

Cardiovascular Disease in Women

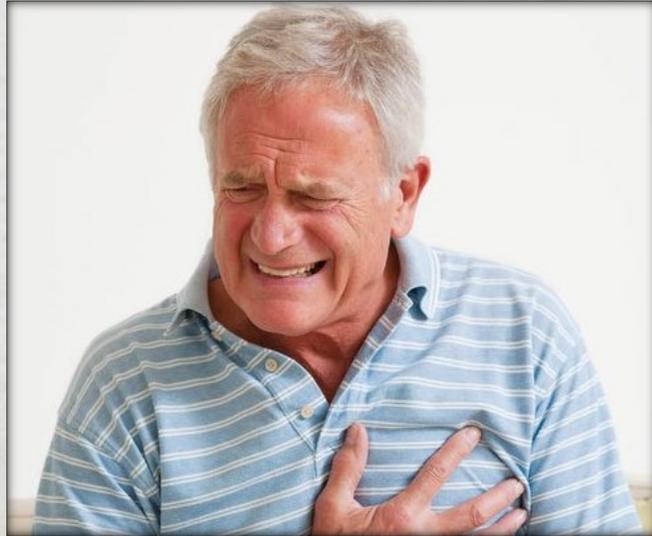
Professor Jay Wright

Thea Wilson

Henry King



First Impressions



First Impressions

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King's Bench Walk

The screenshot shows a Google search for "having a heart attack". The search bar is at the top, with the Google logo on the left and search filters (All, Videos, Images, News, Maps, More) below it. The search results are displayed in a grid of image thumbnails. Each thumbnail includes a small image and a caption with a source URL. The thumbnails depict various scenarios: an elderly man clutching his chest, a man in a white shirt holding his chest against a wall, a man in a blue hoodie being helped by a woman, a man in a white shirt holding his chest, a close-up of hands on a chest, an elderly man on a bench being helped by a woman, a man holding his chest, a man in bed, a close-up of a hand on a chest, a man on the ground being helped by a woman, a man in a white shirt holding his chest, a woman sitting on a chair holding her chest, a close-up of a hand on a chest, a man in a grey t-shirt holding his chest, a man in a blue shirt holding his chest, a woman in a green shirt on the ground holding her chest, a close-up of hands on a chest, a man in a suit holding his chest, a man on a couch being helped by a woman, and a man in a blue hoodie holding his chest.

Google
having a heart attack

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person kid stock patient body what happens arm stroke human heartbeat risk hospital senior sign white test steps avoid ma

Eight signs of a heart attack you get a ...
dailyrecord.co.uk

heart attack? - Mayo Clinic ...
mayoclinichealthsystem.org

Why a 'Widowmaker' Heart Attack Is So ...
health.clevelandclinic.org

10 Warning Signs of a Heart Attack You ...
commhealthcare.com

Think You're Having a Heart Attack ...
sharecare.com

helping someone having a heart attack ...
kutv.com

urgent warning signs of a heart attack ...
kentlive.news

Sex Isn't Going to Harm Most Heart ...
theatlantic.com

What Should I do if Someone Has a Heart ...
cprconsultants.com

Having a Heart Attack | Heart Disease ...
youtube.com

heart attack symptoms
healio.com

Silent Heart Attacks What Do ...
elite24er.com

How it feels to DIE of a heart attack ...
express.co.uk

Heart Attacks Among Young People ...

heart attack - Stock Im...

woman having heart attack | Safe & Sound

Heartburn or Heart Attack: Symptoms ...

That Mimic Heart Attack ...

Heart Attack Survival: Calling 911 ...

6 Signs You're Having a Heart Attack ...

First impressions

- ▶ Differences between the sexes
- ▶ Potential claims:
 - ▶ Failure to recognise the risk
 - ▶ Failure to diagnose
 - ▶ Failure to treat

Differences between the Sexes

- ▶ Physical
- ▶ Genetic
- ▶ Hormonal
- ▶ Immunological
- ▶ Cultural
- ▶ Societal
- ▶ Teaching and understanding
- ▶ Outcome depending on sex of the physician/cardiologist



Recognising the risk

Table 1. The 10 most common causes of death in women, globally and in selected countries and regions, 2017.

Rank	Global	United States of America	High-Income Countries	India	Low-Income Countries
1	CHD	CHD	CHD	CHD	Respir Infect
2	Stroke	Alzheimer's	Alzheimer's	COPD	Neonatal disorders
3	Alzheimer's	Stroke	Stroke	Diarrhoea	Diarrhoea
4	COPD	COPD	Lung cancer	Stroke	Malaria
5	Respir Infect	Lung cancer	COPD	Respir Infect	CHD
6	Diarrhoea	Breast cancer	Respir Infect	Neonatal disorders	Stroke
7	Neonatal disorders	Respir Infect	Breast cancer	TB	HIV/AIDS
8	Diabetes	CKD	Colorectal cancer	Asthma	TB
9	Breast cancer	Colorectal cancer	CKD	Diabetes	Congenital defects
10	Lung cancer	Diabetes	Diabetes	Falls	COPD

Data from The Global Burden of Disease study [1]. Income levels according to the World Bank; CHD = coronary heart disease; TB = tuberculosis; COPD = chronic obstructive pulmonary disease; Respir Infect = lower respiratory tract infection; CKD = Chronic kidney disease. Cardiovascular events are shown in bold.

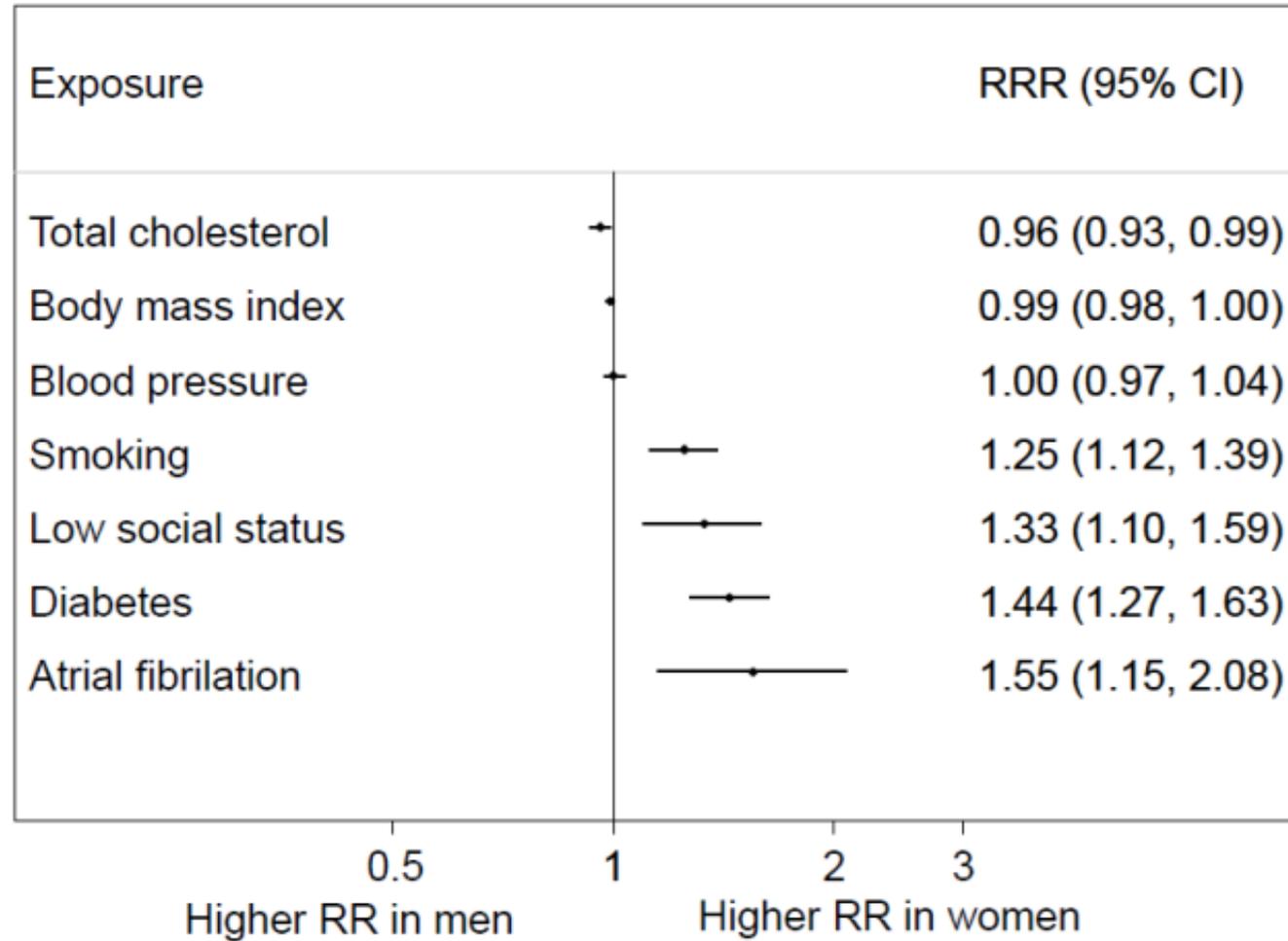
Recognising the risk (2)

Table 2. The 10 most common causes of disability-adjusted life-years lost in women, globally and in selected countries and regions, 2017.

Rank	Global	United States of America	High-Income Countries	India	Low-Income Countries
1	Neonatal disorders	CHD	Low back pain	Neonatal disorders	Neonatal disorders
2	CHD	Low back pain	CHD	CHD	Respir Infect
3	Stroke	COPD	Stroke	Diarrhoea	Malaria
4	Respir Infect	Drug use	Alzheimer's	Respir Infect	Diarrhoea
5	Diarrhoea	Stroke	Headaches	COPD	HIV/AIDS
6	COPD	Headaches	COPD	Dietary iron deficiency	Congenital defects
7	Low back pain	Diabetes	Diabetes	Stroke	TB
8	Headaches	Lung cancer	Depressive disorders	Headaches	Maternal disorders
9	Diabetes	Depressive disorders	Breast cancer	TB	Malnutrition
10	Congenital defects	Alzheimer's	Lung cancer	Congenital defects	Stroke

For conventions, see Table 1.

Recognising the risk (3)



Risk reduction measures

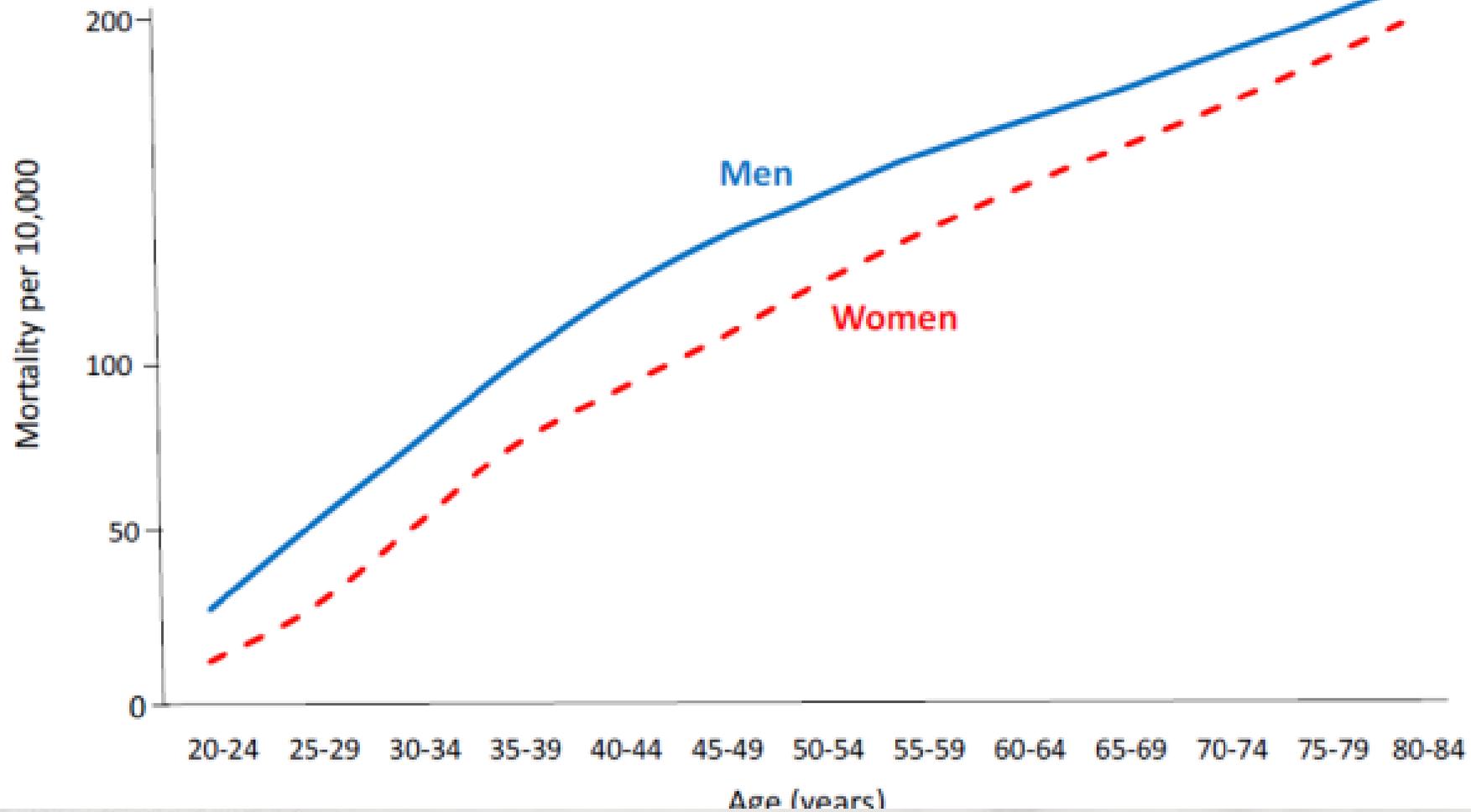
- ▶ Men achieve fewer targets in terms of :
 - ▶ Blood pressure
 - ▶ Smoking
- ▶ Women achieve fewer targets in terms of:
 - ▶ Cholesterol
 - ▶ Diabetes
 - ▶ Weight loss
 - ▶ Rehabilitation



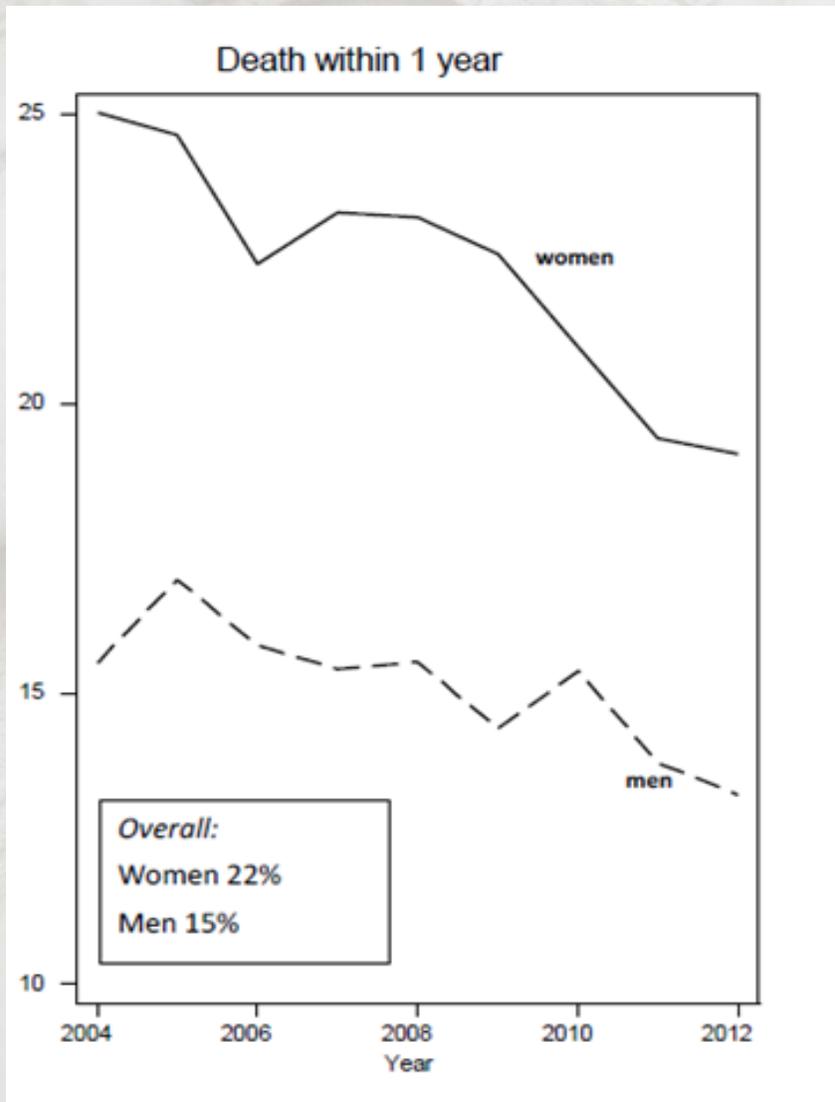
Outcomes

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King's Bench Walk



Outcomes (2)



Medical progress

▶ **The Good:**

- ▶ Over the last 30 years, there has been a reduction CHD/CVD in men and women in the western world

▶ **The Bad:**

- ▶ Not true for young women
- ▶ There has been an increase in female CHD mortality in the last 10 years in Africa, Asia, Eastern Europe

▶ **The Ugly:**

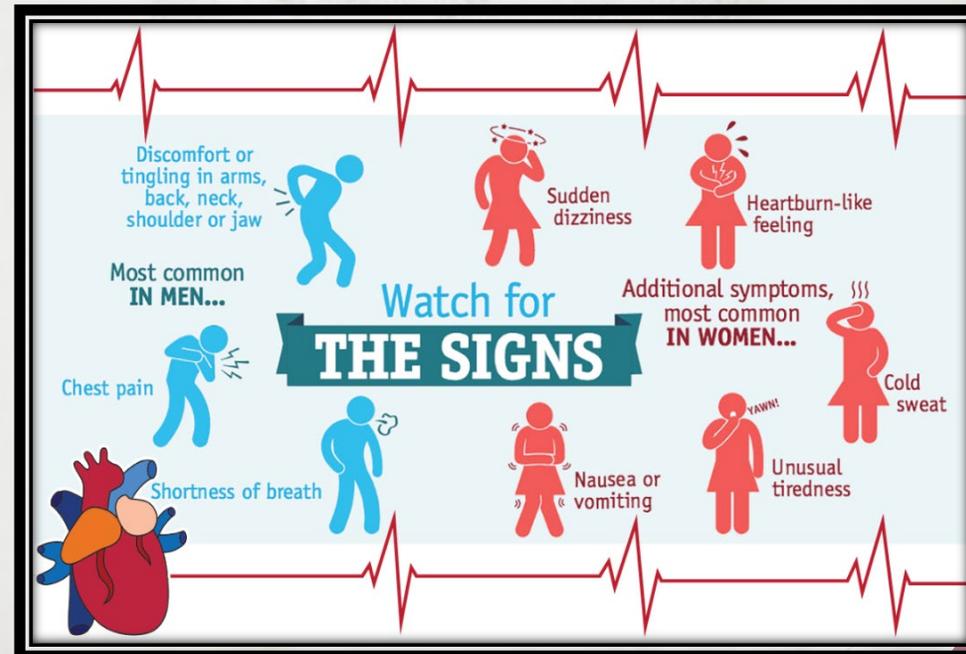
- ▶ There remains a failure to respond to warning signs in pregnancy– pre-eclampsia, gestational diabetes, post partum cardiomyopathy – which indicate predisposition to future problems.

Potential Claims

- ▶ Examples of some potential claims:
 - ▶ Poorly managed diabetes
 - ▶ Failure to treat warning signs
 - ▶ Failure to anticoagulate in atrial fibrillation
 - ▶ Angina diagnosis missed or delayed
 - ▶ Failure to recognise heart attack
- ▶ However, see **Negus v Guy's and St Thomas' NHS Foundation Trust [2021] EWHC 643 (QB)**

Potential Claims

- ▶ Issues to look out for:
 - ▶ Has informed consent been given to treatment (**Montgomery**)
 - ▶ Where CVD has developed or a heart attack suffered, were there warning signs that could or should have been responded to?
 - ▶ Has a diagnosis been delayed or missed because of “atypical symptoms” (**Bolam/Bolitho**)
- ▶ What does the medical expert say?
- ▶ Causation
- ▶ Quantum



Failures in Treatment

- ▶ Look at first how treatments are trialled and made available
- ▶ What this leads to

Treatment Trial Process

- ▶ Principles of research (male based)
- ▶ Pre-clinical - animal models, mice, dogs, pigs (male based)
- ▶ Clinical - phase 1, 2 and 3 studies
 - ▶ Phase 1 - safety
 - ▶ Phase 2 – pharmacology
 - ▶ Phase 3 – clinical outcomes
- ▶ Not reported according to sex – included in sub-group analysis only



Failures to Trial Treatments

- ▶ Women make up only 25% of participants in congestive heart failure trials between 1987 and 2012
- ▶ In a 2014 scientific op-ed in the journal of the scientific American complained that including both sexes in experiments is a “waste of resources”.
- ▶ Women only make up 32% of participants in coronary stent studies.
- ▶ Women are more likely to experience drug induced heart-rhythm abnormalities.

Failure to Trial Treatments (2)

- ▶ This borders on the absurd:
- ▶ When "female Viagra" which was released in 2015 was found to negatively interact with alcohol, its manufacturer ran a trial on this recruiting:
 - ▶ 23 men; and
 - ▶ 2 women.



So What?

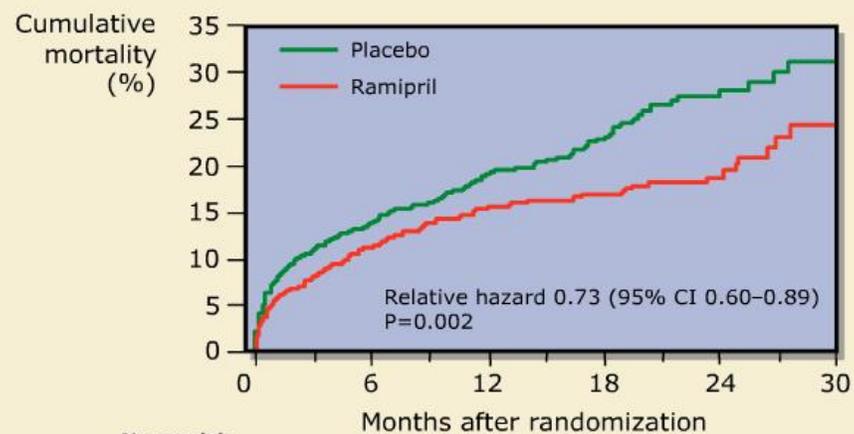
- ▶ Drugs / devices could be (probably are) inadequately tested in women
- ▶ This leads to poorer outcomes for those lucky women whose CVD is caught early enough.
- ▶ We will look at two types of CVD treatment:
 - ▶ Statins
 - ▶ CRT-D

Statins

- ▶ Women again under-represented in studies
- ▶ However, do gain benefit
- ▶ More likely to be discontinued / suffer side effects
- ▶ Less likely to be prescribed in the real world (same for HT and HF)
- ▶ Potential for liability

AIRE: Acute Infarction Ramipril Efficacy study - RESULTS continued-

All-cause mortality



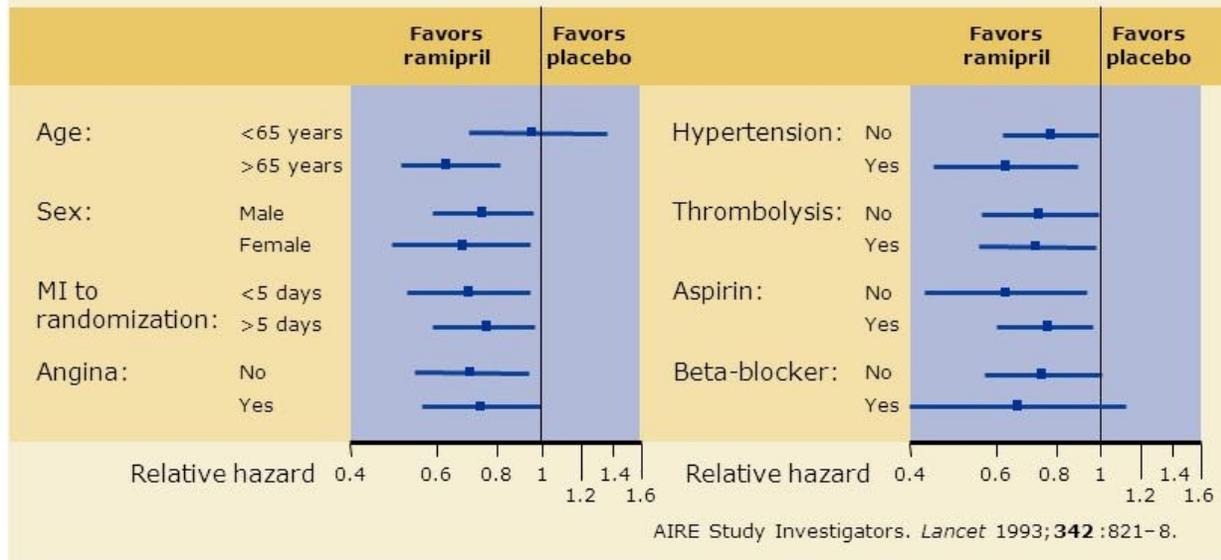
No. at risk

Ramipril	1004	889	592	290	123	45
Placebo	982	845	575	287	98	44

AIRE Study Investigators. *Lancet* 1993; **342**:821-8.

AIRE: Acute Infarction Ramipril Efficacy study - RESULTS continued -

Effect of ramipril on subgroups



Defibrillators

- ▶ CRT-D
 - ▶ Pacemaker (CRT-D) & defibrillator
- ▶ Parameters for having one implanted based on heart size.
- ▶ Recommendations changed

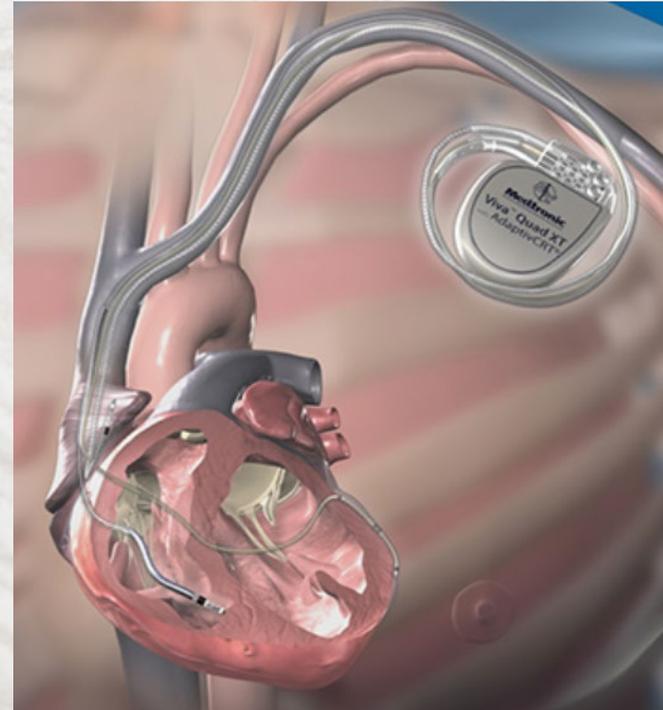
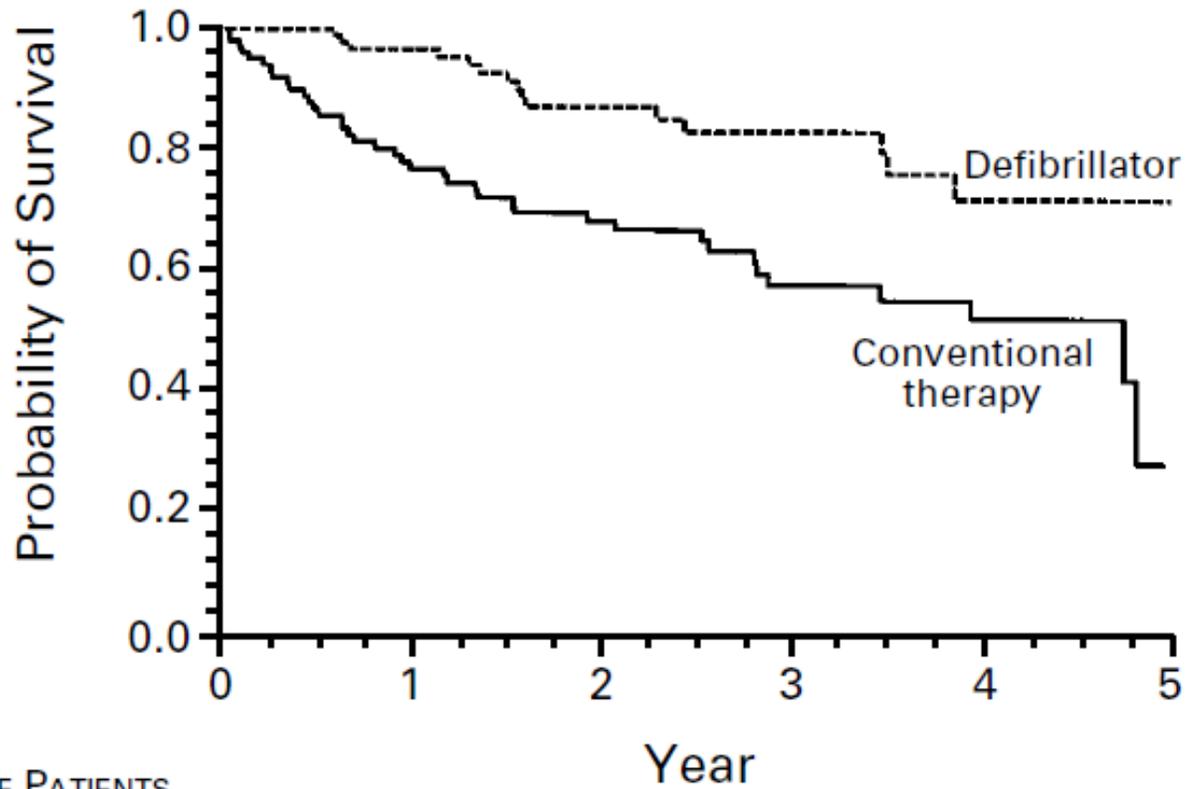
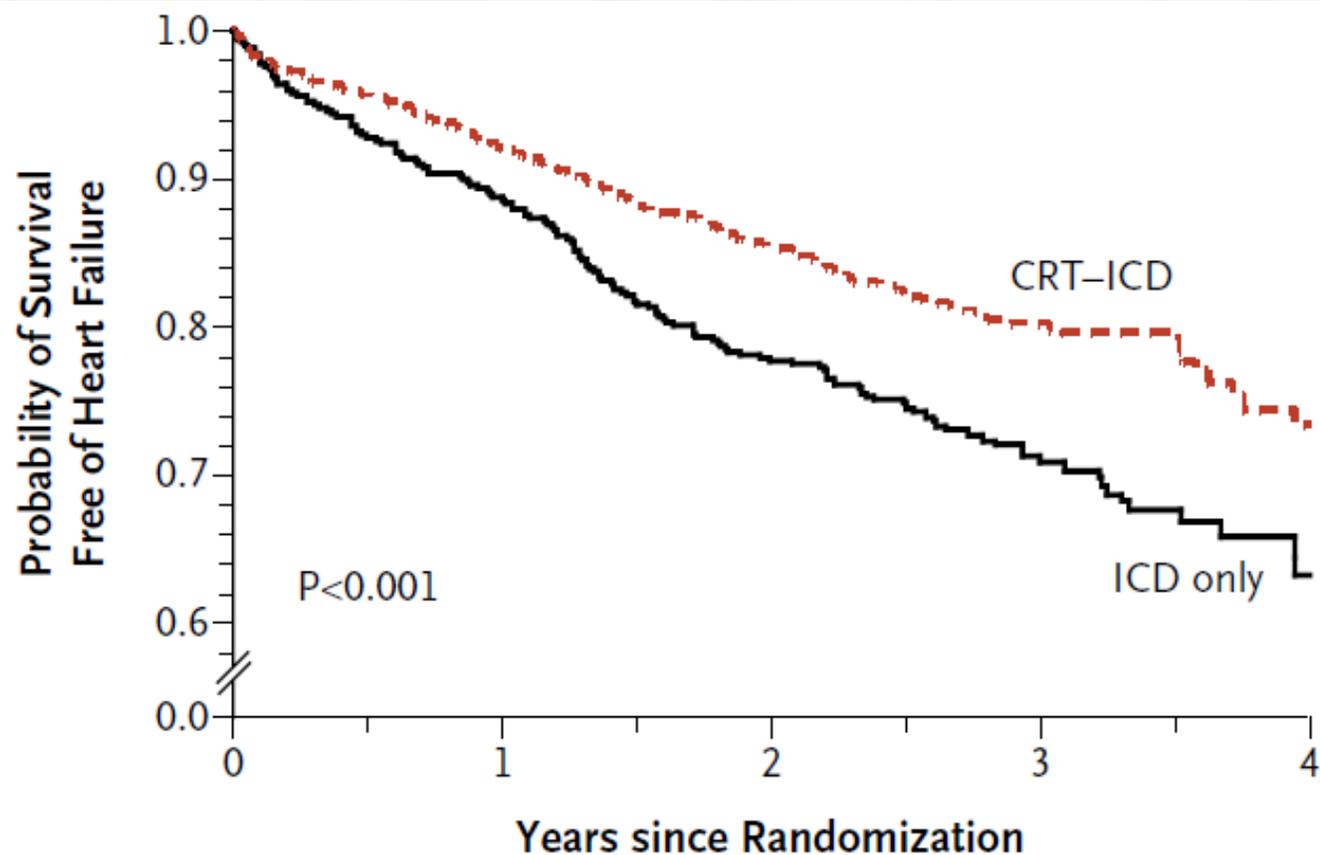


TABLE 1. BASE-LINE CHARACTERISTICS OF 196 RANDOMIZED PATIENTS.*

CHARACTERISTIC	CONVENTIONAL THERAPY (N = 101)	DEFIBRILLATOR (N = 95)
Age (yr)†	64±9	62±9
Sex (M/F)†	92/8	92/8
Cardiac history (%)		
≥2 prior myocardial infarctions†	29	34
Treatment for ventricular arrhythmias	35	42
NYHA class II or III†‡	67	63
Treatment for congestive heart failure†	51	52
Treatment for hypertension†	35	48
Insulin-dependent diabetes	5	7
Cigarette smoking (any time)	73	79
Coronary bypass surgery†	44	46
Coronary angioplasty	27	17
Implanted pacemaker	7	2
Interval of ≥6 mo between most recent myocardial	76	75

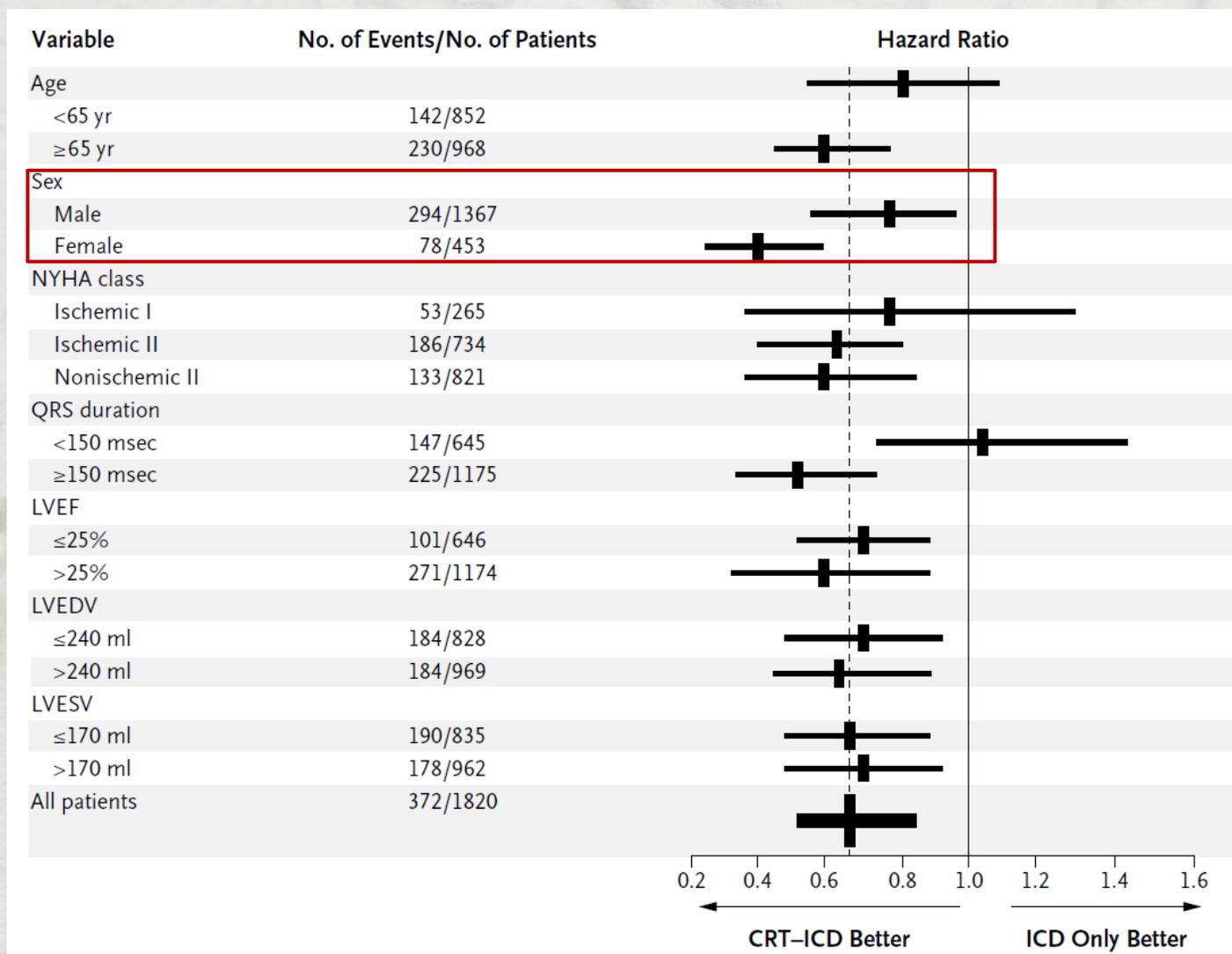


No. OF PATIENTS		Year				
Defibrillator	95	80	53	31	17	3
Conventional therapy	101	67	48	29	17	0



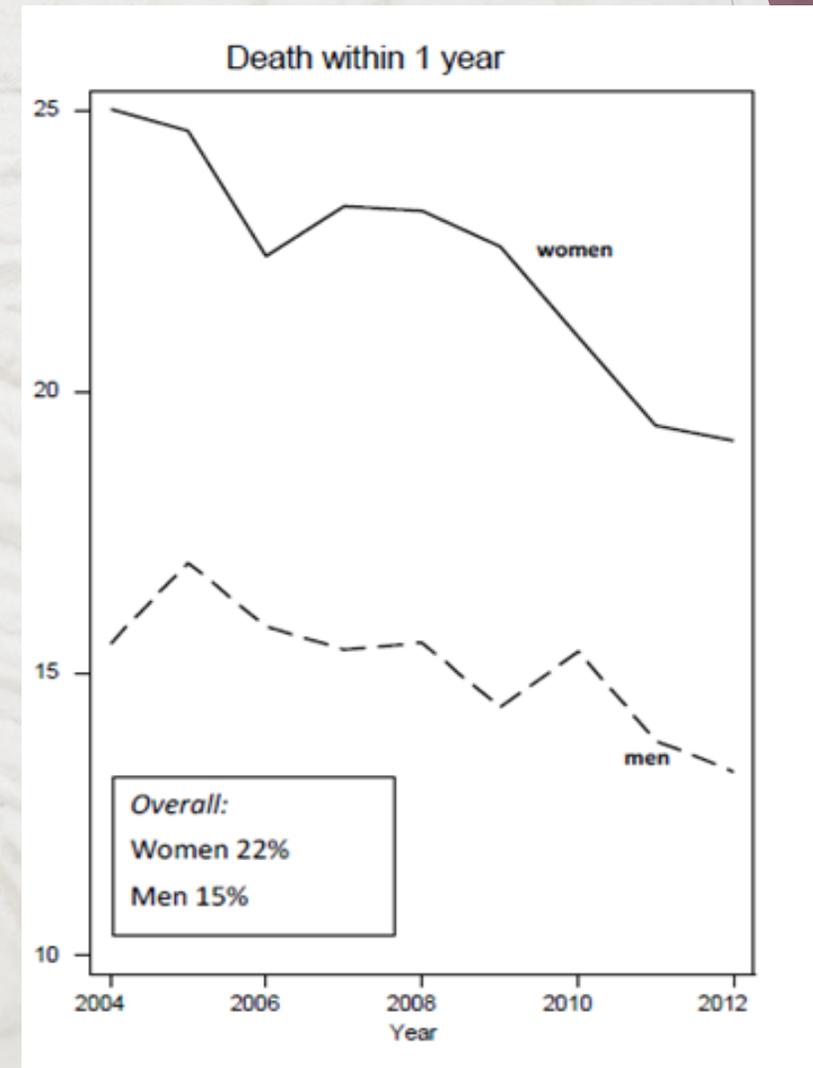
No. at Risk (Probability of Survival)

ICD only	731	621 (0.89)	379 (0.78)	173 (0.71)	43 (0.63)
CRT-ICD	1089	985 (0.92)	651 (0.86)	279 (0.80)	58 (0.73)



Claims of the Future?

- ▶ Failure to treat to guideline targets (**Montgomery**)
- ▶ Failure to continue with statins
- ▶ Failure to refer for CRT-D
- ▶ More likely to see negligent treatment of women than in men



Thank you!

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