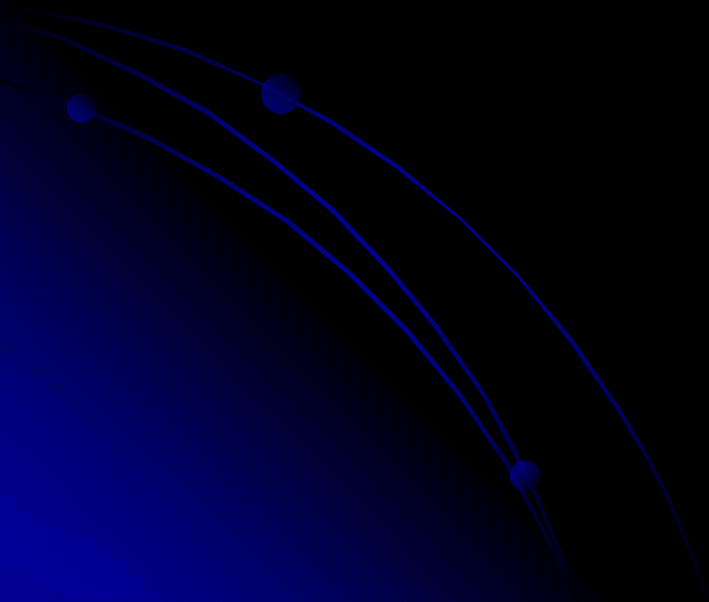
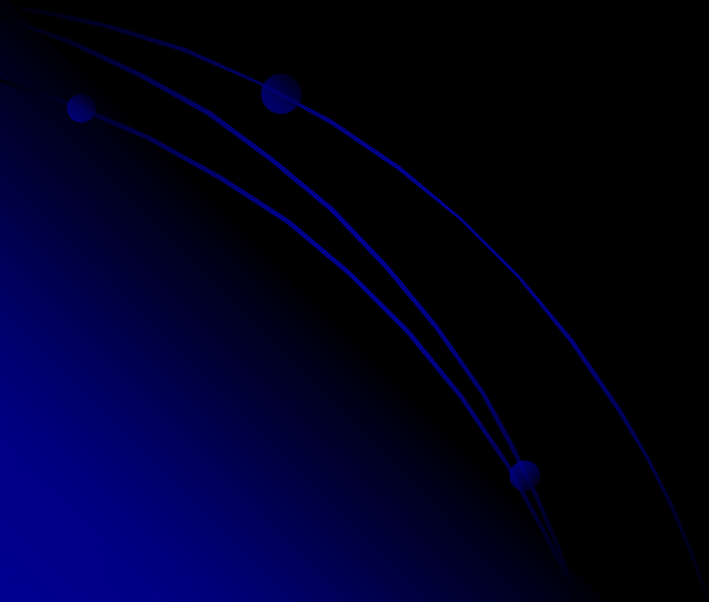


CORONARY HEART DISEASE IN WOMEN : UNDERDIAGNOSED AND UNDERTREATMENT



Gender Specific Analysis

- 1987 Tobin JN, Wassertheil - Smoller S, Wexler JP, et al.
Sex bias in considering coronary bypass surgery. Ann Intern Med



2003

(단위 : 천명, 인구10만명당)

성별 \ 순위		계		1 위		2 위		3 위		4 위		5 위	
		사망자	사망률	사망자	사망률	사망자	사망률	사망자	사망률	사망자	사망률	사망자	사망률
전 체		-	-	암		뇌혈관 질환		심장 질환		당 뇨 병		자 살	
사망자	사망률	246	508.8	64	131.8	36	75.5	17	35.6	12	25.0	11	24.0
남 자		-	-	암		뇌혈관 질환		심장 질환		간 질환		자 살	
사망자	사망률	136	560.1	40	166.4	17	71.1	9	36.8	8	33.2	8	33.2
여 자		-	-	암		뇌혈관 질환		심장 질환		당뇨병		만성하기도 질환	
사망자	사망률	110	457.2	23	97.0	19	80.0	8	34.4	6	25.3	4	16.5

10

(단위 : 인구10만명당)

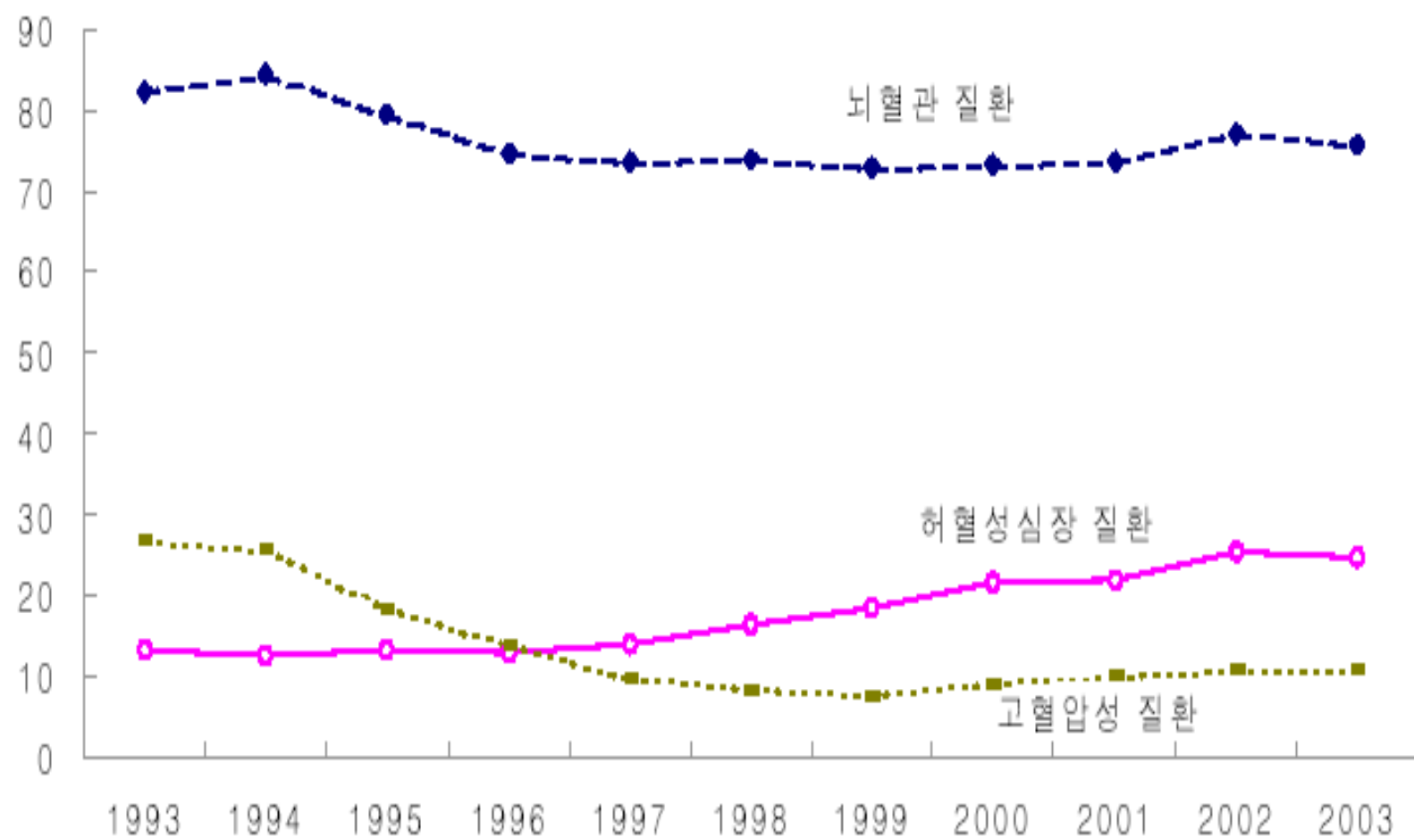
순위	전 체		남 자		여 자	
	1993	2003	1993	2003	1993	2003
1위	암 (악성신생물) 110.6	암 (악성신생물) 131.8	암 (악성신생물) 138.5	암 (악성신생물) 166.4	뇌혈관 질환 87.7	암 (악성신생물) 97.0
2위	뇌혈관 질환 82.5	뇌혈관질환 75.5	뇌혈관 질환 78.0	뇌혈관질환 71.1	암 (악성신생물) 82.0	뇌혈관질환 80.0
3위	심장질환 42.3	심장질환 35.6	간질환 49.4	심장질환 36.8	심장질환 42.6	심장질환 34.4
4위	운수사고 33.0	당뇨병 25.0	운수사고 48.0	간질환 33.2	고혈압성 질환 29.1	당뇨병 25.3
5위	간질환 31.4	자살 24.0	심장질환 42.2	자살 33.2	운수사고 17.5	만성하기도 질환 16.5
6위	고혈압성 질환 26.9	간질환 20.6	고혈압성 질환 24.9	운수사고 27.8	당뇨병 15.7	자살 14.9
7위	당뇨병 16.3	운수사고 19.1	당뇨병 17.0	당뇨병 24.8	만성하기도 질환 15.1	고혈압성 질환 14.2
8위	만성하기도 질환 15.5	만성하기도 질환 19.1	만성하기도 질환 15.9	만성하기도 질환 21.6	간질환 12.7	운수사고 10.3
9위	자살 10.6	고혈압성 질환 10.7	자살 14.4	호흡기결핵 9.3	자살 6.7	간질환 7.9
10위	호흡기 결핵 9.5	추락사고 7.3	호흡기 결핵 13.7	추락사고 8.8	호흡기 결핵 5.3	추락사고 5.8

10

(단위 : 인구10만명당)

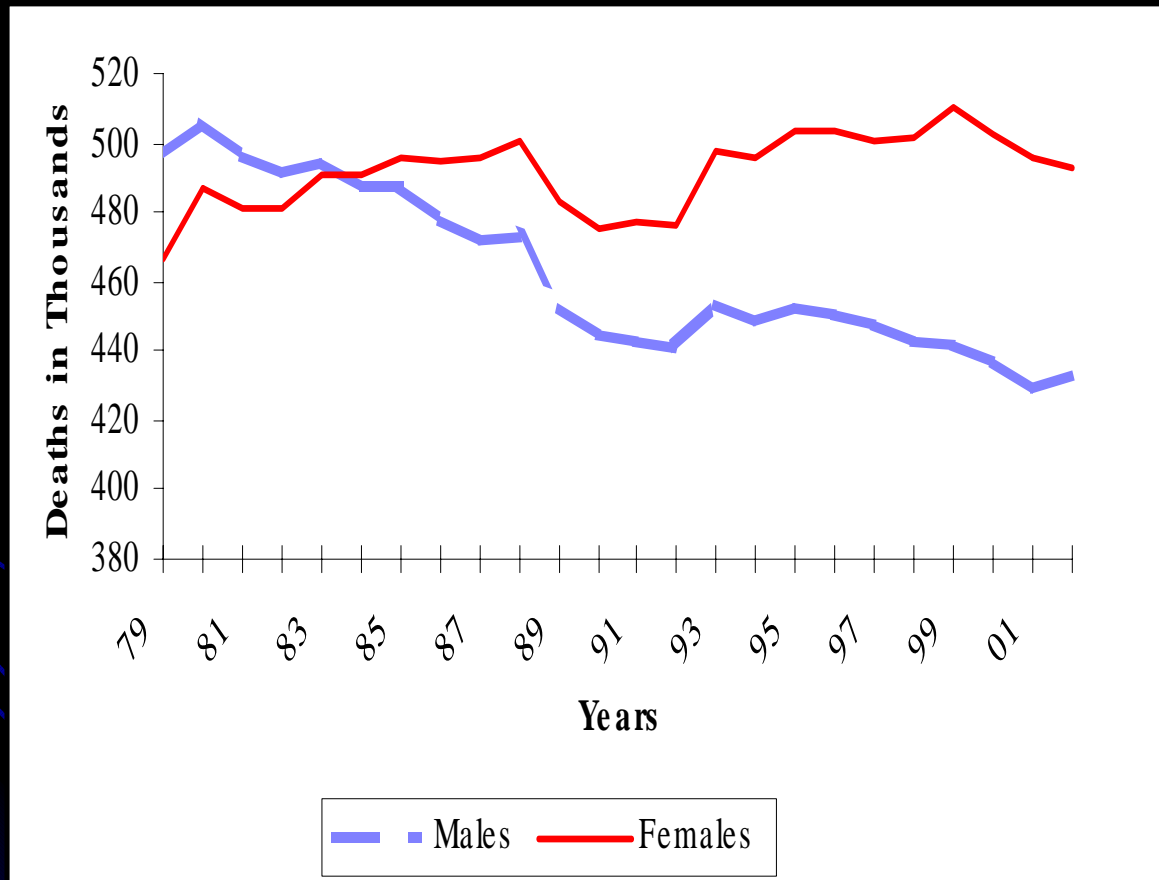
		순환기계통 질	뇌혈관 질 환	허혈성 심장 질환	고혈압성 질 환
전체	1993년	156.0	82.5	13.3	26.9
	2003년	124.7	75.5	24.6	10.7
	증 감	-31.3	-7.0	11.3	-16.2
남자	1993년	149.2	78.0	15.8	24.9
	2003년	118.2	71.1	26.3	7.2
	증 감	-31.0	-6.9	10.5	-17.7
여자	1993년	163.9	87.7	10.8	29.1
	2003년	131.3	80.0	22.8	14.2
	증 감	-32.6	-7.7	12.0	-14.9

(인구 10만명당)

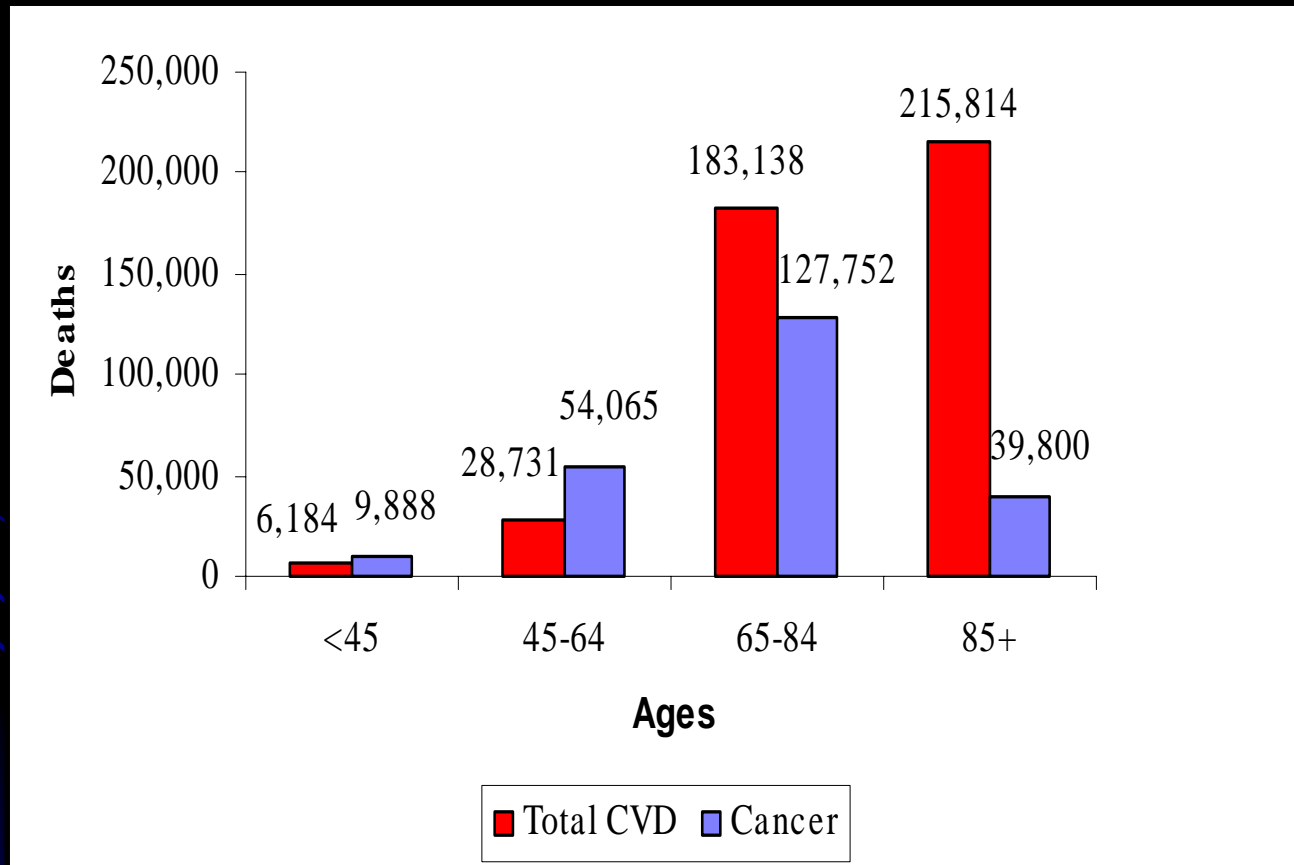


Cardiovascular Disease Mortality Trends for Males and Females

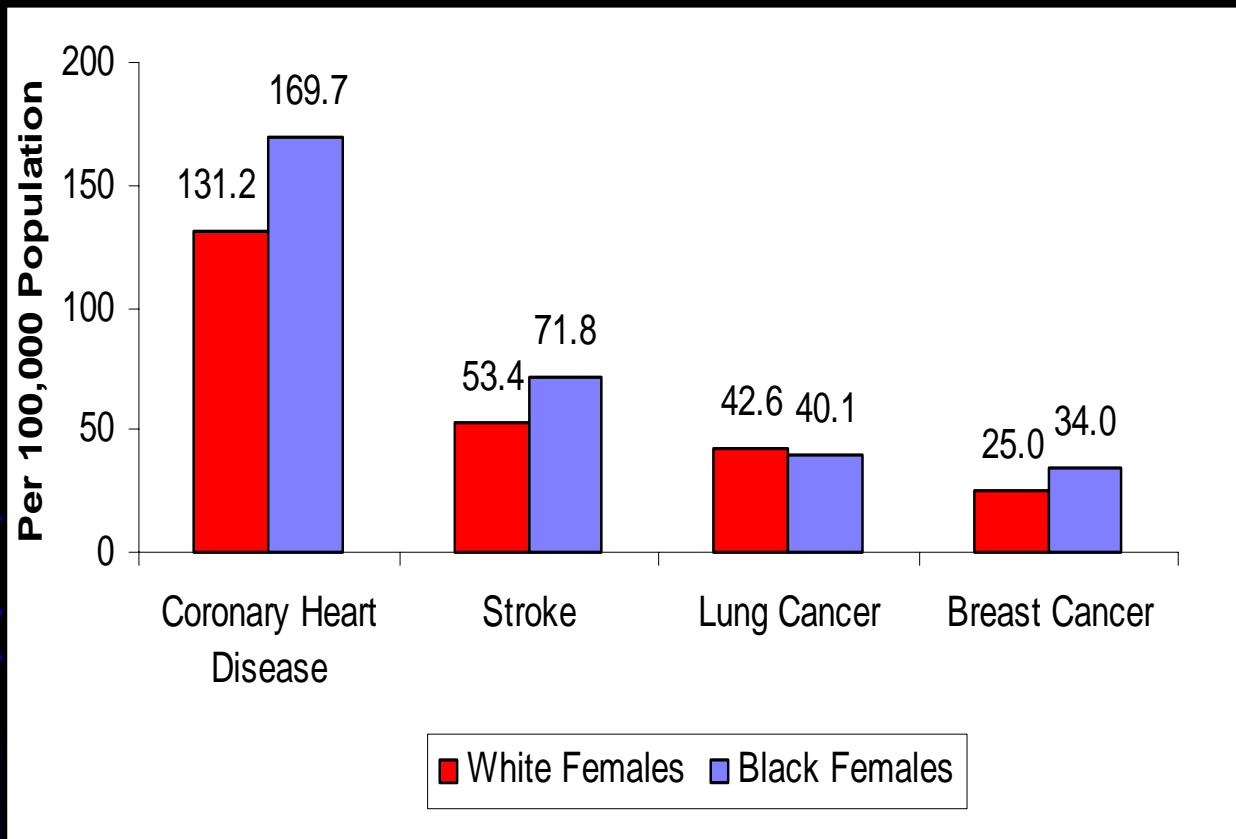
United States: 1979 - 2002



Deaths From Cardiovascular Diseases and Cancer for White Females by Age United States: 2001



Age-Adjusted Death Rates for Coronary Heart Disease, Stroke, and Lung and Breast Cancer for White and Black Females



INTRODUCTION



- 가
- 가 3-5
- Cycle Length가

● Torsade Susceptibility

● QTc 10-20ms Sinus
node recovery time

ST

가

가

가

50-70%

,



|

가



45

52%



55

45%가



||

3-7 가

2-3 가

450,000

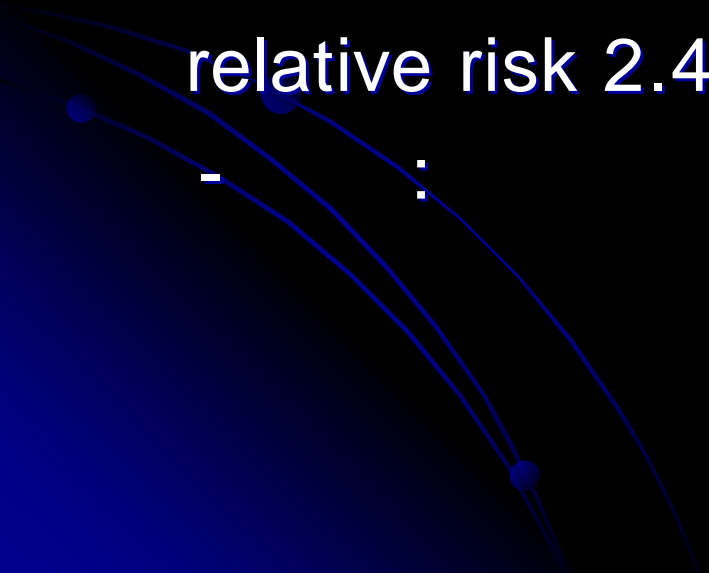
meta - analysis

relative risk 2.48,

1.87

-

:





-
-
- Sex hormone-binding globulin and free androgen index
- Excessive urinary albumin level
- C-
-



PCI

Non-STEMI
가

가? I

(20%)

: Vasospastic, microvascular angina가
, Mitral valvular prolapse

Determinants of coronary heart disease in women with chest pain

Major

Typical angina pectoris

Postmenopausal status without hormone
replacement

Diabetes mellitus

Peripheral vascular disease

Intermediate

Hypertension

Smoking

Lipoprotein abnormalities, especially low
HDL cholesterol levels

Minor

Age >65 years

Obesity, especially central obesity

Sedentary lifestyle

Family history of coronary heart disease

Other risk factors for coronary heart disease
(e.g., psychosocial or hemostatic)

Characteristics of Typical and Atypical Angina Pectoris

Typical

Substernal*

Characterized by a burning, heavy, or squeezing feeling

Precipitated by exertion* or emotion

Promptly relieved by rest or nitroglycerin*

Atypical

Located in the left chest, abdomen, back, or arm in the absence of mid-chest pain

Sharp or fleeting

Repeated, very prolonged

Unrelated to exercise

Not relieved by rest or nitroglycerin

Relieved by antacids

Characterized by palpitations without chest pain

가? II



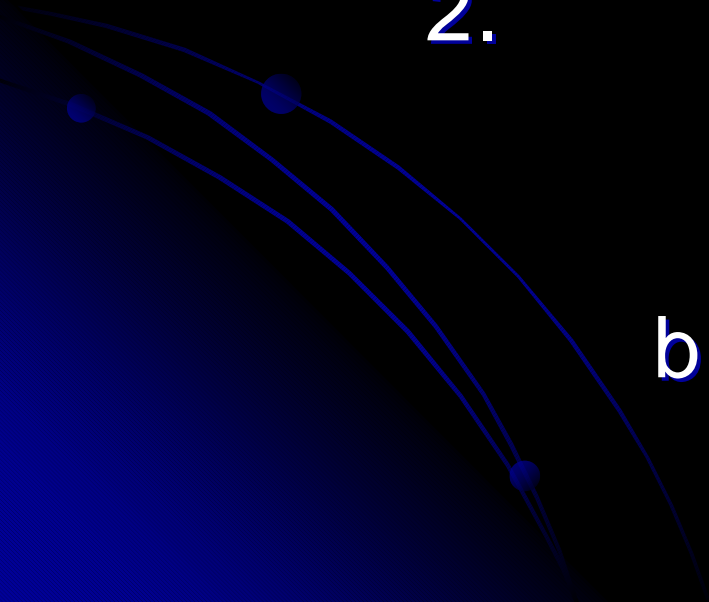
가
: 1.

가

2.

stress test가
:

bias (
)

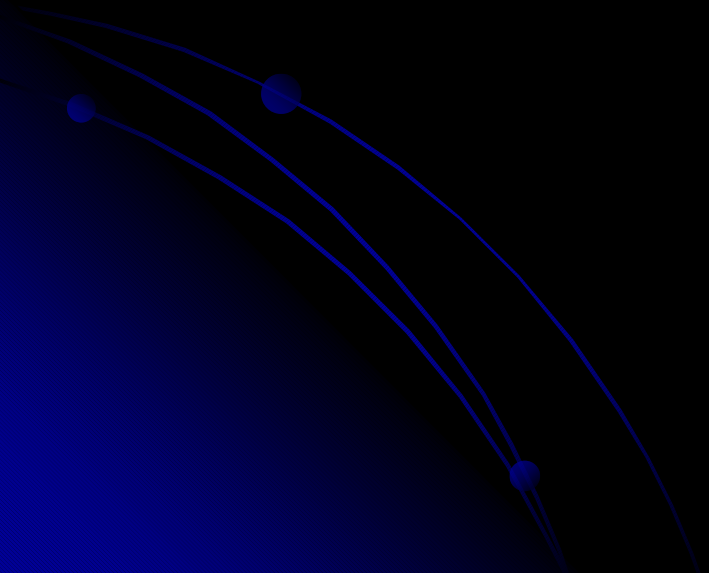


가? III

- Initial Stress Test

women 38.0 % additional study

men 62.3% additional study



가?III



Prevalence of normal and nonobstructive coronary arteries in women compared with men

	No./Total (%)		P Value
	Women	Men	
Acute coronary syndrome			
GUSTO ²	343/1768 (19.4)	304/4638 (8.4)	<.001
TIMI 1 ³	95/666 (17)	99/1091 (9)	<.001
Unstable angina ²	252/826 (30.5)	220/1580 (13.9)	<.001
TIMI IIIa ⁶	30/113 (26.5)	27/278 (8.3)	<.001
MI without ST-segment elevation ²	41/450 (9.1)	55/1299 (4.2)	.001
MI with ST-segment elevation ²	50/492 (10.2)	119/1759 (6.8)	.02

Abbreviations: GUSTO, Global Utilization of Streptokinase and t-PA for Occluded Coronary Arteries; MI, myocardial infarction; TIMI, Thrombolysis In Myocardial Infarction.



가

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,

,

, ACEI



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가

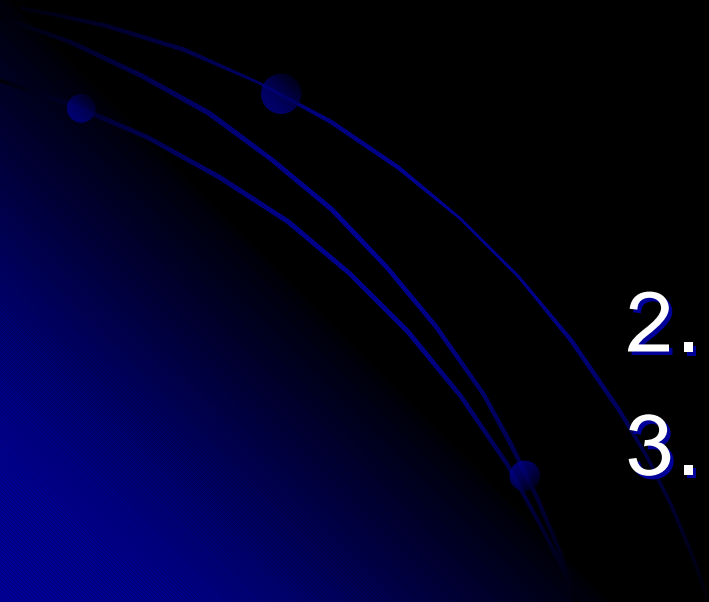
가?

: 1.

10

2.

3.



● CAG, PCI, CABG



가 가?

1. CAG : CASS Study
: 50%

: 17%

2. PCI

50%

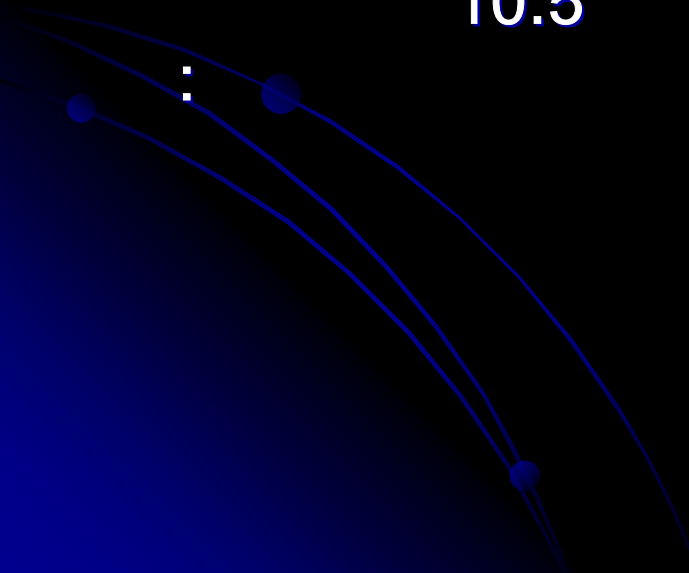
10.5

가

,

가

가

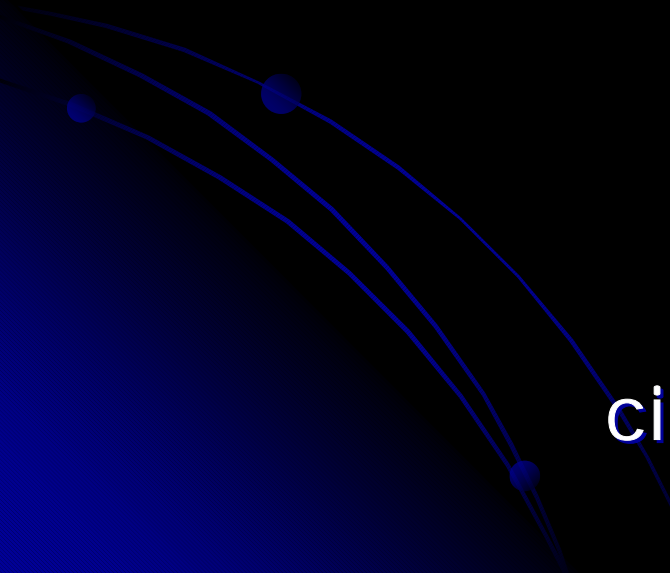


IV

3. CABG

refer
functional gain

6

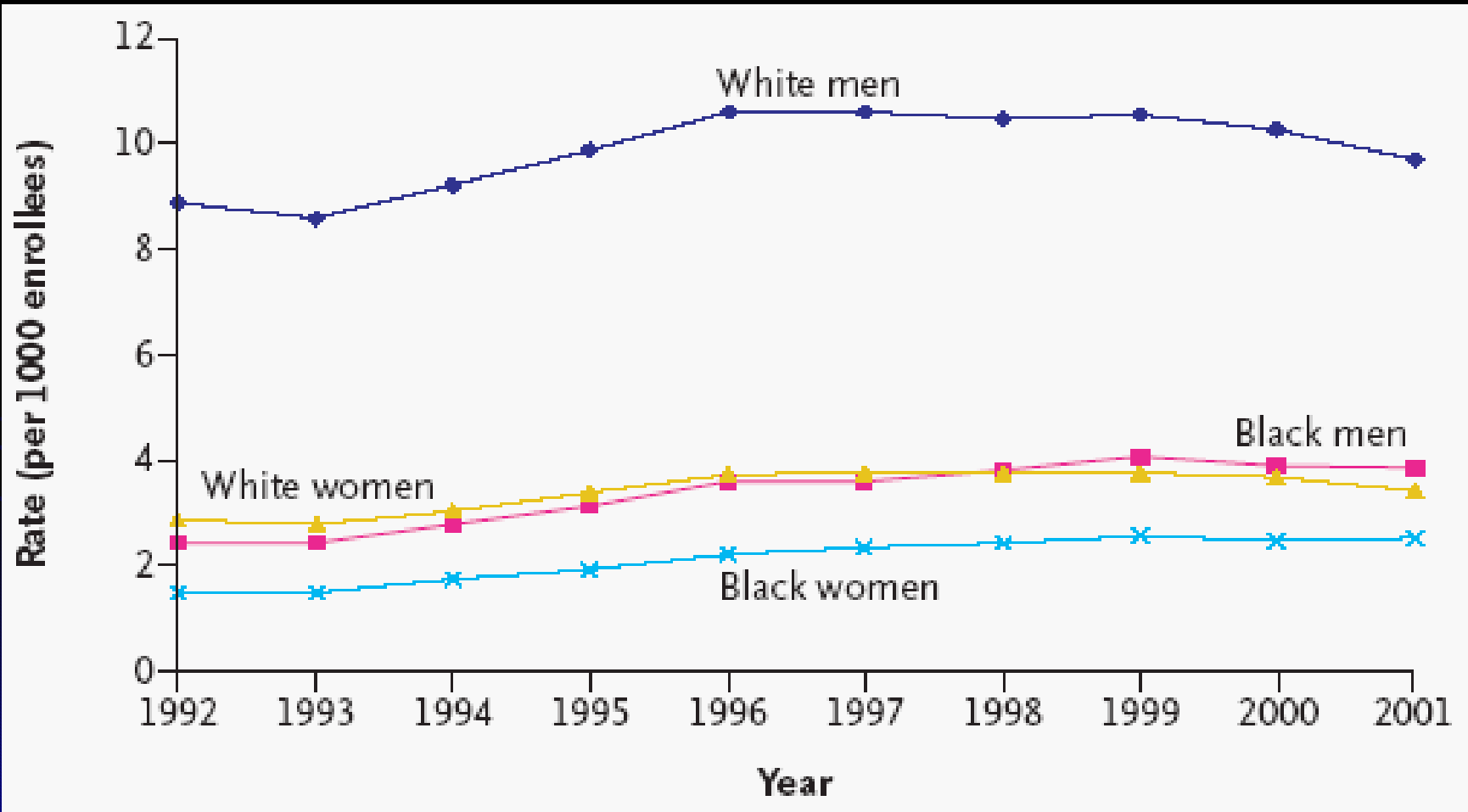


circulation 2003:108:2642 - 2647

Rates and Changes in Rates of Procedures among Men and Women Enrolled in Medicare, 1992 and 2001

Procedure	1992			2001			Change in Gap per Year [†]
	Whites	Blacks	Difference	Whites	Blacks	Difference	
Men							
Repair of abdominal aortic aneurysm	2.10	0.57	1.53	1.59	0.51	1.08	-0.45‡
Angioplasty	21.34	11.86	9.48	28.19	19.67	8.52	-0.96
Back surgery	3.05	1.59	1.46	4.70	2.51	2.19	0.73
CABG	9.01	2.72	6.29	9.80	4.11	5.69	-0.60
Carotid endarterectomy	3.13	0.82	2.31	4.42	1.44	2.98	0.67
Total hip replacement	1.96	0.86	1.10	2.60	1.08	1.52	0.42‡
Knee replacement	3.47	1.19	2.28	5.05	1.85	3.20	0.92‡
Valve replacement	1.43	0.48	0.95	1.91	0.73	1.18	0.23‡
Appendectomy	0.46	0.32	0.14	0.55	0.31	0.24	0.10‡
Women							
Repair of abdominal aortic aneurysm	0.39	0.23	0.16	0.37	0.25	0.12	-0.04
Angioplasty	11.68	10.07	1.61	16.83	17.35	-0.52	-2.13‡
Back surgery	2.62	1.48	1.14	4.33	2.37	1.96	0.82‡
CABG	3.14	1.80	1.34	3.70	2.82	0.88	-0.46
Carotid endarterectomy	1.59	0.64	0.95	2.42	1.15	1.27	0.32
Total hip replacement	2.36	1.24	1.12	3.33	1.86	1.47	0.35‡
Total knee replacement	4.32	3.47	0.85	6.61	5.10	1.51	0.66‡
Valve replacement	0.89	0.39	0.50	1.17	0.64	0.53	0.03‡

Age-Adjusted National Rates of CABG per 1000 Persons Enrolled in Medicare, 1992 through 2001



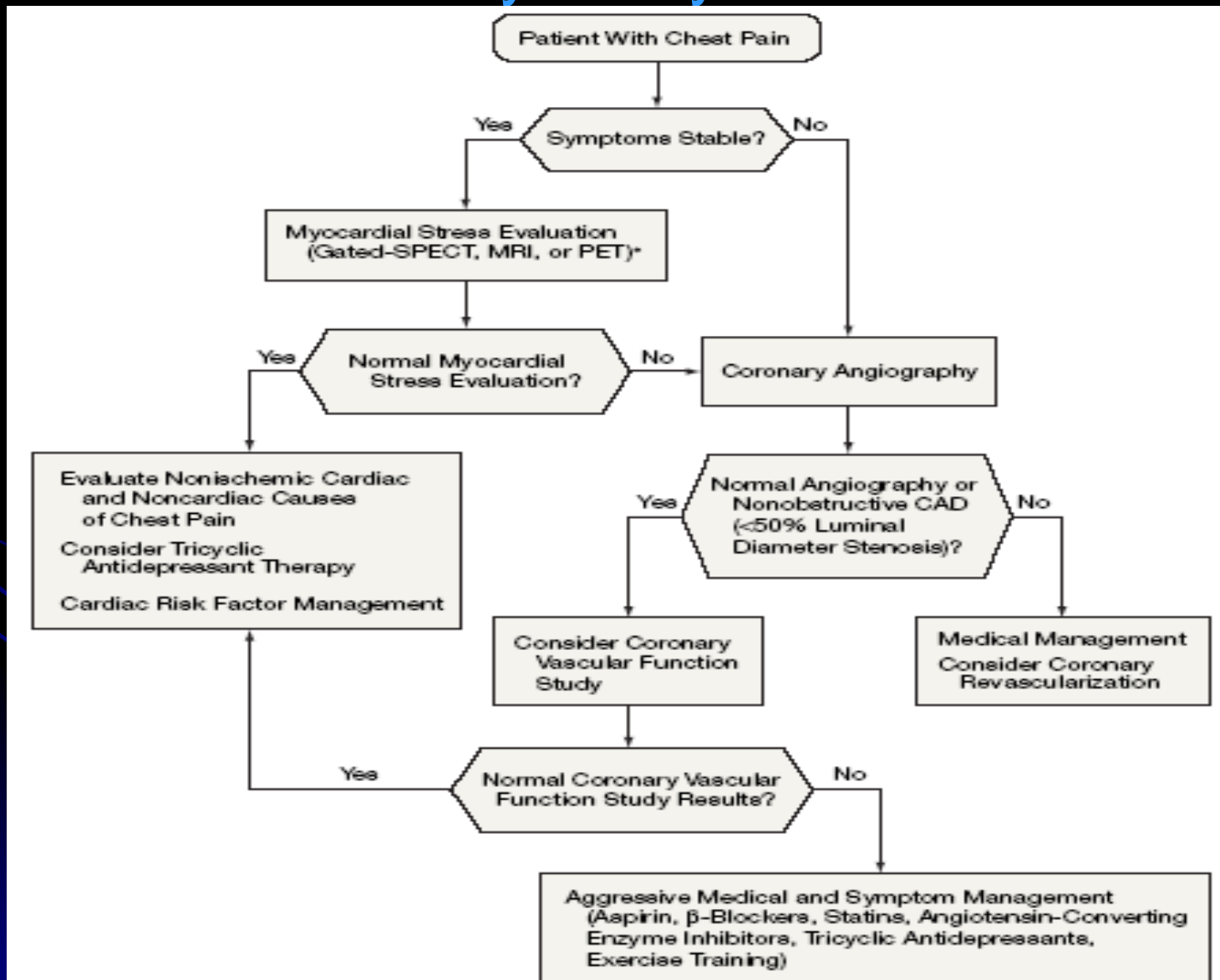
Comparison of Factors Before Surgery

	Women (%) (n = 465)	Men (%) (n = 465)	pValue
Risk factors before surgery			
Systemic hypertension	296 (63.7)	234 (50.3)	<0.001
Diabetes mellitus	109 (23.4)	61 (13.1)	<0.001
Myocardial infarction(occurrence)			0.689
Documented MI	249 (53.7)	256 (55.3)	
Silent MI	56 (12.2)	59 (12.8)	
MI(type)			
Old MI	245 (52.8)	277 (59.8)	
Acute MI	60 (12.9)	38 (8.2)	
Postmyocardial Infarction angina	71 (15.3)	35 (7.5)	<0.001
Congestive heart Failure	101 (21.9)	75 (16.1)	0.030
Emergency surgery	35 (7.5)	17 (3.7)	0.015
Left main narrowing	76 (16.3)	83 (17.8)	0.591
Smoking history	248 (53.9)	340 (73.9)	<0.001
Other comorbidities			
Thyroid gland Disease	48 (10.3)	7 (1.5)	<0.001
Arthritis	108 (23.2)	66 (14.2)	<0.001
Peptic ulcer	18 (3.9)	49 (10.5)	<0.001
Pulmonary disease	41 (8.8)	50 (10.8)	0.383
Renal disease	27 (5.8)	25 (5.4)	0.880
Peripheral vascular Disease	72 (15.5)	67 (14.4)	0.703
Hiatal hernia	47 (10.1)	34 (7.3)	0.160

Comparison of Complications After Surgery

	Women (%) (n = 459)	Men (%) (n = 460)*	pValue
Reoperation	16 (3.4)	29 (6.2)	0.067
Perioperative MI	31 (6.7)	23 (4.9)	0.322
Postoperative MI	12 (2.6)	8 (1.7)	0.491
Atrial arrhythmia	119 (25.6)	170 (36.3)	<0.001
Ventricular arrhythmia	35 (7.5)	49 (10.5)	0.137
Pulmonary insufficiency	51 (11.0)	47 (10.1)	0.838
Renal insufficiency	12 (2.6)	12 (2.6)	1.000
Incisional infection	46 (9.9)	42 (9.0)	0.737
Neurological			0.594
CVA	6 (1.3)	3 (0.6)	
Non-CVA deficit	13 (2.8)	14 (3.0)	
Psychological			0.016
Confusion	15 (3.2)	26 (5.6)	
Emotional upset	10 (2.2)	2 (0.4)	
Congestive heart failure	43 (9.2)	17 (3.7)	<0.001
Pericarditis	8 (1.7)	6 (1.3)	0.788
Angina	6 (1.3)	2 (0.4)	0.287

Practical Algorithm for Management of Patients With Symptoms and Nonobstructive Coronary Artery Disease



JAMA.
2005
;293
:477 -
484





가



Algorithm for evaluation of symptomatic women using exercise ECG or cardiac imaging

