From CVD to CVH – A Quiet Revolution
Three questions about the revolution:

• What is it?

• Where did it come from?

• Why does it matter?
Defining and Setting National Goals for Cardiovascular Health Promotion and Disease Reduction. The American Heart Association's Strategic Impact Goal Through 2020 and Beyond


Circulation published online January 20, 2010
Circulation is published by the American Heart Association. 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2010 American Heart Association. All rights reserved. Print ISSN: 0009-7322. Online ISSN: 1524-4539
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%.”

- 7 metrics (tobacco, physical activity, diet score, BMI, BP, total cholesterol, glucose)
- 3 states (ideal, intermediate, poor)
- 2 age levels (<20, 20+)
Ideal Cardiovascular Health

• Ideal Health Behaviors Metric (ALL)
  – Non-smoking
  – BMI <25 (<85th %ile)
  – PA 150+ mins/wk moderate or 60+ mins/wk vigorous
  – Healthy Diet Score: 7-8/8 items (5-8/8 goal)
    • Fruits >=4 servings/day
    • Vegetables >=5 servings/day
    • Nuts, legumes, seeds >=4 servings/wk
    • Fish >=2 servings/wk
    • Sodium <2300 mg/day
    • Sugar sweetened beverages, <3.5 x 8 oz. servings/wk
    • Whole grains (1.1g fiber in 10g carb), >=3 servings/day
    • Processed meats, <=2 servings/wk
Ideal Cardiovascular Health

• Ideal Health Factors Metric (ALL)
  – Non-smoking
  – Total cholesterol <200 mg/dL (<170 mg/dL)
  – Blood pressure <120/<80 mm Hg (<90th %ile)
  – Non-diabetic (FPG <100)
# Definitions of CV Health States

<table>
<thead>
<tr>
<th>Goal/Metric</th>
<th>Poor Health</th>
<th>Intermediate Health</th>
<th>Ideal Health</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Smoking</strong></td>
<td>Yes</td>
<td>Former &lt;=12 months</td>
<td>Never or quit &gt;12 months</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td>Yes/Ever</td>
<td>Former &lt;12 months</td>
<td>Never tried; never whole cigarette</td>
</tr>
<tr>
<td>Children 12-19 yo</td>
<td>Yes/Tried prior 30 days</td>
<td>Former &lt;12 months</td>
<td>Never tried; never whole cigarette</td>
</tr>
<tr>
<td><strong>Body Mass Index</strong></td>
<td>≥30 kg/m²</td>
<td>25-29.9 kg/m²</td>
<td>&lt;25 kg/m²</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td>&gt;95th percentile</td>
<td>85th-95th percentile</td>
<td>&lt;85th percentile</td>
</tr>
<tr>
<td>Children 2-19 yo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physical Activity</strong></td>
<td>None</td>
<td>1-149 min/wk moderate or</td>
<td>150+ min/wk moderate or</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td>None</td>
<td>1-74 min/wk vigorous or</td>
<td>75+ min/wk vigorous or</td>
</tr>
<tr>
<td>Children 12-19 yo</td>
<td>None</td>
<td>1-149 min/wk moderate or vigorous</td>
<td>150+ min/wk vigorous or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ vig</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;0 and &lt;60 min of moderate or vigorous daily</td>
<td>60+ min of mod or vig daily</td>
</tr>
<tr>
<td><strong>Healthy Diet Score</strong></td>
<td>0-1 components</td>
<td>2-3 components</td>
<td>4-5 components</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td></td>
<td>2-3 components</td>
<td></td>
</tr>
<tr>
<td>Children 5-19 yo</td>
<td></td>
<td>4-5 components</td>
<td></td>
</tr>
<tr>
<td><strong>Total Cholesterol</strong></td>
<td>≥240 mg/dL</td>
<td>200-239 mg/dL or treated to goal</td>
<td>&lt;200 mg/dL</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td></td>
<td>170-199 mg/dL</td>
<td>&lt;170 mg/dL</td>
</tr>
<tr>
<td>Children 6-19 yo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blood Pressure</strong></td>
<td>SBP ≥140 or DBP ≥90 mm Hg</td>
<td>SBP120-139 or DBP 80-89 or Rx to goal</td>
<td>&lt;120/≤80 mm Hg</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td></td>
<td>90th-95th percentile or SBP ≥120 or DBP ≥80</td>
<td></td>
</tr>
<tr>
<td>Children 8-19 yo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fasting Plasma Glucose</strong></td>
<td>≥126 mg/dL</td>
<td>100-125 or treated to goal</td>
<td>&lt;100</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children 12-19 yo</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A population picture of CVH metrics - 1

Prevalence in U.S. Children

Percentage

Current Smoking: 17.1%
Body Mass Index: 18.2%
Physical Activity: 9.8%
Healthy Diet Score: 7.1%
Total Cholesterol: 72.4%
Blood Pressure: 15.5%
Fasting Plasma Glucose: 0.5%

Legend:
- Poor
- Intermediate
- Ideal
A population picture of CVH metrics - 2

Prevalence in U.S. Adults

- Current Smoking: 24.5%
- Body Mass Index: 33.8%
- Physical Activity: 31.7%
- Healthy Diet Score: 76.8%
- Total Cholesterol: 38.4%
- Blood Pressure: 41.2%
- Fasting Plasma Glucose: 30.4%

Levels:
- Poor
- Intermediate
- Ideal
What is it?

A ‘radical’ change in focus –

• *health* – beyond disease

• *all Americans* – the whole population, not just one extreme

• *childhood* – beginning of the life course
Where did it come from?

The seeds of revolution –

• *science* – the impact of new evidence

• *history* – the power of an idea

• *legend* – the back story
Lifetime Risk for ASCVD by RF Strata
Framingham Heart Study, Age 50

Men
Women

Adjusted Cumulative Incidence

Attained Age

≥2 Major RFs
1 Major RF
≥1 Elevated RF
≥1 Not Optimal RF
Optimal RFs

Coronary heart disease deaths, 2010 compared with 2000 baseline, IMPACT Model, United States.

Source: Capewell et al. WHBulletin
Evidence Linking CVH to Outcomes

• Total mortality
• Cardiovascular, coronary, and stroke mortality
• Fatal and non-fatal CVD
  ▪ Stroke
  ▪ In all race/sex groups
• Incident cancer (!)
• VTE

• Atherosclerosis and arterial stiffness in children and young adults
• Cognition in younger and older adults
• Depression
• QOL in adults
  ▪ Healthy days now and QOL in future
• (Healthcare charges)
Number of Ideal CV Health Factors and Behaviors and 20-Year Incidence of CVD

Why does it matter?

Revolutionary consequences

• *For primordial prevention*

• *For policy and practice*

• *For prevention research*
Promoting and preserving ideal cardiovascular health
Promoting and preserving ideal cardiovascular health
Promoting and preserving ideal cardiovascular health
Promoting and preserving ideal cardiovascular health

Favorable change in CVH metrics (health behaviors and factors)

Ideal CVH → Intermediate CVH → Poor CVH

Unfavorable change in CVH metrics (health behaviors and factors)
Promoting and preserving ideal cardiovascular health

Healthy gestation, development, and aging

Favorable change in CVH metrics (health behaviors and factors)

ideal CVH

intermediate CVH

poor CVH

Unfavorable change in CVH metrics (health behaviors and factors)
Evidence-Based Policy Making: Assessment of the American Heart Association’s Strategic Policy Portfolio

Darwin R. Labarthe (Chair), Larry B. Goldstein, (Co-Chair), Elliott Antman, Donna Arnett, Gregg C. Fonarow, Mark Alberts, Laura L. Hayman, Amit Khera, James F. Sallis, Stephen R. Daniels, Ph.D., Ralph L. Sacco, Suhui Li, Leighton Ku, Ph.D, Paula Lantz, Jennifer G. Robinson, M.P.H., Mark A. Creager, Linda Van Horn, Penny Kris-Etherton, Aruni Bhatnagar, Laurie P. Whitsel
Evidence-Based Policy Making: Assessment of the American Heart Association’s Strategic Policy Portfolio

Charge to the Writing Group:

1 – Inventory the current AHA policy portfolio and show the alignments between specific policies and each element of the 2020 Strategic Impact Goal (CVH metrics and CVD management indicators), identifying any policy gaps.

2 – Propose specific topic areas where research is needed to fill gaps or update existing policy.

3 – Consider broad research strategies that could strengthen AHA’s policy process and portfolio.
AHA’s Mission and 2020 Strategic Impact Goal

Mission → Goal → Policy: to guide action (communications, programs, advocacy) toward achievement of the Goal, based on a firm scientific foundation.

“Building healthier lives, free of cardiovascular disease and stroke.”

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

The AHA policy portfolio, 2016, in relation to the cardiovascular health metrics and indicators of CVD management.
The policy inventory

• What are current policies?
• How does each align with Goal elements?
• What is the evidence base for each policy?
The policy inventory

<table>
<thead>
<tr>
<th>Current smoking</th>
<th>Acute event – response, care, palliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity</td>
<td>Post-event rehabilitation</td>
</tr>
<tr>
<td>Healthy diet score (overall + components)</td>
<td></td>
</tr>
<tr>
<td>Healthy weight/BMI</td>
<td></td>
</tr>
<tr>
<td>Low blood pressure</td>
<td></td>
</tr>
<tr>
<td>Low total cholesterol</td>
<td></td>
</tr>
<tr>
<td>Low fasting plasma glucose</td>
<td></td>
</tr>
</tbody>
</table>
The policy portfolio – current smoking

<table>
<thead>
<tr>
<th>Health behaviors and factors</th>
<th>Policy Interventions</th>
<th>Cited Evidence Reviews</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Current smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Children (12-19y)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ideal</strong></td>
<td>Support Comprehensive Clean Indoor Air Laws (State/Community Level and Federal Property)</td>
<td>AHA – (Mozaffarian et al. 9) (See Table 3 for Evidence Grading) - I A</td>
</tr>
<tr>
<td>Never tried or never smoked a whole cigarette</td>
<td>Increase Tobacco Excise Taxes (Federal/State/Municipal)</td>
<td>AHA – (Mozaffarian et al.) – I A</td>
</tr>
<tr>
<td><strong>Poor</strong></td>
<td>Increase Funding for Tobacco Cessation and Prevention Programs (State)</td>
<td>AHA – (Mozaffarian et al.) – I A</td>
</tr>
<tr>
<td>Tried prior 30 days</td>
<td>Ensure Comprehensive Tobacco Cessation Benefits in Private and Public Health Insurance Plans with no Co-Pay (Federal/State)</td>
<td>AHA – (Mozaffarian et al.) – Iia C</td>
</tr>
<tr>
<td><strong>Adults</strong></td>
<td>Purchase Restrictions for Youth (Increase Purchasing Age to 21) (Federal/State)</td>
<td>Community Guide - Recommended</td>
</tr>
<tr>
<td><strong>Ideal</strong></td>
<td>FDA Regulation of Tobacco (Federal)</td>
<td>Community Guide - Insufficient Evidence</td>
</tr>
<tr>
<td>Never smoked or quit more than a year ago</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intermediate</strong></td>
<td>Monitor and regulate new tobacco products coming into the marketplace (Federal/State)</td>
<td>Not available</td>
</tr>
<tr>
<td>Quit &lt;12 months</td>
<td>Eliminate the Sale of Tobacco Products in Pharmacies and Other Health-Related Institutions (State/Local)</td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Poor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Smoker</td>
<td>Monitor and regulate new tobacco products coming into the marketplace (Federal/State)</td>
<td>Not available</td>
</tr>
<tr>
<td></td>
<td>Eliminate the Sale of Tobacco Products in Pharmacies and Other Health-Related Institutions (State/Local)</td>
<td>Not available</td>
</tr>
</tbody>
</table>
Tobacco Control and Prevention

- Support comprehensive clean indoor air laws
- Increase excise taxes
- Ensure comprehensive tobacco cessation benefits in private and public insurance plans with no co-pay
- Ensure FDA Regulation of emerging tobacco products including e-cigarettes
- Increase funding for tobacco cessation and prevention programs
- Eliminate the sale of tobacco in pharmacies and other health related institutions
- Tobacco 21
Broader research functions

• *Current* policies: evaluation and implementation research

• *New* policies: focused basic, clinical, and population research

• *All* policies: assessment of population health impact – strengthened surveillance of CVH and of CVD events, success in reaching vulnerable populations, and cost-effectiveness of policy interventions
# Current smoking – specific research

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>• Address the cultural, social, and economic factors that promote, sustain, or discourage the use of e-cigarettes and other new tobacco products. • Determine the relative impacts of various taxation strategies on youth access to e-cigarettes, adult smokers’ use of these products, and industry response • Assess the extent of including e-cigarettes in smoke-free air laws to decrease use of e-cigarettes by adult smokers as well as youth access and initiation of this use</td>
<td>• Test the efficacy of new tobacco products as cessation devices • Determine whether new tobacco products serve as a gateway to conventional smoking and re-initiation by former smokers • Assess the extent and duration of ‘dual use’ or use of multiple tobacco products • Evaluate the impact of Tobacco 21 purchasing laws on smoking prevalence, youth initiation and youth access</td>
<td>• Identify acute and chronic adverse health effects of e-cigarettes and other new tobacco products • Assess the impact of marketing and communications on prevalence of use of e-cigarettes and other new tobacco products • Increase surveillance of e-cigarette use and other tobacco products • Monitor effects of intentional or unintended use of other substances and medications in e-cigarette delivery devices and its impact</td>
</tr>
</tbody>
</table>
The policy portfolio – overall conclusions

• Generally robust and well aligned – though evidence reviews reveal insufficiency of research in some instances
• Some elements “not prioritized” (e.g., BMI; fish; fiber) – their addition in explicit policies could increase their prominence
• Age specificity for “children” lacking (all under age 20) – opportunities for effective action may be missed
• Quantitative targets for CVD management needed – their adoption could stimulate further policy development toward improved care

∑  =  Science and policy are well connected, with room for progress -- in both directions.
WE'RE AWARDING $75 MILLION TO THE IDEA THAT'S GOING TO END CORONARY HEART DISEASE.

Here's what you've been waiting for! The One Brave Idea questions are below. Now is the time to think through your brave idea to end coronary heart disease and its consequences. You can upload your submission beginning at 8:00a CT on February 1, 2016. The deadline to receive all submissions is 11:59p CT on February 14, 2016. The submission rules are below.

QUESTIONS.

• 1. What is your idea? (250 words or less)
• 2. Why is this project different than anything that has been done before? (250 words or less)
• 3. What is your proposed development plan, milestones and timeline? (250 words or less)
• 4. What are three relevant keywords that represent your idea?
• 5. What qualities make you capable of achieving your idea? (250 words or less)
• 6. Who will be on your team and why have you selected them? (250 words or less)
• 7. What other organization(s) or partner(s), if any, are important to achieving your vision? (250 words or less)

As part of the application, we will also request up to five relevant references and a brief bio or resume.

We look forward to receiving your brave idea beginning February 1, 2016!

Submission Rules Website Terms of Use
1. **iCVH: The ONE BRAVE iDEA**

**Vision:** An end to coronary heart disease (CHD) and its consequences is achievable by virtual eradication of cardiovascular risk up to age 50.

**Goal:** iCVH for all Americans – ultimately a new generation free of cardiovascular risk and disparities.

**Intervention Approaches:** A program of action to promote, preserve, and restore iCVH for all, by implementing the 7 Action Priorities of the Public Health Action Plan to Prevent Heart Disease and Stroke, including population-wide health policy, environmental, and system changes for individuals, families, and communities.

**Health Outcomes:** iCVH from the beginning of life to age 50 and beyond, as measured by each of the 7 AHA metrics and composite CVH score, or corresponding age-appropriate indicators.

**Major Health Impacts:** Elimination of preventable death, disability, disparities, and costs consequent upon CHD events; disruptive innovation in scalable health policies, programs, and practices; and deepening the roots of a culture of health in America.

**Rationale:** iCVH at 50 predicts near disappearance of CVD events but is currently uncommon. While AHA’s 2020 Goal “to improve the cardiovascular health of all Americans by 20%”, is an essential incremental target, to end CHD as we know it requires realizing iCVH as the population norm. However, CVH declines throughout childhood, adolescence, and adulthood. The paramount goal must be to develop, deploy, and demonstrate our capacity to promote and preserve iCVH throughout the life course and, when necessary, to restore it through innovative health policy, technology, and health system transformation supporting both primordial and primary prevention.
From CVD to CVH – A Quiet Revolution

Thank you