232	16%	208	13%	253	15%	277	14%
Insulin and Oral/Injectible agent	208	20%	325	20%	399	21%	445	21%	540	23%
Refused/Unknown	28	1%	26	1%	24	1%	66	4%	33	1%
Not documented	9	1%	0	0%	19	1%	0	0%	5	0%
Chronic Aspirin*										
Yes	747	72%	1,210	74%	1,251	68%	1,296	64%	1,546	65%
No/Refused	369	28%	485	25%	631	32%	745	36%	785	35%
Not documented	0	0%	14	1%	0	0%	0	0%	4	0%
Lipid Lowering Agent										
Yes	613	57%	953	55%	1,048	57%	1,077	54%	1,352	56%
No/Refused	542	43%	818	44%	922	43%	1,055	46%	1,080	44%
Not documented	1	0%	17	1%	0	0%	0	0%	0	0%
ACE Inhibitor/ARBs										
Yes	773	72%	1,262	71%	1,388	72%	1,471	69%	1,681	69%
No/Refused	382	28%	513	28%	582	28%	661	31%	748	31%
Not documented	1	0%	13	1%	0	0%	0	0%	3	0%

* Weighted Estimate

*Among patients 30 years and older

APPENDIX A

Table 9. Tobacco Use among Audited Patients with Diabetes, 2007-2011										
Year	2007		2008		2009		2010		2011	
No. charts audited	1,156		1,788		1,970		2,132		2,432	
	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺
Current Tobacco Use										
User	349	32%	534	29%	602	31%	616	29%	741	30%
Non-user	746	65%	1,191	68%	1,233	63%	1,432	66%	1,569	66%
Not documented	61	4%	63	3%	135	6%	84	5%	122	4%
Cessation Referral*										
Yes	219	57%	326	59%	415	64%	442	72%	481	69%
No	112	38%	163	29%	127	21%	142	23%	230	26%
Refused	15	5%	36	9%	60	15%	32	4%	29	5%
Not documented	3	1%	9	2%	0	0%	0	0%	1	0%

* Weighted Estimate

*Among current tobacco users

Table 10. Depression among Audited Patients with Diabetes, 2007-2011										
Year	2007		2008		2009		2010		2011	
No. charts audited	1,156		1,788		1,970		2,132		2,432	
	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺	No.	% ⁺
Active Diagnosis of Depression										
Yes	363	33%	616	31%	715	32%	648	29%	787	32%
No	792	67%	1,160	68%	1,255	68%	1,483	71%	1,641	68%
Not documented	1	0%	12	1%	0	0%	1	0%	4	0%
Depression Screening*										
Yes	384	46%	637	55%	819	68%	1,047	67%	1,331	77%
No	399	54%	472	38%	424	31%	427	33%	293	22%
Refused	5	0%	12	1%	12	1%	9	0%	15	1%
Not documented	4	1%	39	5%	0	0%	0	0%	2	0%

* Weighted Estimate

*Among those without diagnosis of depression

APPENDIX B

Comparison to National Standards: GPRA and Healthy People 2010

Comparing the urban aggregate results to national goals may provide important information about progress toward providing diabetes-related services and achieving specific health outcomes. The table below presents urban aggregate results as they compare with IHS GPRA Goals and HP targets.

Year	2007	2008	2009	2010	2011	2011 IHS GPRA Goal	HP2020 Objective
No. charts audited	1,156	1,788	1,970	2,132	2,432		
	% ⁺	% ⁺	% ⁺	% ⁺	% ⁺		
A1c < 7.0%	40.0%	40.1%	39.1%	34.8%	36.7%	36.0%	58.9%
A1c > 9.5% (lower is better)	17.1%	17.5%	17.3%	20.3%	19.5%	20.0%	14.6%
Blood pressure (mmHg) <130/80	41.3%	37.5%	41.5%	45.6%	41.0%	39.0%	57.0%
LDL cholesterol assessed	78.1%	75.9%	76.5%	73.1%	73.5%	76.0%	
Retinopathy assessment (eye exam)	44.9%	45.3%	43.2%	39.1%	41.6%	50.1%	58.7%
Foot exam	71.0%	68.6%	66.9%	67.2%	65.6%		74.8%
Dental exam	26.6%	27.3%	29.3%	26.8%	27.6%		61.2%

+Weighted estimate

Government Performance Results Act (GPRA)

Passed in 1993, the Government Performance Results Act (GPRA) was designed to address a broad range of concerns regarding government accountability and performance in the management of government-funded public needs projects. The general purpose of GPRA is to improve the confidence of Americans in the Federal government by holding Federal agencies accountable for achieving program results.¹¹ IHS reports on a range of health topics for GPRA, including diabetes.

In 2011, there were six GPRA goals related to diabetes and two additional diabetes measures that are reported to Congress. These measures are intended to gauge progress toward improving diabetes care and related services. Please note that official GPRA results are prepared and distributed by the IHS Planning and Evaluation office. For more information about the IHS GPRA targets and measurements, visit: http://www.ihs.gov/NonMedicalPrograms/quality/index.cfm?module=gpra_list.

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GPRA Indicators for Diabetes and Definitions	Target
Poor Glycemic Control Last recorded hemoglobin A1c > 9.5%	20%
Ideal Glycemic Control Last recorded hemoglobin A1c < 7.0%	36%
Blood Pressure Control Mean of last three recorded blood pressures <130/<80mmHg	39%
Assessed for Dyslipidemia Low density lipoprotein (LDL) cholesterol tested in preceding 12 months	76%
Assessed for Nephropathy Both an estimated glomerular filtration rate (eGFR) and a quantitative urinary protein assessment in preceding 12 months	35%
Assessed for Retinopathy Retinal exam documented in the preceding 12 months	50.1%

Health People 2020

Healthy People 2020 (HP2020) is a national health promotion and disease prevention initiative established by the U.S. Department of Health and Human Services. HP2020 was designed to measure health-related outcomes and progress over time and was developed through a broad consultation process, built on scientific knowledge and other government health initiatives pursued over the past two decades. HP2020 Objectives are action statements toward which the nation, communities, institutions and local groups can work.

HP2020 provides science-based, 10-year national objectives for improving the health of all Americans. HP2020 identifies 42 major focus areas including one that addresses diabetes. The diabetes focus area and its goals to reduce disease and improve the quality of life are further detailed within 16 objectives, five of which can be tracked using data from the Diabetes Audit.

Healthy People 2020 goals and objectives have been released and are now available. For more information, visit www.healthypeople.gov.

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HP2020 Focus Area Objectives and Definitions	Target
D-1. New cases of diabetes Reduce the annual number of new cases of diagnosed diabetes in the population.	7.2 new cases per 1,000 population aged 18 to 84 years
D-2 Diabetes-related deaths* Reduce the death rate among the population with diabetes.	
D-2.1 Reduce the rate of all-cause mortality among the population with diabetes.	N/A
D-2.2 Reduce the rate of cardiovascular disease deaths in persons with diagnosed diabetes.	N/A
D-3 Diabetes deaths Reduce the diabetes death rate.	65.8 deaths per 100,000 population
D-4 Lower extremity amputations^ Reduce the rate of lower extremity amputations in persons with diagnosed diabetes.	N/A
D-5 Glycemic control Improve glycemic control among the population with diagnosed diabetes.	
D-5.1 Reduce the proportion of the diabetic population with an A1c value greater than 9%.	14.6%
D-5.2 Increase the proportion of the diabetic population with an A1c value less than 7%.	58.9%
D-6 Lipid control* Improve lipid control among persons with diagnosed diabetes.	N/A
D-7 Blood pressure control Increase the proportion of the population with diagnosed diabetes whose blood pressure is under control.	57.0%
D-8 Annual dental examinations Increase the proportion of persons with diagnosed diabetes who have at least an annual dental examination.	61.2%
D-9 Annual foot examinations Increase the proportion of adults with diabetes who have at least an annual foot examination.	74.8%
D-10 Annual dilated eye examinations Increase the proportion of adults with diabetes who have an annual dilated eye examination.	58.7%
D-11 Glycosylated hemoglobin measurement Increase the proportion of adults with diabetes who have a glycosylated hemoglobin measurement at least twice a year.	71.1%
D-12 Annual urinary microalbumin measurement Increase the proportion of persons with diagnosed diabetes who obtain an annual urinary microalbumin measurement.	37.0%
D-13 Self-blood glucose-monitoring Increase the proportion of adults with diabetes who perform self-blood glucose-monitoring at least once daily.	70.4%

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D-14 Diabetes education Increase the proportion of persons with diagnosed diabetes who receive formal diabetes education.	62.5%
D-15 Diagnosed diabetes Increase the proportion of persons with diabetes whose condition has been diagnosed.	80.1%
D-16 Prevention behaviors among persons with pre-diabetes Increase prevention behaviors in persons at high risk for diabetes with pre-diabetes.	
D-16.1 Increase the proportion of persons at high risk for diabetes with pre-diabetes who report increasing their levels of physical activity.	49.1%
D-16.2 Increase the proportion of persons at high risk for diabetes with pre-diabetes who report trying to lose weight.	55.0%

* Developmental objective; these objectives do not have targets.

^ This measure is being tracked for informational purposes only. If warranted, a target will be set during the decade.

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