

# Indian Health Service

## **2009 National Summary**



### ***Performance Measurement:***

***Improving Healthcare for  
American Indians  
and  
Alaska Natives***

**Government Performance and Results Act (GPRA)**

**This page  
intentionally  
left blank**

# Acknowledgments



*Data collected by:*  
***IHS and Tribal Health Program Staff***  
***IHS Area GPRA Coordinators***  
***IHS Area Information Technology Staff***  
***National GPRA Support Team***  
***IHS Headquarters GPRA Measure Leads***

## Area GPRA Coordinators

Aberdeen	Janelle Trottier	(605) 226-7474
Alaska	Bonnie Boedeker	(907) 729-3665
Albuquerque	Regina Robertson	(505) 248-4773
Bemidji	Jason Douglas	(218) 444-0550
Billings	Carol Strasheim	(406) 247-7111
California	Elaine Brinn	(916) 390-3927
Nashville	Kristina Rogers	(615) 467-2926
Navajo	Jenny Notah	(928) 871-5863
Oklahoma	Marjorie Rogers	(405) 951-6020
Phoenix	Jody Sekerak	(602) 364-5274
Portland	Mary Brickell	(503) 326-7434
Tucson	John Kittredge / Scott Hamstra	(520) 295-2406

Data analysis and report preparation by the National GPRA Support Team: **Elaine Brinn**, GPRA Coordinator, CAO; **Amy Patterson**, Public Health Analyst, CAO; **Christine Brennan**, Public Health Analyst, CAO; and **Wendy Blocker**, Public Health Analyst, CAO.

Data and support provided by **Francis Frazier**, IHS HQE GPRA/PART Coordinator; **Diane Leach**, IHS HQE Public Health Advisor; **Lori Butcher**, CRS Software Developer and **Stephanie Klepacki**, CRS Federal Lead.

### IHS National GPRA Lead/Contacts

**Francis Frazier, FNP**  
**Phone: (301) 443-4700**  
[Francis.Frazier@ihs.gov](mailto:Francis.Frazier@ihs.gov)

**Diane Leach, MA**  
**Phone: (301) 443-6586**  
[Diane.Leach@ihs.gov](mailto:Diane.Leach@ihs.gov)

# Table of Contents



Introduction	4
Diabetes: Prevalence and Documented A1c	8
Diabetes: Poor Glycemic Control	9
Diabetes: Ideal Glycemic Control	10
Diabetes: Blood Pressure Control	11
Diabetes: LDL Assessment	12
Diabetes: Nephropathy Assessment	13
Diabetes: Retinopathy	14
Dental: General Access	15
Dental: Sealants	16
Dental: Topical Fluorides	17
Immunizations: Influenza	18
Immunizations: Pneumococcal	19
Immunizations: Childhood (19 – 35 months)	20
Cancer Screening: Cervical (Pap Smear)	21
Cancer Screening: Breast (Mammography)	22
Cancer Screening: Colorectal	23
Tobacco Cessation	24
Alcohol Screening: Fetal Alcohol Syndrome (FAS) Prevention	25
Domestic Violence/Intimate Partner Violence Screening	26
Depression Screening	27
CVD Prevention: Comprehensive Assessment	28
Prenatal HIV Screening	29
Appendix A:	
2009 CRS Clinical Measure Dashboard	A1
2009 Non-CRS Measure Dashboard	A2
Mortality Disparities Table (2002 – 2004)	A3
Bibliography	A4



The Indian Health Service (IHS), an agency within the Department of Health and Human Services, carries out the federal government's trust responsibility to provide health care services to all eligible American Indian and Alaska Native (AI/AN) people. The AI/AN population is fast growing and suffers disproportionately from a number of health problems. For example, the 2002-2004 unintentional injury death rate was 2.5 times higher among AI/ANs than among all races in 2003; the cervical cancer death rate was almost 2 times higher, and the pneumonia and influenza death rate was 1.5 times higher. Despite these challenges, IHS has succeeded in substantially improving the health status of the AI/AN population, primarily by focusing on preventive and primary care services and developing a community-based public health system. As a result, the average death rate from all causes for the AI/AN population dropped a significant 28.4 percent between 1972-1974 and 2002-2004.

The Government Performance and Results Act (GPRA) requires each federal agency to develop a Strategic Plan outlining long-term goals and objectives, and to submit Annual Performance Plans and Annual Performance Reports showing progress toward meeting these long-term goals. Specific performance measures demonstrate an agency's effectiveness in meeting its mission. GPRA performance measures for the Indian Health Service assess the Agency's progress toward improving access to health care and reducing health disparities for the more than 1.9 million AI/AN people receiving care through the IHS network. GPRA results are also included in the annual IHS/HHS budget submission to Congress.

In Fiscal Year (FY) 2009, IHS had 33 GPRA measures; including 22 clinical and 11 non-clinical Measures. Results for 30 measures are available. Of the three remaining measures, two are long term measures: Childhood Weight Control rates will be reported in FY 2010 and Unintentional Injury Mortality will be reported in FY 2012. Another measure, Patient Safety, exceeded the FY 2009 target in FY 2008 and underwent revision in FY 2009. A new baseline will be reported in FY 2010. IHS met 27 (90%) of 30 reported measures. This report provides a summary of results for the 21 clinical reported GPRA measures for FY 2009. These represent the performance of IHS and Tribally-operated health facilities in the 12 IHS Areas, based on aggregated data that the Clinical Reporting System (CRS) software extracted from individual patient health records at 196 reporting clinics and service units. A dashboard display of the eleven non-clinical measures results appears in Appendix A.

# Introduction



Overall, the Agency performed very well on clinical GPRA measures in FY 2009. Twenty of twenty-one reported clinical measures, or 95%, met their targets, and sixteen of these exceeded their targets. Twelve measures also exceeded their FY 2008 results. Of particular note are the Dental Sealant, Topical Fluoride, and Depression Screening measures, which all achieved increases of 7 percentage points or greater over FY 2008 final performance.

- Depression screening rates increased from 35% in FY 2008 to 44% in FY 2009, an increase of nine percentage points. Depression may affect heart rhythms, increase blood pressure, may lead to elevated insulin and cholesterol levels, and could result in chronically elevated levels of stress hormones. Depression also frequently increases the risk of suicidal behavior. For the period 2002-2004, the AI/AN suicide rate was 70% higher than the 2003 rate for all races. Screening is a first step in identifying patients who need intervention, treatment, and follow up.
- Topical fluoride treatments were provided to 136,794 patients in FY 2009, 16,040 more than in FY 2008. This represents an increase of thirteen percentage points. Topical fluoride treatments are a preventive measure that can reduce tooth decay, which may lead to abscesses, infections, tooth loss, and other health problems.
- The number of dental sealants placed was 257,067 in FY 2009, an increase of 15,860 over the 241,207 sealants placed in FY 2008. This represents an increase of seven percentage points. This improvement is particularly noteworthy; while the Topical Fluoride measure has historically experienced increases each year, the Dental Sealant measure often does not meet prior year performance, as clinics report having sealed all eligible patients.

The six GPRA measures that IHS uses to assess the quality of care for patients with diabetes are: Poor Glycemic Control, Ideal Glycemic Control, Blood Pressure Control, LDL Assessment, Nephropathy Assessment, and Retinopathy Assessment. Studies show that adequate control of blood glucose levels and blood pressure can prevent the onset or progression of complications associated with diabetes. Retinopathy and LDL Assessments help to identify diabetic patients who are at higher risk for developing blindness and heart disease. Nephropathy Assessments help to identify patients who are at risk for kidney disease. These measures are particularly important given the continuing epidemic of diabetes among AI/AN populations. Between 1997 and 2003, the prevalence of diabetes increased by 41 percent in the population served by the IHS. All diabetes measures met their targets in FY 2009, and five measures: Ideal Glycemic Control, Controlled Blood Pressure, LDL Assessment, Nephropathy Assessment, and Retinopathy Assessment, exceeded their targets.

# Introduction



However, while this news is welcome, it should be noted that the FY 2009 *targets* for all diabetes care measures were lower than the FY 2008 results for these measures. This reduction was negotiated due to low funding levels for FY 2009. Had these targets not been reduced, the Agency would have missed three measures: Poor Glycemic Control, Ideal Glycemic Control, and Controlled Blood Pressure, which all decreased by one percentage point from FY 2008 performance. The Controlled Blood Pressure measure is of particular concern; it has experienced a one percentage point decline every year since FY 2007. Ideal Glycemic and Poor Glycemic Control measure rates have also not shown improvement in recent years. These are all high-cost measures that rely on expensive medications, an effective physician-patient relationship, patient concurrence with treatment, and lifestyle changes.

IHS also has three GPRA measures related to oral health: Dental Access, Dental Sealants, and Topical Fluorides. All three measures exceeded their targets in FY 2009, though targets were also reduced from FY 2008 performance. As a result, the Topical Fluoride measure exceeded its (reduced) target by 22,078 applications and the Dental Sealants measures exceeded its (reduced) target by 27,920 sealants. The Dental Access measure maintained the FY 2008 rate of 25%, exceeding its (reduced) target of 24%.

All of the remaining GPRA performance measures relating to immunization, cancer screening, behavioral health, cardiovascular disease, and HIV prevention did not have their targets reduced from FY 2008 performance. With the exception of one measure, performance on these measures met or exceeded FY 2008 rates.

Of the three performance measures relating to immunization, two met their targets for FY 2009. The Childhood and Adult Pneumovax measures met or slightly exceeded their targets and their FY 2008 performance. However, the Adult Influenza Immunization measure did not meet its target, falling from 62% in FY 2008 to 59% in FY 2009.

All three cancer screening GPRA measures, Cervical Cancer (Pap Smear) Screening, Breast Cancer Screening (Mammography), and Colorectal Cancer Screening also met or exceeded their targets. Mammography screening rates were maintained at 45%, the highest rate of mammography screening since the Agency began reporting GPRA results. Cervical cancer screening rates were unchanged from the FY 2008 rate of 59%. Colorectal Cancer screening rates improved by 4 percentage points from 29% in FY 2008 to 33% in FY 2009.

7



All Behavioral Health screening measures also improved over FY 2008 rates, continuing a pattern of annual improvement. Alcohol Screening improved by 5 percentage points, and Domestic/Intimate Partner Violence Screening rates improved by 6 percentage points over FY 2008. Depression Screening rates improved by 9 percentage points over FY 2008. Tobacco Cessation measure rates also improved in FY 2009, increasing by 3 percentage points to 24%. CVD Comprehensive care rates improved by 2 percentage points to 32%. The Prenatal HIV screening rate continued to improve slightly, from 75% in FY 2008 to 76% in FY 2009.

The continued improvement on most performance measures in the face of limited funding in FY 2009 shows the commitment of IHS providers and staff providing quality health care for all users of the Indian health system. As the Indian Health Service moves forward into a new era and with a new Administration, performance measures will continue to play an important role in assessing and improving health care for all eligible AI/ANs.



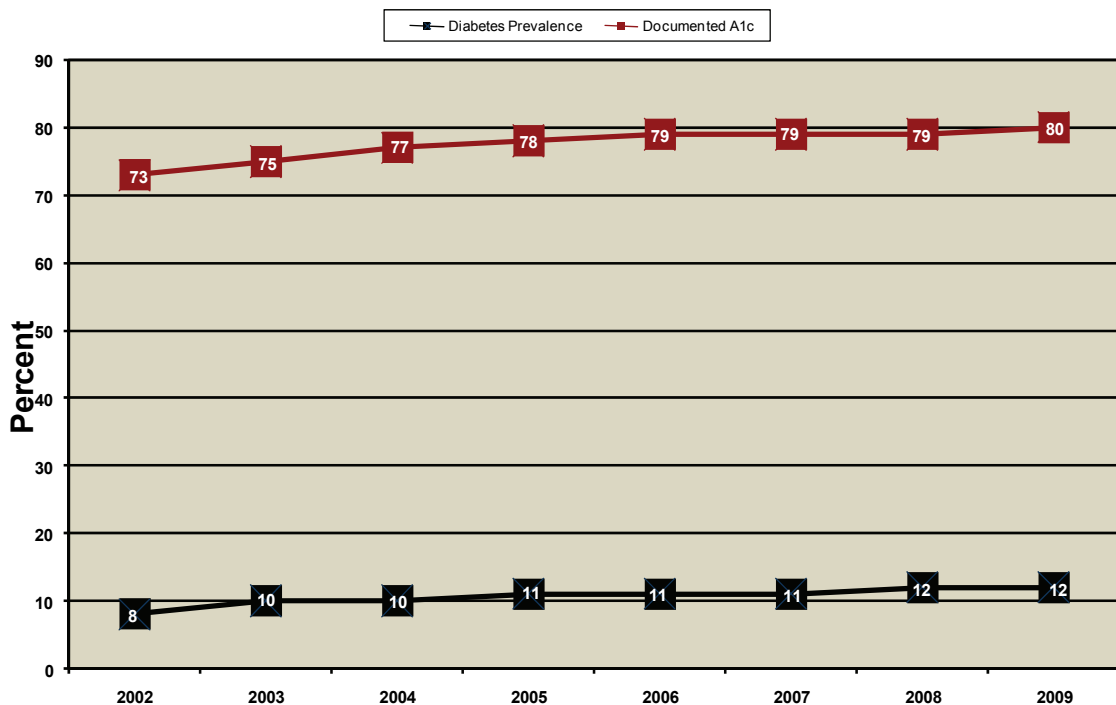
# Diabetes: Prevalence and Documented A1c

**Measures:** Prevalence: Percentage of patients in the user population with diabetes diagnosed ever. Documented A1c: Percentage of patients with Hemoglobin A1c documented during the report period, regardless of result.

**Importance:** *Diabetes is a major cofactor in morbidity as well as one of the leading causes of mortality among AI/AN people. Diabetes is a major risk factor for cardiovascular disease, and CVD is the leading cause of death for American Indians. “Documented A1c” refers to a blood test called the Hemoglobin A1c, which determines blood sugar levels in patients with diabetes. This test can be used to determine a patient’s level of “glycemic control,” or how well blood sugars are controlled. These levels of control are divided into “Ideal” (<7 percent); “Good” (7.0-7.9 percent); “Fair” (8.0-<9.5 percent); and “Poor” (>9.5 percent), based on national diabetes care standards.*

**2009 Target:** N/A. Diabetes Prevalence and Documented A1c are not GPRA measures but are tracked by CRS and provided for context.

Diabetes: Prevalence and Documented A1c



**Data source:** CRS 9.0 electronic examination of 1,276,482 patient records for Diabetes prevalence and 102,640 patient records for Documented A1c.

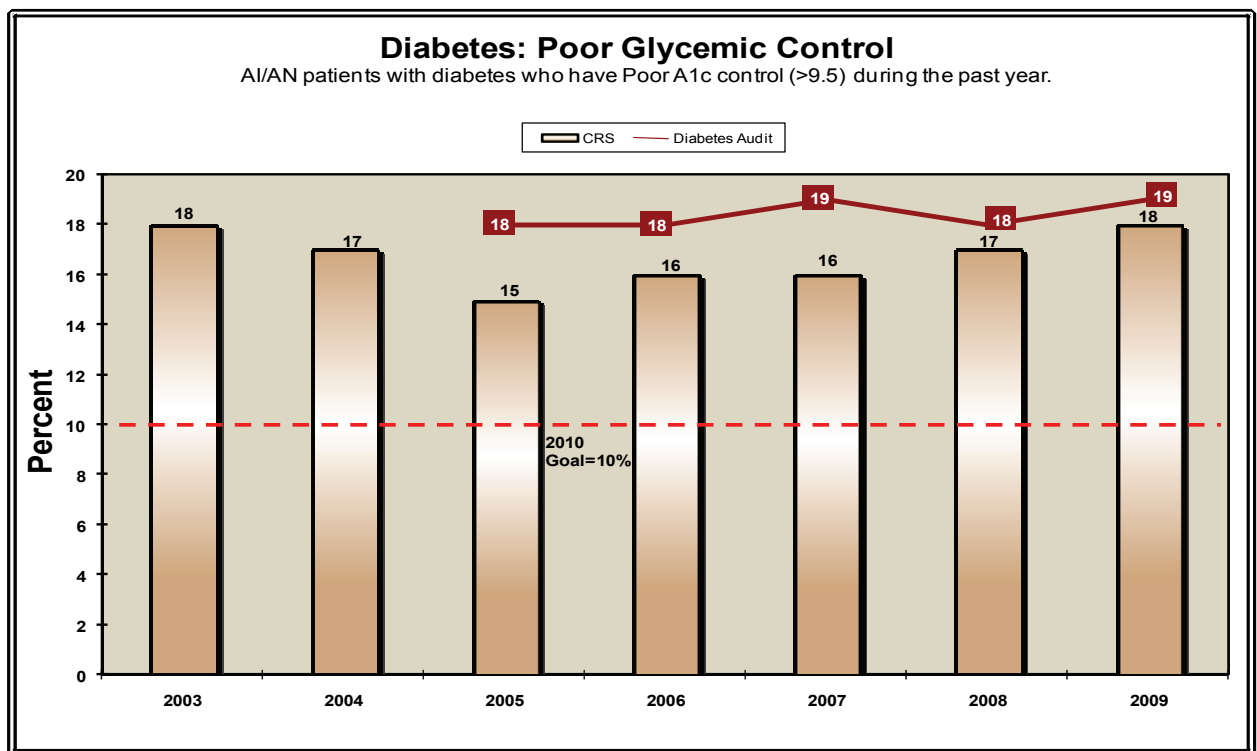
**Results and Analysis:** In FY 2009, the unadjusted diabetes prevalence rate among the GPRA user population represented in this report was 12% as measured by CRS. This is well above the national average of 8% for all races. The Documented A1c rate for active clinical patients diagnosed with diabetes was 80%, which far exceeds the Healthy People 2010 goal of 50%.

## Diabetes: Poor Glycemic Control

**Measure:** Percentage of patients with diagnosed diabetes with poor glycemic control (A1c>9.5).

**Importance:** *Reducing the number of patients with diabetes with poor glycemic control will reduce the prevalence of diabetes complications. Clinical studies have shown that a 1% decrease in the absolute A1c level translates into a: 14% decrease in total mortality, 21% decrease in diabetes-related deaths, 14% decrease in myocardial infarctions, 40% decrease in eye diseases, 12% decrease in strokes, 43% decrease in amputations, and a 24% decrease in kidney failures.*

**2009 Target:** Achieve a target rate of 18% of patients diagnosed with diabetes with poor glycemic control.



**Data source:** CRS 9.0 electronic examination of 102,640 patient records. Diabetes audit data comes from the IHS Diabetes program. Audit data is based on different collection methods and exclusion criteria, but Audit data trends generally mirror CRS data trends.

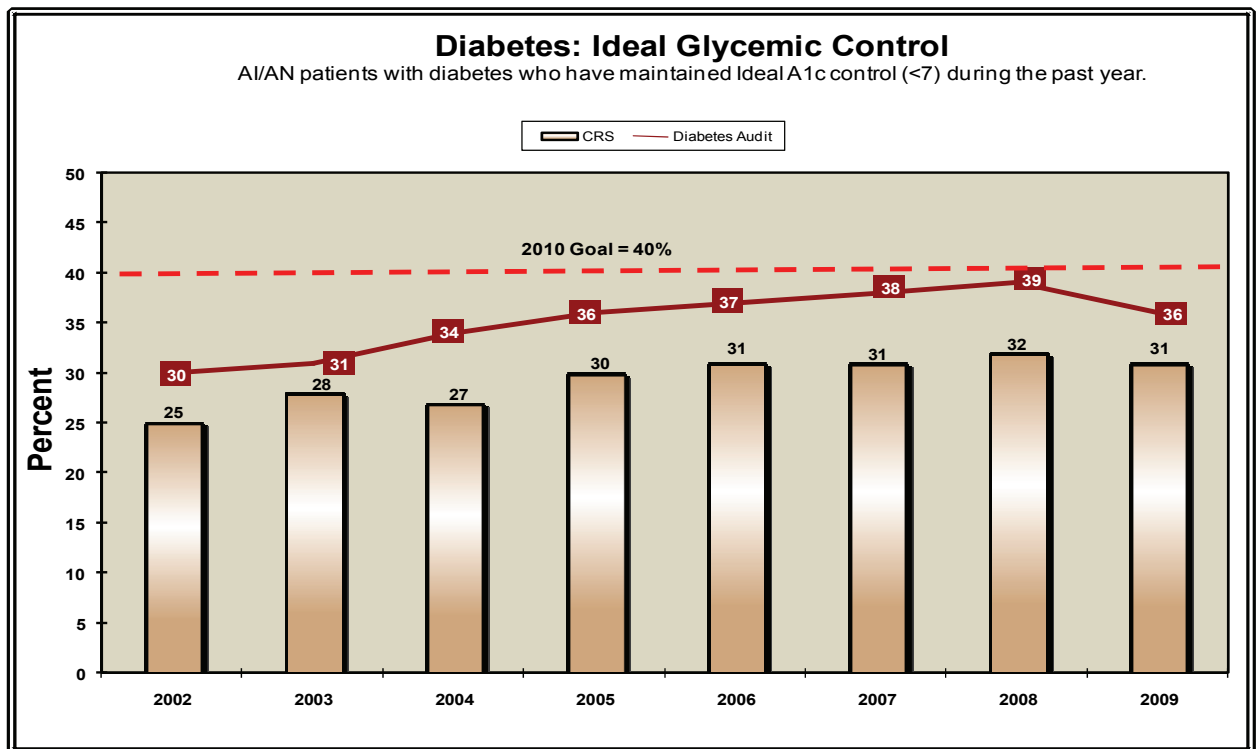
**Results and Analysis:** IHS met the target for this measure. However, targets for all diabetes care measures were lower than the FY 2008 results. Although the target was met, the percentage of patients with diabetes with poor glycemic control increased from 17% in FY 2008 to 18% in FY 2009. (Note that a lower rate is the goal for this measure). IHS met the diabetes audit target of 19% of patients with poor control. The diabetes audit result increased from 18% to 19%. This is a high cost measure due to the necessity of frequent medical visits, medications, and laboratory testing for blood sugar control.

## Diabetes: Ideal Glycemic Control

**Measure:** Percentage of patients with diagnosed diabetes with ideal glycemic control (A1c<7).

**Importance:** *Keeping blood sugar levels below 7 can slow or prevent the onset and progression of eye, kidney, and nerve disease caused by diabetes. Clinical studies have shown that intensive blood glucose control results in a 76% reduced risk of eye disease, a 50% reduced risk of kidney disease, a 60% reduced risk of nerve disease, a 42% reduced risk of any cardiovascular event, and a 57% reduced risk of heart attack or stroke.*

**2009 Target:** Achieve a target rate of 30% of patients diagnosed with diabetes with ideal glycemic control.



**Data source:** CRS 9.0 electronic examination of 102,640 patient records. Diabetes audit data comes from the IHS Diabetes program. Audit data is based on different collection methods and exclusion criteria, but Audit data trends generally mirror CRS data trends.

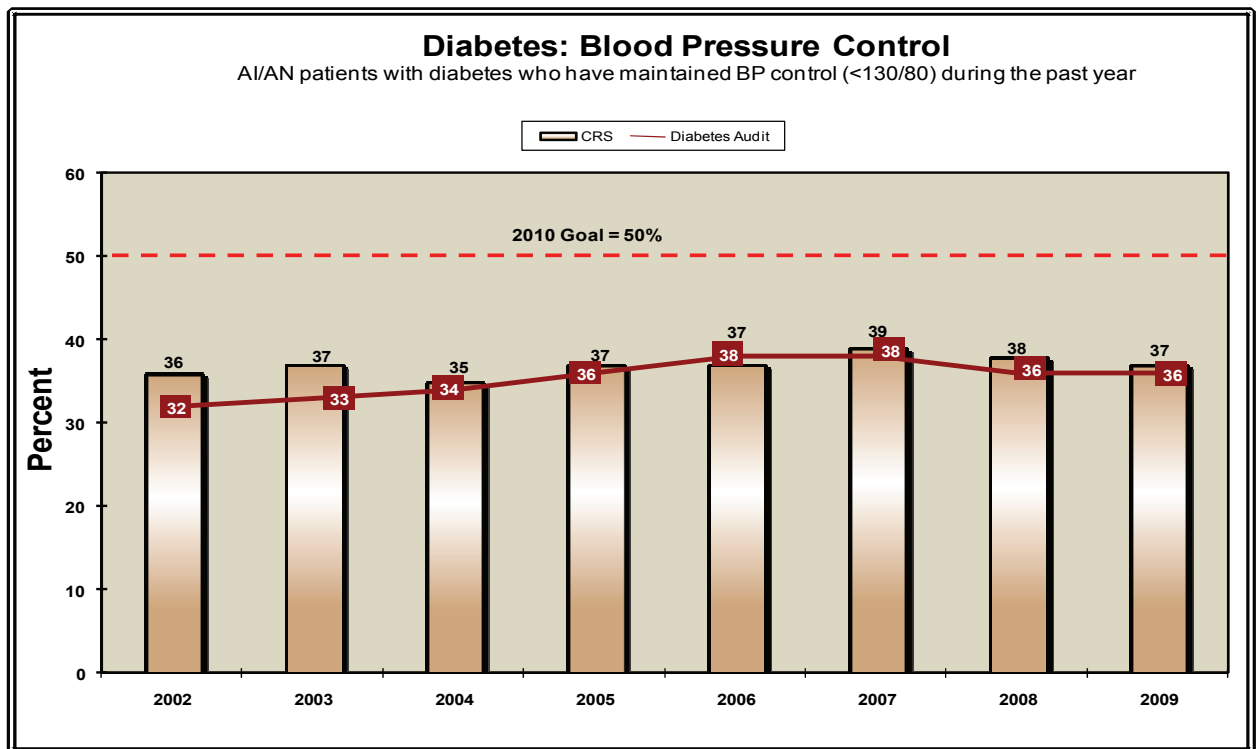
**Results and Analysis:** IHS met and exceeded the target for this measure. However, targets for all diabetes care measures were lower than the FY 2008 results. Although the target was met, the percentage of patients with diabetes with ideal glycemic control decreased from 32% in FY 2008 to 31% in FY 2009. IHS did not meet the diabetes audit target of 38% of patients with ideal control. The diabetes audit result decreased from 39% to 36%. This is a high cost measure due to the necessity of frequent medical visits, medications, and laboratory testing for blood sugar control.

## Diabetes: Blood Pressure Control

**Measure:** Percentage of patients with diagnosed diabetes with blood pressure control (<130/80).

**Importance:** *Good blood pressure control can reduce the risk of complications from diabetes. A large clinical study in the United Kingdom found that diabetics with tightly controlled blood pressure had a 32% reduction in death related to diabetes, a 21% reduction in heart attacks, and a 44% reduction in strokes.*

**2009 Target:** Achieve a target rate of 36% of patients diagnosed with diabetes with blood pressure control.



**Data source:** CRS 9.0 electronic examination of 102,640 patient records. Diabetes audit data comes from the IHS Diabetes program. Audit data is based on different collection methods and exclusion criteria, but Audit data trends generally mirror CRS data trends.

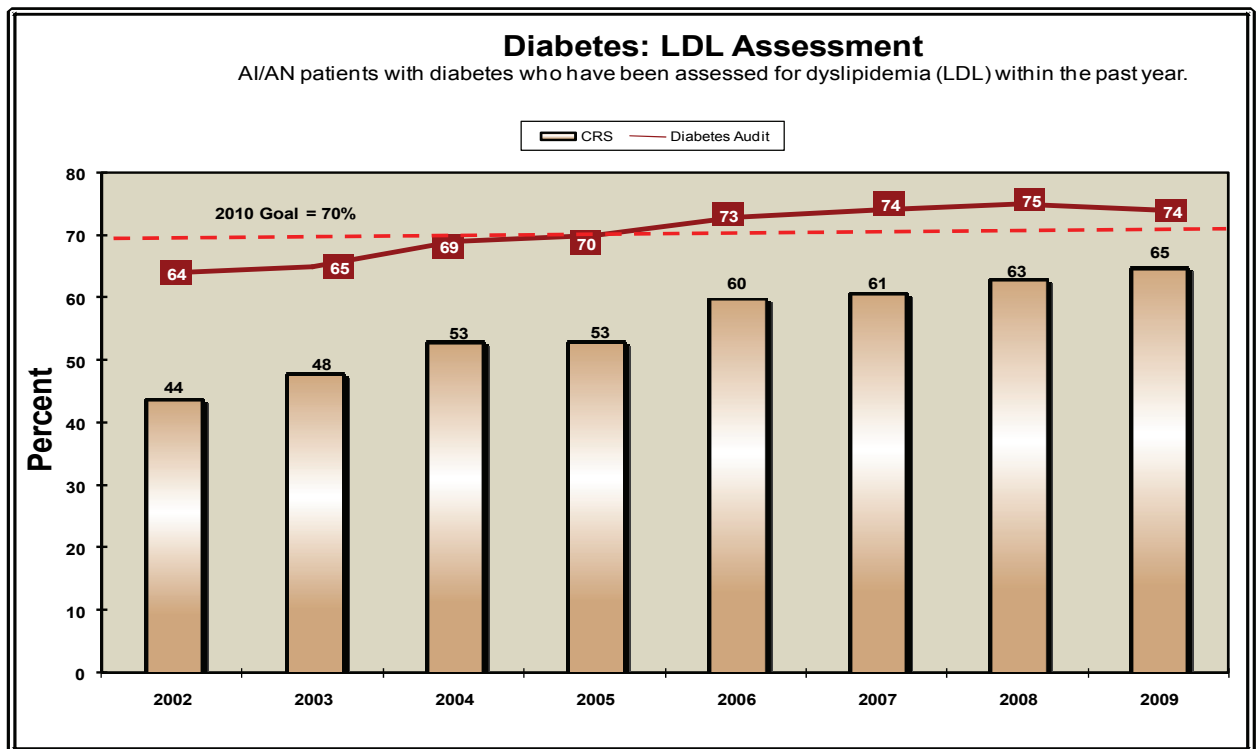
**Results and Analysis:** IHS met and exceeded the target for this measure. However, targets for all diabetes care measures were lower than the FY 2008 results. Although the target was met, the percentage of patients with diabetes with blood pressure control decreased from 38% in FY 2008 to 37% in FY 2009. IHS also met the diabetes audit target to maintain the number of patients with blood pressure control at 36%.

## Diabetes: LDL Assessment

**Measure:** Percentage of patients with diagnosed diabetes assessed for LDL cholesterol.

**Importance:** *Dyslipidemia refers to disorders in the lipoprotein metabolism, including hypercholesterolemia (high LDL cholesterol), and low HDL (good) cholesterol. Improved control of cholesterol levels reduces the risk of cardiovascular complications by 20-50%. National standards recommend that people with diabetes keep their total cholesterol levels below 200 mg/dl, and their LDL cholesterol levels below 130 mg/dl and ideally below 100 mg/dl.*

**2009 Target:** Achieve a target rate of 60% of patients diagnosed with diabetes with LDL assessed.



**Data source:** CRS 9.0 electronic examination of 102,640 patient records. Diabetes audit data comes from the IHS Diabetes program. Audit data is based on different collection methods and exclusion criteria, but Audit data trends generally mirror CRS data trends.

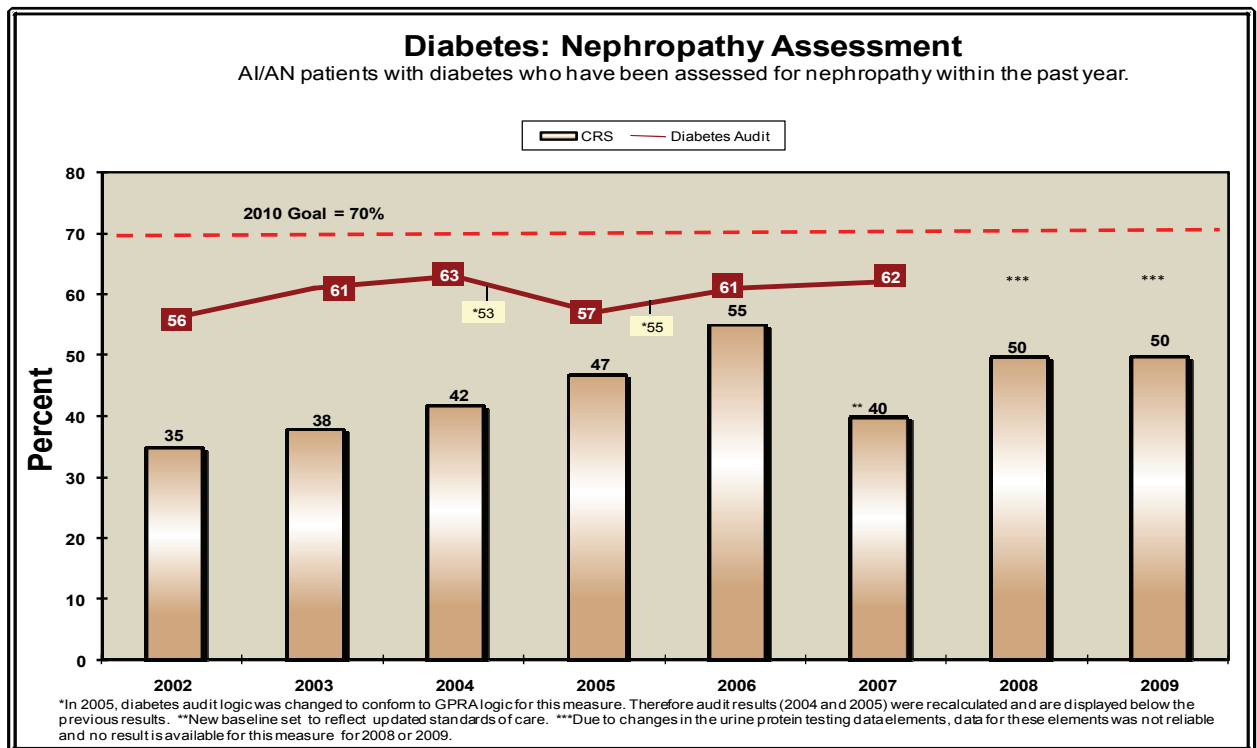
**Results and Analysis:** IHS met and exceeded the target for this measure. The percentage of patients with diabetes with LDL assessed increased from 63% in FY 2008 to 65% in FY 2009. The target for this measure was 60%; FY 2009 targets for all diabetes care measures were lower than the FY 2008 results. IHS met the reduced diabetes audit target of 74% of patients with their LDL assessed. As with blood sugar control, this is a high cost measure requiring frequent medical visits and laboratory testing.

# Diabetes: Nephropathy Assessment

**Measure:** Percentage of patients with diagnosed diabetes assessed for nephropathy.

**Importance:** *Diabetes can cause kidney disease by damaging the parts of the kidneys that filter out wastes. Diabetic nephropathy, or kidney disease, can eventually lead to kidney failure. Diabetes is the leading cause of end stage renal disease (ESRD), which is a significant and growing problem in American Indian communities. Early identification of at-risk patients may help prevent or delay the need for costly care such as dialysis or renal transplant. New Diabetes Standards of Care guidelines were incorporated into this measure in FY 2007; these standards require both an estimated GFR and a quantitative urinary protein assessment.*

**2009 Target:** Achieve a target rate of 47% of patients diagnosed with diabetes assessed for nephropathy.



**Data source:** CRS 9.0 electronic examination of 102,640 patient records. Diabetes audit data comes from the IHS Diabetes program. Audit data is based on different collection methods and exclusion criteria, but Audit data trends generally mirror CRS data trends.

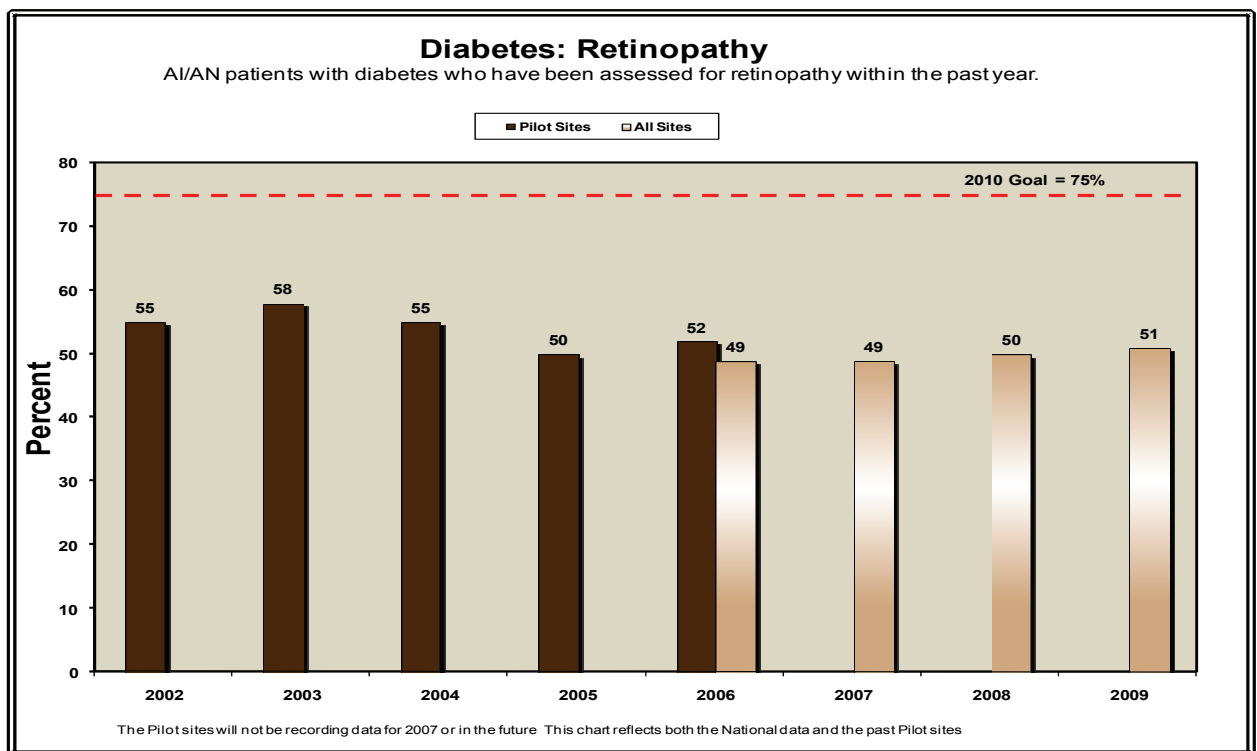
**Results and Analysis:** IHS met and exceeded the target for this measure. The percentage of patients with diabetes assessed for nephropathy was maintained at the FY 2008 rate of 50% and met the FY 2009 target of 47%. FY 2009 targets for all diabetes care measures were lower than the FY 2008 results. Data from the diabetes audit was not available for this measure for FY 2008 or FY 2009 due to changes in the urine protein testing data elements.

# Diabetes: Retinopathy

**Measure:** Percentage of patients with diagnosed diabetes who receive an annual retinal examination.

**Importance:** *Diabetes can affect sight by damaging the blood vessels inside the eye, a condition known as “diabetic retinopathy.” Diabetic eye disease is a leading cause of blindness in the United States. Early detection of diabetic retinopathy (DR) is a fundamental part of the effort to reduce visual disability in diabetic patients. Clinical trials demonstrated that effective laser photocoagulation treatment of DR could reduce vision loss by 90%. These studies also underscore the need for early identification of DR at a time when laser photocoagulation is most effective.*

**2009 Target:** Achieve a target rate of 47% of patients diagnosed with diabetes who receive an annual retinal examination.



**Data source:** CRS 9.0 electronic examination of 102,640 patient records.

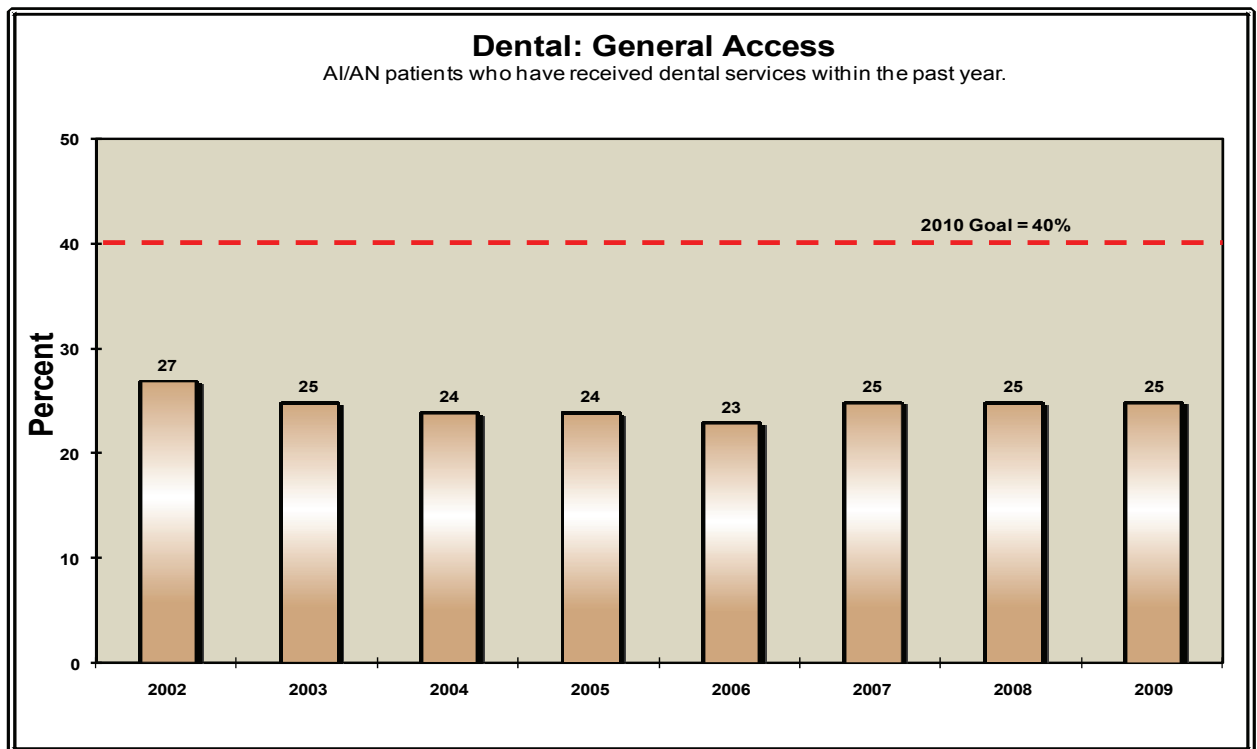
**Results and Analysis:** IHS met and exceeded the target for this measure. The percentage of patients with diabetes who received an annual diabetic retinal exam increased from 50% in FY 2008 to 51% in FY 2009. The target was 47%; FY 2009 targets for all diabetes care measures were lower than the FY 2008 results. Prior to 2006, this measure tracked performance only at designated sites with telemedicine systems, but beginning in 2007, results represent all sites.

## Dental: General Access

**Measure:** Percentage of patients who receive dental services.

**Importance:** *This measure is directed at improving the oral health status of the American Indian and Alaska Native populations. American Indians and Alaska Natives report greater unmet dental health needs compared to non-Hispanic whites. Untreated tooth decay can cause abscesses and infections, pain, dysfunction and weight loss. Dental problems result in the loss of almost 2.5 million workdays each year. Access to dental care improves oral health as well as the overall health of AI/AN people.*

**2009 Target:** Achieve a target rate of 24% of patients who receive dental services within the past year.



**Data source:** CRS 9.0 electronic examination of 1,276,482 patient records.

**Results and Analysis:** IHS met and exceeded the target for this measure. In FY 2009, the percentage of patients that obtained access to dental services was maintained at the FY 2008 level of 25%. FY 2009 targets for all dental measures were lower than the FY 2008 results. Although the target was met, the proportion of patients receiving dental care has not changed in recent years, mainly because of continued high vacancy rates in the dental program.

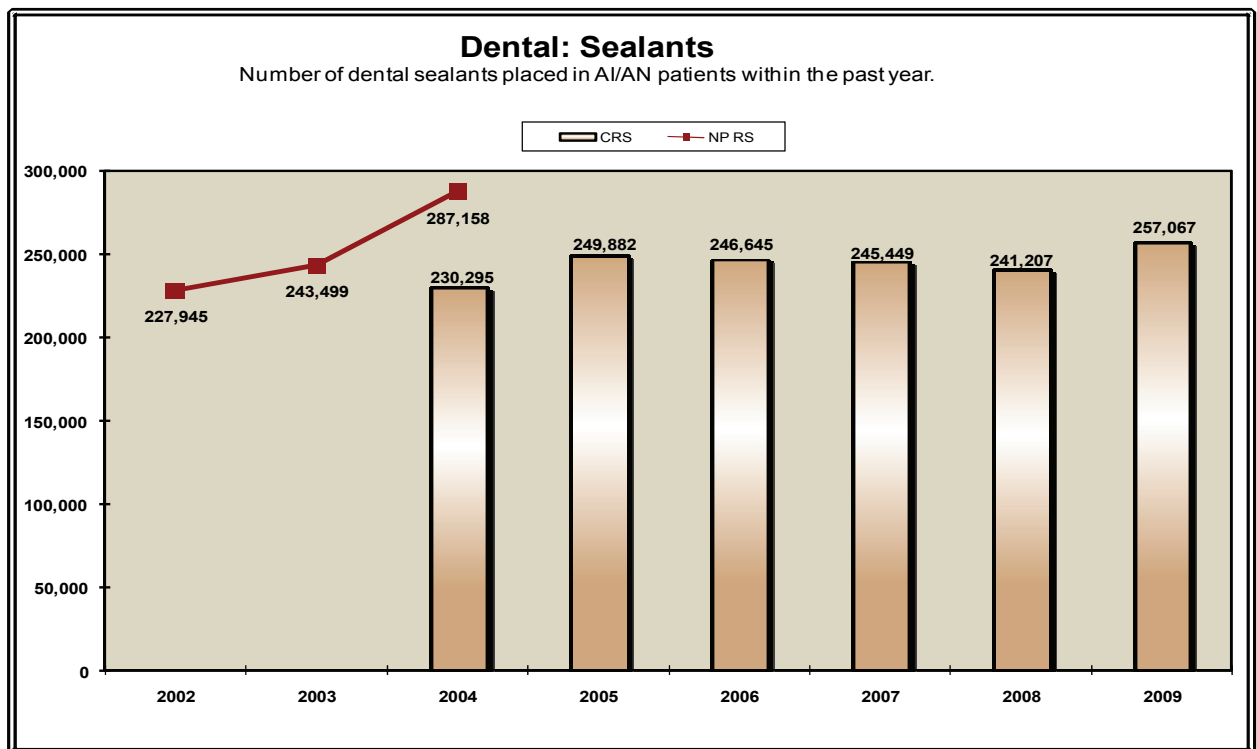


## Dental: Sealants

**Measure:** Number of sealants placed per year in American Indian and Alaska Native patients.

**Importance:** *Surveys of American Indian and Alaska Native children have consistently identified them as having significantly higher dental decay rates than the general U.S. population. Dental sealants, a recognized standard in preventive dental care, are an effective measure for reducing dental decay rates and can be effectively applied by dental auxiliaries at relatively low cost. By reducing the incidence of dental decay, sealants improve oral health and represent a cost-effective preventive dental treatment. Sealants can provide 100% protection from dental decay and research has shown that even when sealants are placed over very minimal decay, the decay will no longer progress.*

**2009 Target:** Achieve a target of 229,147 sealants placed in American Indian and Alaska Native patients.



**Data source:** CRS 9.0 electronic examination of 1,276,482 patient records.

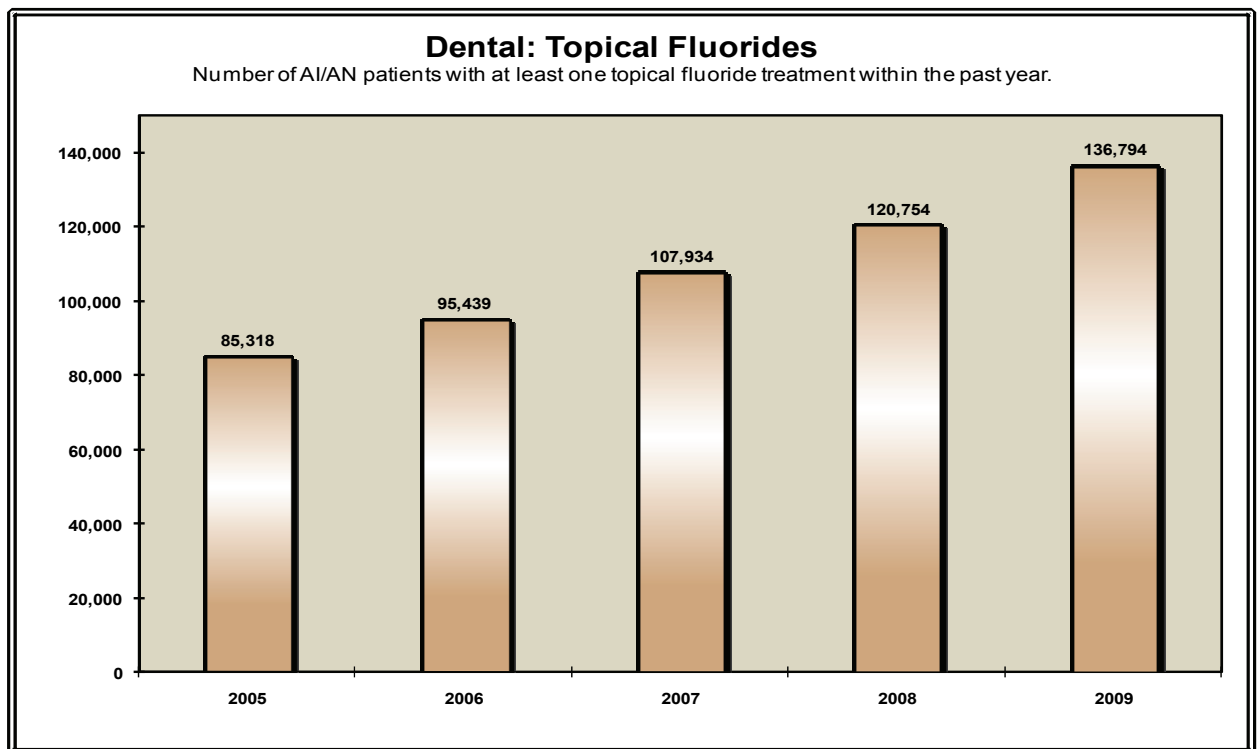
**Results and Analysis:** IHS met and exceeded the target for this measure. The number of sealants placed in AI/AN patients increased by 15,860 (7 percentage points) from 241,207 in FY 2008 to 257,067 in FY 2009. This improvement is significant, as it represents the first annual increase in the overall number of sealants placed since FY 2005.

## Dental: Topical Fluorides

**Measure:** Number of patients with one or more topical fluoride treatments.

**Importance:** *The professional topical application of fluoride is an accepted caries-preventive procedure that is appropriate for children, adolescents, and adults. Topical fluorides are also useful when applied to exposed root surfaces. This is especially beneficial for older patients, who are vulnerable to root caries and root sensitivity as a result of the loss of periodontal attachment and/or xerostomia (dry mouth). As a public health measure, targeting those at higher risk for caries is a cost-effective procedure. Patients who receive at least one fluoride application have fewer new caries, reducing the cost of subsequent dental care and improving oral health.*

**2009 Target:** Achieve a target of 114,716 patients who received one or more topical fluoride treatments.



**Data source:** CRS 9.0 electronic examination of 1,276,482 patient records.

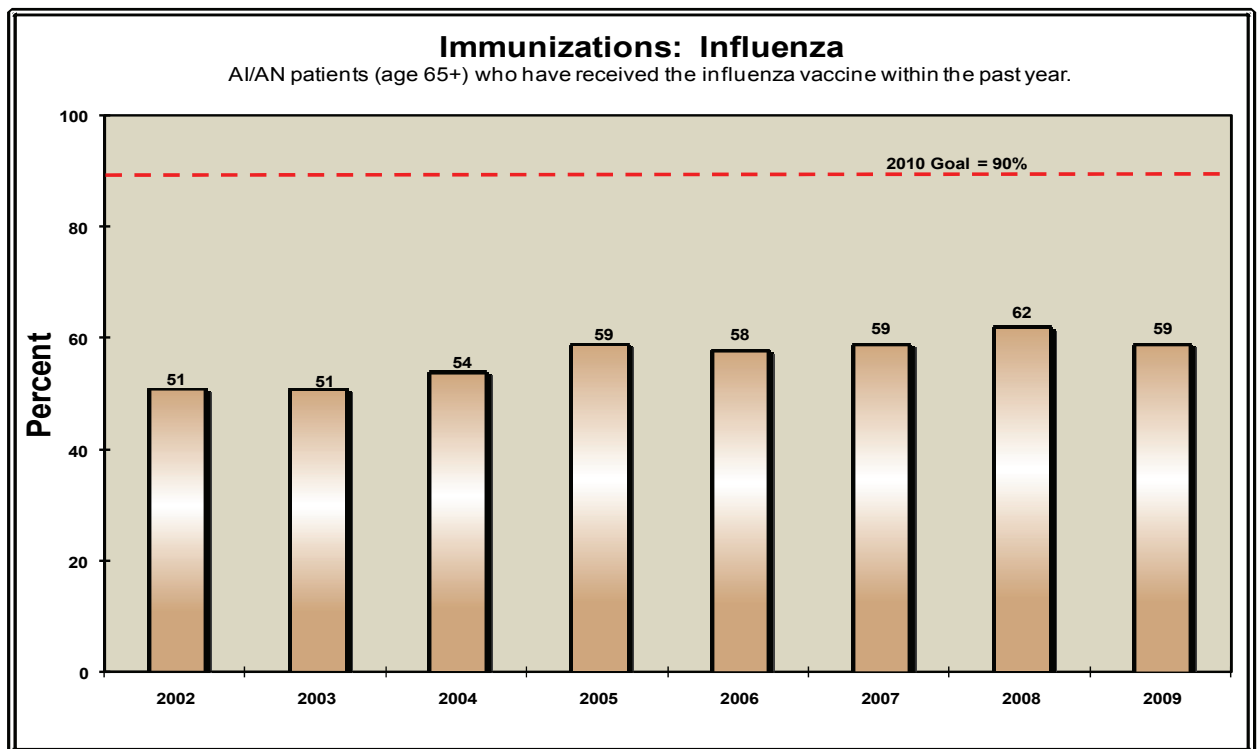
**Results and Analysis:** IHS met and exceeded the target for this measure. The number of patients who received one or more topical fluoride treatments increased by 16,040 (13 percentage points) from 120,754 in FY 2008 to 136,794 in FY 2009. The dental program has experienced great success in improving the number of patients who receive at least one topical fluoride treatment since this measure began in FY 2005. Approximately 60% more patients received topical fluoride treatments in FY 2009 compared to FY 2005.

# Immunizations: Influenza

**Measure:** Influenza vaccination rates among adult patients age 65 years and older.

**Importance:** *Influenza is a highly contagious respiratory illness that can cause potentially life-threatening complications. People aged 65 and older are especially vulnerable. The Centers for Disease Control (CDC) reports that adults age 65 and older account for 90% of the deaths each year from complications related to influenza and pneumonia. Approximately 63% of the 200,000 hospitalizations each year from influenza-related illness involve people age 65 and older. The best way to prevent influenza and associated complications is to get an annual flu vaccination. One observational study found a 29-32% reduction in hospitalizations for influenza or pneumonia and a 48-50% reduction in the risk of death from all causes in patients who received a flu vaccine.*

**2009 Target:** Maintain the percentage of eligible patients with an influenza vaccination in the past year at the FY 2008 level of 62%.



**Data source:** CRS 9.0 electronic examination of 60,798 patient records.

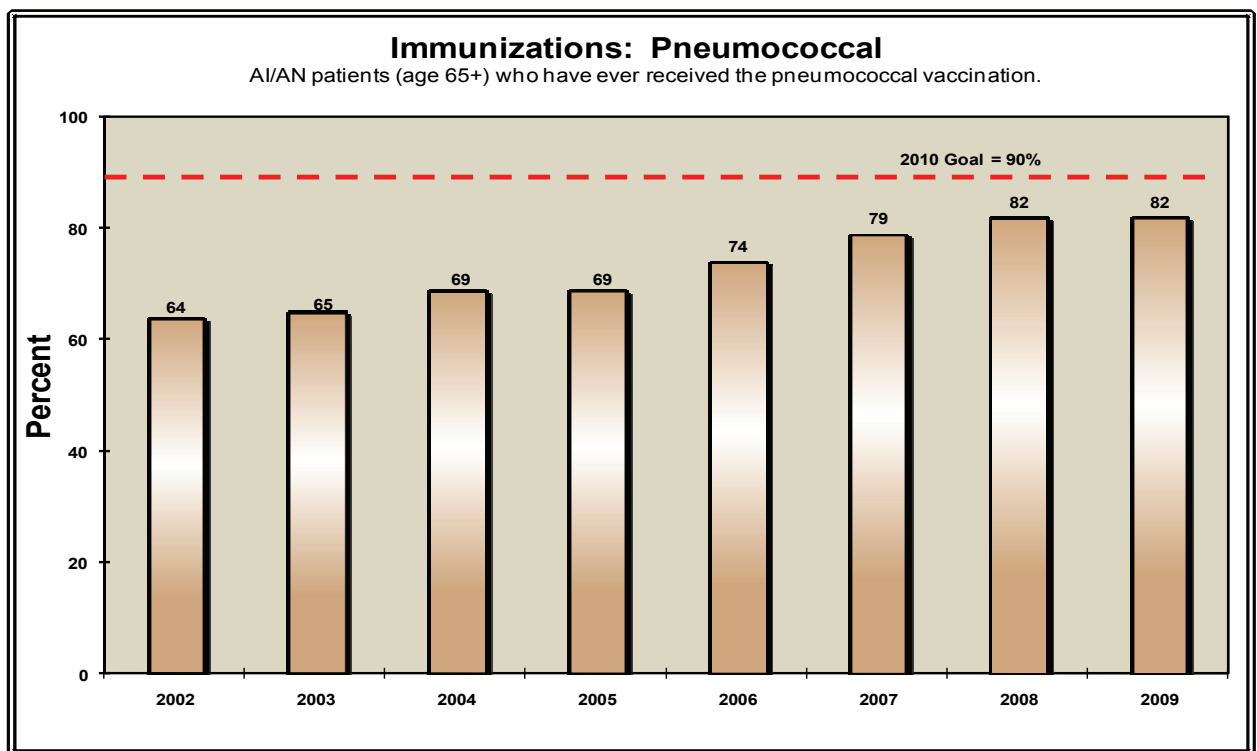
**Results and Analysis:** IHS did not meet the target for this measure. The percentage of eligible patients receiving an influenza vaccination decreased from 62% in FY 2008 to 59% in FY 2009. Although there has been improved awareness of the need for influenza immunization due to the H1N1 virus, it may divert resources normally directed at seasonal flu prevention. Reported shortages of seasonal flu vaccine may also impact FY 2010 rates.

# Immunizations: Pneumococcal

**Measure:** Pneumococcal vaccination rates among adult patients age 65 years and older.

**Importance:** *Pneumococcal disease is a bacterial infection that can lead to meningitis, pneumonia, and/or bacteremia. In 2006, approximately 5,000 people in the United States died from invasive pneumococcal disease and nearly half were older adults. Morbidity and mortality from this illness in the elderly can be greatly reduced by a single pneumococcal vaccination once a person reaches the age of 65. This vaccine is a low-cost medical intervention that has been shown to prevent serious health complications among the elderly.*

**2009 Target:** Maintain the proportion of eligible patients with a pneumococcal vaccination ever at the FY 2008 level of 82%.



**Data source:** CRS 9.0 electronic examination of 60,798 patient records.

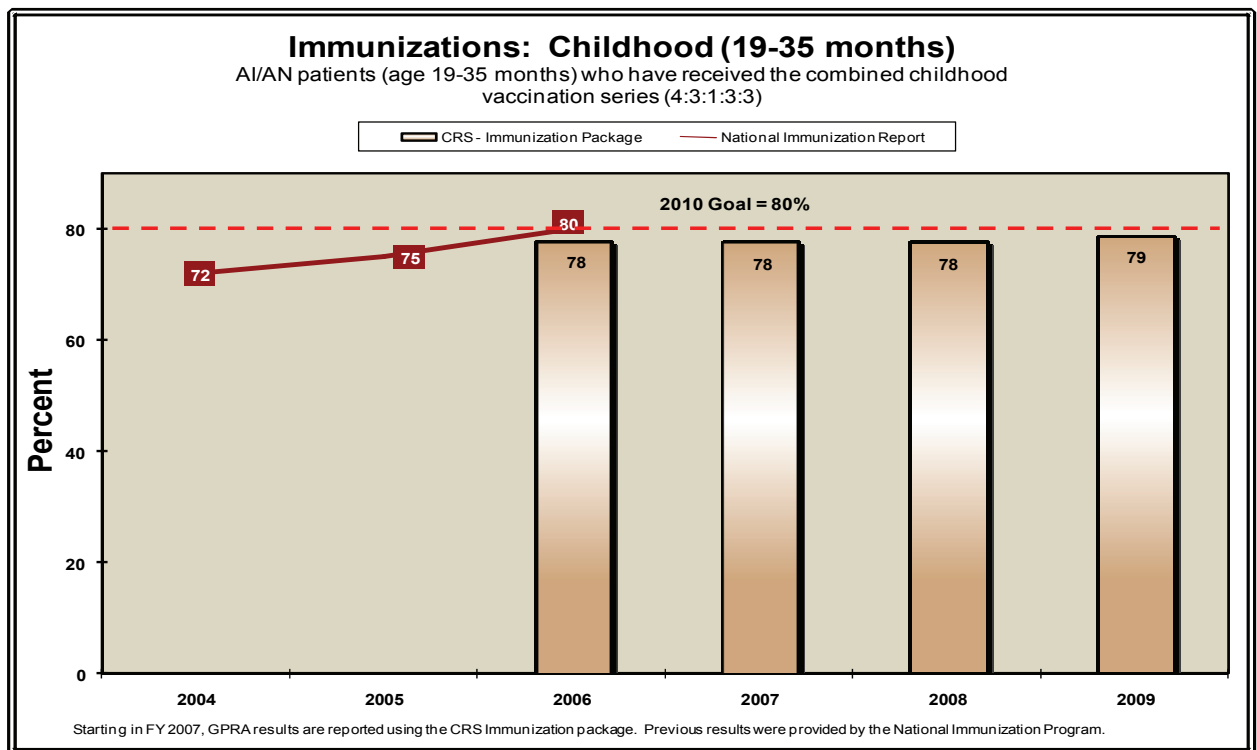
**Results and Analysis:** IHS met the target for this measure. The number of patients aged 65 and over that have ever received pneumococcal vaccination was maintained at the FY 2008 rate of 82%. The high profile concern about the H1N1 virus over the past year may have raised patient and provider awareness of the need for adequate vaccination coverage of vulnerable populations.

## Immunizations: Childhood (19-35 months)

**Measure:** Combined (4:3:1:3:3) immunization rates for AI/AN patients aged 19-35 months.

**Importance:** Routine immunizations represent a cost-effective public health measure that significantly improves the health of children. The Healthy People 2010 goal is 90% coverage for all routine immunizations for children aged 19-35 months and 80% coverage for the combined (4:3:1:3:3) series of vaccinations. The combined series includes 4 doses of DTaP, 3 doses of IPV, 1 dose of MMR, 3 doses of Hep B and 3 doses of Hib.

**2009 Target:** Maintain the percentage of American Indian and Alaska Native children aged 19-35 months who have received the combined series of recommended immunizations at the FY 2008 level of 78%.



**Data source:** CRS 9.0 electronic examination of 23,527 patient records in the RPMS Immunization Package. Prior to 2007, results were based on data provided by the National Immunization Program based on patient care records and public health nursing records of children who received immunizations at an IHS or tribal facility.

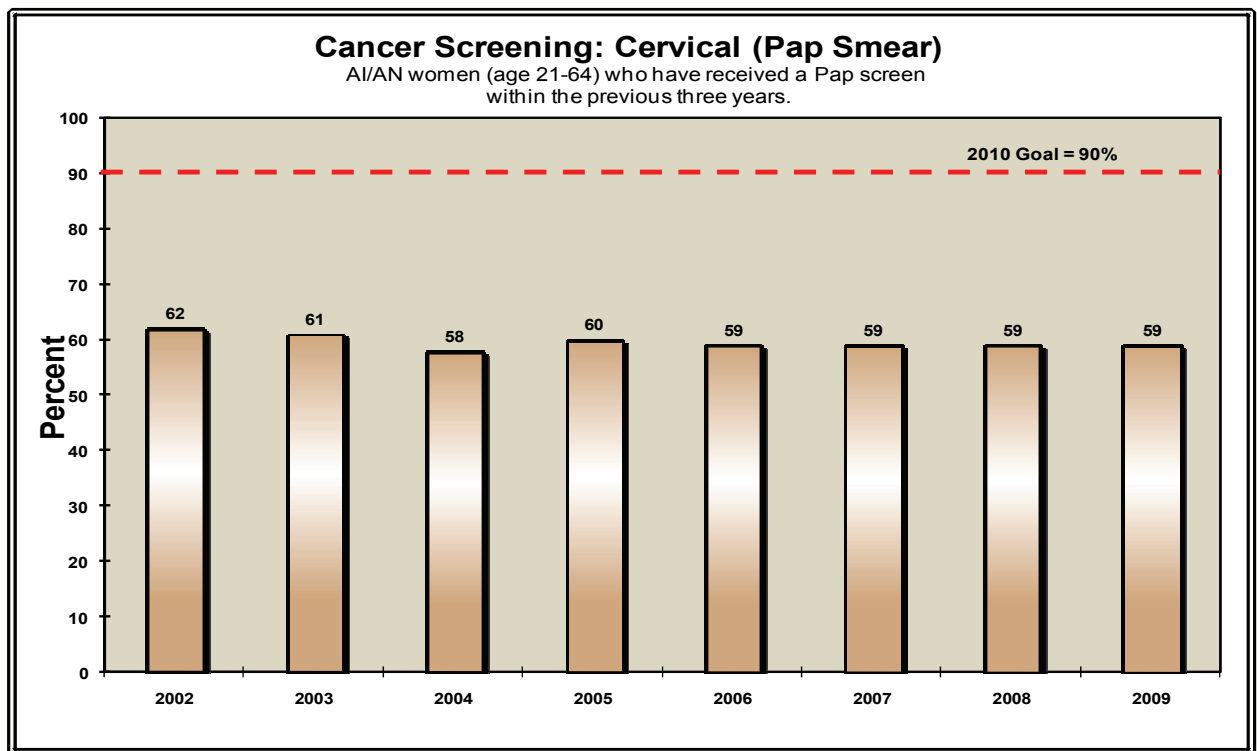
**Results and Analysis:** IHS met and exceeded the target for this measure. The percentage of children ages 19-35 months receiving the combined series of recommended vaccines increased from 78% in FY 2008 to 79% in FY 2009. FY 2006 is the first year for which there has been an increase in the vaccination rate since 2006, and IHS is now closer to meeting the Healthy People and Agency 2010 goals of an 80% immunization rate for the combined series of immunizations. As of FY 2010, the Varicella vaccine will be added to the required combined series of childhood immunizations for GPRA.

## Cancer Screening: Cervical (Pap Smear)

**Measure:** Percentage of eligible women who have had a Pap screen within the previous three years.

**Importance:** *More American Indian women report having never had a Pap screen than any other racial or ethnic group. Regular screening with a pap smear lowers the risk of developing invasive cervical cancer by detecting pre-cancerous cervical lesions that can be treated. If cervical cancer is detected early, the likelihood of survival is almost 100 percent with appropriate treatment and follow-up. Cervical cancer was once the leading cause of cancer death among women, but death rates dropped by 74% between 1955 and 1992 thanks to the use of Pap screens.*

**2009 Target:** Maintain the percentage of eligible women aged 21-64 who have had a Pap screen within the previous three years at the FY 2008 level of 59%.



**Data source:** CRS 9.0 electronic examination of 259,942 patient records.

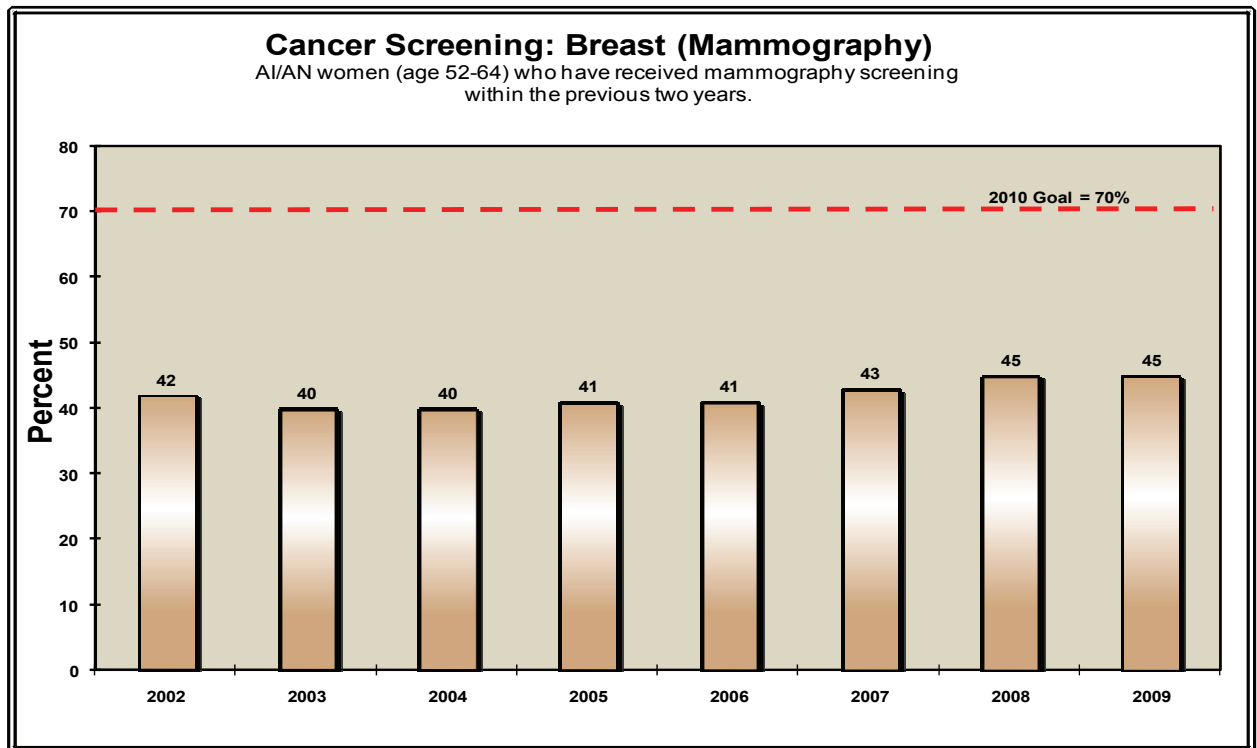
**Results and Analysis:** IHS met the target for this measure. In FY 2009, the percentage of eligible female patients (age 21-64) with a Pap screen within the previous three years was maintained at 59%. These results illustrate the difficulty of raising the Pap screening rate over time without increased resources; since the Agency began reporting this measure in 2002, there has been no significant change in the percentage of patients meeting this measure.

## Cancer Screening: Breast (Mammography)

**Measure:** Percentage of eligible women who have had mammography screening within the previous two years.

**Importance:** *Biennial screening of women between the ages of 50 and 69 has been shown to be a cost-effective way to decrease the breast cancer mortality rate. Breast cancer is the second leading cause of cancer death among U.S. women (lung cancer is first). Although there has been overall improvement in breast cancer mortality rates since 1990, AI/AN women have not shared these gains. Between 1997 and 2006, breast cancer mortality rates declined for all racial and ethnic groups except American Indian/Alaska Native women, who experienced no decline in mortality rates. Regular mammography screening can reduce breast cancer mortality by 20-25%. AI/AN women diagnosed with breast cancer have lower 5-year survival rates in comparison to all other groups except African-Americans, mainly because their cancers are less likely to be found in earlier stages.*

**2009 Target:** Maintain the percentage of eligible women aged 52-64 who have had mammography screening within the previous two years at the FY 2008 level of 45%.



**Data source:** CRS 9.0 electronic examination of 53,651 patient records.

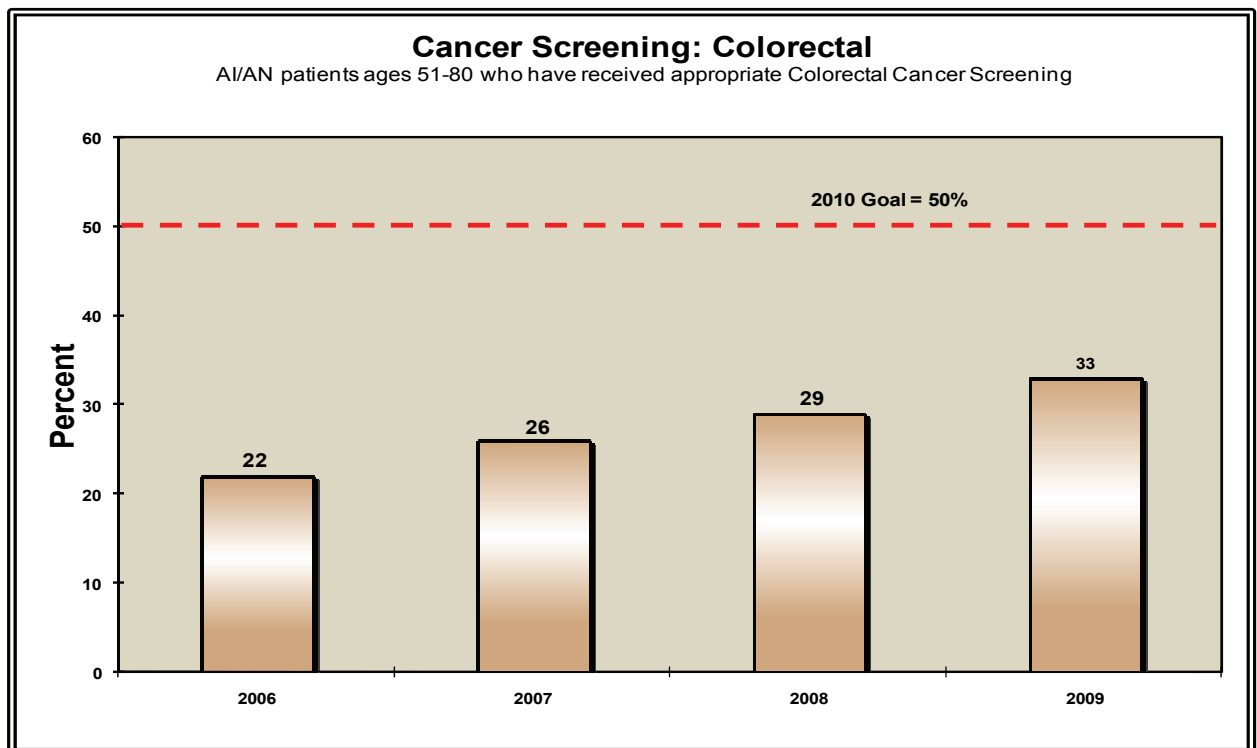
**Results and Analysis:** IHS met the target for this measure. In FY 2009, the percentage of eligible patients (aged 52-64) who have had mammography screening was maintained at the FY 2008 rate of 45%. This is the highest rate of mammography screening since the Agency began reporting GPRA results.

## Cancer Screening: Colorectal

**Measure:** Percentage of eligible patients who have had appropriate colorectal cancer screening.

**Importance:** *Colorectal cancer incidence and mortality rates among the Alaska Native and Northern Plains American Indian population are well above the national average. Studies have found rates of 88.9 to 98.5 per 100,000 among these two groups compared to 61.3 to 61.4 for non-Hispanic whites in these areas. Screening at the recommended frequency improves the chance that colorectal cancer will be detected at an earlier stage, when it is more likely to be cured by surgery alone. Patients diagnosed at the local stage have a five-year relative survival rate of about 90%, those diagnosed at the regional stage have a 68% five-year relative survival rate, and those diagnosed at the distant stage have a 11% five-year relative survival rate. The risk of colorectal cancer increases with age; 91% of cases are diagnosed in individuals aged 50 and older.*

**2009 Target:** Maintain the percentage of eligible patients who have received appropriate colorectal cancer screening at the FY 2008 rate of 29%.



**Data source:** CRS 9.0 electronic examination of 157,311 patient records.

**Results and Analysis:** IHS met and exceeded the target for this measure. In FY 2009, the percentage of eligible patients who have had appropriate colorectal cancer screening increased by 4 percentage points from 29% in FY 2008 to 33%. The increase reflects increased provider and patient awareness of the value of regular screening.

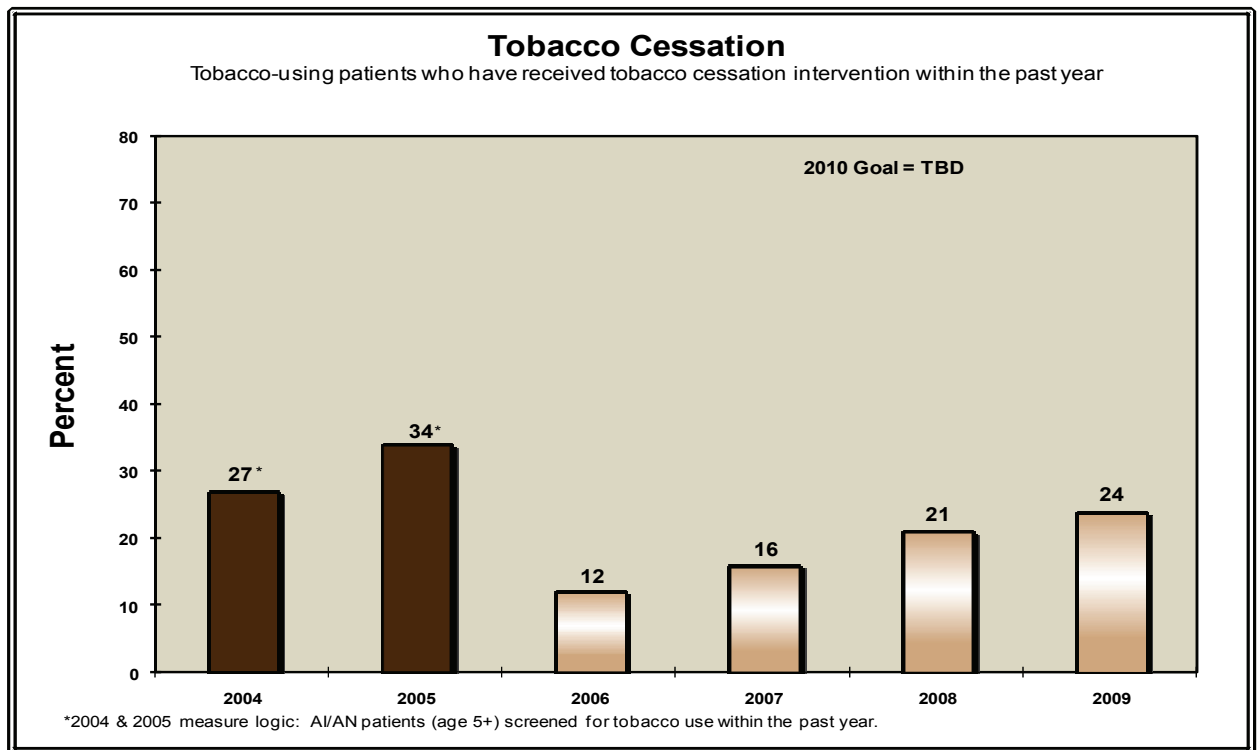


# Tobacco Cessation

**Measure:** Percentage of tobacco-using patients that receive tobacco cessation intervention.

**Importance:** *Cigarette smoking is the leading preventable cause of death in the United States, resulting in an estimated 443,000 premature deaths each year. American Indians and Alaska Natives had the highest prevalence of current cigarette smoking (32.4%) of any other racial/ethnic group in the U.S in 2008. Tobacco users who quit enjoy longer and healthier lives, on average, than those who do not. Even long-time smokers can significantly reduce their risk of heart disease and other complications by quitting. Advice from a health care provider and group and individual cessation counseling can help smokers quit. Smoking cessation treatments have been found to be safe and effective. Moreover, tobacco cessation programs are more cost-effective than other common prevention interventions.*

**2009 Target:** Maintain the percentage of tobacco-using patients receiving tobacco cessation intervention in the past year at the FY 2008 rate of 21%.



**Data source:** CRS 9.0 electronic examination of 205,834 patient records.

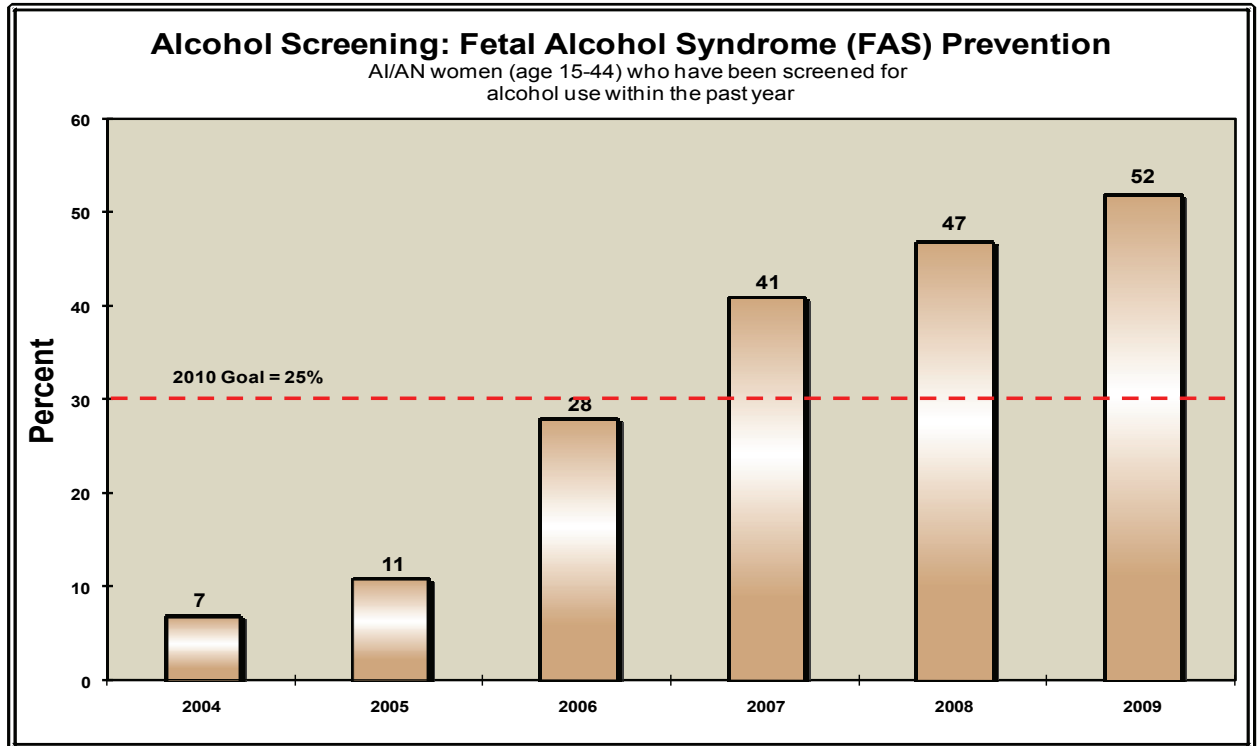
**Results and Analysis:** IHS met and exceeded the target for this measure. In FY 2009, 24% percent of tobacco-using patients received tobacco cessation intervention, an increase of 3 percentage points over the FY 2008 rate of 21%. The increase is due to growing provider awareness of the measure, and improved data entry for patient education and counseling. Prior to FY 2006, this measure tracked the number of patients screened for tobacco use.

## Alcohol Screening (FAS Prevention)

**Measure:** Alcohol use screening (to prevent Fetal Alcohol Syndrome) in appropriate female patients.

**Importance:** *Heavy drinking during pregnancy can cause significant birth defects, including Fetal Alcohol Syndrome (FAS). FAS is the leading known, and preventable, cause of mental retardation. Rates of FAS are higher among American Indians and Alaska Natives than the general population. FAS cases have been reported at a rate of 9.8 per 1000 live births among southwestern Indians, 5.6 per 1000 in Alaska, and 2.5 per 1000 in Arizona, well above that of any other race or ethnicity. Studies have found alcohol consumption rates among AI/AN women to be higher than national averages.*

**2009 Target:** Maintain the percentage of women aged 15-44 screened for alcohol use in the past year at the FY 2008 level of 47%.



**Data source:** CRS 9.0 electronic examination of 234,005 records.

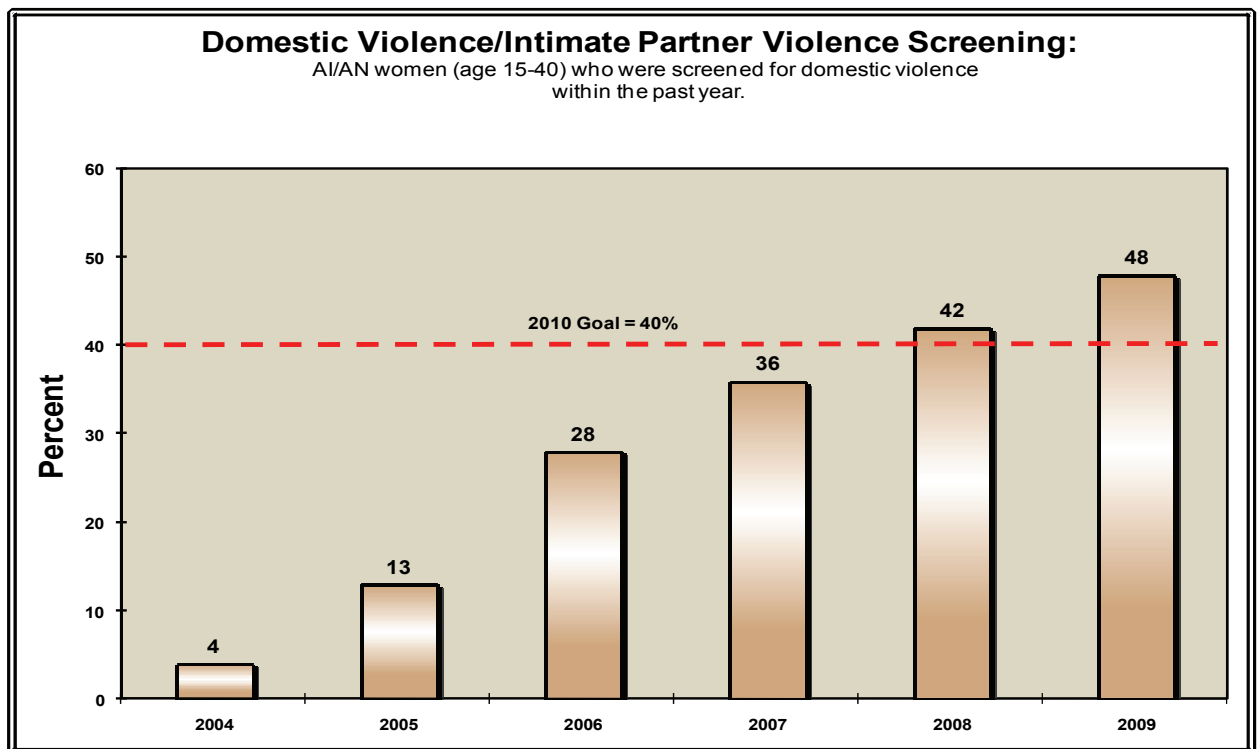
**Results and Analysis:** IHS met and exceeded the target for this measure. In FY 2009 the percentage of women screened for alcohol to prevent Fetal Alcohol Syndrome (FAS) increased by 5 percentage points, from 47% in FY 2008 to 52%. Alcohol Screening rates have increased dramatically since the FY 2004 baseline year, due to increased provider awareness and an agency emphasis on behavioral health screening in the primary care setting.

## Domestic Violence/Intimate Partner Violence Screening

**Measure:** Percentage of women who are screened for domestic violence at health care facilities.

**Importance:** *Thirty percent of women in the United States experience domestic violence at some time in their lives, and studies have found that AI/AN women experience domestic violence at rates higher than the national average. According to the National Violence Against Women Survey, at least one out of every three American Indian/Alaska Native females has been subject to intimate partner violence. The health consequences of intimate partner violence are numerous. Women who experience domestic violence are more often victims of nonconsensual sex and have higher rates of smoking, chronic pain syndromes, depression, generalized anxiety, substance abuse, and Post-Traumatic Stress Disorder.*

**2009 Target:** Maintain the proportion of women aged 15-40 screened for domestic and intimate partner violence in the past year at the FY 2008 level of 42%.



**Data source:** CRS 9.0 electronic examination of 208,051 patient records.

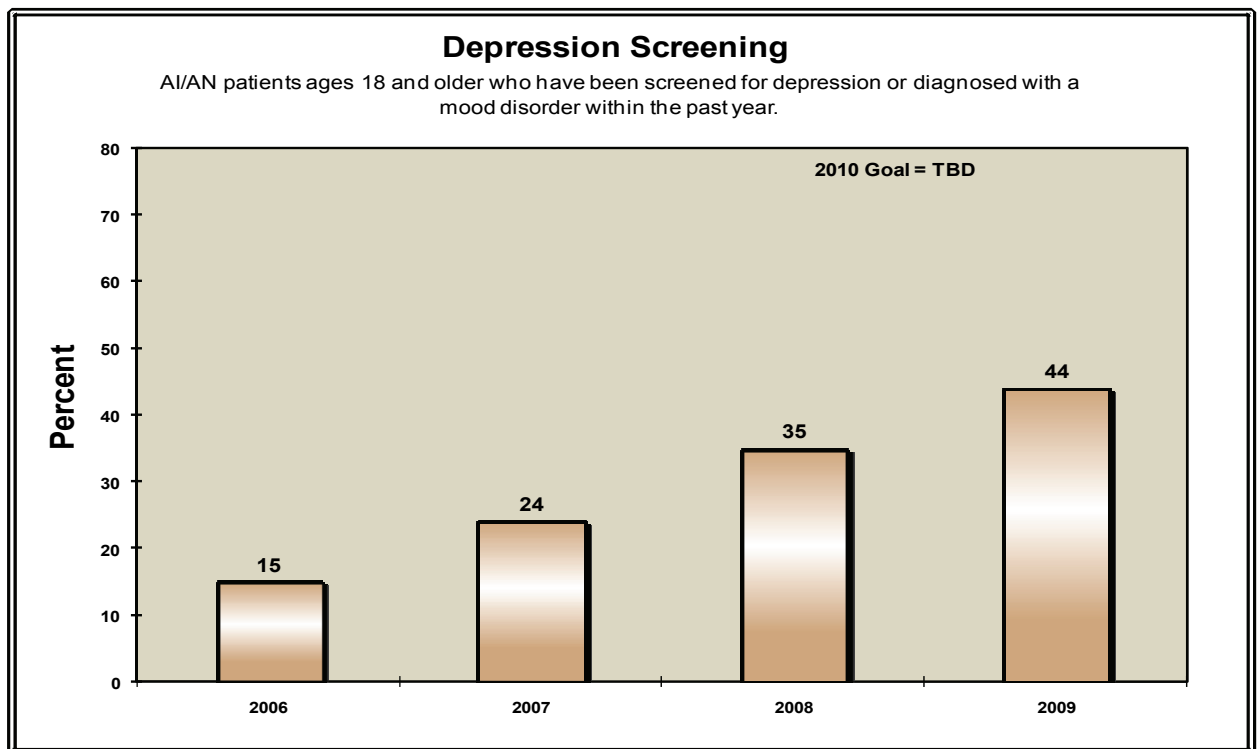
**Results and Analysis:** IHS met and exceeded the target for this measure. In FY 2009, the percentage of women screened for Domestic and Intimate Partner Violence (DV/IPV) was 48%, an increase of 6 percentage points over the FY 2008 rate of 42%. As with Alcohol screening rates, DV/IPV screening rates have improved dramatically since the FY 2004 baseline year thanks to increased provider awareness of the importance of screening and an agency emphasis on behavioral health screening in primary care settings.

# Depression Screening

**Measure:** Percentage of adults ages 18 and older who are screened for depression.

**Importance:** *About 1 in 20 adults experience major depression in a given year. Depression and anxiety disorders may affect heart rhythms, increase blood pressure, and alter blood clotting. Depression can also lead to elevated insulin and cholesterol levels. Depression or anxiety may result in chronically elevated levels of stress hormones such as cortisol and adrenaline. Depression also frequently increases the risk of suicidal behavior. The specific risk for suicide associated with depressive disorders is elevated 12- to 20-fold compared to the general population. Screening for depression is the first step toward identifying patients who need intervention, treatment, and follow up.*

**2009 Target:** Maintain the proportion of patients ages 18 and older that receive depression screening in the past year at the FY 2008 level of 35%.



**Data source:** CRS 9.0 electronic examination of 585,082 patient records.

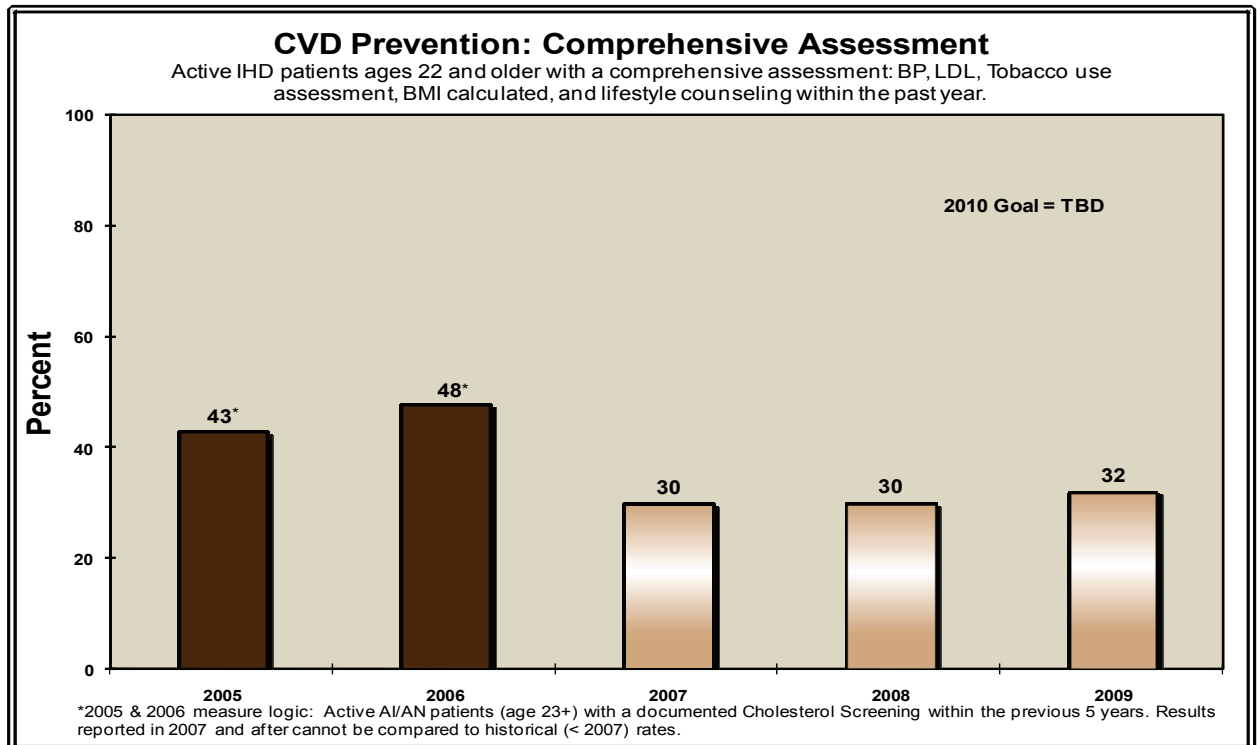
**Results and Analysis:** IHS met and exceeded the target for this measure. In FY 2009, 44% of patients age 18 and older were screened for depression, an increase of 9 percentage points over the FY 2008 rate of 35%. This measure has shown significant increases from the baseline result of 15% in FY 2006. Higher screening rates reflect increasing provider awareness of the importance of universal screening for depression among adults.

# CVD Prevention: Comprehensive Assessment

**Measure:** Percentage of IHD patients who have a comprehensive assessment for five CVD-related risk factors.

**Importance:** *Cardiovascular disease (CVD) represents the leading cause of death for American Indian and Alaska Native people above 45 years of age. In 2005, death rates from CVD in American Indians or Alaska Natives were 173.2 per 100,000 people in males and 115.9 per 100,000 people in females. Unlike other racial and ethnic groups, American Indians appear to have an increasing incidence of cardiovascular disease, likely due to a high prevalence of diabetes. Modifying risk factors offers the greatest potential for reducing CVD morbidity, disability, and mortality: high blood pressure, high cholesterol, smoking tobacco, excessive body weight, and physical inactivity.*

**2009 Target:** Maintain the percentage of active patients with Ischemic Heart Disease (IHD) aged 22 and older that receive a comprehensive CVD assessment at the FY 2008 level of 30%



**Data source:** CRS 9.0 electronic examination of 34,449 patient records.

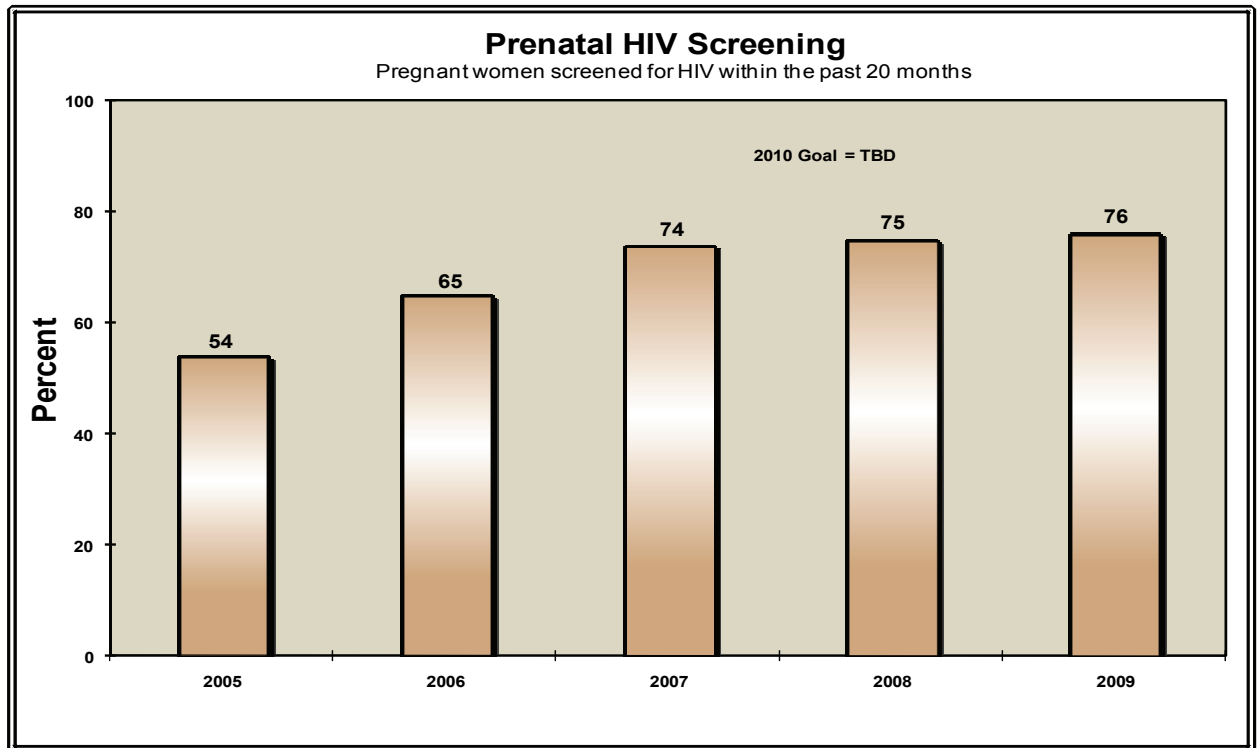
**Results and Analysis:** IHS met and exceeded the target for this measure. In FY 2009, 32% of eligible patients received a comprehensive assessment for five CVD-related risk factors, a 2 percentage point increase over the FY 2008 rate of 30%. Comprehensive assessment of risk factors and patient education are important standards of care for patients at risk of cardiovascular disease in the AI/AN population.

# Prenatal HIV Screening

**Measure:** Percentage of pregnant women screened for HIV.

**Importance:** *The HIV/AIDS epidemic represents a growing threat to AI/AN women of childbearing age. From 2001 through 2004 the number of HIV/AIDS diagnoses for women aged 15-39, decreased for white, black, and Hispanic women, while the number of diagnoses for AI/AN women increased. An increase in HIV infections in newborn children is a potential consequence of higher HIV infection rates among women of childbearing age. Perinatal transmission accounts for 91% of all AIDS cases among children in the United States. Antiretroviral therapy during pregnancy can reduce the transmission rate to 2% or less. The transmission rate is 25% without treatment. Routine prenatal HIV testing of all pregnant women is the best way to avoid transmission of HIV from mother to infant.*

**2009 Target:** Maintain the proportion of pregnant women screened for HIV in the previous 20 months at the FY 2008 level of 75%.



**Data source:** CRS 9.0 electronic examination of 25,731 patient records.

**Results and Analysis:** IHS met and exceeded the target for this measure. In FY 2009, 76% of prenatal patients were screened for HIV, an increase of 1 percentage point above the FY 2008 rate of 75%. Since it introduced this measure in FY 2005, the Agency has increased prenatal screening rates by 22 percentage points, though rates have leveled off within the past three years.

# Appendix A

# 2009 CRS Clinical Measure Results Dashboard

Measure	2009 Results	2008 Results	2009 Target	Measure Status
Diabetes: Poor Glycemic Control	18%	17%	18%	Met
Diabetes: Ideal Glycemic Control	31%	32%	30%	Met
Diabetes: Blood Pressure Control	37%	38%	36%	Met
Diabetes: LDL Assessment	65%	63%	60%	Met
Diabetes: Nephropathy Assessment	50%	50%	47%	Met
Diabetes: Retinopathy Assessment	51%	50%	47%	Met
Dental: General Access	25%	25%	24%	Met
Dental: Sealants	257,067	241,207	229,147	Met
Dental: Topical Fluorides	136,794	120,754	114,716	Met
Immunizations: Influenza (65+)	59%	62%	62%	Not Met
Immunizations: Pneumococcal (65+)	82%	82%	82%	Met
Immunizations: Childhood (19-35mo)	79%	78%	78%	Met
Cancer Screening: Cervical (Pap)	59%	59%	59%	Met
Cancer Screening: Breast (Mammography)	45%	45%	45%	Met
Cancer Screening: Colorectal	33%	29%	29%	Met
Tobacco Cessation	24%	21%	21%	Met
Alcohol Screening (FAS Prevention)	52%	47%	47%	Met
Domestic (Intimate Partner) Violence Screening	48%	42%	42%	Met
Depression Screening	44%	35%	35%	Met
CVD Comprehensive Assessment	32%	30%	30%	Met
Prenatal HIV Screening	76%	75%	75%	Met
Childhood Weight Control	25%	24%	N/A	N/A



# 2009 Non-CRS Measure Results Dashboard

Measure	2009 Result	2008 Result	2009 Target	Measure Status
<b>YRTC Accreditation</b> <i>Accreditation rate for Youth Regional Treatment Centers (in operation 18 months or more).</i>	91%	91%	100%	Not Met
<b>IHS Direct Accreditation</b> <i>Percent of IHS hospitals and outpatient clinics accredited.</i>	100%	100%	100%	Met
<b>Patient Safety</b> <i>Number of sites with a patient safety measurement system. *Note this measure exceeded its original FY 09 target in FY 08; in FY 09 the measure underwent revision and a new baseline will be reported in FY 2010.</i>	Measure in Revision*	94 sites	Measure in Revision	N/A
<b>Scholarships</b> <i>Proportion of Health Professional Scholarship recipients placed in Indian health settings within 90 days of graduation.</i>	67%	61%	69%	Not Met
<b>Public Health Nursing</b> <i>GPRA-related activities (extracted from PHN database)</i>	428,207	415,945	427,700	Met
<b>Injury Intervention</b> <i>At least one comprehensive injury prevention intervention directed at improving the motor vehicle occupant restraint rates in 11 Areas</i>	1 pilot/Area	11 Areas	1 pilot/Area	Met
<b>Unintentional Injury Rates</b> <i>Unintentional injury mortality rate in AI/AN people (three-year rates centered on mid-year).</i>	Long-Term (2012)	Results available 12/2012	N/A	N/A
<b>Suicide Surveillance</b> <i>Incidence of suicidal behavior reported by health care providers</i>	1687 forms	1598 forms	1678 forms	Met
<b>Environmental Surveillance</b> <i>2009 measure at least 3 interventions to address common environmental risk factors identified in FY 2008 in 11 Areas.</i>	3 Interventions/ Area	12 Areas	3 Interventions/ Area	Met
<b>Sanitation Improvement</b> <i>Number of new or like-new AI/AN homes and existing homes provided with sanitation facilities. *This measure is counted as "met" if the number of homes provided with sanitation facilities meets the target.</i> <i>•Number of homes / percent of existing homes at Deficiency Level 4 or above</i>	45,325 •32%*	21,811 •42%	37,500 •43%	Met
<b>Health Care Facility Construction</b> <i>Number of Health Care Facilities Construction projects completed. See specific Facility Construction report for status.</i>	1 project	0 projects completed	Complete 1 project	Met

# Indian Health Services Mortality Disparities Table

**American Indian and Alaska Natives (AI/AN) in the IHS Service Area**

**2002-2004, US All Races 2003**

	Rate AI/AN 2002-2004	Rate U.S. All Races 2003	Ratio: AI/AN: U.S. All Races
<b>ALL CAUSES</b>	<b>1027.1</b>	<b>832.7</b>	<b>1.2</b>
ALCOHOL INDUCED <sup>1</sup>	43.6	6.7	6.5
BREAST CANCER	21.0	25.3	0.8
CEREBROVASCULAR DISEASE	50.9	53.5	1.0
CERVICAL CANCER	4.7	2.5	1.9
DIABETES	74.2	25.3	2.9
DISEASES OF THE HEART	231.1	232.3	1.0
HIV INFECTION <sup>2</sup>	3.1	4.7	0.7
HOMICIDE (assault)	12.2	6.0	2.0
INFANT DEATHS <sup>3</sup>	11.7	6.9	1.7
MALIGNANT NEOPLASMS (ALL)	180.7	190.1	1.0
MATERNAL DEATHS <sup>4</sup>	11.1	12.1	0.9
MOTOR VEHICLE CRASHES	51.2	15.3	3.3
PNEUMONIA & INFLUENZA	32.3	22.0	1.5
SUICIDE (Intentional self-harm)	17.9	10.8	1.7
TUBERCULOSIS	1.7	0.2	8.5
UNINTENTIONAL INJURIES	94.8	37.3	2.5

**Source:** Unpublished data: OPHS/Division of Program Statistics (2002-2004 AI/AN rates based on 2000 census with bridged – race categories).

1. Rate of alcohol-induced deaths is for the 1979-1981 three year period. The US all races rate is for 1980.

2. HIV was first classified in 1987. Rate of HIV is for the 1987-1989 three year period. The US all races rate is for 1988.

3. Per 1,000 live births.

4. Rate per 100,000 live births. Rate does not meet the standards of reliability due to small numbers. The break in comparability for maternal mortality has not been quantified by NCHS.

## Bibliography

1. American Cancer Society, *Breast Cancer Facts and Figures 2009-2010*.
2. American Cancer Society, *Colorectal Cancer Facts and Figures, 2008-2010*.
3. American Cancer Society, *Cancer Facts and Figures 2009*.
4. American Cancer Society, 2009 “What are the Key Statistics about Cervical Cancer?”.
5. American Dental Association. 2001 “Access to Care”.
6. American Diabetes Association (ADA) 2005. “Diabetes Statistics for Native Americans”.
7. American Heart Association. 2009. Statistical Fact Sheet – Populations, 2009 Update: American Indians /Alaska Natives and Cardiovascular Diseases – Statistics.
8. Athas, W. Colon and Rectum Cancer. *Cancer in New Mexico: Changing Patterns and Emerging Trends, 1970-1996*. New Mexico Tumor Registry, New Mexico Department of Health, 1997.
9. Barrier PA. Domestic violence. *Mayo Clinic Proceedings*. 1998 Mar;73(3):271-4.
10. Benard VB, Lee NC, Piper M, Richardson L. Race-specific results of Papanicolaou testing and the rate of cervical neoplasia in the National Breast and Cervical Cancer Early Detection Program, 1991-1998 (United States). *Cancer Causes and Control*. 2001 Jan;12(1):61–68.
11. Centers for Disease Control and Prevention. 2008. CDC Says Immunizations Reduce Deaths from Influenza and Pneumococcal Disease Among Older Adults. Atlanta, GA.
12. Centers for Disease Control. Cigarette Smoking Among Adults and Trends in Smoking Cessation---United States, 2008. *Morbidity and Mortality Weekly Report*. 2009;58(44):1227-1232.
13. Centers for Disease Control and Prevention. 2007. National Diabetes Fact Sheet: National estimates and general information on diabetes in the United States. Atlanta, GA.
14. Centers for Disease Control and Prevention. 2008. CDC Fact Sheet: *HIV/AIDS Among Women*.
15. Centers for Disease Control and Prevention. Office of Minority Health and Health Disparities Fact Sheet: Eliminate Disparities in Cardiovascular Disease (CVD).
16. Dietz WH. Health consequences of obesity in youth: childhood predictors of adult disease. *Pediatrics*. 1998;101:518-525.
17. Early Treatment Diabetic Retinopathy Study Research Group. Early photocoagulation for Diabetic Retinopathy. ETDRS Report 9. *Ophthalmology*. 1991;98:766-785. Abstract.
18. Fagot-Campagna A, Pettitt DJ, Engelgau MM, Burrows NR, Geiss LS, Valdez R, Beckles GL, Saaddine J, Gregg EW, Williamson DF, Narayan KM. 2000. Type 2 diabetes among North American children and adolescents: an epidemiologic review and a public health perspective. *Journal of Pediatrics* 136(5):664–672.

## Bibliography

19. Fairchild D, Fairchild M, Stoner S. Prevalence of adult domestic violence among women seeking routine care in a Native American health care facility. *American Journal of Public Health*. 1998;88:1515-7.
20. Fetal alcohol syndrome: Alaska, Arizona, Colorado, and New York, 1995-1997: *MMWR. Morbidity and Mortality Weekly Report*. 2002 May 24;51(20) 433-5.
21. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. *Journal of the American Medical Association*. 2002 Oct 9;288(14):1723-7.
22. Ganley A, Warshaw C, eds. *Improving the Health Care Response to Domestic Violence: A resource manual for health care providers*. Family Violence Prevention Fund. 1995.
23. Hamby S, Skupien M. Domestic violence on the San Carlos Apache reservation: Rates, associated psychological symptoms, and current beliefs. *IHS Provider* 1998, August.
24. Hankin, JR. Fetal Alcohol Syndrome Prevention Research. *Alcohol research & health: the journal of the National Institute on Alcohol Abuse and Alcoholism*. 2002;26(1):58-65.
25. Harris EC, Barraclough B. Suicide as an outcome for mental disorders. A meta-analysis *British Journal of Psychiatry*. 1997. 170: 205-228.
26. Jarrett RJ, Keen H. Hyperglycemia and diabetes mellitus. *Lancet*. 1976;2:1009-12.
27. Laakso, M. Benefits of Strict Glucose and Blood Pressure Control in Type 2 Diabetes. *Circulation*, 1999; 99:461-462.
28. Lesperance F, Frasure-Smith N, Talajic M. Major depression before and after myocardial infarction: its nature and consequences. *Psychosomatic Medicine*, 1996; 58(2): 99-110.
29. Lieu TA, Cochi SL, Black SB, Halloran ME, Shinefield HR, Holmes SJ, Wharton M, Washington AE. Cost-effectiveness of a routine varicella vaccination program for US children. *Journal of the American Medical Association*; 1994 Feb 2;271(5):375-81.
30. May PA, Hymbaugh KJ, Aase JM, Samet JM. Epidemiology of fetal alcohol syndrome among American Indians of the Southwest. *Social Biology*. 1983 Winter;30(4):374-87.
31. McFarlane J, Gondolf E. Preventing abuse during pregnancy: a clinical protocol. *MCN American Journal of Maternal Child Nursing* 1998 Jan-Feb;23(1):22-6.
32. Miller BA, Kolonel LN, Bernstein L, Young, Jr. JL, Swanson GM, West D, Key CR, Liff JM, Glover CS, Alexander GA, et. al. (eds). *Racial/Ethnic Patterns of Cancer in the United States, 1988-1992*, National Cancer Institute. NIH Pub. No. 96-4103. (SEER Program) Bethesda, MD , 1996.
33. Muelleman RL, Lenaghan PA, Pakieser RA. Battered women: injury locations and types. *Annals of Emergency Medicine* 1996;28(5):486-92.
34. National Cancer Institute (NCI). State Cancer Profiles, mortality rates by race/ethnicity (2002).

## Bibliography

35. National Diabetes Information Clearinghouse. 2008. *DCCT and EDIC: The Diabetes Control and Complications Trial and Follow-up Study*.
36. National Institute of Diabetes and Digestive and Kidney Diseases. 1995. *The Pima Indians: Pathfinders for Health*. NIH Publication No. 95-3821. Washington, DC: U.S. Government Printing Office.
37. National Institute of Diabetes and Digestive and Kidney Diseases. National Diabetes Statistics fact sheet: general information and national estimates on diabetes in the United States, 2005. Bethesda, MD: U.S. Department of Health and Human Services, National Institute of Health, 2005.
38. National Institute of Mental Health. "Depression and Heart Disease".
39. Nichol, et al. Influenza Vaccination and Reduction in Hospitalizations for Cardiac Disease and Stroke among the Elderly. *New England Journal of Medicine* 2003;348:1322-32.
40. Photocoagulation treatment of proliferative diabetic retinopathy: The Second Report of Diabetic Retinopathy Study Findings. *Ophthalmology*. 1978; 85: 82-106. Abstract.
41. Pi-Sunyer FX. Health implications of obesity. *American Journal of Clinical Nutrition*. 1991;53(6 Suppl):1595S-1603S.
42. Plichta S., The effects of woman abuse on health care utilization and health status: a literature review, *Women's Health Issues: Official Publication of the Jacobs Institute of Women's Health*, 2(3), 154-63, 1992.
43. Prevalence and characteristics of alcohol consumption and fetal alcohol syndrome awareness--Alaska, 1991 and 1993. *MMWR. Morbidity and Mortality Weekly Report*. 1994 Jan 14;43(1):3-6.
44. Regier DA, Narrow WE, Rae DS, et al. The de facto mental and addictive disorders service system. Epidemiologic Catchment Area prospective 1-year prevalence rates of disorders and services. *Archives of General Psychiatry*, 1993; 50(2): 85-94.
45. Robinson K, Baughman W, Rothrock G, et al. Epidemiology of invasive Streptococcus Pneumonia infection in the United States, 1995-1998. *Journal of the American Medical Association* 2001;285:1729-35.
46. Saslow, D., C.D. Runowicz, D. Solomon, A. Moscicki, R. A. Smith, H. J. Eyre, C. Cohen. 2002. American Cancer Society Guideline for the early detection of cervical neoplasia and cancer. *CA, A Cancer Journal for Clinicians*, 52: 342-362.
47. Schwartz MB, Puhl R. 2003. Childhood obesity: A societal problem to solve. *Obes Rev* 4(1):57-71.
48. Sisk, J. E. 2000. The best and worst of times: Use of adult immunizations. *American Journal of Preventive Medicine*, 19: 26-27.

## Bibliography

49. Smith RA, Saslow D, Sawyer KA, Burke W, Costanza ME, Evans WP, Foster RS, Hendrik E, Eyre HJ, and Sener S. 2003 American Cancer Society Guidelines for breast cancer screening: Update 2004. *CA, A Cancer Journal for Clinicians*, 53:131-169.
50. Story M, Evans M, Fabsitz RR, Clay TE, Holy Rock B, Broussard B. The epidemic of obesity in American Indian communities and the need for childhood obesity-prevention programs. *American Journal of Clinical Nutrition*. 1999 Apr;69(4 Suppl):747S-754S.
51. U.S. Department of Health and Human Services (DHHS). Indian Health Service. *Trends in Indian Health, 2000-2001*.
52. U.S. Department of Health and Human Services. 1998. *Tobacco Use Among U.S. Racial/Ethnic Minority Groups —African Americans, American Indians and Alaska Natives, Asian Americans and Pacific Islanders, and Hispanics: A Report of the Surgeon General*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
53. U.S. Preventive Services Task Force. *Screening for Breast Cancer: Recommendations and Rationale*. February 2002. Agency for Healthcare Research and Quality, Rockville, MD.
54. US Preventative Services Task Force. Screening and Behavioral Counseling Interventions in Primary Care to Reduce Alcohol Misuse, April 2004.
55. US Public Health Service recommendations for human immunodeficiency virus counseling and voluntary testing for pregnant women. *MMWR: Recommendations and Reports*. 1995 Jul 7;44(RR-7):1-15.
56. Wagner, E. H., C. Davis, C. Homer, S. Hagedorn, B. Austin, A. Kaplan. 2002. Curing the system: Stories of change in chronic illness care. *Accelerating Change Today*: 9.
57. Warner KE, Smith RJ, Smith DG, Fries BE. Health and economic implications of a work-site smoking-cessation program: a simulation analysis. *Journal of Occupational and Environmental Medicine* 1996;38(10):981–92.
58. Charles Wiggins, David Espey, Phyllis. Wingo, Judith Kaur, Robin Taylor Wilson, Judith Swan, Barry Miller, Melissa Jim, Janet Kelly, Anne Lanier, Cancer Among American Indians and Alaska Natives in the United States, 1999–2004, *Cancer Supplement* September 1, 2008; 113 (5): 1142-52.
59. Wilt S, Olson S. Prevalence of domestic violence in the United States. *Journal of the American Medical Women's Association* 1996; 51(3):77-82.
60. Zuckerman et al. Health Service Access, Use, and Insurance Coverage Among American Indians/Alaska Natives and Whites: What role does the Indian Health Service Play? *American Journal of Public Health*: Jan 2004:94:1.