

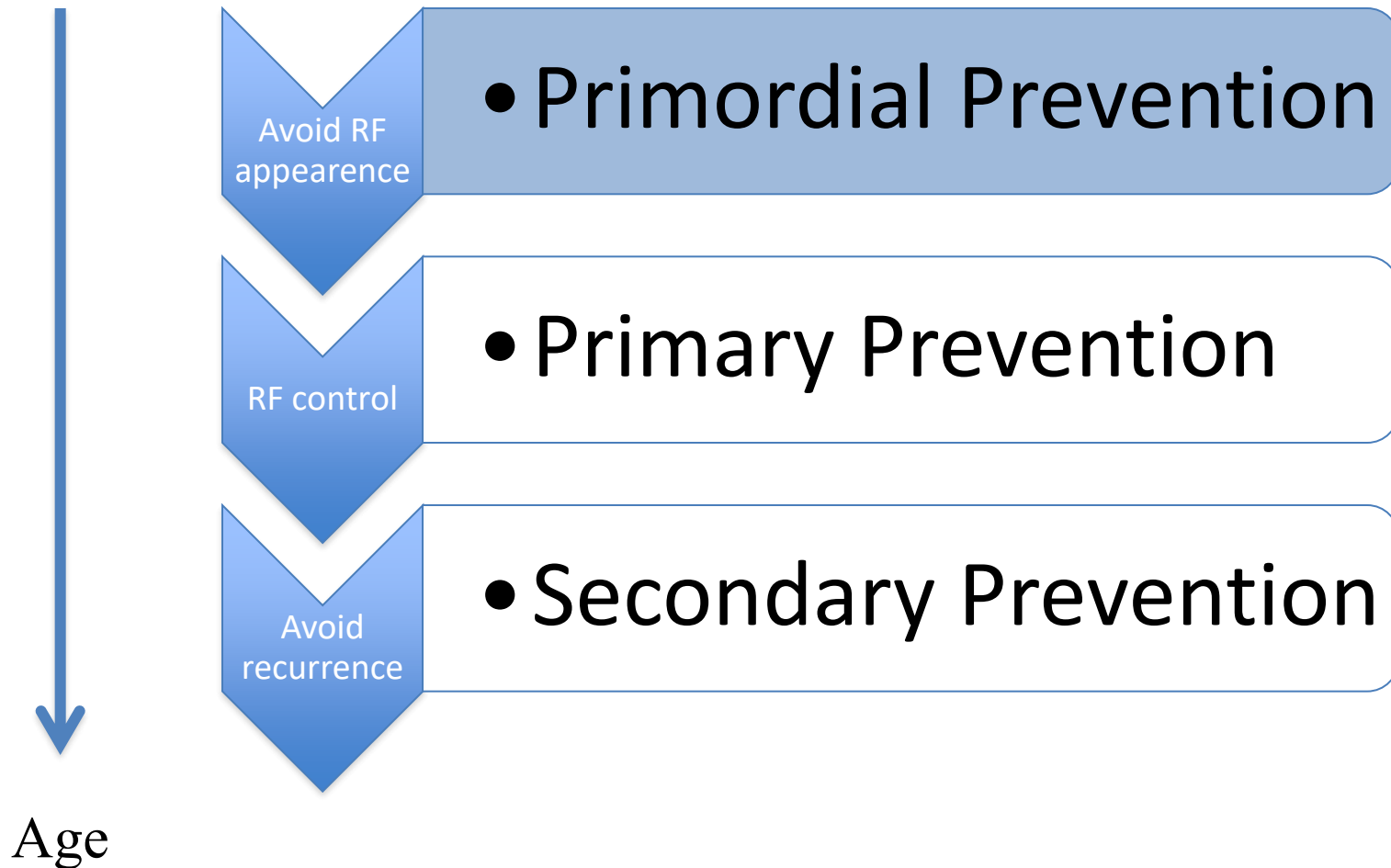
PRIMORDIAL PREVENTION: concept and relevance for preventing CVD and beyond

**SYM20: Primordial prevention of cardiovascular disease and
beyond in the African continent: opportunities and challenges**

Prof. Jean-Philippe Empana
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Integrative Epidemiology of CVD

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Prevention stage and populations



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

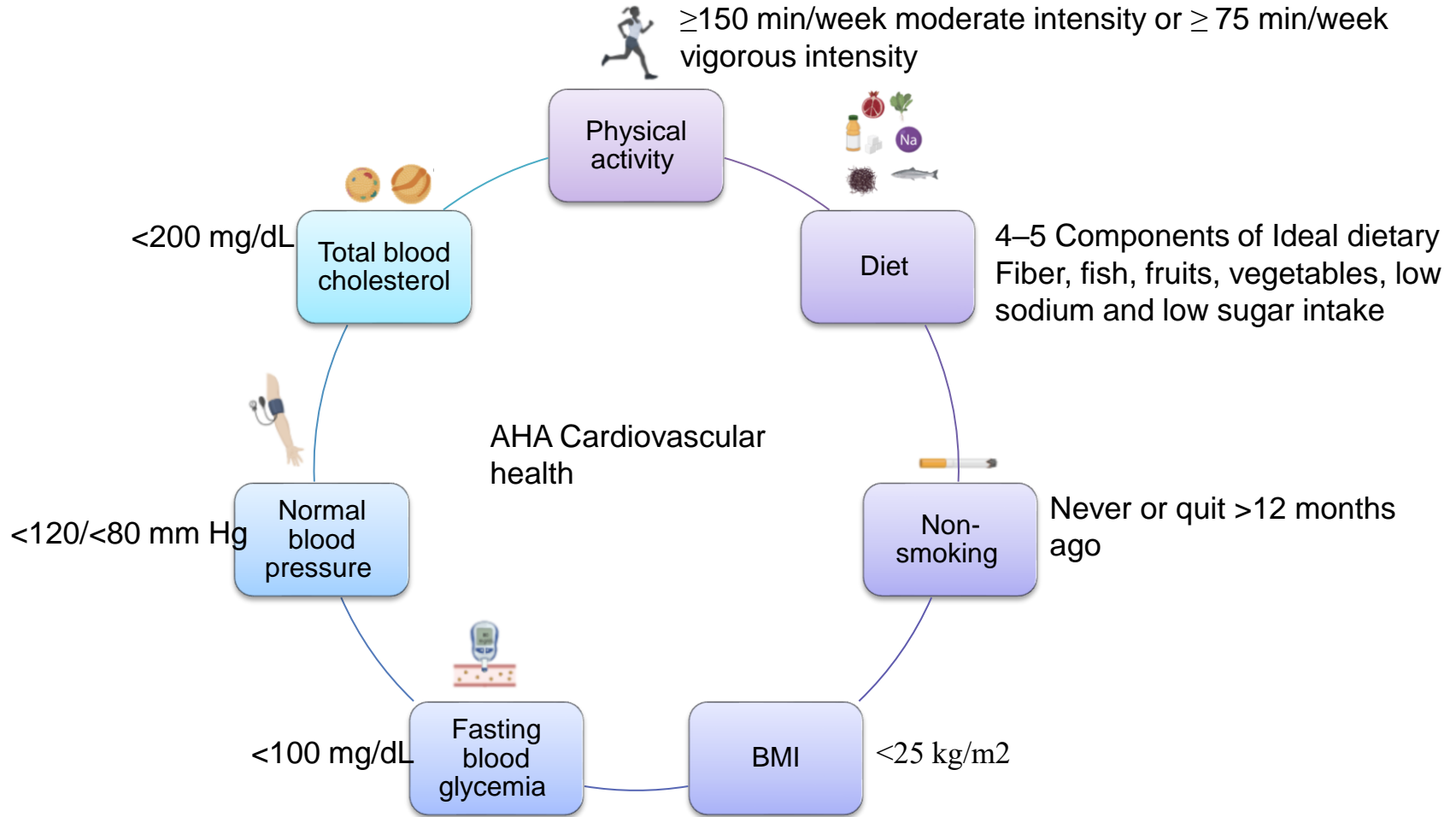
Donald M. Lloyd-Jones, MD, ScM, FAHA, Chair;
Yulino Honor. MD, MSc, PhD, FAHA*; Darwin Labarthe, MD, MPH, PhD, FAHA*:

AHA/ASA Presidential Advisory

Defining Optimal Brain Health in Adults A Presidential Advisory From the American Heart Association/ American Stroke Association

Philip B. Gorelick, MD, MPH, FAHA, Chair*; Karen L. Furie, MD, MPH, FAHA, Co-Chair†; Costantino Iadecola, MD, FAHA, Co-Chair†; Eric E. Smith, MD, MPH, FAHA‡; Salina P. Waddy, MD§; Donald M. Lloyd-Jones, MD, ScM, FAHA||; Hee-Joon Bae, MD, PhD, FAHA; Mary Ann Bauman, MD; Martin Dichgans, MD; Pamela W. Duncan, PhD, PT, FAHA; Meighan Girgus; Virginia J. Howard, PhD, FAHA; Ronald M. Lazar, PhD, FAHA; Sudha Seshadri, MD, FAHA; Fernando D. Testai, MD, PhD, MS, FAHA; Stephen van Gaal, MD; Kristine Yaffe, MD, FAHA; Hank Wasiak, MBA; Charlotte Zerna, MD, MSc; on behalf of the American Heart Association/
American Stroke Association

Ideal Cardiovascular health metrics



Lloyd-Jones Donald M., Hong Yuling, Labarthe Darwin, et al. Defining and Setting National Goals for Cardiovascular Health Promotion and Disease Reduction. *Circulation* 2010;121:586–613.



Donald M. Lloyd-Jones. Circulation. Life's Essential 8: Updating and Enhancing the American Heart Association's Construct of Cardiovascular Health: A Presidential Advisory From the American Heart Association, Volume: 146, Issue: 5, Pages: e18-e43, DOI: (10.1161/CIR.0000000000001078)



TABLE 2 HRs of Intermediate and Ideal CVH for All-Cause Mortality, CHD, and Stroke

	All-Cause Mortality		CHD or Stroke	
	n/N	HR (95% CI)	n/N	HR (95% CI)
Global cardiovascular health*				
Poor	874/2,943	1.00	340/2,870	1.00
Intermediate	1,045/4,252	0.84 (0.76-0.92)	327/4,132	0.69 (0.59-0.81)
Ideal	68/378	0.71 (0.55-0.90)	13/369	0.33 (0.19-0.57)
p value for trend		<0.0001		<0.0001

Gaye et al. 3C Study. JACC 2017

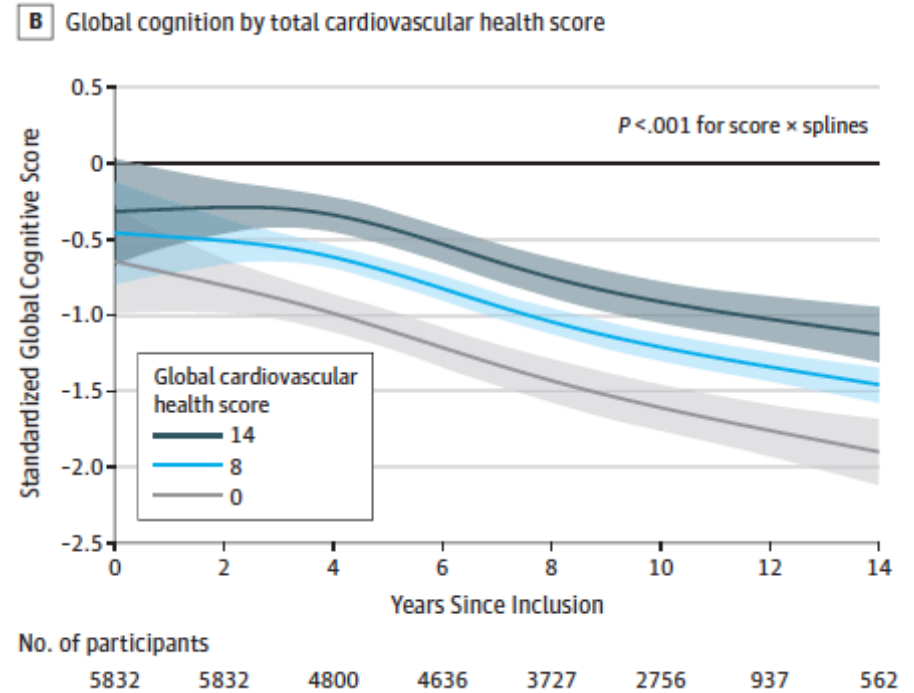
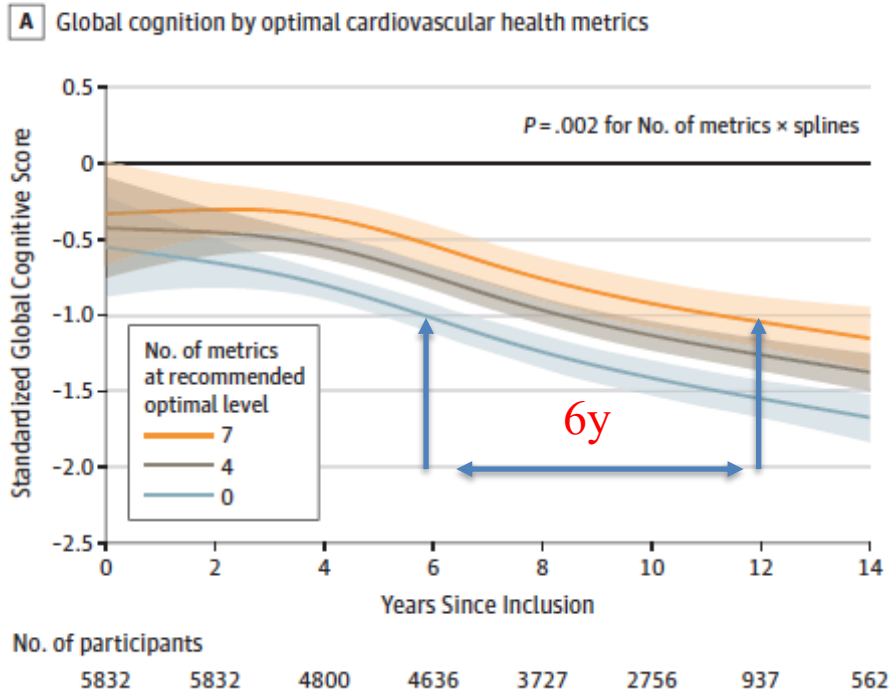
HIGHLIGHTS OF THE YEAR

Editor-in-Chief's Top Picks From 2017

Valentin Fuster



Figure 2. Mean Trajectories of Change in Global Cognition and Memory Predicted by a Multivariable Linear Mixed Model for a Specific Profile of Covariates, by Increasing Number of Recommended Optimal Cardiovascular Health Metrics and by Higher Total Cardiovascular Health Score



Samieri et al. 3C study. JAMA 2018

Cardiovascular Health (CVH) Change and Cancer Risk

Life's Simple 7



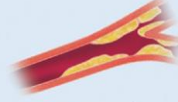
Stop smoking



Eat better



Lose weight



Control cholesterol



Get active



Reduce blood sugar



Manage blood pressure

Change in CVH score between 1989/1990 and 1996/1997

N=9,558

- 8% improved
- 76% no change
- 16% worsened

Cancer onset up to 2015
Median follow-up 18 years

Change in CVH Score

n/N

Cancer HR (95% CI)

Low→Low (ref)

175/1,010

1.00 (Ref.)

Low→Moderate/High

51/372

0.77 (0.56-1.05)

Moderate→Low

209/1,219

0.99 (0.81-1.21)

Moderate→Moderate

784/6,061

0.75 (0.64-0.88)

Moderate→High

43/398

0.62 (0.45-0.87)

High→Moderate/Low

35/310

0.64 (0.44-0.92)

High→High

15/188

0.45 (0.27-0.77)

Change in CVH score per 1 unit

1,312/9,558

0.95 (0.92-0.99)



Change in CVH score between 1990 and 1997 is related to a lower cancer risk



Association between changes in cardiovascular health and the risk of multimorbidity: community-based cohort studies in the UK and Finland

Christof Prugger,^{a,*} Marie-Cécile Perier,^b Séverine Sabia,^{c,d} Aurore Fayosse,^c Thomas van Sloten,^e Xavier Jouven,^b Jaana Pentti,^{f,g,h,i} Mika Kivimäki,^{j,k} and Jean-Philippe Empena^{b,**}

	Whitehall II study				Finnish Public Sector study			
	n MM/N	IR per 1000 PY	HR	95% CI	n MM/N	IR per 1000 PY	HR	95% CI
No. of ideal LS7 metrics								
0-1	130/244	21.9	Ref		102/439	20.2	Ref	
2	522/1350	14.6	0.60	0.50-0.73	387/2030	15.2	0.79	0.63-0.98
3	953/2954	11.5	0.48	0.40-0.58	1284/8665	11.3	0.66	0.54-0.81
4	745/2961	8.7	0.39	0.32-0.47	2022/19,733	7.7	0.50	0.41-0.61
5	325/1737	6.3	0.30	0.25-0.37	1830/26,203	5.2	0.38	0.31-0.46
6-7 ^a	76/469	5.4	0.30	0.22-0.40	850/18,307	3.5	0.28	0.23-0.35
Per one ideal LS7 metric	2751/9715		0.79	0.76-0.82	6475/75,377		0.77	0.75-0.79

CI, confidence interval; HR, hazard ratio; IR, incidence rate; LS7, Life's Simple 7; MM, multimorbidity; OR, Odds ratio; PY, person-years. Baseline examinations took place between 1985 and 1988 in the Whitehall II study and in 2000-2002, 2004-2005, and 2008-2009 in the Finnish Public Sector study (open cohort). Hazard ratios and 95% confidence intervals from Cox's proportional hazards models with age as time scale and birth cohort strata, adjusted for sex, education, occupation, and marital status in Finnish Public Sector study and additionally for ethnicity in Whitehall II study. ^aMaximum number of 6 ideal LS7 metrics in Finnish Public Sector study due to unavailable data on diet.

Table 2: Associations of ideal LS7 metrics at baseline with multimorbidity status during follow-up in the Whitehall II study and Finnish Public Sector study populations.

MM: 2+ comorbidities out of possibly 13



Ideal Cardiovascular Health, Mortality, and Vascular Events in Elderly Subjects

The Three-City Study

Bamba Gaye, PhD,^a Marianne Canonico, PhD,^b Marie-Cécile Perier, MSc,^a Cecilia Samieri, PhD,^c Claudine Berr, MD, PhD,^d Jean-François Dartigues, MD, PhD,^c Christophe Tzourio, MD, PhD,^c Alexis Elbaz, MD, PhD,^b Jean-Philippe Empana, MD, PhD^a



JAMA | Original Investigation

Association of Change in Cardiovascular Risk Factors With Incident Cardiovascular Events

Thomas T. van Sloten, MD, PhD; Muriel Tafflet, MSc; Marie-Cécile Périer, MSc; Aline Dugravot, PhD; Rachel E. D. Climie, PhD; Archana Singh-Manoux, PhD; Jean-Philippe Empana, MD, PhD

Research

JAMA | Original Investigation

Association of Cardiovascular Health Level in Older Age With Cognitive Decline and Incident Dementia

Cécilia Samieri, PhD; Marie-Cécile Perier, MSc; Bamba Gaye, PhD; Cécile Proust-Lima, PhD; Catherine Helmer, MD, PhD; Jean-François Dartigues, MD, PhD; Claudine Berr, MD, PhD; Christophe Tzourio, MD, PhD; Jean-Philippe Empana, MD, PhD

Research

JAMA Psychiatry | Original Investigation

Association of Cardiovascular Health With Risk of Clinically Relevant Depressive Symptoms

Thomas T. van Sloten, MD; Eugénie Valentin, MSc; Rachel E. Climie, PhD; Xavier Jouven, MD; Cedric Lemogne, MD; Marcel Goldberg, MD; Marie Zins, MD; Jean-Philippe Empana, MD



Change in Cardiovascular Health and Incident Type 2 Diabetes and Impaired Fasting Glucose: The Whitehall II Study

Rachel E. Climie,^{1,2,3} Thomas T. van Sloten,^{1,4} Marie-Cécile Périer,¹ Muriel Tafflet,¹ Aurore Fayosse,⁵ Aline Dugravot,⁵ Archana Singh-Manoux,^{5,6} and Jean-Philippe Empana¹

Diabetes Care 2019;42:1981–1987 | <https://doi.org/10.2337/dc190000>

Association between changes in cardiovascular health and the risk of multimorbidity: community-based cohort studies in the UK and Finland

Christof Prugger,^{a,*} Marie-Cécile Perier,^b Séverine Sabia,^{c,d} Aurore Fayosse,^c Thomas van Sloten,^e Xavier Jouven,^b Jaana Pentti,^{f,g,h,i} Mika Kivimäki,^{j,k} and Jean-Philippe Empana^{b,**}

Association of Midlife Cardiovascular Health and Subsequent Change in Cardiovascular Health With Incident Cancer

Thomas Van Sloten, MD, PhD,^{a,b} Eugénie Valentin, MSc,^a Rachel E. Climie, PhD,^{a,c} Omar Deraz, DMD, MPH,^a Elisabete Weiderpass, MD, PhD,^d Xavier Jouven, MD, PhD,^a Marcel Goldberg, MD, PhD,^e Marie Zins, MD, PhD,^e Jean-Philippe Empana, MD, PhD^a

The Lancet Regional Health - Europe 2024;42: 100922

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<https://doi.org/10.1016/j.lanep.2024.100922>

→ a unified preventive approach for NCDs

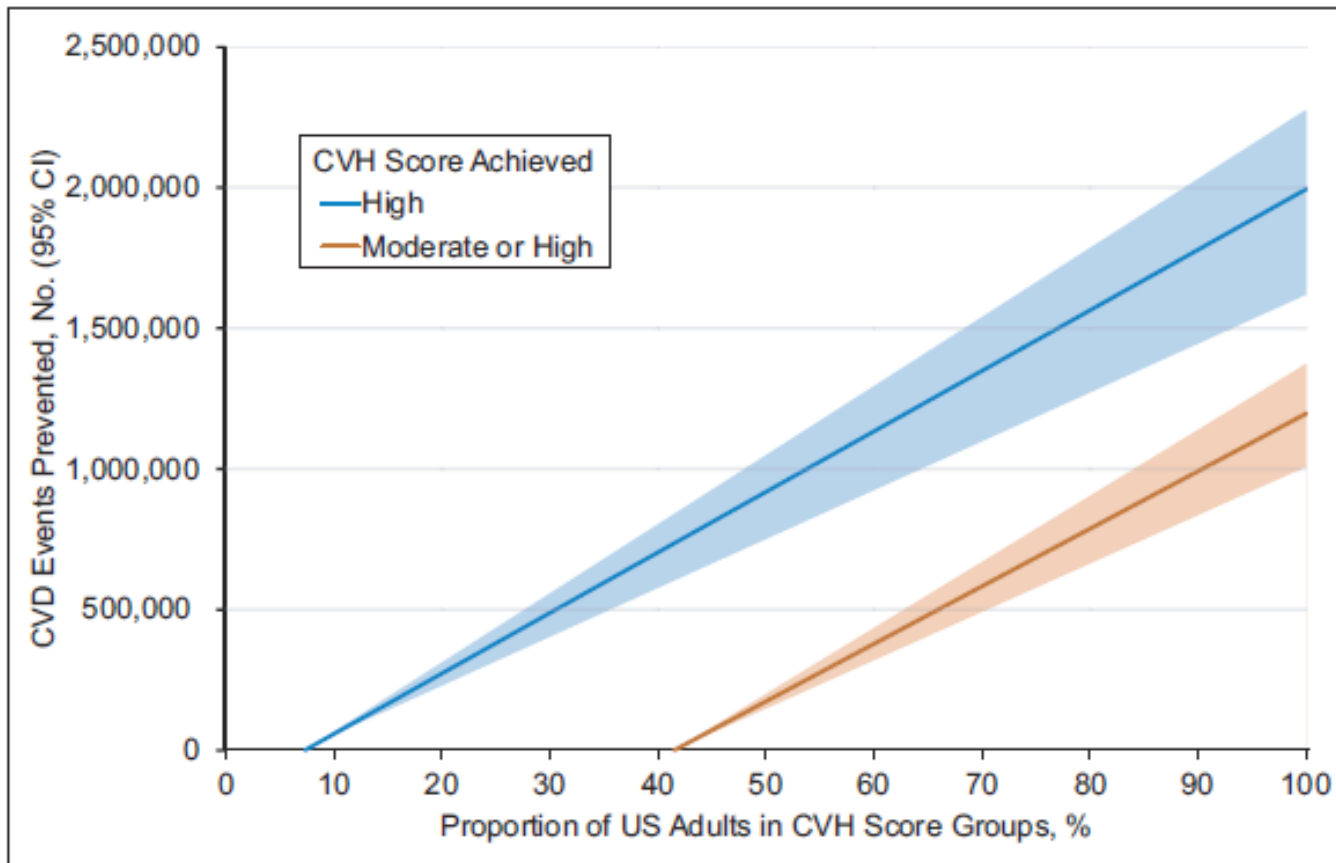
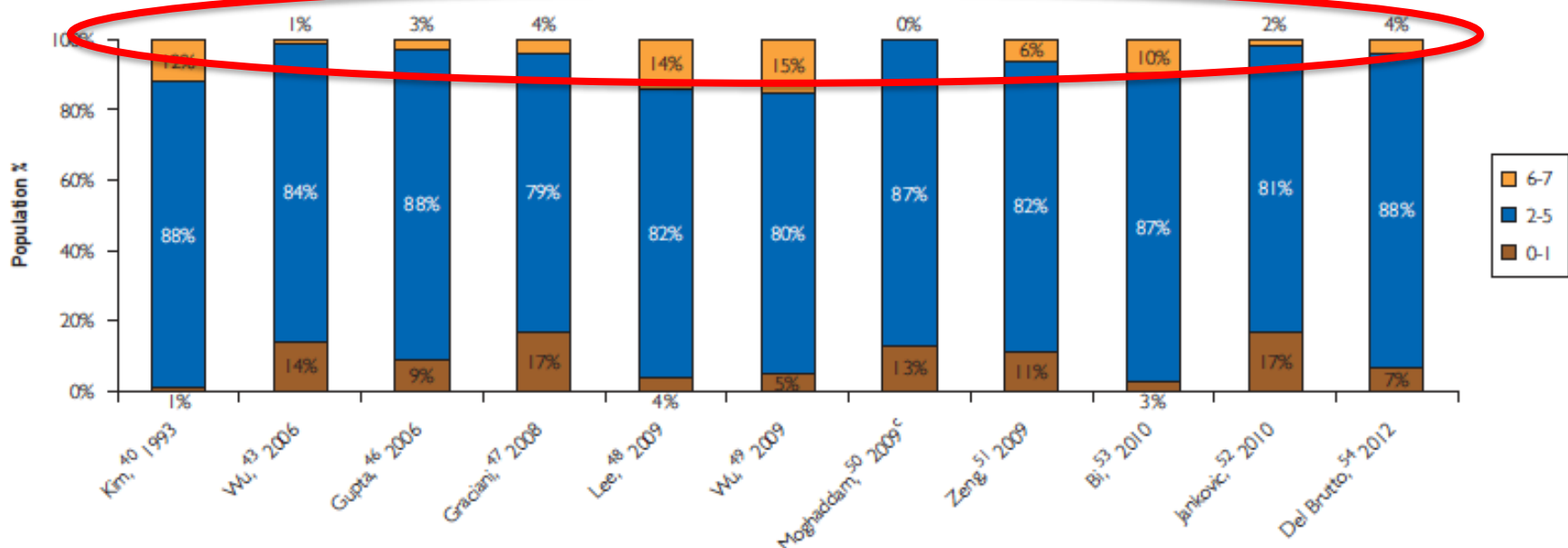
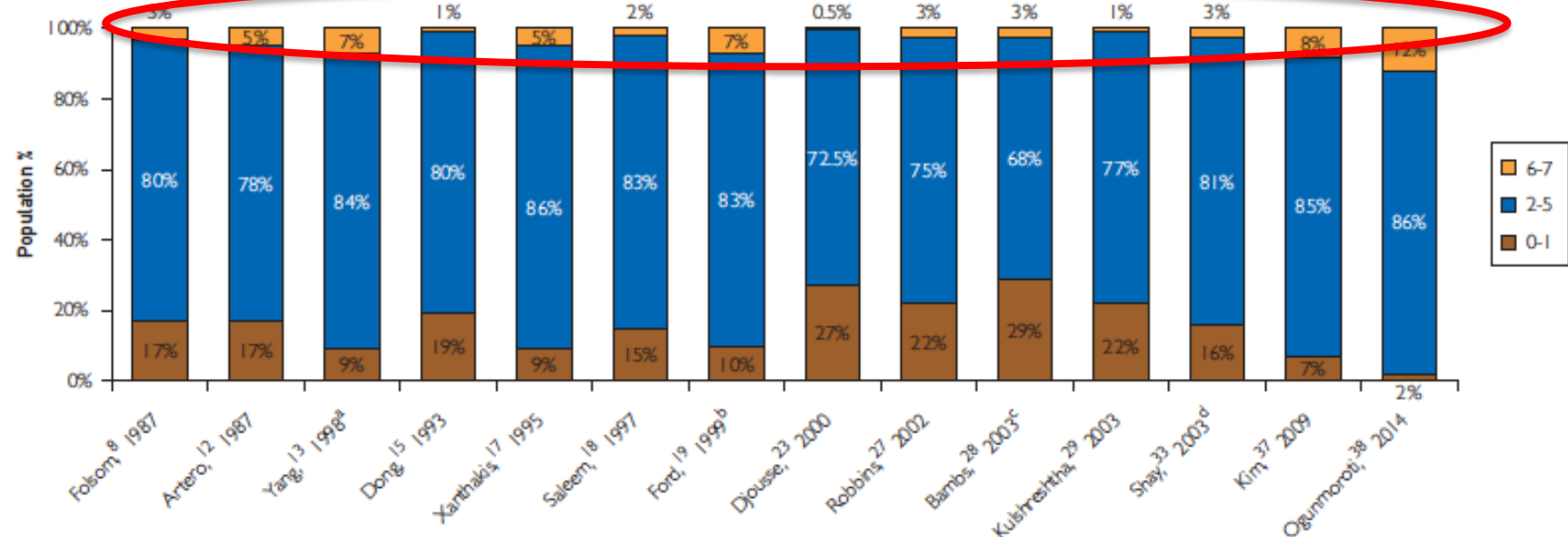


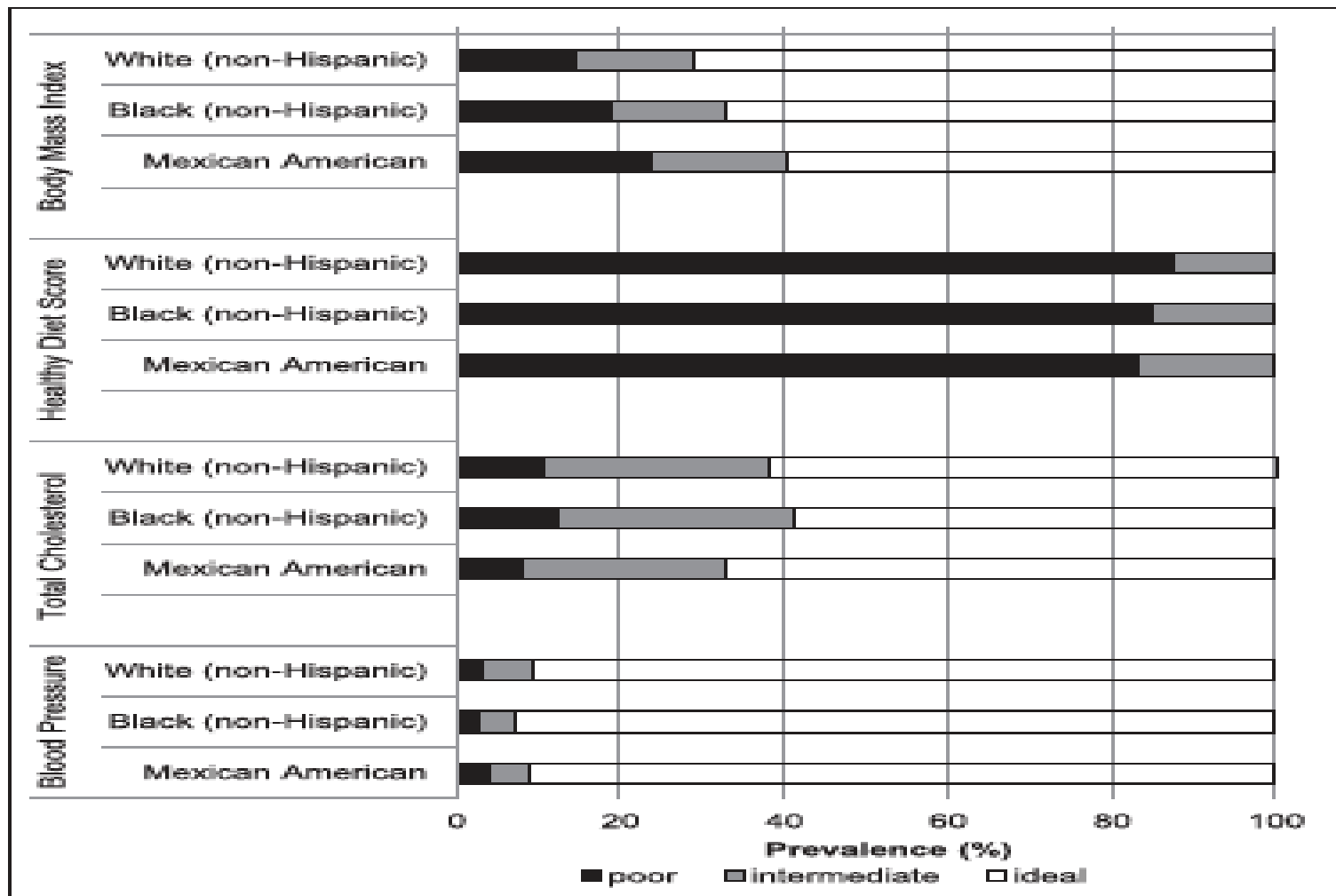
Figure 2. Estimated numbers of cardiovascular disease (CVD) events prevented annually with US population improvement of cardiovascular health (CVH) scores.

The blue line represents the estimated number of CVD events prevented annually if adults with a low or moderate CVH score achieved a high CVH score. The orange line represents the estimated number of CVD events prevented annually if (1) adults with a low CVH score achieved a moderate CVH score; and (2) all adults with a moderate or high CVH score remained in the same score groups. Tinted regions indicate 95% CIs.

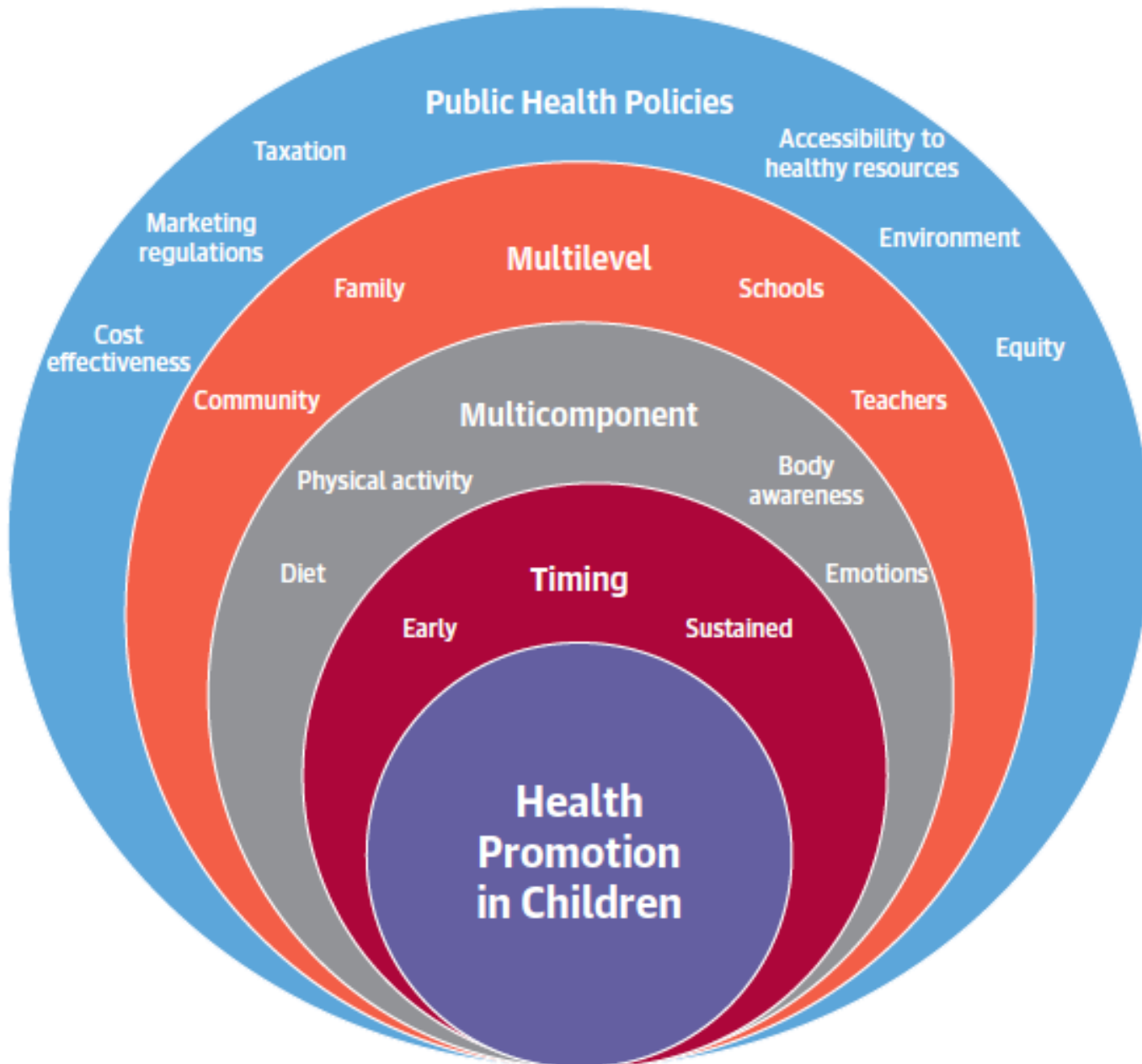


Status of Cardiovascular Health in US Children Up to 11 Years of Age

The National Health and Nutrition Examination Surveys 2003–2010



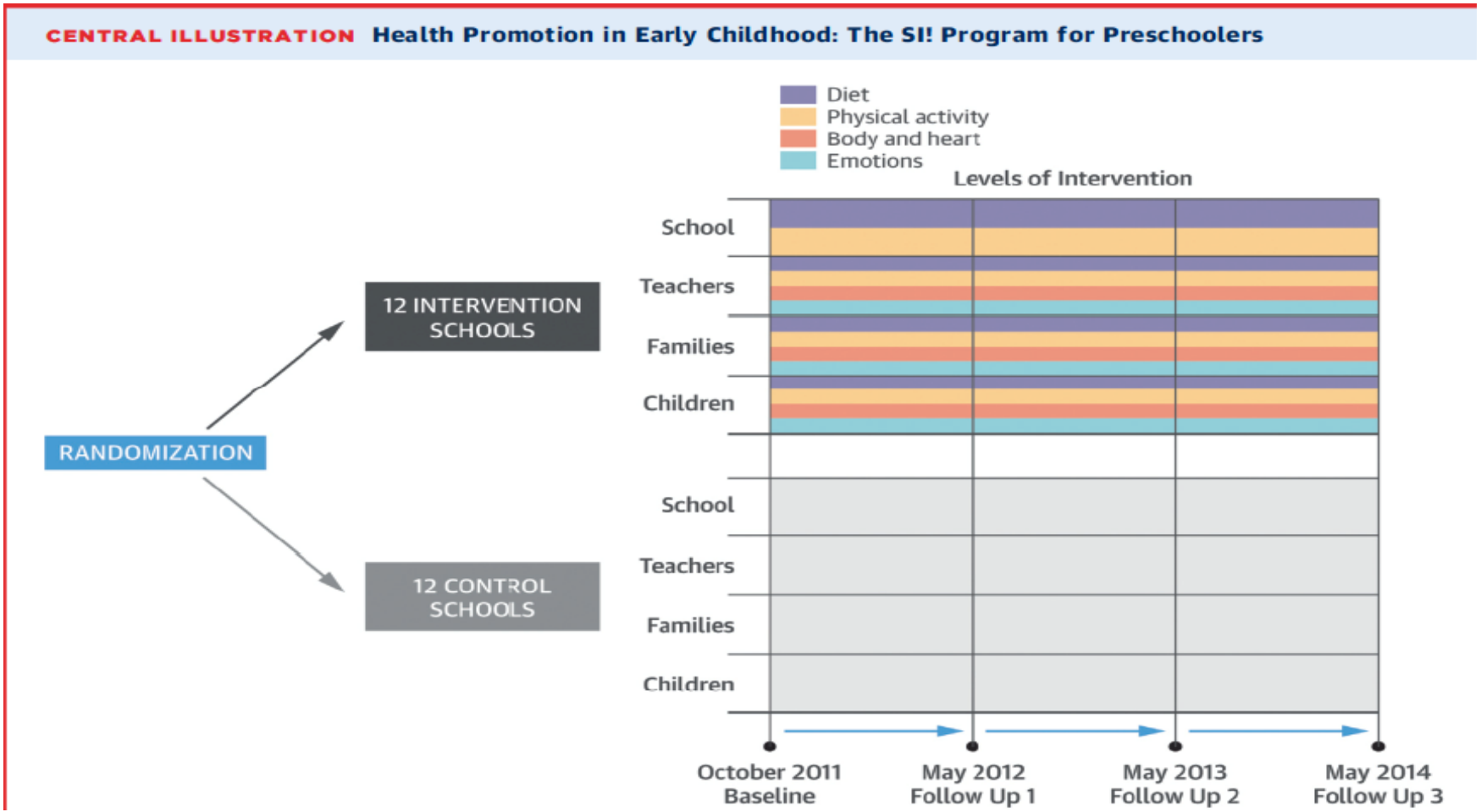
BMI: Age 2-11; Healthy Diet Score: Ages 5-11; TC: Ages 6-11.; BP: Ages 8-11.



The SI! Program for Cardiovascular Health Promotion in Early Childhood

A Cluster-Randomized Trial

José L. Peñalvo, PhD,*† Gloria Santos-Beneit, PhD,‡ Mercedes Sotos-Prieto, PhD,‡§ Patricia Bodega, MSc,‡ Belén Oliva, PhD,* Xavier Orrit, PhD,‡ Carla Rodríguez, MSc,‡ Juan Miguel Fernández-Alvira, PhD,* Juliana Redondo, PhD,* Rajesh Vedanthan, MD, MPH,|| Sameer Bansilal, MD, MS,|| Emilia Gómez, PhD,‡ Valentin Fuster, MD, PhD*||



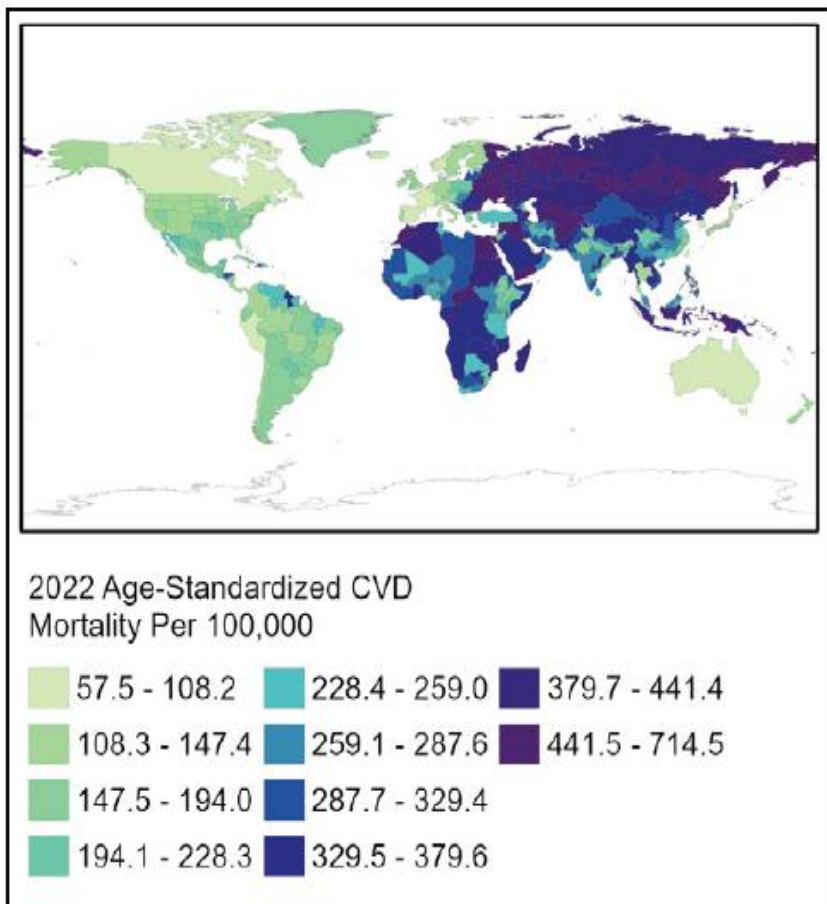


Figure 1. Global map of 2022 age-standardized cardiovascular disease mortality rate per 100,000 with quantile classification

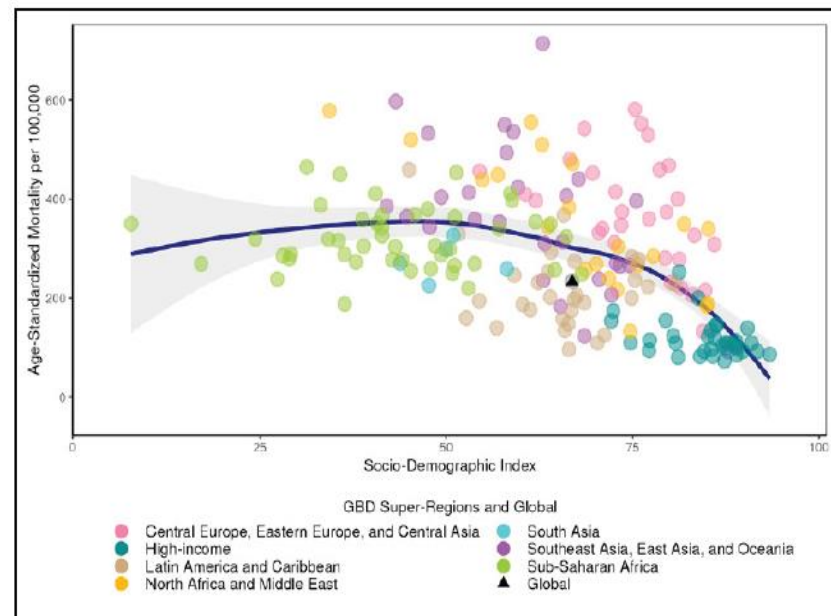


Figure 3. Age-standardized cardiovascular disease mortality rate per 100,000 by country (circle) in 2022 by socio-demographic index (0-100), a composite indicator of fertility, income, and education. Global estimate indicated by a triangle, loess line in blue with shaded 95% uncertainty interval.

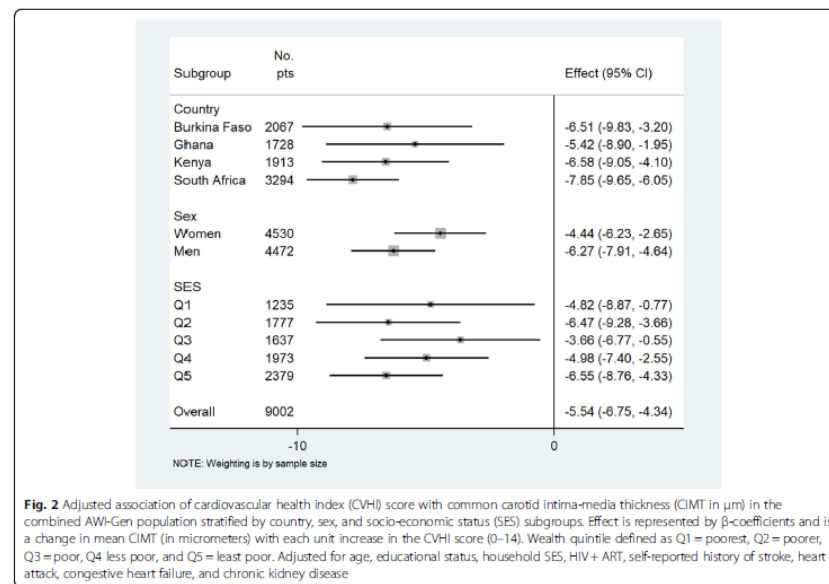
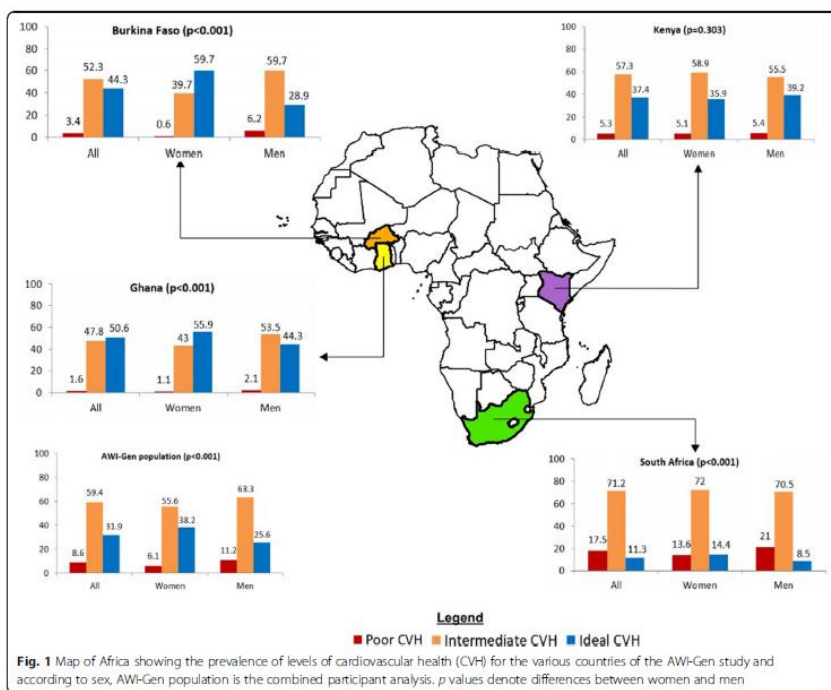
RESEARCH ARTICLE

Open Access



Poor cardiovascular health is associated with subclinical atherosclerosis in apparently healthy sub-Saharan African populations: an H3Africa AWI-Gen study

Engelbert A. Nonterah^{1,2*}, Nigel J. Crowther³, Abraham Oduro¹, Godfred Agongo¹, Lisa K. Micklesfield⁴, Palwendé R. Boua⁵, Solomon S. R. Choma⁶, Shukri F. Mohamed⁷, Herman Sorgho⁵, Stephen M. Tollman⁸, Shane A. Norris⁴, Frederick J. Raal⁹, Diederick E. Grobbee², Michelé Ramsay¹⁰, Michiel L. Bots², Kerstin Klipstein-Grobusch^{2,11} as part of the H3Africa AWI-Gen study



Primordial prevention in the African continent ?

- **Cardiovascular health (CVH) status ?**
- **Disparities in CVH ?**
- **Primordial prevention Implementation**
 - Based on already existing programmes ?
 - Targets ?
 - Culturally adapted
 - Local contexts
 - Digital revolution

THANK YOU !