

# Dental / Medical Collaboration

## The Impact on Diabetes



# Reconnecting the Mouth to the Body



# Inflammation is a critical player in the oral-systemic links



# Newsweek

September 4, 2000 : \$3.50

**TAX CUT  
SMACKDOWN**

**SAINTLY  
POPE**

newsweek.msnbc.com

**BEHIND  
CNBC**

# DIABETES

It Strikes  
~~16~~ Million  
Americans

Are You  
at Risk?

Computer drawing of a human insulin molecule

23.6

# Why Diabetes?

**The CDC refers to diabetes as the “Epidemic of Our Time”**

- 25.8 million children and adults in the US with diabetes 8.3% of the total population
- It is estimated that 7 million people have undiagnosed diabetes
- 1.9 million new cases were diagnosed in people ages 20 and older in 2010
- 79 million with pre-diabetes

# What is Diabetes?

Diabetes is a disease in which the body cannot produce or use insulin characterized by high levels of blood glucose

- **HbA1c  $\geq$  6.5%**
- **Fasting glucose  $\geq$  126 mg/dl**
- **75 gram OGTT 2 hour value  $\geq$  200 mg/dl**
- **Random glucose  $\geq$  200 mg/dl**

## Common risk factors:

- obese or overweight
- family history
- habitual inactivity

## Common symptoms:

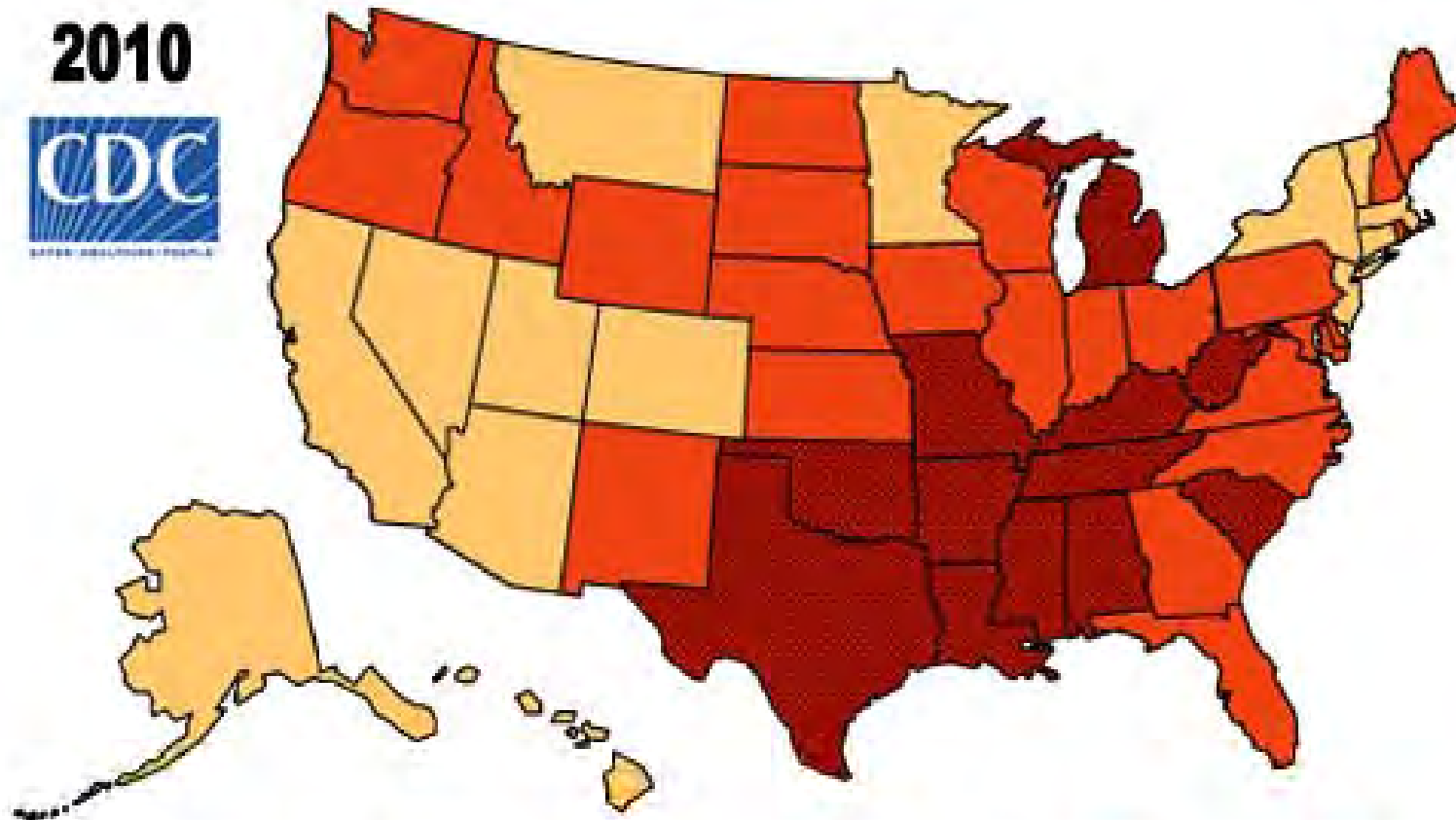
- excessive thirst/urination
- frequent infections
- constant hunger
- fatigue



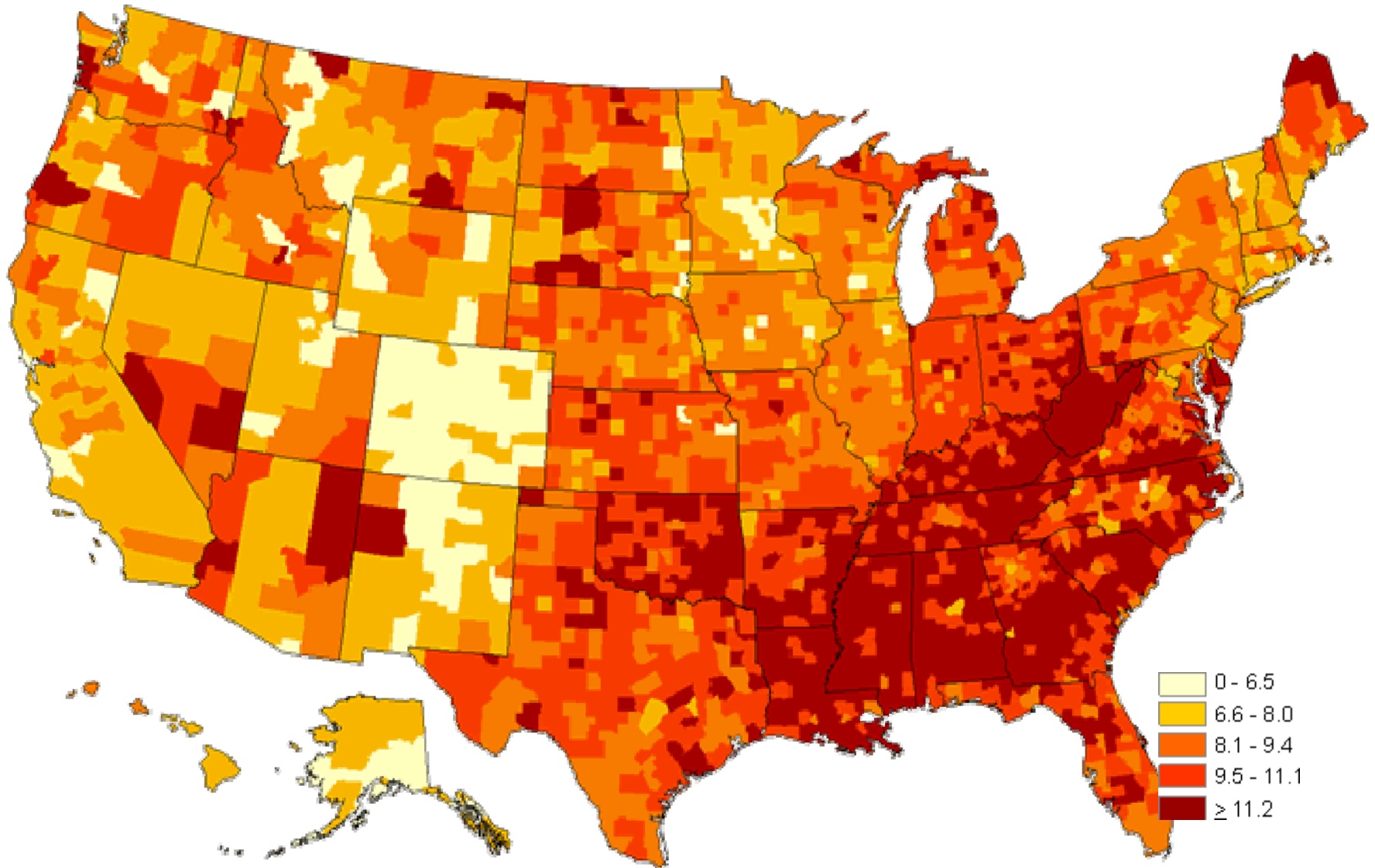
Source: Diabetes Care, Volume 33, Supplement 1, January 2010,

# % of the population that is obese

2010



# % of Adults Diagnosed with Diabetes 2008



# Why Does Diabetes Continue to Command Our Attention?

Because **EVERY 24 Hrs** there are:

- **4,100** New Cases of Diabetes,
- **810** Deaths Due to Diabetes,
- **230** Amputations,
- **120** Kidney Failures
- **55** New Cases of Blindness

Source: NIDDK, National Diabetes Statistics fact sheet. HHS, NIH, 2005.

# Estimated Cost of Diabetes in the United States

- **Direct Medical Cost: \$116 billion**
- **Indirect Cost: \$58 billion**
- **Total Cost: \$174 billion**



**Approximately \$1 out of every \$10 spent on health care can be attributed to diabetes!**

# Why Diabetes?

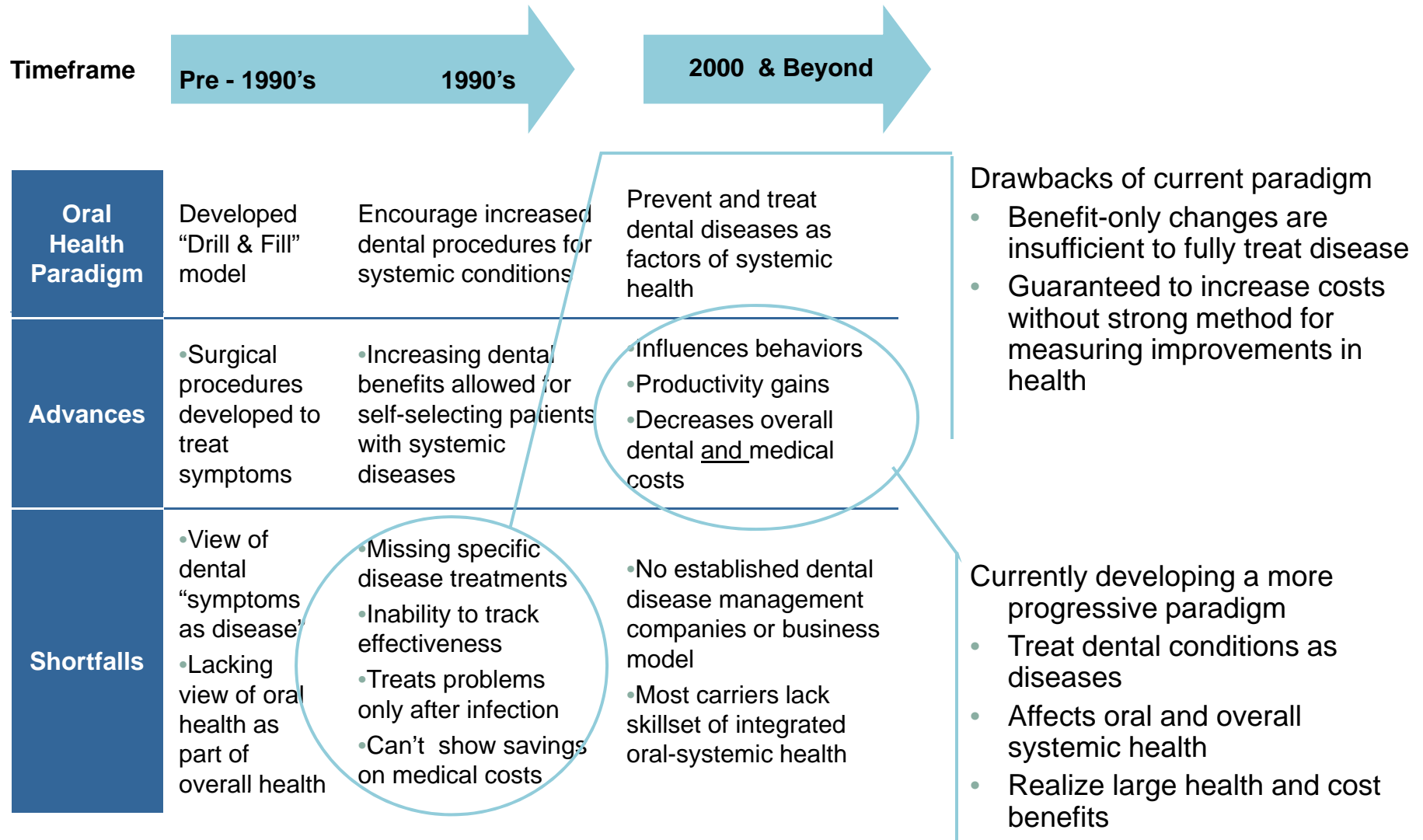
## Diabetes now affects more than 600,000 Washington residents:

- Approximately 444,000 people in Washington have diagnosed diabetes.
- More than 162,000 people have undiagnosed diabetes.
- Over 1.4 million people have pre-diabetes.

# Diabetes and Periodontal Disease

## Exploring New Paradigms

# The Paradigm Shift in Dental



# Dental Disease linked to Diabetes

- **Periodontal, or gum, disease is more common in people with diabetes. Among young adults, those with diabetes have about twice the risk of those without diabetes.**
- **Adults ages 45 years or older with poorly controlled diabetes—A1C above 9 percent—were 2.9 times more likely to have severe periodontitis than those without diabetes. The likelihood was even greater—4.6 times—among smokers with poorly controlled diabetes.**
- **About one-third of people with diabetes have severe periodontal disease consisting of loss of attachment—5 millimeters or more—of the gums to the teeth.**

# What is Periodontal Disease?

**Periodontal (gum) disease, including gingivitis and periodontitis, is a serious infection**



# Periodontitis

- Bacteria are essential but insufficient by themselves to cause disease:

**P. Gingivalis**

**T. Denticola**

**B. Forsythus**



**“Red Cluster”**

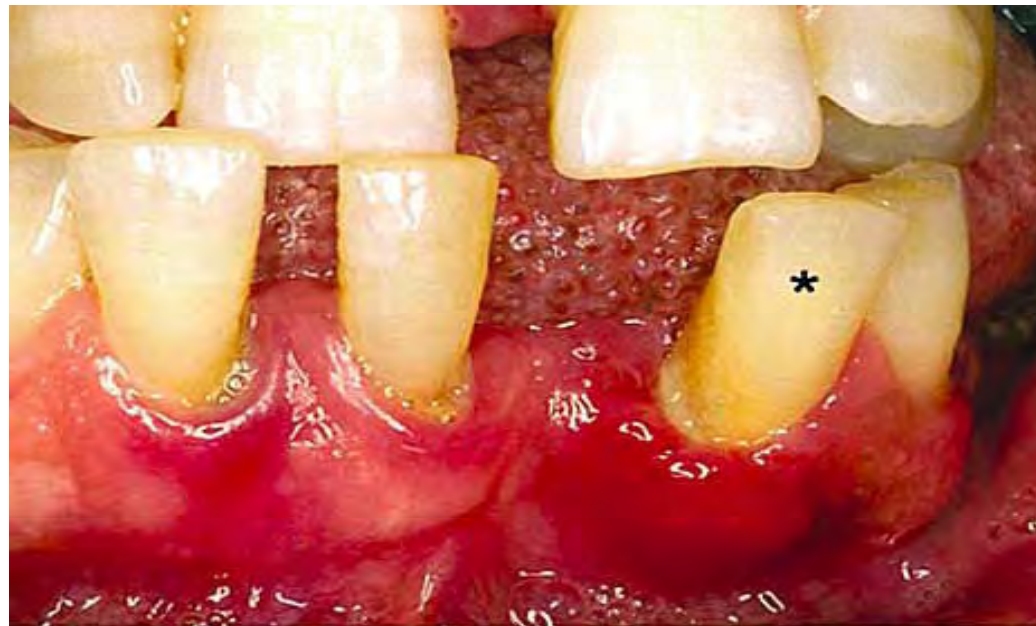
- The host must be susceptible
- Studies conducted in twins suggests that 1/2 the expression of periodontal disease affecting the population appears to be due to genetic factors

# Periodontal Diseases

- **Most Common Dental Condition**
  - **75% of adults over age 35 will be affected by periodontal disease**
- **High Morbidity**
  - **Chronic and Progressive**
- **No Cure**
  - **Treatable and Preventable**
- **Linked to Systemic Health**

# Warning Signs

- **Gums that bleed easily**
- **Red, swollen or tender gums**
- **Gums that are pulled away from the teeth**
- **Persistent bad breath**
- **Pus between the teeth and gums**



## People with diabetes and severe periodontitis have:

- **82% have had 1 or more macrovascular complication (heart attack or stroke) vs 21% w/o**
- **Death rate due to CVD is 2.3 times higher**
- **Death rate from nephropathy is 8.5 times higher**

# Disease process

Diabetes  
Mellitus



Periodontal  
Disease



**Effect of periodontitis on metabolic state**

# Effect of periodontitis on metabolic state

**Periodontal  
Disease**



**Diabetes  
Mellitus**



**Periodontal  
Therapy**



**Improved  
Glycemic Control**

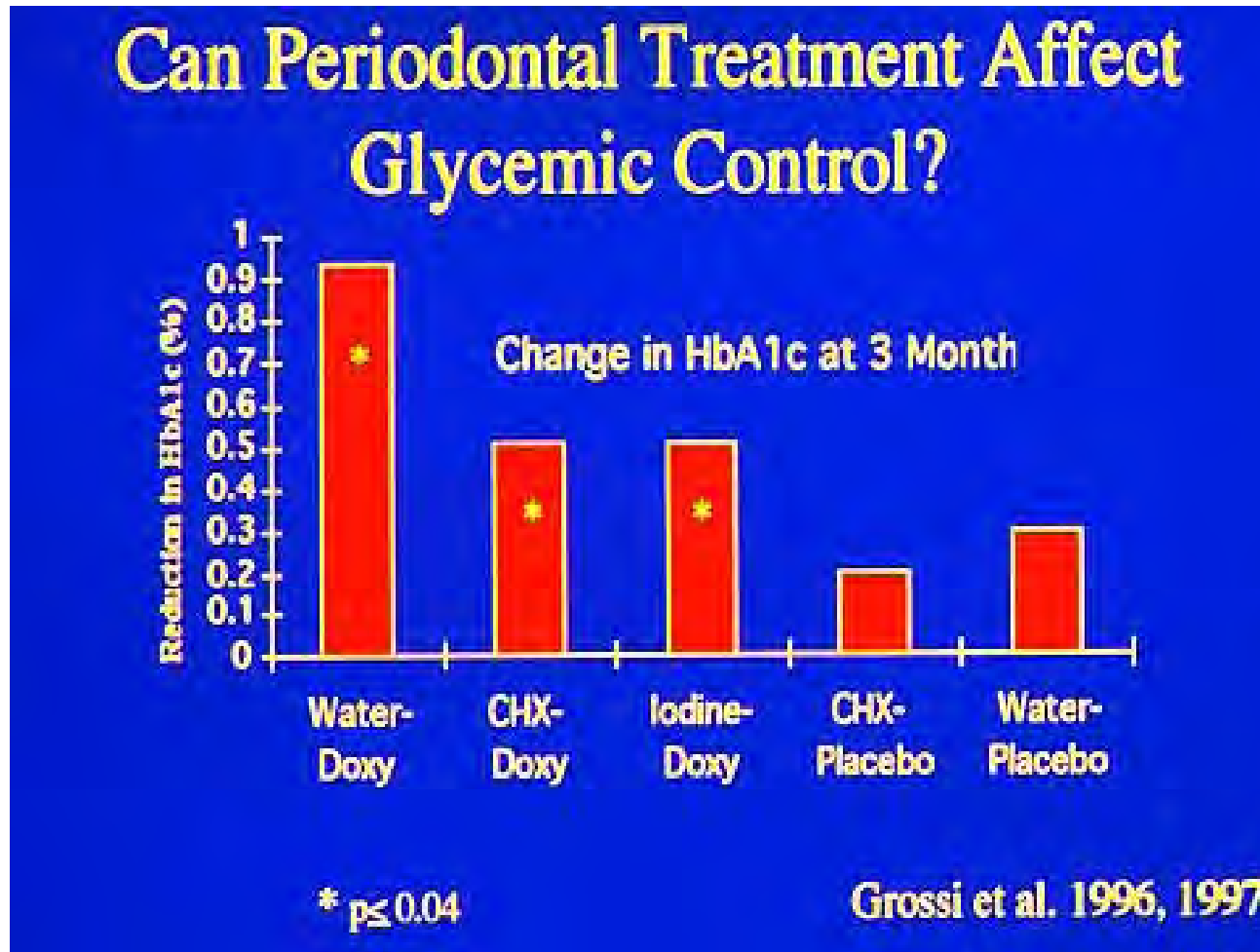
# Does Periodontal Disease Affect Glycemic Control?

## **Intervention study:**

- **125 Type 2 DM patients, severe periodontitis, 5 groups**
- **Periodontal status, HbA1c and pooled subgingival plaque sample at baseline, 3 months, 6 months**

Grossi et al. J Perio 1996, 1997

# Effect of Periodontal Therapy on HbA1c



For every 1% reduction in A1c, the risk of microvascular complications (eye, kidney, and nerve damage) can be reduced by up to 40%.

Source - [http://www.cdc.gov/diabetes/pubs/pdf/ndfs\\_2007.pdf](http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2007.pdf)

# Diabetes Screening by Dentists

## Early Detection:

- **Periodontal exam: 93% of patients with periodontal disease met the standards for diabetes screening compared to 63% of non-periodontal patients; (Strauss, et al; Journal of Public Health Dentistry)**



# Glucose Monitoring in the dental office

- **Glucose monitoring device**



**Fasting glucose  $\geq$  126 mg/dl**

**Random glucose  $\geq$  200 mg/dl**

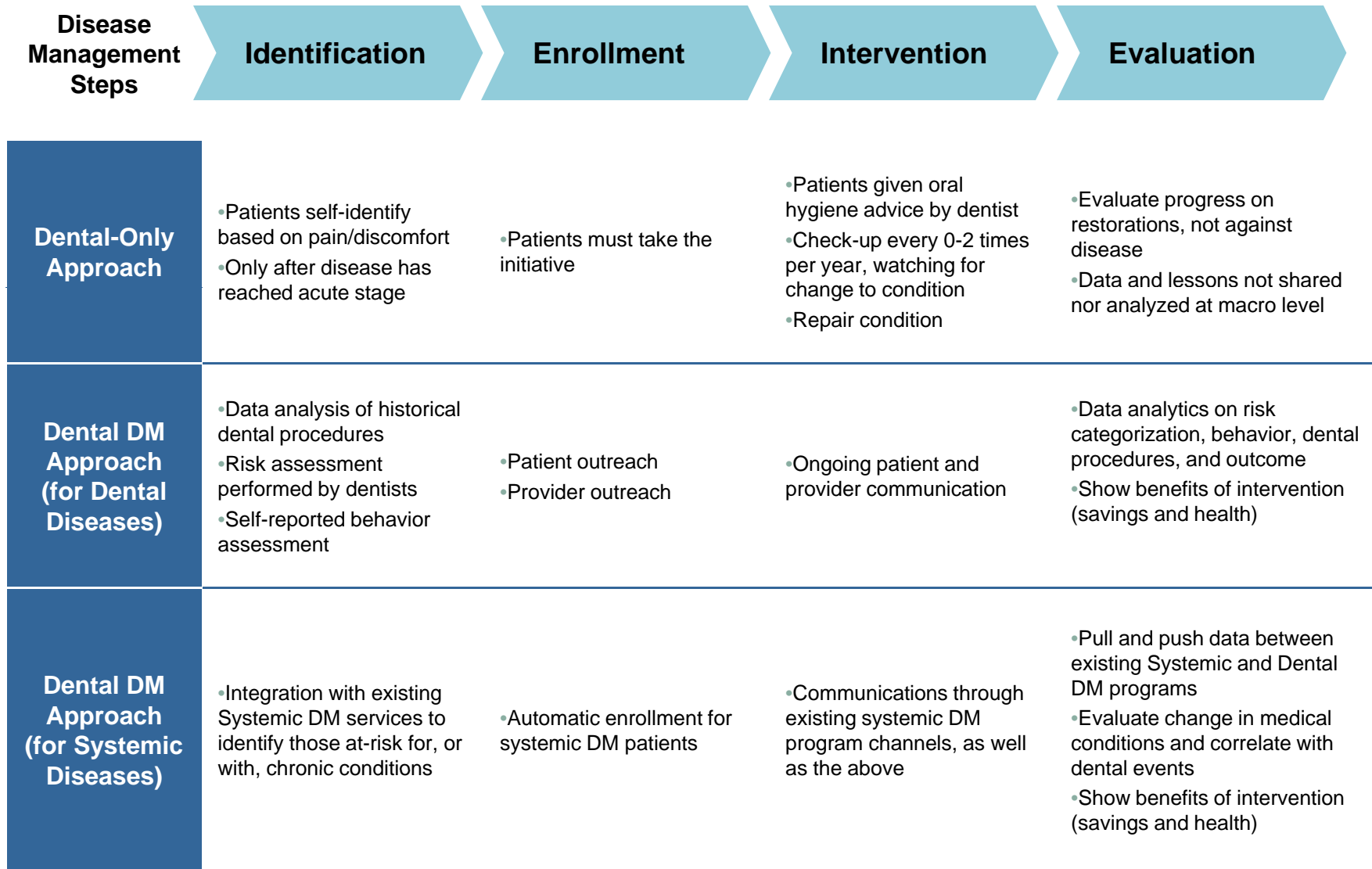
# HbA1c testing in the dental office

## HbA1c test kit

- HbA1c value in 5 minutes
- 99% accuracy with laboratory test results



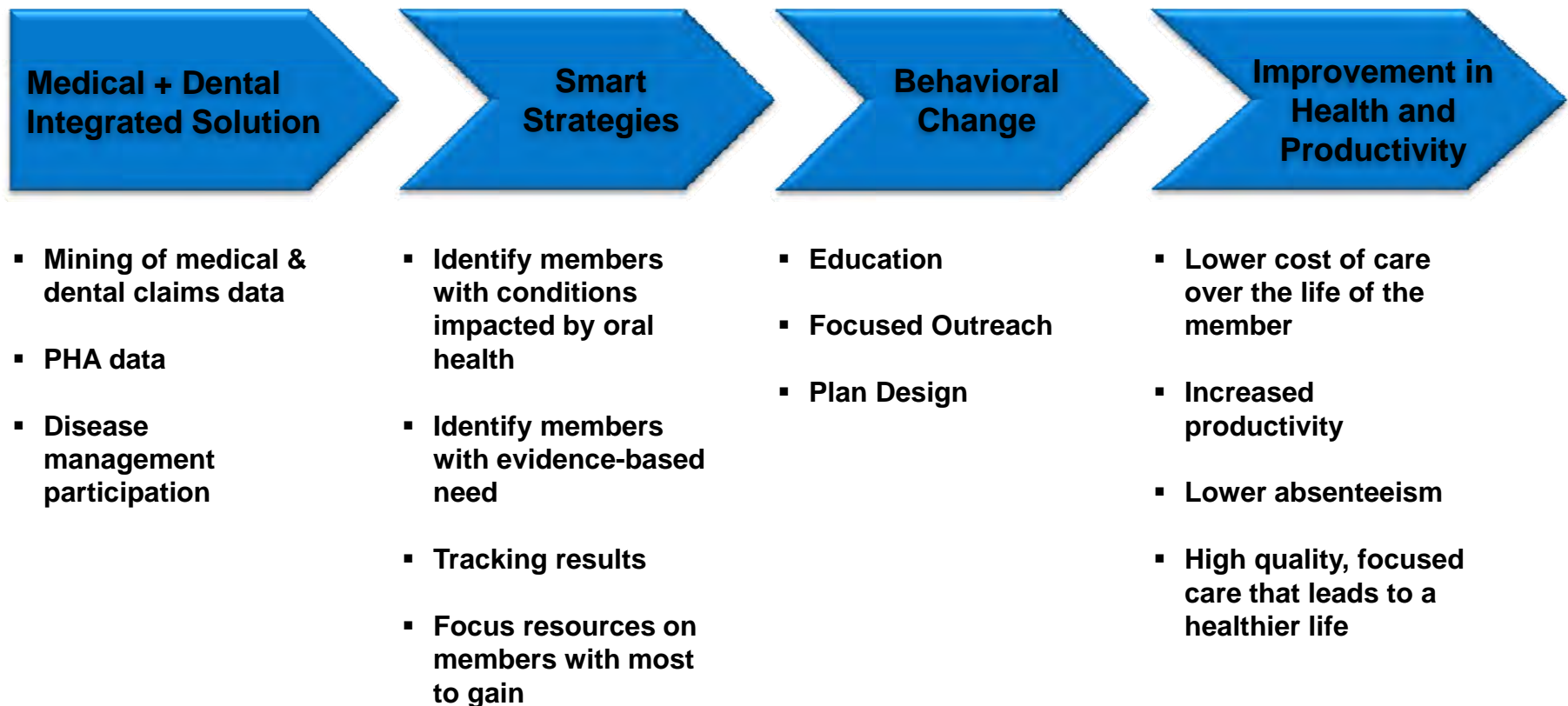
# Disease Management Approach



# Total Health Solution

## Total Health

Leveraging analysis of combined dental and medical claims data to create individualized, innovative plans that include tiered engagement strategies focusing on education and outreach to improve the health and productivity.



# Dental Disease Management

## Dental Disease Management Pilot

- **2003 claims data showed that members that received Dental Prophylaxis and/or Periodontal Treatment had \$144 PMPM lower medical costs than members that did not seek these treatments.**
- **2008 claims data showed an \$811 PMPY difference in costs for these two cohorts**

**Thank you**

**Questions?**