Northwestern Medicine®

Population-Based Strategies to Improve Cardiovascular Health: Focus on Tobacco

World Heart Federation Emerging Leaders - 2016
St. John's Research Institute, Bangalore

Darwin R. Labarthe, MD, MPH, PhD
Department of Preventive Medicine

WORLD HEART FEDERATION®

HAS

A TOBACCO CONTROL ROADMAP!!!

Reducing Cardiovascular Mortality Through Tobacco Control

A World Heart Federation Roadmap

Alice Grainger Gasser*, Cassandra Welch†, Monika Arora‡, Rohan Greenland§, Lubna Bhatti‖, Luminita Sanda‖, Rob Moodie¶, Eduardo Bianco#

Geneva, Switzerland; Nairobi, Kenya; New Delhi, India; Melbourne, Victoria, Australia; and Montevideo, Uruguay

Northwestern Medicine®

Topics

- The context for this conversation
- Four observations from a CVD/CVH perspective (with two case studies)
- Four main points to take away
- A question

The context

- *Moving beyond global tobacco control to global disease control* (Wipfli & Samet, *Tobacco Control*, March 2012)
- *Integrating tobacco control into health and development agendas* (Reddy, Yadav, Arora, & Nazar, *Tobacco Control*, March 2012)

❖ Four observations from a CVD/CVH perspective:

(1) What ‘population’ means
(2) What a picture of a ‘population-based strategy’ looks like
(3) How multiple components fit in community-based CVD prevention programs
(4) What we have learned about population-based strategies for CVD prevention and CVH promotion

What '*population*' means

- "Mass" or "population" strategy vs "high-risk" strategy: Rose 1981, 1986
- "Primordial prevention": Strasser 1978
- Social-ecological model: Dahlgren & Whitehead, 1991 (v. 2003, Institute of Medicine)
- Social determinants of health (HP 2020)

“Population” strategy: Rose 1981

“In the high-risk preventive strategy we go out and identify those at the top end of the distribution and give them some preventive care… [But this strategy offers] only a limited answer to the community problem of heart disease.

“We are therefore driven to consider mass approaches, of which the simplest is to endeavour to lower the whole distribution of the risk variable by some measure in which all participate…

“Potentially far more effective, and ultimately the only acceptable answer, is the mass strategy…’

“Population” strategy: Rose 1981

“In the high-risk preventive strategy we go out and identify those at the top end of the distribution and give them some preventive care… [But this strategy offers] only a limited answer to the community problem of heart disease.

“We are therefore driven to consider mass approaches, of which the simplest is to endeavour to lower the whole distribution of the risk variable by some measure in which all participate…

“Potentially far more effective, and ultimately the only acceptable answer, is the mass strategy…’

Northwestern Medicine®

“Primordial prevention”: Strasser 1978

“Real grassroots prevention should start by preserving entire risk-factor-free societies from the penetration of risk factor epidemics. Here lies the possibility of averting one of tomorrow’s world health problems. I wish to propose the term of *protoprophylaxis* or *primordial prevention*.”

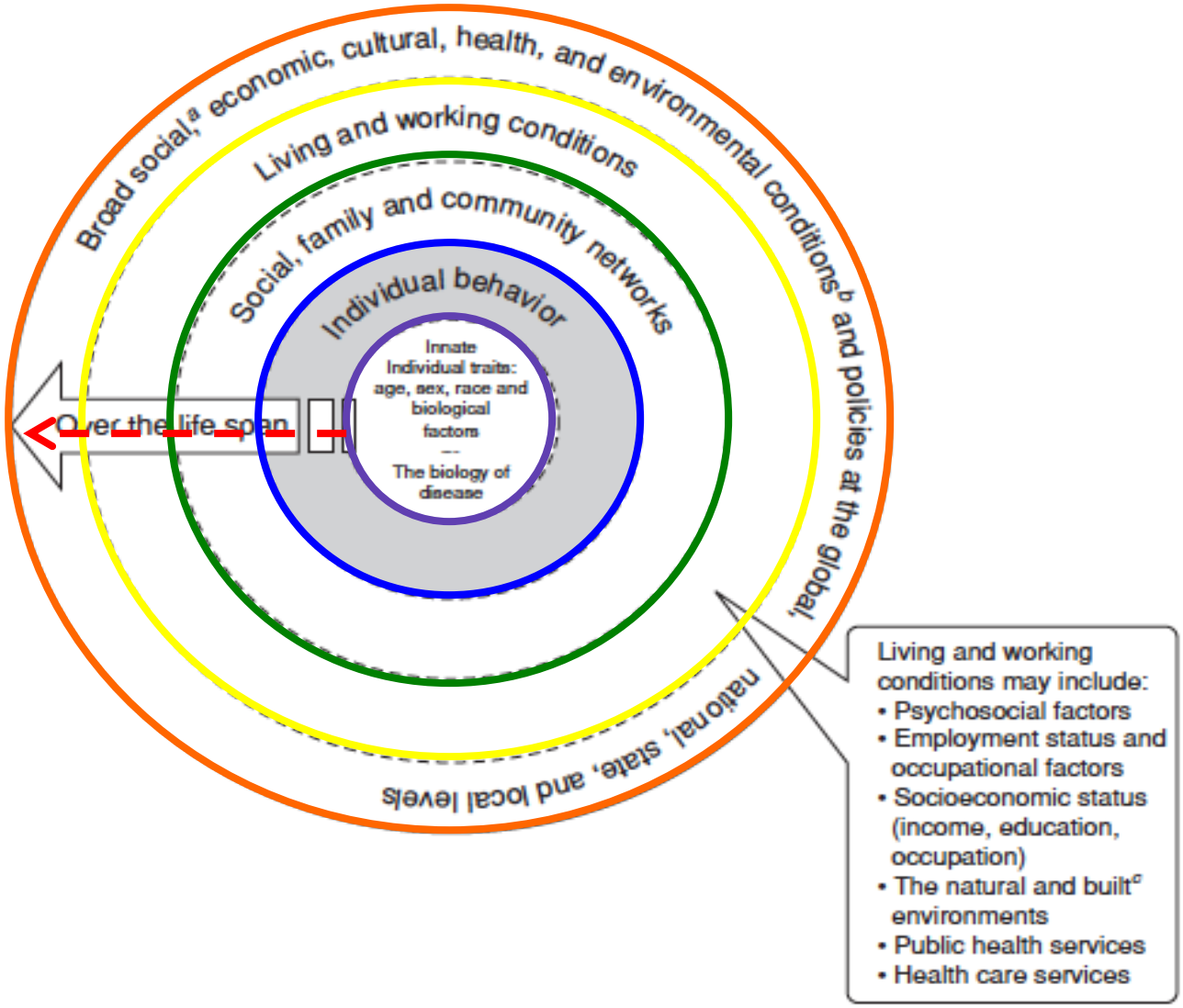
Strasser, T. Reflections on cardiovascular diseases. Interdisciplinary Science Reviews, 1978

“Primordial prevention”: Strasser 1978

“Real grassroots prevention should start by preserving entire risk-factor-free societies from the penetration of risk factor epidemics. Here lies the possibility of averting one of tomorrow’s world health problems. I wish to propose the term of *protoprophylaxis* or *primordial prevention*.”

Strasser, T. Reflections on cardiovascular diseases. Interdisciplinary Science Reviews, 1978

The social-ecological model – 1991, 2003



Northwestern Medicine®

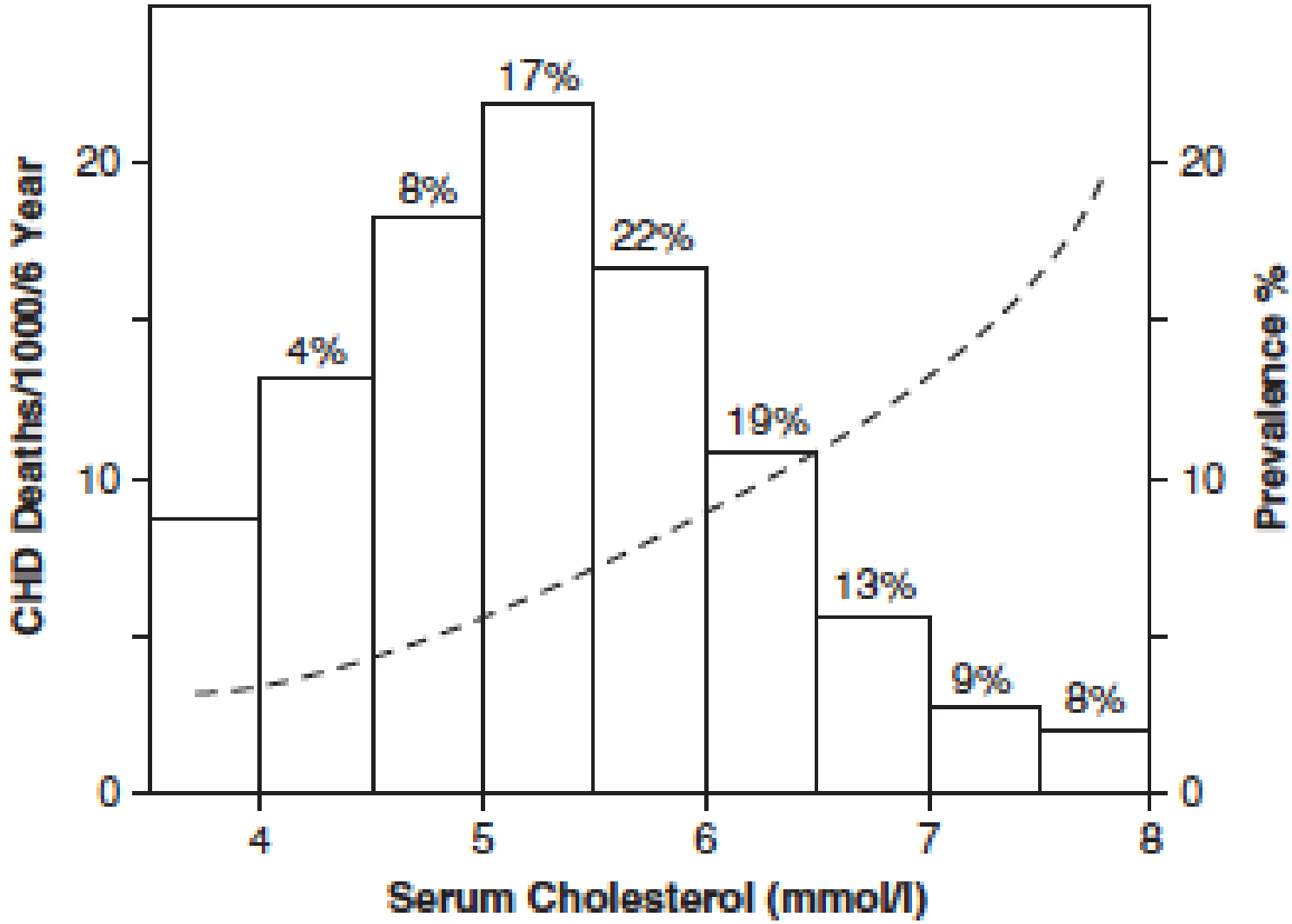
Social determinants of health (HP 2020)

Northwestern Medicine®

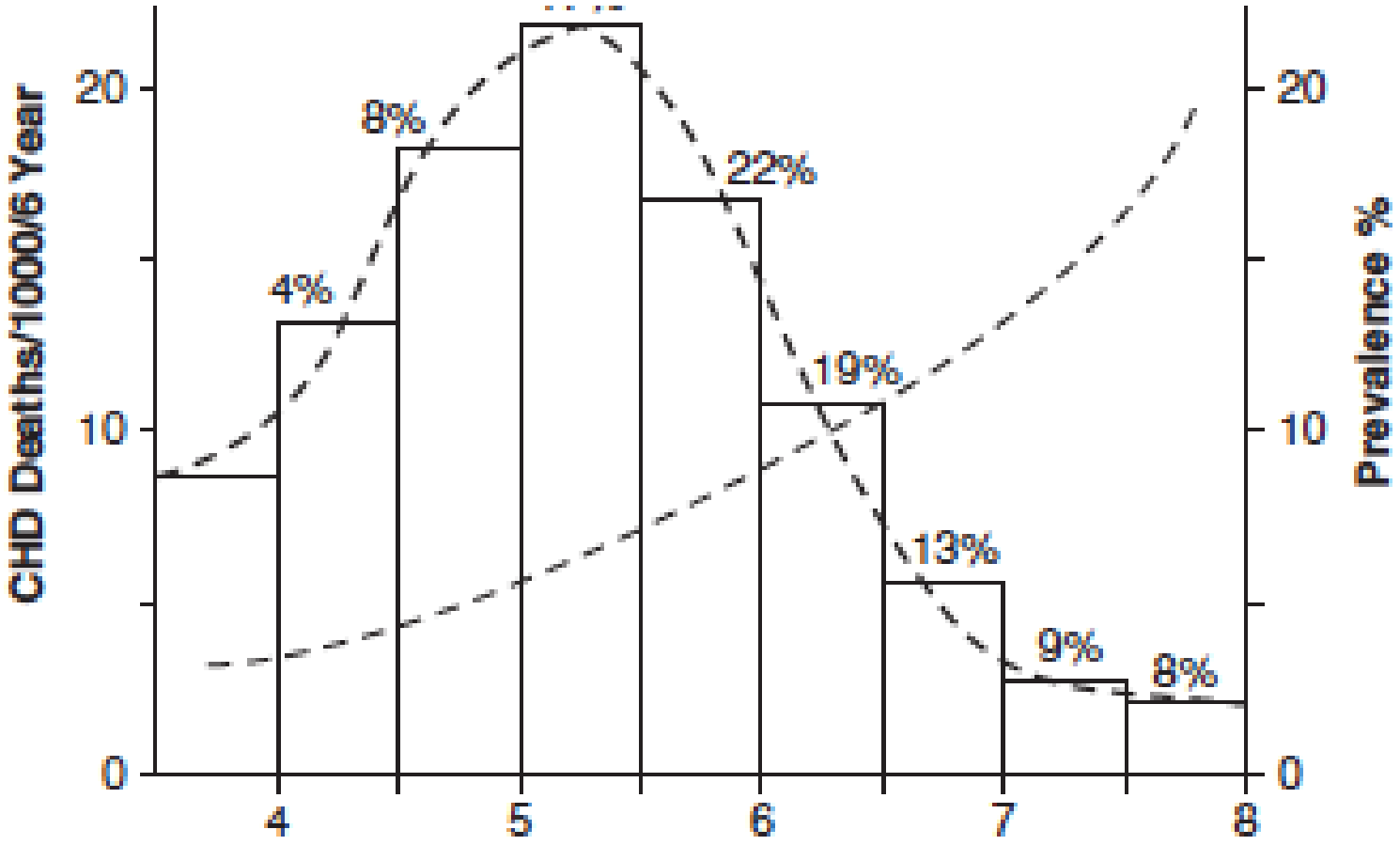
❖ What a ‘population-based strategy’ looks like

Northwestern Medicine®

The existing distribution of risk and events

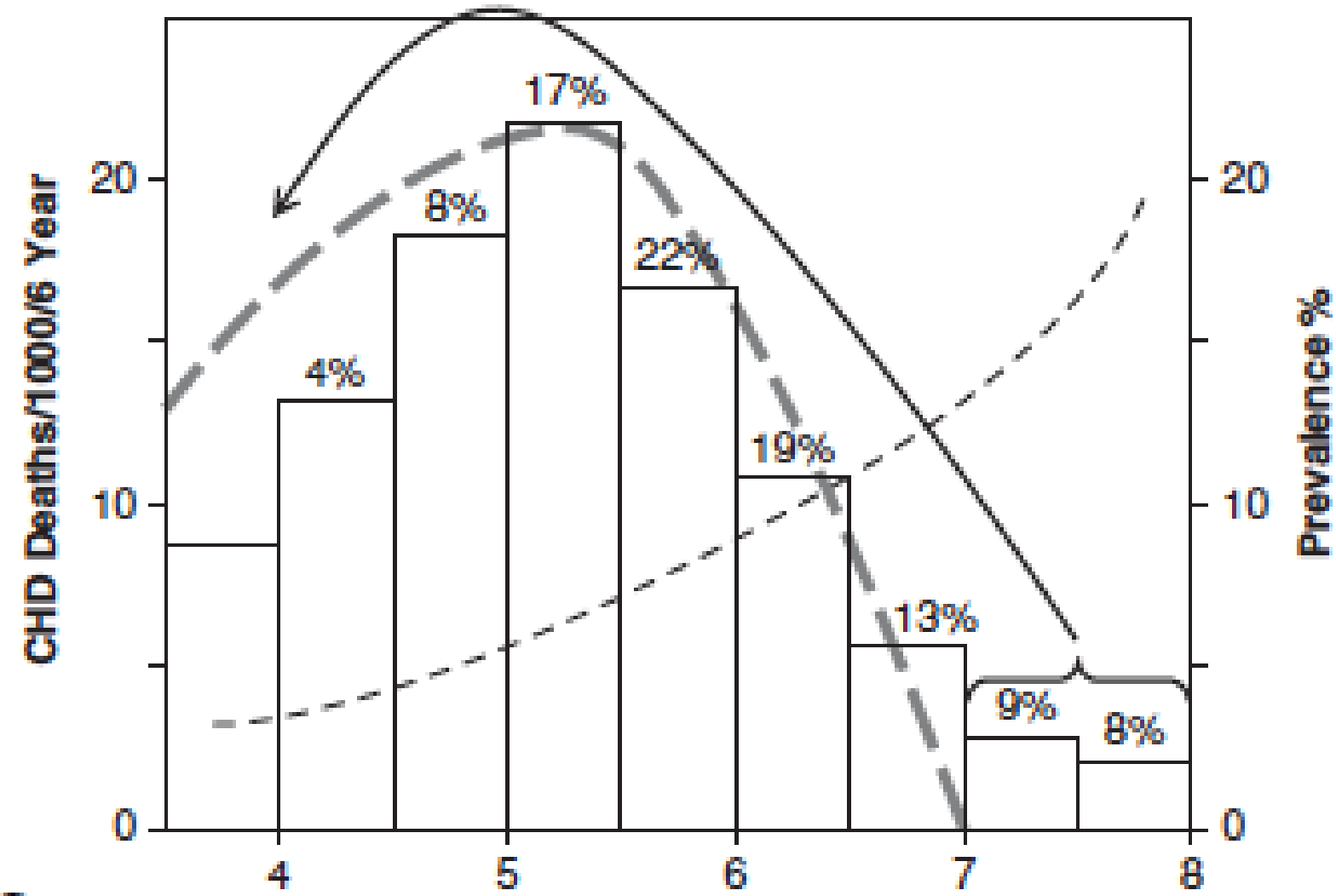


The existing distribution of risk and events



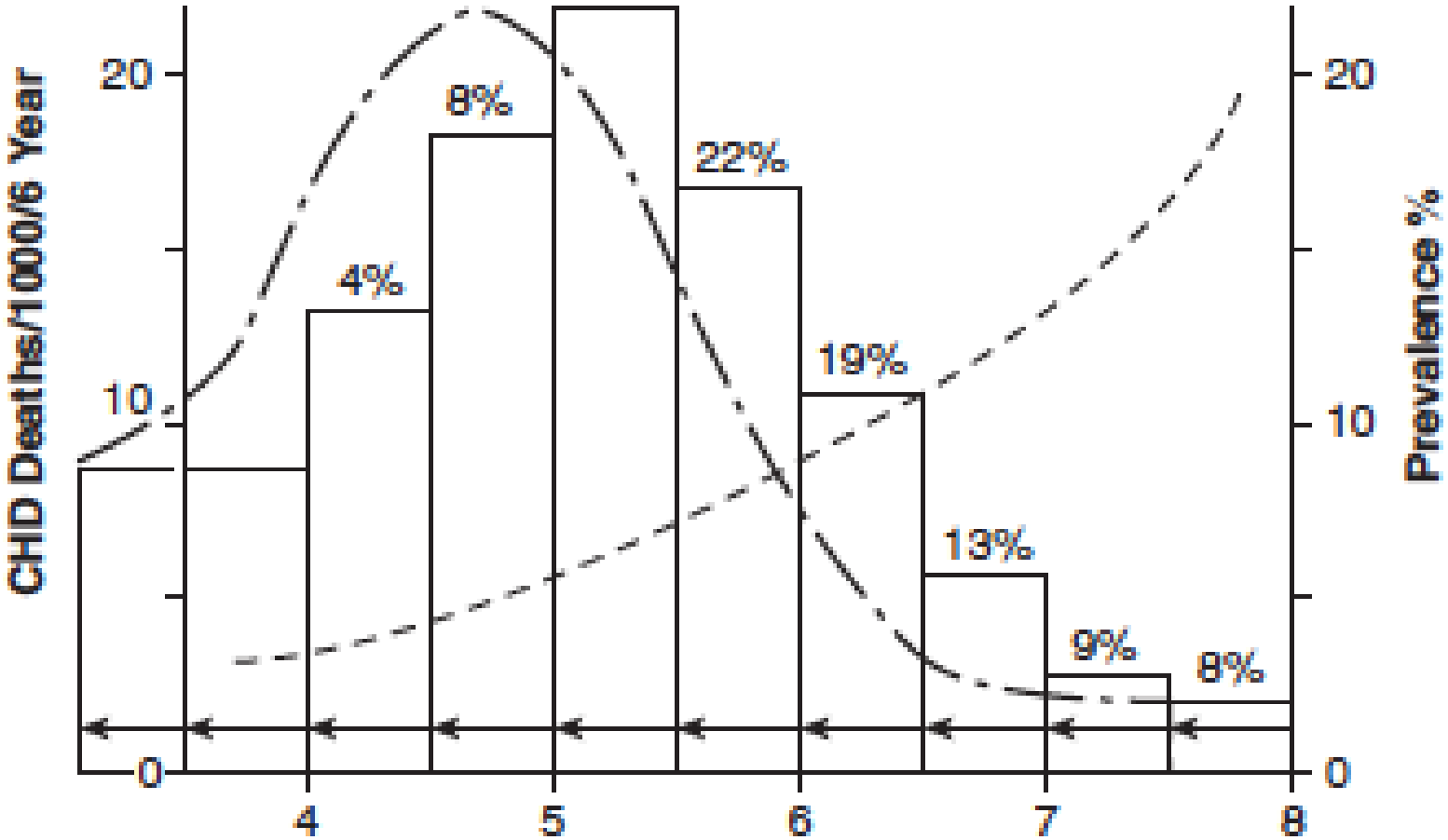
Northwestern Medicine®

The remedial high-risk strategy



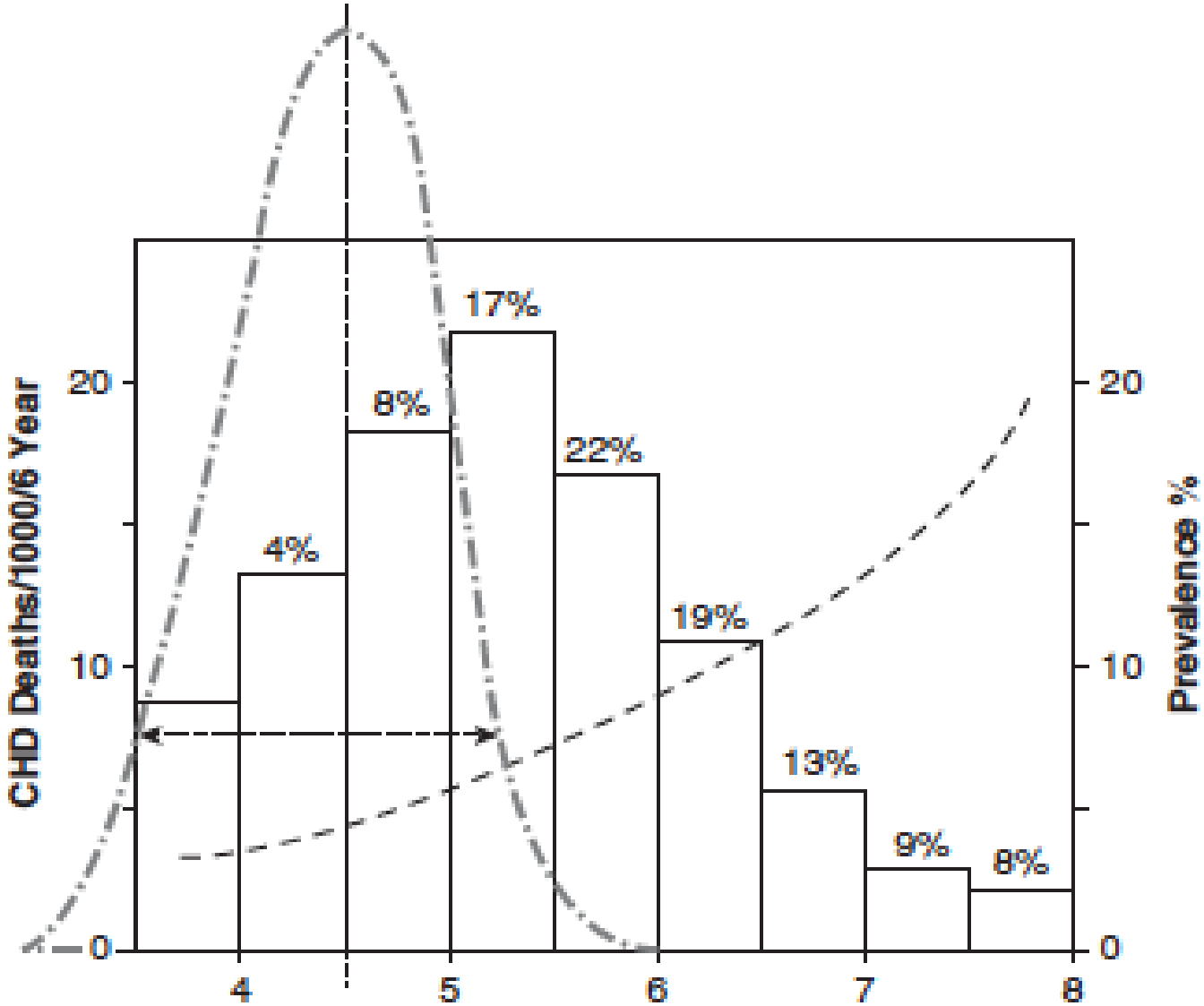
Northwestern Medicine®

The remedial population-wide strategy



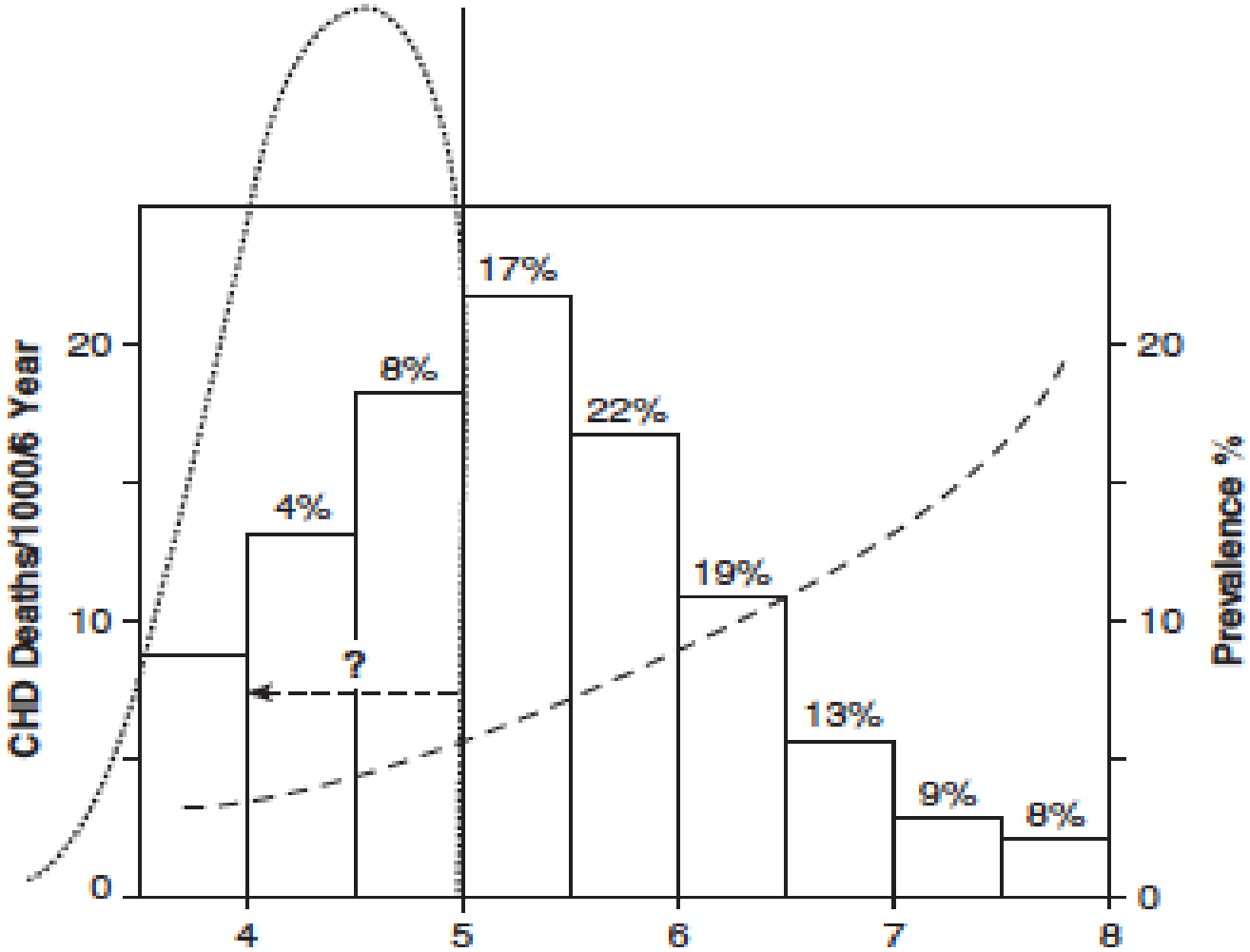
Northwestern Medicine®

The primordial strategy



Northwestern Medicine®

The primordial strategy full-blown



Northwestern Medicine

❖ Multi-component community-based CVD prevention programs: 2 examples

Northwestern Medicine®

Some early and recent examples

- The North Karelia Project
- The Franklin County, Maine, Program

The North Karelia Project

Main features:

- 1972-1992
- Rural Finland – 180,000 population
- Highest known CHD death rate @ start
- Response to public demand
- Community ownership, integration with health care, sustained focus on risk factors among individuals.
- Multifaceted intervention
- Risk factor change monitored by serial surveys
- Control areas – Kuopio; all of Finland

Interventions: North Karelia and elsewhere

Table 21-3 Intervention Strategies of Six Major Community CVD Prevention Trials

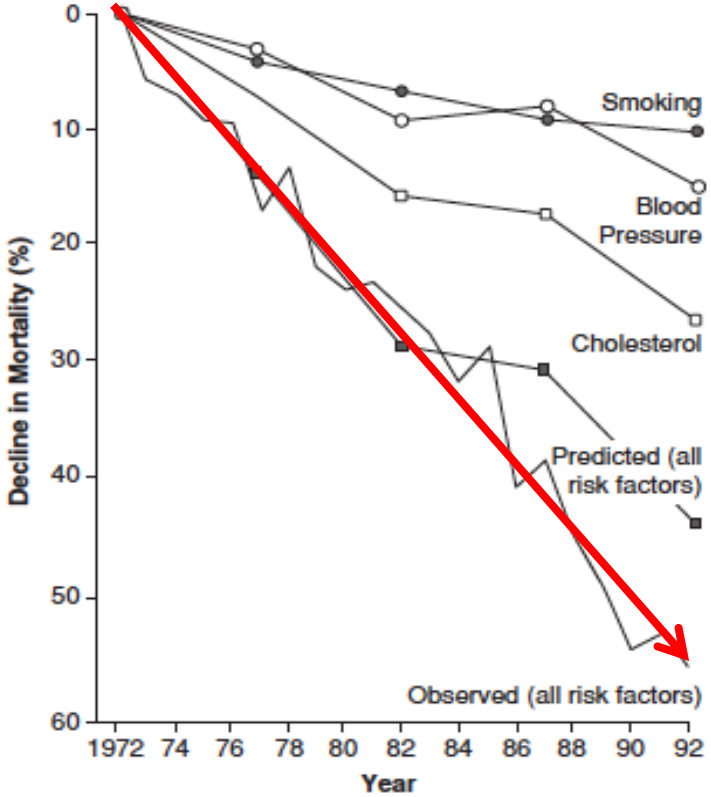
Strategies	North Karelia	Stanford 3-Community	Stanford 5-Cities	Minnesota	Pawtucket	Franklin Maine
Community organization	+	+	+	+	+	+
Mass media	+	+	+	+	Print only	+
Environmental modifications	+	0	+	0	+	+
Community groups	+	0	+	+	+	+
Schools	+	+	+	+	+	+
Worksites	+	0	+	+	+	+
Groceries and restaurants	+	+	+	+	+	+
Medical settings	+	0	+	+	+	+
Professional education	+	0	+	+	+	+
Health agencies collaboration	+	0	+	+	+	+
Train local personnel	+	0	+	+	+	+
Lay volunteer emphasis	+	0	0	0	+	0
Self-management focus	0	+	+	+	+	+
Group education	+	+	+	+	+	+
Risk factor screening	+	+	0	+	+	+
Individual counseling	+	+	0	+	+	+
Referral for medical care	+	0	0	+	+	+
Client risk factor tracking	+	0	0	+	0	+
Active client follow-up	+	0	0	+	0	+
Professional nursing staff	+	0	0	0	0	+
Primary medical care integration	+	0	0	0	0	+

CVD = cardiovascular disease "+" indicates characteristic present, but does not imply equivalent intensity of intervention components

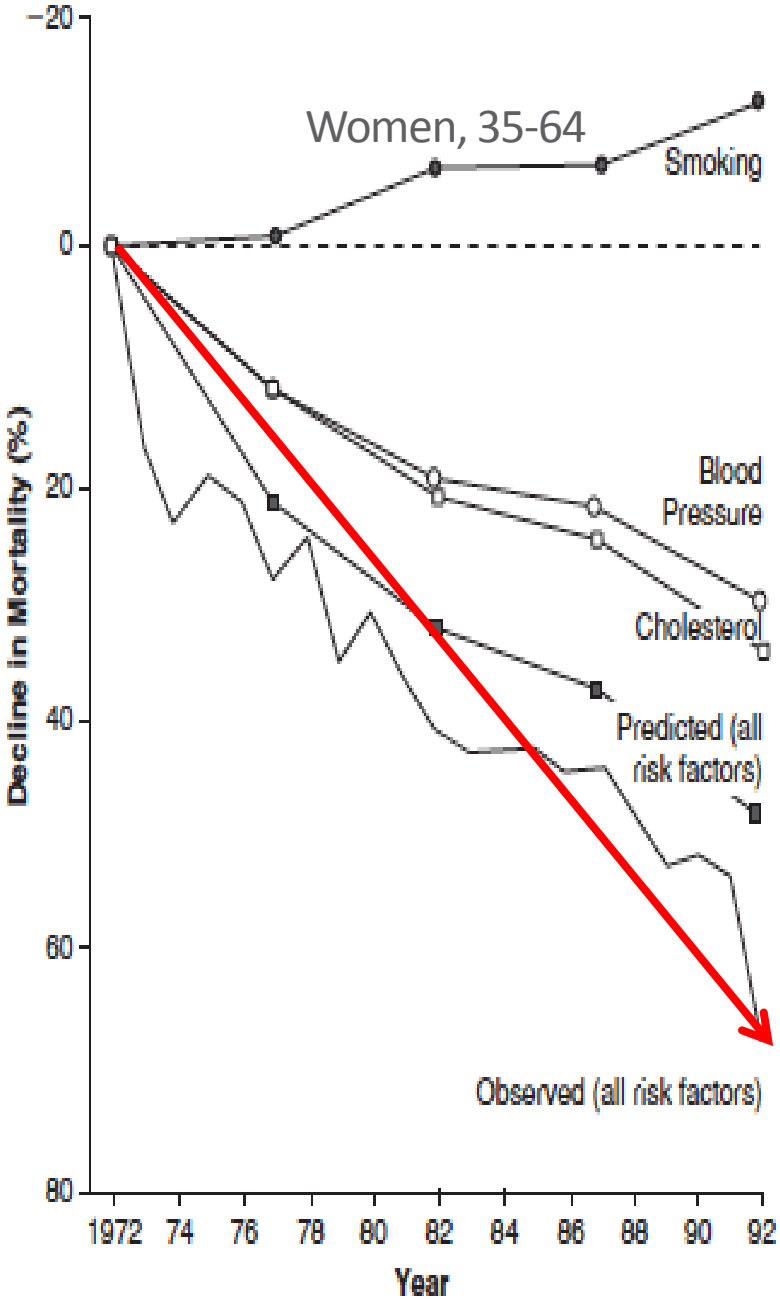
Source: Reprinted with permission from PA Ades, TE Kottke, N Houston Miller et al., *Journal of the American College of Cardiology*, Vol. 40, © 2002 American College of Cardiology Foundation, p 619.

North Karelia

Men, 35-64



Women, 35-64



Northwestern Medicine®

The Franklin County Health Program (FCHP)

Original Investigation

Community-Wide Cardiovascular Disease Prevention Programs and Health Outcomes in a Rural County, 1970-2010

N. Burgess Record, MD; Daniel K. Onion, MD, MPH; Roderick E. Prior, MD; David C. Dixon, MD; Sandra S. Record, RN; Fenwick L. Fowler, BA; Gerald R. Cayer, BS, MPH; Christopher I. Amos, PhD; Thomas A. Pearson, MD, PhD, MPH

JAMA, Jan 13, 2015

Interventions: North Karelia and elsewhere

Table 21-3 Intervention Strategies of Six Major Community CVD Prevention Trials

Strategies	North Karelia	Stanford 3-Community	Stanford 5-Cities	Minnesota	Pawtucket	Franklin Maine
Community organization	+	+	+	+	+	+
Mass media	+	+	+	+	Print only	+
Environmental modifications	+	0	+	0	+	+
Community groups	+	0	+	+	+	+
Schools	+	+	+	+	+	+
Worksites	+	0	+	+	+	+
Groceries and restaurants	+	+	+	+	+	+
Medical settings	+	0	+	+	+	+
Professional education	+	0	+	+	+	+
Health agencies collaboration	+	0	+	+	+	+
Train local personnel	+	0	+	+	+	+
Lay volunteer emphasis	+	0	0	0	+	0
Self-management focus	0	+	+	+	+	+
Group education	+	+	+	+	+	+
Risk factor screening	+	+	0	+	+	+
Individual counseling	+	+	0	+	+	+
Referral for medical care	+	0	0	+	+	+
Client risk factor tracking	+	0	0	+	0	+
Active client follow-up	+	0	0	+	0	+
Professional nursing staff	+	0	0	0	0	+
Primary medical care integration	+	0	0	0	0	+

CVD = cardiovascular disease "+" indicates characteristic present, but does not imply equivalent intensity of intervention components

Source: Reprinted with permission from PA Ades, TE Kottke, N Houston Miller et al., *Journal of the American College of Cardiology*, Vol. 40, © 2002 American College of Cardiology Foundation, p 619.

Interventions: North Karelia and elsewhere

Table 21-3 Intervention Strategies of Six Major Community CVD Prevention Trials

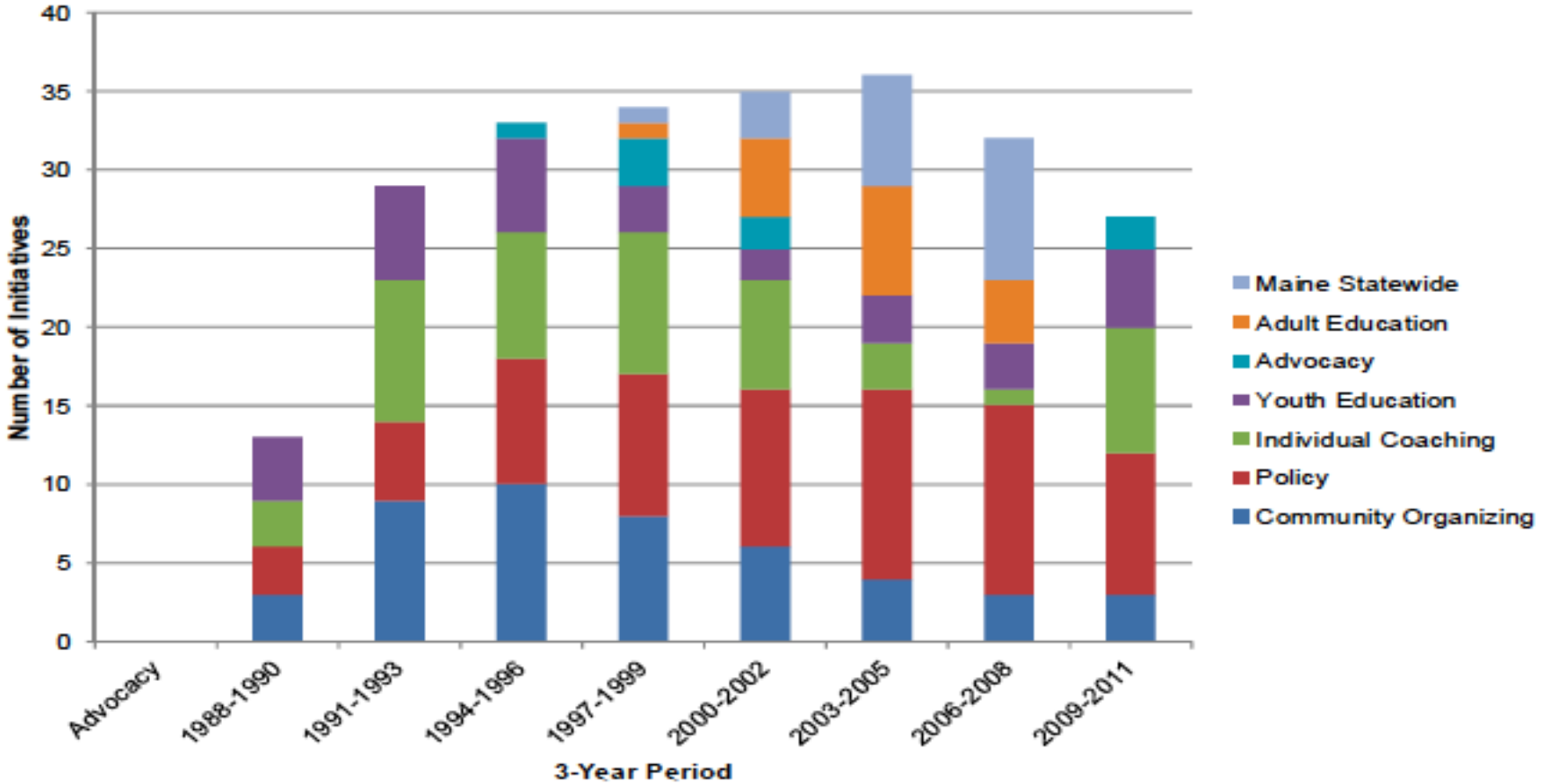
Strategies	North Karelia	Stanford 3-Community	Stanford 5-Cities	Minnesota	Pawtucket	Franklin Maine
Community organization	+	+	+	+	+	+
Mass media	+	+	+	+	Print only	+
Environmental modifications	+	0	+	0	+	+
Community groups	+	0	+	+	+	+
Schools	+	+	+	+	+	+
Worksites	+	0	+	+	+	+
Groceries and restaurants	+	+	+	+	+	+
Medical settings	+	0	+	+	+	+
Professional education	+	0	+	+	+	+
Health agencies collaboration	+	0	+	+	+	+
Train local personnel	+	0	+	+	+	+
Lay volunteer emphasis	+	0	0	0	+	0
Self-management focus	0	+	+	+	+	+
Group education	+	+	+	+	+	+
Risk factor screening	+	+	0	+	+	+
Individual counseling	+	+	0	+	+	+
Referral for medical care	+	0	0	+	+	+
Client risk factor tracking	+	0	0	+	0	+
Active client follow-up	+	0	0	+	0	+
Professional nursing staff	+	0	0	0	0	+
Primary medical care integration	+	0	0	0	0	+

CVD = cardiovascular disease "+" indicates characteristic present, but does not imply equivalent intensity of intervention components

Source: Reprinted with permission from PA Ades, TE Kottke, N Houston Miller et al., *Journal of the American College of Cardiology*, Vol. 40, © 2002 American College of Cardiology Foundation, p 619.

Community collaborations - FCHP

eFigure 5. Categories and Number of Franklin County Community Anti-Smoking Initiatives: 1988 – 2011.

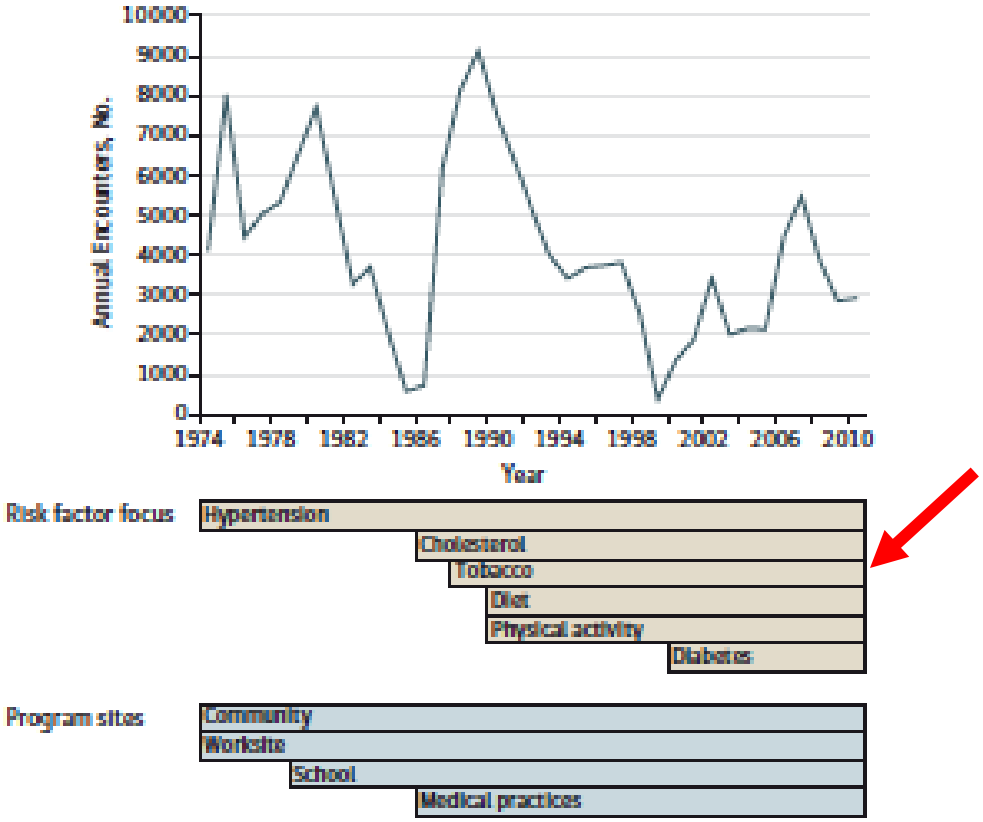


across the timeline. Several initiatives resulted from and/or depended on multi-institutional collaboration (yellow).

Northwestern Medicine®

Key program elements and chronology, FCHP

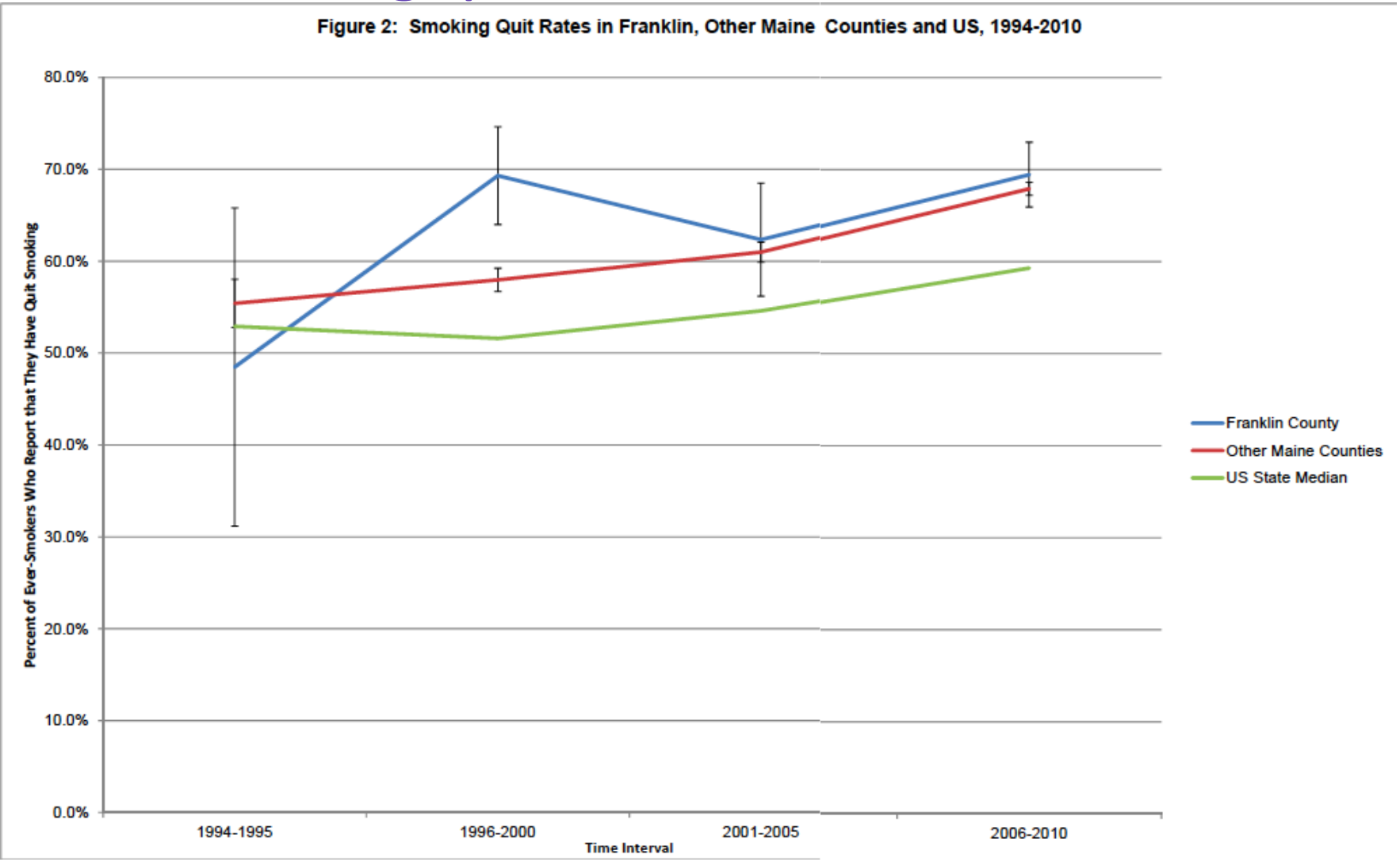
Figure 1. Franklin Cardiovascular Health Program Annual Encounters, Risk Factor Focus, and Locations: 1974-2010



Encounters were in-person contacts between program staff and individuals in the community. The beginning of each bar under the graph indicates the year in which the component was introduced.

Northwestern Medicine®

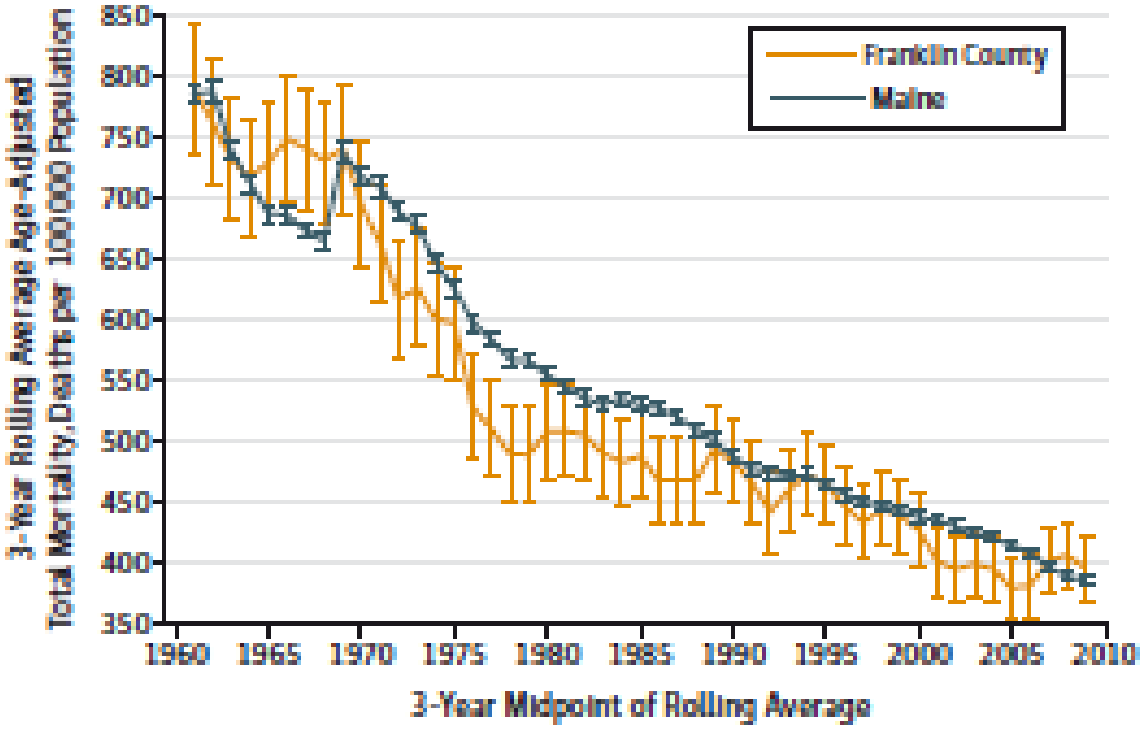
Smoking quit rates: FCHP, Maine, US



Northwestern Medicine®

Trends in mortality rates, all-causes, FCHP

Figure 4. Mortality Rates for Franklin County and Maine, 1960-2010



Age-adjusted total mortality rates. Data was summed to 3-year rolling averages. Age adjustment performed using 1940 standard US population. Error bars indicate 95% confidence intervals.

Northwestern Medicine®

❖ Some lessons learned

Lessons from the field

- What works best:
  multi-level, multi-component interventions

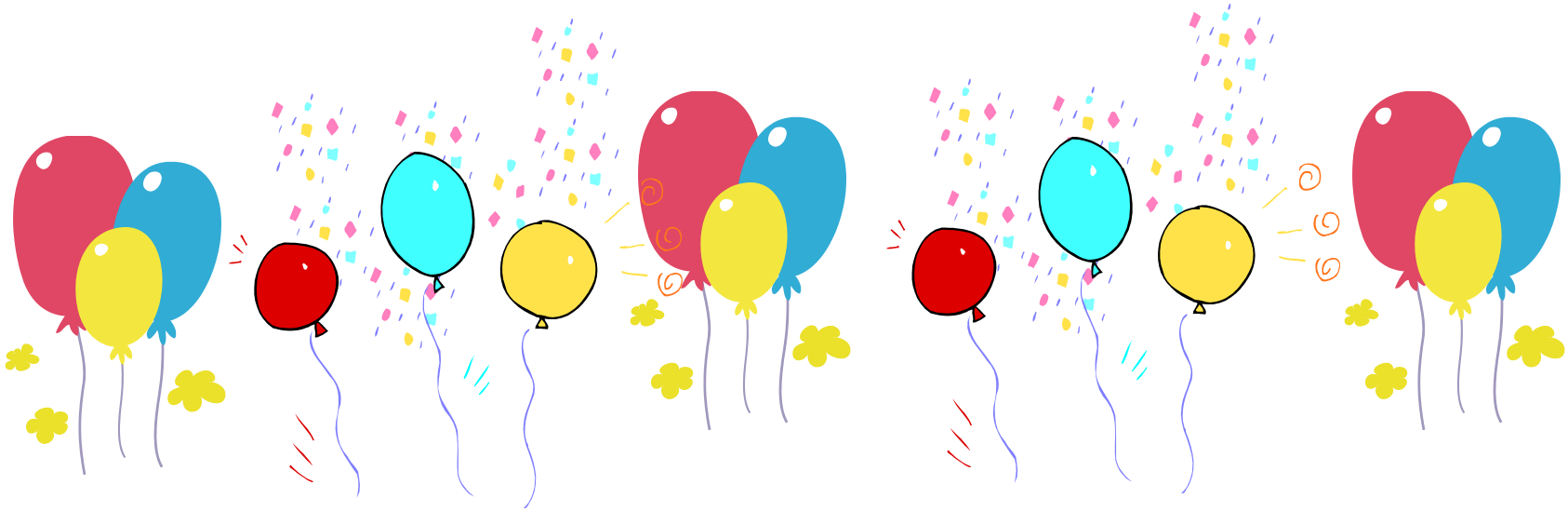
- Least likely to succeed:
  insufficient scope, intensity, duration ('incomplete dose')

- Greatest challenges:
  evaluation, replication, attribution

❖ Summing up – four main points:

- Population-based strategies are supported by a strong rationale; they are designed, when fully deployed, to reach the whole population; and they may be primordial, remedial or both in approach.
- Multiple, diverse population-based strategies, including tobacco control, can be implemented concurrently to improve cardiovascular health.
- Past experience and recent programs document substantial and widespread activity in applying population-based strategies, with valuable lessons learned.
- Tobacco control appears to offer abundant possibilities for population-based strategies in CVD prevention/CVH promotion.

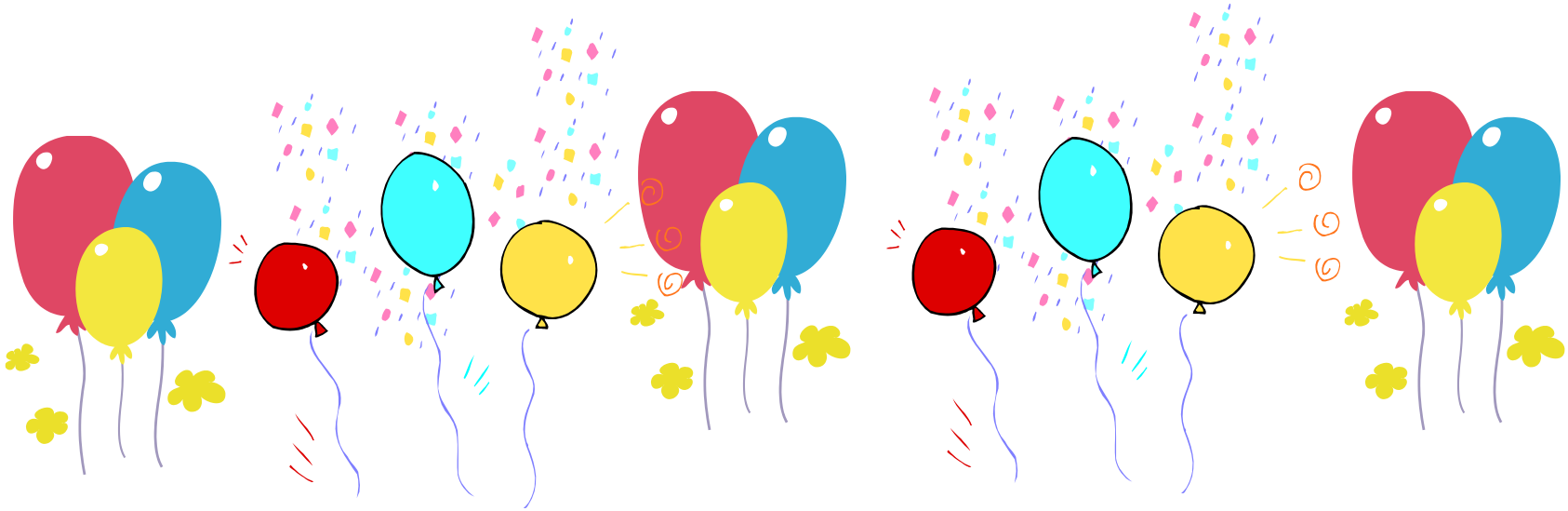
What's next???



WORLD HEART FEDERATION®

HAS

A TOBACCO CONTROL ROADMAP!!!



WORLD HEART FEDERATION®

HAS

A TOBACCO CONTROL ROADMAP!!!

WORLD HEART FEDERATION®

HAS

A TOBACCO CONTROL ROADMAP!!!

WHAT COULD THIS MEAN?

It's up to you --- the WHFEL Cohort of 2016

Northwestern Medicine®

Population-Based Strategies to Improve Cardiovascular Health: Focus on Tobacco

World Heart Federation Emerging Leaders - 2016
St. John's Research Institute, Bangalore

Darwin R. Labarthe, MD, MPH, PhD
Department of Preventive Medicine