From CVD to CVH: A quiet revolution?

Darwin R. Labarthe, MD, MPH, PhD
Department of Preventive Medicine
– What might a “CVH revolution” mean?
– What is the evidence for a revolution?
– How long is a generation?
What might a “CVH revolution” mean?
Cardiovascular Health Policy in the US
The national goal for heart disease and stroke prevention:

To improve cardiovascular health and quality of life by

- prevention of risk factors
- detection and treatment of risk factors
- early identification and treatment of heart attacks and strokes
- prevention of recurrent cardiovascular events
4 Goals of Prevention

- Prevention of risk factors
- Detection and treatment of risk factors
- Early identification and treatment of heart attacks and strokes
- Prevention of recurrent cardiovascular events
4 Goals of Prevention: Action Areas

- Preserving Low CVD Risk
- Controlling Increased CVD Risk
- Detecting & Treating Acute CVD Events
- Reducing Disability & Risk of Recurrent CVD
4 Goals of Prevention: Action Areas

- Preserving Low CVD Risk
- Controlling Increased CVD Risk
- Detecting & Treating Acute CVD Events
- Reducing Disability & Risk of Recurrent CVD

CVH Promotion  CVD Prevention
Toma Strasser, 1978:

*From the viewpoint of world health for tomorrow, however, one has to go 1 step further. Although the epidemic of risk factors has pervaded the consumer societies, it still has not reached the majority of the developing world. Real grassroot prevention should start by preserving entire risk-factor-free societies from the penetration of risk factor epidemics. Here lies the possibility of averting 1 of tomorrow’s world health problems. For expressing this important concept, I wish to propose the term of proto-prophylaxis or primordial prevention.*
4 Goals of Prevention: Action Areas

- Preserving Low CVD Risk
- Controlling Increased CVD Risk
- Detecting & Treating Acute CVD Events
- Reducing Disability & Risk of Recurrent CVD

CVH Promotion

CVD Prevention
4 Goals of Prevention: Action Areas

Preserving Low CVD Risk

Controlling Increased CVD Risk

Detecting & Treating Acute CVD Events

Reducing Disability & Risk of Recurrent CVD

CVH Promotion

CVD Prevention

Primordial

?
4 Goals of Prevention: Action Areas

- Preserving Low CVD Risk
- Controlling Increased CVD Risk
- Detecting & Treating Acute CVD Events
- Reducing Disability & Risk of Recurrent CVD

CVH Promotion
- Primordial

CVD Prevention
- Remedial
Action Framework for a Comprehensive Public Health Strategy To Prevent Heart Disease and Stroke

A Vision of the Future

Social and Environmental Conditions Favorable to Health → Behavioral Patterns Promote Health → Low Population Risk → Few Events/Only Rare Deaths → Full Functional Capacity/Low Risk of Recurrence → Good Quality of Life Until Death

Policy and Environmental Change → Behavior Change → Risk Factor Detection and Control → Emergency Care/Acute Case Management → Rehabilitation/Long-term Case Management → End-of-Life Care

Intervention Approaches

The Present Reality

Unfavorable Social and Environmental Conditions → Adverse Behavioral Patterns → Major Risk Factors → First Event/Sudden Death → Disability/Risk of Recurrence → Fatal CVD Complications/Decompensation

The Healthy People 2010 Goals

Increase Quality and Years of Healthy Life → Eliminate Disparities

Goal 1 → Goal 2 → Goal 3 → Goal 4

Preserving Low CVD Risk → Controlling Increased CVD Risk → Detecting & Rx Acute CVD Events → Reducing Disability & Risk of Recurrent CVD
Action Framework for a Comprehensive Public Health Strategy To Prevent Heart Disease and Stroke

**A Vision of the Future**
- Low Population Risk
- Few Events/Only Rare Deaths
- Full Functional Capacity/Low Risk of Recurrence
- Good Quality of Life Until Death

**The Present Reality**
- Major Risk Factors
- First Event/Sudden Death
- Disability/Risk of Recurrence
- Fatal CVD Complications/ Decompensation

**The Healthy People 2010 Goals**
- Increase Quality and Years of Healthy Life
- Eliminate Disparities

- **Goal 1** Preserving Low CVD Risk
- **Goal 2** Controlling Increased CVD Risk
- **Goal 3** Detecting & Rx Acute CVD Events
- **Goal 4** Reducing Disability & Risk of Recurrent CVD
Action Framework for a Comprehensive Public Health Strategy To Prevent Heart Disease and Stroke

**A Vision of the Future**

- **Social and Environmental Conditions Favorable to Health**
  - Behavioral Patterns Promote Health
  - Low Population Risk
  - Few Events/Only Rare Deaths
  - Full Functional Capacity/Low Risk of Recurrence
  - Good Quality of Life Until Death

**CONTINUUM OF CARE**

- **Unfavorable Social and Environmental Conditions**
  - Adverse Behavioral Patterns
  - Major Risk Factors
  - First Event/Sudden Death
  - Disability/Risk of Recurrence
  - Fatal CVD Complications/ Decompensation

**The Present Reality**

- **Goal 1**
  - Increase Quality and Years of Healthy Life

- **Goal 2**
  - Preserving Low CVD Risk

- **Goal 3**
  - Eliminate Disparities

- **Goal 4**
  - Controlling Increased CVD Risk

**The Healthy People 2010 Goals**

- **Goal 1**
  - Increase Quality and Years of Healthy Life

- **Goal 2**
  - Preserving Low CVD Risk

- **Goal 3**
  - Eliminate Disparities

- **Goal 4**
  - Controlling Increased CVD Risk
An Integrated Public Health Strategy to Prevent Heart Disease and Stroke
An Integrated Public Health Strategy to Prevent Heart Disease and Stroke

- Strengthening capacity
- Evaluating impact
- Advancing knowledge
- Taking action
- Engaging in regional and global partnerships
- Effective communication
- Strategic leadership, partnerships and organization
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
Impact Goals: “By 2020, to improve the cardiovascular health of all Americans by 20% while reducing deaths from cardiovascular diseases and stroke by 20%.”

• 7 metrics (tobacco, physical activity, diet score, BMI, BP, total cholesterol, glucose)
• 2 age levels (<20, 20+)
• 3 states (ideal, intermediate, poor)
<table>
<thead>
<tr>
<th>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, tried prior 30 days</td>
<td>Former &lt;=12 months</td>
<td>Never or quit &gt;12 months</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td></td>
<td></td>
<td>Never tried; never whole cigarette</td>
</tr>
<tr>
<td>Children 12-19 yo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Body Mass Index</strong></td>
<td>≥30 kg/m² or &gt;95th percentile</td>
<td>25-29.9 kg/m² or 85th-95th percentile</td>
<td>&lt;25 kg/m² or &lt;85th percentile</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td></td>
<td></td>
<td></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 1-74 min/wk vigorous or 1-149 min/wk mod + vig</td>
<td>150+ min/wk moderate or 75+ min/wk vigorous or 150+ min/wk mod + vig</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>
<tr>
<td><strong>Healthy Diet Score</strong></td>
<td>0-1 components or 0-1 components</td>
<td>2-3 components or 2-3 components</td>
<td>4-5 components or 4-5 components</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children 5-19 yo</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Total Cholesterol</strong></td>
<td>≥240 mg/dL or ≥200 mg/dL</td>
<td>200-239 mg/dL or treated to goal</td>
<td>&lt;200 mg/dL or &lt;170 mg/dL</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td></td>
<td></td>
<td></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/&lt;80 mm Hg</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
<td></td>
<td>90th-95th percentile or SBP ≥120 or DBP ≥80 mm Hg</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 or ≥126 mg/dL</td>
<td>100-125 or treated to goal</td>
<td>&lt;100</td>
</tr>
<tr>
<td>Adults ≥20 yo</td>
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</table>
Intermediate CVH

Favorable change in CVH metrics (health factors and behaviors)

Ideal CVH

Unfavorable change in CVH metrics (health factors and behaviors)

Poor CVH
Healthy gestation, development, and aging

Favorable change in CVH metrics (health factors and behaviors)

ideal CVH  intermediate CVH  poor CVH

Unfavorable change in CVH metrics (health factors and behaviors)
Prevalence in U.S. Children

- Current Smoking: 17.1%
- Body Mass Index: 64.8%
- Physical Activity: 44.0%
- Healthy Diet Score: 72.4%
- Total Cholesterol: 79.7%
- Blood Pressure: 81.0%
- Fasting Plasma Glucose: 0.5%

Percentage

- Poor
- Intermediate
- Ideal
Prevalence in U.S. Adults

<table>
<thead>
<tr>
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<tr>
<td>Current Smoking</td>
<td>24.5%</td>
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<tr>
<td>Body Mass Index</td>
<td>33.8%</td>
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<tr>
<td>Physical Activity</td>
<td>31.7%</td>
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<tr>
<td>Healthy Diet Score</td>
<td>76.8%</td>
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<tr>
<td>Total Cholesterol</td>
<td>46.6%</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>41.7%</td>
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<tr>
<td>Fasting Plasma Glucose</td>
<td>30.4%</td>
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</table>
Loss of ideal cardiovascular health - beginning in childhood
Systolic blood pressure

![Graph showing systolic blood pressure for males and females. The graph has two curves: one for males and one for females. The y-axis represents SBP (mmHg) ranging from 95 to 115, and the x-axis represents age (8 to 18 years). The graph shows that systolic blood pressure increases with age for both males and females, with males generally having a higher SBP than females.]
What is the evidence for a revolution?
From Cardiovascular Disease to Cardiovascular Health: A Quiet Revolution?
Darwin R. Labarthe

doi: 10.1161/CIRCOUTCOMES.111.964726
Circulation: Cardiovascular Quality and Outcomes is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 1941-7705. Online ISSN: 1941-7713
The Public Health Action Plan to Prevent Heart Disease and Stroke: Ten-Year Update

Darwin Labarthe, MD, MPH, PhD
Benn Grover, MA
James Galloway, MD
Laura Gordon
Sharon Moffatt, RN, BSN, MSN
Thomas Pearson, MD, MPH, PhD
Mark Schoeberl
Steven Sidney, MD, MPH
### Seven Immediate Action Priorities for 2014 and Beyond

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<thead>
<tr>
<th>Priority</th>
<th>Focus</th>
<th>Action Needed</th>
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<tbody>
<tr>
<td>Effective communication</td>
<td>Prevention and public health</td>
<td>Communicate to legislators, policymakers, and the public at large the nation’s vital stake in sustaining and building upon the prevention and public health provisions in the Affordable Care Act, e.g., the National Prevention Council, Prevention and Public Health Fund, and others.</td>
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<tr>
<td>Strategic leadership, partnerships, and organization</td>
<td>Public health – healthcare collaboration and integration</td>
<td>Integrate public health and health care into a public health system effective in supporting community-level prevention policies and programs, e.g., the Million Hearts Initiative.</td>
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<td>Taking action</td>
<td>Cardiovascular health and health equity</td>
<td>Develop, advocate, and implement policies, programs, and practices aimed to improve the nation’s cardiovascular health in terms of the Healthy People 2020 objectives and AHA metrics – addressing tobacco use, overweight/obesity, physical activity, healthy diet (including reduction in sodium and artificial trans fat intake), blood pressure, cholesterol, and fasting plasma glucose; and ensure that all such actions reach everyone, especially those most vulnerable due to unfavorable social and environmental conditions.</td>
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<td>Building capacity</td>
<td>Prevention workforce</td>
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<td>Evaluating impact</td>
<td>Monitoring cardiovascular health</td>
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<td>Advancing policy</td>
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<td>Engaging in regional and global collaboration</td>
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(Source: Authors)
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(Source: Authors)
“By 2020, to improve the cardiovascular health of all Americans by 20% while reducing deaths from cardiovascular diseases and stroke by 20%.”

As later described,

“Success in this task would enable the AHA to undertake a new and more proactive organizational mission, not only continuing the tremendous success in improved treatment but also addressing the need for a new and expanded emphasis on prevention, control of risk, improving quality of life, and promoting health rather than solely treating disease.”

1
Global Cardiovascular Health Promotion and Disease Prevention: 2011 and Beyond
Darwin R. Labarthe and Sandra B. Dunbar

Circulation. 2012;125:2667-2676
doi: 10.1161/CIRCULATIONAHA.111.087726
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7322. Online ISSN: 1524-4539
Table. **Recommendations for Promoting Cardiovascular Health in the Developing World**

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<thead>
<tr>
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<th>Recommendation</th>
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<tbody>
<tr>
<td>1</td>
<td>To recognize chronic diseases as a developmental assistance priority</td>
</tr>
<tr>
<td>2</td>
<td>To improve local data</td>
</tr>
<tr>
<td>3</td>
<td>To implement policies to promote cardiovascular health</td>
</tr>
<tr>
<td>4</td>
<td>To include chronic diseases in health systems strengthening</td>
</tr>
<tr>
<td>5</td>
<td>To improve national coordination for chronic diseases</td>
</tr>
<tr>
<td>6</td>
<td>To research to assess what works in different setting</td>
</tr>
<tr>
<td>7</td>
<td>To disseminate knowledge and innovation among similar countries</td>
</tr>
<tr>
<td>8</td>
<td>To collaborate to improve diets</td>
</tr>
<tr>
<td>9</td>
<td>To collaborate to improve access to CVD diagnostics, medicines, and technologies</td>
</tr>
<tr>
<td>10</td>
<td>To advocate for chronic diseases as a funding priority</td>
</tr>
<tr>
<td>11</td>
<td>To define resource needs</td>
</tr>
<tr>
<td>12</td>
<td>To report on global progress</td>
</tr>
</tbody>
</table>

“What the cardiovascular community could contribute...”

- Working to implement the multiple country-level case studies as models across all regions of the world referred by the Institute of Medicine report of 2010 to the GACD
- Ensuring successful development of NCD indicators to include key measures relevant to CVD risk and CVH status
- Embracing the charge to expand surveillance for baseline and ongoing assessment of CVH, CVD, and measures of intervention impact
“What the cardiovascular community could contribute...”

- Supporting cost-effective interventions such as the best buys that have specific implications for CVH like sodium reduction in foods and diets of populations worldwide and simplified, standardized regimens for reducing cardiovascular risk
- Building capacity through training for policy development, workforce development for program implementation, and evaluation of interventions through implementation science, economic analysis, and related approaches
- Advocating for greatly increased focus on the prevention of risk in the first place through health promotion to avert the loss of health from early life when the burden, disparities, and cost of CVD and the other NCDs begin
— How long is a generation?
THANK YOU!