

Optimizing Health for All:

Science, Systems, Sanity

Massachusetts Department of Public Health Partnership Summit
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Shorter Lives, Poorer Health

- **Obesity and diabetes:** US has the highest obesity rate among high-income countries. U.S. adults have among the highest prevalence rates of diabetes among peer countries.
- **Heart disease:** The US death rate from ischemic heart disease is 2nd highest among peer countries. **Americans reach age 50 with a less favorable cardiovascular risk profile than their peers in Europe**, and adults over age 50 are more likely to develop and die from CVD than are older adults in other high-income countries.
- **Chronic lung disease:** Lung disease is more prevalent and associated with higher mortality in the US than in the United Kingdom and other European countries.
- **Disability:** Older U.S. adults report a higher prevalence of arthritis and activity limitations than their counterparts in the United Kingdom, other European countries, and Japan.



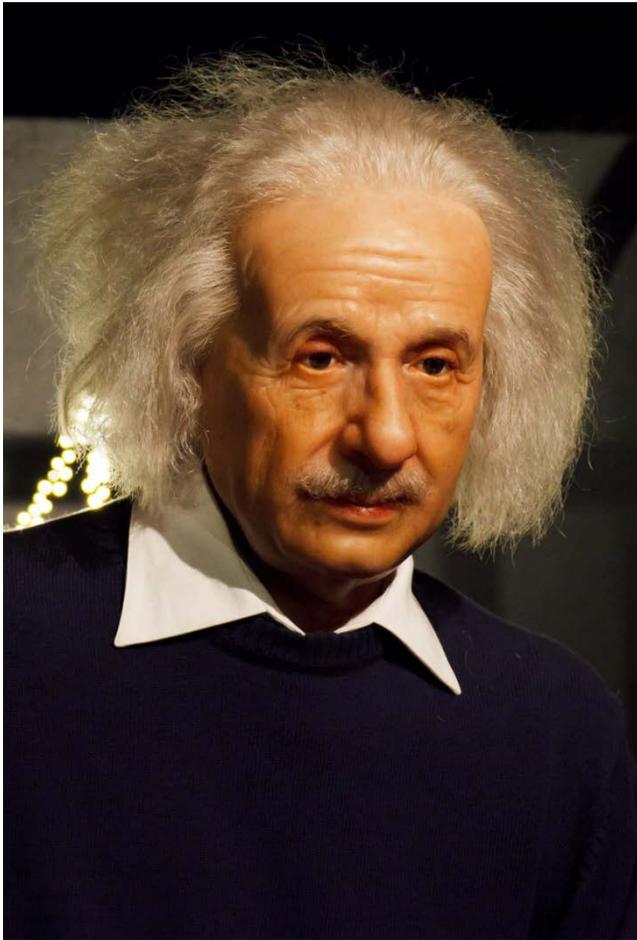
10 most costly medical conditions

Condition	National Cost
Heart disease	\$90.9 B
Cancer	71.4
Trauma-related	67.3
Mental disorders	59.9
Osteoarthritis	56.2
Hypertension	47.3
Diabetes	45.5
COPD, Asthma	44.5
Hyperlipidemia	38.5
Back problems	34.6

Top 10 risk factors for health loss in 2010 and the number of deaths attributable to each

1.	Dietary risks	678,282
2.	Smoking	465,651
3.	High blood pressure	442,656
4.	High body mass index	363,991
5.	Physical inactivity	234,022
6.	High blood sugar	213,669
7.	High total cholesterol	158,431
8.	Ambient air pollution	103,027
9.	Alcohol use	88,587
10.	Drug use	25,430

Institute for Health Metrics and Evaluation (IHME), 2013



"**Insanity**: doing the same thing over and over again and expecting different results." - Albert **Einstein**

Patient Protection and Affordable Care Act of 2010



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Public Health Spending Linked to Declines in Preventable Deaths

Mortality rate	Percent decrease per 10% spending increase
Infant deaths per 1000 live births	6.85
Heart disease deaths per 100,000	3.22
Diabetes deaths per 100,000	1.44
Cancer deaths per 100,000	1.13
Influenza deaths per 100,000	0.25

Mays and Smith, Health Affairs. Aug 2011;30(8).

The Health System



Prevention and Public Health Fund

- Improve health and help restrain the rate of growth in private and public sector health care costs
- Expand and sustain national investment in prevention and public health programs
- First year \$500m to \$2b annually
- Prevention, wellness, and public health activities including prevention research, Health screenings, Immunizations

(From Rein, Berger; CDC)



The incredible shrinking Prevention Fund

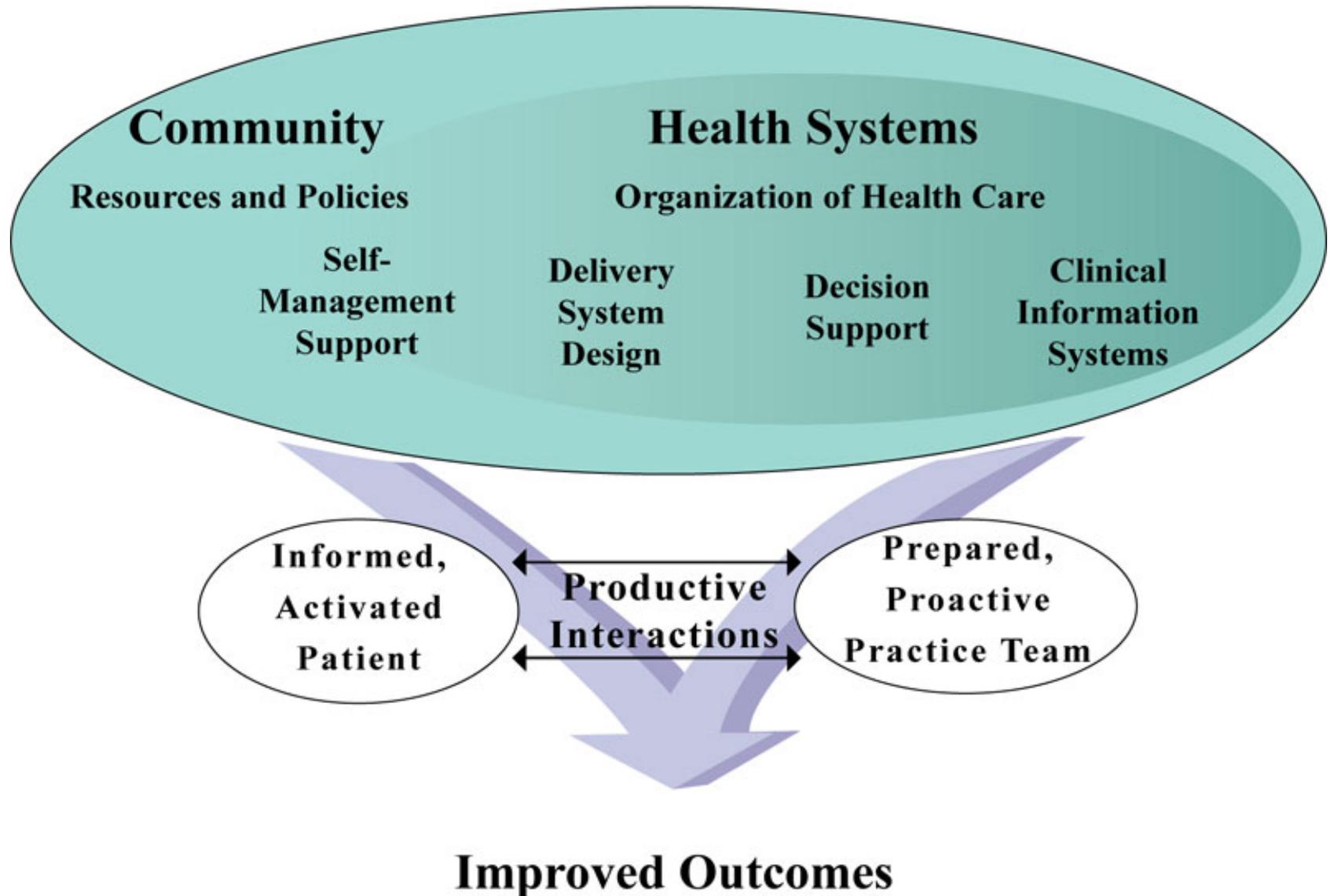
- **2010: \$250 million** to increase the number of clinicians and strengthen the primary care workforce. (hhs.gov)
- **2012:** The US Congress **cut \$6.5 billion** (37%) of Prevention fund and used the funds as part of fixing SGR
- **2013:** The administration announces that it will use **\$454 million** of the \$1 billion 2013 the Prevention Fund for the federal health insurance exchange

Challenges Associated with Establishing and Maintaining Population Health Initiatives

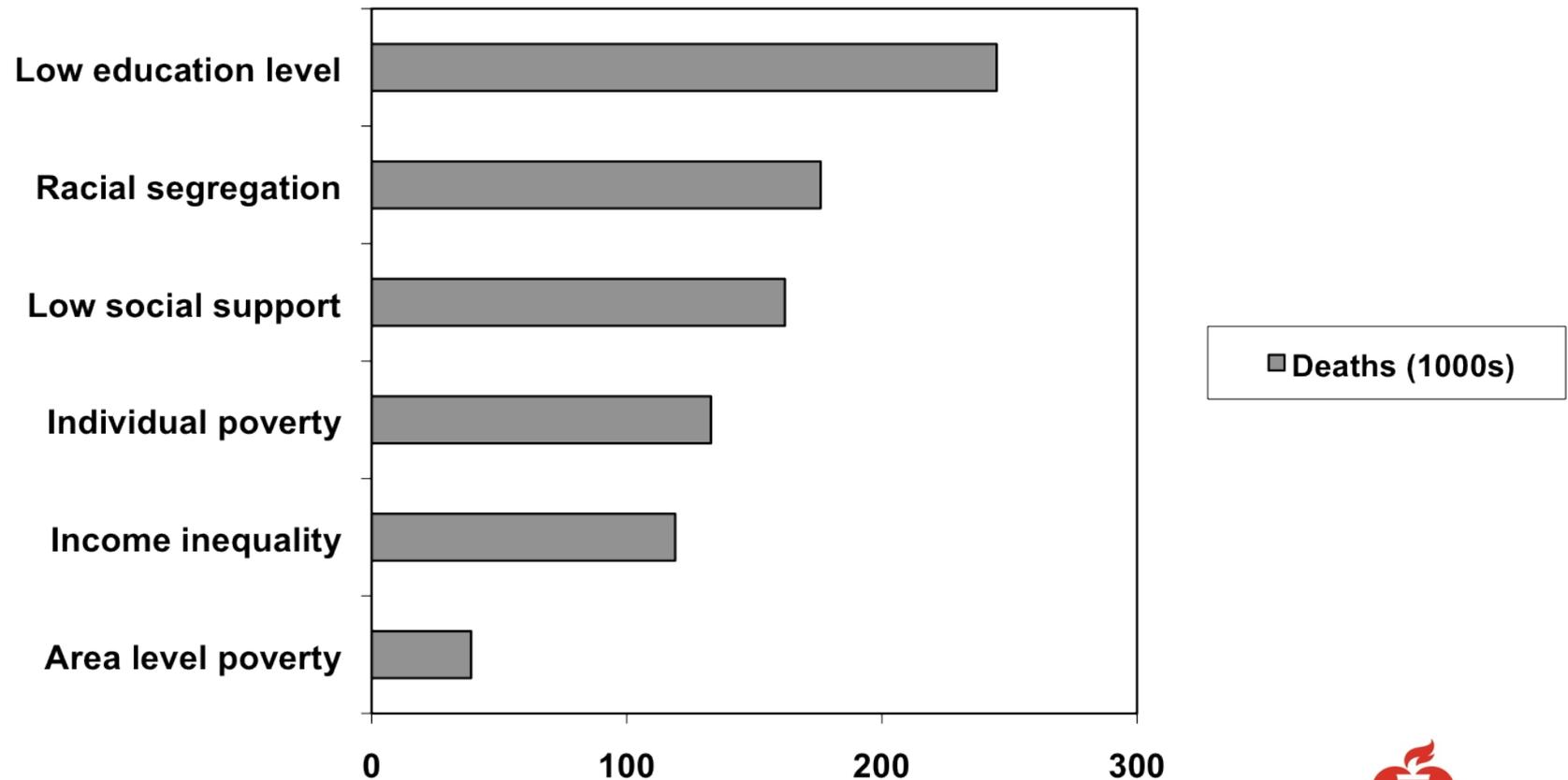
- Public health benefits are dispersed and delayed, and success is when “nothing happens”
- Unlike Meredith Grey or Dr. Oz, public health practitioners are not well known and public health programs are taken for granted (think indoor plumbing, water quality, food safety)
- Approaches can involve regulation or fees or taxes and can generate fierce opposition
- Public health sometimes clashes with moral values (think HPV or needle exchange)
- Population health improvement requires actions and resources outside of public health

Mayes and Oliver, *Journal of Health Politics, Policy and Law*, Vol. 37, No. 2, April 2012

The Chronic Care Model



Relationship between Social Determinants and Mortality (2000)



Place Matters

Neighborhood Effects on the Long-Term Well-Being of Low-Income Adults

- Moving from a high-poverty to lower-poverty neighborhood leads to long-term (10- to 15-year) improvements in adult physical and mental health and subjective well-being, despite not affecting economic self-sufficiency.
 - Lower levels of obesity, diabetes, and depression
- A decline in neighborhood poverty (13 percentage points) increases subjective well-being by an amount equal to the gap in subjective well-being between people whose annual incomes differ by \$13,000—a large amount given that the average control group income is \$20,000.

Place Matters

Predictors of upward mobility

- Metropolitan areas where poor families were more dispersed in mixed income neighborhoods
- More two-parent households
- Better elementary and high schools
- More civic engagement, including membership in religious and community groups



The American Healthcare Paradox

- Experts puzzle over why the U.S. spends more on health care but suffers poorer outcomes than other industrialized nations.
- In the US, health is conceived of quite narrowly - as an output of health care services and medical care. The US invests aggressively and spends exorbitantly in health care services to build hospitals and pay physicians, buy medical technology, under the assumption that this will create health for the population.
- The authors get to the root of this paradox: We've left out of our tally the most impactful expenditures countries can make to improve their citizens' health—investments in social services.
- Narrow definitions of "health care," archaic divisions in the distribution of health and social services, and the US's allergy to government programs combine to create preventable suffering and cost.
- There are health status problems the ACA of 2010 won't solve.

*"The American Health Care Paradox: Why Spending More Is Getting Us Less,"
Bradley and Taylor, 2013.*



The Massachusetts Prevention & Wellness Trust Fund

- Passed into law in August 2012 as a part of health care cost containment legislation (Chapter 224)
- Will invest \$60 million over 4 years in evidence-based community prevention activities through competitive grants.
- The Department of Public Health (DPH) with Wellness and Prevention Advisory Board input, will administer the funds, 75% will be spent on competitive grants to reduce rates of preventable health conditions, reduce health disparities, increase healthy behaviors, increase the adoption of workplace-based wellness programs, build the evidence-base of effective prevention programs

The Massachusetts Partnership for Health Promotion and Chronic Disease Prevention

Massachusetts Coordinated Health Promotion and Chronic Disease Prevention Plan – Communities of Practice

- Healthy eating
- Physical Activity
- Built environment
- Tobacco-free living
- Clinical preventive services and population health management
- Community and healthcare linkages
- Access to state and local data

AHA 2020 Impact Goal

By 2020, to improve the cardiovascular health of **all Americans** by 20%, while reducing deaths from cardiovascular disease and stroke by 20%.

20% 2020

Health at 50: Predictive of Healthy Aging

- **The absence of established risk factors at 50 years of age is associated with very low lifetime risk for CVD...** and markedly longer survival. These results should promote efforts aimed at preventing development of risk factors in young individuals.
- Given the high lifetime risks and lower survival in those with intermediate or high risk factor burden at 50 years of age, these data may be useful in communicating risks and supporting intensive preventive therapy.

Lloyd-Jones, et al, Circulation 2006;113:791-798.

Vol 120, No 13, September 29, 2009
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<http://circ.ahajournals.org>

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Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION

Editorials

AHA Special Report

Defining and Setting National Goals for Cardiovascular Health Promotion and Disease Reduction The American Heart Association's Strategic Impact Goal Through 2020 and Beyond

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Wayne D. Rosamond, PhD, FAHA; on behalf of the American Heart Association Strategic Planning Task Force
and Statistics Committee

... report of the American
... Foundation/American Heart
... Association/American College of Physicians Task Force
on Competence and Training (Writing Committee to
Develop a Competence and Training Statement on
Prevention of Cardiovascular Disease) p. e100

AHA 2020 Strategic Impact Goals

Defining cardiovascular health

HEALTH BEHAVIORS	HEALTH FACTORS
<ul style="list-style-type: none">• Smoking• Diet• Physical Activity• Body Weight	<ul style="list-style-type: none">• Glucose• Cholesterol• Blood Pressure

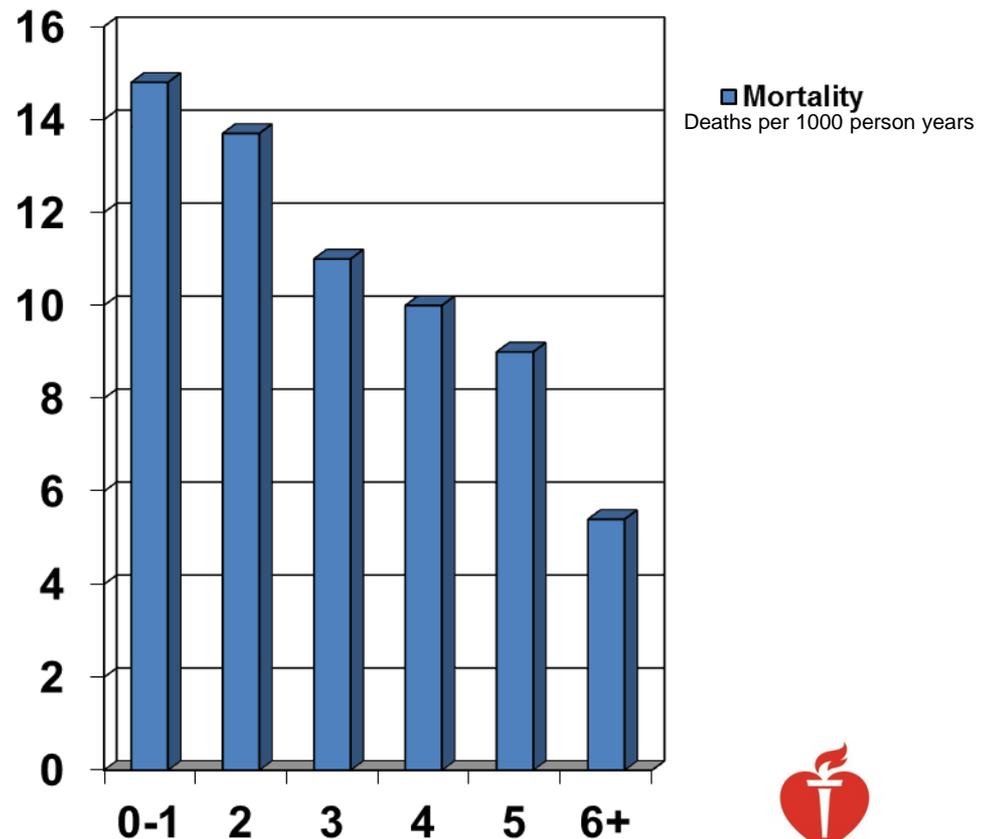
- **39% of Americans *think* they are in ideal CV health**
- **Prevalence of ideal cardiovascular health in adults is actually less than 1%!**

Cardiovascular Health Definitions

LIFE'S SIMPLE 7	POOR	INTERMEDIATE	IDEAL
 <p>Smoking Status Adults >20 years of age Children (12–19)</p>	<p>Current Smoker Tried prior 30 days</p>	<p>Former ≤ 12 mos</p>	<p>Never /quit ≥ 12 mos</p>
 <p>Physical Activity Adults > 20 years of age Children 12-19 years of age</p>	<p>None None</p>	<p>1-149 min/wk mod or 1-74 min/wk vig or 1-149 min/wk mod + vig >0 and <60 min of mod or vig every day</p>	<p>150+ min/wk mod or 75+ min/wk vig or 150+ min/wk mod + vig 60+ min of mod or vig every day</p>
 <p>Healthy Diet Adults >20 years of age Children 5-19 years of age</p>	<p>0-1 components 0-1 components</p>	<p>2-3 components 2-3 components</p>	<p>4-5 components 4-5 components</p>
 <p>Healthy Weight Adults > 20 years of age Children 2-19 years of age</p>	<p>≥30 kg/m² >95th percentile</p>	<p>25-29.9 kg/m² 85th-95th percentile</p>	<p><25 kg/m² <85th percentile</p>
 <p>Blood Glucose Adults >20 years of age Children 12-19 years of age</p>	<p>126 mg/dL or more 126 mg/dL or more</p>	<p>100-125 mg/dL or treated to goal 100-125 mg/dL</p>	<p>Less than 100 mg/dL Less than 100 mg/dL</p>
 <p>Cholesterol Adults >20 years of age Children 6-19 years of age</p>	<p>≥240 mg/dL ≥200 mg/dL</p>	<p>200-239 mg/dL or treated to goal 170-199 mg/dL</p>	<p><170 mg/dL</p>
 <p>Blood Pressure Adults >20 years of age Children 8-19 years of age</p>	<p>SBP ≥140 or DBP ≥90 mm Hg >95th percentile</p>	<p>SBP120-139 or DBP 80-89 mm Hg or treated to goal 90th-95th percentile or SBP ≥120 or DBP ≥80 mm Hg</p>	<p><120/<80 mm Hg <90th percentile</p>

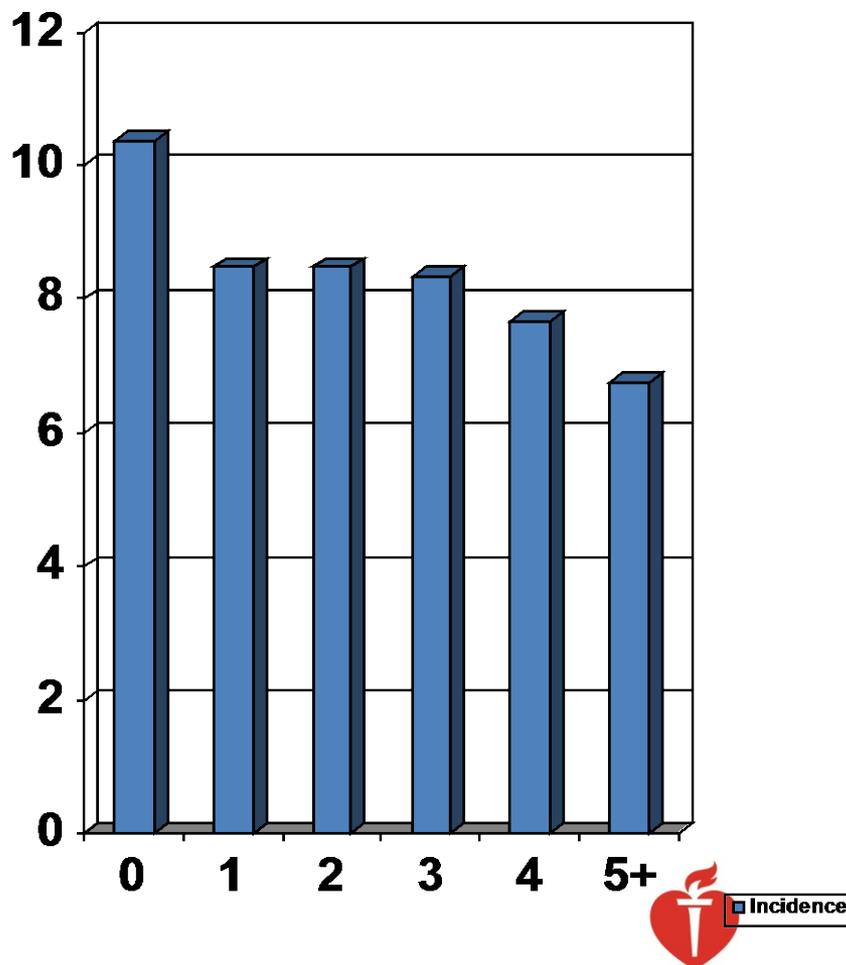
More Means Less: Heart Health Factors and Mortality

- No Tobacco use
- Physical activity
- Healthy eating
- Healthy Weight
- Normal Blood pressure
- Normal Cholesterol
- Normal Hemoglobin A1c (normal blood glucose levels)



More heart health means less cancer

- Risk of cancer dropped in stepwise fashion as a greater number heart health factors were met
- Persons with 5-7 factors had an adjusted risk 38% less than that of individuals with no factors.
- Among 4 major cancers – lung, colon, prostate, breast, – the inverse relationship between the number of heart health factors and cancer risk was strongest for lung cancer, significant for colon and prostate cancer, but not breast cancer.



Research by Shay using the Atherosclerosis In Communities ([ARIC](#)) study cohort ;

reported in Family Practice News 1 Feb 2012

Diabetes Prevention Program (DPP)

	Placebo	Metformin	Lifestyle
<u>Incidence</u> of diabetes (percent per year)	11.0%	7.8%	4.8%
<u>Reduction</u> in incidence compared with placebo	–	31%	58%
<u>Number needed to treat</u> to prevent 1 case in 3 years	–	13.9	6.9



Heart Health

Action Strategies

- **Activate** stakeholders to advance the **health environment** of **communities** through alignment of **public policy** and **systems change** efforts.
- **Activate** individuals in the health of their **communities**, the **conversation** about health, and changing their own health.

GOAL

- Increase the percentage of all Americans who live in environments that support healthy eating, active lifestyles, smoke-free air, quality care and emergency response.
- Increase the percentage of all Americans who optimize their cardiovascular and brain health.

EMPHASIS

- Emphasize no smoking, healthy diet and physical activity in children and younger adults.
- Emphasize no smoking, control of blood pressure and cholesterol in adults.
- Optimize outcomes and quality of life for those with chronic disease.
- Optimize early detection, acute event treatment, post-event outcomes and quality of life.



Community-Clinical Linkages

- A clinical system initiative to improve blood pressure control
- A community-based blood pressure control awareness and activation initiative
- A communications strategy to link the two

Blue Zones

Five zones

- Okinawa, Japan
- Sardinia, Italy
- Nicoya, Costa Rica
- Ikaria, Greece
- Loma Linda, California

9 principles

- Move naturally
- Know your purpose
- Down shift
- 80 percent rule
- Plant slant
- Wine at 5
- Family first
- Belong
- Right tribe



Community-Clinical Linkages

- Texas Health Resources (THR)
- Healthways: Blue Zone

The Right to Health

- The right of every person to enjoy the highest attainable standard of physical and mental health is an established international legal precept whose origins date back to 1946 in the constitution of the World Health Organization (WHO), which identified the **“enjoyment of the highest attainable standard of health”** as **“one of the fundamental rights of every human being.”**
- In 1948, the United Nations (UN) General Assembly adopted the Universal Declaration of Human Rights (UDHR), article 25 of which guarantees the right to **“a standard of living adequate for the health and well-being . . . including food, clothing, housing and medical care.”**

JAMA, Dec. 2012

The Health System



Sanity

Redefine health and healthcare.



Science

Apply evidence-based community health, population health, and patient-centered clinical care



Systems

It is rocket science! Systems Engineering

- An interdisciplinary approach and means to enable the realization of successful systems, that
 - focuses on defining customer needs and required functionality, documents requirements,
 - proceeds with design synthesis and system validation while considering the complete problem
 - integrates all the disciplines and specialty groups into a team effort forming a structured development process that proceeds from concept to production to operation.

6 Solutions for Changing Communities

INTEGRATE PHYSICAL ACTIVITY EVERY DAY IN EVERY WAY.

Smoke Free

MARKET WHAT MATTERS FOR A HEALTHY LIFE.

STRENGTHEN SCHOOLS AS THE HEART OF HEALTH.

EAT WELL!

ON THEIR OWN, ANY ONE OF THESE FIVE SOLUTIONS MIGHT HELP SPEED UP PROGRESS IN PREVENTING OBESITY, BUT TOGETHER, THEIR EFFECT WOULD BE REINFORCED, AMPLIFIED, AND MAXIMIZED.

MARKET

FRESH PRODUCE AVAILABLE!

ACTIVATE EMPLOYERS AND HEALTH CARE PROFESSIONALS.

MAKE HEALTHY FOODS AVAILABLE EVERYWHERE.

