

Diabetes: Tobacco Use as a Risk Factor

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Objectives for Session

By the end of the session, participants will be able to:

1. Discuss the relationship between tobacco use and the development of diabetes.
2. State at least one risk of using tobacco and the progression of complications in diabetes.
3. State at least one change they will make in their practice as a result of attending this session.



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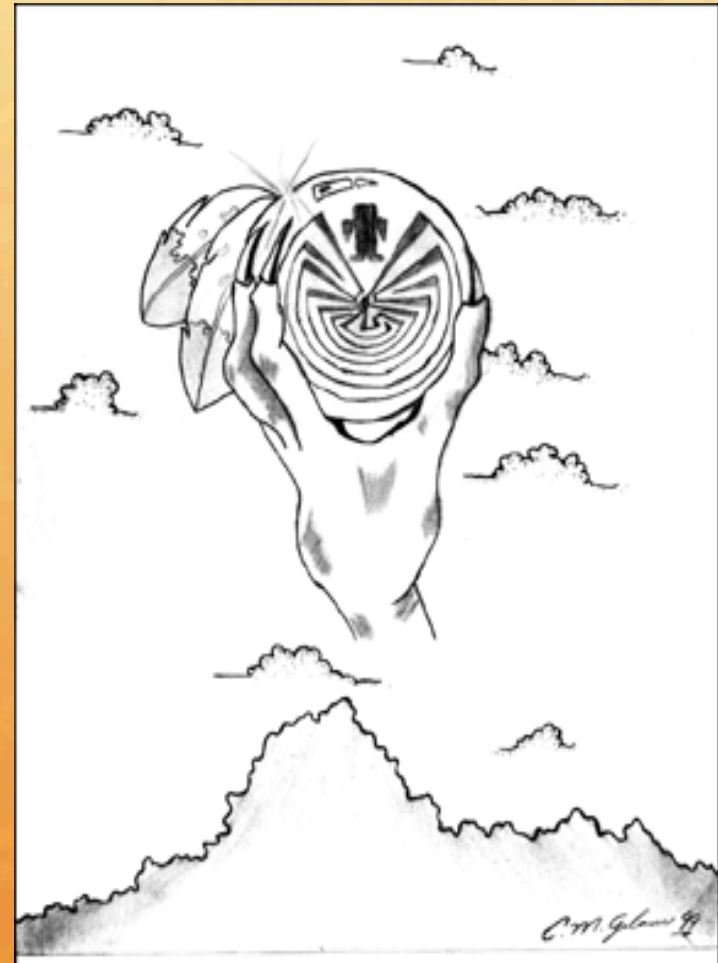
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Ceremonial Tobacco

“When used with respect in small amounts, traditional tobacco is a life-affirming sacramental substance that confers enormous power on the people using it. When used without respect in cigarettes and other commercial products, tobacco is a deadly killer, regardless of race or religion.”

- Joseph Winter, 2000



Commercial Tobacco Misuse

- Repeated consumption of nicotine containing products such as cigarettes, cigars, pipe tobacco, snuff or chew, that has been cultivated, cured, manufactured and sold by corporations for profit.
- Use of commercial tobacco products with the purpose of satisfying a personal need or enjoying their pleasurable effects.
- The use of commercial tobacco products in traditional ceremonies is not considered tobacco misuse.



Just the Facts

- AI/AN have the highest smoking prevalence in the United States (32.4% in 2008)
- AI/AN men smoke nearly twice as much as AI/NA women (42.3% vs. 22.4%)
Source: NHIS, 2008

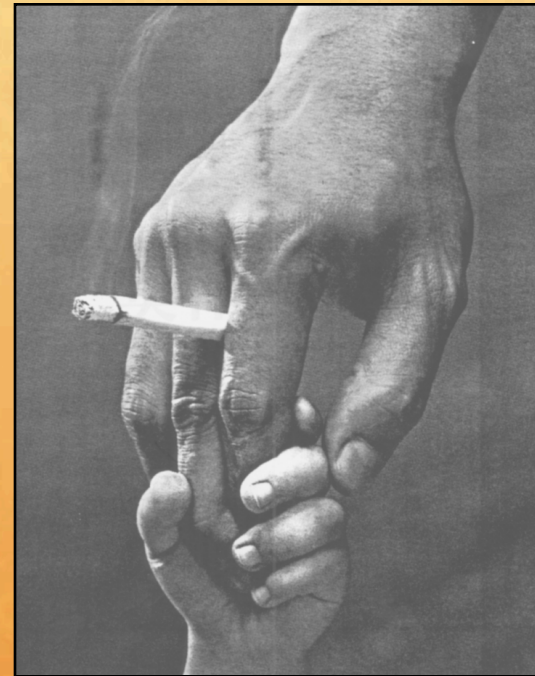


- Smokeless Tobacco
8.1% of men and 2.5% of women vs. 5.6% and 0.6% all U.S. population men and women
Source: NHIS, 1991



Environmental Tobacco Smoke (ETS) or Secondhand Smoke (ShS)

- 60% of adults show biologic evidence of ShS exposure
- 15.5 million kids are exposed to ShS in their homes
- 50,000 adult non-smokers die from ShS each year



Source: Campaign for Tobacco Free Kids, 2009

Smokeless Tobacco

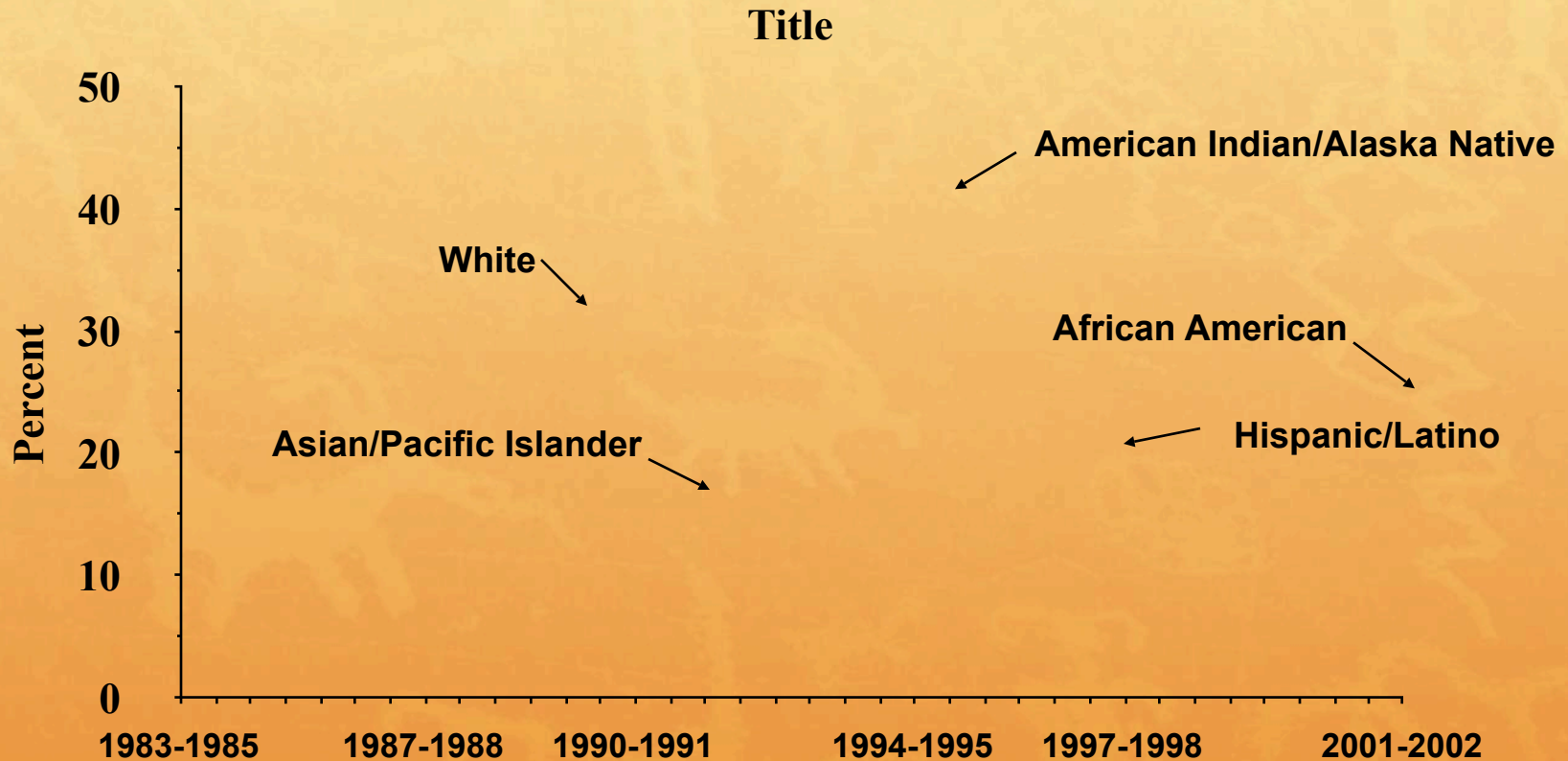
- Hidden addiction
- May not be obvious to family, co-workers or healthcare professionals
- Per capita consumption of moist snuff has increased in the past decade

Historic Tobacco Tidbits: Tobacco and the Americas

- Tobacco was grown by American Indians before the Europeans came from England, Spain, France, and Italy to North America
- Tobacco was the first crop grown for money in North America – 1612 Jamestown, Virginia
- The first commercial cigarettes were made in 1865 in Raleigh, North Carolina.



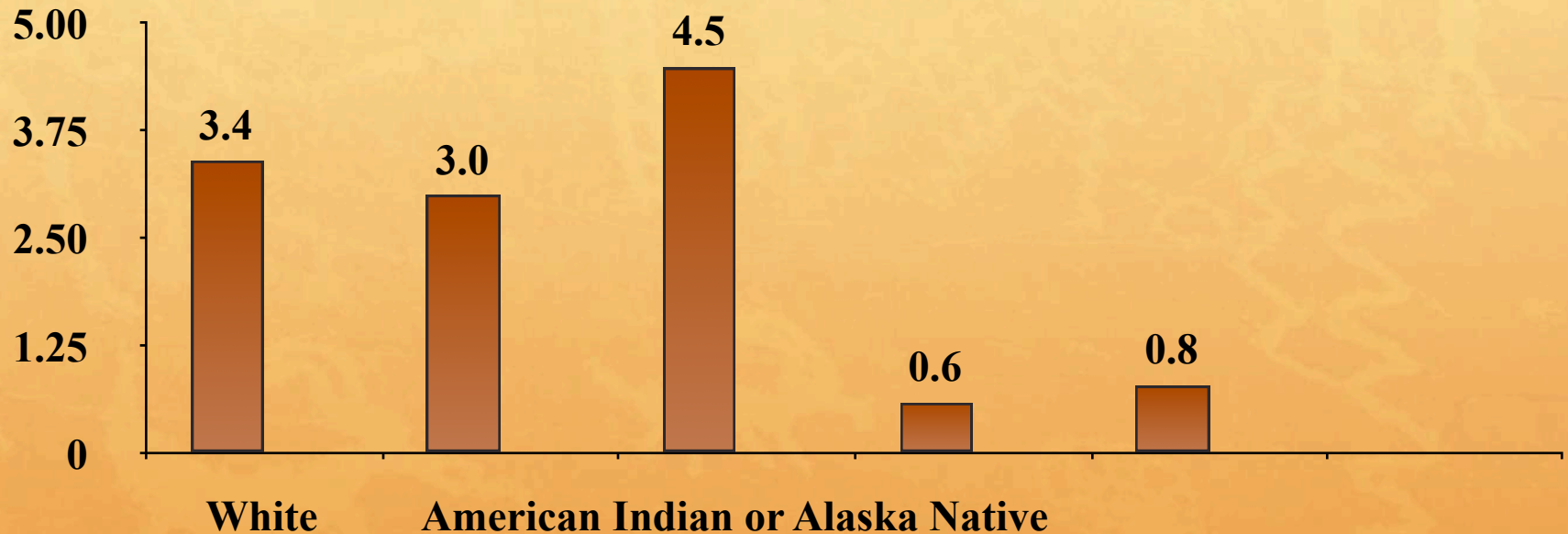
Adult Cigarette Smoking* Trends 1983 - 2002



* Smoking on 1 or more of the previous 30 days.

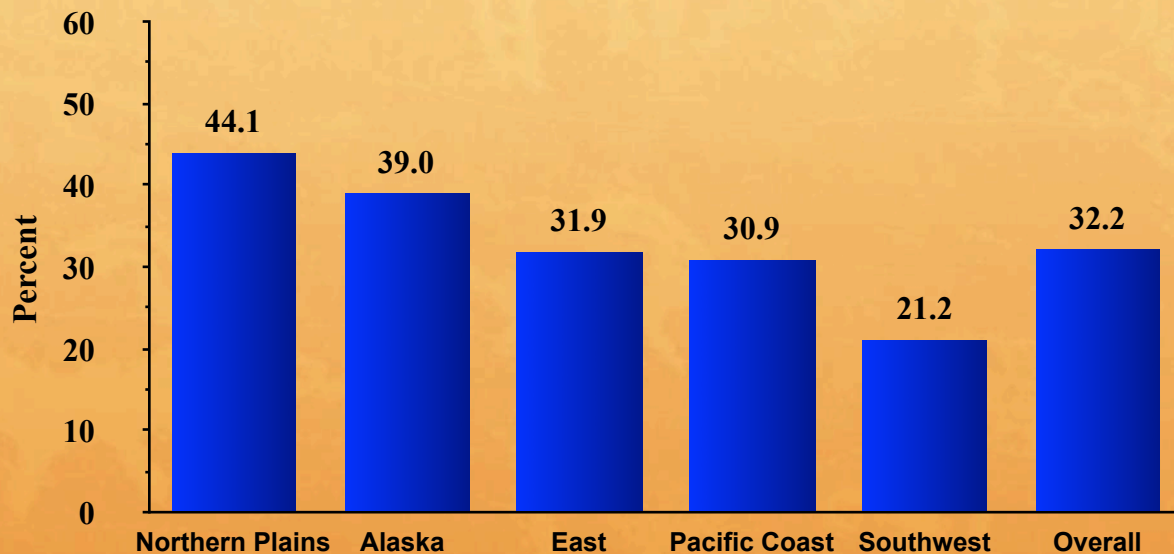
Source: National Health Interview Surveys, 1983-2002, selected years, aggregate data

Smokeless Tobacco Use 1983 - 2002



U.S. Department of Health and Human Services. 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, 1998.

Current Cigarette Smoking by Region



Source: MMWR August 1, 2003/52(SS07);1-13

Prevalence of Tobacco Use and People with Diabetes

- The prevalence of smoking among people with diabetes appears to mirror that of the general population.

Haire-Joshu, Glasgow, Tibbs, 1999



IHS Diabetes Care & Outcomes Audit

- Since 1986
- Measures based on IHS Standards of Care for Diabetes
- In 2009:
 - 71,708 charts representing care to 127,772 people
 - 319 participating facilities (33 of these are Urban)
- **Patient characteristics:**
 - **43% Male**
 - **57% Female**
 - **< 15 Years Age (%): <1**
 - **15-64 Years Age (%): 73**
 - **65+ Years Age (%): 27**

IHS Annual Diabetes Audit 2009

Tobacco

	A B	AQ	AL	BE	BI	CA	NA	NS	O K	PH	PO	TU	ALL
Current User %	3 7	15	30	33	29	23	6	30	25	14	31	14	22
Counsel Rate/ Users %	34	31	30	39	50	49	7	33	41	25	46	15	37
Not Current User %	52	70	65	49	54	68	87	62	69	63	57	74	67
Tobacco Use Unknown %	12	15	5	18	17	9	7	9	5	23	12	11	11

Tobacco use Increases Risk of Developing Type 2 Diabetes

- Cigarette smokers with a family history of diabetes have nearly a six times increased risk.
- Current users of moist snuff have a 1.5-2.7 times higher prevalence of diabetes type 2 compared with non-snuffers.

Persson et al., 2000

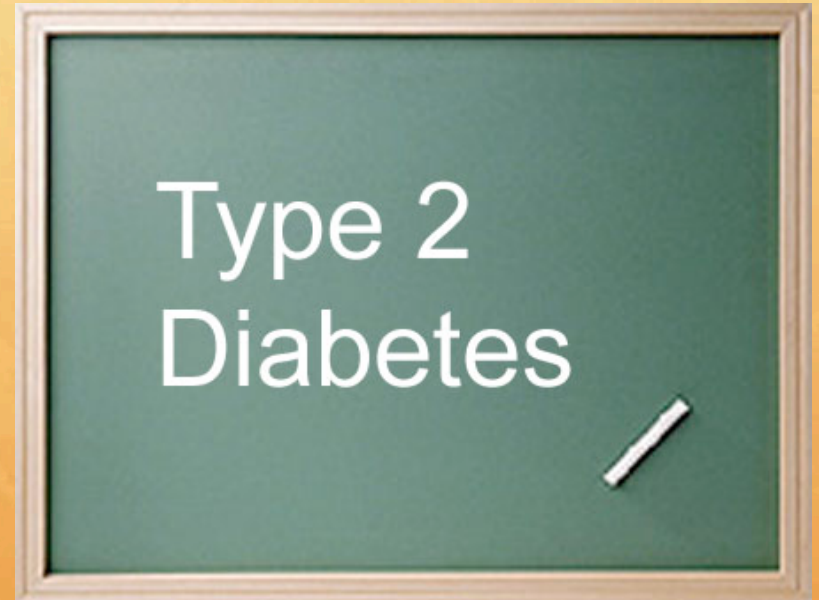


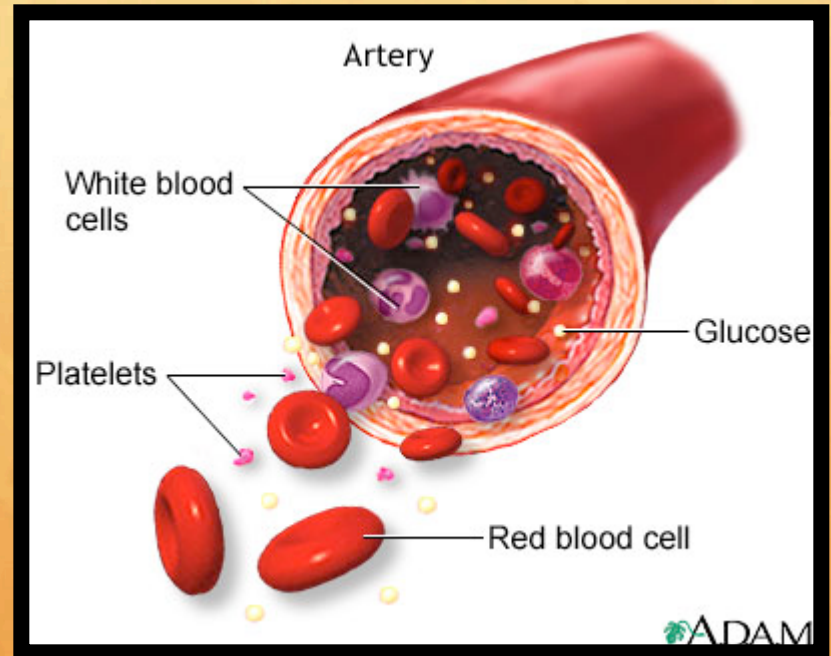
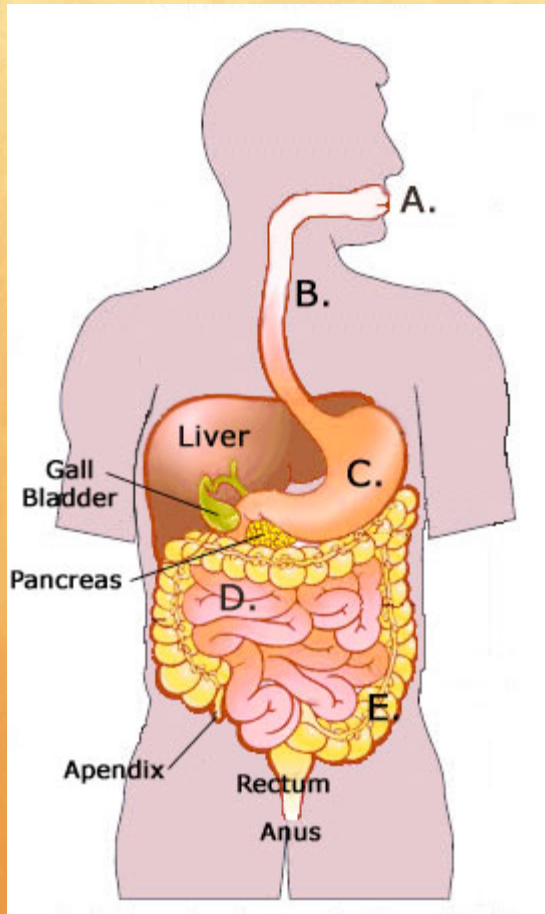
Overview of Diabetes

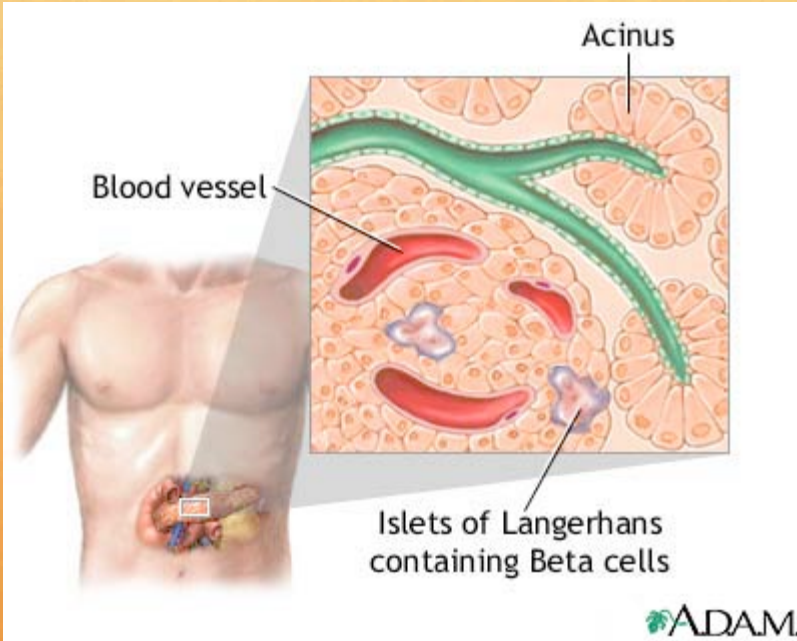
- Diabetes is...
 - A chronic condition
 - High blood sugar (glucose)
 - Something my grandmother has



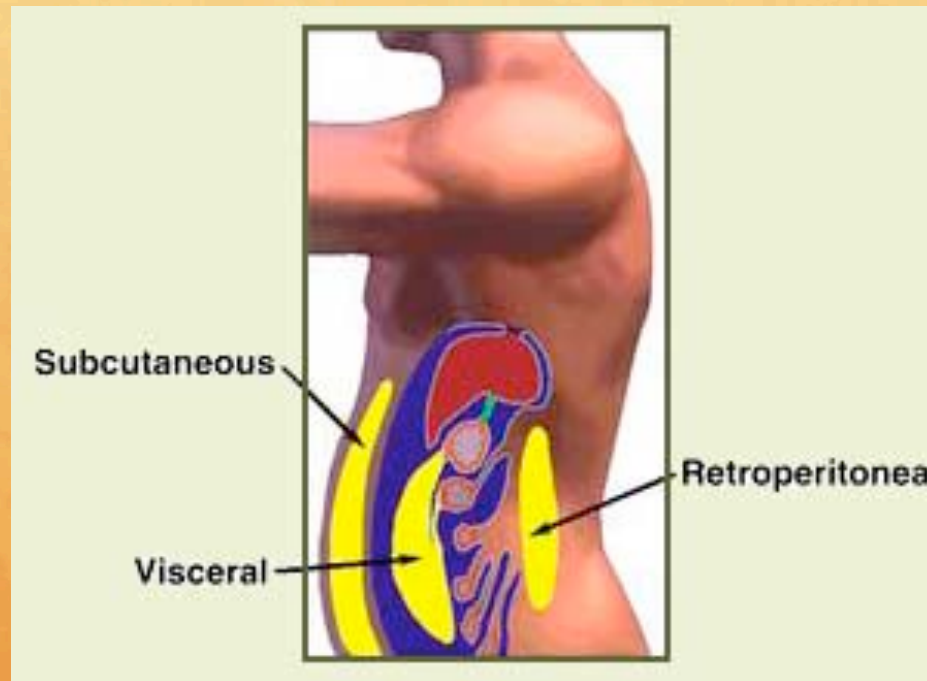
TYPES OF DIABETES

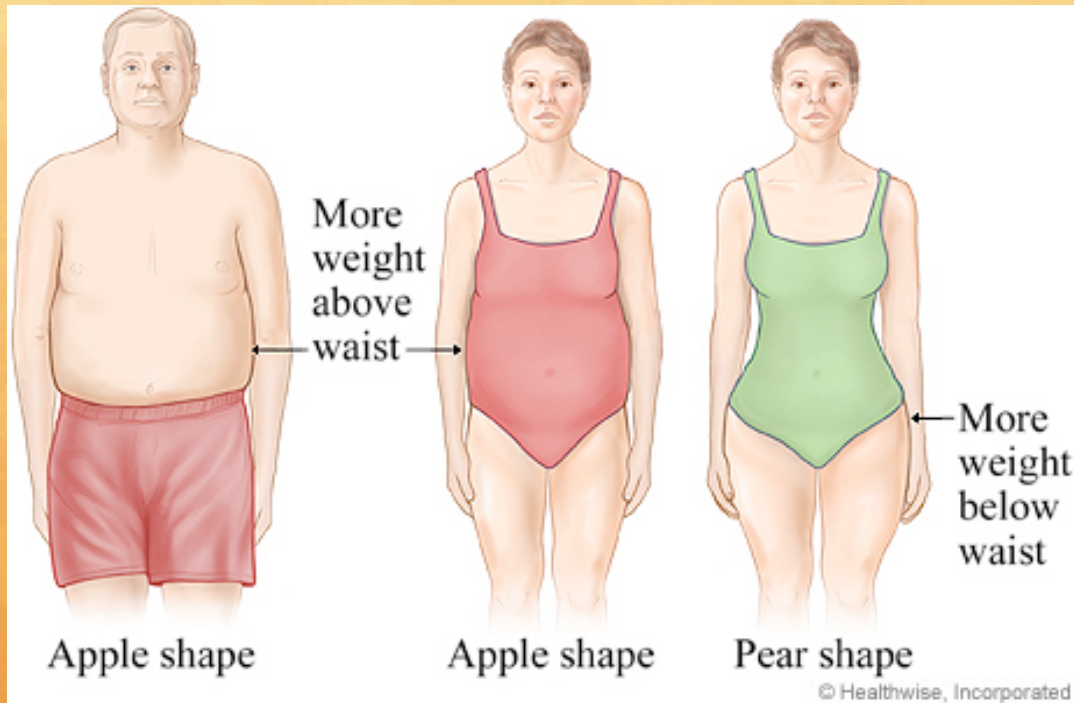






Insulin Resistance





Tobacco and Insulin Resistance

- Experimental findings suggest that smoking causes insulin resistance.

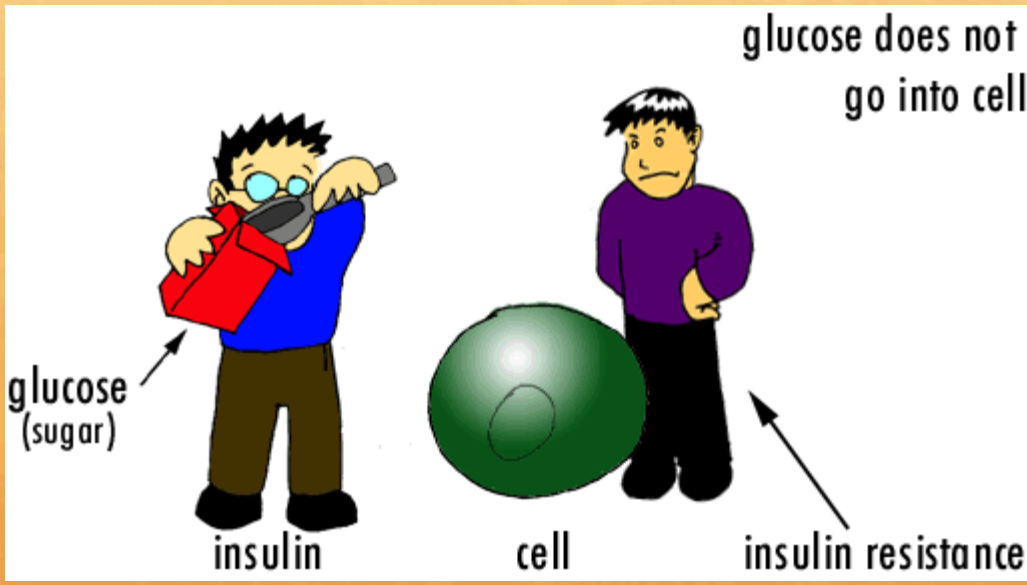
Targher et al., 1997 and 1997

- This effect could be due to a stimulation of the sympathetic nervous system by nicotine.

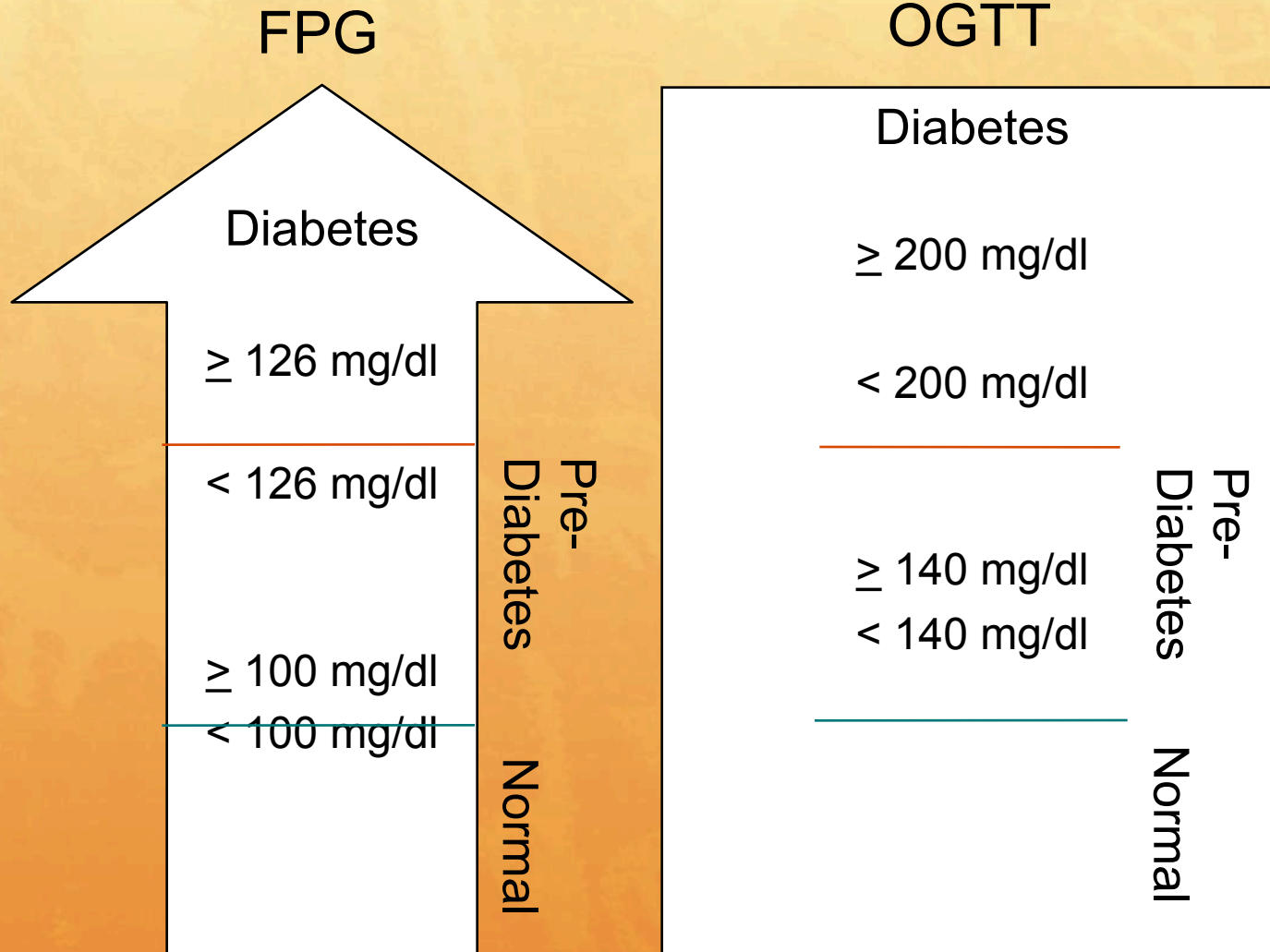
Persson et al., 2000



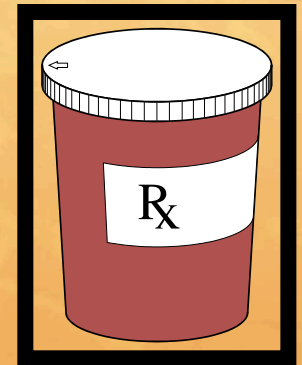
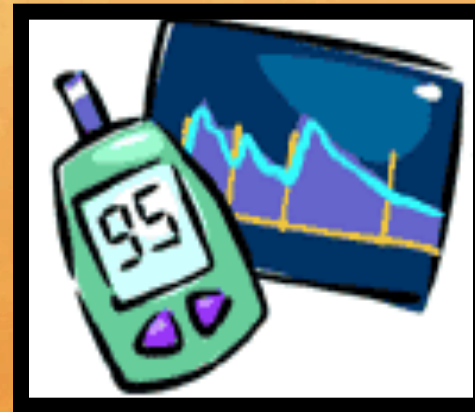
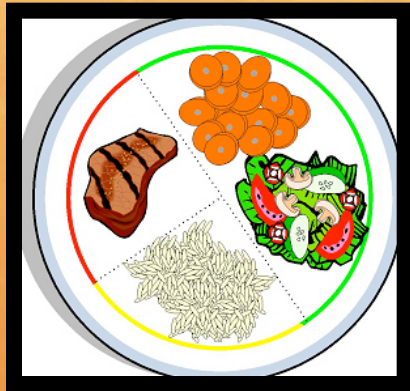
Insulin Resistance



Diagnosis of Pre-Diabetes and Diabetes



Diabetes Management



Burden of Diabetes in the US

- **Disproportionately affects ethnic, minority and lower socioeconomic groups:**

NHWhites: 6.6%

NHBlacks: 11.8%

Hispanic/Lat: 10.4%

AI/AN: 16.5%

- **Increases risk of heart attack and stroke by 2–4 times**
- **Leading cause of new blindness, end stage renal disease, and amputation**

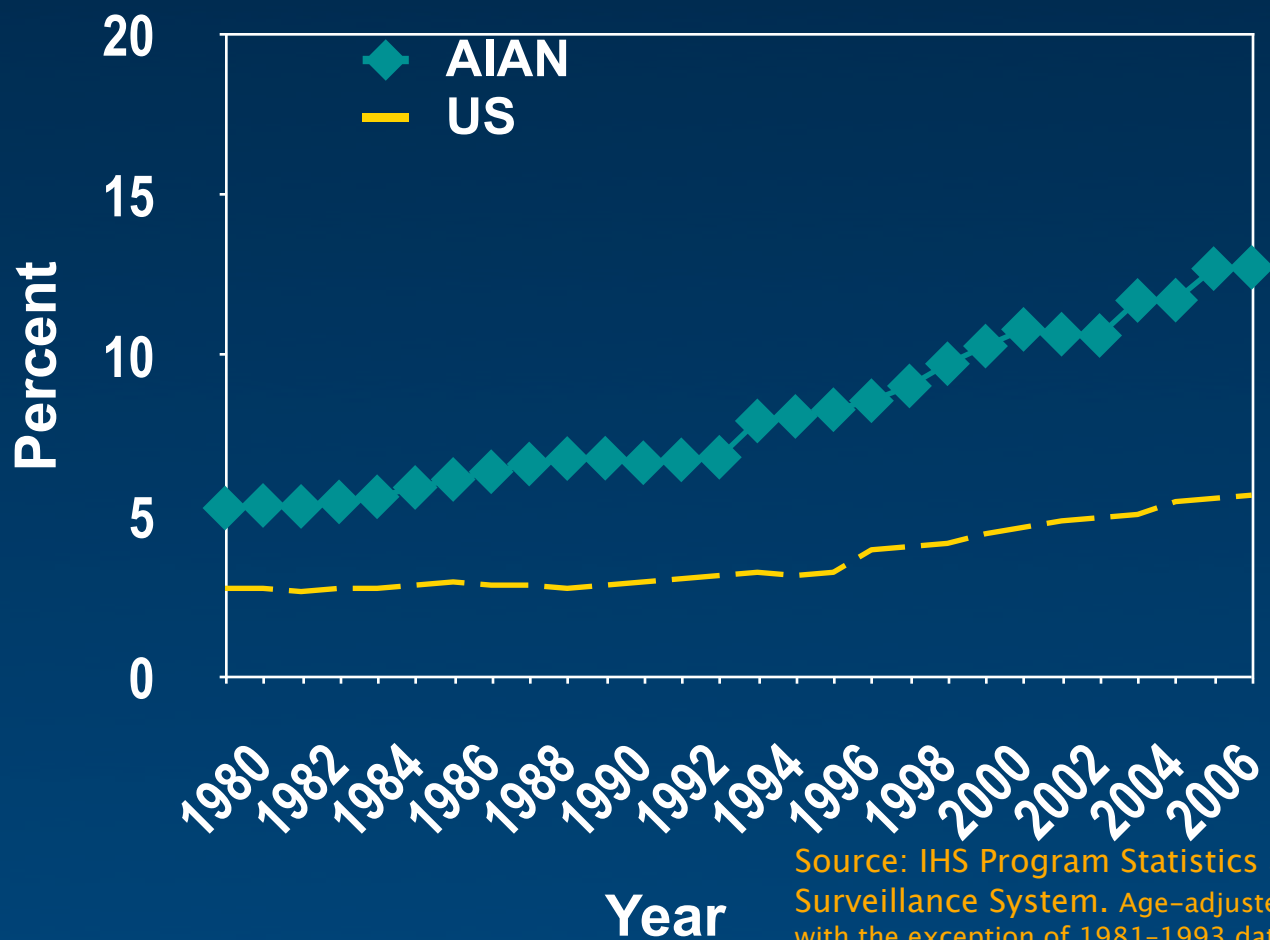
The Diabetes Epidemic in American Indians and Alaska Natives

ONE out of SIX has diagnosed diabetes

Prevalence of Diagnosed Diabetes

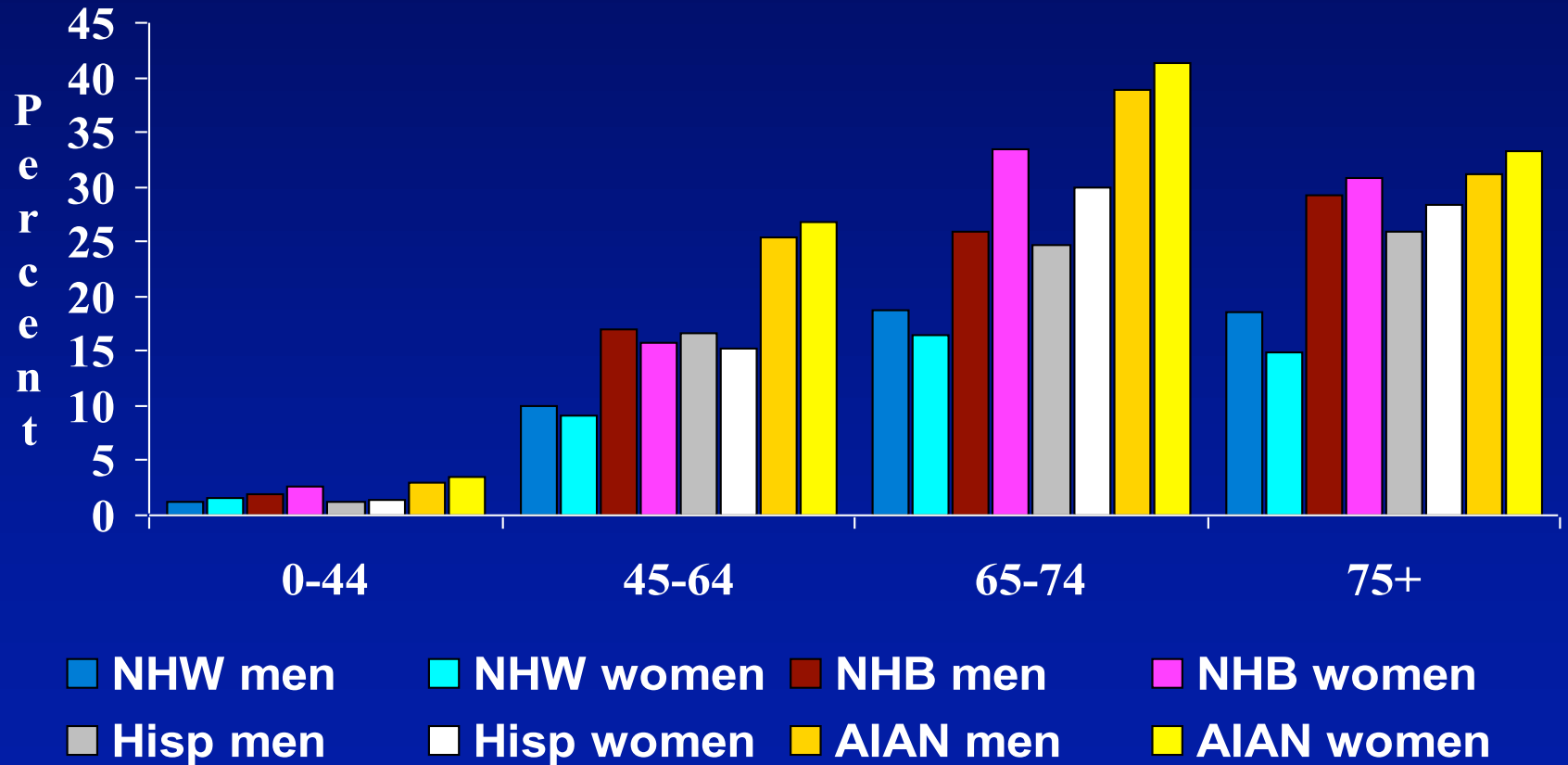
AI/ANs compared to U.S. population – All

1980-2007



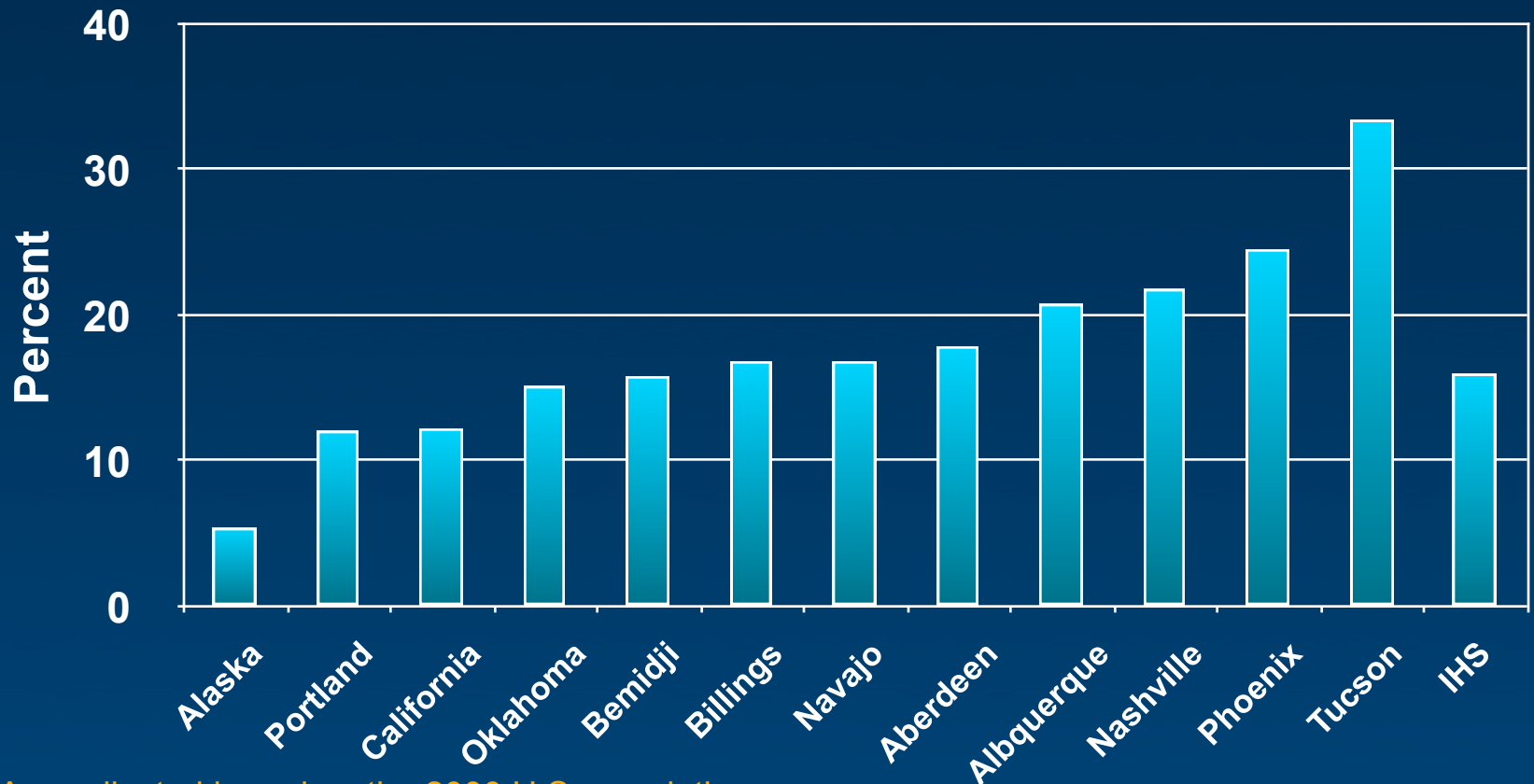
Source: IHS Program Statistics and National Diabetes Surveillance System. Age-adjusted to the 2000 US standard population with the exception of 1981-1993 data for AIAN, which was age-adjusted to the 1980 US standard population.

Prevalence of diagnosed diabetes among adults, by age, race/ethnicity, and sex, United States, 2007



*Source: Centers for Disease Control and Prevention, National Center for Health Statistics, Division of Health Interview Statistics, data from the National Health Interview Survey. Statistical analysis by the Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Diabetes Translation and Indian Health Service National Patient Information Reporting System.

Age-adjusted* prevalence of diagnosed diabetes among American Indians/Alaska Natives, by area, Indian Health Service 2009

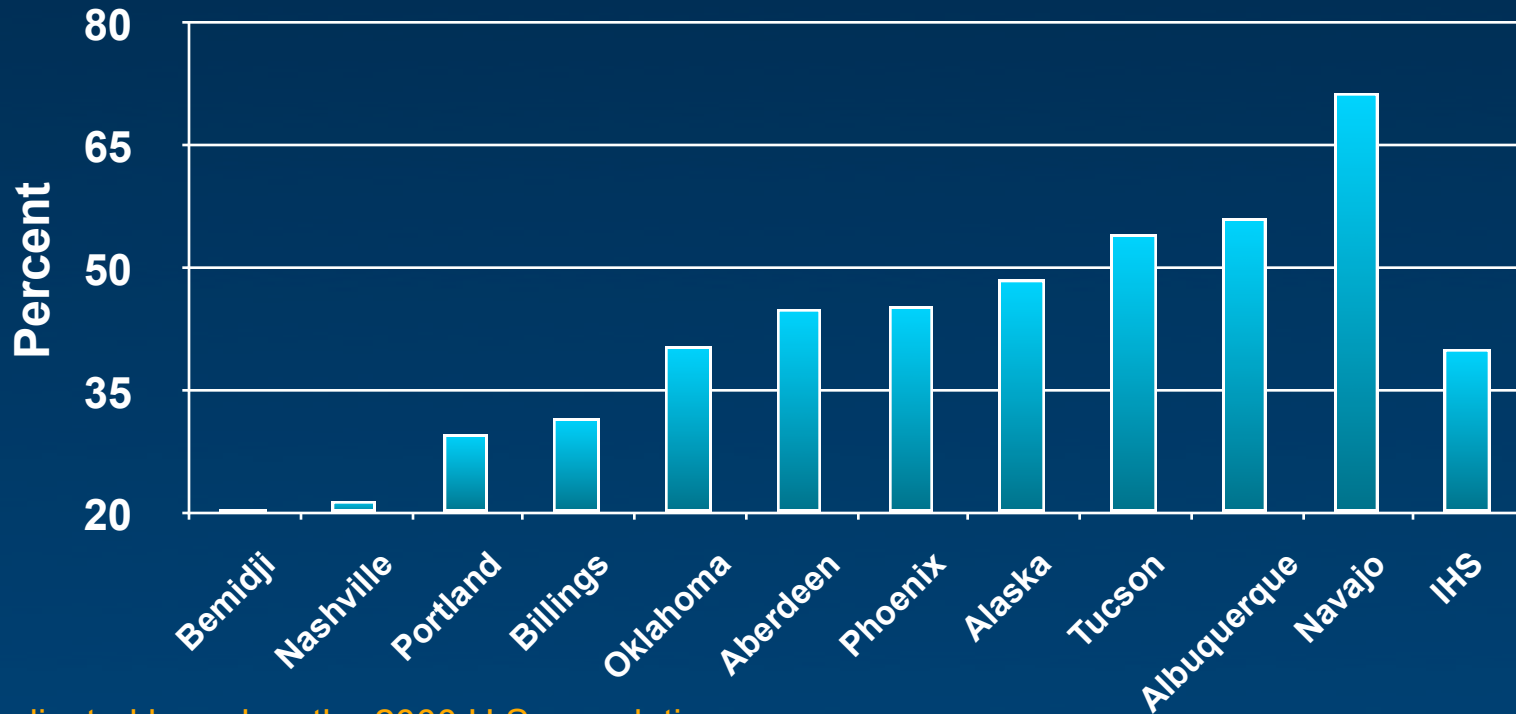


*Age-adjusted based on the 2000 U.S. population

Source: Indian Health Service National Patient Information Reporting System

Reported by DDTP.

Increase in age-adjusted* prevalence of diagnosed diabetes among American Indians/Alaska Natives aged 20 years or older, by IHS area†, 1997 and 2009

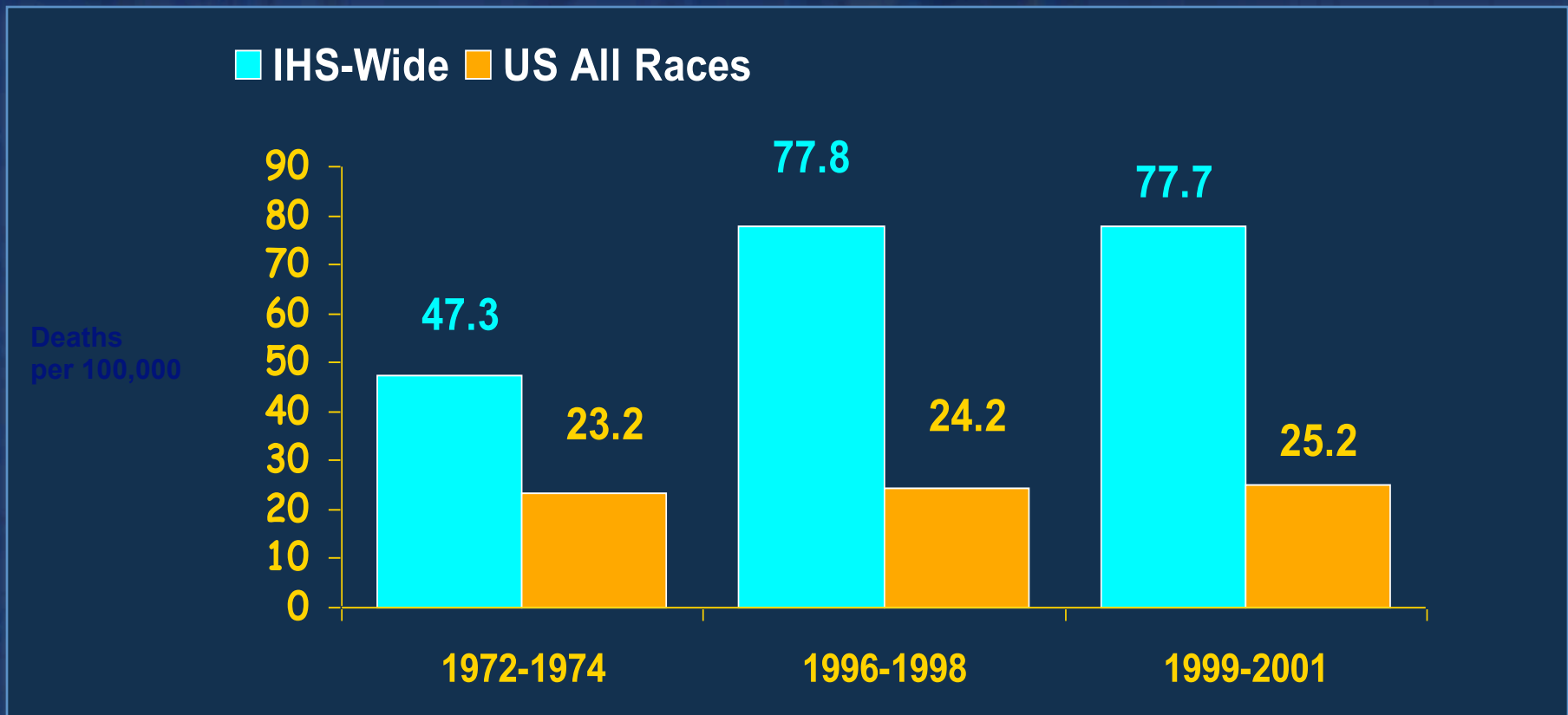


*Age-adjusted based on the 2000 U.S. population

†Age-adjusted diabetes prevalence in California did not show an increase between 1997 and 2009.

Source: FY97–09 IHS National Patient Information Reporting System. Excludes data from 24 service units.

Diabetes Mortality Rate* AI/AN in the IHS Area, 1972-1974, 1996-1998, 1999-2001, and U.S. All Races 1973, 1997, 2000



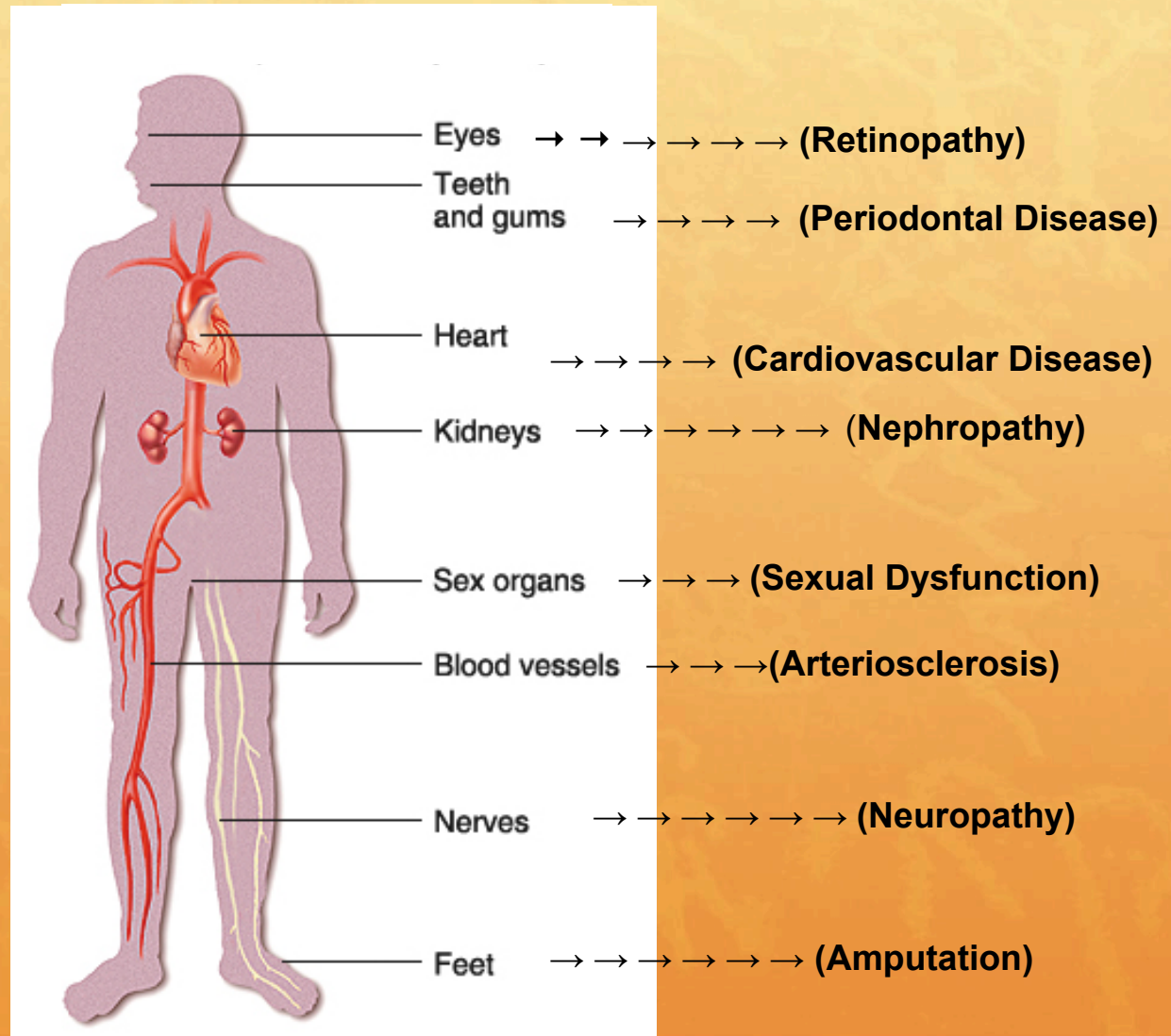
*Age-adjusted based on the 2000 U.S. population
Source: IHS Division of Program Statistics and National Center for Health Statistics

Socio-Cultural Factors

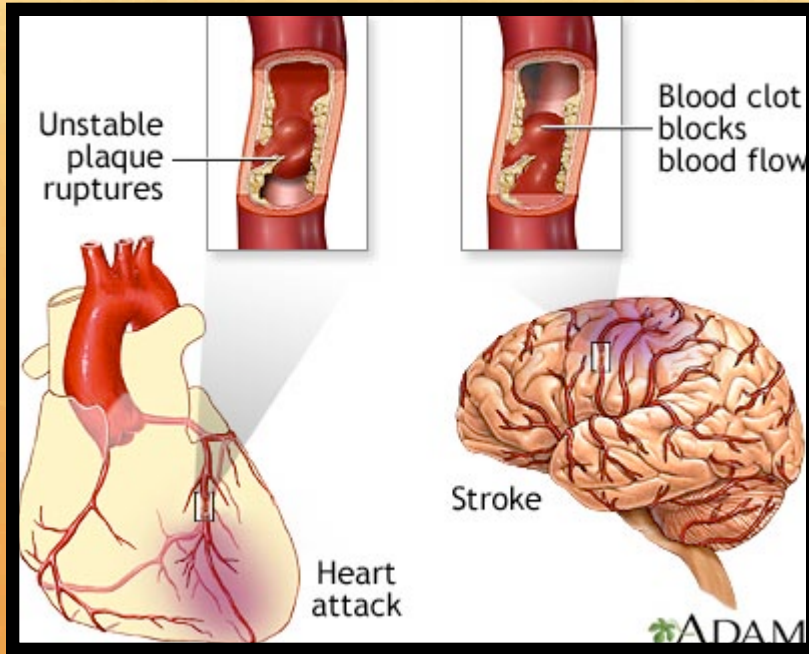
- Traditional tobacco plays an important role in many American Indian/Alaskan Native (AI/AN) cultures
- AI/AN people are at high risk for type 2 diabetes
- Be aware of learning styles, age, language, religious beliefs, and cultural norms



Diabetes Complications



Tobacco Use, Diabetes and Cardiovascular Disease



- Increases risk for Coronary Artery Disease (CAD)
- Excess morbidity & mortality due to circulatory and cardiovascular disease.

Cardiovascular Disease and Tobacco

Centers for Disease Control Tobacco Facts-2005:

- Cerebrovascular disease (CVA):
 - 2 Fold Increase in smokers
- Coronary artery disease (CAD):
 - 2-4 Fold Increase in smokers
- Peripheral vascular disease (PVD):
 - 10 Fold Increase in smokers

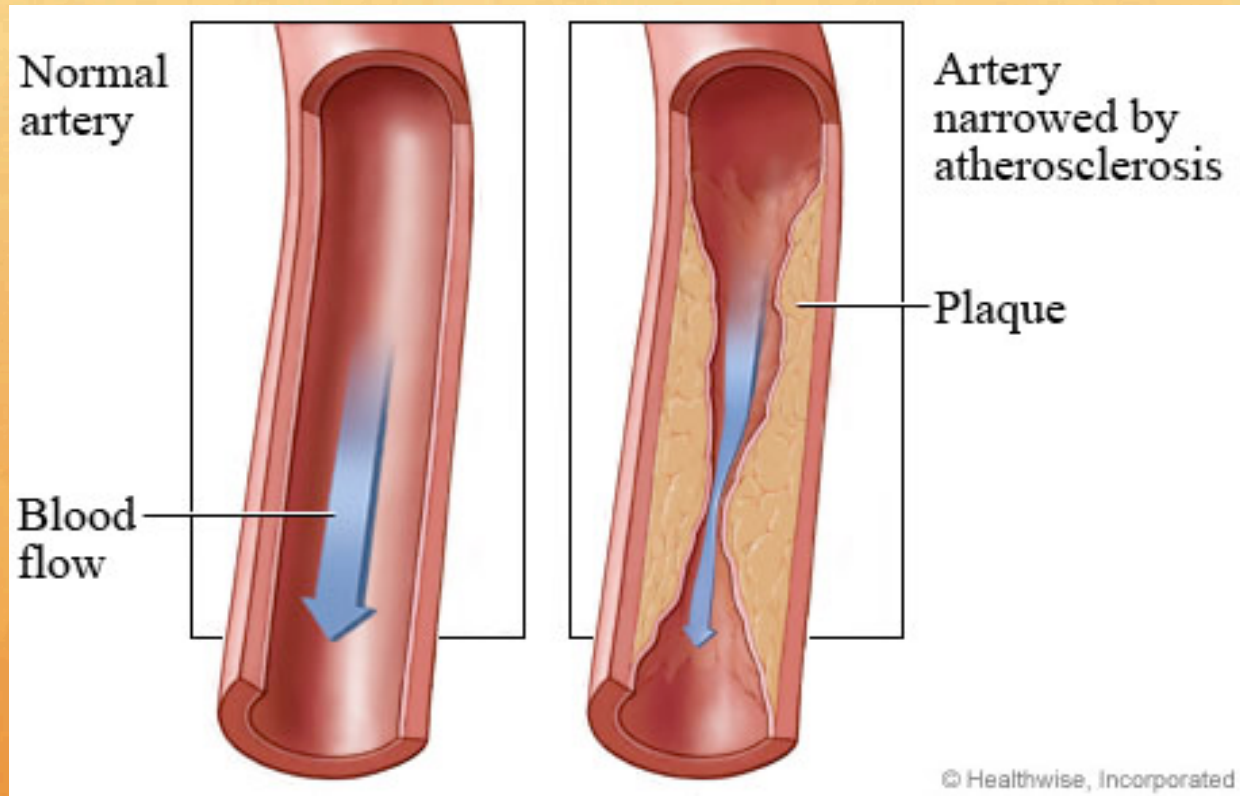


Smoking and Health of Blood Vessels

- Smoking increases cholesterol.
- Smoking lowers High Density Lipoproteins (HDL).
- Blood levels of ascorbic acid 25-40% lower in smokers.
- Calcium levels are lower – calcium is important for management of BP.
- Smoking is not associated with the development of HTN.



Arteriosclerosis



Smoking and Cardiovascular Disease

- Smoking and Cardiovascular Disease:
 - Smoking decreases the age of onset of heart disease by a decade.
 - 70% of patients under 45 with myocardial infarction (MI) were smokers in study. (JAMA 2003)
 - Risk is dose-dependent, as few as 1-4 cigarettes/day increases risk.
 - Smoking negated the known aspirin-stroke prevention benefit in the Women's Health Initiative.



Cardiovascular Disease Risk

Smoking Cessation and Cardiovascular Risk:

- After 1 year:
 - Risk of myocardial infarction (MI) drops by one half
- After 3 years:
 - Risk of MI is similar to someone who never smoked
- Risk of cardiac arrest, stroke, congestive heart failure (CHF) and death show similar early declines with cessation (NEJM 1988).



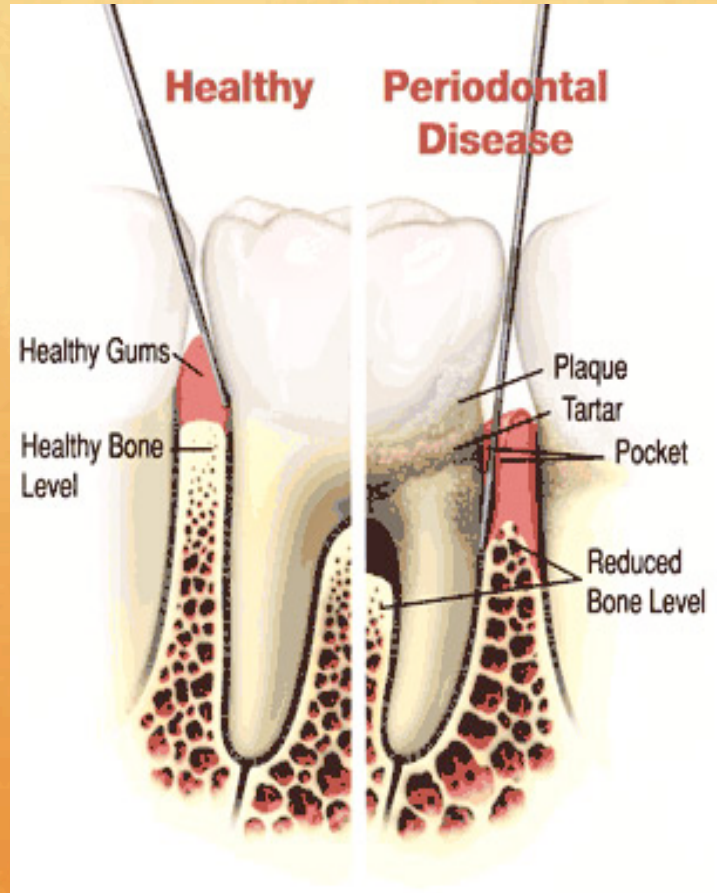
Smoking, Diabetes and Long Term Damage

- Quitting smoking does reduce mortality risk in ex-smokers with diabetes.
- Risks remain high several years after quitting and are highly dependent on the duration of smoking.
- Individuals with diabetes who smoke should be encouraged to quit as soon as possible in the course of the disease.

Diabetes Care 1997;20(8)1266



Tobacco Use, Diabetes and Periodontal Disease



- Tobacco use increases the risk of developing periodontal disease
- Periodontal disease adversely affects management of diabetes
- Diabetics and smokers both exhibit impaired wound healing

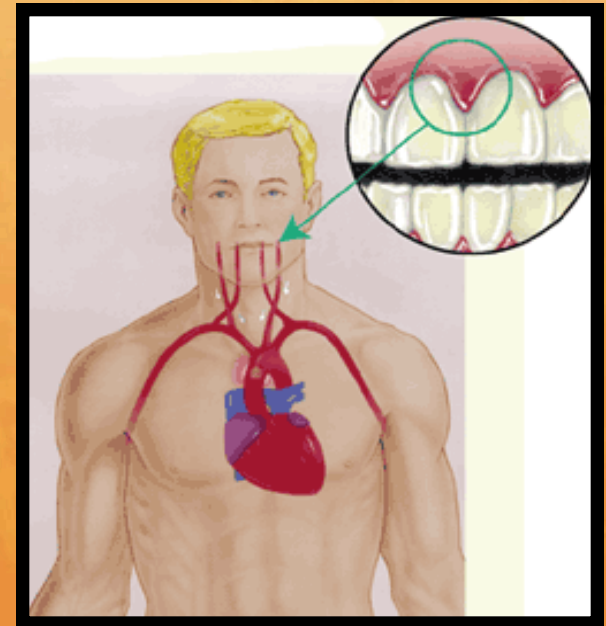
Tobacco and Periodontal Disease

- Tobacco use is a factor in the development and progression of periodontal disease.
 - It is estimated that 35% of dentate adults have periodontitis
- Nicotine, as a vasoconstrictor, restricts the flow of anti-inflammatory cells to sites of periodontal disease, inhibiting healing.



Periodontitis and Cardiovascular Disease

- Periodontal disease is a risk factor
- Periodontal pathogens are linked to systemic disease.
- Bacteria enter the blood stream
- Contribute to clot formation



Sexual Dysfunction



- Impotence affects an estimated 30 million Americans
- Factors:
 - High blood pressure
 - Smoking
 - Diabetes

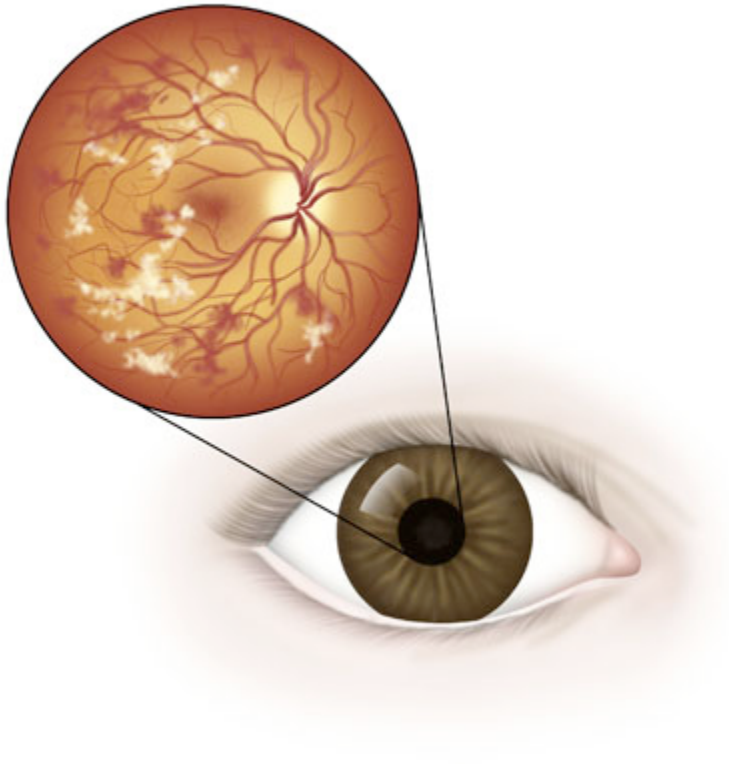
Diabetes: Consequences of Tobacco Use

- Tobacco use
 - Leads to poor glycemic control
 - Increased prevalence of microvascular complications. *Diabetes Care* 1995;18(6)785-792



Tobacco Use, Diabetes and Retinopathy

Diabetes Affects the Retina

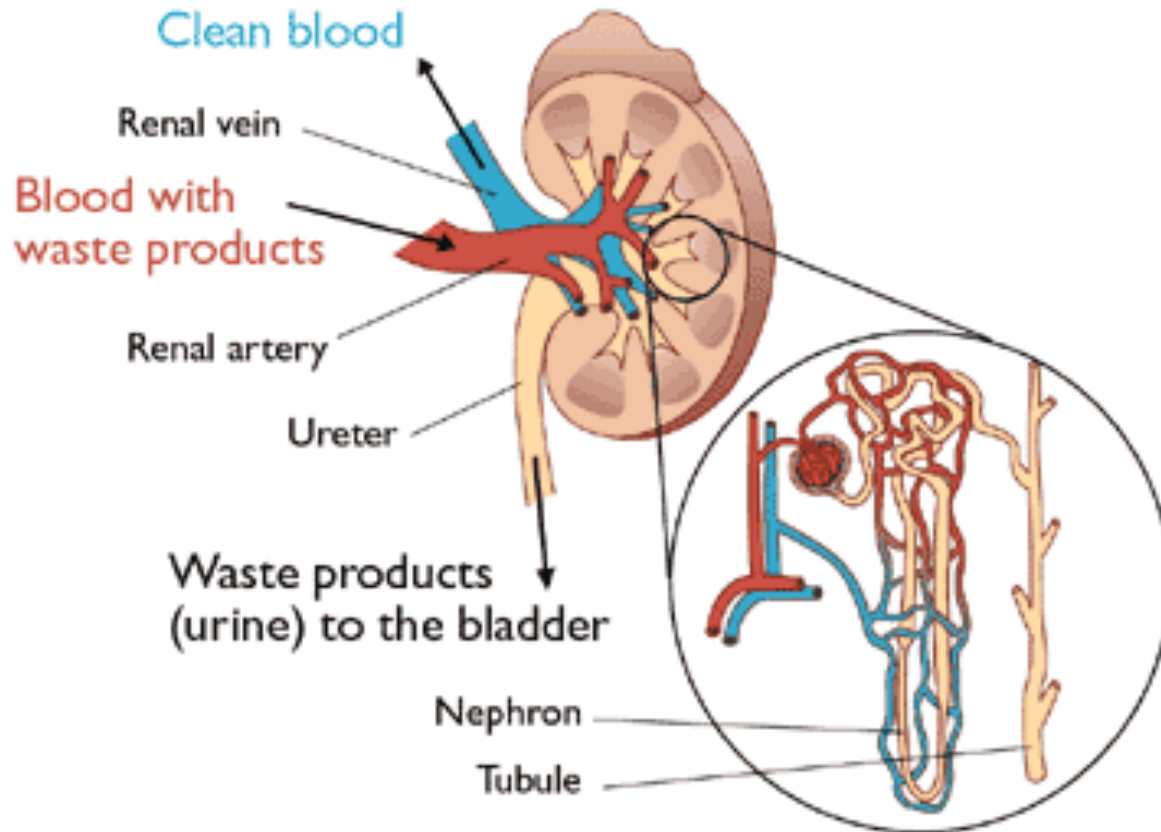


General recommendations:

- Annual eye exam
- Stop smoking
- Manage ABC's
 - Blood Sugar
 - A1C < 7%
 - Blood Pressure
 - BP < 130/80 mm Hg
 - Blood Cholesterol
 - LDL < 100 mg/dl
 - HDL > 40 mg/dl – men
 - > 50 mg/dl – women

Tobacco Use, Diabetes and Nephropathy

How the kidney works



- Increases risk of nephropathy.
- Increases risk for albuminuria by >20%.

Diabetes Care 1999;22(11):1887-1889

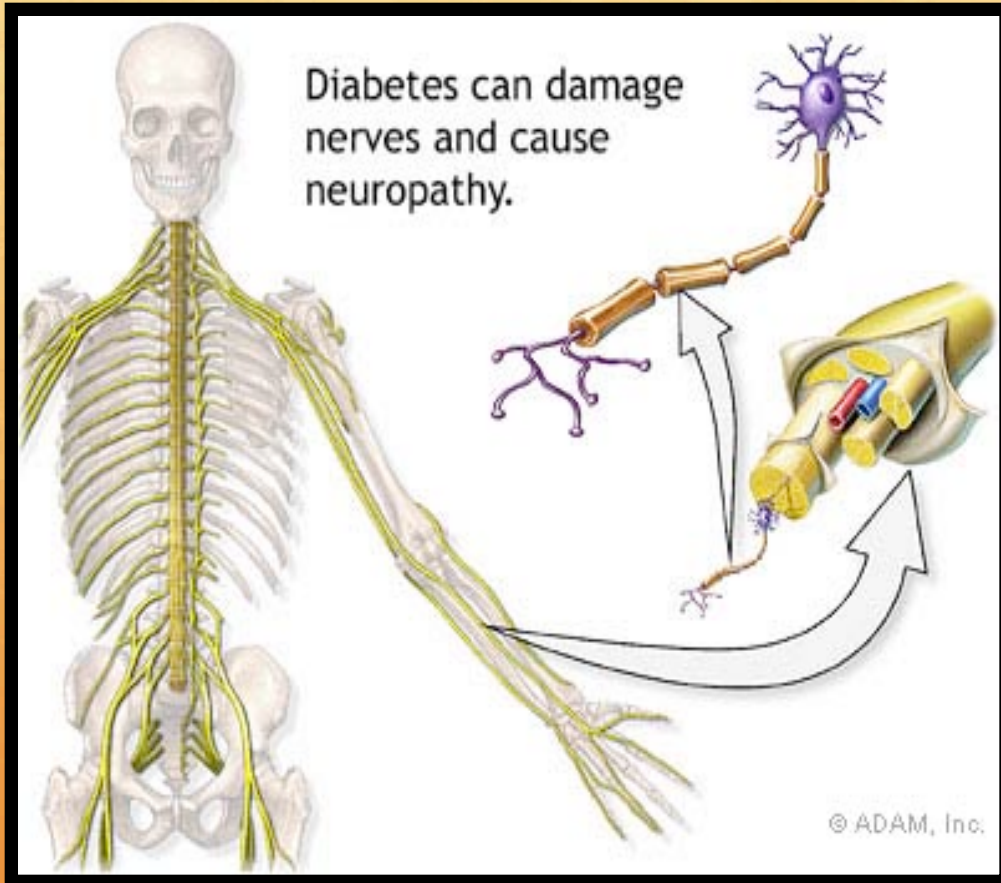
Diabetes: Consequences of Tobacco Use

- Cigarette smokers with diabetes and on dialysis show higher:
 - Fibrinogen and systolic blood pressure values
 - Incidence of MI
 - Have a decreased 5 year survival rate compared to nonsmoking patients on dialysis.

Diabetes Care 1996;19(6)625



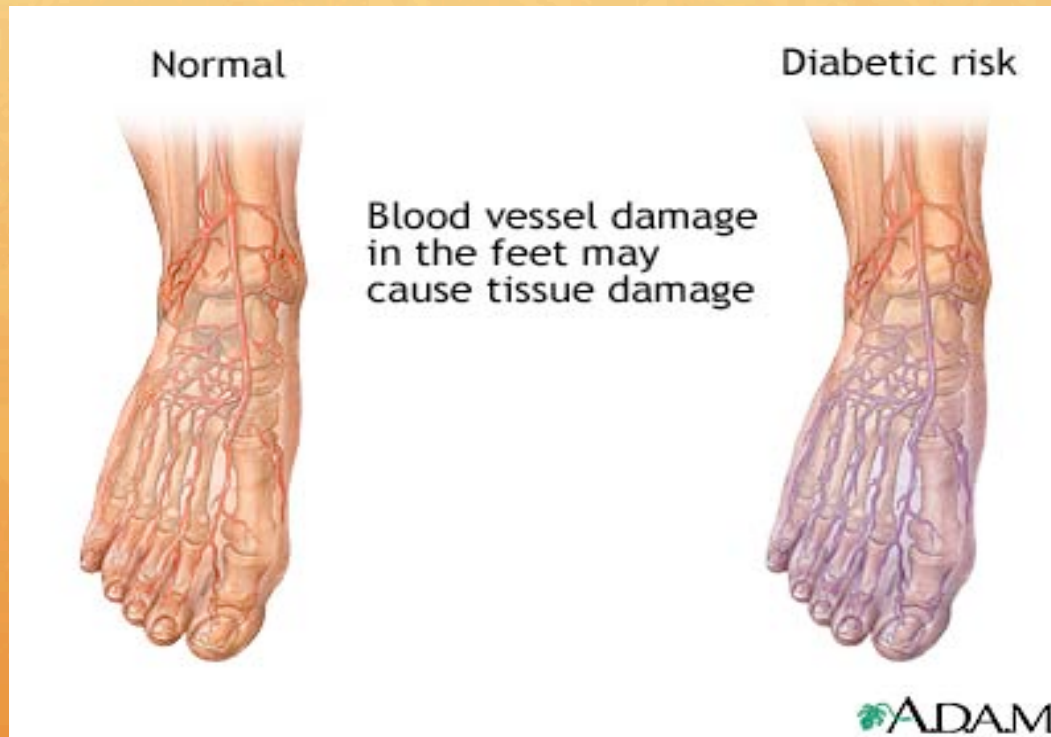
Tobacco Use, Diabetes and Neuropathy



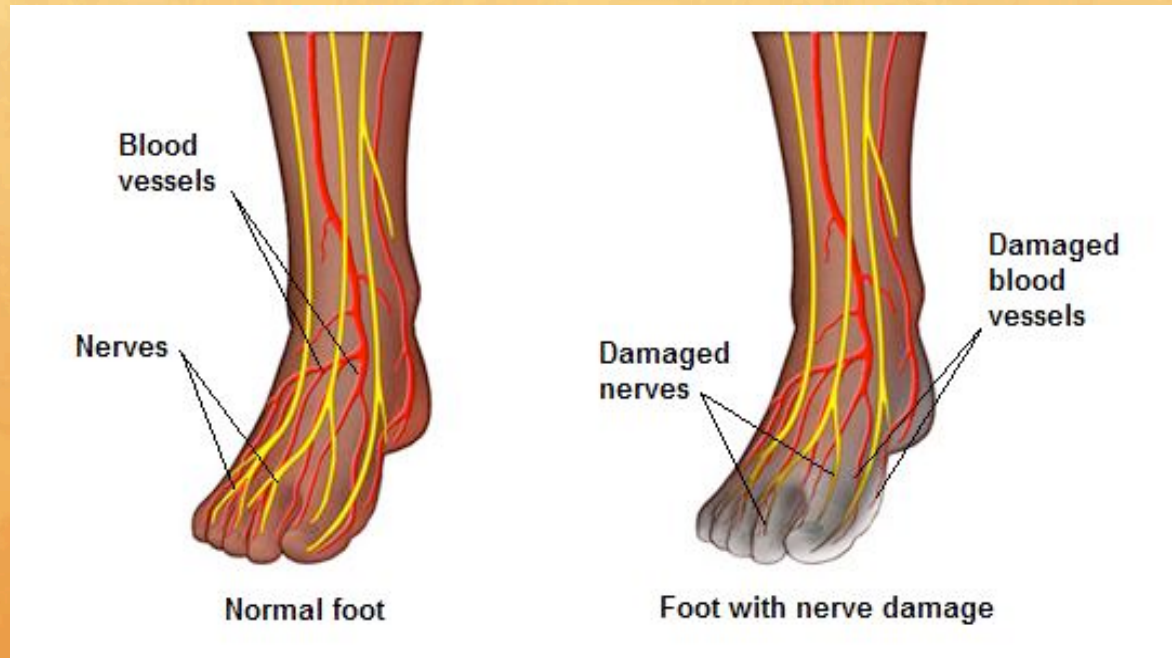
- Increases neuropathy by 12 fold.

Diabetes Care 1999;22
(11)1887-1889

Feet & Risk for Amputation



Diabetes and Risk for Amputation



Diabetes & Smoking

- Smoking is one of the strongest predictors of poor metabolic control in addition to age of onset, blood glucose monitoring, socioeconomic status and knowledge.

Diabetes Care 1999 22(11)1887-1898



Barriers to Tobacco Dependence Treatment for People with Diabetes

- Concerns about:
 - Weight gain
 - Dietary adherence
 - Minimal encouragement from general practitioners

- Wakefield, Rosenfeld, 1998



Concerns about Smoking Cessation

- 2/3 of smokers will gain weight after smoking cessation.
- Most gain fewer than 7 pounds, but some gain as much as 30 pounds.
- Women tend to gain slightly more weight than men.
- Risk factors associated with weight gain include: African American, age under 55, and heavy smoking history (> 25 cigarettes per day).



Smoking Cessation and Weight Gain

- If smokers do not increase their caloric intake upon quitting, they will gain some weight.
- Conversely, once a former smoker relapses and begins smoking at pre-cessation levels, there is usually loss, of some if not all, of the weight gained associated with quitting.



Smoking Cessation and Major Weight Gain

- Major weight gain occurs in a minority of those who quit.
- Effective methods to weight control are needed for smokers trying to quit, especially if they are:
 - Sedentary
 - Overweight



Recommendations for Prevention of Weight Gain after Smoking Cessation

Acknowledge that quitting can result in weight gain.

- Encourage the tobacco user to start taking steps to counter weight gain prior to - and throughout - the quitting process.
- Discuss increasing exercise, getting 7-8 hours of restful sleep, practicing meditation or deep breathing, and practicing mindful eating habits.

Note that the health risks of weight gain are small when compared to the risks of continued smoking.



Diabetes

Clinical Practice Recommendations

- American Diabetes Association's 2000 Clinical Practice Guidelines included a major change:
 - Assessment of tobacco and alcohol use during initial and continuing visits.

Diabetes Care 2000;23(Supplement 1)



Multiple Providers Need to Intervene

- Treatments delivered by multiple types of providers are more effective than interventions delivered by a single type of provider
- Increases quit rates by:
 - 1 provider = 80%
 - 2 providers = 150%
- More is more!



The average smoker takes 12-14 attempts before they are successful

- Shu-Hong Zhu, University of California, 2007

The Five A's

Framework for Tobacco Use Intervention

- Ask about tobacco use (Nurse)
- Advise all users to quit (Provider)
- Assess willingness to quit (Provider)
- Assist - to increase readiness (Provider/RN)
- to access treatment (Referral)
- Arrange treatment and follow-up (TTS/
Provider)



Tobacco Control Task Force Technical Assistance

Certifications

- Basic Tobacco Intervention Skills
- Basic Tobacco Intervention Skills
- Instructor
- Tobacco Treatment Specialist

Clinical Tools

- Fieldbook
- Supplemental Materials

Task Force Member Mentoring

- EHR Templates
- Coding/Billing
- Protocol Development

Website

<http://www.ihs.gov/medicalprograms/epi/>



On the Path to a Diabetes-free Future



**IHS Division
of Diabetes Treatment
and Prevention**

**5300 Homestead Rd NE
Albuquerque, New Mexico
505.248.4182
diabetes@mail.ihs.gov
www.ihs.gov/medicalprograms/diabetes**

PLUS: National Diabetes Education Program – www.ndep.nih.gov

National Indian Health Service Tobacco Control Task Force (TCTF)

The National Indian Health Service (IHS) Tobacco Control Task Force is comprised of a multidisciplinary team of volunteer representatives from across the Indian Health System as well as partners from tobacco control organizations

Contact for TCTF:
Megan.Wohr@ihs.gov



Online Resources

- www.smokefree.gov (CDC)
- <http://www.surgeongeneral.gov/tobacco/> (DHHS)
- www.fda.gov/TobaccoProducts/default.htm (FDA)
- www.cancer.org (American Cancer Society)
- www.americanheart.org (American Heart Association)
- www.tobaccofreekids.org (Campaign for Tobacco-Free Kids)
- www.lungusa.org (American Lung Association)
- www.becomeanex.org (Become An EX)



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www.healthcarepartnership.org

