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# Diabetes Alphabet Soup

# Topics

- A1C, BP, and Lipid targets
- SDPI Update
- Data
  - Diabetes Care and Outcomes Audit
  - Diabetes Prevalence Nationally and by Area
  - Updated ESRD Incidence
- Ever-expanding science on diabetes risk factors



# Changing Guidelines for A1C, Blood Pressure, and Lipids

# Management of Hyperglycemia in Type 2 Diabetes: A Patient-Centered Approach

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Position Statement of the American Diabetes Association (ADA) and  
the European Association for the Study of Diabetes (EASD)

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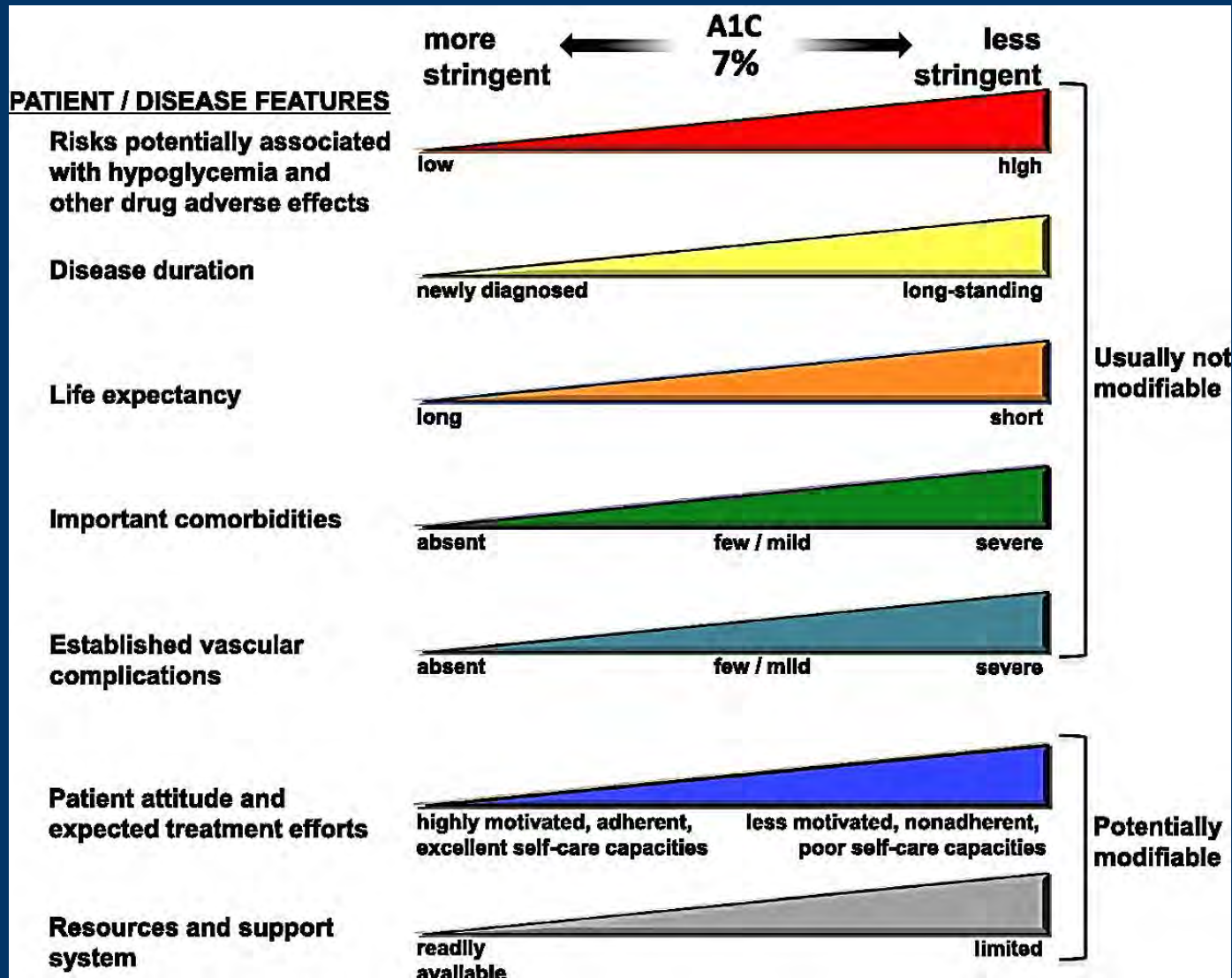
### 3. ANTI-HYPERGLYCEMIC THERAPY

- **Glycemic targets**

- **HbA1c < 7.0%** (mean PG ~150-160 mg/dl [8.3-8.9 mmol/l])
- Pre-prandial PG <130 mg/dl (7.2 mmol/l)
- Post-prandial PG <180 mg/dl (10.0 mmol/l)
- **Individualization** is key:
  - Tighter targets (6.0 - 6.5%) - younger, healthier
  - Looser targets (7.5 - 8.0%<sup>+</sup>) - older, comorbidities, hypoglycemia prone, etc.
- Avoidance of hypoglycemia

PG = plasma glucose

# Approach to the Management of Hyperglycemia



# Blood Pressure: JNC 8 Panel

- 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults
  - Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8) *JAMA* 2014;311(5):507-520
- Very rigorous guideline development process
- Target for people with diabetes +/- CKD:  
**<140/90**
- Recommended medications:
  - Thiazide diuretic, ACEI/ARB, Calcium Channel Blocker
  - If CKD: start with ACEI or ARB
  - Big change: Beta blockers no longer recommended for first-line treatment of hypertension (different issue from CVD)

# Recommendations: Hypertension/Blood Pressure Control

## Goals

- People with diabetes and hypertension should be treated to a systolic blood pressure goal of  $<140$  mmHg **A**
- Lower systolic targets, such as  $<130$  mmHg, may be appropriate for certain individuals, such as younger patients, if it can be achieved without undue treatment burden **C**
- Patients with diabetes should be treated to a diastolic blood pressure  $<90$  mmHg **A**
- Lower diastolic targets, such as  $<80$  mmHg, may be appropriate for certain individuals, such as younger patients, if it can be achieved without undue treatment burden **B**



# 2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults

*J Am Coll Cardiol*

E-pub: November 12, 2013

# ACC/AHA Cholesterol Guidelines

- ATP IV panel's work in conjunction with ACC/AHA
- Guideline highlights (it's all about statins!)
  - No longer recommended to treat to LDL targets
  - Treat w/moderate or high-intensity statin therapy:
    - Clinical CVD: high-intensity if <75 y/o, moderate if older
    - LDL  $\geq 190$ mg/dL: high-intensity
    - DM pts 40-75 y/o with LDL 70-189 mg/dL but no known CVD: moderate—high-intensity if 10-yr CVD risk  $\geq 7.5\%$
    - Other pts with 10-yr CVD risk  $\geq 7.5\%$ : moderate or high

# ACC/AHA Cholesterol Guidelines

- Statin dosing:
  - **High-intensity:** atorvastatin 40-80 mg, rosuvastatin 20-40 mg
  - **Moderate-intensity:** atorvastatin 10-20 mg, rosuvastatin 5-10 mg, simvastatin 20-40 mg, pravastatin 40-80 mg
- What do we do with the patients who can't tolerate statins: at high/moderate dose, low dose, or at all?
  - Try different statin (esp. if sx with simvastatin), start at low dose/titrate up slowly
  - Use of non-statin lipid agents only if high risk patient can't tolerate sufficient statin dose +/- therapeutic response

# Recommendations for Statin Treatment in People with Diabetes (4)

Age	Risk factors	Recommended statin dose*	Monitoring with lipid panel
< 40 years	None	None	Annually or as needed to monitor for adherence
	CVD risk factor(s)**	Moderate or high	
	Overt CVD***	High	
40–75 years	None	Moderate	As needed to monitor adherence
	CVD risk factors	High	
	Overt CVD	High	
> 75 years	None	Moderate	As needed to monitor adherence
	CVD risk factors	Moderate or high	
	Overt CVD	High	

\* In addition to lifestyle therapy.

\*\* CVD risk factors include LDL cholesterol  $\geq 100$  mg/dL (2.6 mmol/L), high blood pressure, smoking, and overweight and obesity.

\*\*\* Overt CVD includes those with previous cardiovascular events or acute coronary syndromes.

# Recommendations: Dyslipidemia/Lipid Management (6)

## Treatment recommendations and goals

- Combination therapy has been shown not to provide additional cardiovascular benefit above statin therapy alone and is not generally recommended **A**
- Statin therapy is contraindicated in pregnancy **B**

So what do we do with all  
this in 2015?

# A1C Targets

- Individualize glucose targets—really!
  - Younger, healthier patients: aim for <7% (or *lower*)
    - Excellent glucose control achieved and maintained early in the course of diabetes has long-term benefits, including for CVD
  - Longer duration of diabetes, more co-morbidities and lots of meds already: liberalize glucose targets (ranges)
    - Think carefully about whether to add another medication (and which one) to lower glucose
    - Hypoglycemia causes “considerable morbidity and even mortality”  
*Diabetes Care* 2013;36:1384-1395
- Focus more efforts on patients with A1Cs >9.0%
- Future EHRs: help with selecting, documenting target for each patient—VA already has a prototype

# BP Targets

- **<140/90:** target for (most) diabetes patients
  - Good BP control definitely reduces CVD, CKD risks
  - Balance need for good BP control with risk of problems
    - Hypotension, fatigue, polypharmacy issues are common
    - Use caution in patients who have symptoms at <140/90 and/or with meds needed to achieve it
      - Higher risk: Older, comorbidities, longer duration of DM, on lots of meds, autonomic neuropathy
      - Antihypertensive meds associated with falls/injuries in elderly *JAMA Intern Med* 2014;doi:10.1001/jamainternmed.2013.14764



# LDL Cholesterol

- ACC/AHA and ADA guidelines now aligned
- Statin use is the major issue—prescribe them in diabetes pts:
  - With overt CVD: use high-intensity dose regardless of LDL
  - Without overt CVD:
    - If  $\geq 40$  yrs old (esp. with any other CVD risk factor) regardless of LDL level at moderate or high-intensity
    - If  $< 40$  yrs old, decide based on CVD risk
- What to do for patients who can't tolerate a statin at high enough dose or at all?
  - Non-statin lipid meds can lower LDL, but little evidence that they reduce CVD risk
    - Clinical judgment as to when to use these in high risk patients



# Special Diabetes Program for Indians

# Special Diabetes Program for Indians (SDPI)

- SDPI was established by Congress in 1997
  - Today, provides \$150 million/year for the prevention and treatment of diabetes through FY 2015
- The SDPI currently provides grants for 404 programs in 35 states:
  - 336 Community-Directed Programs
  - 68 DP/HH Initiatives

# Special Diabetes Program for Indians 1997 - 2014



# Special Diabetes Program for Indians 404 Grantees



# SDPI Community–Directed Programs

- **336 community-directed diabetes programs:**
  - Implement diabetes treatment and prevention programs based on scientifically proven Best Practices
  - Are designed to address local community priorities
  - Have increased access to many types of services
    - Large variety of diabetes treatment and prevention programs
    - Makes for challenges in quantifying direct impact of SDPI



# Demonstration Projects Transitioned to Initiatives: 2010 to Present

- Current Initiatives:
  - 38 Diabetes Prevention Initiatives
  - 30 Healthy Heart Initiatives
- Continuing diabetes and cardiovascular risk reduction activities
- Toolkits will disseminate the lessons learned throughout AI/AN communities.



# SDPI FY 2015

- National Tribal Consultation
  - Tribal Leaders Diabetes Committee
- Reauthorization
  - Protecting Access to Medicare Act of 2014 (P.L. 113-93)
    - Signed by President Obama on April 1
    - Included SDPI: one year through FY 2015 at current \$150 million
- “Class Deviation Waiver” for FY 2015 to be a 6<sup>th</sup> year
  - Received from HHS on May 1
- IHS Director’s Decisions on SDPI FY 2015
  - “Dear Tribal Leader Letter” May 9
  - Continuation application, no changes in funding distribution



# SDPI National Funding Distribution

Total: \$150m

- Community-Directed Grants (I/T): \$108.9m
- Diabetes Prevention/Healthy Heart Grants: \$27.4m
- Set-Asides:
  - Urban Indian Health Programs: \$7.5m
  - Data Infrastructure Improvement: \$5.2m
  - CDC Native Diabetes Wellness Program: \$1.0m

# FY 2016 and Beyond

- Will SDPI be reauthorized?
  - If so, 1 year? Multi-year?
- Regardless, if there is SDPI in FY 2016, will almost certainly have to be a competitive application year
  - Will there be any changes in SDPI?
  - Tribal consultation
    - TLDC meetings: September 11-12, February 4-5, 2015
- New Best Practices format
  - Tied to Audit elements

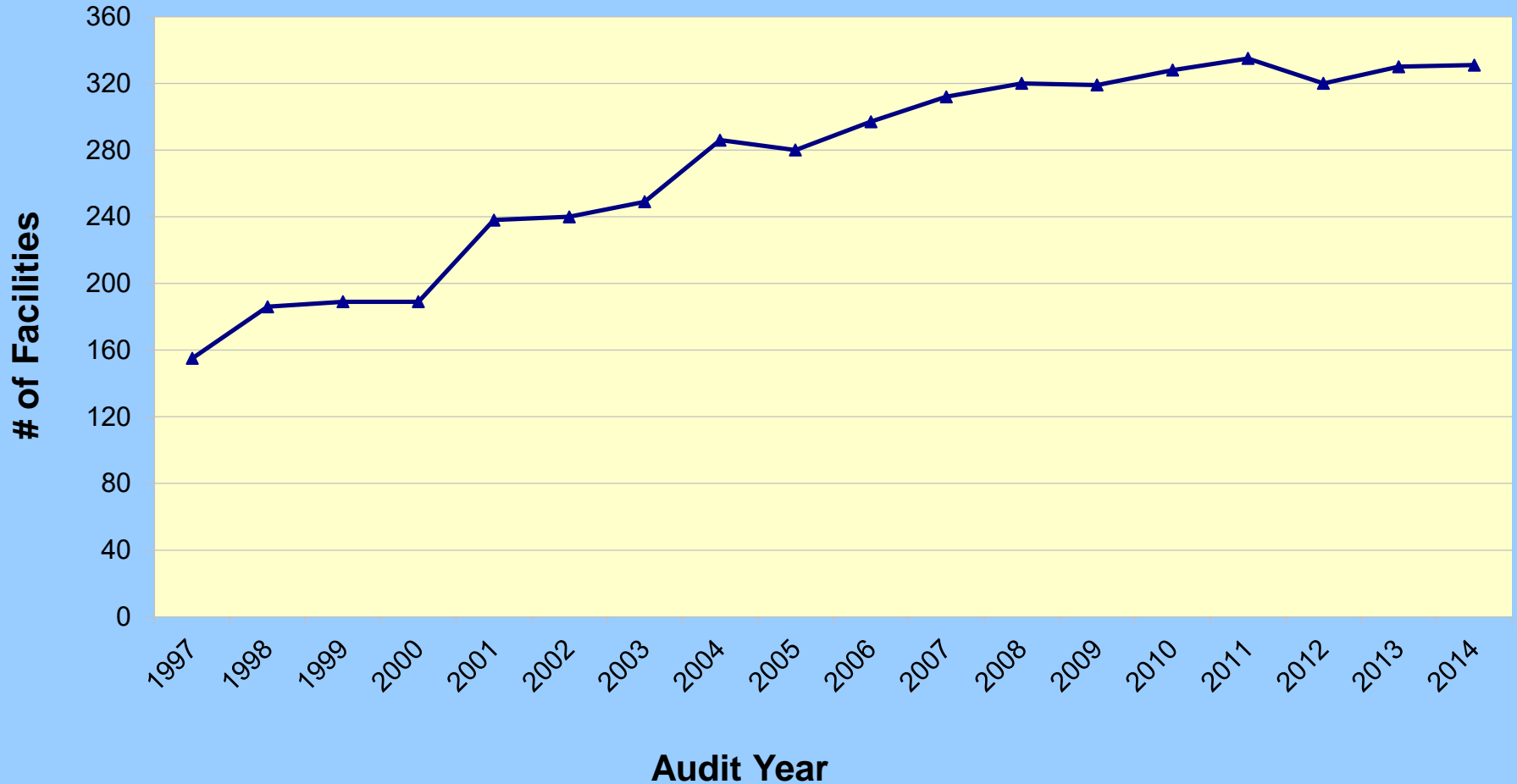


IHS Division of Diabetes  
Treatment and Prevention  
(DDTP)

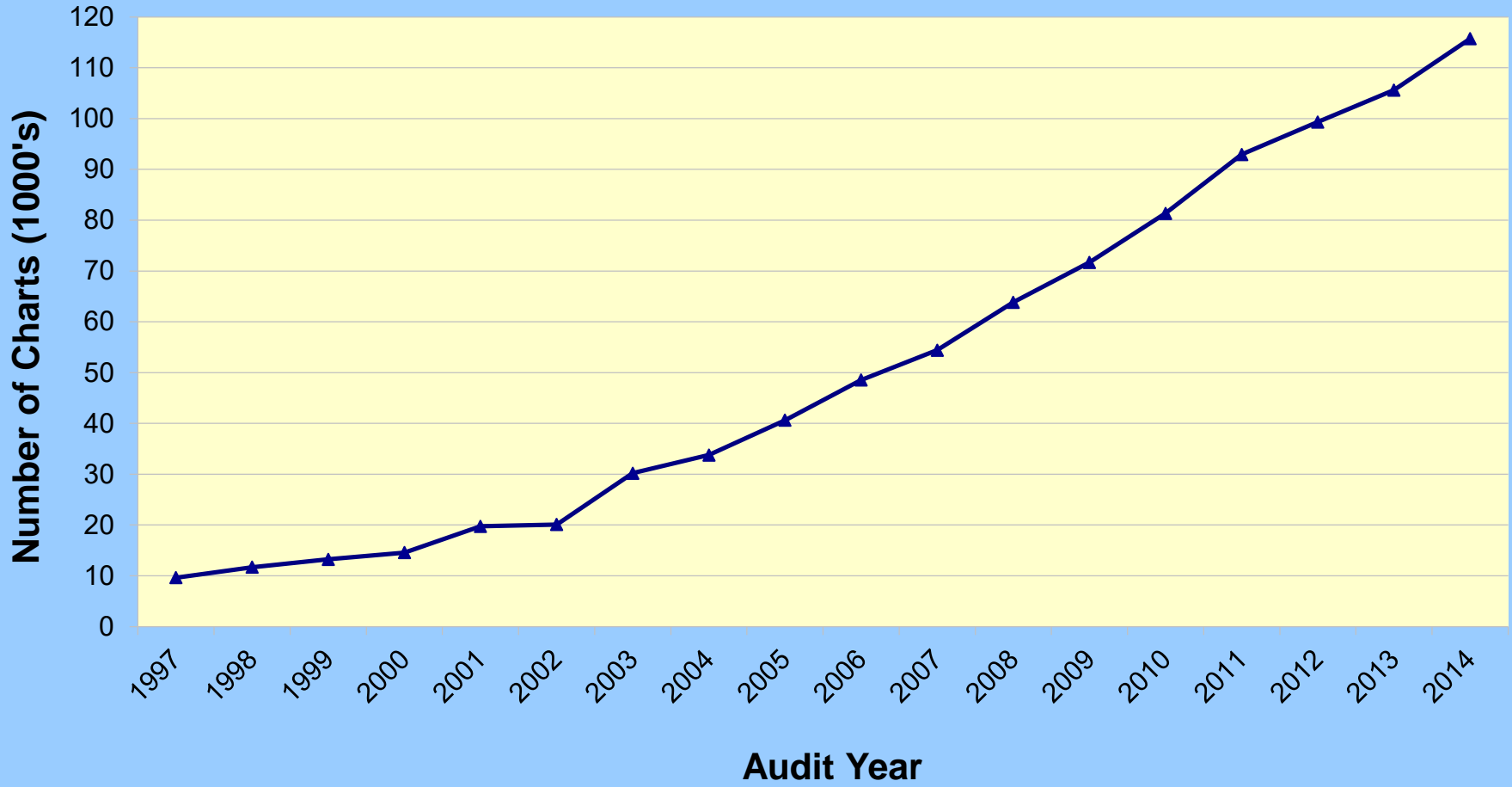
# Diabetes Care and Outcomes Audit 2014

331 I/T/U Facilities  
115,724 Charts

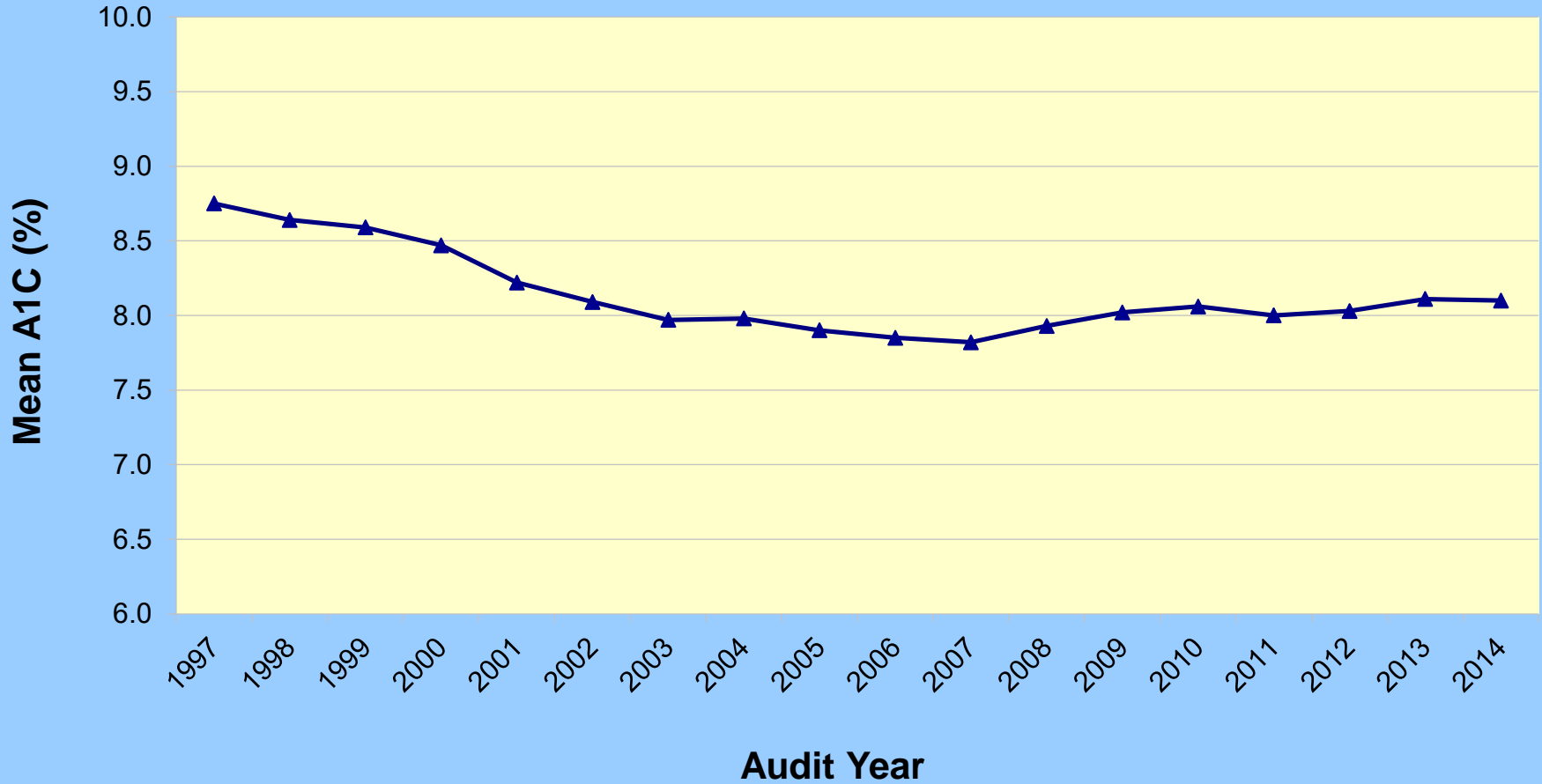
# Number of Participating Facilities 1997-2014



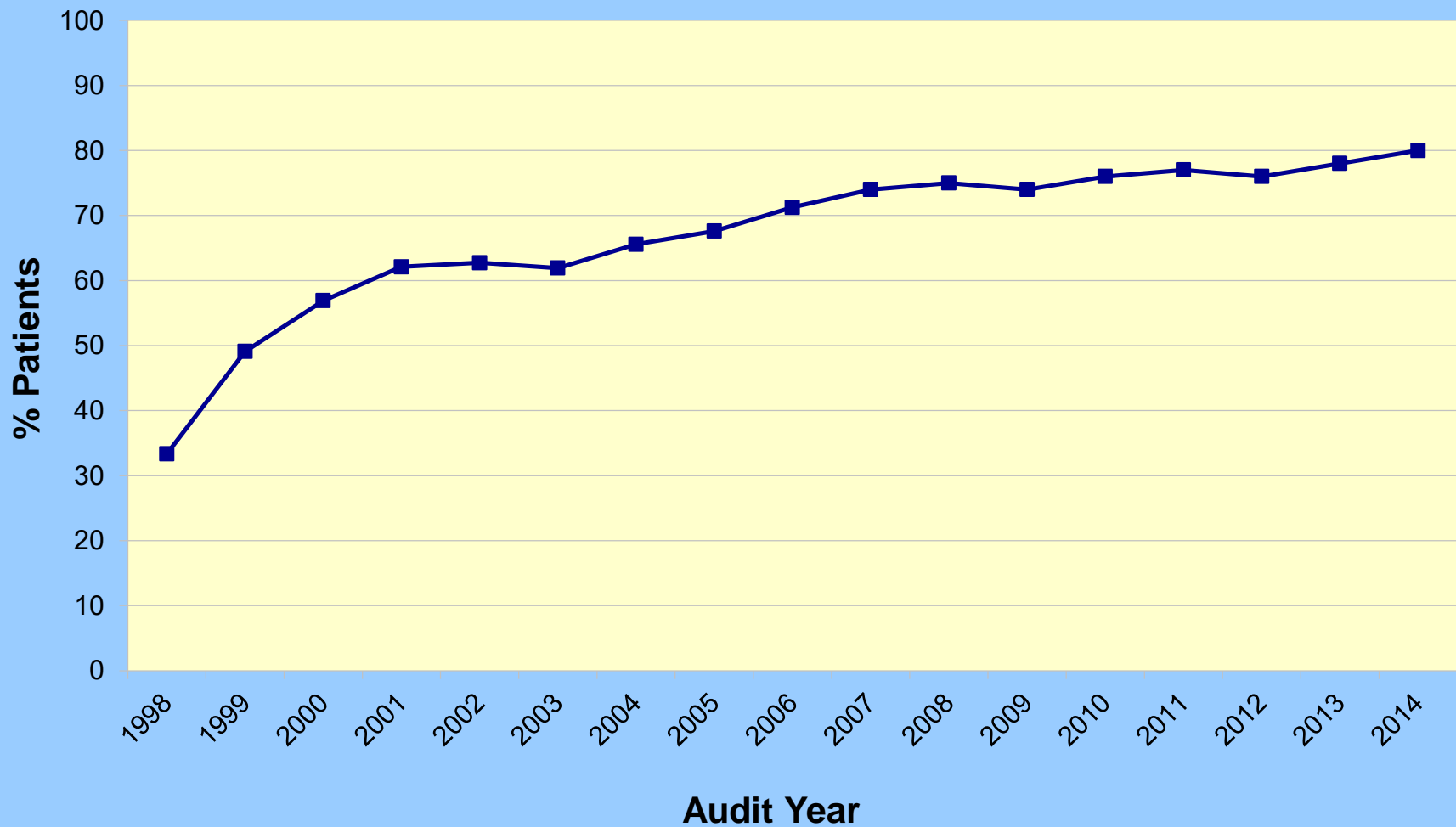
# Number of Charts Audited 1997-2014



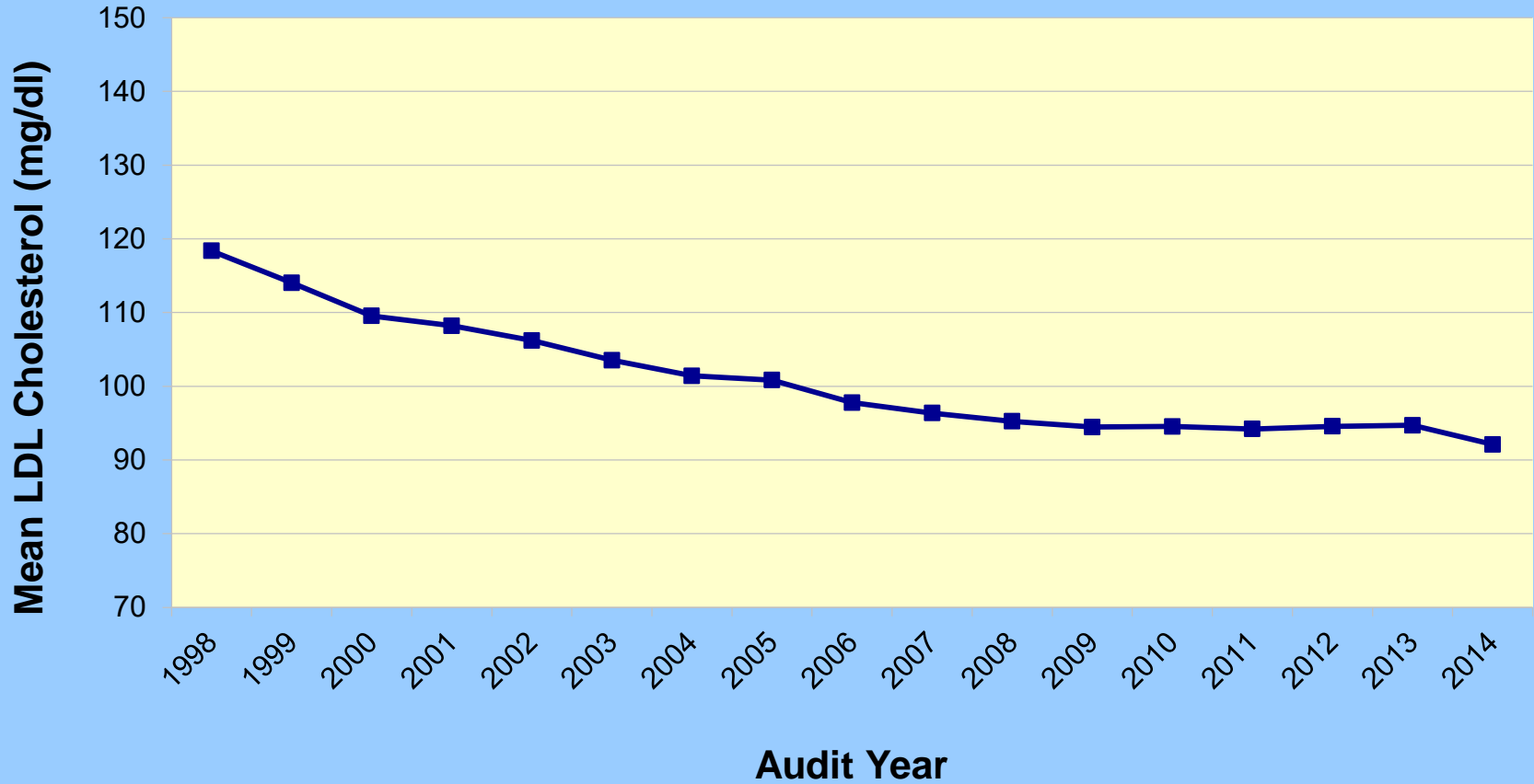
# Mean A1C 1997-2014



# LDL Cholesterol Screening 1998-2014

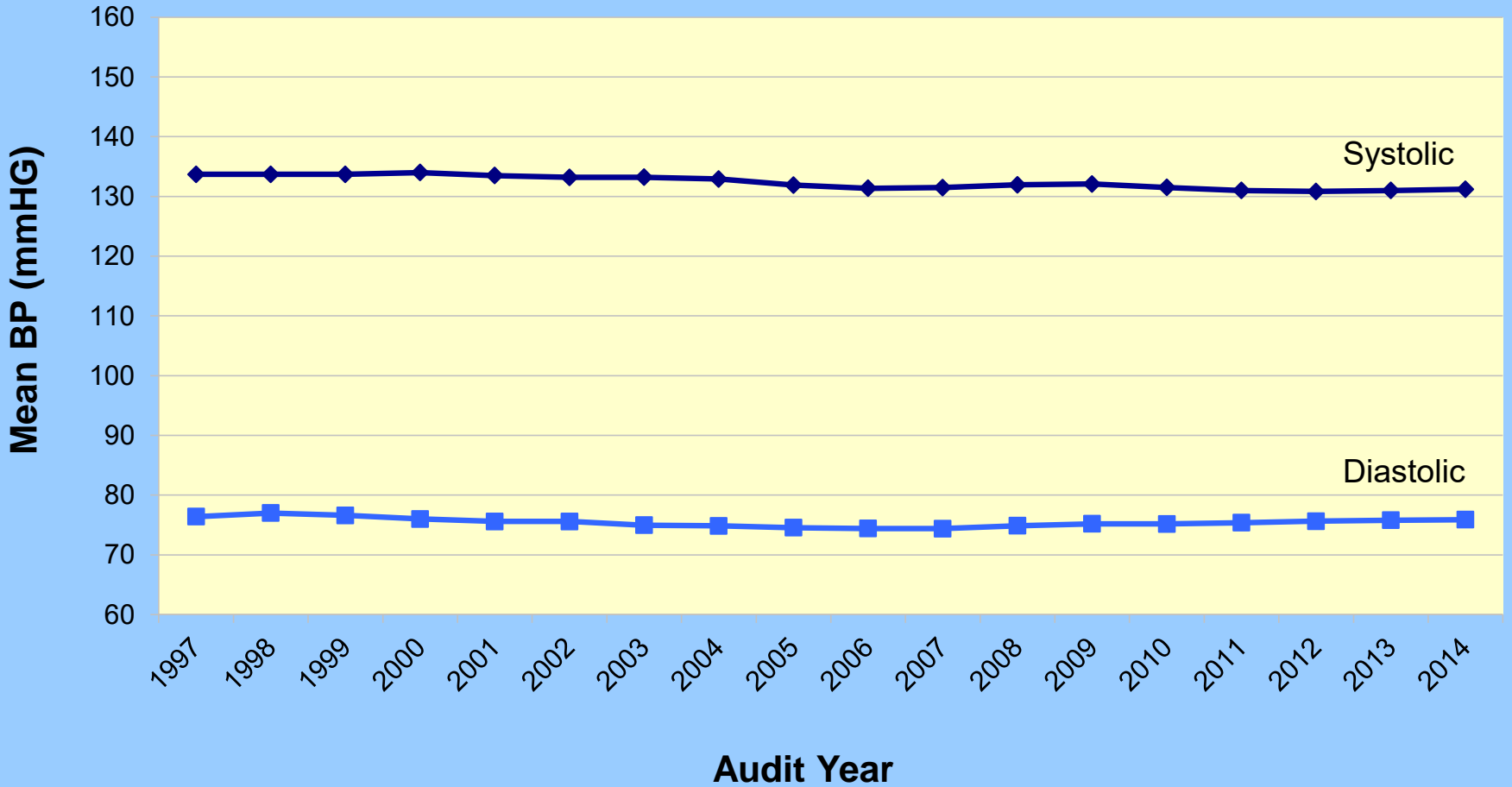


## Mean LDL Cholesterol 1998-2014

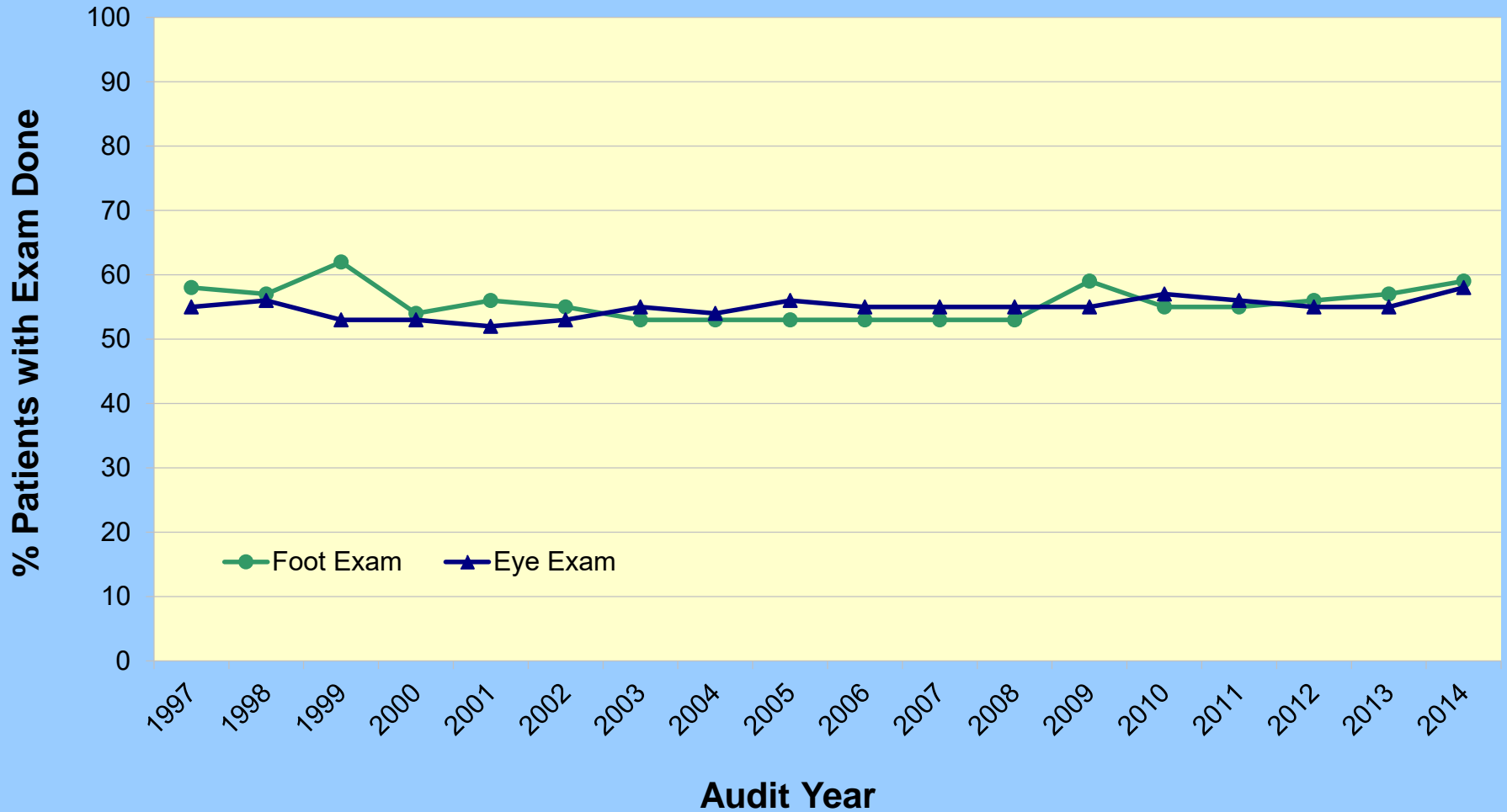




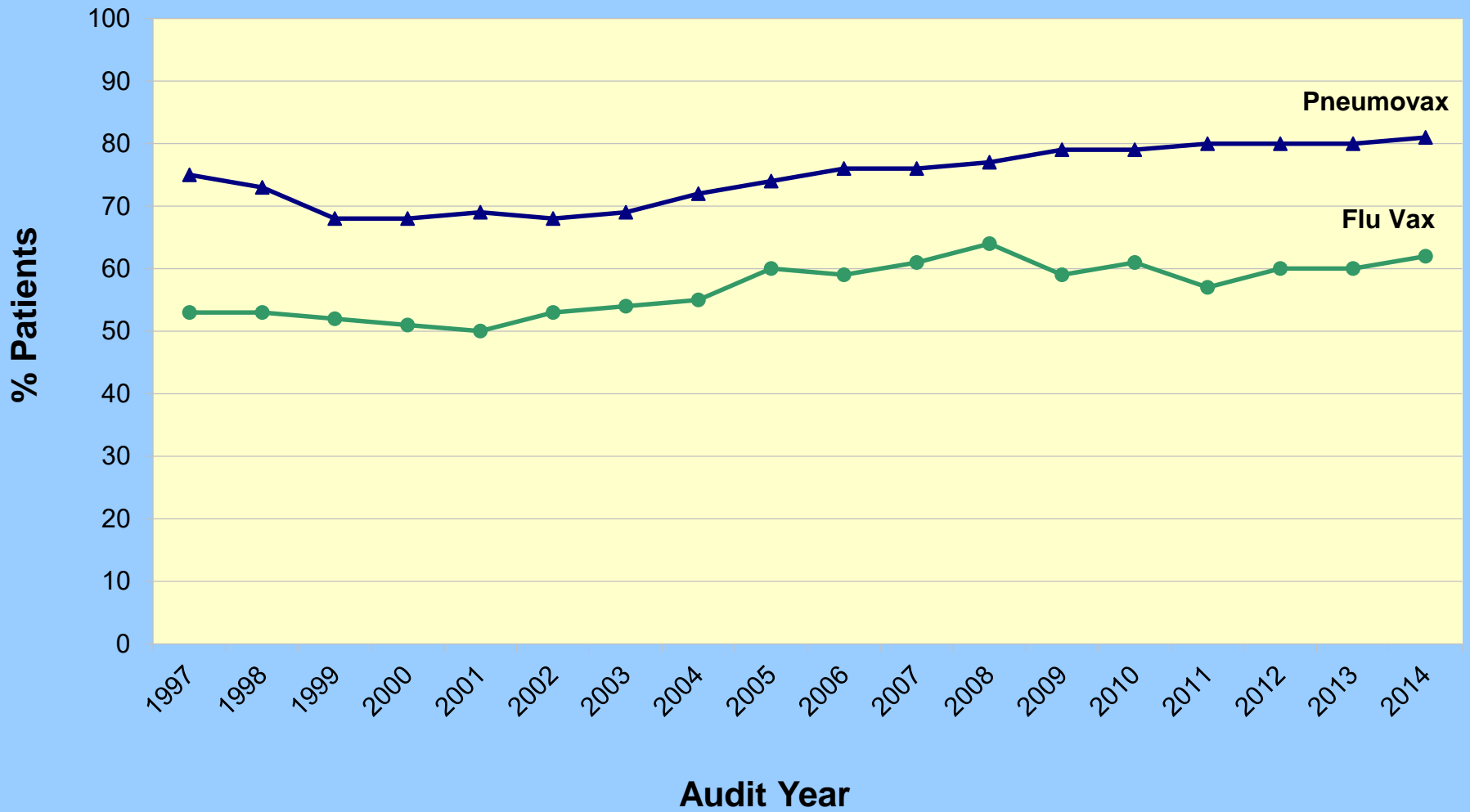
# Mean Blood Pressure 1997-2014



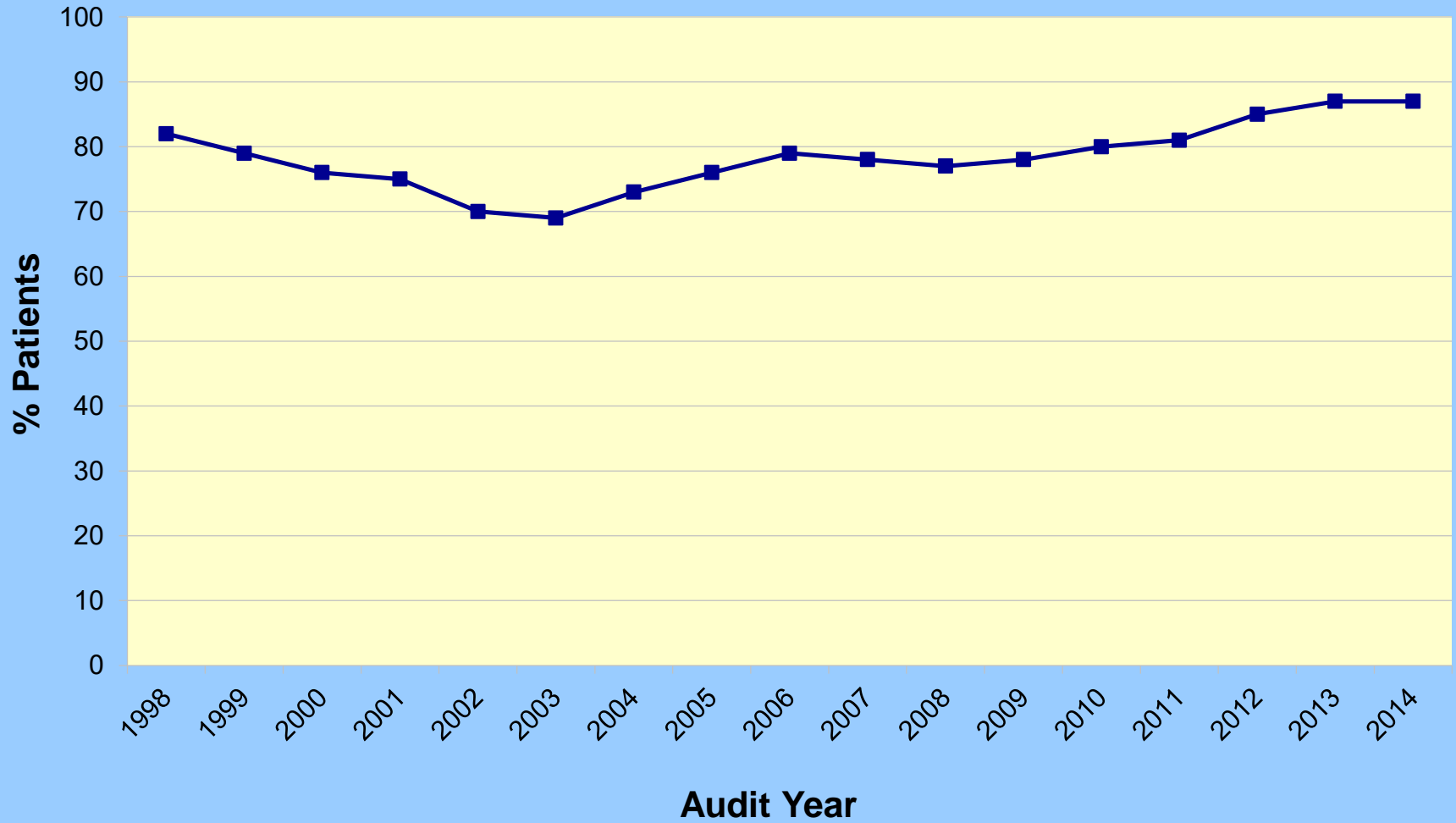
# Exams 1997-2014



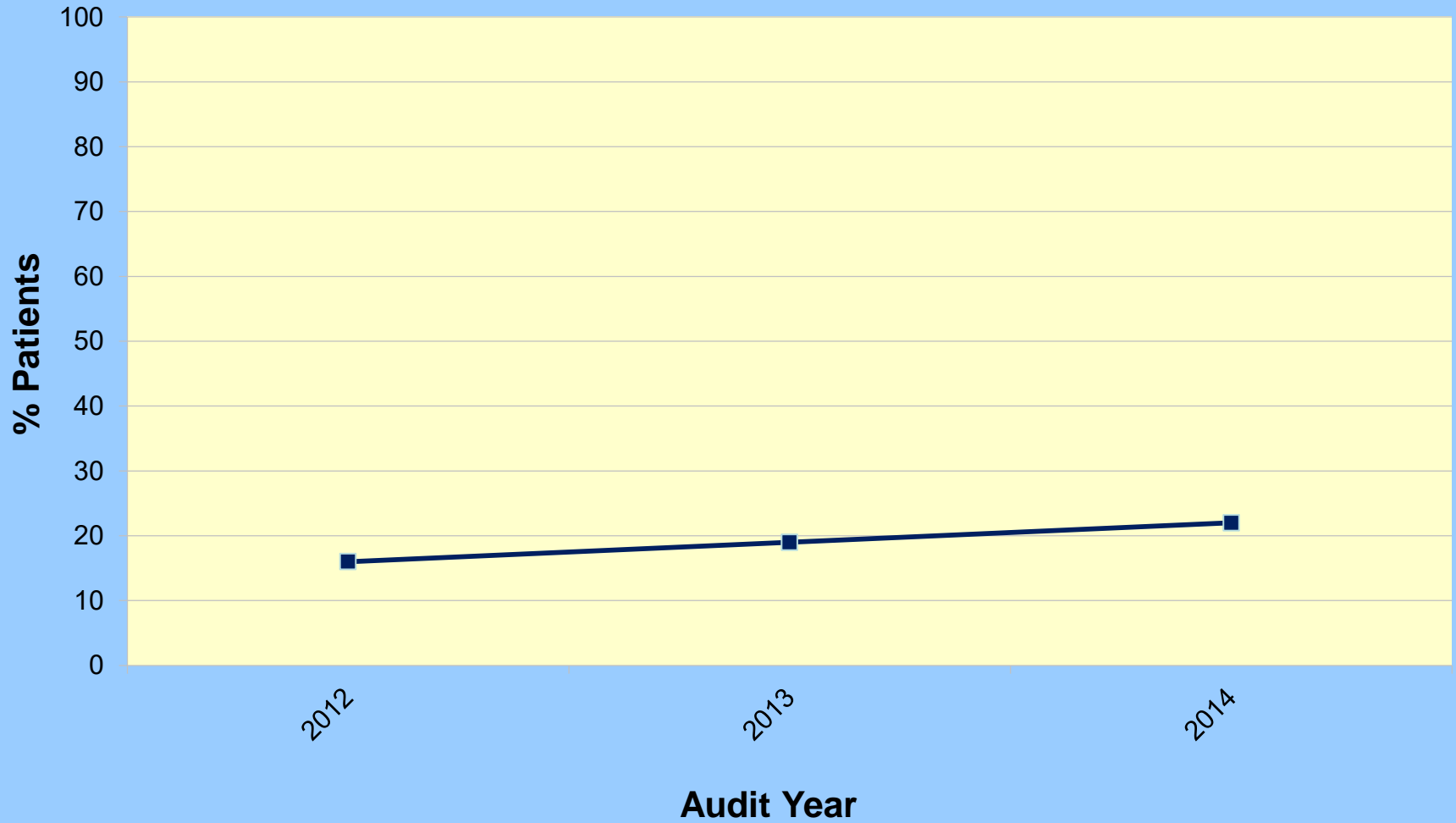
# Immunizations 1997-2014



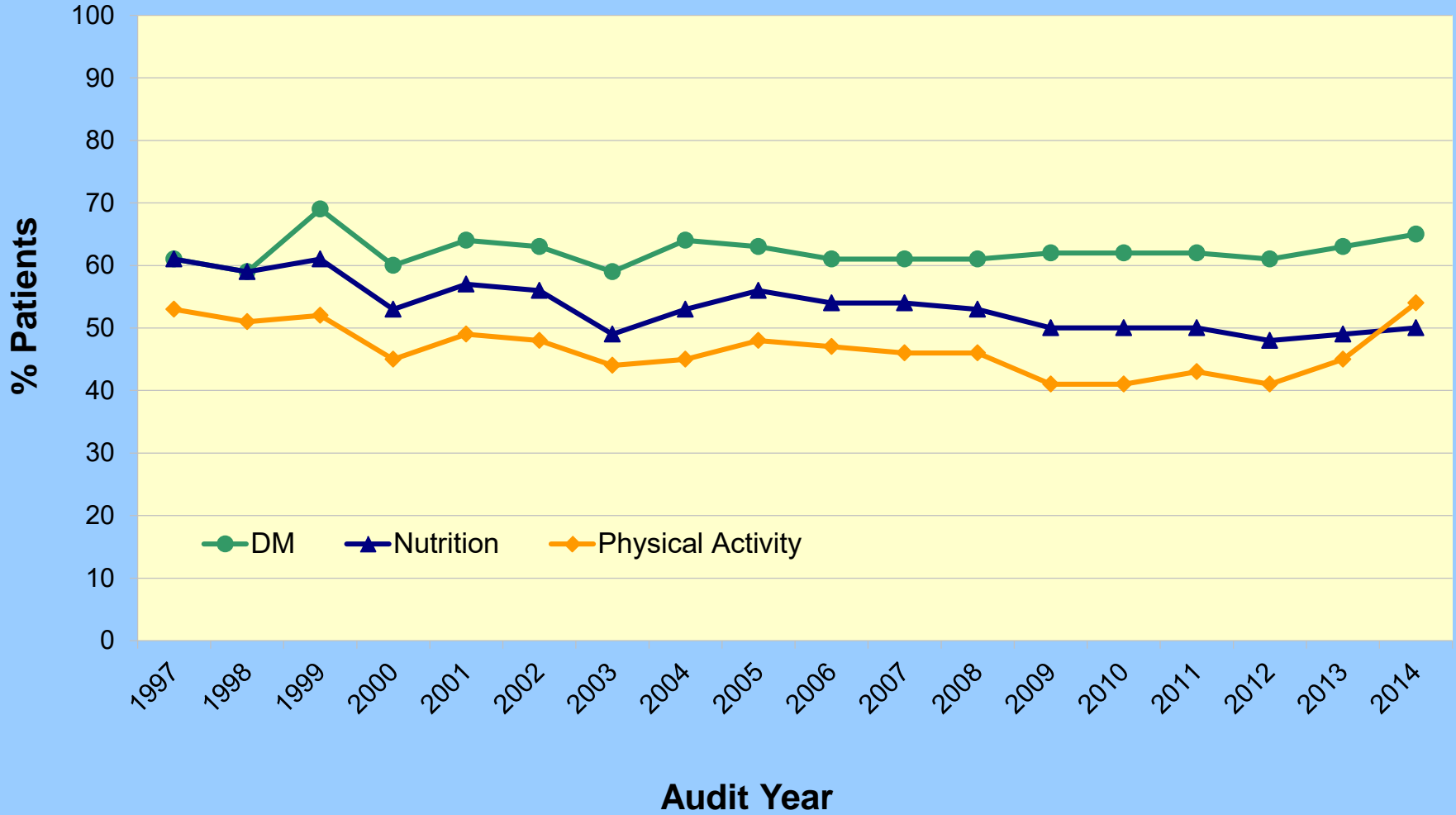
# Td/Tdap 1998-2014



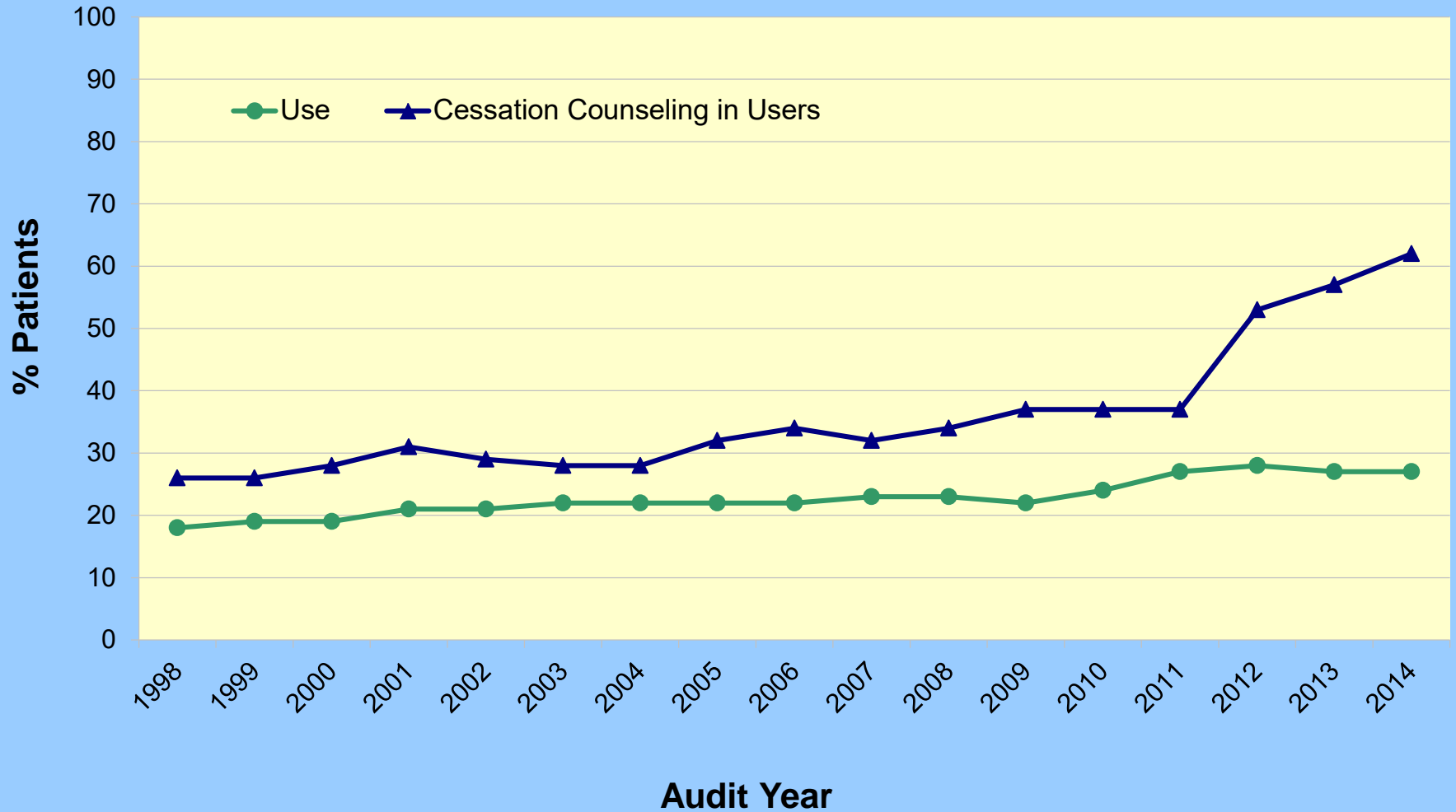
# Hepatitis B Vaccine 2012-2014



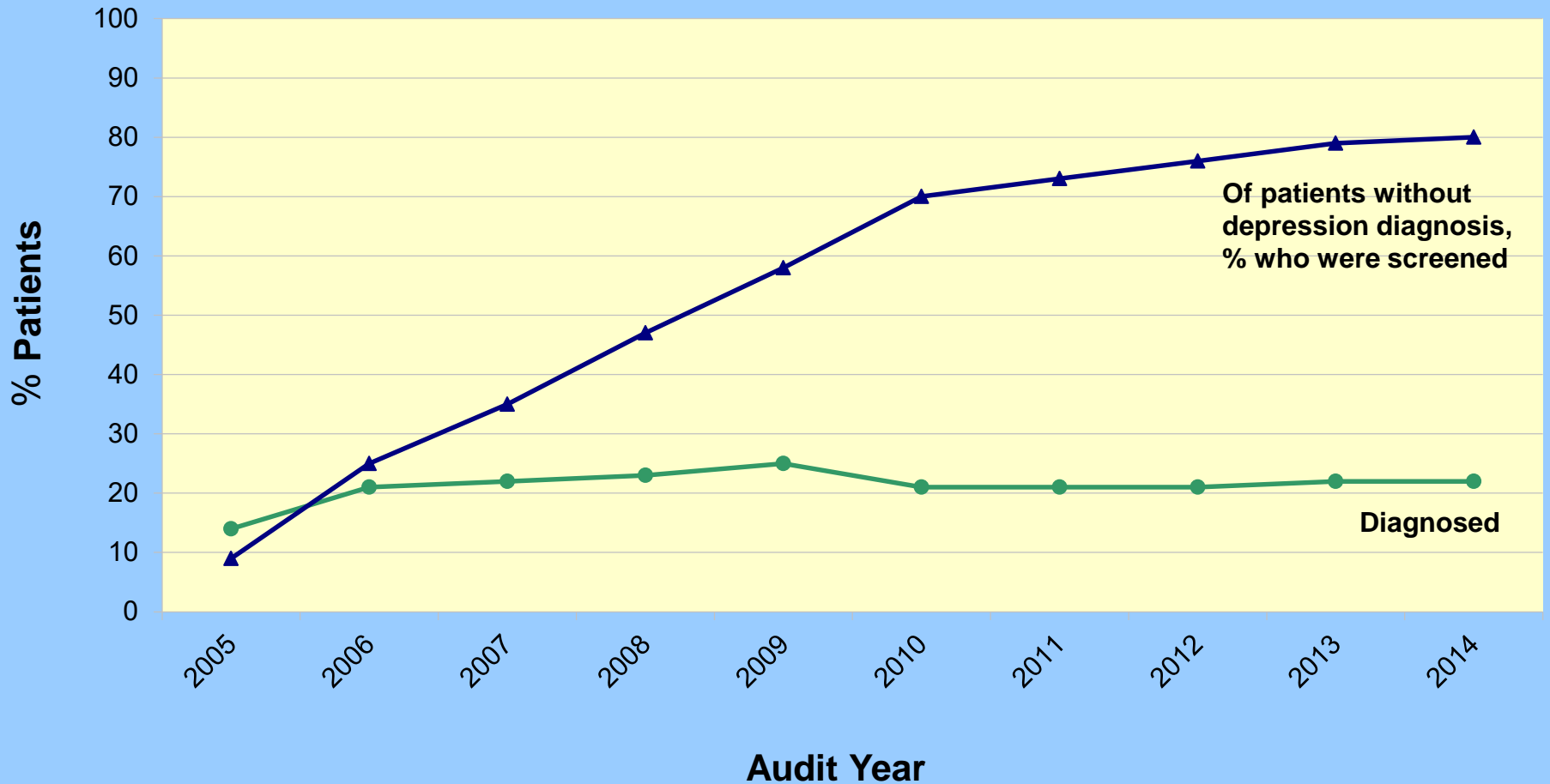
# Education 1997-2014



# Tobacco Use and Cessation Counseling 1998-2014

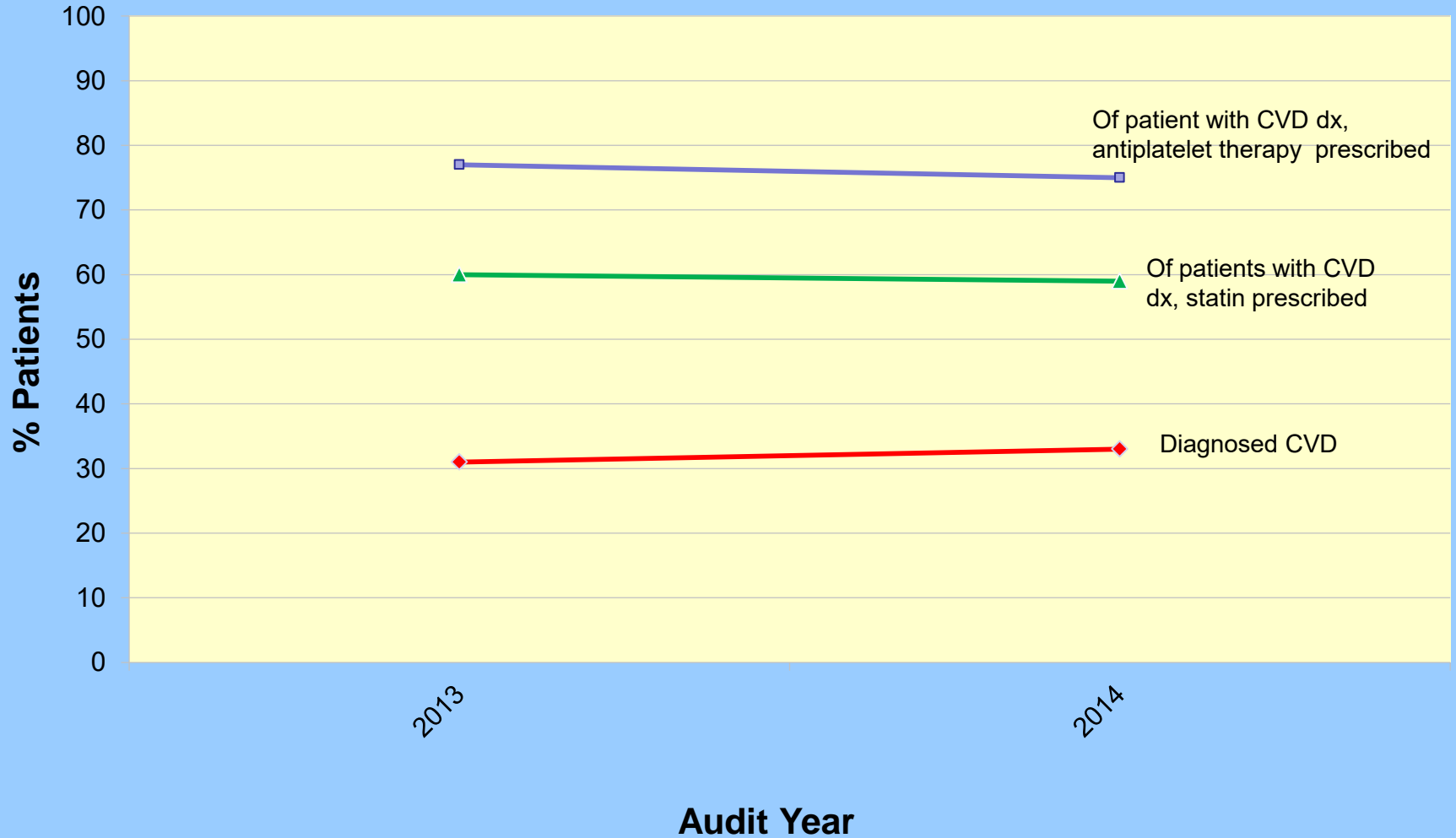


## Depression Diagnosis and Screening 2005-2014

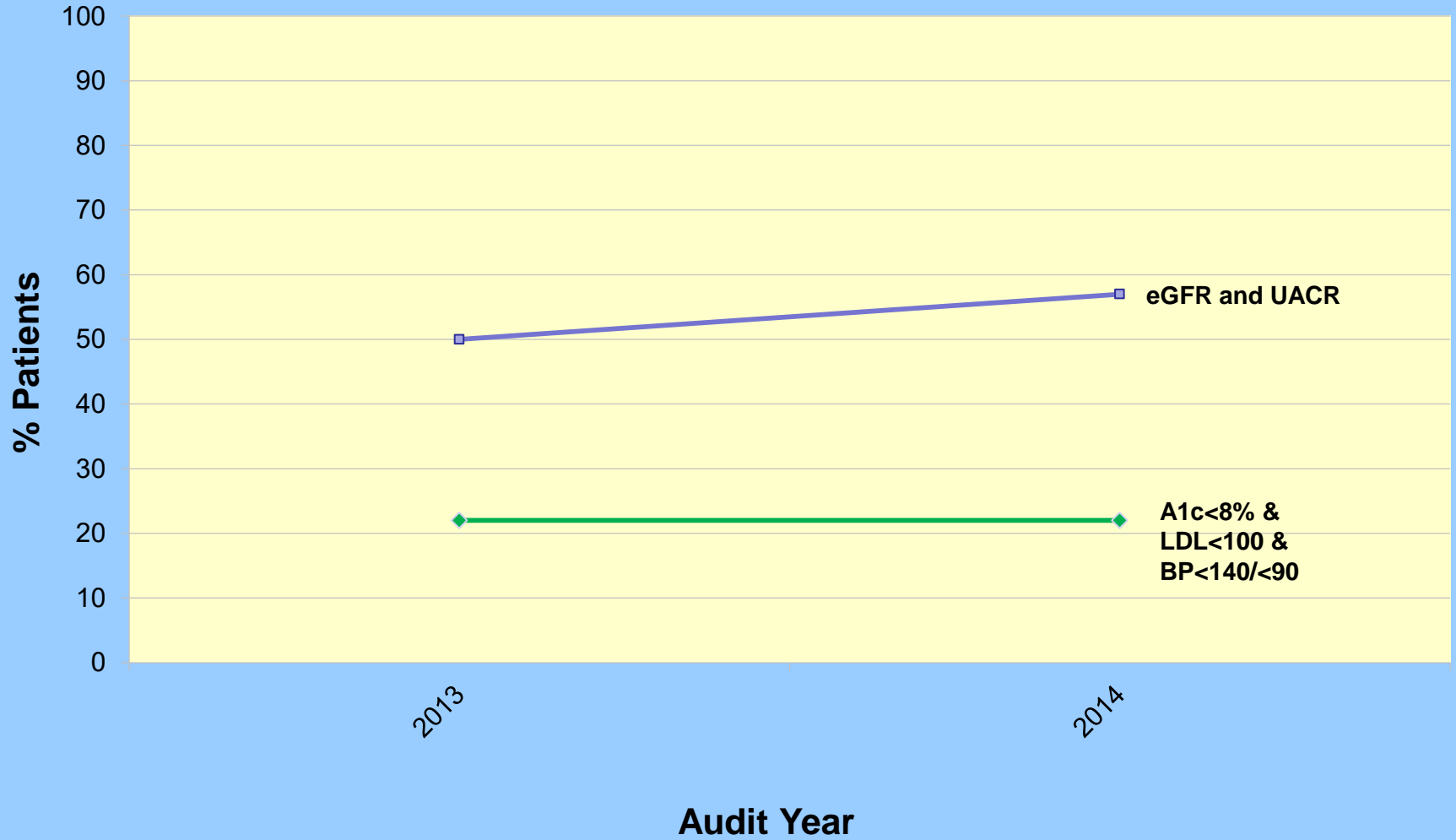




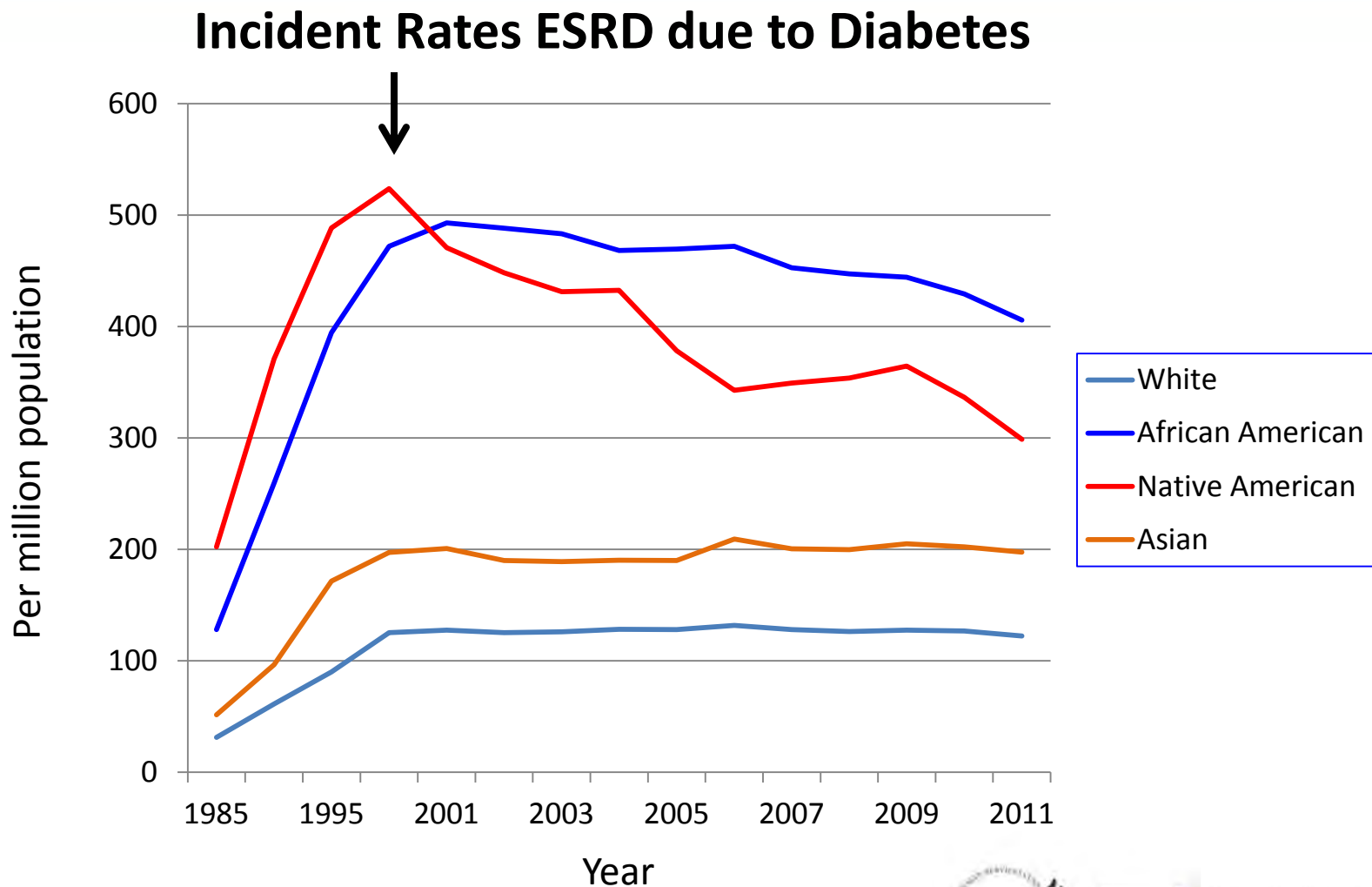
# Diagnosed CVD 2013-2014



# Combined Measures 2013-2014



# Implementation of Research Results Can Impact Public Health

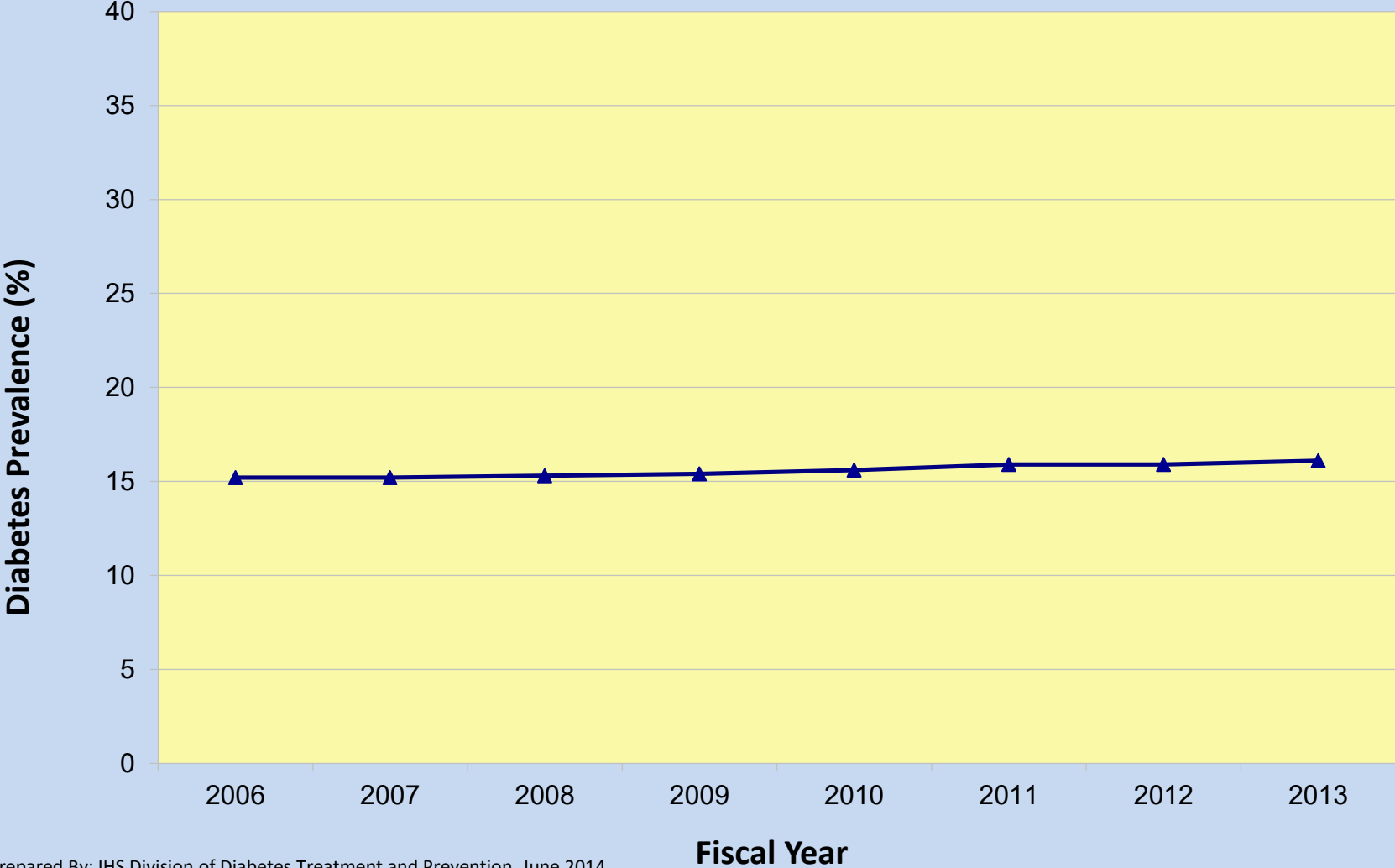


# Diabetes Prevalence in AI/AN People\* 2006-2013

\*Among patients who seek care from sites  
which submit data to the IHS National Data  
Warehouse

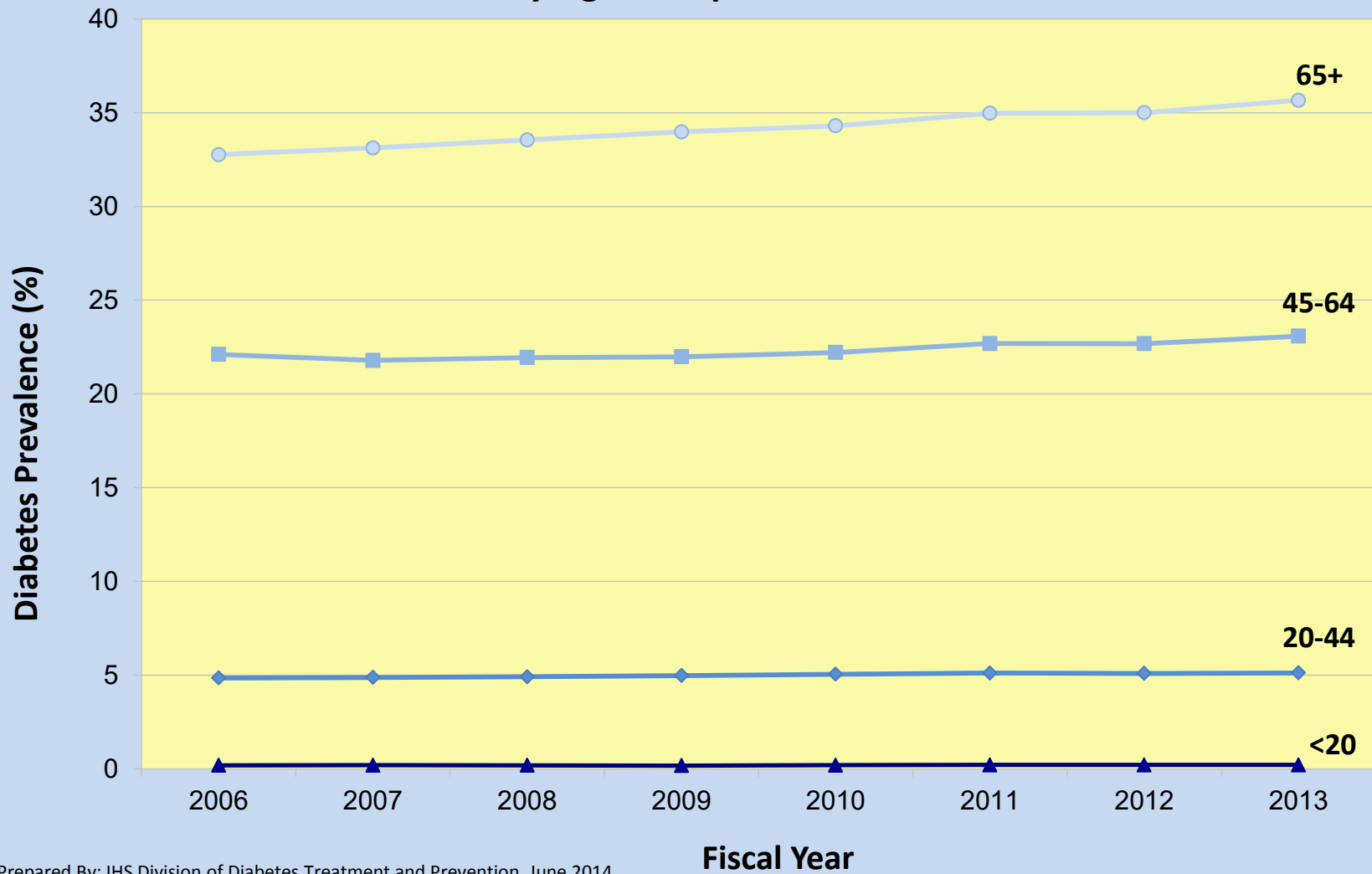
# Diabetes Prevalence in American Indians and Alaska Natives: 2006-2013

## Adults (20+) - Age Adjusted to the US Population



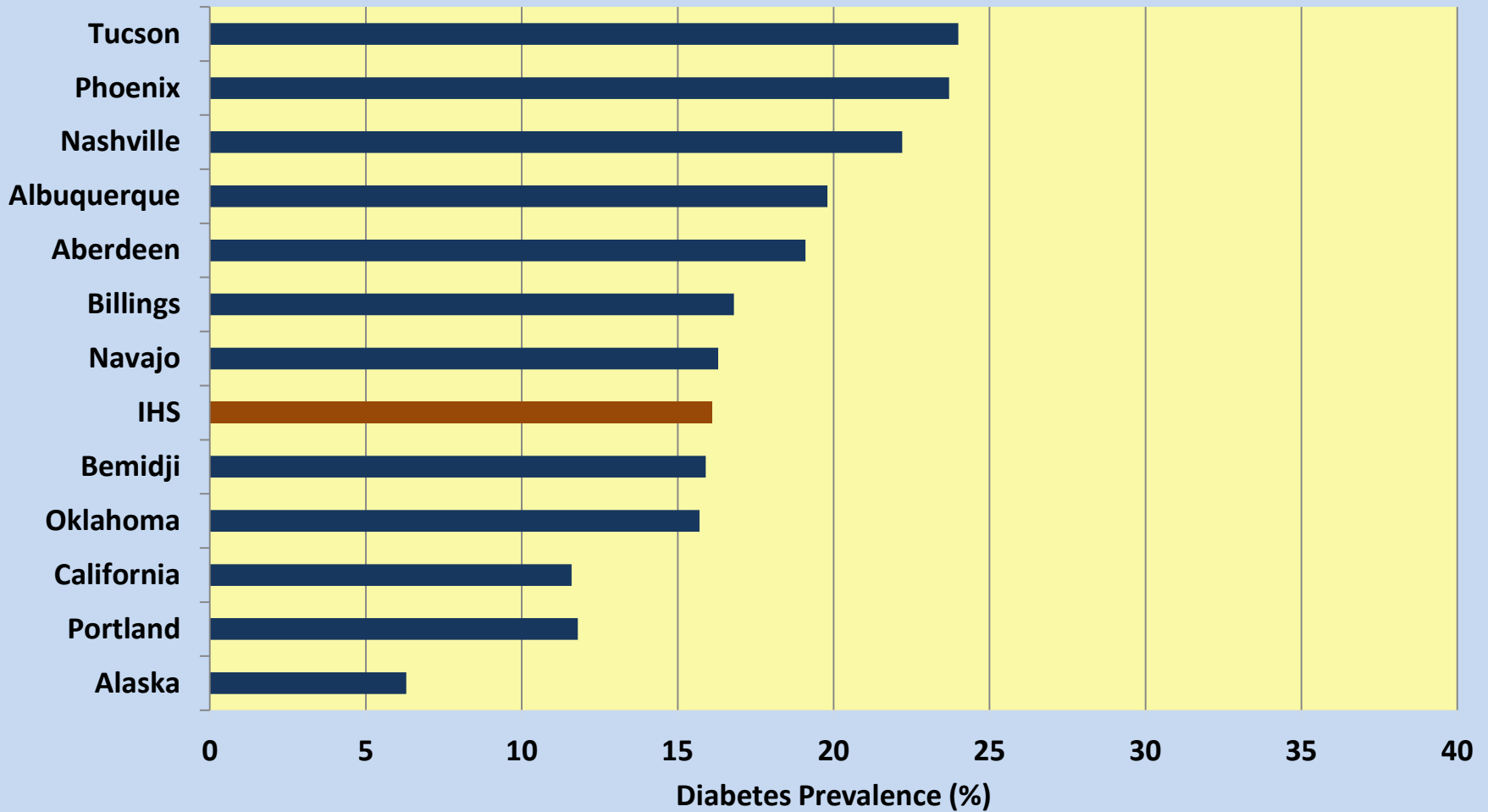
Prepared By: IHS Division of Diabetes Treatment and Prevention, June 2014  
Data Source: IHS National Data Warehouse General Data Mart

## Diabetes Prevalence in American Indians and Alaska Natives by Age Group: 2006-2013



Prepared By: IHS Division of Diabetes Treatment and Prevention, June 2014  
Data Source: IHS National Data Warehouse General Data Mart

# Diabetes Prevalence in American Indians and Alaska Natives By Area for FY 2013 Adults (20+) - Age Adjusted to the US Population



# Diabetes Prevalence in Youth

- SEARCH for Diabetes in Youth Study
  - AI youth have the
    - Lowest prevalence of type 1 diabetes (0.35 per 1000)
    - Highest prevalence of type 2 diabetes (1.2 per 1000)
  - Between 2001 and 2009, prevalence of type 2 diabetes
    - Increased in whites, Hispanic, and black youth
    - No increase in AI or API youth





Thank you for all you do to  
improve the health of AI/AN  
people in the Portland Area

[www.diabetes.ihs.gov](http://www.diabetes.ihs.gov)



# A very short discussion of the emerging science around diabetes risk factors

# Emerging science on DM risk factors

- In utero and early life stress/nutrition
  - Leg length in adulthood (marker of early life deprivation) independently assoc with lower insulin sensitivity

*Diabetes Care* 2013;36:3599-3606
  - Lower insulin sensitivity ***predicts*** decline in physical activity in peripubertal Hispanic and African American girls

*Diabetes Care* 2013;36:3739-3745
- Diet quality associated with weight gain even if calories restricted
  - Overeating, ↓ physical activity as consequences of poor diet quality, stress

*JAMA*, published online May 16, 2014

# “Understanding the Origins of Diabetes”

“Despite the emphasis on Western lifestyle as contributing to NCD risk, attempts to address the problem through modifying behavior in adults have met with limited success, indicating that such interventions occur too late in life to reduce risk substantially. Attention is now focused on ways in which early developmental factors contribute to later NCD risk, offering a new approach to how NCDs, such as diabetes, are inherited. ...Aspects of the early developmental environment, reflected in the diet, behavior, and lifestyle of the mother and ...father, play an important role, acting on the developing fetus through epigenetic processes that appear to contribute to risk via links to adiposity.”

*JAMA 2014;311:575-576*

- Inverse association between gestational age and elevated insulin levels at birth and in early childhood

*JAMA 2014:311:587-596*

# Association Between Casino Opening and Obesity

- 117 school districts that encompassed tribal lands in California between 2001 and 2012
  - 57 gained/expanded a casino
  - 24 had a preexisting casino but did not expand
  - 36 never had a casino
- Every slot machine per capita gained was assoc with a \$541 ↑ in per capita annual income and a decrease in percentage in poverty of 0.6% among AI living on tribal lands
  - And ↓ probability of overweight/obesity of 0.19% in AI kids

*JAMA* 2014;311:929-936

# “Early Life Investments Substantially Boost Adult Health”

- Carolina Abecedarian Project
- Study: 4 cohorts of disadvantaged children born 1972-77
  - Birth thru age 5 yrs
  - Intervention children received
    - Devel of language, emotional regulation, cognitive skills
    - Caregiving/supervised play
    - Nutrition: 2 meals and a snack at childcare center
    - Primary pediatric care
- In their mid-30s: lower prevalence of CVD and metabolic disease risk factors incl BP, A1C, obesity, HDL c/w controls

Imagine what our  
interventions to  
prevent diabetes will  
look like!