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Diabetes Alphabet Soup

Topics

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

Changing Guidelines for A1C, Blood Pressure, and LDL Cholesterol

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

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

American Diabetes Association.

EASD

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%$^{+}$) - older, comorbidities, hypoglycemia prone, etc.
  - Avoidance of hypoglycemia

PG = plasma glucose

Diabetes Care, Diabetologia. 19 April 2012 [Epub ahead of print]

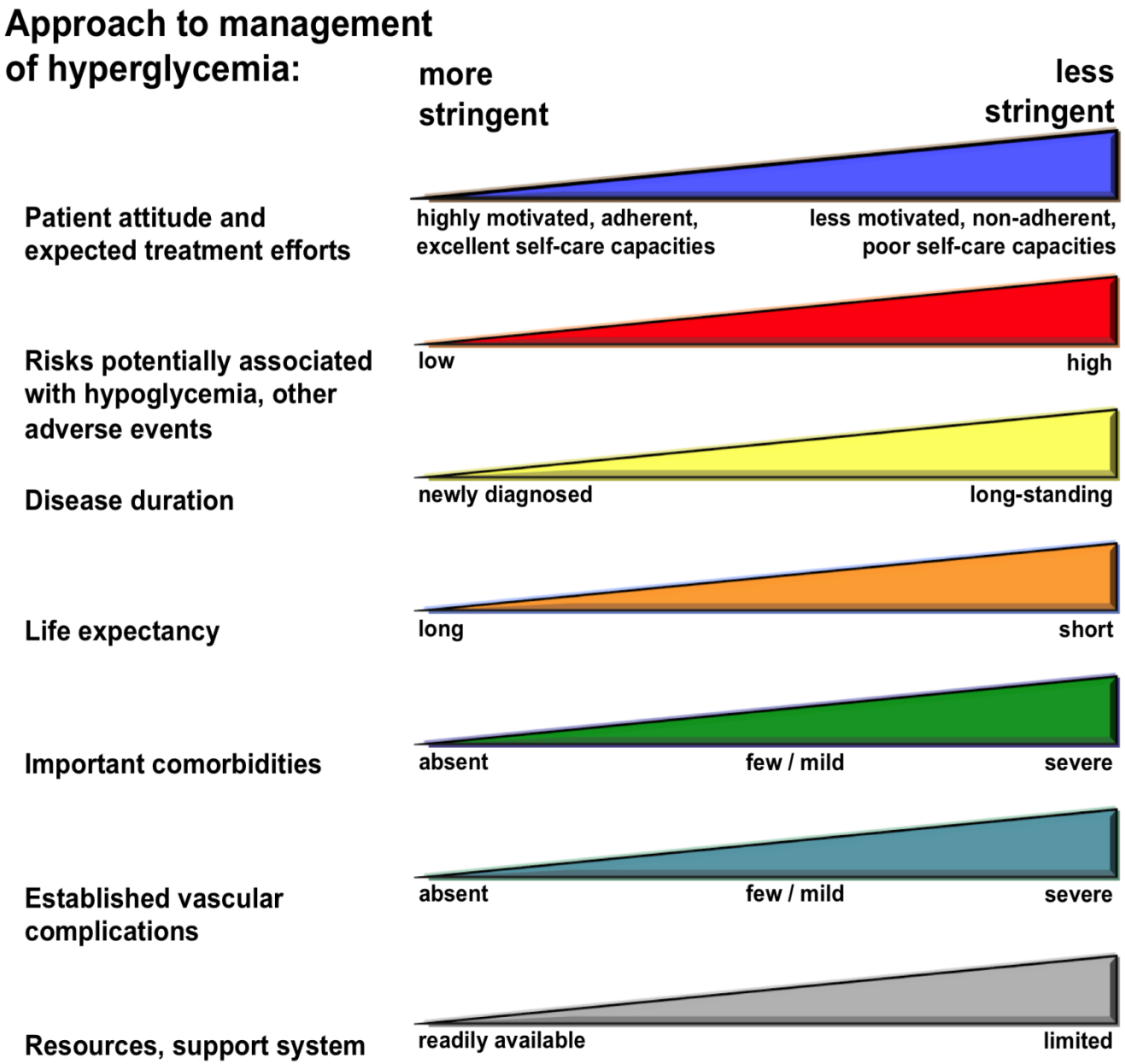


Figure 1

Diabetes Care, Diabetologia. 19 April 2012 [Epub ahead of print]
(Adapted with permission from: Ismail-Beigi F, et al. *Ann Intern Med* 2011;154:554)

Current BP Targets in Diabetes

- Numerous studies have shown that risk for CVD, CKD starts at SBP of 140 mmHg (not 130 mmHg)
- ADA 2014 *Diabetes Care* 2014;37(S1), pg. S36
  - "People with diabetes and hypertension should be treated to a systolic blood pressure goal of **<140** mmHg."
    - "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."
  - "Patients with diabetes should be treated to a DBP <80 mm Hg."

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 initial treatment of HTN

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 ≥190mg/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 ≥7.5%
    - Other pts with 10-yr CVD risk ≥7.5%: moderate or high

New 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

ADA 2014

- LDL goal:
  - <100 mg/dL in patients with no overt CVD
  - <70 mg/dL with a high dose statin an option if overt CVD
  - If maximum tolerated statin therapy does not achieve these targets, can use alternative goal of 30-40% LDL reduction
- Statin should be prescribed regardless of LDL level in diabetic patients with overt CVD or who are >40 yrs old with ≥ 1 other CVD risk factor
- Insufficient evidence that combination therapy with non-statin drugs provides CVD risk benefit over statin alone

So what do we do with all this in 2014?

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 more similar than different
- 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 ≥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 and/or if LDL >100 mg/dL
- Treat to a LDL target or titrate to a statin dose?
- What to do for patients who get only small therapeutic effect from statin, those 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)

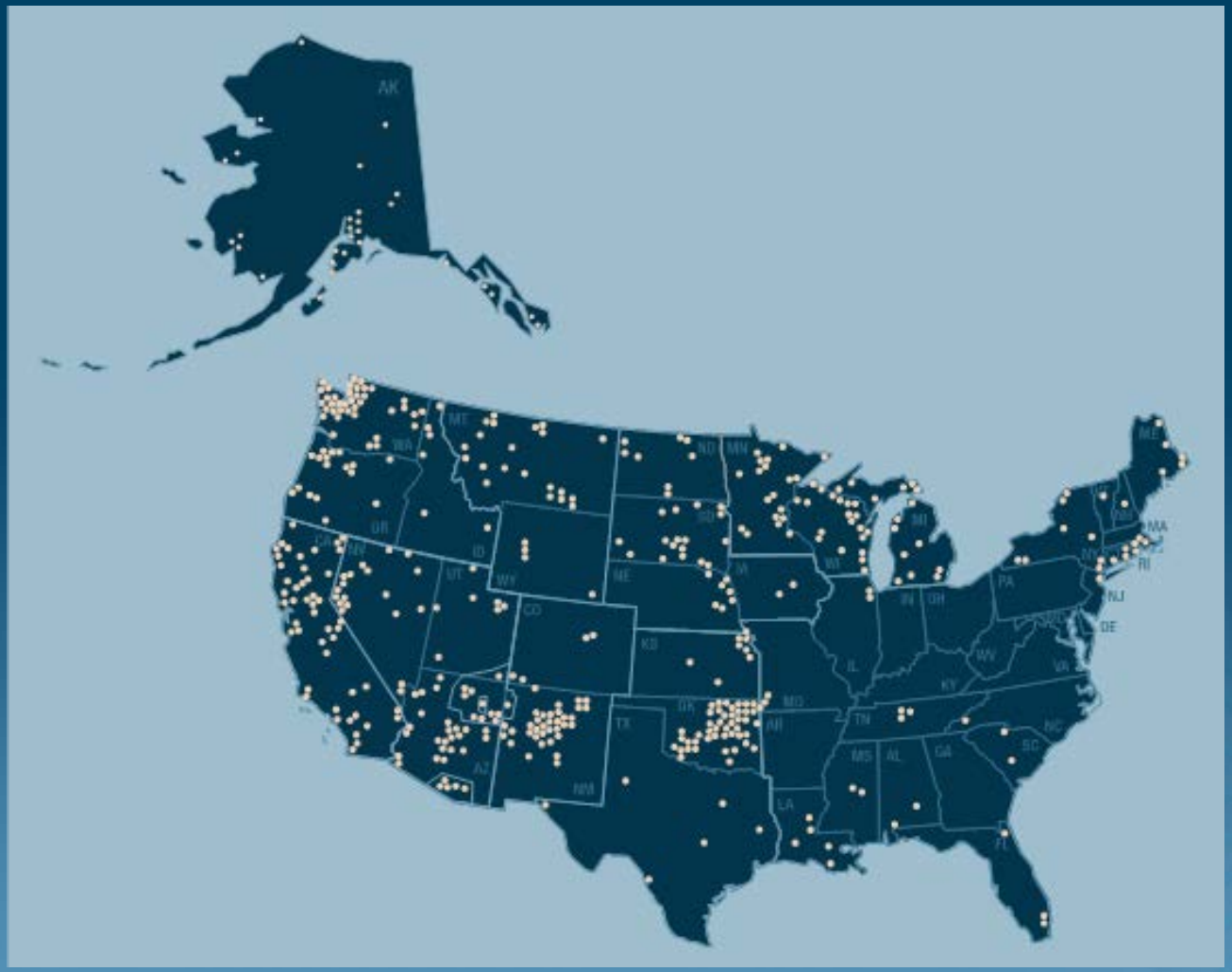
- SDPI was established by Congress in 1997
  - Today, provides $150 million/year for the prevention and treatment of diabetes through FY 2015
- The SDPI currently provides grants for 404 programs in 35 states:
  - 336 Community-Directed Programs
  - 68 DP/HH Initiatives

Special Diabetes Program for Indians
1997 - 2014

$30 M → $100 M → $150 M

1997-2000 2001-2003 2004-2014

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
- Developing toolkits and will disseminate the lessons learned throughout AI/AN communities.

Update on 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 6th 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
    - Traditional Foods Grants to Tribes

SDPI Continuation Applications

- Community-directed: FY 2015
  - Cycle 1: application kit released last week
    - Due date: June 13
  - Cycles 2-4: usual timelines
- DP/HH: FY 2014
  - Applications due June 1

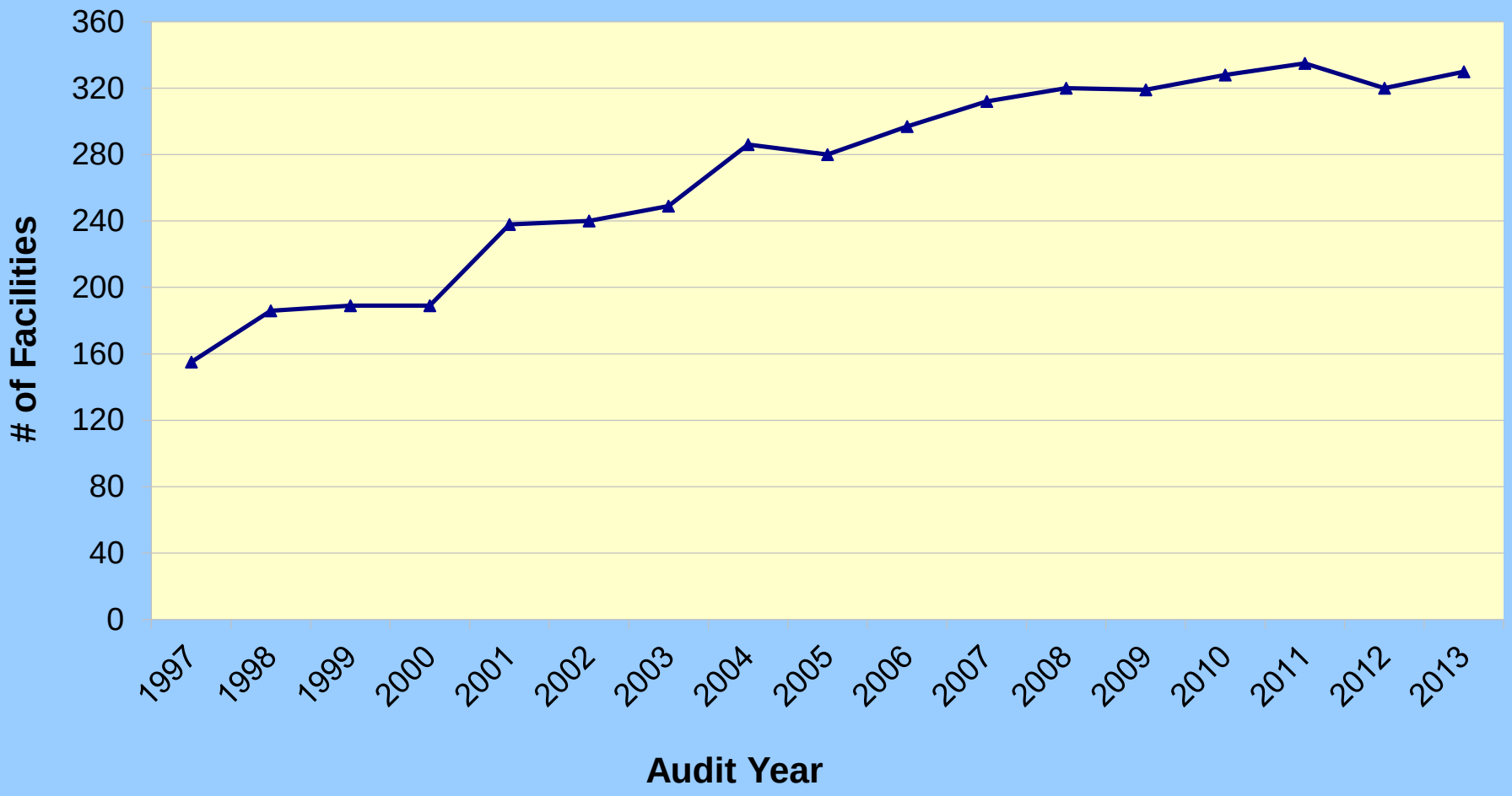
FY 2016 and Beyond

- Will SDPI be reauthorized?
  - 1 year? Multi-year? Permanent?
- Regardless, if there is SDPI in FY 2016, will almost certainly have to be a competitive application year
  - Changes in funding distribution?
  - Tribal consultation
- New Best Practices format
  - Tied to Audit elements

IHS Diabetes Care and Outcomes Audit

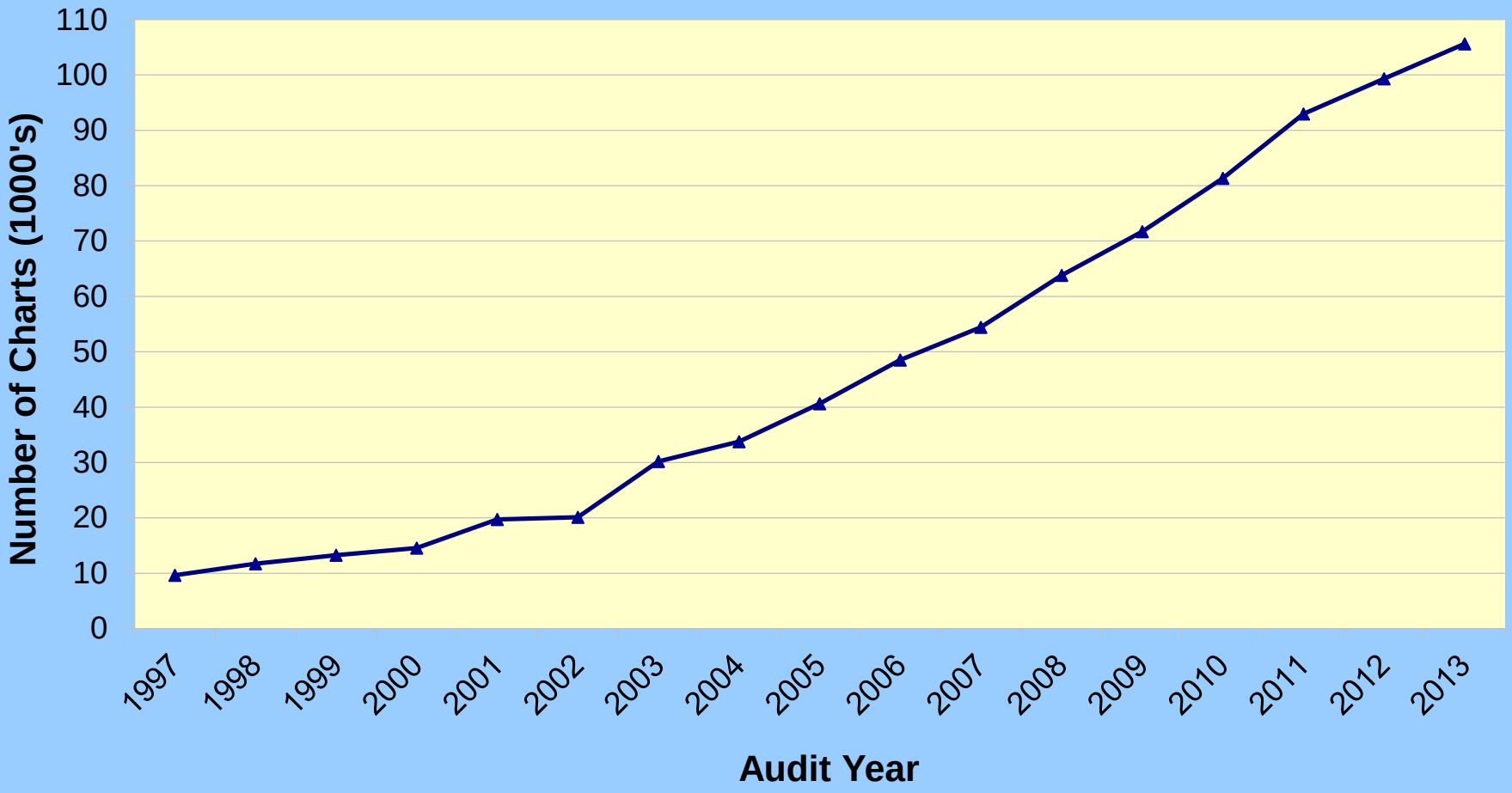
1997-2013

Number of Participating Facilities
1997-2013



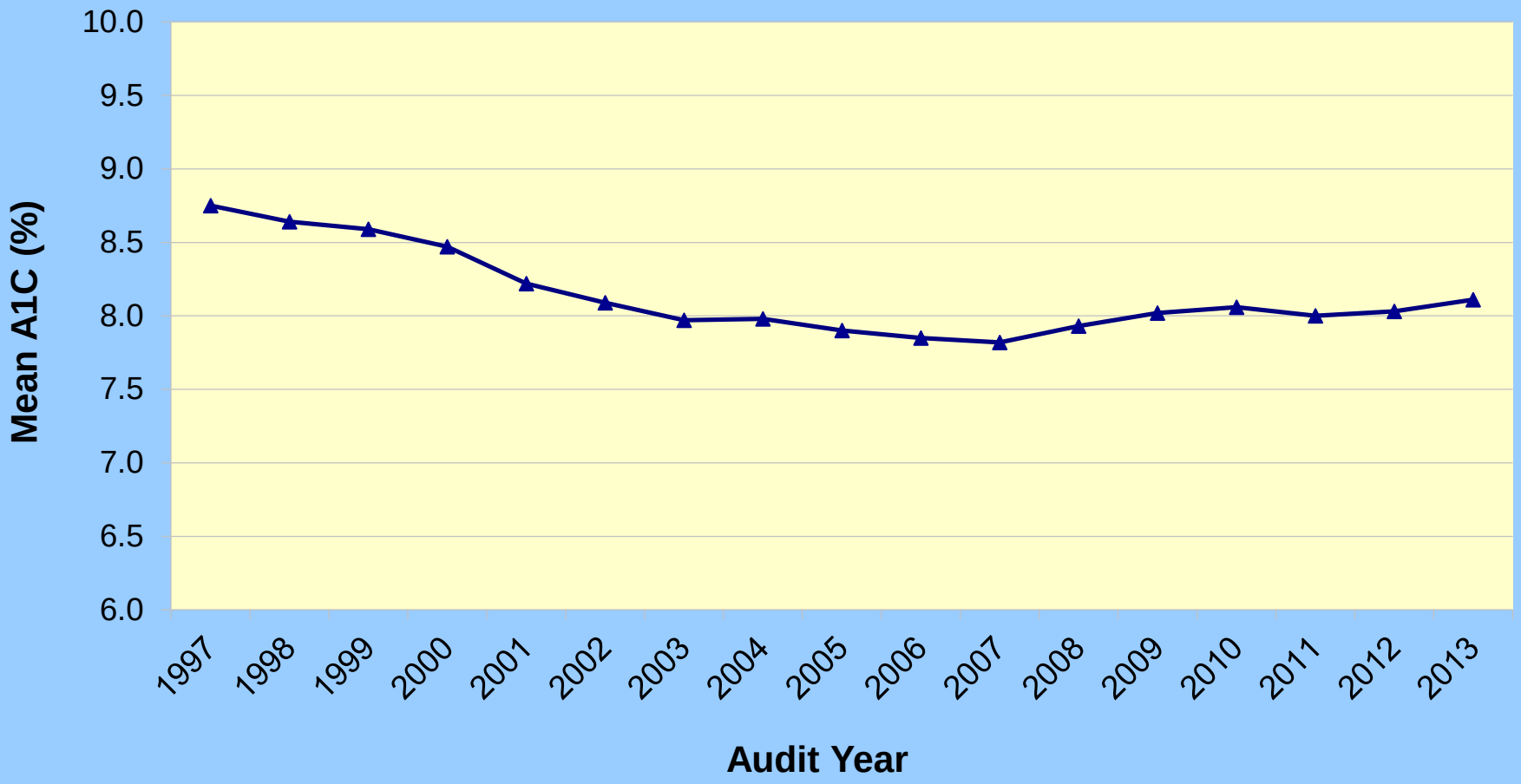
Source: IHS Diabetes Care and Outcomes Audit

Number of Charts Audited
1997-2013



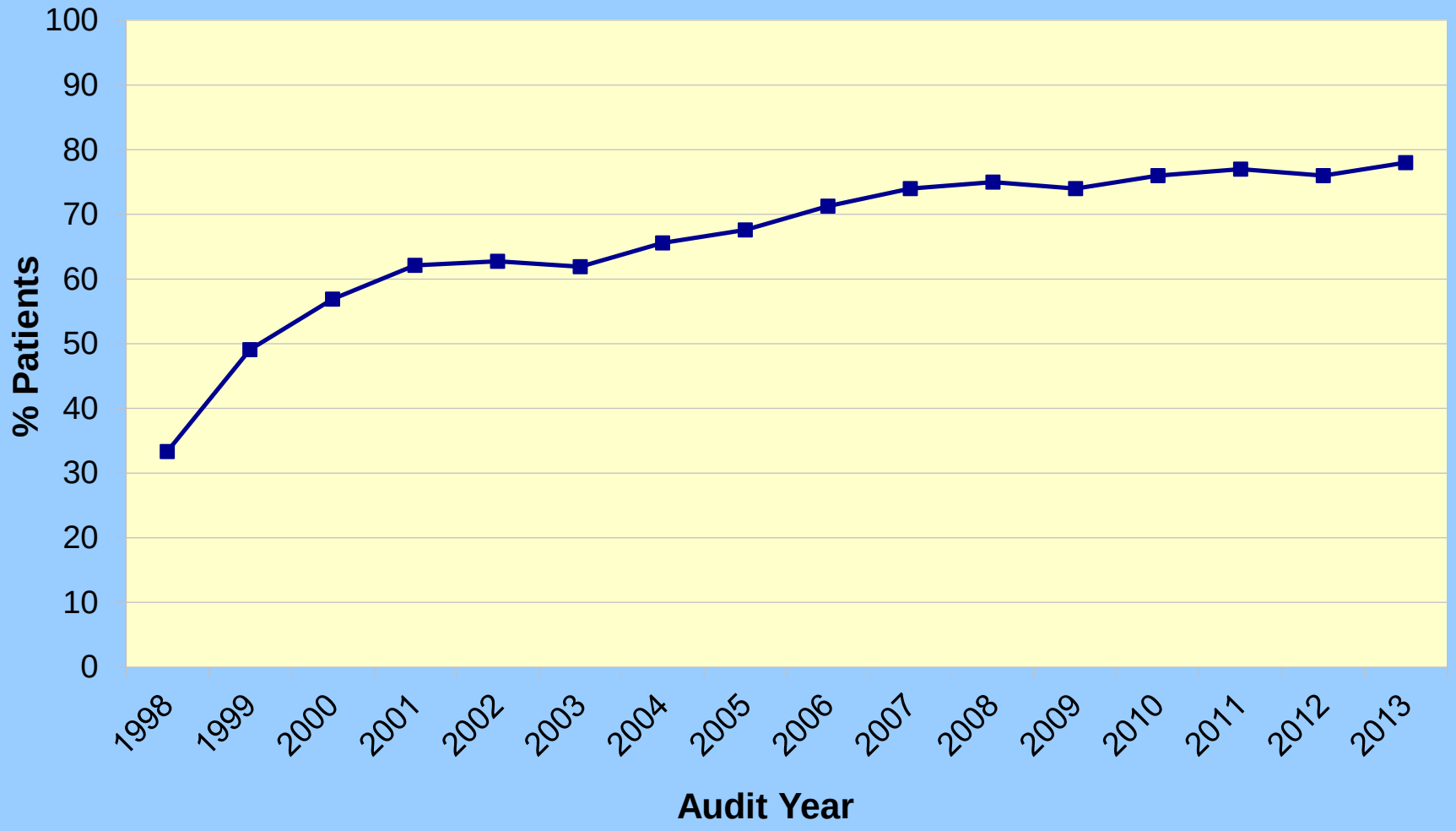
Source: IHS Diabetes Care and Outcomes Audit

Mean A1C
1997-2013



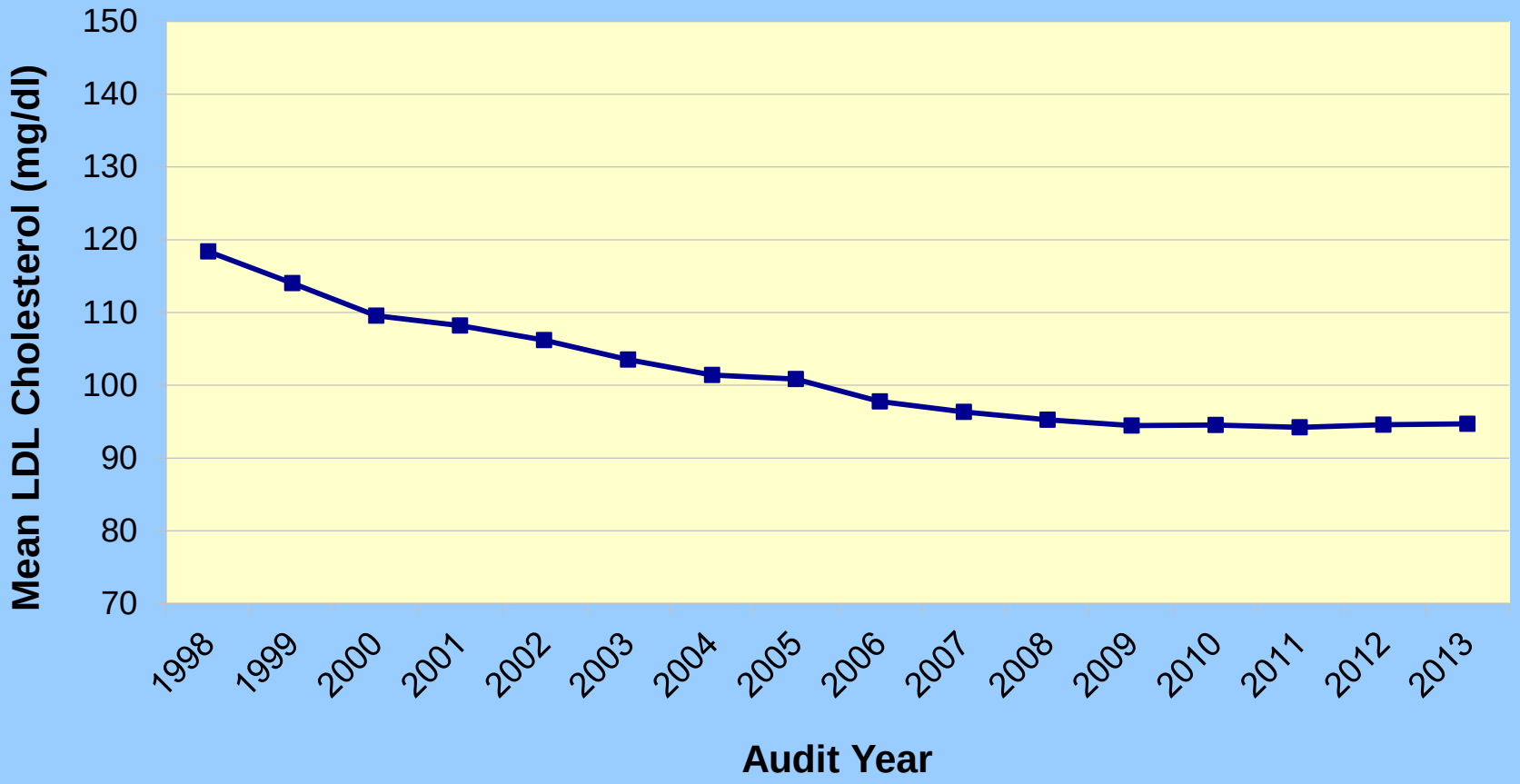
Source: IHS Diabetes Care and Outcomes Audit

LDL Cholesterol Screening
1998-2013



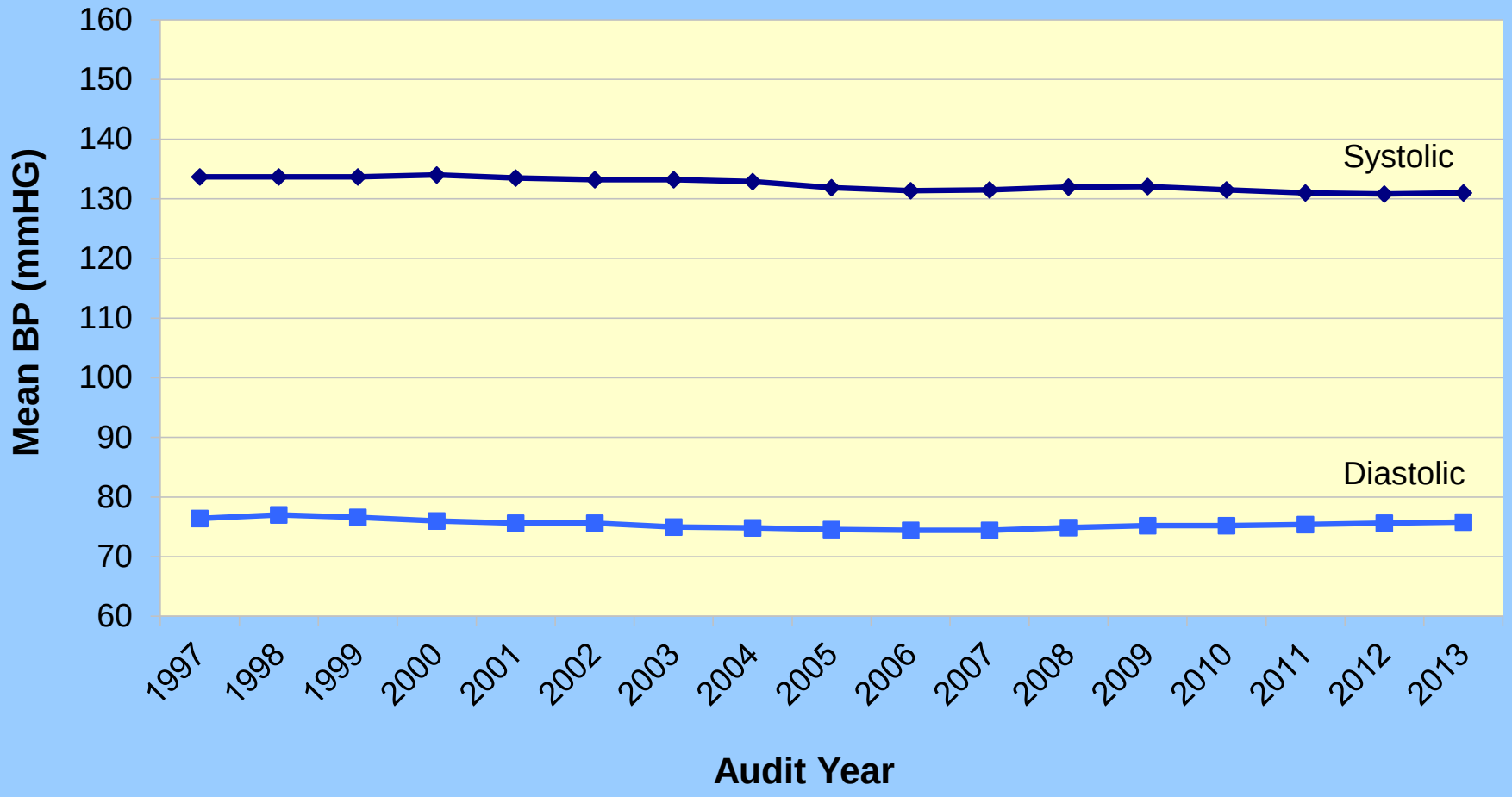
Source: IHS Diabetes Care and Outcomes Audit

Mean LDL Cholesterol
1998-2013



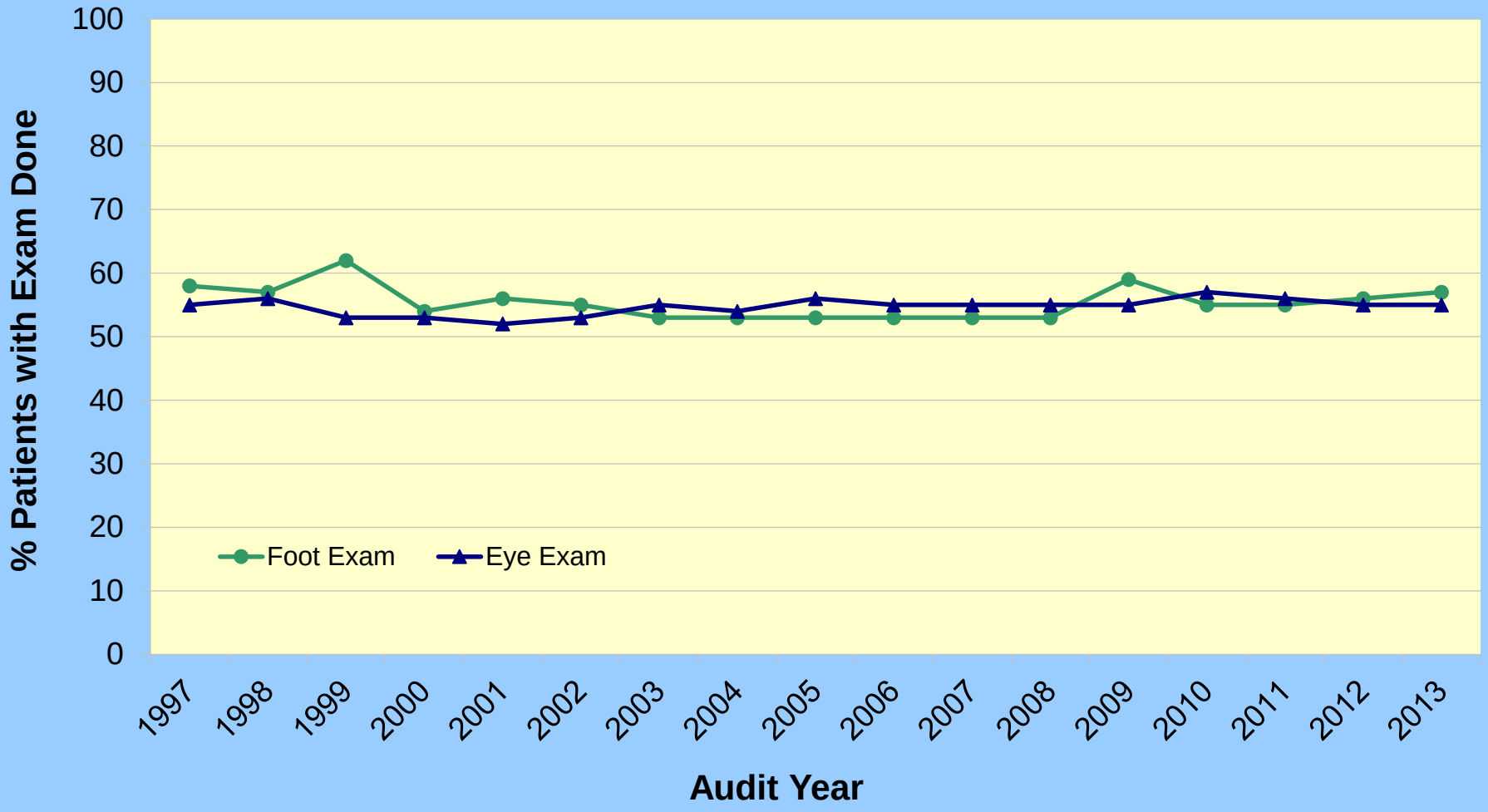
Source: IHS Diabetes Care and Outcomes Audit

Mean Blood Pressure
1997-2013

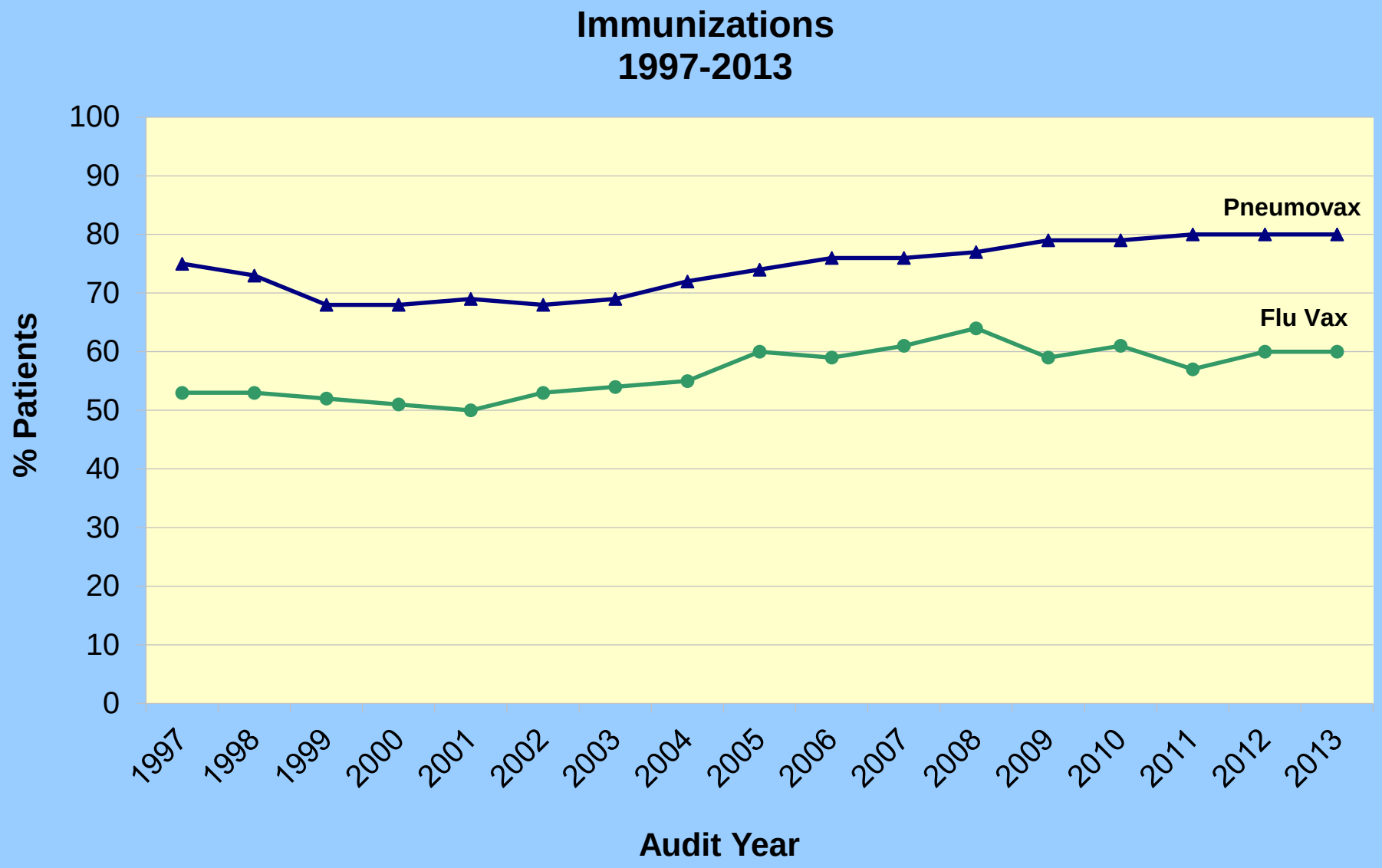


Source: IHS Diabetes Care and Outcomes Audit

Exams
1997-2013

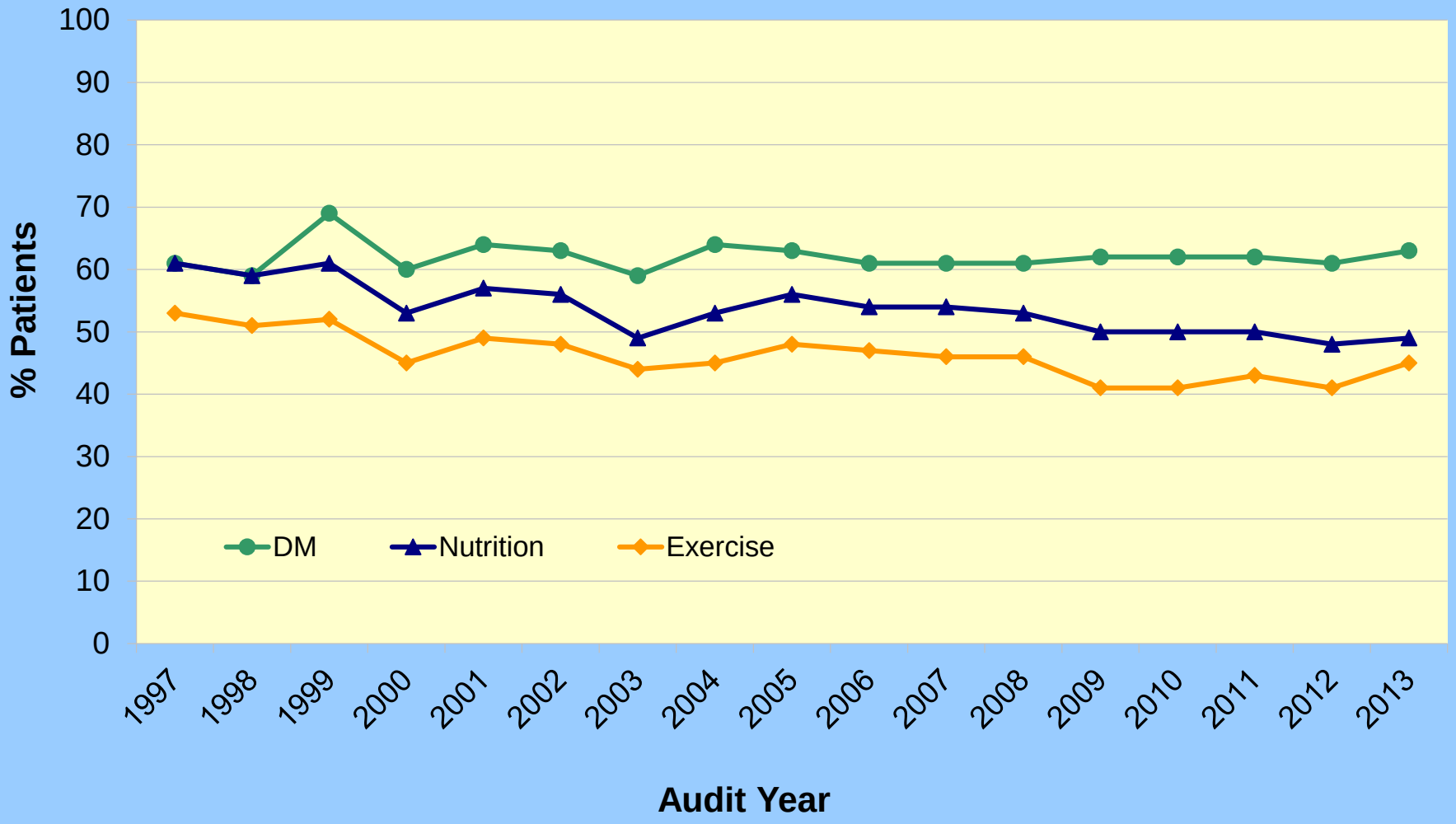


Source: IHS Diabetes Care and Outcomes Audit



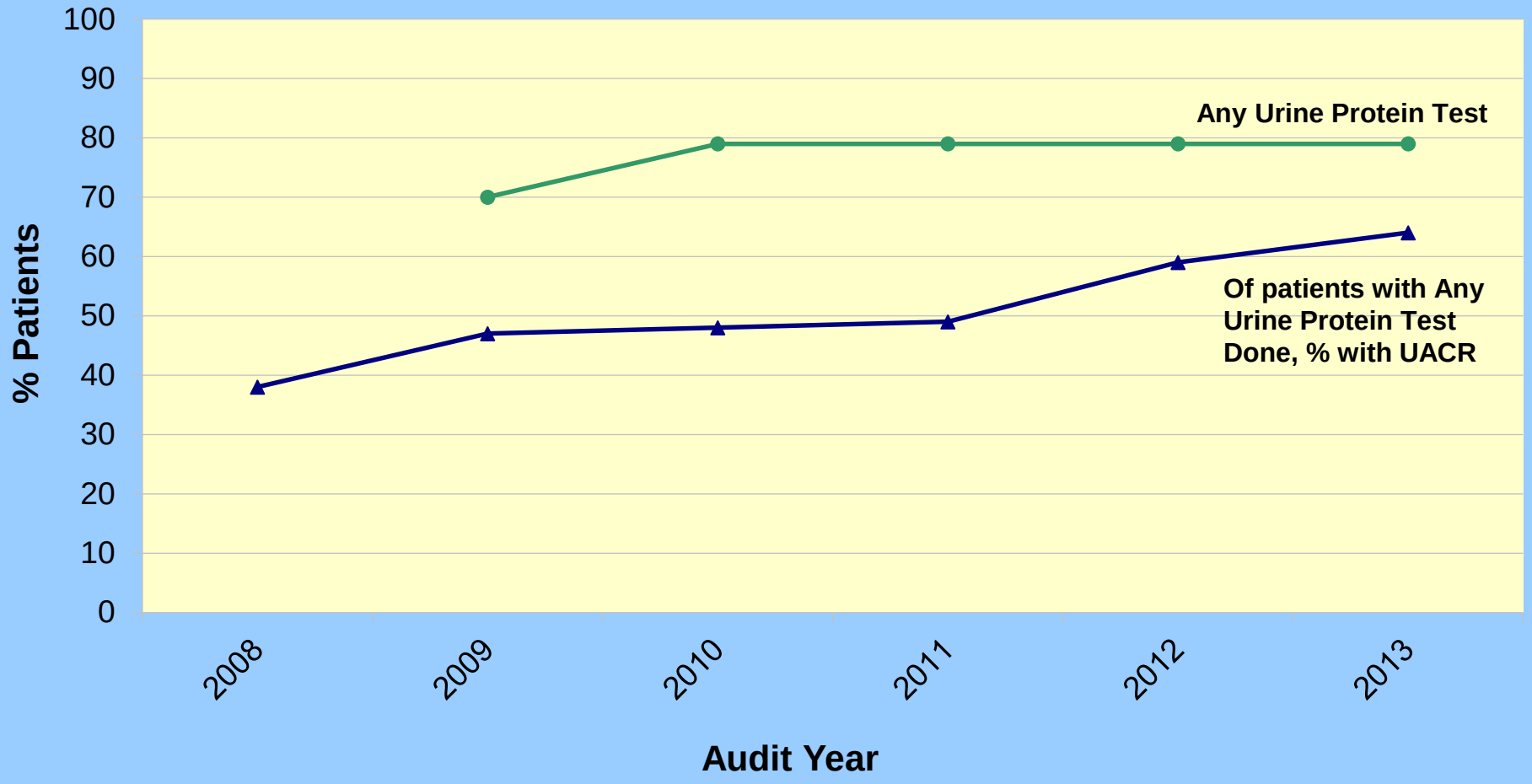
Source: IHS Diabetes Care and Outcomes Audit

Education
1997-2013



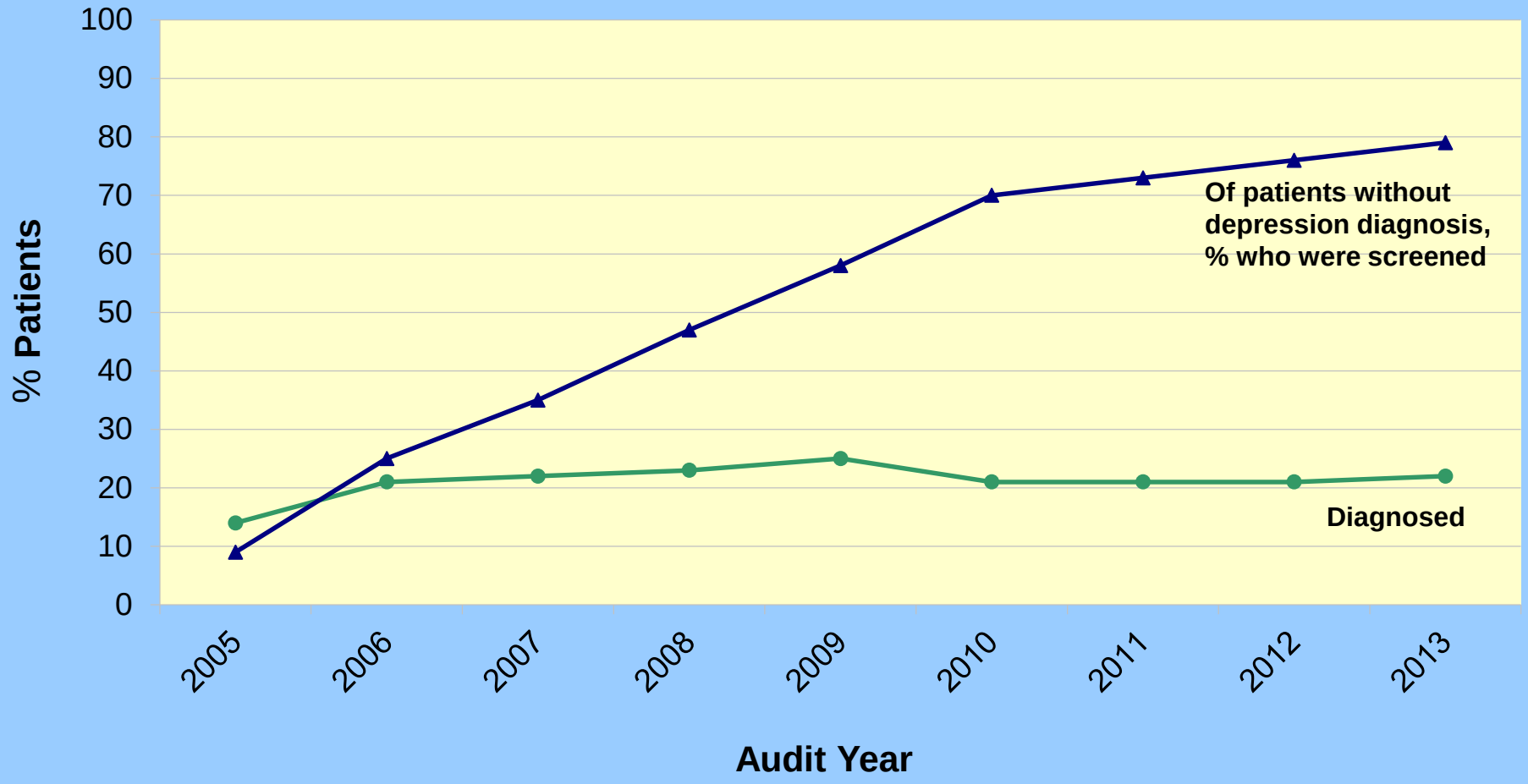
Source: IHS Diabetes Care and Outcomes Audit

Urine Protein Testing and UACR
2008-2013



Source: IHS Diabetes Care and Outcomes Audit

Depression Diagnosis and Screening 2005-2013



Source: IHS Diabetes Care and Outcomes Audit

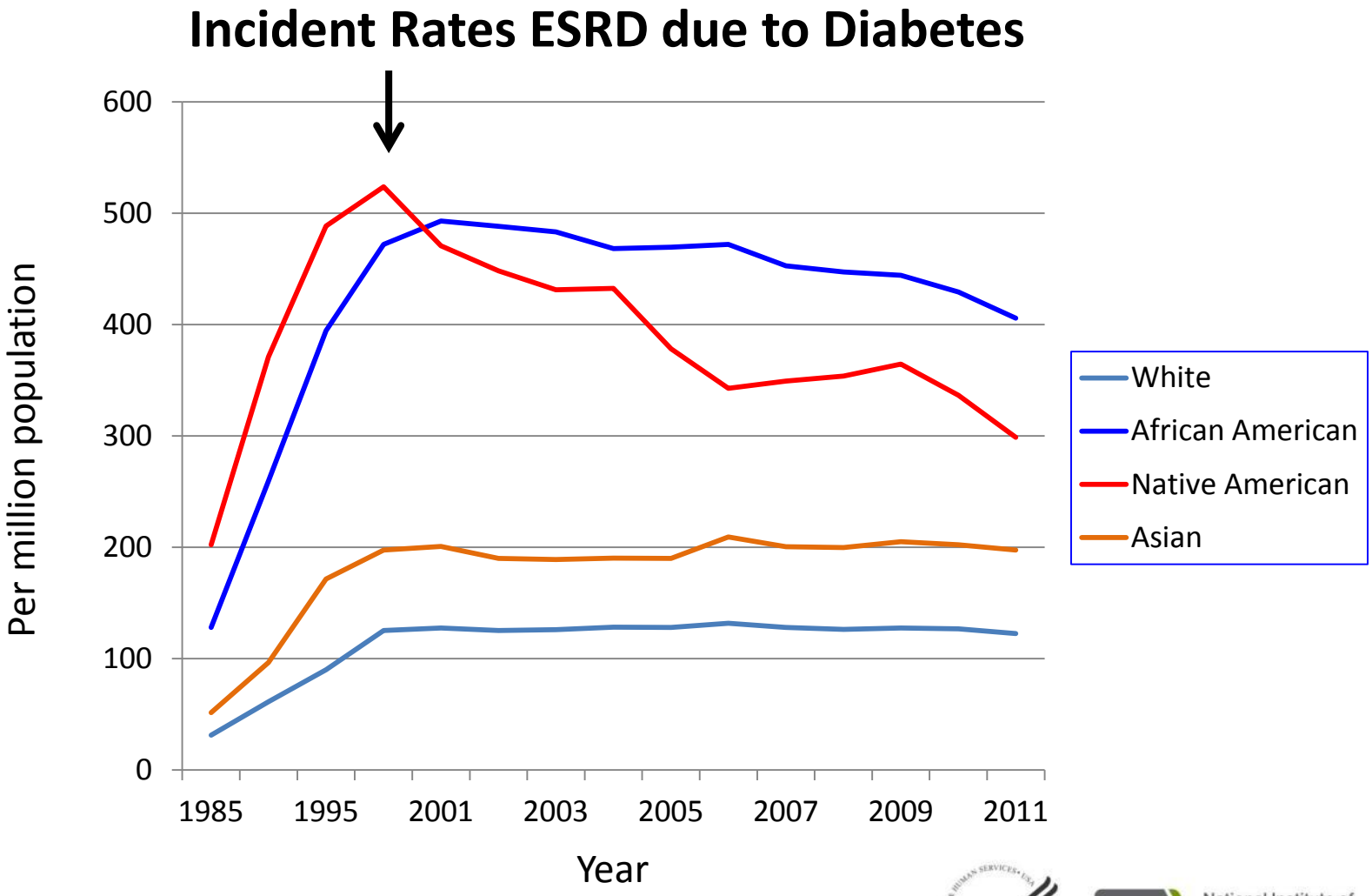
New Measures for Audit 2013

- Diagnosed CVD: 31%
  a. Antiplatelet use in patients with Diagnosed CVD: 77%
  b. Statin use in patients with Diagnosed CVD: 60%

- Comprehensive (bundled) measures:
  - A1C <8.0% & LDL <100 & BP <140/<90: **22%**
  - eGFR & UACR: **50%**

Source: IHS Diabetes Care and Outcomes Audit

Implementation of Research Results Can Impact Public Health



National Institute of Diabetes and Digestive and Kidney Diseases

Source: USRDS ADR, 2013; NEJM 329: 1456, 1993

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

JAMA 2014;311:1778-1786

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

Science 2014;343:1478-1485

Imagine what our interventions to prevent diabetes will look like!

Thank you for all you do to improve the health and wellbeing of AI people in California

www.diabetes.ihs.gov