

# Toward the Elimination of Heart Attacks and Strokes

Anthony DeMaria M.D.

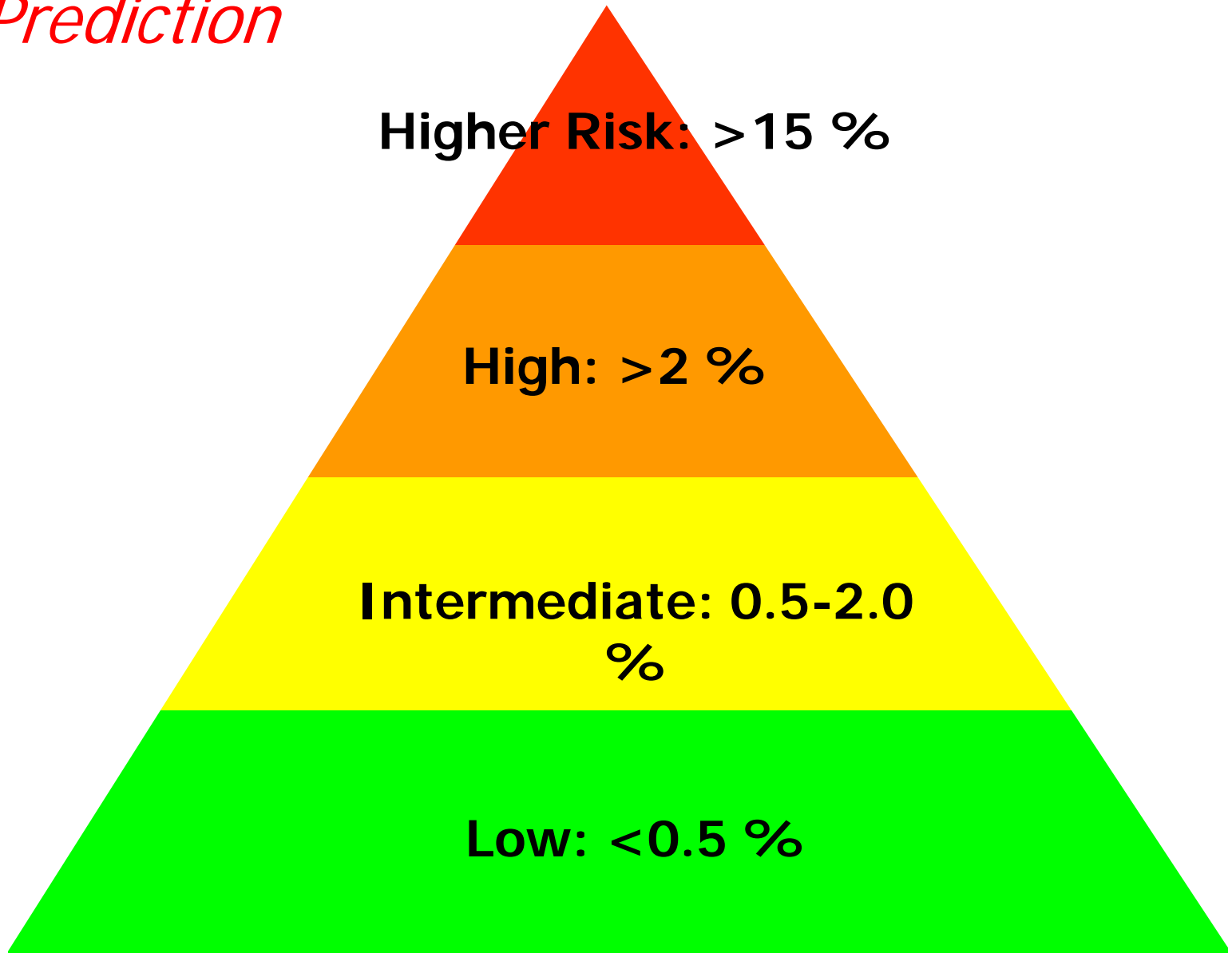
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# *Risk Prediction*



Braunwald E. What do clinicians expect from imagers?  
Detection of Vulnerable Plaques; Eds. Narula & Willerson, JACC  
Suppl 2004

# Coronary Disease Risk Markers

Modifiable		Not
<ul style="list-style-type: none"><li>● Elevated LDL-C</li><li>● Low HDL-C</li><li>● Elevated blood pressure</li><li>● Elevated triglycerides</li></ul>	<ul style="list-style-type: none"><li>● Thrombogenic factors<ul style="list-style-type: none"><li>– PAI-1</li><li>– Fibrinogen</li><li>– C-reactive protein</li></ul></li><li>● Diet</li><li>● Tobacco smoking</li><li>● Excess alcohol consumption</li><li>● Physical inactivity</li><li>● Obesity</li></ul>	<ul style="list-style-type: none"><li>● Male gender</li><li>● Family history of CHD</li><li>● Age</li><li>● Personal history of CHD</li></ul>

***Atherosclerosis itself is the strongest risk factor***

# A strategy to reduce cardiovascular disease by more than 80%

N J Wald, M R Law **BMJ** VOLUME 326 28 JUNE 2003

**Table 1** Effects of the Polypill on the risks of ischaemic heart disease (IHD) and stroke after two years of treatment at age 55-64

Risk factor	Agent	Reduction in risk factor	% reduction in risk (95% CI)*		Source of evidence
			IHD event	Stroke	
LDL cholesterol	Statin†	1.8 mmol/l (70 mg/dl) reduction in LDL cholesterol	61 (51 to 71)	17 (9 to 25)	Law et al <sup>1</sup>
Blood pressure	Three classes of drug at half standard dose	11 mm Hg diastolic	46 (39 to 53)	63 (55 to 70)	Law et al <sup>16</sup>
Serum homocysteine	Folic acid (0.8 mg/day)	3 µmol/l	16 (11 to 20)	24 (15 to 33)	Wald et al <sup>9</sup>
Platelet function	Aspirin (75 mg/day)	Not quantified	32 (23 to 40)	16 (7 to 25)	Table A on bmj.com
Combined effect	All		88 (84 to 91)	80 (71 to 87)	

LDL=low density lipoprotein.

\*95% confidence intervals include imprecision of the estimates of both the agent reducing the risk factor and the risk factor reduction decreasing risk.

†Atorvastatin 10 mg/day, or simvastatin or lovastatin 40 mg/day taken in the evening or 80 mg/day taken in the morning.

## The Polypill in the Prevention of Cardiovascular Diseases Key Concepts, Current Status, Challenges, and Future Directions

Eva Lonn, MD, MSc; Jackie Bosch, MSc; Koon K. Teo, MD, PhD; Prem Pais, MD;  
Denis Xavier, MD; Salim Yusuf, MBBS, DPhil

### Potential cumulative impact of four simple secondary-prevention treatments

	Relative-risk reduction	2-year event rate
None	..	8%
Aspirin	25%	6%
$\beta$ -blockers	25%	4.5%
Lipid lowering (by 1.5 mmol)	30%	3.0%
ACE inhibitors	25%	2.3%

Cumulative relative risk reduction if all four drugs are used is about 75%

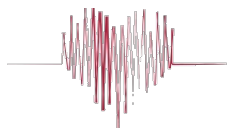
Events=cardiovascular death, myocardial infarction, or strokes. To calculate cumulative risk-reduction, multiplicative scale was used—eg, two interventions each reducing the risk of event by 30% would be expected to have about 50% relative risk-reduction [ $1-(0.70 \times 0.70)$ ]. No interactions in treatment effects are observed in trials suggesting that proportionate risk-reduction of specific drug in presence or absence of other effective interventions would be expected to be similar. Smoking cessation lowers risk of recurrent myocardial infarction by about one-half after about 2 years. So, in smoker with vascular disease, quitting smoking and use of four simple preventive strategies could theoretically have large potential benefit (say around 80% relative-risk reduction).

**Table 1. Projected Reductions in IHD and Stroke With Various Polypills**

Risk Factor	Agent	Reduction in Risk Factors	Reduction in Risk, %*	
			IHD Event	Stroke
LDL cholesterol				
Wald and Law	Simvastatin 40 mg/d	1.80 mmol/L (70 mg/dL)	61	17
TIPS (low-dose Polycap)	Simvastatin 20 mg/d	0.80 mmol/L (31 mg/dL)	27	8
Full-dose Polycap	Simvastatin 40 mg/d	1.1 mmol/L (43 mg/dL)	35	10
Diastolic BP				
Wald and Law	3 classes of drugs at half standard dose	11 mm Hg	46	63
TIPS (low-dose Polycap)	3 classes of drugs at half standard dose	7 mm Hg	24	33
Full-dose Polycap	3 classes of drugs at full doses	10 mm Hg	40	50
Serum homocysteine				
Wald and Law	Folic acid 0.8 mg/d	3 $\mu$ mol/L	16	24
TIPS (low-dose Polycap)	None		...	...
Full-dose Polycap	None		...	...
Platelet function				
Wald and Law	Aspirin 75 mg/d	Not quantified	32	16
TIPS (low-dose Polycap)	Aspirin 100 mg/d	Similar for Polycap and aspirin alone	32	16
Full-dose Polycap	Aspirin 100 mg/d	Similar for Polycap and aspirin alone	32	16
Combined effects				
Wald and Law	All components		88	80
TIPS (low-dose Polycap)	All components		62	48
Full-dose Polycap	All components		70–80	65–75

## Two Thrusts

- Patient Activation – Be There
- Provider Mobilization and utilization of “Best Practices”



**be there.**  
*san diego*

The campaign to make San Diego a heart attack and stroke-free zone.



IT'S HER TIME TO SHINE.  
BE THERE.

Heart Attack and Stroke are preventable. See your doctor today to find out your risk for heart disease and stroke and to get on the right treatments to reduce your risk for premature death.

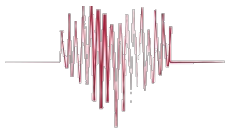
**Take charge of your health today and visit:**  
[www.betheresandiego.org](http://www.betheresandiego.org)



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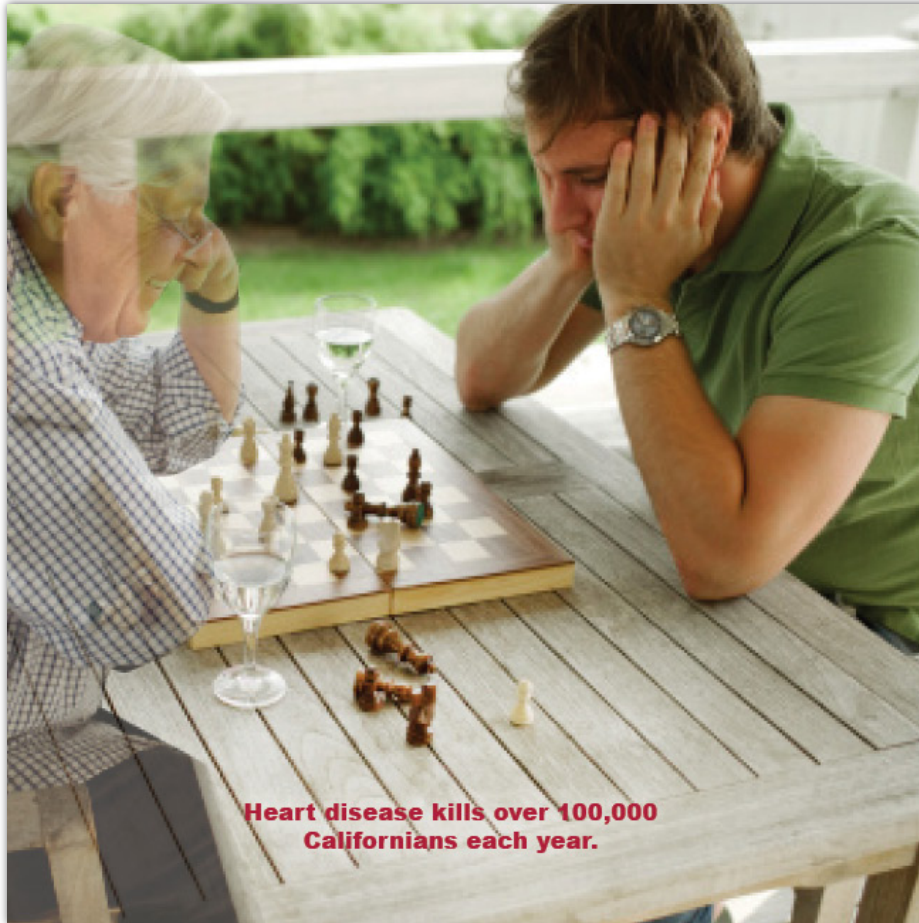
The campaign to make San Diego a heart attack and stroke-free zone.





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**Heart disease kills over 100,000 Californians each year.**

DAD, YOU NEVER LET ME WIN.  
NOW, I WOULD DO ANYTHING TO  
HAVE YOU BEAT ME ONE MORE TIME.

Heart Attack and Stroke are preventable. See your doctor today to find out your risk for heart disease and stroke and to get on the right treatments to reduce your risk for premature death.

**Take charge of your health today and visit:**  
[www.betheresandiego.org](http://www.betheresandiego.org)

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# University of Best Practices: Participants



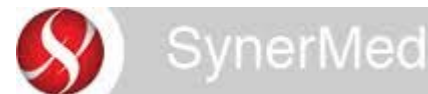
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# A Heart Attack/Stroke Free Zone

- A clear and grand vision
- Community ownership
- Patient activation
- Physician mobilization