



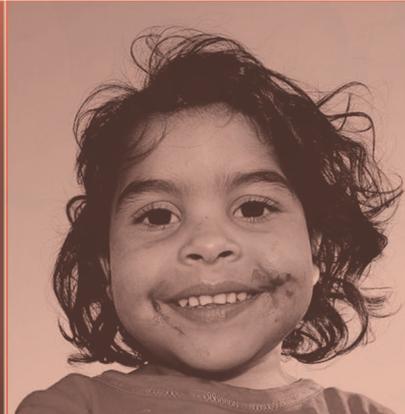
**Urban Diabetes Care and Outcomes**  
**Summary Report: Aggregate Results from**  
**Urban Indian Health Organizations, 2008-2012**

*May 2013*





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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## ACKNOWLEDGEMENTS



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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.



# EXECUTIVE SUMMARY

## Introduction

The Urban Indian Health Institute (UIHI) developed the Urban Diabetes Care and Outcomes Summary Report to provide a description of the Indian Health Service (IHS) Diabetes Care and Outcomes Audit (Diabetes 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. Included in the report are select key measures from the Best Practice Guidelines, with accompanying aggregated data from participating UIHOs.

## Methods

The data for this analysis were obtained from the Diabetes Audit performed at participating UIHOs from 2008-2012. Data collected and submitted to the 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

For the 2012 Diabetes Audit, there were 3,603 American Indian/Alaska Native (AI/AN) patients in diabetes registries across 30 UIHO facilities. Below are some of the key findings from the 2008-2012 urban Diabetes Audit analysis:

- There was a 12% increase in the percentage of audited urban patients with diabetes with a mean blood pressure <130/<80, from 37% in 2008 to 42% in 2012.
- Mean LDL cholesterol decreased 3% during the five-year time period, from 100 mg/dl in 2008 to 97 mg/dl in 2012. In 2012, 75% of audited patients had their LDL cholesterol assessed, surpassing the 2012 IHS GPRA Goal for 70.3% of diabetes patients to have an LDL cholesterol assessment each year.
- Although rates of depression remained constant during the 2008-2012 time period, the percentage of audited patients without a current depression diagnosis who were screened for depression increased 39%, from 55% in 2008 to 77% in 2012.
- In 2012, 65% of audited patients received both nutrition and physical activity education, a 33% increase from 49% in 2008.

## Discussion

This report summarizes trends in diabetes services and clinical outcomes among AI/AN patients with diabetes at UIHOs participating in the Diabetes Audit from 2008-2012. These findings do not reflect changes experienced by individual patients, but instead highlight areas of progress and challenge across patients seen at urban facilities. Over the 2008-2012 period, UIHOs have maintained or experienced marked improvements in important diabetes clinical care outcomes, such as LDL cholesterol, mean blood pressure, and receipt of critical screening and education services. Urban diabetes programs also have struggled to effect change in specific areas. Each facility is unique, and it is difficult to determine why some indicators are not improving over time. These data bring awareness to UIHO staff and other stakeholders about challenges and opportunities in diabetes care across the urban programs. This report can hopefully motivate information-sharing around potential innovations or areas of need in clinical care, educational interventions, data collection or other efforts.

# INTRODUCTION

## Background

Diabetes Mellitus is a major public health concern among American Indian and Alaska Natives (AI/AN), and the prevalence of diabetes among AI/AN adults is more than twice that of non-Hispanic white adults.<sup>1</sup> In an effort to reduce the burden of diabetes among AI/ANs, Congress established the Special Diabetes Program for Indians (SDPI) in 1997.<sup>2</sup> SDPI provides funding specifically to aid in the prevention and treatment of diabetes in AI/AN communities.

To better understand the trends in diabetes services and outcomes among AI/AN patients with diabetes, Indian health agencies nationwide conduct an annual medical chart audit, 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 AI/ANs who receive diabetes care and services through the Indian health system.

The Urban Indian Health Institute (UIHI) developed the Urban Diabetes Care and Outcomes Summary Report to provide a summary 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). The UIHI collaborated with the IHS DDTP in the development of this report.

### *Urban American Indians/Alaska Natives 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 reservations into urban centers, both by choice and as a result of federal policy.<sup>3</sup> These individuals left reservation lands for educational, employment or housing opportunities, as well as through forced relocation and termination policies. Currently, 71% of AI/ANs reside in urban areas.<sup>4</sup> 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.<sup>3</sup> 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.

Urban Indian Health Organizations (UIHOs) are private, non-profit corporations that serve AI/ANs in select cities by providing a range of health and social services, from referral services to full ambulatory care. Thirty-three UIHOs, funded in part under Title V of the Indian Health Care Improvement Act, receive limited grants and contracts from the IHS to provide services to AI/ANs living in urban areas. UIHOs are located in 19 states serving individuals in approximately 100 U.S. counties, in which over 1.2 million AI/ANs reside.<sup>4</sup> UIHOs provide traditional health care services, cultural activities and a culturally appropriate environment for urban AI/ANs to receive health care. Although the scope and delivery of health care services vary among facilities, almost all receive SDPI funding to provide diabetes treatment and prevention services.

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.<sup>5</sup> 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%).<sup>6</sup> And 74% of AI/ANs in the combined service area report

# INTRODUCTION

having medical insurance compared with 82% of the general population.<sup>5</sup>

## Methods

### *Data Collection*

The data for this analysis were obtained from the IHS Diabetes Care and Outcomes Audit performed at UIHOs that participated in the Diabetes Audit from 2008 through 2012. The IHS Diabetes Audit is based on consensus-derived standards of care, also known as the Standards of Care and Clinical Practice Recommendations: Type 2 Diabetes.<sup>7</sup> These standards were first developed in 1986, and are regularly reviewed and updated by the IHS DDTP. Health care facilities utilize Diabetes Audit data to 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.<sup>8</sup> 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 and 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 the IHS. Data used in this report were de-identified and provided to the UIHI for analysis and reporting purposes.

### *Data Analysis*

The data examined for this report were collected for the annual Diabetes Audit of medical records performed at participating UIHOs from 2008-2012. 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 percentages over time were not performed. A weighting procedure was applied to the UIHO aggregate estimates. This is necessary when combining data from multiple facilities because facilities sample differing proportions of their patients with diabetes. Stata version 10.1 (Stata Corp., College Station, Texas) was used to perform all statistical analyses.

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## *Limitations*

This analysis has several limitations. First, the Diabetes Audit provides a snapshot of the overall progress of patients with diabetes across UIHOs. These data cannot be used to track individual patients. Trends over time must be interpreted carefully, as the patient population in the registries and those audited may be different from year-to-year. Any changes in patient outcomes seen over time may be the result of changes in the patient population and not necessarily a result of changes in care at the facility. Provided that patient selection was random, as outlined in the Diabetes Audit instructions, the patients audited should be representative of those patients seen at the urban facilities 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 proportion of missing values; this can affect the results. Reducing the amount of missing data at each facility will improve the quality of future reports. The proportion of missing data for a given facility may be related to patients' use of multiple health care providers in different health care systems, making it challenging for the facility to capture data.

Third, limited demographic data are available for registry patients. The Diabetes 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 additional context around diabetes patient outcomes.

Finally, there may be important indicators not captured by the Diabetes Audit that better represent the achievements and challenges of the UIHO diabetes programs, including disability, death, retinopathy and neuropathy. The IHS Best Practices are a resource to review the Best Practices and key measures not addressed in this report, and to identify other sources of data to monitor progress on those indicators. Identifying and collecting these additional indicators may provide a more detailed understanding of how each program is doing in reaching its goals. Examples of potential indicators include setting and achieving individual patient goals, diet changes and cultural connectedness.

## **About the Urban Indian Health Institute (UIHI)**

The UIHI, a division of the Seattle Indian Health Board, provides centralized nationwide management of health surveillance, research and policy regarding the health status of urban AI/AN people. The UIHI serves the national network of 33 UIHOs through scientific inquiry, technology and information.

The UIHI offers technical assistance to UIHOs. Here are some of the many ways the UIHI can assist UIHO diabetes programs:

- ✓ Develop talking points based on UIHO aggregate data or facility-level diabetes outcomes data;
- ✓ Offer technical assistance to translate audit findings for use in funding proposals;
- ✓ Provide additional data or graphs on subgroups of interest (e.g. mean A1c values for patients with depression);
- ✓ Discuss areas for improvement in data collection or data entry practices; and
- ✓ Provide guidance for the analysis or collection of other sources of data on diabetes patients.

For questions or comments about the UIHI or the Diabetes Audit Summary Report please call (206) 812-3030 or email [info@uihi.org](mailto:info@uihi.org).

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## Report Content

This report's format is based on the 2011 IHS Diabetes Best Practices.<sup>9</sup> First developed in 2001 by a workgroup coordinated by the IHS DDTP, the Best Practices are based on the latest scientific research as well as diabetes success stories and experiences within AI/AN communities. The Best Practices are focused on both clinical (e.g. weight management) and community (e.g. school health) settings. 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 Practices.
- ✓ **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 UIHO data is presented, along with a brief description of the results. For Best Practice II: Cardiovascular Disease, one "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. Other sources of data are needed to measure progress on those key measures that cannot be evaluated with Diabetes Audit data.

When applicable, 2012 IHS Government Performance and Results Act (GPRA) Goals<sup>10</sup> and Healthy People 2020 (HP2020) Objectives<sup>11</sup> also are included. These are universal targets and not treatment targets for individual patients. They are provided to help describe how patients collectively across UIHO diabetes programs compare with national benchmarks. Although 2012 GPRA indicators are presented in this report, these indicators have changed for 2013 and will be updated in future reports. Please note that official GPRA results are prepared and distributed by the IHS Planning and Evaluation office.

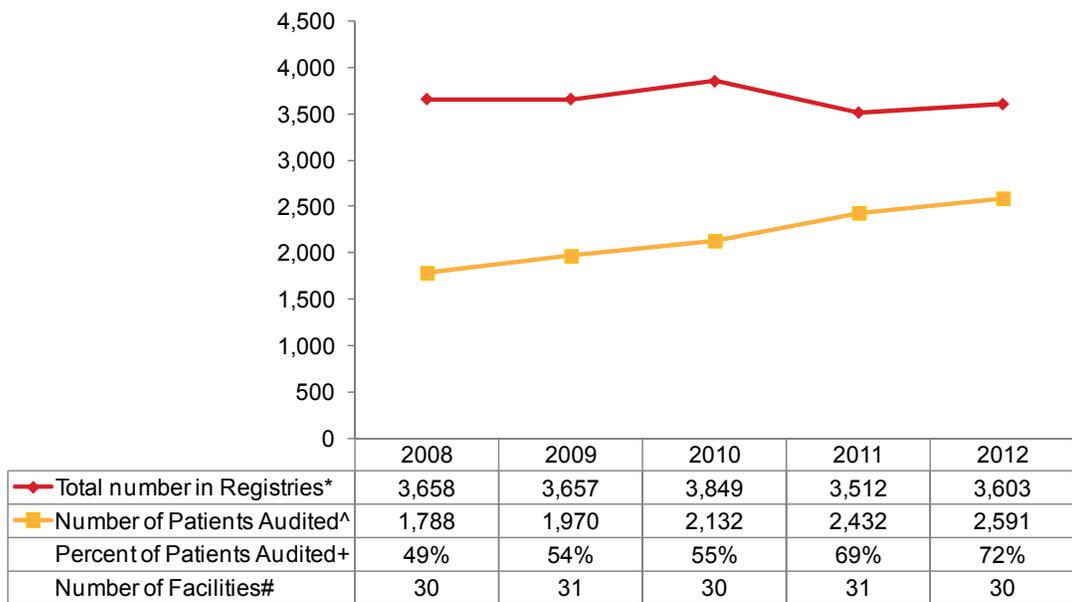
- ✓ **Appendix A** contains data tables with UIHO aggregate data over the past five years (2008-2012).
- ✓ **Appendix B** contains background information about GPRA and HP2020.

# 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**

**Patients in Diabetes Registries, Urban Indian Health Organizations, 2008 - 2012**



\* Sum of all patients in each registry

^ Sum of all patients in Audit

+ (Number of patients audited/number of patients in registry)×100

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

**Description of Graphic:** For the 2012 Diabetes Audit, there were 3,603 AI/AN patients in diabetes registries across 30 UIHO facilities. The percent of diabetes patients audited from diabetes registries has increased from 49% in 2008 to 72% in 2012. This change is possibly due to an increasing number of UIHOs moving from a manual audit to an electronic audit, where data are extracted from an electronic health record system and then uploaded to a central database via the WebAudit’s upload tool. This allows a larger number of patients to be included without increased effort or resources.

# BEST PRACTICE I: Adult Weight Management

Overweight and obesity can lead to poor health outcomes in individuals with diabetes by increasing insulin resistance and raising blood glucose levels.<sup>12</sup> Diet and exercise together provide the best approach for weight loss and maintenance. Even modest weight loss can improve glycemic outcomes and have a beneficial effect on blood pressure and blood lipids for individuals with diabetes and insulin resistance.<sup>13</sup> On a community level, changes to physical and food environments may provide opportunities to eat healthy foods and to be physically active on a daily basis.<sup>14</sup>

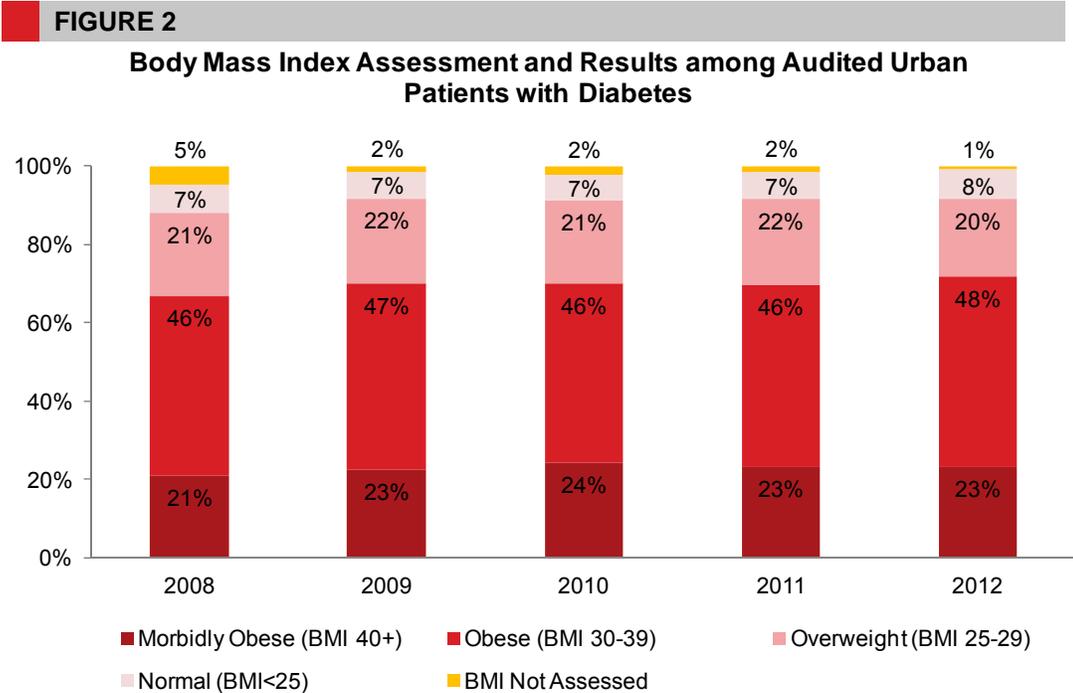
## **Key Clinical Practice Recommendations Related to Adult Weight Management**

- 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

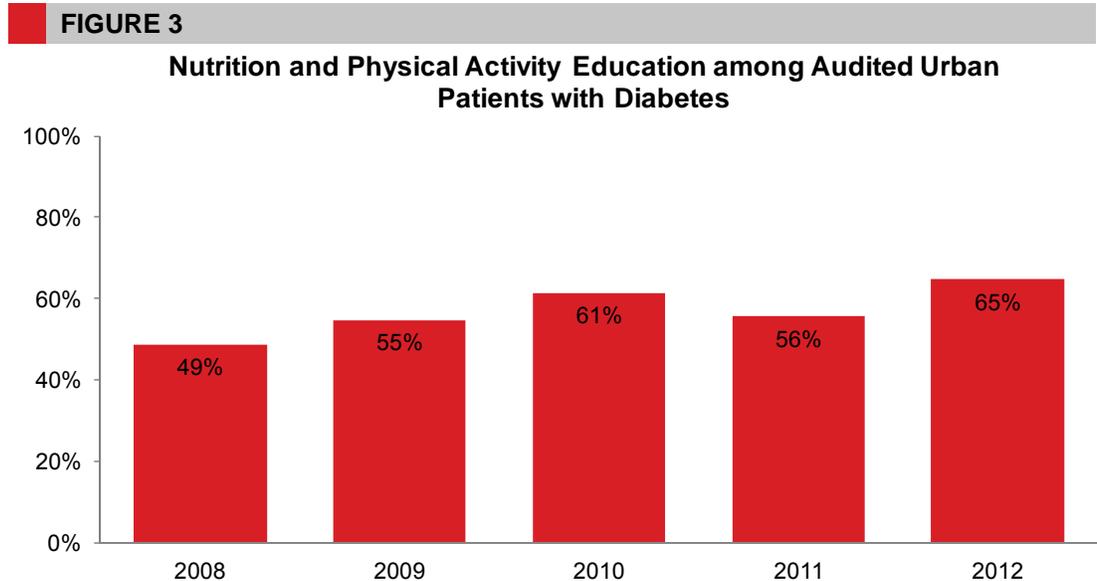
**KEY MEASURE 1:** Percent of diabetes patients with a documented assessment for overweight or obesity in the past 12 months.



**Description of Graphic:** In 2012, almost half (48%) of audited patients were considered obese (BMI 30-39) and 23% were considered morbidly obese (BMI 40+). Rates are similar across the five-year period. BMI assessment is almost universal among audited patients, with only 1% of patients not having a BMI recorded in 2012, down from 5% not assessed in 2008.

# 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.



**Description of Graphic:** In 2012, 65% of audited patients received both nutrition and physical activity education, a 33% increase from 2008. An even greater percentage received just nutrition or physical activity education alone: In 2012, 73% of audited patients received nutrition education from a registered dietitian or other provider, and 69% received exercise instruction (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.*

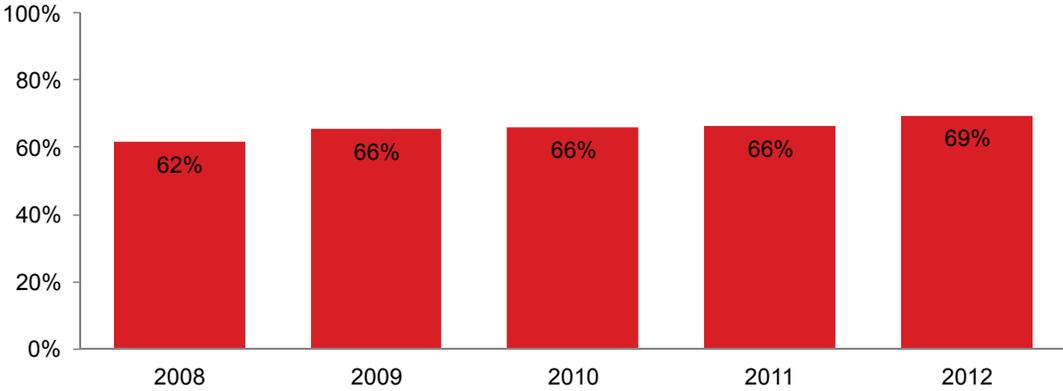
# BEST PRACTICE I: Adult Weight Management

**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)

**FIGURE 4**

**Laboratory Assessment of Cardiometabolic Risk among Audited Urban Patients with Diabetes\***



\* Does not include fasting glucose

**Description of Graphic:** In 2012, 69% of audited patients had laboratory assessments for cardiometabolic risk that included non-HDL-cholesterol, triglycerides, LDL- and HDL-cholesterol, and Hemoglobin A1c. This is a 13% increase from 2008, where 62% of audited patients had assessments.

# BEST PRACTICE II: Cardiovascular Disease

Cardiovascular Disease (CVD) is the leading cause of death in the United States.<sup>15</sup> Adults with diabetes have heart disease death rates about two to four times higher than adults without diabetes.<sup>16</sup> Tobacco use, poor diet, obesity, alcohol use, high cholesterol and other risk factors can put individuals at a higher risk for developing CVD.<sup>17</sup> CVD is the leading cause of death for AI/AN adults.<sup>18</sup>

## **Key Clinical Practice Recommendations Related to Cardiovascular Disease**

### *Lifestyle Management*

- Assess tobacco use status, provide counseling and implement a tobacco cessation program.
- Assess lifestyle factors and provide medical nutrition therapy.
- 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*

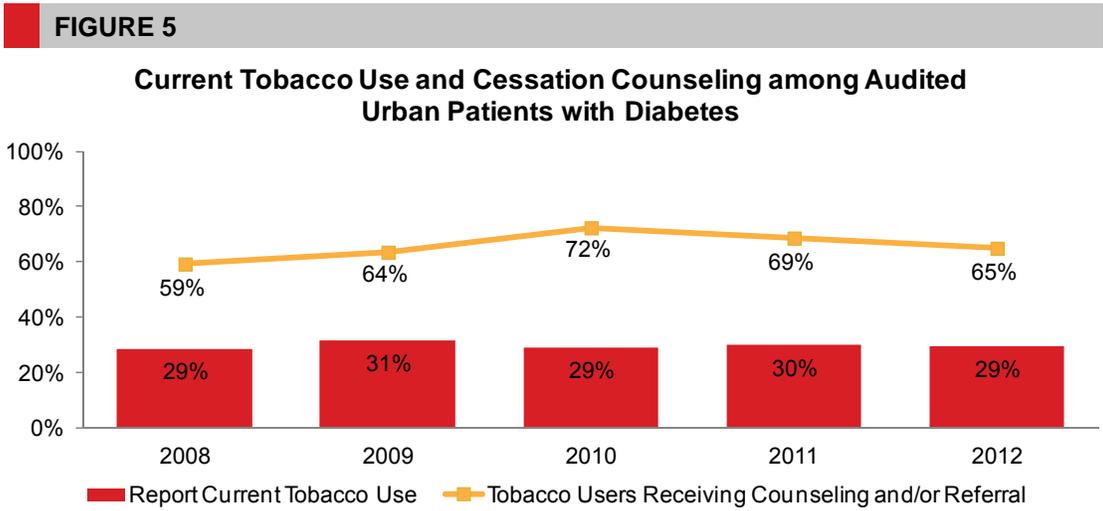
- Assess and treat high blood pressure (hypertension) to appropriate targets.
- Assess and treat lipids to appropriate targets.
- Assess and treat albuminuria to appropriate targets.
- Assess and treat blood glucose to appropriate targets.
- Provide aspirin and antiplatelet therapy for appropriate individuals.
- 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 tobacco use 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.



**Description of Graphic:** From 2008 to 2012, there was little change in the percentage of patients who used tobacco, with approximately 30% of audited patients reporting current tobacco use. In 2012, 65% of audited patients who used tobacco received cessation counseling and/or referral for counseling. The percentage of tobacco users who received counseling has fluctuated from year to year, but has increased 10% since 2008, where 59% of tobacco users received cessation counseling. The Diabetes Audit does not contain information about the percentage of patients who quit using tobacco after cessation counseling or for other reasons, but it may be inferred from the consistent rates of tobacco usage over the five-year period that few tobacco users are quitting.

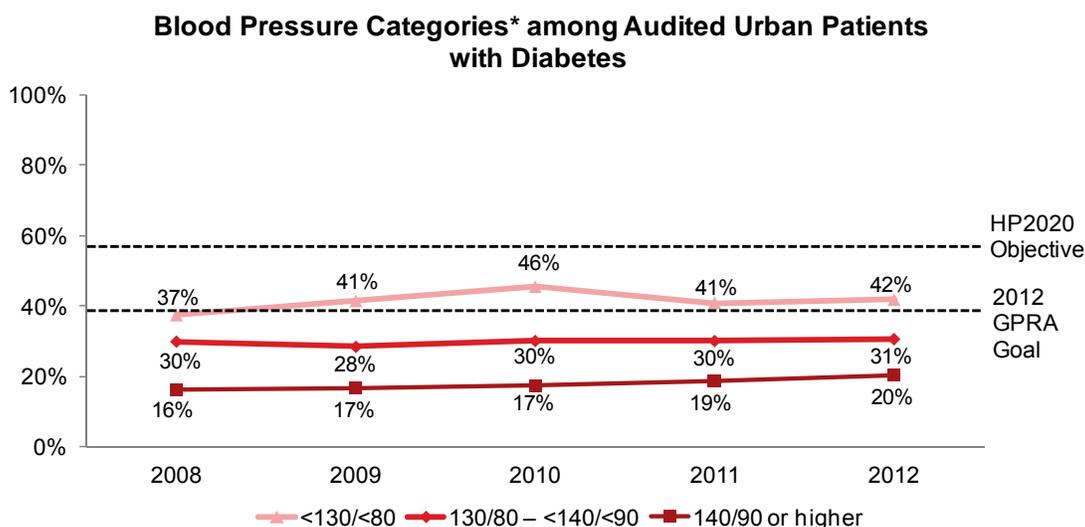
# BEST PRACTICE II: Cardiovascular Disease

**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.

**FIGURE 6**



**2012 IHS GPRA Goal:** 38.7% of diabetes patients achieve blood pressure control (<130/<80).

**HP2020 Objective:** 57% of diabetes patients achieve blood pressure control (<130/<80).

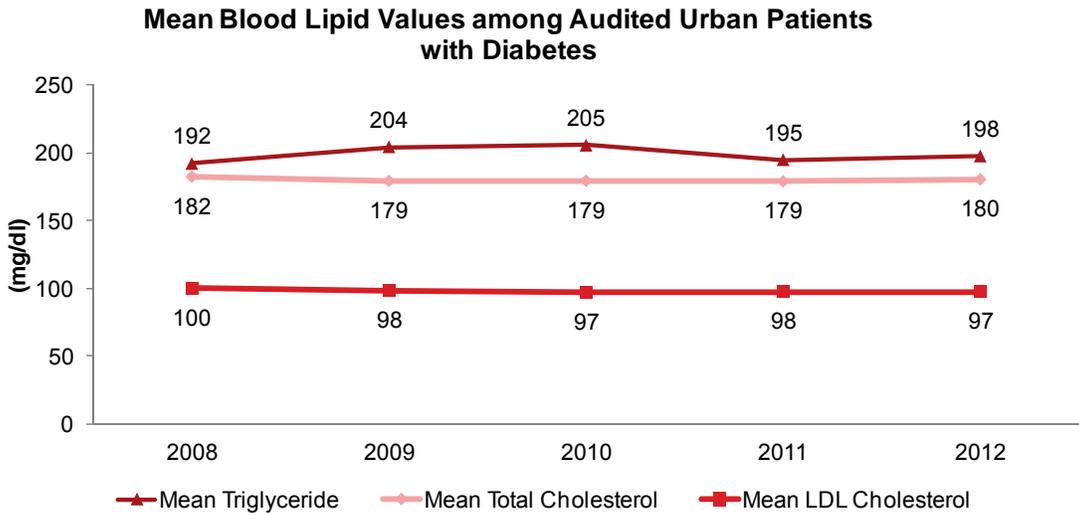
**Description of Graphic:** In 2012, 42% of audited patients had mean blood pressure values at <130/<80, 31% were between 130/80 and <140/<90, and 20% were 140/90 or higher. These rates were similar throughout the five-year period, although the percentage of patients with BP <130/<80 increased 12%, from 37% in 2008 to 42% in 2012. In 2012, the percent of diabetes patients with blood pressure <130/<80 reached the 2012 IHS GPRA Goal but was below the HP2020 objective for 57% of diabetes patients to achieve blood pressure control. However, GPRA and HP2020 goals are universal targets and should not be interpreted as treatment goals for individual patients. Individualized blood pressure treatment goals should be set for patients based on age, duration of diabetes, comorbidities and other factors.

# 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.*

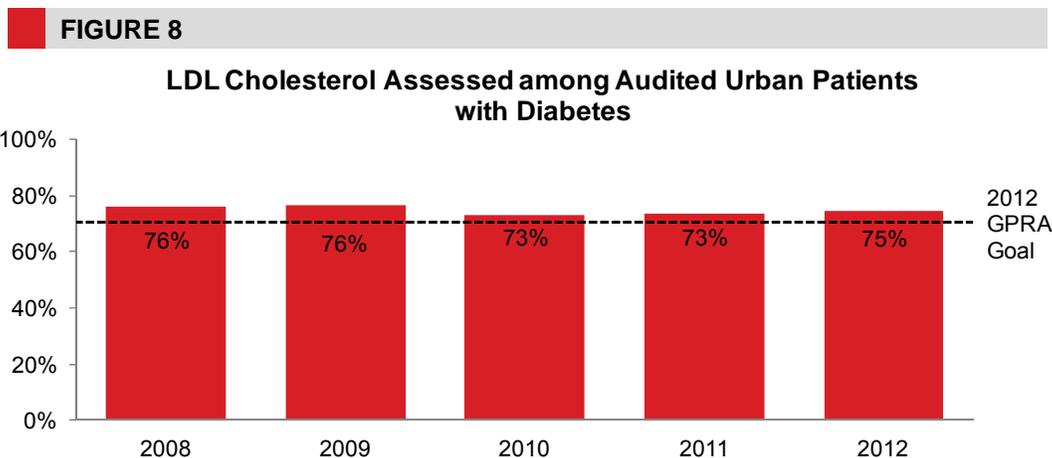
**KEY MEASURE 6:** Percent of diabetes patients who had most recent lipid measurements in the past 12 months at target.

**FIGURE 7**



**Description of Graphic:** Mean total cholesterol has remained relatively constant over the five-year period and was consistently within the targeted range (ideal total cholesterol is 200 mg/dl or less). Mean LDL cholesterol values for audited patients also have remained at or below ideal levels (less than 100 mg/dl) during the time period and have decreased slightly, from 100 mg/dl in 2008 to 97 mg/dl in 2012. However, in 2012 mean triglyceride values were 198 mg/dl, up from 192 mg/dl in 2008. Ideal triglyceride values are less than 150 mg/dl, and mean triglyceride values for audited patients have remained above that level for the five-year period.

# BEST PRACTICE II: Cardiovascular Disease



**2012 IHS GPRA goal:** 70.3% of diabetes patients receive at least one assessment of low-density lipoprotein (LDL) cholesterol annually.

**Description of Graphic:** In 2012, 75% of audited patients had their LDL cholesterol assessed, similar to previous years. This reaches the 2012 IHS GPRA goal for 70.3% of diabetes patients to receive at least one assessment of LDL cholesterol each year.

**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.*

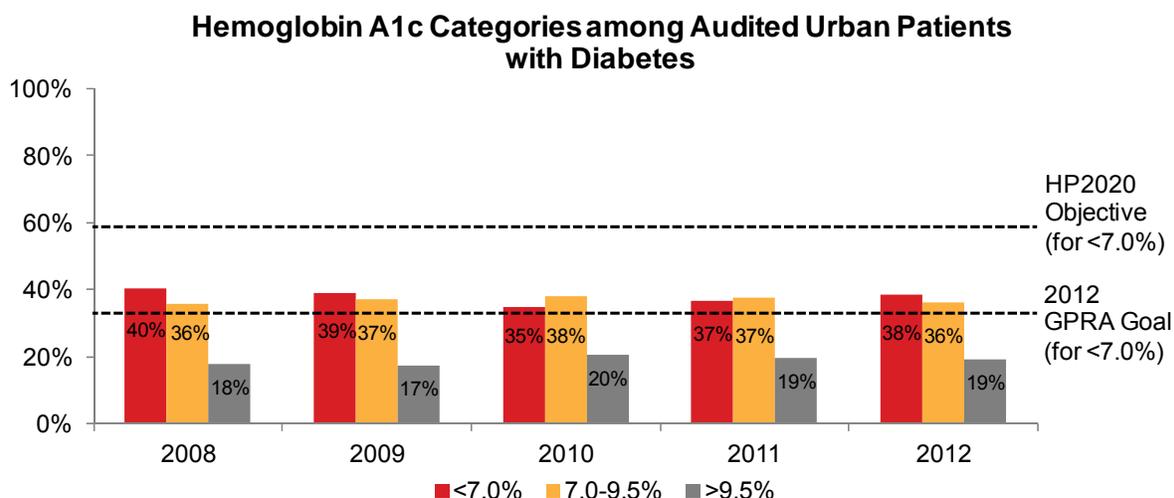
**KEY MEASURE 8:** Percent of target population with improvements in A1c in the past 12 months.

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

# BEST PRACTICE II: Cardiovascular Disease

**ALTERNATIVE MEASURE 1:** Percentage of diabetes patients who had most recent A1c in the past 12 months at target (A1c <7.0%).

**FIGURE 9**



**2012 IHS GPRG goal:** 32.7% of diabetes patients have recommended glycemic control (hemoglobin A1c < 7.0%).

**2012 IHS GPRG goal:** 18.6% (or less) of diabetes patients have poor glycemic control (hemoglobin A1c > 9.5%).\*

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

**HP2020 Objective:** 16.1% (or less) of diabetes patients have poor glycemic control (hemoglobin A1c > 9.0%).\*

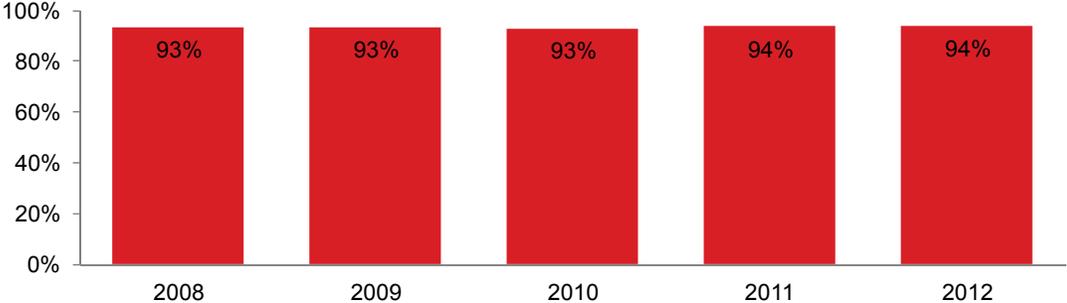
\* Not shown on graph

**Description of Graphic:** In 2012, 38% of audited patients had A1c values less than 7.0%, similar to previous years. This reached the 2012 IHS GPRG goal for 32.7% of diabetes patients to have recommended glycemic control (A1c <7.0%) but was below the HP2020 objective for 58.9% of diabetes patients to have A1c <7.0%. In 2012, 19% of audited patients had A1c>9.5%. This value did not reach the 2012 IHS GPRG goal for 18.6% or less of diabetes patients to have poor glycemic control (defined as A1c>9.5%) nor the HP2020 objective for 16.1% or less to have poor glycemic control (defined as A1c >9.0%). However, GPRG and HP2020 goals are universal targets that may not be appropriate for all patients. Hemoglobin A1c goals for individual patients should be adjusted based on duration of diabetes, comorbidities and other factors.

# BEST PRACTICE II: Cardiovascular Disease

**FIGURE 10**

**Hemoglobin A1c Assessed among Audited Urban Patients with Diabetes**



**Description of Graphic:** In 2012, 94% of audited patients were assessed for hemoglobin A1c. These rates are consistent over the five-year time period.

# BEST PRACTICE III: Chronic Kidney Disease

Chronic Kidney Disease (CKD) is the loss of kidney function caused when blood vessels in the kidneys are damaged over time and hinder the kidney's ability to filter blood, which increases waste in the body's blood supply.<sup>19</sup> 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.<sup>20</sup> Diabetes is the leading cause of kidney disease and kidney failure, and accounted for 44% of new cases of kidney failure in 2008.<sup>16</sup> The threat to those afflicted and their families is great, but CKD also impacts allocation of resources: 26% of total Medicare diabetes costs are from patients with CKD.<sup>21</sup> 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.<sup>16</sup>

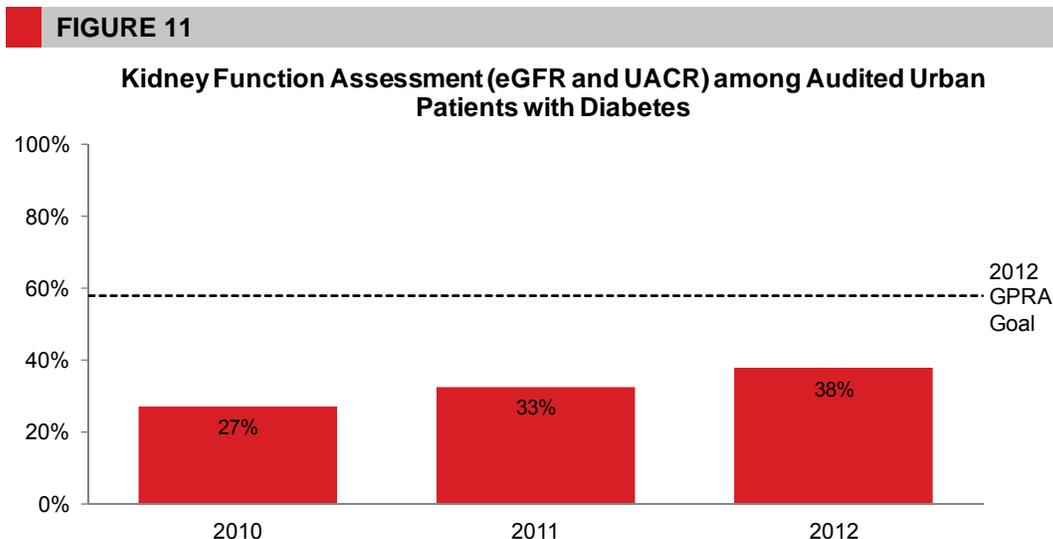
## Key Clinical Practice Recommendations Related to Chronic Kidney Disease

- Perform screening for early detection of CKD using both a urine albumin to creatinine ratio (UACR) and estimated glomerular filtration rate (eGFR).
- Provide interventions to delay or prevent 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 angiotensin converting enzyme (ACE) inhibitor or angiotensin II receptor blocker (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 by using UACR and GFR.

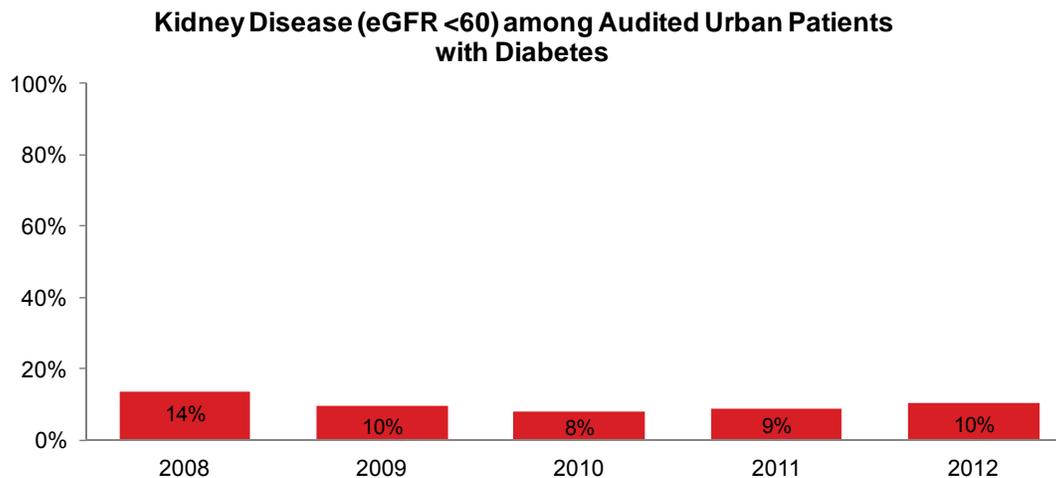


**2012 IHS GPRA goal:** 57.8% of diabetes patients are assessed for poor kidney function (eGFR and quantitative urinary protein assessment) annually.

**Description of Graphic:** In 2012, 38% of audited patients were screened for chronic kidney disease (both eGFR and UACR), a 39% increase from 2010 where 27% were assessed. This change may be explained by the increase in the percentage of patients receiving UACR tests: The percentage of patients with an estimated GFR increased 3%, while the percentage of patients with UACR testing increased 42% over the three-year period (see Appendix A, Table 11). The 2012 kidney disease assessment rate was below the 2012 IHS GPRA goal for more than half (57.8%) of diabetes patients to be assessed for poor kidney function by both eGFR and quantitative urinary protein assessment. The majority (61%) of those assessed in 2012 were age 45-64 (data not shown). Data on kidney function assessment (using both eGFR and UACR) were not available prior to 2010.

# BEST PRACTICE III: Chronic Kidney Disease

**FIGURE 12**



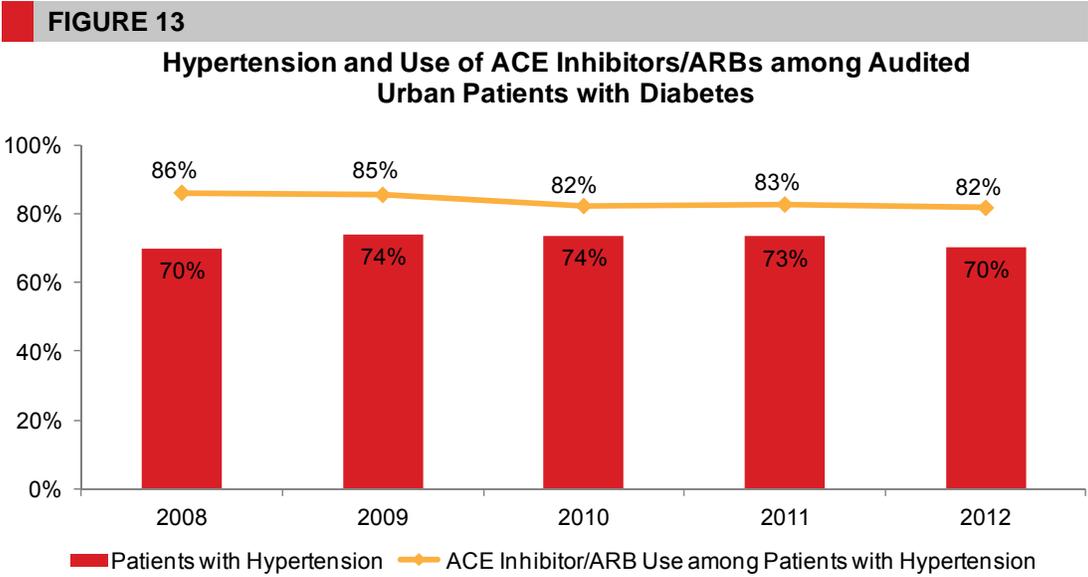
**Description of Graphic:** In 2012, 10% of audited patients had kidney disease, defined as eGFR <60. This is similar to the past few years, but a slight decrease from 2008, where 14% of patients had an eGFR <60. Among those with kidney disease in 2012, 55% were age 45-64 and 37% were age 65 or older (data not shown).

**KEY MEASURE 2:** Percent of individuals with diabetes who had most recent BP at <130/<80 in the past 12 months (or has 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 were treated with an ACE inhibitor or ARB (or have a documented allergy/intolerance) in the past 12 months.



**Description of Graphic:** The percentage of audited patients with hypertension ranged between 70-74% over the five-year period. In 2012, 82% of audited patients with hypertension were treated with an ACE inhibitor or ARB. 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 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.<sup>22</sup> 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/AN people with depression and diabetes have worse glycemic control than AI/AN people who have diabetes alone.<sup>23</sup> Routine depression screening for people with diabetes is recommended, yet screening must be incorporated into an effective collaborative care system that includes ongoing treatment, care coordination and psychoeducation.<sup>24</sup>

## **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.

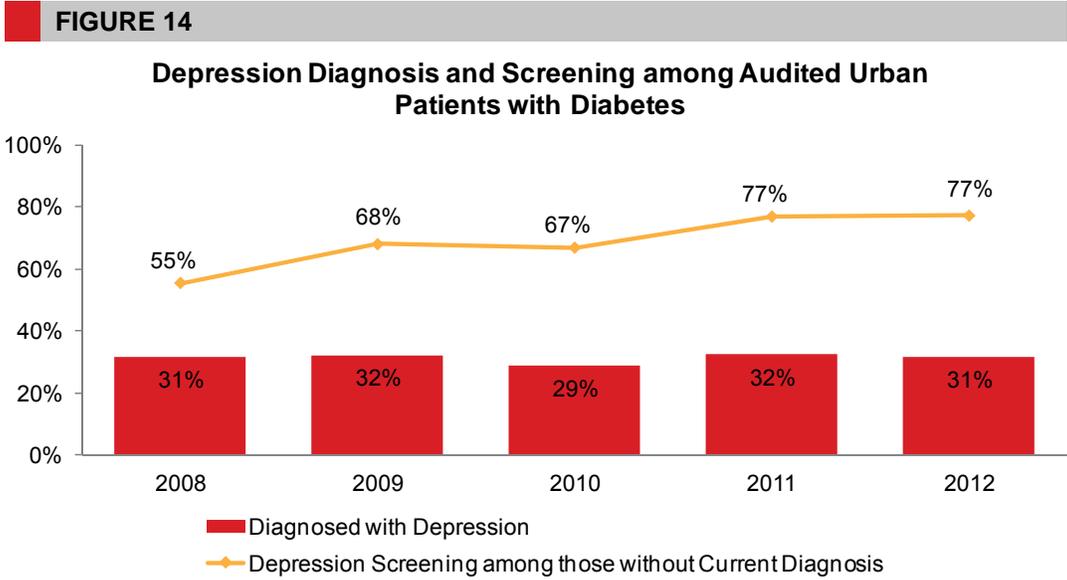
### *For Your Health Care System*

- 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 in the target population who were screened for depression in the past 12 months.



**Description of Graphic:** In 2012, 31% of audited patients had a diagnosis of depression in their medical chart. This rate is relatively consistent throughout the five-year period. Because information about depression treatment is not available in the Diabetes Audit, it is not known what percentage of patients with a depression diagnosis was being treated for depression through antidepressant medications, group and individual therapies, or other treatments. Although rates of depression remain constant, the percentage of audited patients (without a current depression diagnosis) who were screened for depression increased 39% during the five-year time period, from 55% in 2008 to 77% in 2012. This increase in depression screening may not be due to an actual increase in screening, but instead might reflect an increase in the documentation of screening that previously was not fully captured in the Diabetes Audit.

**KEY MEASURE 2:** Percentage of diabetes patients in the target population 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.<sup>16</sup> 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.<sup>25</sup> 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.<sup>26</sup>

## 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.

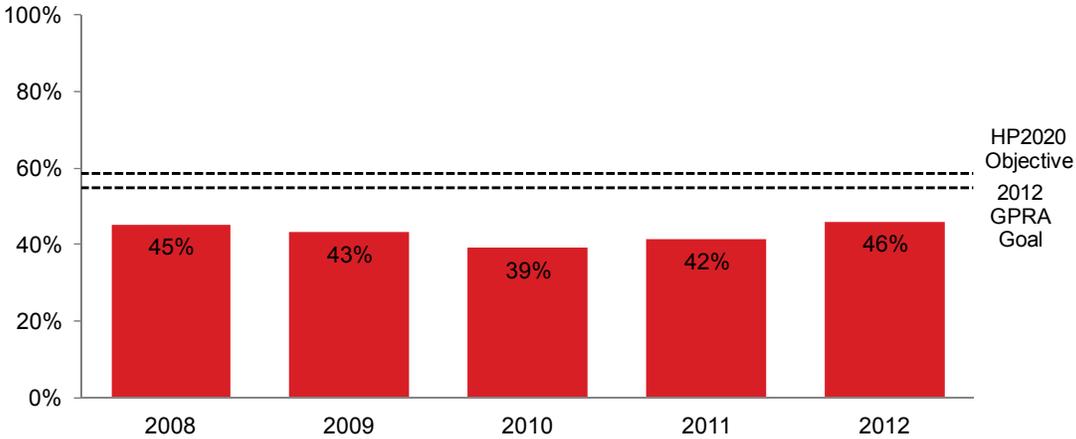
# BEST PRACTICE V: Eye Care

## Measures Used for Tracking Eye Care

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

**FIGURE 15**

**Eye Exam in Past Year among Audited Urban Patients with Diabetes**



**2012 IHS GPRA goal:** 54.8% of diabetes patients receive an annual eye exam.

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

**Description of Graphic:** In 2012, 46% of audited patients received a qualifying eye exam, an increase from previous years. During the 2008-2012 time period, the percentage of audited patients who received eye exams remained below both the 2012 IHS GPRA goal and HP2020 objective for over 50% of diabetes patients to receive an annual eye exam. Access to specialty care, recognized as a serious barrier 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.

**KEY MEASURE 2:** Percentage of diabetes patients in the target population with abnormal retinal screening exam who received appropriate specialty follow up in the past 12 months.

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

# BEST PRACTICE VI: Foot Care

Approximately eight percent of patients with type 2 diabetes have acute foot problems such as numbness, pain, burning, and reduced feeling in the feet and legs.<sup>27</sup> Foot ulcers and amputation are common complications from diabetes, yet are preventable when identified early through regular foot examinations. Foot complications can be managed and prevented by providing foot care self-management education that includes information about smoking cessation, daily foot care, appropriate footwear, avoiding foot trauma, and controlling blood glucose, blood pressure and lipids.<sup>28</sup>

## **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.

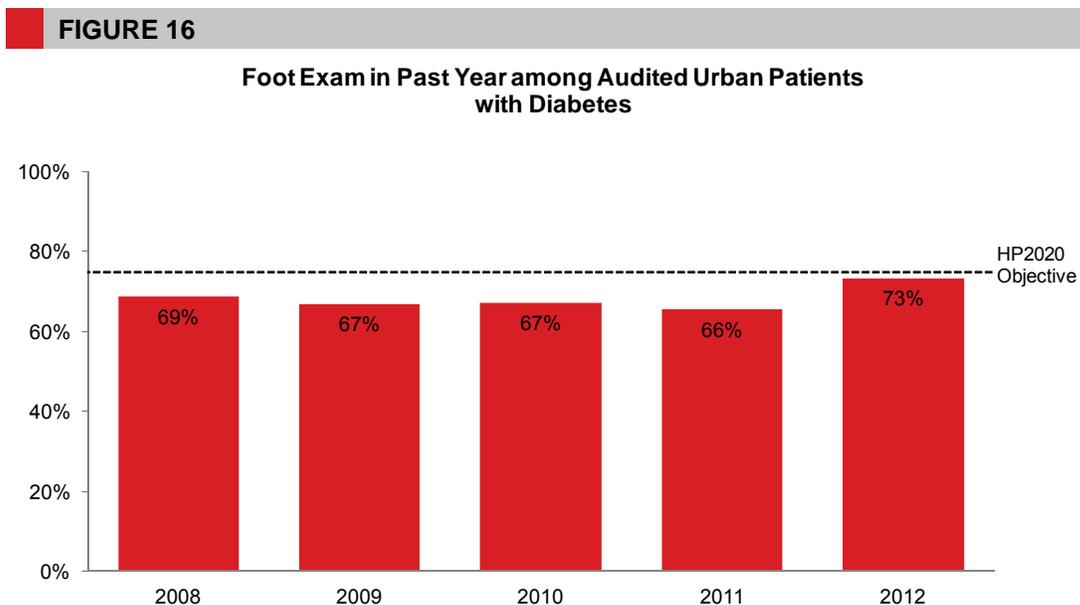
### *For Your Health Care System*

- 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.



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

**Description of Graphic:** In 2012, 73% of audited patients received a foot exam, a 7% increase from 2008. The percentage of patients receiving an annual foot exam was only slightly below the HP2020 objective for 74.8% of diabetes patients to receive at least one annual foot exam.

**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 increase the risk for periodontal disease, tooth decay, infections and other serious oral health problems.<sup>29</sup> Infection and inflammation associated with periodontitis also can increase risk for diabetes complications such as cardiovascular disease, coronary artery disease and chronic kidney disease.<sup>30</sup> Oral health education and regular oral evaluations can prevent, detect and treat periodontal disease and dental caries early.<sup>30</sup>

### **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.

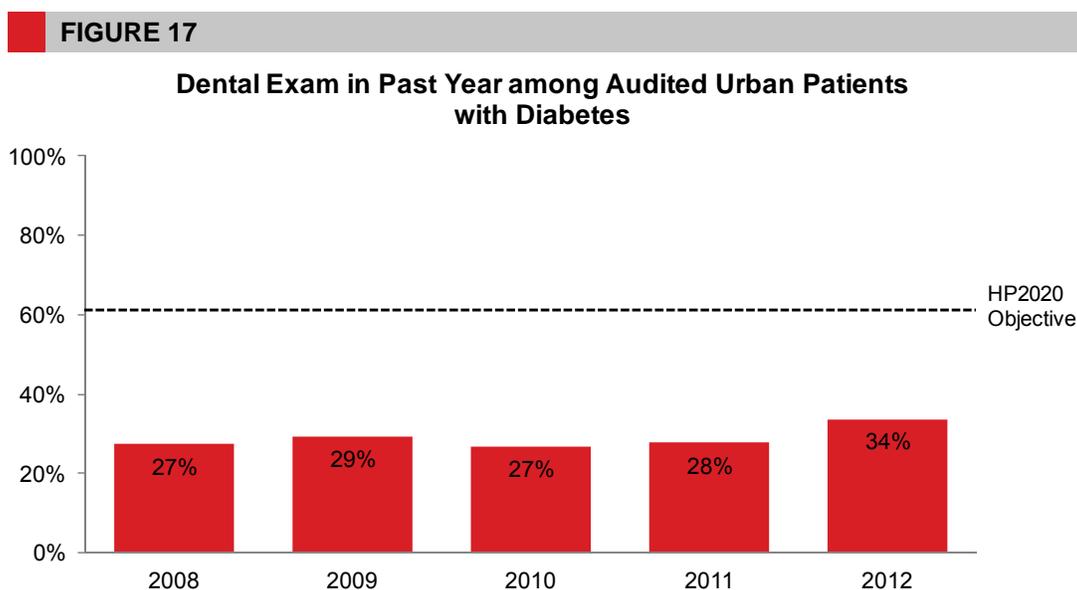
# BEST PRACTICE VII: Oral Health

## Measures Used for Tracking Oral Health

**KEY MEASURE 1:** Percent of diabetes patients who had documented oral health patient education (done by any provider) in the past 12 months.

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

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



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

**Description of Graphic:** In 2012, 34% of patients received a dental exam, a 23% increase from 2008 where 27% of patients received a dental exam. The rate of patients receiving dental exams was below the HP2020 objective throughout the five-year period. Not all UIHOs offer dental services at their facility. 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 and cost of dental care may be a significant factor in a patient's ability to obtain these 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 2008-2012. Both raw numbers and weighted percentages are included. Because percentages are rounded, the total may not add up to 100%. Cells are left blank if data were not collected for that indicator for a given year.

<b>Year</b>	2008		2009		2010		2011		2012	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Sex</b>										
Male	697	40%	779	41%	852	40%	972	40%	1,028	40%
Female	1,091	60%	1,191	59%	1,280	60%	1,460	60%	1,563	60%
<b>Age (Years)</b>										
< 18	8	0%	5	0%	8	1%	2	0%	2	0%
18-44	497	28%	563	28%	608	28%	677	28%	679	28%
45-64	988	55%	1,095	56%	1,193	56%	1,389	56%	1,496	56%
≥ 65	295	16%	307	16%	323	16%	363	16%	414	16%
Mean age <sup>+</sup>	51.7		52.0		51.8		52.0		51.8	
<b>Diabetes Duration (Years)</b>										
< 5	693	39%	703	35%	829	39%	930	38%	977	41%
5 – 9	453	24%	468	25%	506	26%	636	26%	680	26%
≥ 10	464	26%	526	28%	585	29%	713	27%	840	31%
Not documented	178	11%	273	13%	212	7%	153	8%	94	3%
Mean duration <sup>+</sup>	7.3		7.8		7.6		7.4		7.7	
<b>Diabetes Type</b>										
Type 1	49	3%	36	2%	46	2%	47	2%	53	2%
Type 2	1,736	97%	1,934	98%	2,086	98%	2,384	98%	2,538	98%

<sup>+</sup> Weighted Estimate

# APPENDIX A

<b>Year</b>	2008		2009		2010		2011		2012	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Body Mass Index (BMI)*</b>										
< 25	133	7%	134	7%	139	7%	155	7%	183	8%
25 - 29	377	21%	443	22%	447	21%	542	22%	538	20%
30 - 40	818	46%	918	47%	970	46%	1,121	46%	1,223	48%
≥ 40	396	21%	438	23%	524	24%	577	23%	626	23%
Not tested or no valid result	64	5%	37	2%	52	2%	37	2%	21	1%
Mean BMI <sup>+</sup>	34.7		34.9		35.4		34.8		35.1	
<b>Hypertension<sup>^</sup></b>										
Yes	1,248	70%	1,433	74%	1,528	74%	1,778	73%	1,872	70%
No	528	29%	537	26%	604	26%	654	27%	719	30%
Not tested or no valid result	12	1%	0	0%	0	0%	0	0%	0	0%
<b>Blood Pressure (mmHg)</b>										
<130/<80	666	37%	795	41%	968	46%	988	41%	1,060	42%
130/80 – <140/<90	505	30%	514	28%	608	30%	750	30%	801	31%
140+/90+	309	16%	331	17%	393	17%	451	19%	548	20%
Not tested or no valid result	308	16%	330	13%	163	7%	243	10%	182	7%
Mean systolic <sup>+</sup>	128.4		128.3		127.7		127.9		128.6	
Mean diastolic <sup>+</sup>	77.1		77.1		76.5		76.5		77.3	

<sup>+</sup> Weighted Estimate

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

<sup>^</sup> Documented diagnosis or taking prescription medication

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<b>Year</b>	2008		2009		2010		2011		2012	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Eye Exam</b>										
Yes	856	45%	886	43%	901	39%	998	42%	1,171	46%
No	877	51%	1,039	54%	1,166	58%	1,366	55%	1,363	51%
Refused	40	3%	45	2%	64	3%	68	3%	57	3%
Not documented	15	1%	0	0%	1	0%	0	0%	0	0%
<b>Foot Exam</b>										
Yes	1,210	69%	1,257	67%	1,379	67%	1,626	66%	1,883	73%
No	557	30%	695	32%	735	32%	789	34%	698	26%
Refused	13	1%	18	1%	17	1%	17	1%	10	0%
Not documented	8	1%	0	0%	1	0%	0	0%	0	0%
<b>Dental Exam</b>										
Yes	535	27%	621	29%	612	27%	710	28%	828	34%
No	1,160	67%	1,269	67%	1,432	70%	1,632	69%	1,659	62%
Refused	70	4%	80	4%	86	4%	90	3%	104	4%
Not documented	23	2%	0	0%	2	0%	0	0%	0	0%

<sup>+</sup> Weighted Estimate

# APPENDIX A

<b>Year</b>	2008		2009		2010		2011		2012	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Diet Instruction</b>										
By registered dietitian only	336	20%	326	17%	376	19%	340	16%	343	17%
By other staff only	652	32%	789	36%	942	42%	1,024	41%	1,080	40%
By both RD and other staff	187	7%	229	11%	273	13%	249	9%	455	16%
No diet instruction	581	38%	575	32%	493	25%	769	33%	699	27%
Refused	25	2%	51	4%	47	1%	50	2%	14	1%
Not documented	7	1%	0	0%	1	0%	0	0%	0	0%
<b>Exercise Instruction</b>										
Yes	1,099	56%	1,269	61%	1,467	67%	1,511	62%	1,827	69%
No	655	42%	667	37%	621	32%	844	36%	749	30%
Refused	24	2%	34	2%	43	1%	76	2%	15	1%
Not documented	10	1%	0	0%	1	0%	1	0%	0	0%
<b>Diabetes Education (other)</b>										
Yes	1,317	70%	1,483	71%	1,693	79%	1,909	77%	2,247	85%
No	433	28%	449	25%	400	20%	483	22%	332	14%
Refused	26	2%	38	3%	38	1%	40	2%	12	1%
Not documented	12	1%	0	0%	1	0%	0	0%	0	0%

<sup>+</sup> Weighted Estimate

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<b>Year</b>	<b>2008</b>		<b>2009</b>		<b>2010</b>		<b>2011</b>		<b>2012</b>	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Influenza Vaccine in Past Year</b>										
Yes	1,099	60%	1,191	60%	1,122	55%	1,360	56%	1,528	56%
No	557	32%	639	33%	889	40%	909	38%	891	38%
Refused	118	7%	140	7%	119	5%	163	6%	172	6%
Not documented	14	1%	0	0%	2	0%	0	0%	0	0%
<b>Pneumococcal Vaccine Ever</b>										
Yes	1,103	62%	1,277	65%	1,351	64%	1,640	67%	1,747	64%
No	615	34%	618	31%	711	32%	704	30%	778	34%
Refused	51	3%	75	4%	68	3%	87	3%	66	2%
Not documented	19	1%	0	0%	2	0%	1	0%	0	0%
<b>Td Vaccine in Past 10 Years</b>										
Yes	1,090	63%	1,207	64%	1,311	66%	1,582	63%	1,654	62%
No	657	35%	733	34%	780	33%	779	34%	862	36%
Refused	23	1%	30	1%	39	1%	69	2%	75	2%
Not documented	18	1%	0	0%	2	0%	2	0%	0	0%
<b>TB Status (PPD)</b>										
Positive, INH complete	66	3%	82	4%	65	3%	87	3%	83	3%
Positive, not treated	78	4%	93	5%	67	3%	106	5%	82	3%
Negative, up to date	482	22%	509	23%	497	22%	592	22%	661	23%
Negative, outdated	65	4%	74	3%	96	4%	116	4%	100	4%
Negative, date unknown	24	1%	58	3%	108	3%	22	1%	16	1%
Status unknown	1,044	64%	1,154	62%	1,299	66%	1,473	63%	1,649	66%
Not tested or no valid result	29	2%	0	0%	0	0%	36	2%	0	0%
<b>Hepatitis B Series</b>										
Ever completed series									134	6%
Never completed series									2,385	92%
Refused									72	2%
Not documented									0	0%

<sup>+</sup> Weighted Estimate

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**Table 6. Laboratory Services among Audited Patients with Diabetes, 2008-2012**

Year	2008		2009		2010		2011		2012	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Labs Done in Past Year</b>										
A1c	1,647	93%	1,806	93%	1,957	93%	2,282	94%	2,422	94%
Total cholesterol	1,363	78%	1,484	78%	1,577	76%	1,907	76%	2,068	77%
LDL cholesterol	1,317	76%	1,475	76%	1,542	73%	1,851	73%	2,010	75%
Triglycerides	1,365	79%	1,501	79%	1,570	76%	1,911	76%	2,066	77%
HDL cholesterol	1,372	80%	1,491	79%	1,564	75%	1,899	76%	2,058	77%
Creatinine	1,432	81%	1,534	81%	1,682	79%	1,977	79%	2,119	81%

<sup>+</sup> Weighted Estimate

**Table 7. Laboratory Results among Audited Patients with Diabetes, 2008-2012**

Year	2008		2009		2010		2011		2012	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>A1c (%)</b>										
<7.0	706	40%	742	39%	775	35%	904	37%	1,000	38%
7.0 – 9.5	626	36%	700	37%	764	38%	907	37%	961	36%
> 9.5	315	18%	364	17%	418	20%	471	19%	461	19%
Not tested or no valid result	141	7%	164	7%	175	7%	150	6%	169	6%
Mean A1c <sup>+</sup>	7.9		7.9		8.0		8.0		7.9	
<b>Creatinine (mg/dL)</b>										
<2.0	1,381	78%	1,498	79%	1,649	78%	1,931	77%	2,058	78%
≥2.0	51	3%	36	2%	33	2%	42	2%	46	2%
Not tested or no valid result	356	19%	436	19%	450	21%	459	21%	487	20%
Mean creatinine <sup>+</sup>	1.0		0.9		0.9		0.9		0.9	

<sup>+</sup> Weighted Estimate

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<b>Year</b>	<b>2008</b>		<b>2009</b>		<b>2010</b>		<b>2011</b>		<b>2012</b>	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Total Cholesterol (mg/dl)</b>										
< 200	937	56%	1,046	57%	1,167	58%	1,434	57%	1,519	56%
200 – 239	283	15%	296	14%	272	12%	332	14%	384	14%
≥ 240	143	8%	142	6%	138	6%	141	6%	165	6%
Not tested or no valid result	425	22%	486	22%	555	24%	525	24%	523	23%
Mean total cholesterol <sup>+</sup>	182		179		179		179		180	
<b>LDL Cholesterol (mg/dl)</b>										
< 100	690	41%	800	43%	841	41%	1,053	42%	1,143	42%
100 – 129	375	22%	417	21%	459	22%	547	22%	571	21%
130 – 160	174	9%	187	9%	177	8%	174	7%	209	8%
> 160	78	4%	71	3%	65	3%	77	3%	87	3%
Not tested or no valid result	471	24%	495	24%	590	27%	581	27%	581	25%
Mean LDL cholesterol <sup>+</sup>	100		98		97		98		97	
<b>HDL Cholesterol (mg/dL)</b>										
<35	220	14%	287	16%	289	15%	340	13%	407	15%
35-45	534	30%	544	30%	600	29%	739	30%	754	28%
46-55	373	21%	384	20%	396	20%	449	18%	498	19%
>55	245	15%	276	12%	279	12%	371	15%	399	15%
Not tested or no valid result	416	20%	479	21%	568	25%	533	24%	533	23%
Mean HDL cholesterol <sup>+</sup>	46		44		45		46		46	
<b>Triglyceride (mg/dl)</b>										
< 150	622	37%	665	36%	717	35%	893	35%	969	36%
150 – 199	284	17%	342	18%	336	15%	377	15%	431	16%
200 – 400	365	21%	380	20%	418	20%	529	21%	555	20%
> 400	94	5%	114	6%	99	5%	112	5%	111	4%
Not tested or no valid result	423	21%	469	21%	562	24%	521	24%	525	23%
Mean triglyceride <sup>+</sup>	192		204		205		195		198	

<sup>+</sup> Weighted Estimate

# APPENDIX A

Year	2008		2009		2010		2011		2012	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Diabetes Treatment</b>										
Diet/Exercise alone	174	8%	214	8%	214	8%	284	10%	353	13%
Oral/Injectible agent only	1,031	56%	1,106	56%	1,154	53%	1,293	52%	1,266	49%
Insulin only	232	16%	208	13%	253	15%	277	14%	331	14%
Insulin and oral/injectible agent	325	20%	399	21%	445	21%	540	23%	609	23%
Refused/Unknown	26	1%	24	1%	66	4%	33	1%	32	1%
Not documented	0	0%	19	1%	0	0%	5	0%	0	0%
<b>Chronic Aspirin*</b>										
Yes	1,210	74%	1,251	68%	1,296	64%	1,546	65%	1,608	62%
No/Refused	485	25%	631	32%	745	36%	785	35%	879	38%
Not documented	14	1%	0	0%	0	0%	4	0%	0	0%
<b>Lipid Lowering Agent</b>										
Yes	953	55%	1,048	57%	1,077	54%	1,352	56%	1,458	54%
No/Refused	818	44%	922	43%	1,055	46%	1,080	44%	1,133	46%
Not documented	17	1%	0	0%	0	0%	0	0%	0	0%
<b>ACE Inhibitor/ARBs</b>										
Yes	1,262	71%	1,388	72%	1,471	69%	1,681	69%	1,815	69%
No/Refused	513	28%	582	28%	661	31%	748	31%	776	31%
Not documented	13	1%	0	0%	0	0%	3	0%	0	0%

\* Weighted Estimate

\* Among patients 30 years and older

Year	2008		2009		2010		2011		2012	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Current Tobacco Use</b>										
User	534	29%	602	31%	616	29%	741	30%	785	29%
Non-user	1,191	68%	1,233	63%	1,432	66%	1,569	66%	1,736	68%
Not documented	63	3%	135	6%	84	5%	122	4%	70	2%
<b>Cessation Referral*</b>										
Yes	326	59%	415	64%	442	72%	481	69%	500	65%
No	163	29%	127	21%	142	23%	230	26%	260	30%
Refused	36	9%	60	15%	32	4%	29	5%	24	5%
Not documented	9	2%	0	0%	0	0%	1	0%	1	0%

\* Weighted Estimate

\* Among current tobacco users

# APPENDIX A

Year	2008		2009		2010		2011		2012	
No. charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Active Diagnosis of Depression</b>										
Yes	616	31%	715	32%	648	29%	787	32%	834	31%
No	1,160	68%	1,255	68%	1,483	71%	1,641	68%	1,741	68%
Not documented	12	1%	0	0%	1	0%	4	0%	16	1%
<b>Depression Screening*</b>										
Yes	637	55%	819	68%	1,047	67%	1,331	77%	1,391	77%
No	472	38%	424	31%	427	33%	293	22%	341	22%
Refused	12	1%	12	1%	9	0%	15	1%	9	1%
Not documented	39	5%	0	0%	0	0%	2	0%	0	0%

<sup>+</sup> Weighted Estimate

\* Among those without diagnosis of depression

Year	2008		2009		2010		2011		2012	
Number of charts audited	1,788		1,970		2,132		2,432		2,591	
	No.	% <sup>+</sup>								
<b>Kidney Function Assessment (eGFR)</b>										
Yes	1,136	65%	1,376	73%	1,608	76%	1,956	78%	2,068	78%
No	580	31%	594	27%	524	24%	465	21%	521	22%
Not tested or no valid result	72	5%	0	0%	0	0%	11	1%	2	0%
<b>Urine Protein Testing</b>										
UACR					689	29%	916	35%	1,182	42%
UPCR					51	2%	13	0%	6	0%
24hr urine test					2	0%	8	0%	2	0%
Microalbumin/creatinine strips					352	17%	474	23%	366	18%
Microalbumin only					163	7%	76	2%	157	6%
UA dipstick					276	17%	281	11%	260	9%
Not documented					599	28%	664	28%	618	25%
<b>Kidney Disease</b>										
eGFR $\geq$ 60	1,173	67%	1,349	71%	1,503	71%	1,755	70%	1,829	70%
eGFR<60	256	13%	185	10%	179	8%	218	9%	275	10%
Not tested or no valid result	359	20%	436	19%	450	21%	459	21%	487	20%

<sup>+</sup> Weighted Estimate

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## Comparison to National Standards: GPRA and Healthy People 2020

The table below presents urban aggregate results as they compare with 2012 IHS Government Performance and Results Act (GPRA) Goals and Healthy People 2020 (HP2020) targets. Comparing urban aggregate results to national goals offers additional information about progress toward providing diabetes-related services and achieving specific health outcomes. However, GPRA and HP2020 goals are universal targets and should not be considered as treatment targets for individual patients. They are provided to help describe how patients across UIHO diabetes programs compare with national benchmarks. Although 2012 GPRA indicators are presented in this report, these indicators have changed for 2013 and will be updated in future reports. Please note that official GPRA results are prepared and distributed by the IHS Planning and Evaluation office.

	2008	2009	2010	2011	2012	2012 IHS GPRA Goal	HP2020 Objective
<b>Year</b>							
No. charts audited	1,788	1,970	2,132	2,432	2,591		
	% <sup>+</sup>						
A1c < 7.0%	40.1%	39.1%	34.8%	36.7%	38.4%	<b>32.7%</b>	<b>58.9%</b>
A1c > 9.5% (lower is better)	17.5%	17.3%	20.3%	19.5%	19.2%	<b>18.6%</b>	<b>16.1%</b>
Blood pressure (mmHg) <130/80	37.5%	41.5%	45.6%	41.0%	41.9%	<b>38.7%</b>	<b>57.0%</b>
LDL cholesterol assessed	75.9%	76.5%	73.1%	73.5%	74.7%	<b>70.3%</b>	
Nephropathy assessment			27.1%	32.6%	37.7%	<b>57.8%</b>	
Retinopathy assessment (eye exam)	45.3%	43.2%	39.1%	41.6%	46.1%	<b>54.8%</b>	<b>58.7%</b>
Foot exam	68.6%	66.9%	67.2%	65.6%	73.4%		<b>74.8%</b>
Dental exam	27.3%	29.3%	26.8%	27.6%	33.7%		<b>61.2%</b>

<sup>+</sup> Weighted Estimate

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## The Government Performance and Results Act (GPRA)

Passed in 1993, the Government Performance and Results Act (GPRA) was designed to address concerns regarding government accountability and performance in the management of government-funded public needs projects. The purpose of GPRA is to improve the confidence of Americans in the Federal government by holding Federal agencies accountable for achieving program results.<sup>10</sup> The IHS reports on a range of health topics for GPRA, including diabetes.

In 2012, there were six IHS GPRA goals related to diabetes and two additional diabetes measures that are reported to Congress. These universal performance measures gauge progress toward improving diabetes care and related services. GPRA indicators have changed for 2013 and will be updated in future reports. 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](http://www.ihs.gov/NonMedicalPrograms/quality/index.cfm?module=gpra_list).

FY2012 GPRA Indicators for Diabetes	Target
<b>Poor Glycemic Control</b> Last recorded hemoglobin A1c > 9.5%	18.6%
<b>Ideal Glycemic Control</b> Last recorded hemoglobin A1c < 7.0%	32.7%
<b>Blood Pressure Control</b> Mean of last three recorded blood pressures <130/<80mmHg	38.7%
<b>Assessed for Dyslipidemia</b> Low density lipoprotein (LDL) cholesterol tested in preceding 12 months	70.3%
<b>Assessed for Nephropathy</b> Both an estimated glomerular filtration rate (eGFR) and a quantitative urinary protein assessment in preceding 12 months	57.8%
<b>Assessed for Retinopathy</b> Retinal exam documented in the preceding 12 months	54.8%

## Healthy 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. 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.

For more information about HP2020, visit [www.healthypeople.gov](http://www.healthypeople.gov).

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HP2020 Focus Area Objectives and Definitions	Target
<b>D-1. New cases of diabetes</b> 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
<b>D-2 Diabetes-related deaths*</b> Reduce the death rate among the population with diabetes.	N/A
<b>D-2.1</b> Reduce the rate of all-cause mortality among the population with diabetes.	
<b>D-2.2</b> Reduce the rate of cardiovascular disease deaths in persons with diagnosed diabetes.	
<b>D-3 Diabetes deaths</b> Reduce the diabetes death rate.	65.8 deaths per 100,000 population
<b>D-4 Lower extremity amputations^</b> Reduce the rate of lower extremity amputations in persons with diagnosed diabetes.	N/A
<b>D-5 Glycemic control</b> Improve glycemic control among the population with diagnosed diabetes.	
<b>D-5.1</b> Reduce the proportion of the diabetic population with an A1c value greater than 9%.	16.1%
<b>D-5.2</b> Increase the proportion of the diabetic population with an A1c value less than 7%.	58.9%
<b>D-6 Lipid control</b> Improve lipid control among persons with diagnosed diabetes.	58.4%
<b>D-7 Blood pressure control</b> Increase the proportion of the population with diagnosed diabetes whose blood pressure is under control.	57.0%
<b>D-8 Annual dental examinations</b> Increase the proportion of persons with diagnosed diabetes who have at least an annual dental examination.	61.2%
<b>D-9 Annual foot examinations</b> Increase the proportion of adults with diabetes who have at least an annual foot examination.	74.8%
<b>D-10 Annual dilated eye examinations</b> Increase the proportion of adults with diabetes who have an annual dilated eye examination.	58.7%
<b>D-11 Glycosylated hemoglobin measurement</b> Increase the proportion of adults with diabetes who have a glycosylated hemoglobin measurement at least twice a year.	71.1%
<b>D-12 Annual urinary microalbumin measurement</b> Increase the proportion of persons with diagnosed diabetes who obtain an annual urinary microalbumin measurement.	37.0%

\* 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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HP2020 Focus Area Objectives and Definitions	Target
<b>D-13 Self-blood glucose-monitoring</b> Increase the proportion of adults with diabetes who perform self-blood glucose-monitoring at least once daily.	70.4%
<b>D-14 Diabetes education</b> Increase the proportion of persons with diagnosed diabetes who receive formal diabetes education.	62.5%
<b>D-15 Diagnosed diabetes</b> Increase the proportion of persons with diabetes whose condition has been diagnosed.	80.1%
<b>D-16 Prevention behaviors among persons with pre-diabetes</b> Increase prevention behaviors in persons at high risk for diabetes with pre-diabetes.	
<b>D-16.1</b> Increase the proportion of persons at high risk for diabetes with pre-diabetes who report increasing their levels of physical activity.	49.1%
<b>D-16.2</b> Increase the proportion of persons at high risk for diabetes with pre-diabetes who report trying to lose weight.	55.0%
<b>D-16.3</b> Increase the proportion of persons at high risk for diabetes with pre-diabetes who report reducing the amount of fat or calories in their diet.	53.4%

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