

# Worldwide Differences in Outcomes Among Atherothrombotic Patients: *the REduction of Atherothrombosis for Continued Health (REACH) Registry Results*

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E. Magnus Ohman\*, P. Gabriel Steg, Deepak L. Bhatt,  
Peter W.F. Wilson, Joachim Röther,  
C.S. Liau, Alan T. Hirsch, J-L Mas, S. Goto,  
on Behalf of the REACH Registry Investigators



# Worldwide Differences in Outcomes Among Atherothrombotic Patients

## Conflict of interests:

### Research grants

- Berlex, Sanofi-Aventis, Schering-Plough, Eli Lilly, Bristol-Myers Squibb, and Millennium.

### Stock ownership

- Medtronic, Savacor

### Consultant

- Response Biomedical, Northpoint Domain, Sanofi-Aventis, The Medicines Company, Liposcience and Inovise Medical



# Background

- **Large registries and population studies, such as Framingham, WHO MONICA, INTERHEART, and others have contributed greatly to our understanding of current burden and risk factors for cardiovascular disease. However, these studies have mainly focused on**
  - At risk populations only
  - Hospitalized patients only
  - One disease category such as CAD, or PVD only
  - One region of the world only
- **The REACH project is a contemporary registry exploring risk factors and burden of atherothrombotic disease in an out-patient setting, across different regions of the world, and across the spectrum of disease from high-risk patients without overt disease to those with established CAD, PVD, and/or CVD**
- **This presentation will provide updated 2-year data and focus on international differences**



# REACH Registry Methodology Published

- **Protocol manuscript**
  - Ohman et al, *American Heart Journal* 2006:151;786.e1-e10
- **Baseline characteristics manuscript**
  - Bhatt et al, *JAMA* 2006:295;180-189

*REACH Registry is supported by  
BMS and Sanofi-Aventis*

**Trial Design**

**The REduction of Atherothrombosis for Continued Health (REACH) Registry: An international, prospective, observational investigation in subjects at risk for atherothrombotic events-study design**

E. Magnus Ohman, MD,<sup>a</sup> Deepak L. Bhatt, MD,<sup>b</sup> P. Gabriel Steg, MD,<sup>c</sup> Shinya Goto, MD, DMedSci,<sup>d</sup> Alan T. Hirsch, MD,<sup>e</sup> Chiau-Suong Liao, MD, PhD,<sup>f</sup> Jean-Louis Mas, MD,<sup>g</sup> Alain-Jean Richard, MD, PhD,<sup>h</sup> Joachim Röther, MD, PhD,<sup>i</sup> and Peter W.F. Wilson, MD,<sup>j</sup> on behalf of the REACH Registry Investigators  
*Durham, NC; Cleveland, OH; Paris, France; Kanagawa, Japan; Minneapolis, MN; Taipei, Taiwan; Minden, Germany; and Charleston, SC*

ORIGINAL CONTRIBUTION

**International Prevalence, Recognition, and Treatment of Cardiovascular Risk Factors in Outpatients With Atherothrombosis**

Deepak L. Bhatt, MD  
P. Gabriel Steg, MD  
E. Magnus Ohman, MD  
Alan T. Hirsch, MD  
Yasuo Ikeda, MD  
Jean-Louis Mas, MD  
Shinya Goto, MD  
Chiau-Suong Liao, MD, PhD  
Alain J. Richard, MD, PhD  
Joachim Röther, MD  
Peter W. F. Wilson, MD  
for the REACH Registry Investigators

**Context** Atherothrombosis is the leading cause of cardiovascular morbidity and mortality around the globe. To date, no single international database has characterized the atherosclerosis risk factor profile or treatment intensity of individuals with atherothrombosis.

**Objective** To determine whether atherosclerosis risk factor prevalence and treatment would demonstrate comparable patterns in many countries around the world.

**Design, Setting, and Participants** The Reduction of Atherothrombosis for Continued Health (REACH) Registry collected data on atherosclerosis risk factors and treatment. A total of 67 888 patients, aged 45 years or older from 5473 physician practices in 44 countries had either established arterial disease (coronary artery disease [CAD], n = 40 258; cerebrovascular disease, n = 18 843; peripheral arterial disease, n = 8273) or 3 or more risk factors for atherothrombosis (n = 12 389) between 2003 and 2004.

**Main Outcome Measures** Baseline prevalence of atherosclerosis risk factors, medication use, and degree of risk factor control.

**Results** Atherothrombotic patients throughout the world had similar risk factor pro-



# REACH Registry: >68,000 patients from 5,592 sites in 44 countries

## Europe 23,916

Austria: 1,590

Belgium: 391

Bulgaria: 1000

Denmark: 427

France: 4,740

Finland: 311

Germany: 5,641

Greece: 708

Hungary: 965

Lithuania: 100

Netherlands: 332

Portugal: 221

Romania: 2,018

Russia: 999

Spain: 2,549

Switzerland: 698

Ukraine: 600

United Kingdom: 626

## Asia 5,989

China: 711

Hong Kong: 195

Indonesia: 504

Malaysia: 527

Philippines: 1,040

Singapore: 894

South Korea: 510

Taiwan: 1,082

Thailand: 526

## North America 28,335

Canada: 1,998

USA: 26,337

## Latin America 1,970

Brazil: 444

Chile: 256

Mexico: 915

Interlatina\*: 355

## Middle East 863

Israel: 390

Kingdom of Saudi

Arabia: 203

Lebanon: 120

United Arab Emirates: 150

Japan\*\*: 5,197

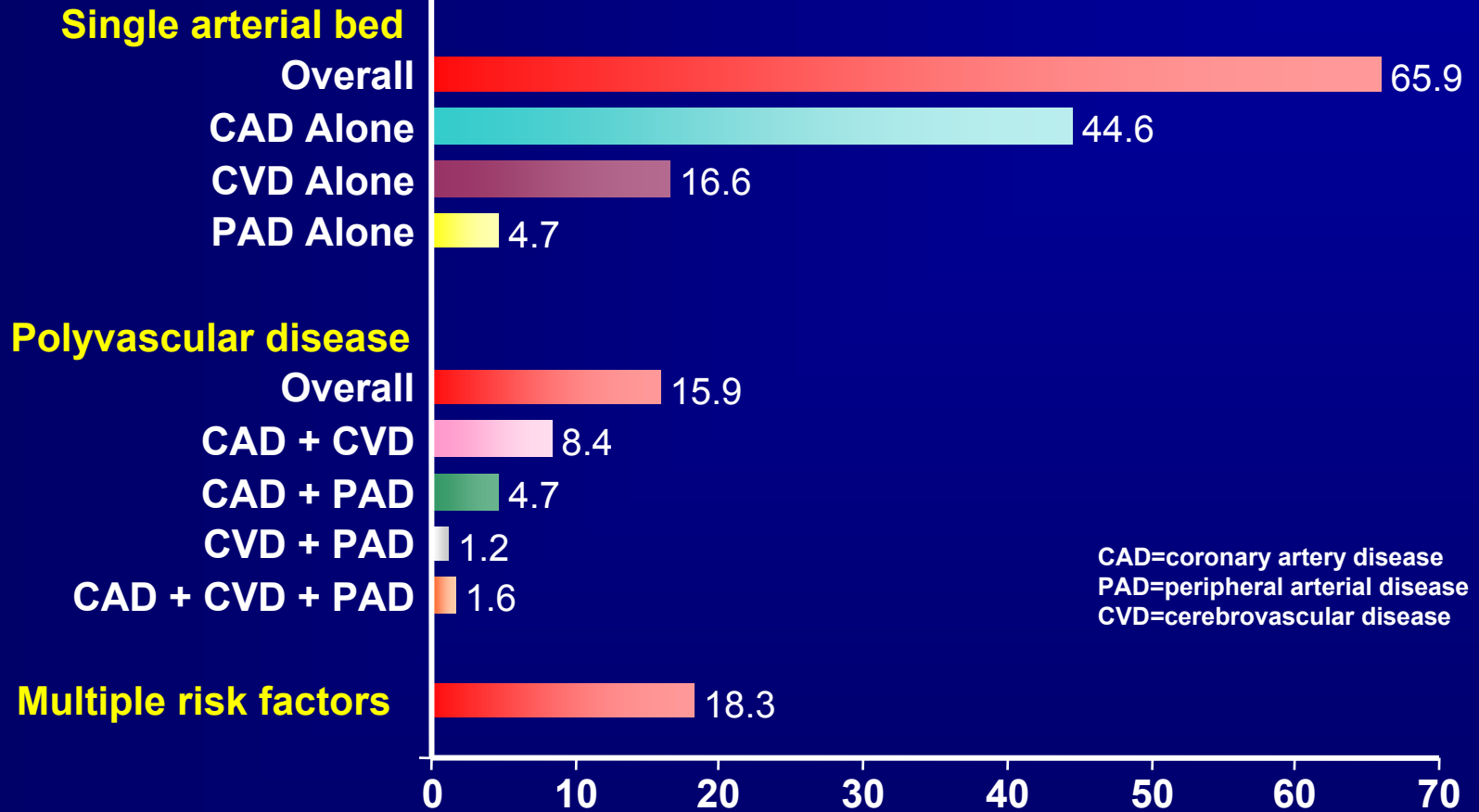
Australia 2,877

\*Panama, Costa Rica, Dominican Republic, Ecuador, Guatemala, Peru

\*\* Japan – not completed 2 year f/u

# Distribution of REACH Registry Population at Baseline

Prevalence of disease in arterial beds (% of total)



*\*Data shown may differ slightly from published abstracts owing to a subsequent database lock.*

**Patients (%)**



# Regional Baseline Risk Factor Profile

\* Data age and gender adjusted.  
† P<0.0001 unless otherwise stated.

	North America	Latin America	Western Europe	Eastern Europe	Middle East	Asia	Australia	Japan
Population	27,746	1,931	17,886	5,656	846	5,903	2,872	5,048
Mean age† (years)	69.9	67.1	68.4	63.3	66.3	65.0	72.8	69.8
Male† (%)	57.9	62.0	69.6	65.5	71.8	64.7	65.1	69.6
Diabetes† (%)*	51.0	43.3	39.7	26.6	52.4	46.6	31.6	46.6
Hypertension† (%)*	86.4	79.0	80.1	85.7	82.8	80.9	76.5	71.1
Hypercholesterolemia† (%)*	83.7	61.1	72.8	51.5	81.6	58.8	80.0	48.1
Obesity (BMI≥30)	42.3	21.6	27.7	24.1	27.9	7.3	22.6	4.2
Obesity (waist>102cm male; >88cm female) (%)*	54.5	44.9	53.3	47.7	48.9	18.6	57.8	10.2
Former smokers† (%)*	40.0	41.1	41.3	29.2	27.7	27.5	52.7	42.6
Current smokers† (%)*	13.7	6.8	14.7	14.2	11.1	8.8	7.7	16.5



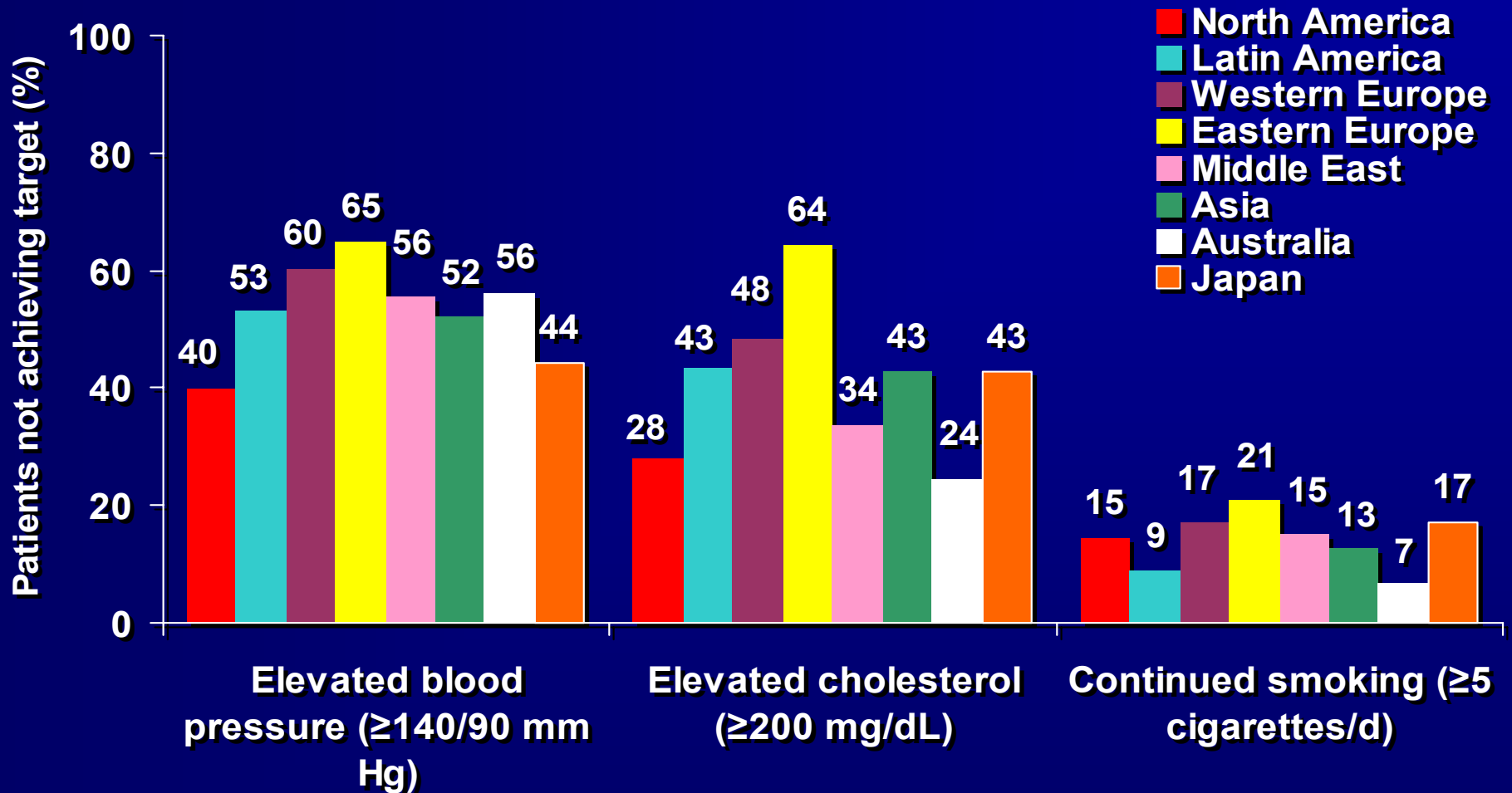
# Medical Therapy Listed at Baseline Visit

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<b>Medications</b>	<b>% (n=67 888)</b>
<b>Beta-Blockers</b>	<b>48.9%</b>
<b>ACE-Inhibitors</b>	<b>48.2%</b>
<b>ARBs</b>	<b>25.4%</b>
<b>Anti-Platelet Rx</b>	<b>78.6%</b>
<b>Aspirin</b>	<b>67.4%</b>
<b>Lipid-lowering Rx</b>	<b>75.2%</b>
<b>Statin</b>	<b>69.4%</b>

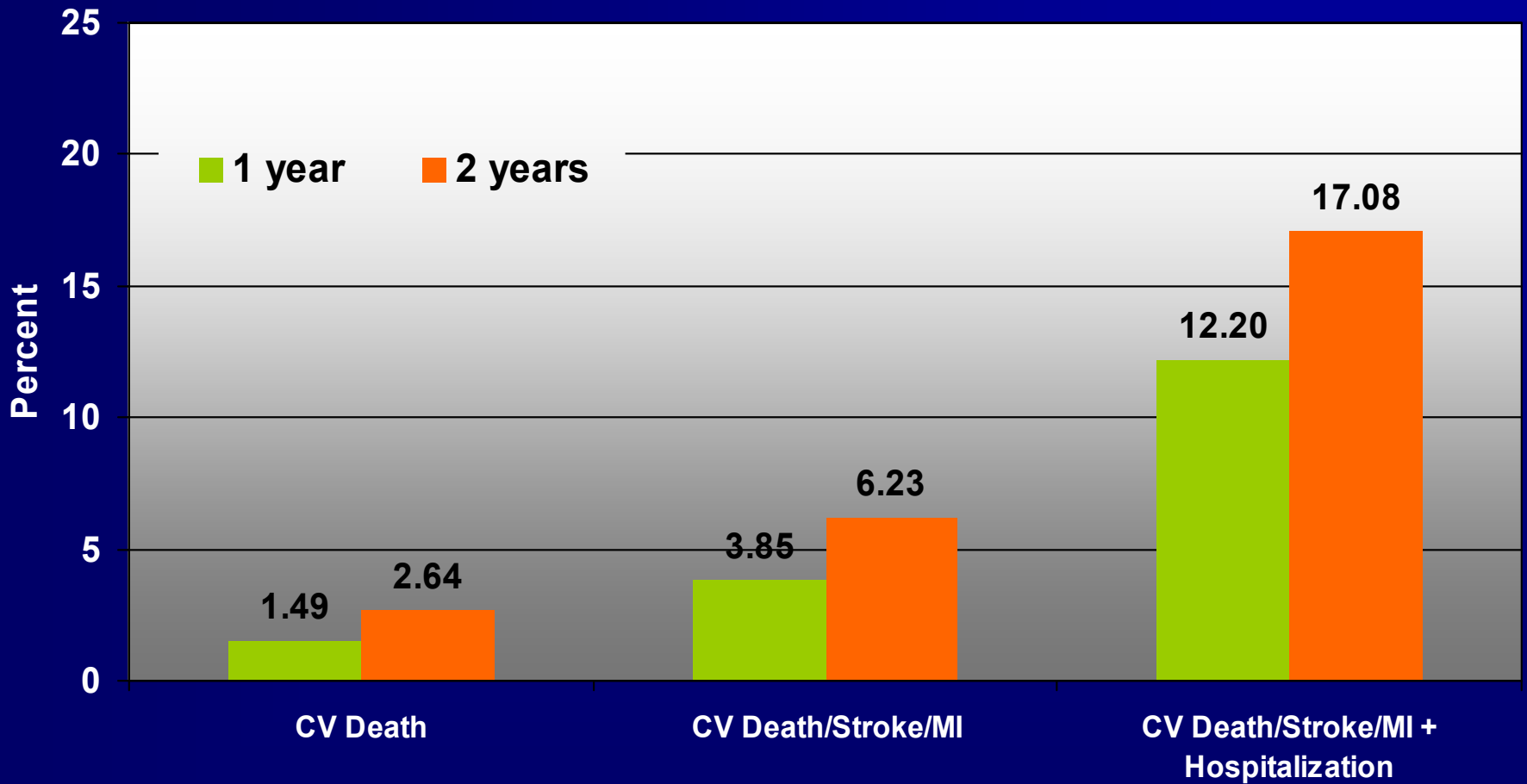


# Non-Achievement of Prevention Targets: Regional Differences



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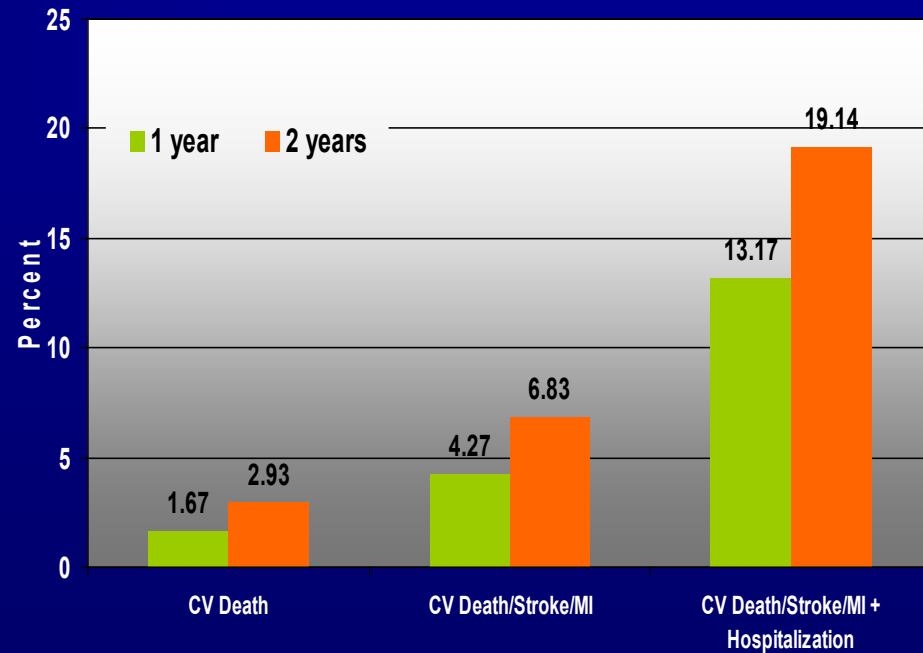
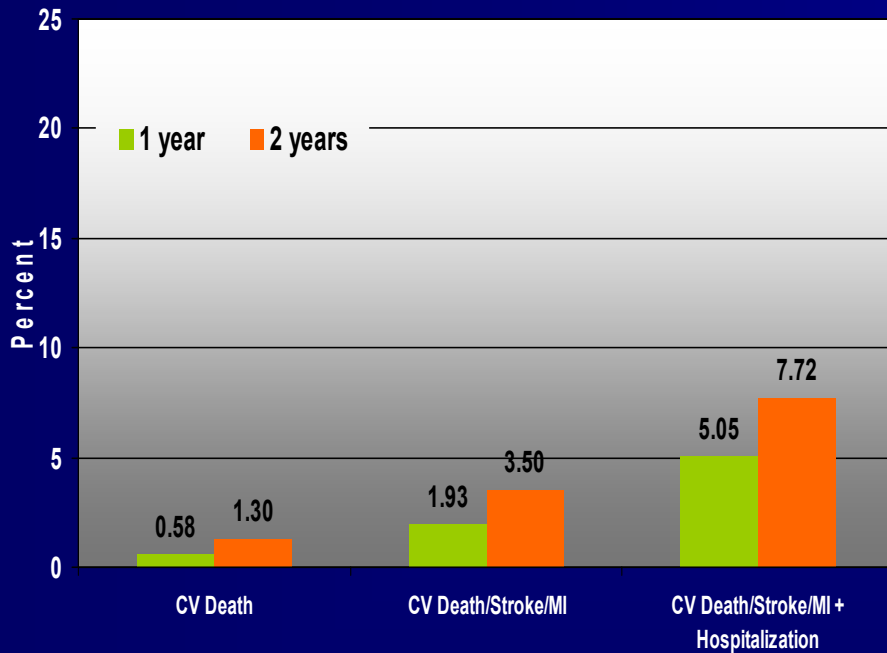
# Cumulative Events + Hospitalizations at 1 and 2 Years of Follow-up: Total Population



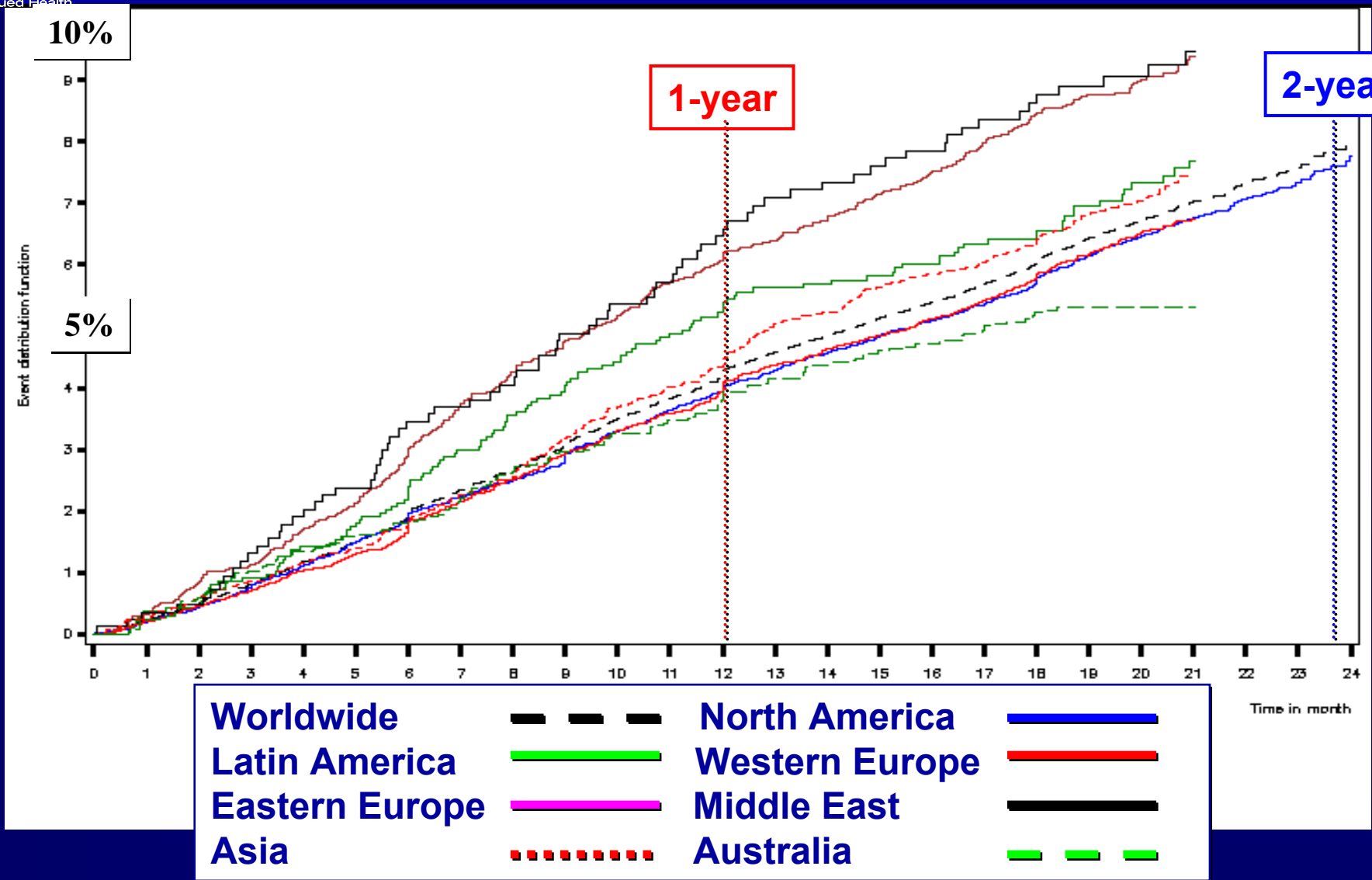
# Cumulative CV Mortality, Non-Fatal MI/Stroke + Hospitalization at 1 and 2 Years of Follow-up

## Multiple Risk Factors

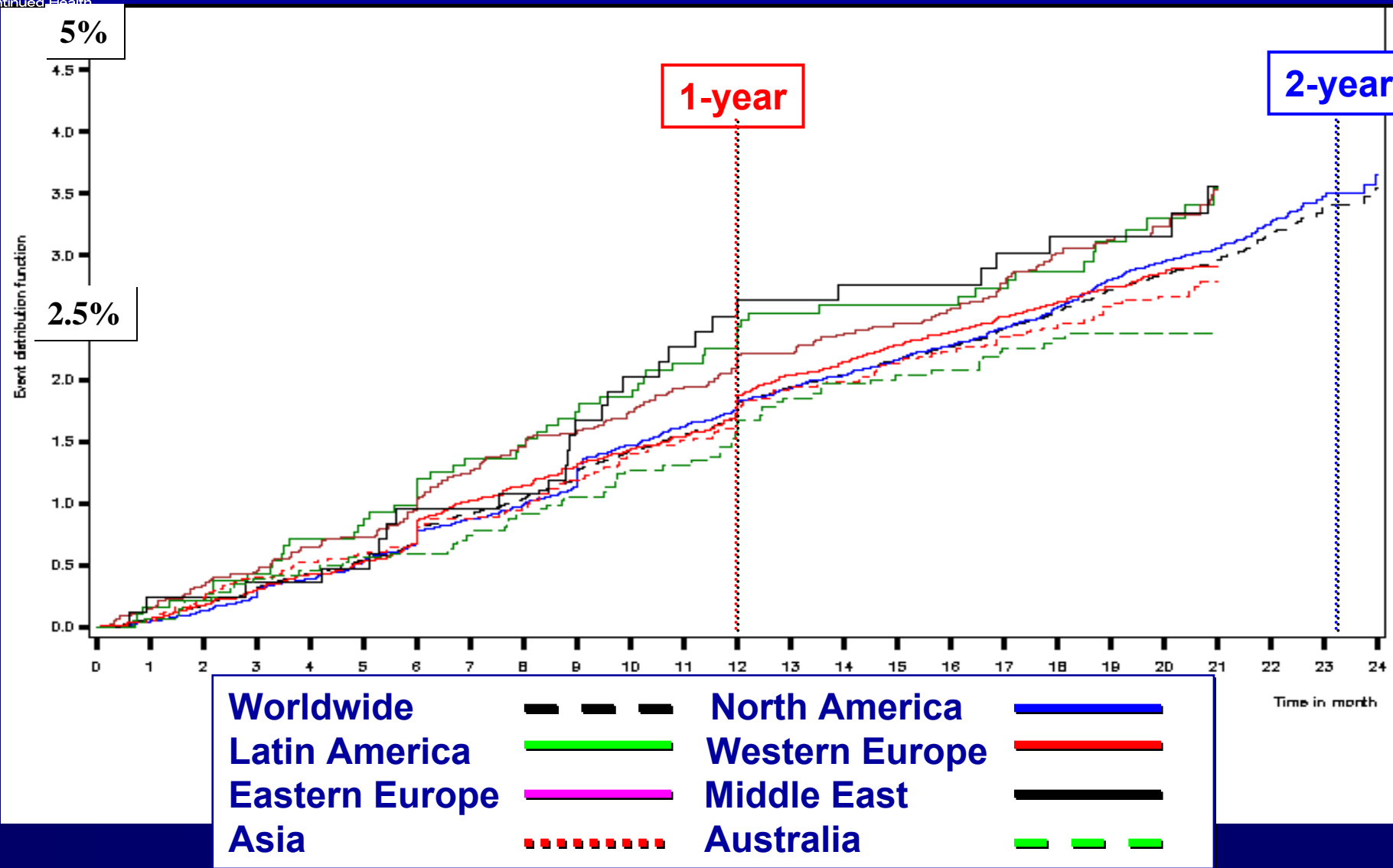
## Symptomatic Population



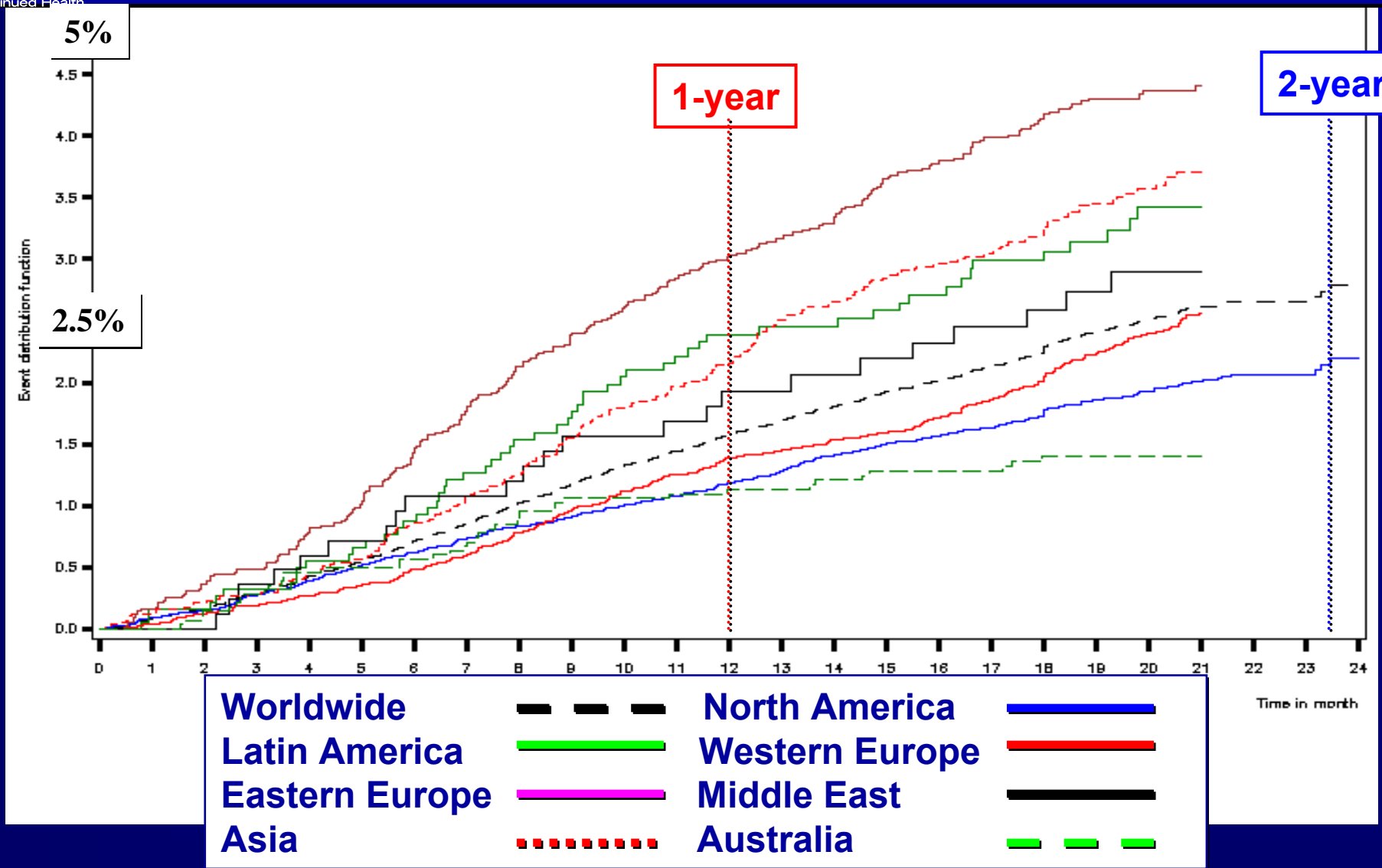
# 2-Year CV Death/MI/Stroke Curves\*



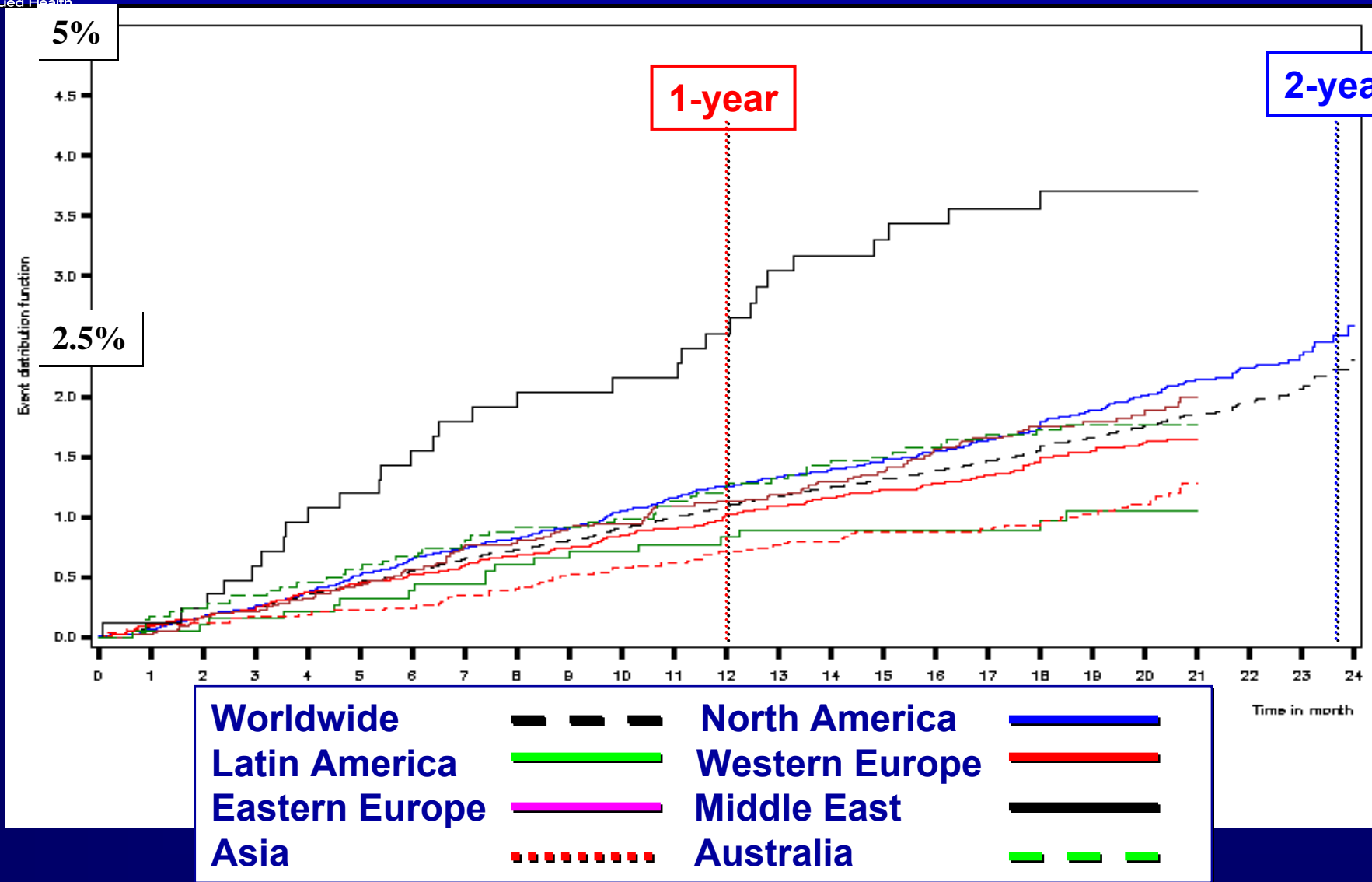
# 2-Year CV Mortality Curves\*



# 2-Year Non-fatal Stroke Curves\*

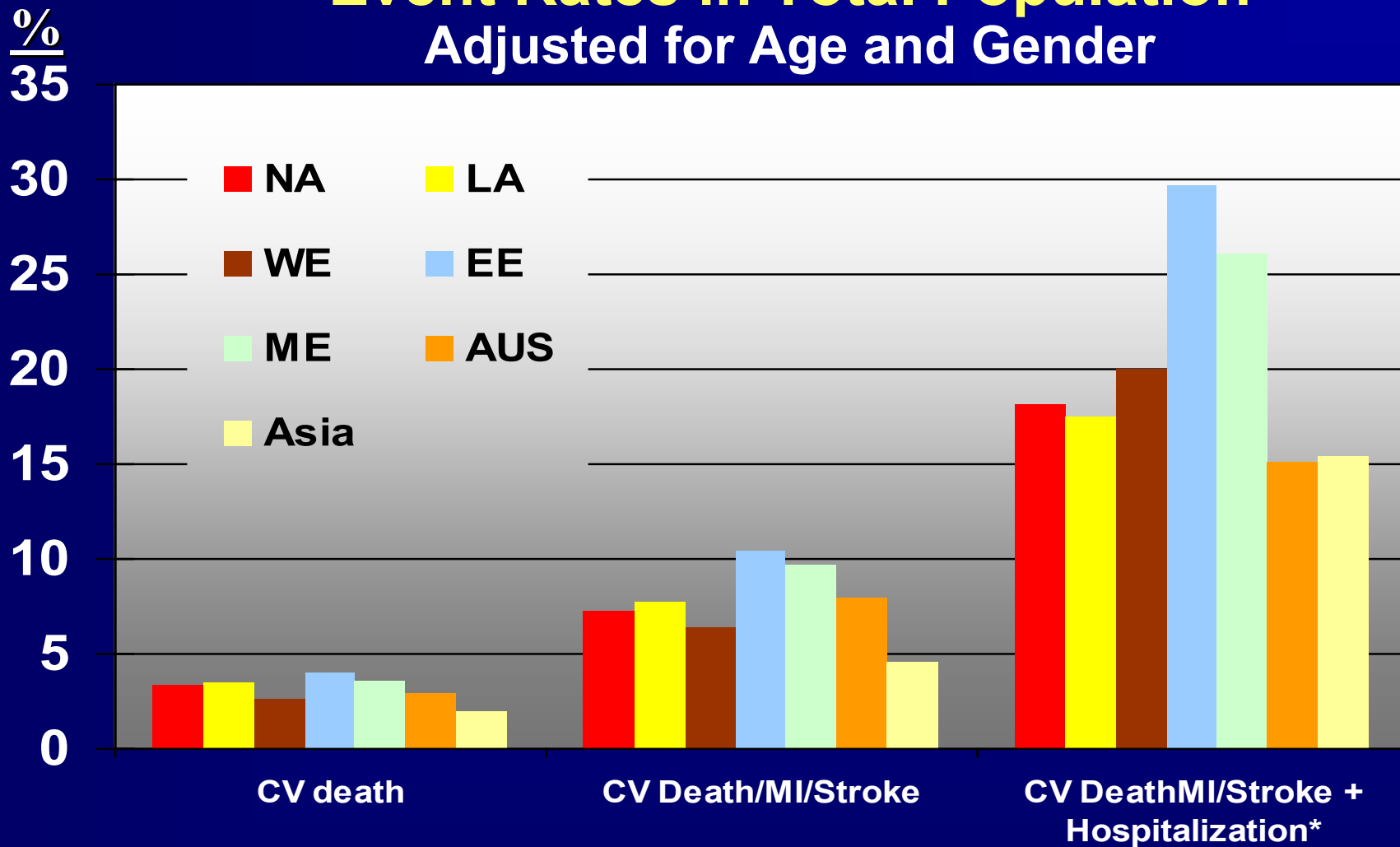


# 2-Year Non-fatal MI Curves\*



# Regional Variation of 2-Year Cardio-Vascular Event Rates in Total Population

## Adjusted for Age and Gender

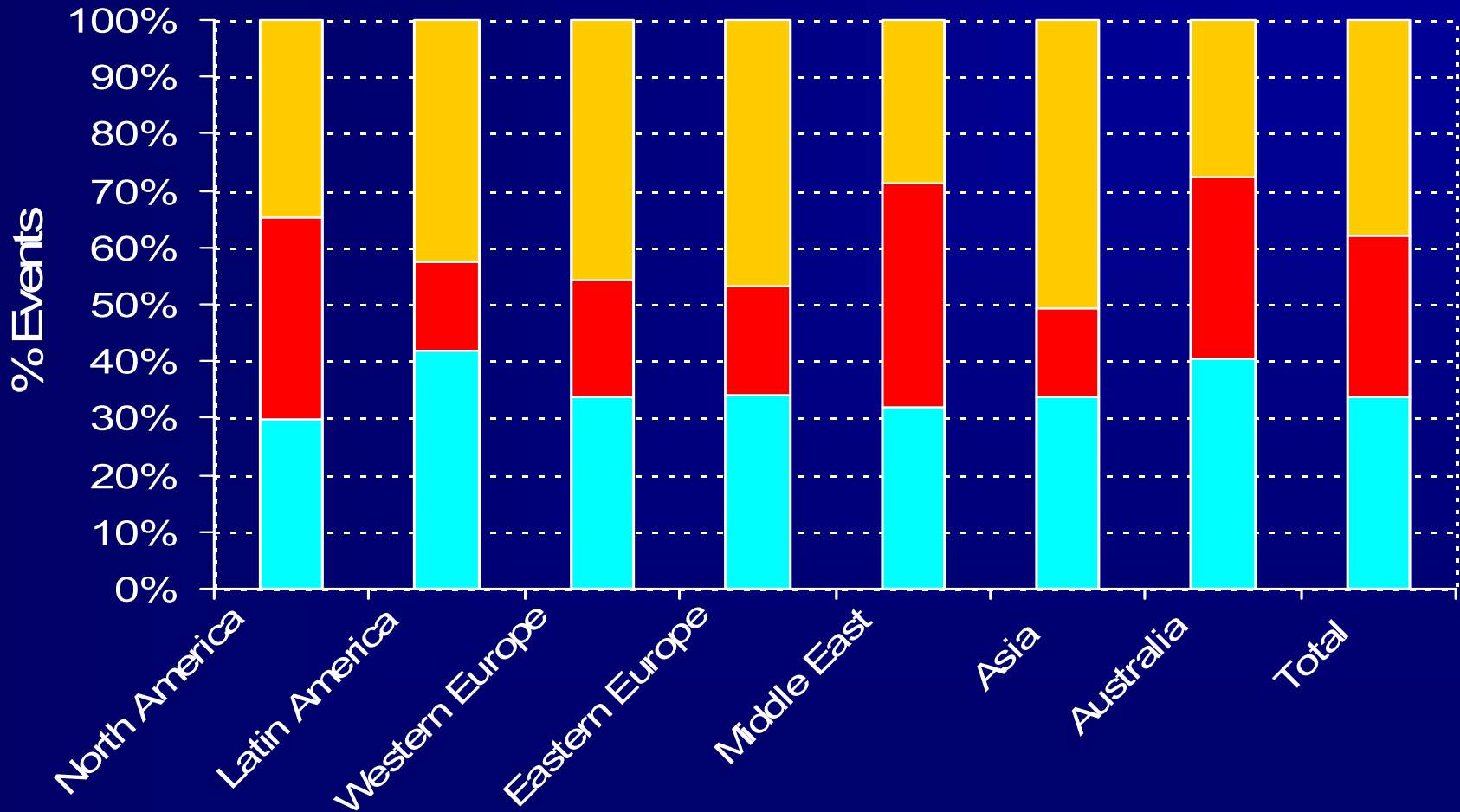


\*TIA, unstable angina, other ischemic arterial event including worsening of peripheral arterial disease



# Total 2-Year Event Distribution Per Region

CV Death Non-fatal MI Non-fatal Stroke



# REACH Registry Conclusions

- **After 2 years, we observed a high burden of atherothrombotic disease across the world with..**
  - Almost 1 in 12 of the MRF population and..
  - Almost 1 in 5 of the symptomatic population suffered a major event or were hospitalized
- **Eastern Europe and the Middle East had the highest burden of disease where almost 1 in 3 suffered a major event or were hospitalized**
- **While clinical events like non-fatal stroke or MI vary across the regions, approximately 1/3 of all major CV events represent cardiovascular mortality**
- **Preventive therapies are frequently used but in general have not been optimized to reduce further events**

