

# **Disparities and Complexities in Women's Cardiovascular Care: Benefits and Risks**

**Karol Watson, MD, PhD, FACC, FAHA  
Professor of Medicine  
David Geffen School of Medicine  
at UCLA  
Los Angeles, California**

# *Disclosures*

**Consultant:** Amgen, AstraZeneca Pharmaceuticals, Daiichi-Sankyo, GlaxoSmithKline, Merck & Co., and Quest

# Disparities in Women's Cardiovascular Care

*Evidence Report/Technology Assessment*  
Number 81

## Diagnosis and Treatment of Coronary Heart Disease in Women: Systematic Reviews of Evidence on Selected Topics

AHRQ Publication No. 03-  
E035

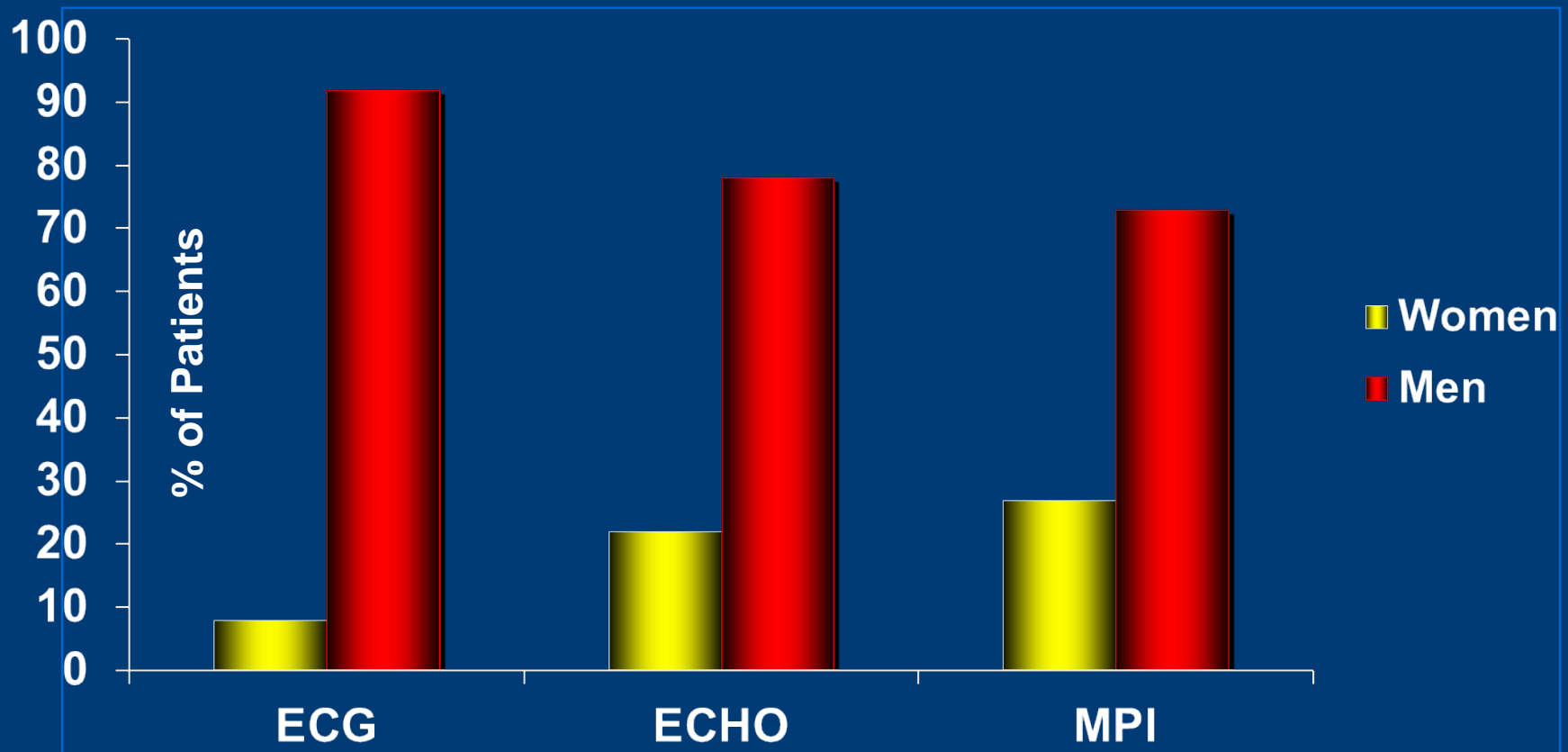
May 2003



U.S. Department of Health and Human Services  
Public Health Service  
Agency for Healthcare Research and Quality  
[www.ahrq.gov](http://www.ahrq.gov)

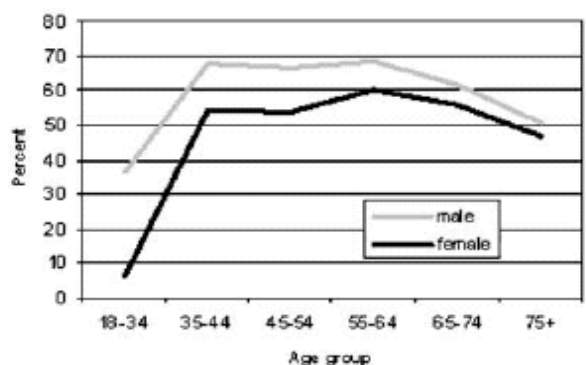
- Research in the last 20 years ... **excluded women entirely** or included only limited numbers of women and minorities
- **Findings specific to women** were often NOT provided
- Many tests and therapies used clinically are **based on studies conducted predominantly in men**

# Limited Numbers of Women in Research on Noninvasive Testing

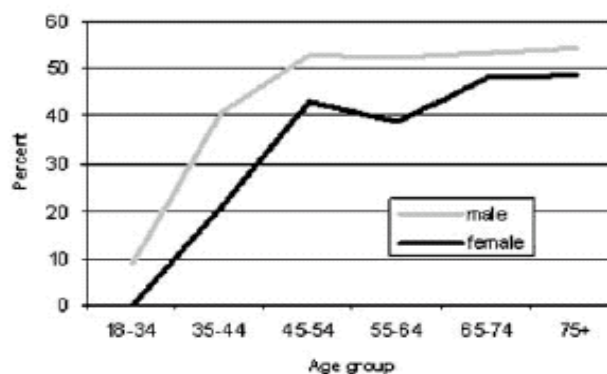


# Even with Comparable diagnosis and risk profile, women are undertreated as compared to men

## Beta blockers

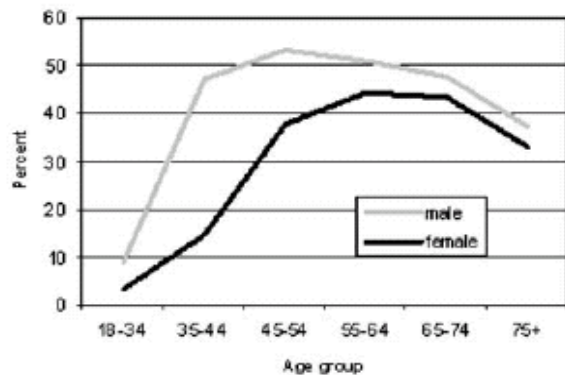


## ACE inhibitors

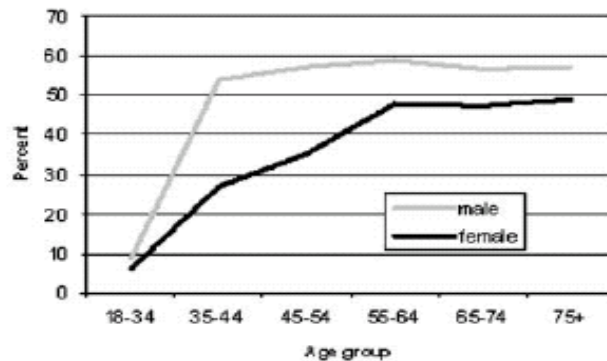


Men —  
women —

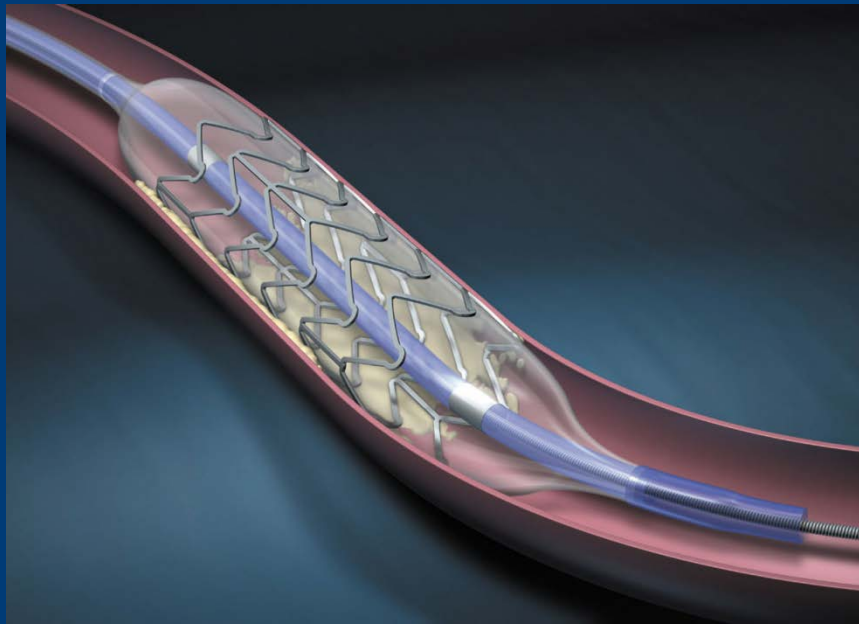
## Statins



## Antiplatelet agents



# Cardiac Interventions are often underutilized in women as well



# Disparities in Women's Cardiovascular Care

- Disparities in use of preventive medications
  - Aspirin
- Disparities in application of preventive strategies
  - Hypertension control

# The Benefits



# Benefit Risk Evaluation

- Estimates of benefits and harm of aspirin given for 5 years to 1,000 persons with various levels of baseline risk for coronary heart disease\*

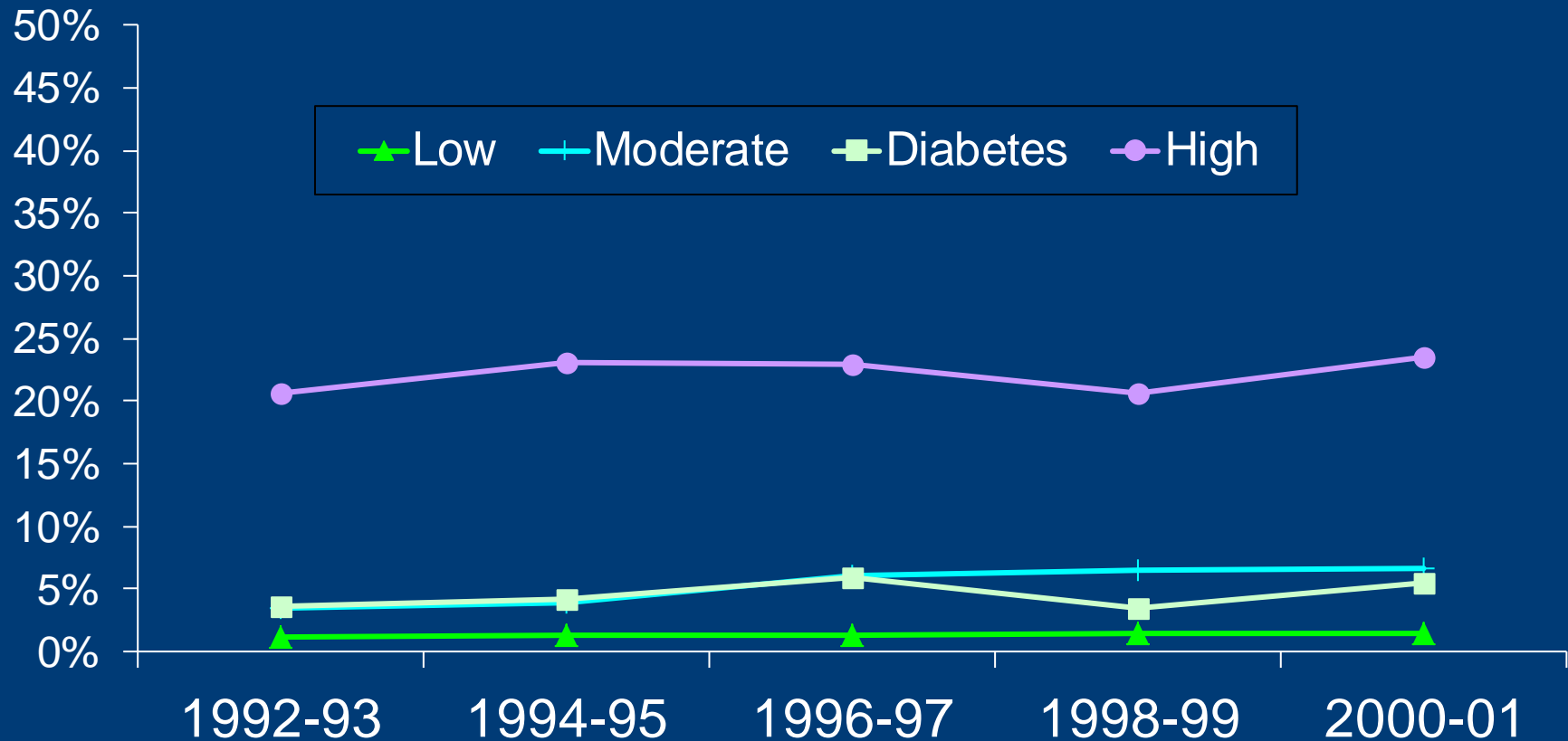
Benefits and Harms	Baseline Risk for CHD over 10 Years		
	2%	6%	10%
Total mortality	No effect	No effect	No effect
Coronary heart disease events	1-4 avoided	4-12 avoided	6-20 avoided
Hemorrhagic strokes	0-2 caused	0-2 caused	0-2 caused
Major gastrointestinal bleeding events	2-4 caused	2-4 caused	2-4 caused

\*U.S. Preventive Services Task Force. Ann Intern Med 2002;136:157-160 (modified).

# Aspirin use in a representative US sample

- Stafford et al wanted to investigate aspirin use in a representative US sample
- They used 1993–2003 US National Ambulatory Medical Care Survey data to evaluate aspirin use by cardiovascular risk level.
  - ~50,000 visits
- Visit-Specific Information gathered about:
  - Patient demographics and diagnoses
  - Physician activities (tests, advice, referrals)
  - New or continuing medications

# The Likelihood of Aspirin Use by Cardiovascular Risk



Stafford RS, Monti V, Ma J (2005) Underutilization of Aspirin Persists in US Ambulatory Care for the Secondary and Primary Prevention of Cardiovascular Disease. PLoS Med 2(12): e353.

# Factors Independently Associated with Aspirin Use

Significant Factors	Odds Ratios
<b>Cardiovascular Risk (ref: Low)</b>	
Multiple risk factors	2.2 (1.7 3.0)
Diabetes	3.3 (1.8 5.9)
High	9.0 (6.4 12.7)
<b>Patient Age (years) (ref: 20-44)</b>	
45-64	1.9 (1.4 2.7)
65-79	2.5 (1.8 3.6)
≥ 80	3.2 (2.1 5.0)
<b>Patient Sex (ref: Male)</b>	
Female	0.8 (0.7 0.9)

# The Complexities

# Aspirin Evidence: Primary Prevention in Men

## Physicians' Health Study (PHS)

22,071 men randomized to aspirin (325mg every other day)

End point	Relative Risk (95% CI)	P value
<b>Myocardial infarction</b>		
Fatal	0.34 (0.15-0.75)	0.007
Nonfatal	0.59 (0.47-0.74)	<0.00001
Total	0.56 (0.45-0.70)	<0.00001
<b>Stroke</b>		
Fatal	1.51 (0.54-4.28)	0.43
Nonfatal	1.20 (0.91-1.59)	0.20
Total	1.22 (0.93-1.60)	0.15

**Aspirin significantly reduces the risk of MI in men**

# Aspirin Evidence: Primary Prevention in Women

39,876 initially healthy women, aged  $\geq 45$  yrs  
Randomized, blinded, factorial

Low-Dose Aspirin  
100 mg on alternate days  
n=19,934

Placebo  
n=19,942

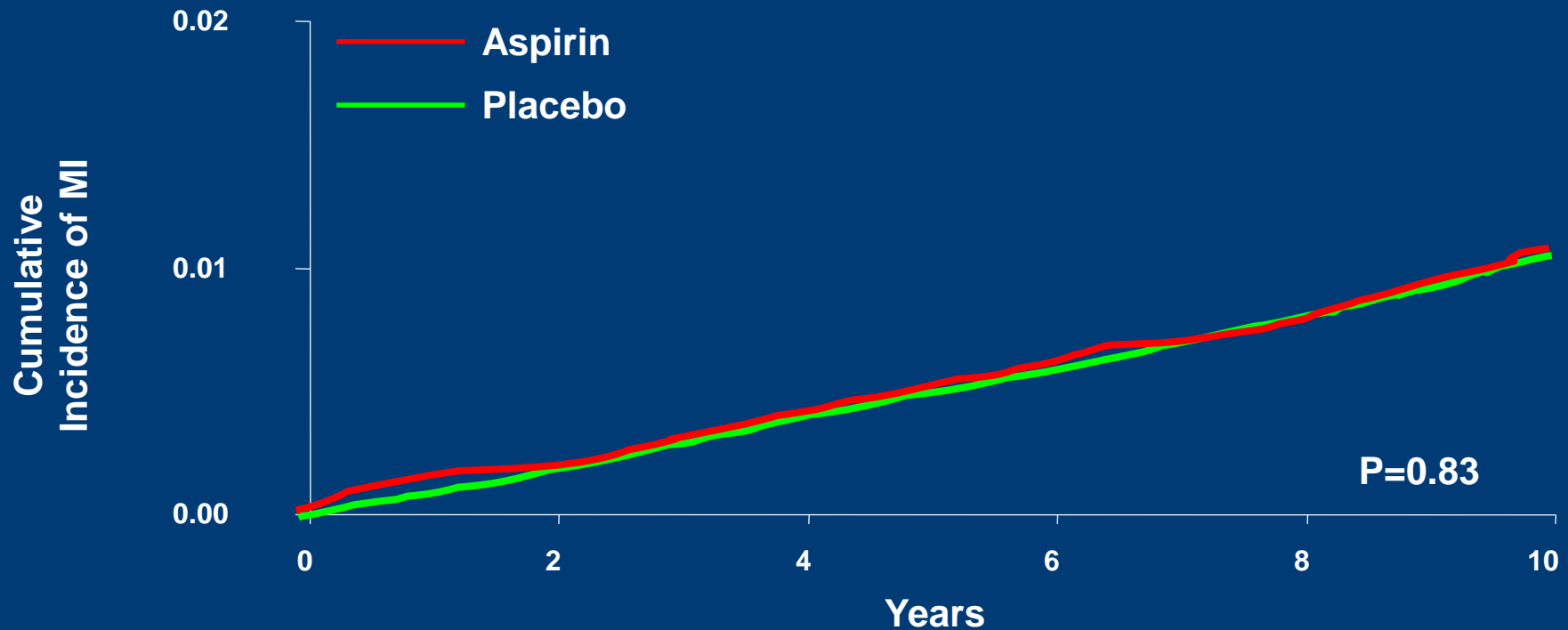
End points (mean, 10.1 yrs):

- Combined end point of nonfatal MI, nonfatal stroke, or total cardiovascular death
- Incidence of total malignant neoplasms of epithelial cell origin

# Aspirin : Primary Prevention in Women

## Womens' Health Study (WHS)

39,876 women randomized to aspirin (100 mg every other day) or placebo for an average of 10 years



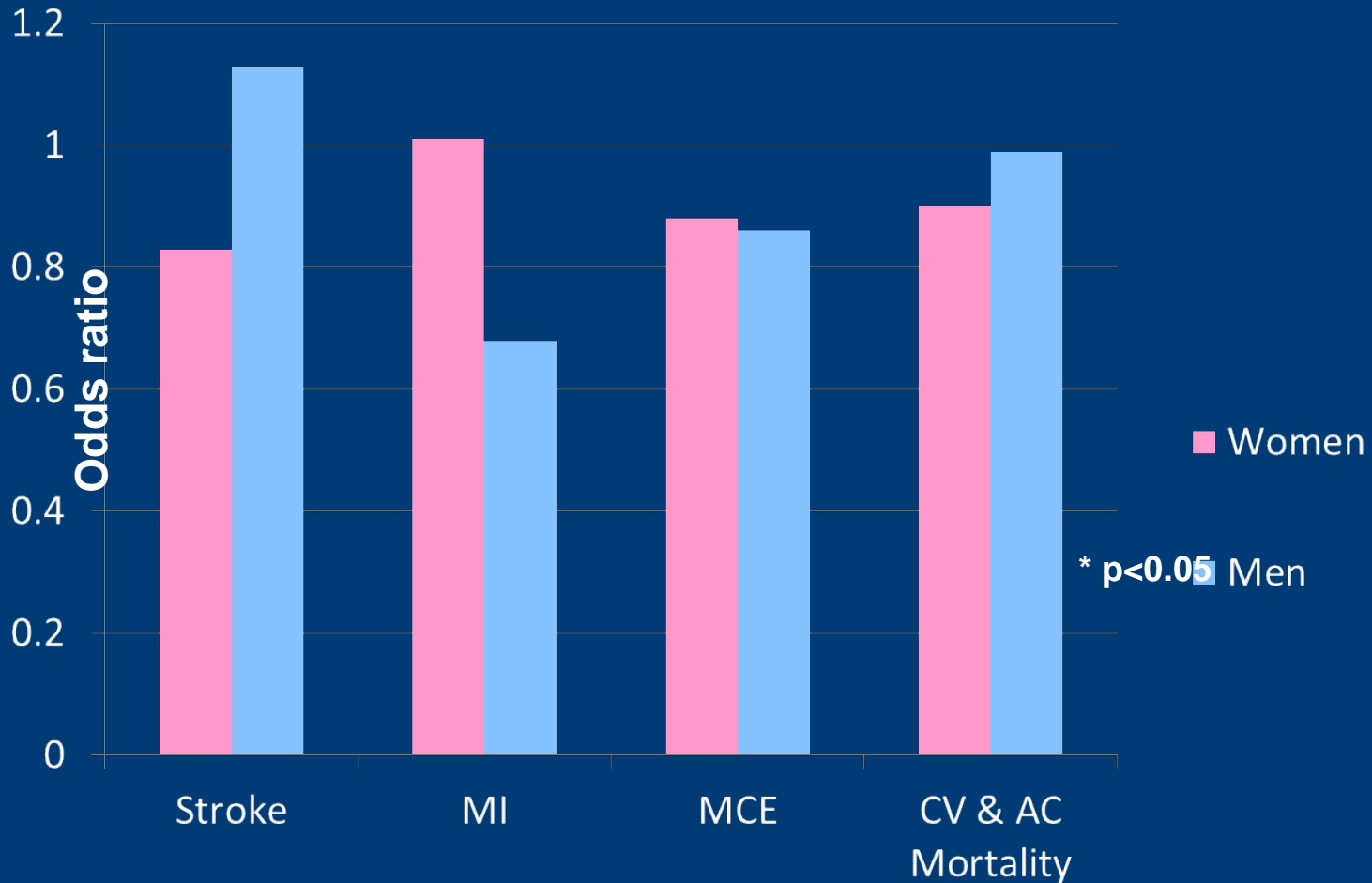
Low dose aspirin did not reduce the risk of MI in low risk women



# Womens' Health Study (WHS)

	Aspirin	Placebo	RR	95% CI	p
<b>Smoking status:</b>					
Current (n = 5235)	157	127	1.30	1.03-1.64	.03
Past/never (n = 34,605)	319	392	0.80	0.69-0.93	.003
<b>Secondary endpoints:</b>					
Stroke	221	206	0.83	0.69-0.99	.04
Ischemic	170	221	0.76	0.63-0.93	.009
TIA	186	238	0.78	0.64-0.94	.01
<b>Age (yrs):</b>					
45-54 (n = 24,025)	163	161	1.01	0.81-1.26	.92
55-64 (n = 11,754)	183	186	0.98	0.80-1.20	.84
65+ (n = 4097)	131	175	0.74	0.59-0.92	.008

# Aspirin reduces the risk of stroke in women and MI in men



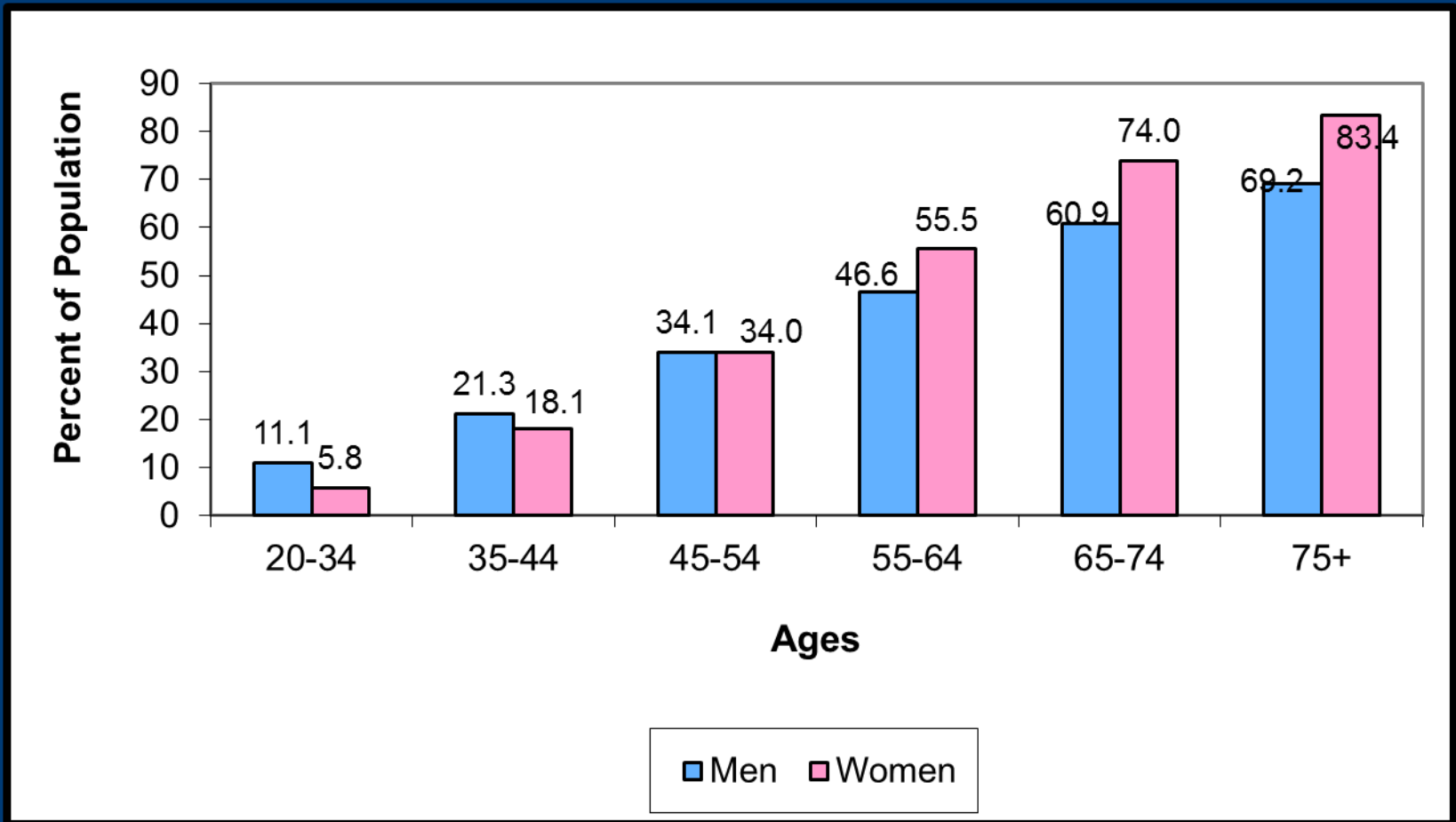
AC=All cause, CV=Cardiovascular, MCE=Major cardiovascular events, MI=Myocardial infarction

Source: Berger JS et al. *JAMA*. 2006;295:306-313

# Disparities in Women's Cardiovascular Care

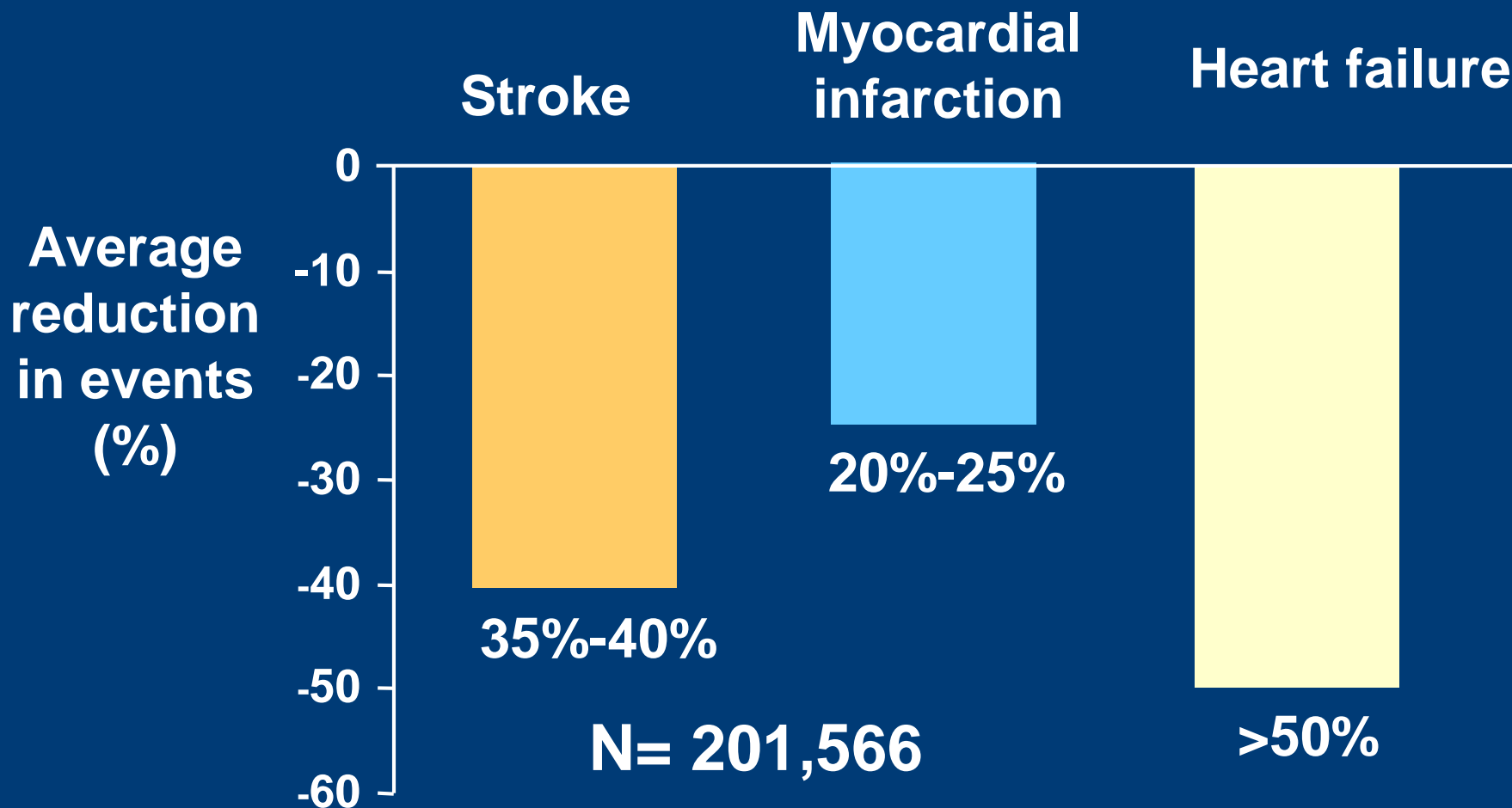
- Disparities in use of preventive medications
  - Aspirin
- Disparities in application of preventive strategies
  - Hypertension control

# Hypertension Prevalence (1999 - 2002)

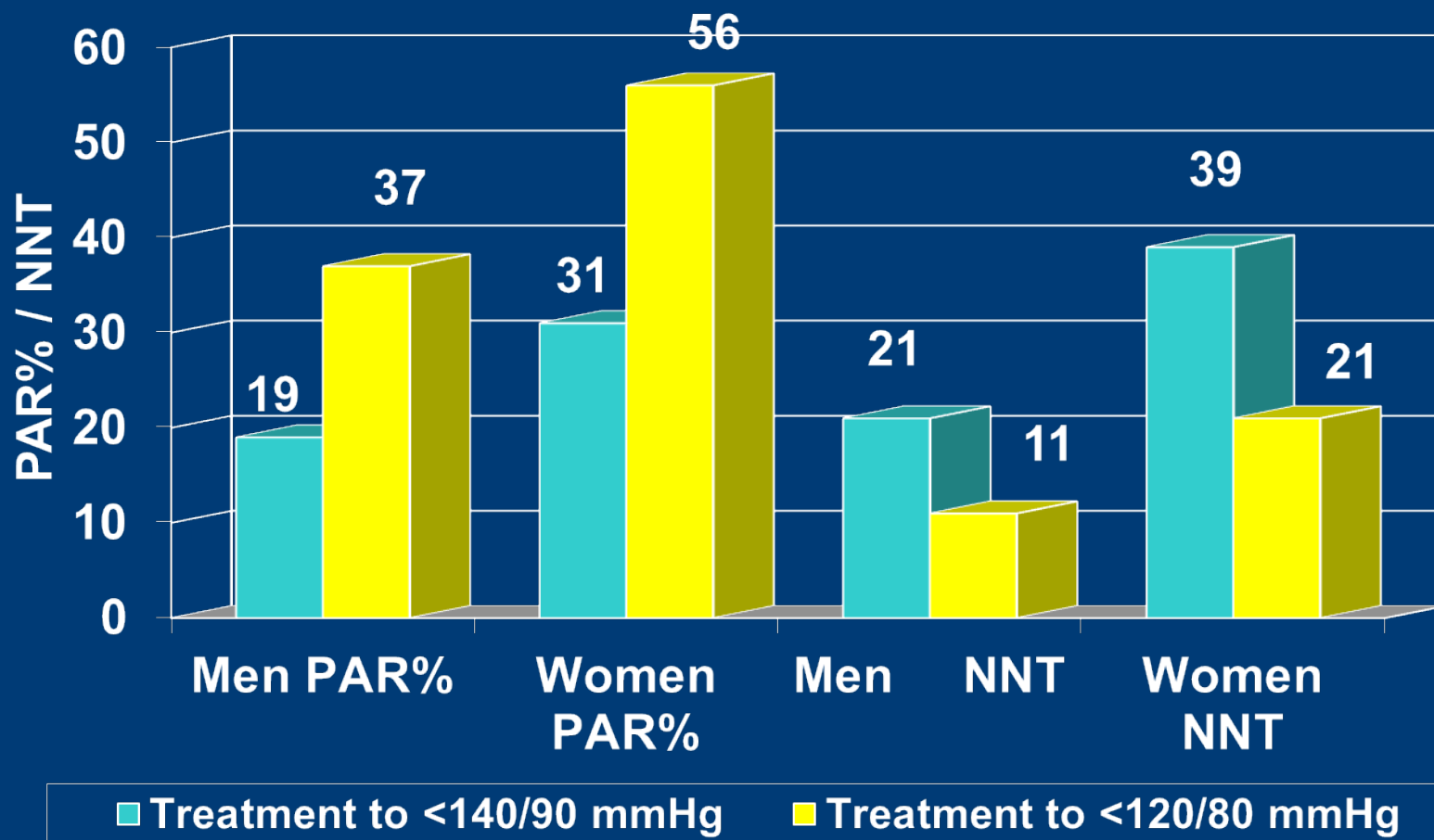


# The Benefits

# Antihypertensive Therapy Decreases Cardiovascular Events

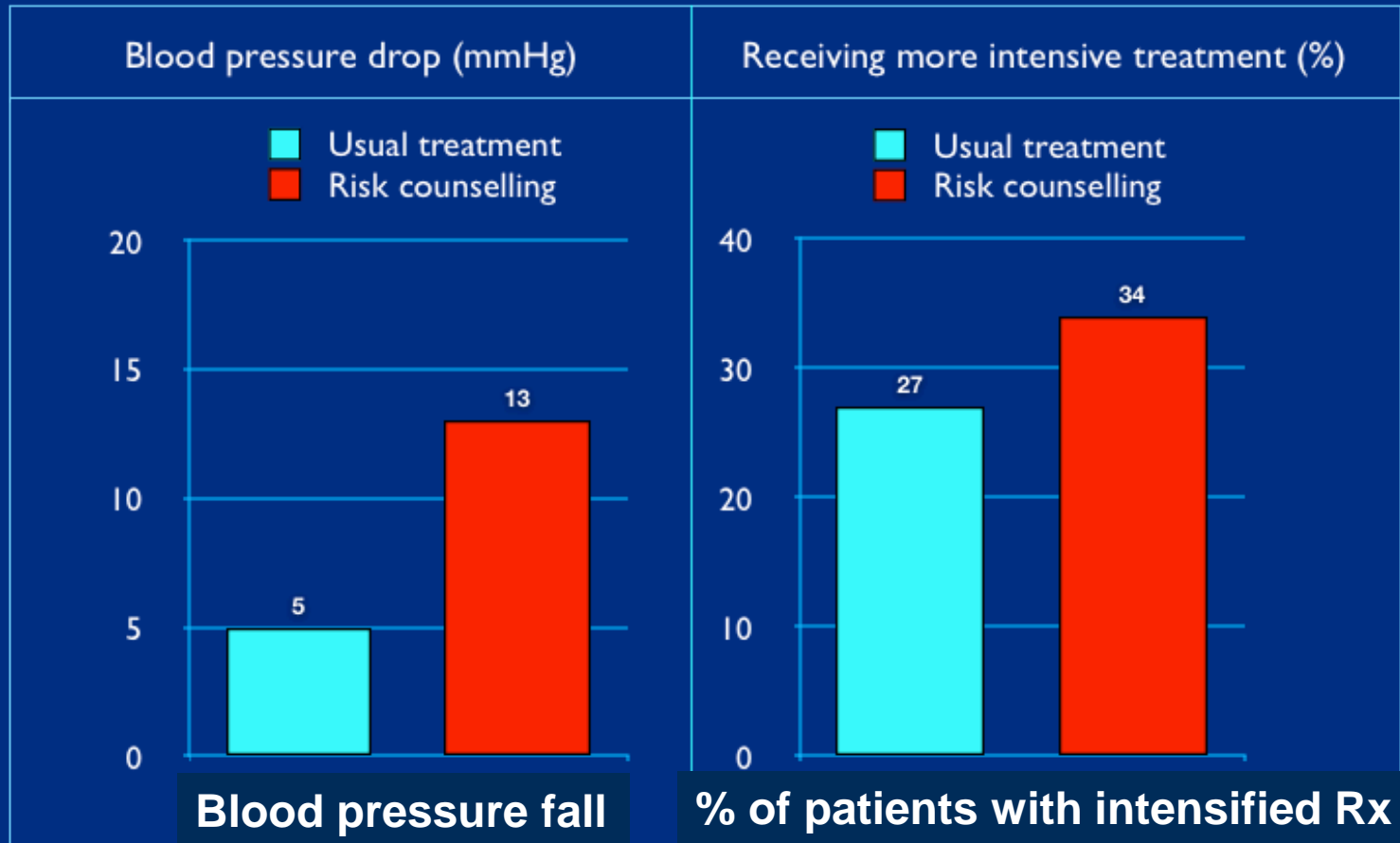


# Preventable CHD Events from Control of Hypertension in US Adults



PAR% = proportion of CHD events preventable, NNT = number needed to treat to prevent 1 CHD event

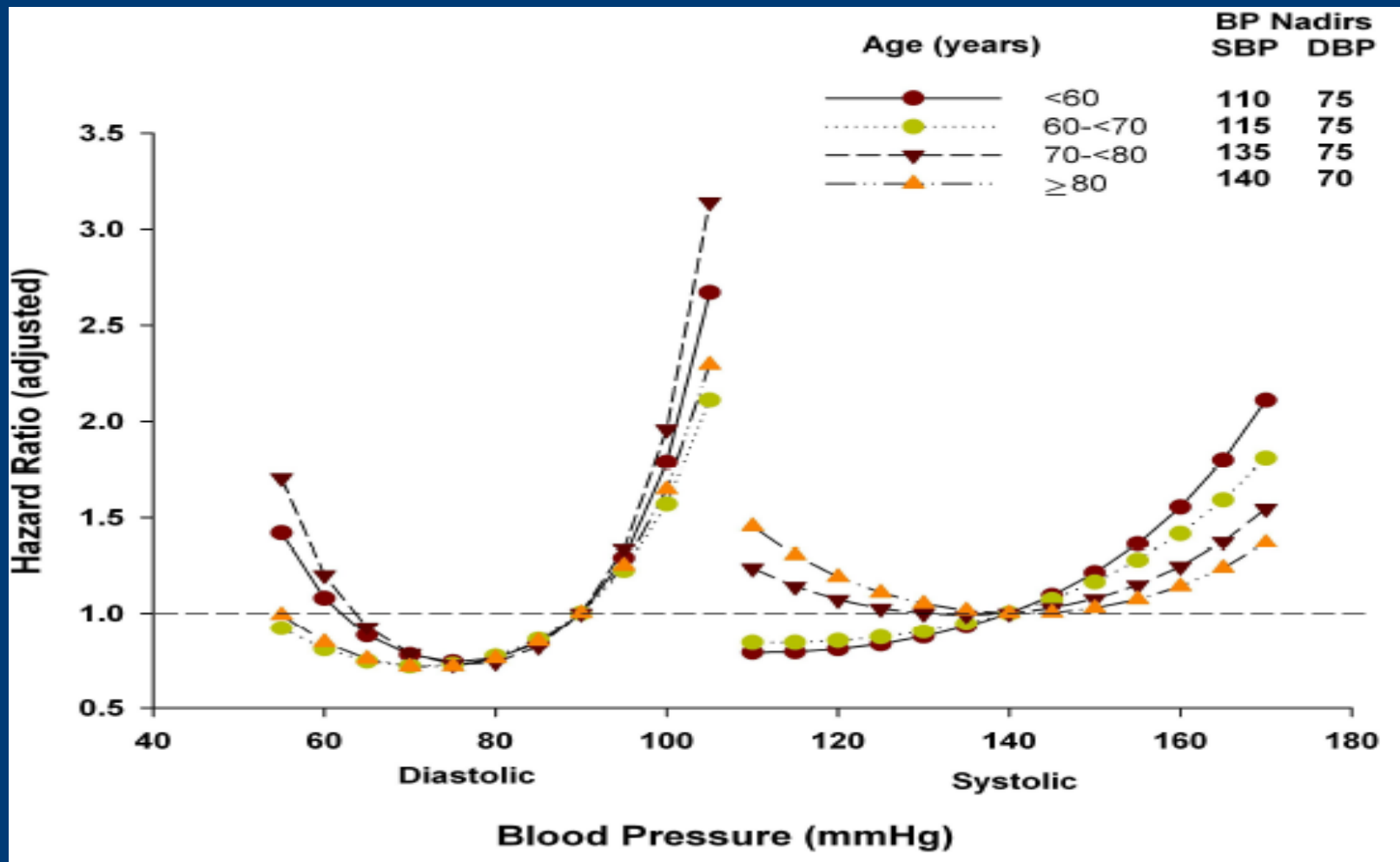
# Impact of Discussing Coronary Risk with Patients Receiving BP



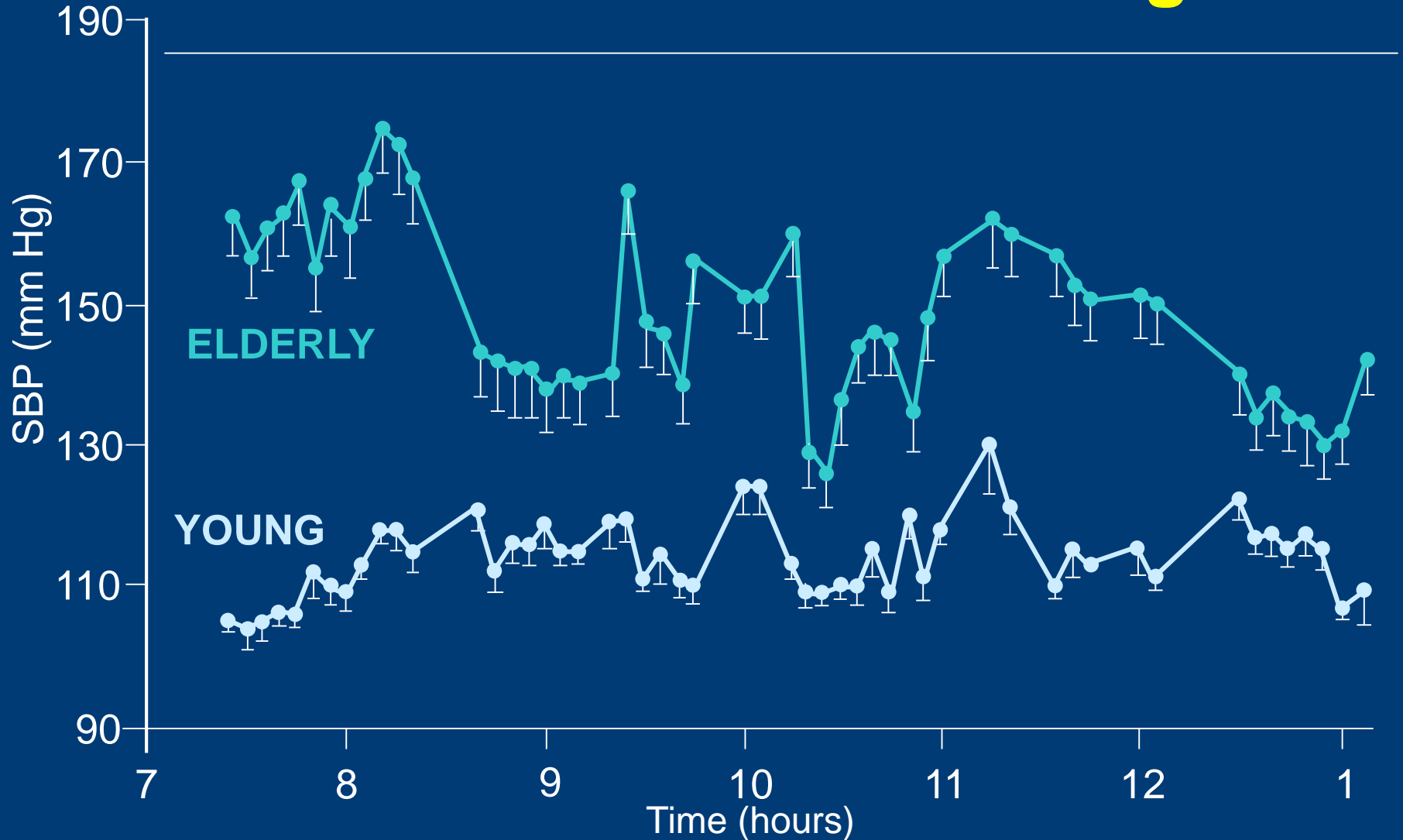


# The Complexities

# Risk of Adverse Outcomes Among Elderly CAD Patients by Age and BP



# Postural Changes in Blood Pressure are more common as we Age



# Antihypertensive Use Linked to Serious Fall Risk in Elderly Patients

- 4961 Medicare enrollees with hypertension interviewed about number and dose of antihypertensive medications
- Followed for 3 years, using claims data to track fall injuries
- 446 (9%) had a serious fall
- In multivariate analysis, patients who used more antihypertensive medication had more serious falls
  - hazard ratio 1.4 for high intensity antihypertensive therapy
  - hazard ratio 1.28 for moderate intensity antihypertensive therapy
  - Among the 503 participants with a prior serious fall, the hazard ratios was 2.31

# Disparities in Women's Cardiovascular Care

- Gender disparities in cardiovascular care exist
- Underutilization of appropriate medications, interventions and strategies contributes to excess cardiovascular morbidity and mortality
- Benefits of appropriate care must be balanced against risks