

OREGON PUBLIC HEALTH DIVISION • OREGON HEALTH AUTHORITY

MAKING 1:1,000,000 GOOD ODDS: THE MILLION HEARTS CAMPAIGN

While death rates from cardiovascular disease (CVD) have been declining during the past 20 years in the U.S. and Oregon, CVD continues to be a leading cause of death and disability. Annually, CVD causes one in three (approximately 800,000) deaths in the U.S.^{1,2} and one in four (25.8%) deaths in Oregon.³ Annual direct and overall costs resulting from CVD in the U.S. are estimated at \$273 billion and \$444 billion, respectively.³ In Oregon during 2010, there were 5,954 hospitalizations due to heart attack and 8,228 due to stroke, accounting for more than \$510 million in health care expenditures.[†]

THINK YOU KNOW THIS BY HEART?

We have long known that 'traditional' risk factors like hypertension, high cholesterol, smoking and diabetes are important contributors to short-term risk for cardiovascular events. But we haven't known as much about how they relate to a person's lifetime risk of CVD events and death, or what influence they have when a person is age 45 years compared to 75 years. There's also the age-old question of how much declining rates of CVD deaths in the U.S. are attributable to changes in risk factor profiles versus advances in medical care from one generation to the next. A recent meta-analysis looked into these questions and came up with some pretty compelling answers.

GETTING TO THE HEART OF THE MATTER

The Cardiovascular Lifetime Risk Pooling Project collected and pooled data from several longitudinal epidemiologic cohort studies conducted in the United States over the past 50 years.⁴ By pooling results, the authors were able to assess lifetime risk of cardiovascular events according to age, sex, race, and other risk factors across

Table 1. Lifetime risk of death from cardiovascular disease, by risk factor category and age group (through age 80 for age 55 years; through age 90 for age 75 years)**

CVD Risk Factor Category	Lifetime Risk of CVD Death Age 55 years		Lifetime Risk of CVD Death Age 75 years	
	Men	Women	Men	Women
Optimal risk factors¶	4.7%	6.4%	20.7%	
≥1 elevated risk factor±	13.0%	7.5%	28.1%	20.5%
≥2 major risk factors†	29.6%	20.5%	39.3%	33.6%

** Cohort study participants. Source: N Engl J Med 2012;366:321-9
¶ Total cholesterol <180 mg per deciliter; blood pressure <120/80 mm Hg; nonsmoking status; and non-diabetic status
±Nonsmokers without diabetes with total cholesterol of 200 to 239 mg per deciliter or untreated systolic blood pressure of 140 to 159 mm Hg or untreated diastolic blood pressure of 90 to 99 mm Hg
†Major risk factors: current smoker; diabetes; treated hypercholesterolemia or untreated total cholesterol level ≥240 mg per deciliter; treated hypertension, untreated systolic blood pressure ≥160 mm Hg, or untreated diastolic blood pressure ≥100 mm Hg

several generations. Altogether, the study used data from 18 cohort studies involving a total of 257,384 men and women (African American and white) whose risk factors for cardiovascular disease were measured at the ages of 45, 55, 65, and 75 years. Blood pressure, cholesterol level, smoking status, and diabetes were used to assign participants to mutually exclusive risk factor categories. These risk factor categories were used to estimate participants' remaining lifetime risks of cardiovascular events at each age.

ABSENCE MAKES THE HEART GROW FONDER

The study showed marked differences in the lifetime risks of cardiovascular events according to risk-factor group. For both men and women, the presence or absence of traditional risk factors was shown to be a powerful

predictor of lifetime risk of cardiovascular disease events, and deaths (Table 1). These same trends were consistently shown for each age group.

In other words, traditional risk factors mattered whether you were age 45 years or 75 years. Similar results were seen among African Americans and whites. Likewise, these trends were seen in groups born at different times during the past century. Consider the example of cardiovascular disease death among 55-year-old men born before or after 1920 (Table 2). As you can see, the lower-risk group born before 1920 did better than the higher risk groups of both eras, and outcomes for high-risk groups were similar for those born in either era, despite any intervening improvements in medical care. Improved risk factor profiles (Table 3, *verso*) were therefore thought to be the biggest contributors to improved outcomes from one generation to the next.

The take home message? As the authors stated quite eloquently: "Efforts to lower the burden of cardiovascular disease will require prevention of the development of risk factors (primordial prevention) rather than the sole reliance on the treatment of existing risk factors (primary prevention)" (Berry, p. 326).

PUT YOUR HEART INTO IT

So if primordial prevention (yeah, we love it!) is the key, how are we doing when it comes to risk factors? In Oregon, the prevalence of key CVD risk factors are

Table 2. CVD deaths among 55-year old men by birth era and risk factor category**

CVD Risk Factor Category	Lifetime Risk of CVD Death	
	Born before 1920	Born in or after 1920
1 elevated risk factor	7.5%	
≥2 major risk factors	20.7%	16.8%

* 2009 Oregon death certificate data
†2010 Oregon Hospital Discharge Index

**Cohort study participants. Source: N Engl J Med 2012;366:321-9



If you need this material in an alternate format, call us at 971-673-1111.

IF YOU WOULD PREFER to have your *CD Summary* delivered by e-mail, zap your request to cd.summary@state.or.us. Please include your full name and mailing address (not just your e-mail address), so that we can purge you from our print mailing list, thereby saving trees, taxpayer dollars, postal worker injuries, etc.

as follows:[‡] diabetes 8.2%; smoking 17.0%; hypertension 27.2%; and hypercholesterolemia 35.3%. So there's still plenty of work to be done in preventing risk factors before they develop. And how are we doing managing risk factors that exist? We don't have specific Oregon data on that, but national CDC estimates of clinical interventions for the ABCS of appropriate Aspirin therapy, Blood pressure control, Cholesterol control, and Smoking cessation indicate there's plenty of work to be done there as well (Table 4). That's where "Million Hearts" comes in.

MILLION HEARTS CAMPAIGN

To reduce the burden of CVD risk factors, the U.S. Department of Health and Human Services, in collaboration with nonprofit and private organizations, is launching the "Million Hearts" campaign, which aims to prevent 1 million heart attacks and strokes over the next 5 years.

Table 3. CVD risk factors among 55-year old men by birth era**

CVD Risk Factor	Born before 1920	Born in or after 1920
Diabetes prevalence	4.2%	8.8%
Smoking prevalence	52.3%	29.5%
Mean total cholesterol	216 mg/dL	210 mg/dL
Mean systolic blood pressure	137 mm Hg	124 mm Hg

**Cohort study participants. Source: N Engl J Med 2012;366:321-9

‡ 2009 BRFSS data

Table 4. Estimated intervention level for ABCS (aspirin therapy, blood pressure control, cholesterol management, and smoking cessation) measures to prevent cardiovascular disease, United States, 2011¹

Preventive Measure	Definition	Estimated Intervention Level
Aspirin therapy	% of outpatient visits by patients aged ≥18 yrs with ischemic vascular disease who are prescribed aspirin	47%
Blood pressure control	% of adults aged ≥18 yrs with hypertension whose blood pressure is adequately controlled	46%
Cholesterol management	% of adults aged ≥20 yrs with high cholesterol who have adequately controlled LDL-C	33%
Smoking cessation	% of outpatient visits in which tobacco users aged ≥18 yrs are provided with tobacco cessation counseling or medications	23%

Million Hearts is focused on two goals:

- Empowering Americans to make healthy choices, such as preventing tobacco use and reducing sodium and trans-fat consumption. This can reduce the number of people who need medical treatment such as blood pressure or cholesterol medications to prevent heart attacks and strokes (primordial prevention!)
- Improving care for people who do need treatment by encouraging a targeted focus on the "ABCS" – Aspirin for people at risk, Blood pressure control, Cholesterol management and Smoking cessation.

Million Hearts is expected to align policies, programs, and resources to improve access to care; focus attention on improved care through use of the ABCS and health information technology; increase public awareness about risk factors; improve medication adherence; promote healthier behaviors and environments; and enhance surveillance and monitoring.

FOR MORE INFORMATION

- The Oregon Heart Disease and Stroke Prevention Program: <http://public.health.oregon.gov/diseasesconditions/chronicdisease/heart-diseasestroke/pages/index.aspx>

RESOURCES

- Million Hearts: <http://millionhearts.hhs.gov/index.html>

REFERENCES

- 1 Centers for Disease Control and Prevention. Million Hearts: Strategies to reduce the prevalence of leading cardiovascular disease risk factors—United States, 2011. *MMWR* 2010;59:1261-65.
- 2 Roger VL, Go AS, Lloyd-Jones DM, et al. Heart disease and stroke statistics—2011 update: A report from the American Heart Association. *Circulation* 2011;123:e18—209.
- 3 Heidenreich PA, Trogon JG, Khavjou OA, et al. Forecasting the future of cardiovascular disease in the United States: a policy statement from the American Heart Association. *Circulation* 2011;123:933—44.
- 4 Berry JD, Dyer A, Cai X, Garside DB et al. Lifetime risks of cardiovascular disease. *New Engl J Med* 2012;366:321-9.