

Cardiovascular Disease in Women

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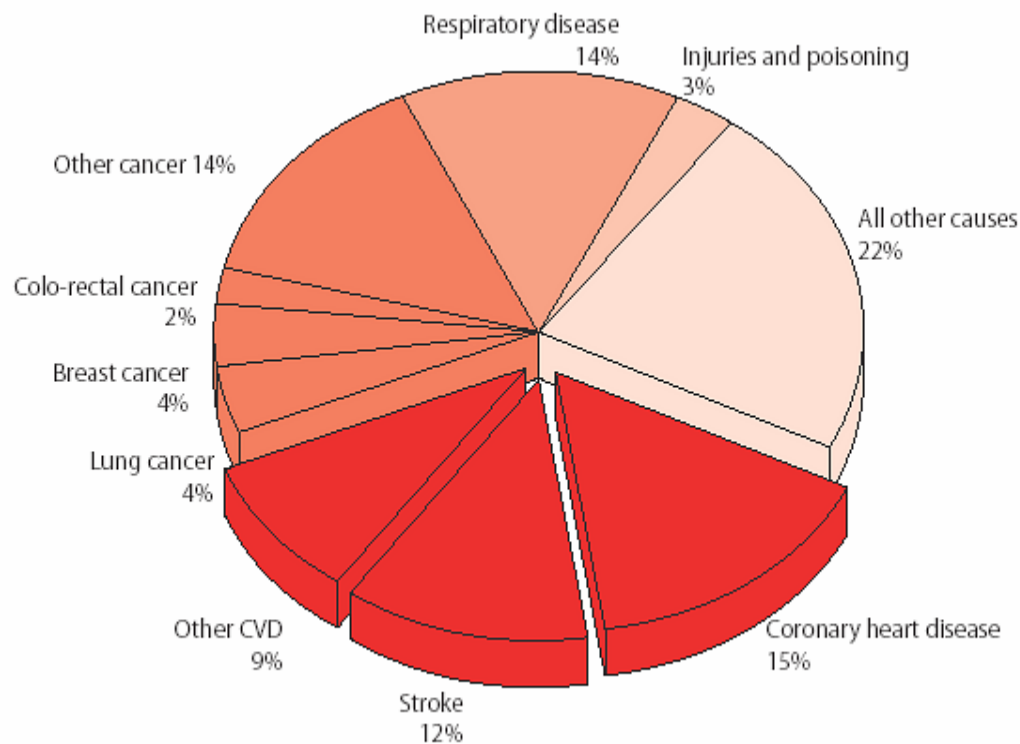
Death By Cause - Women 2004 UK

-CVD is responsible for 36% of deaths in women (37% in men)

-Higher than deaths from all cancers combined

-Breast CA is responsible for 4% deaths in women

Deaths from CVS is almost 9 times higher than deaths from breast cancer.



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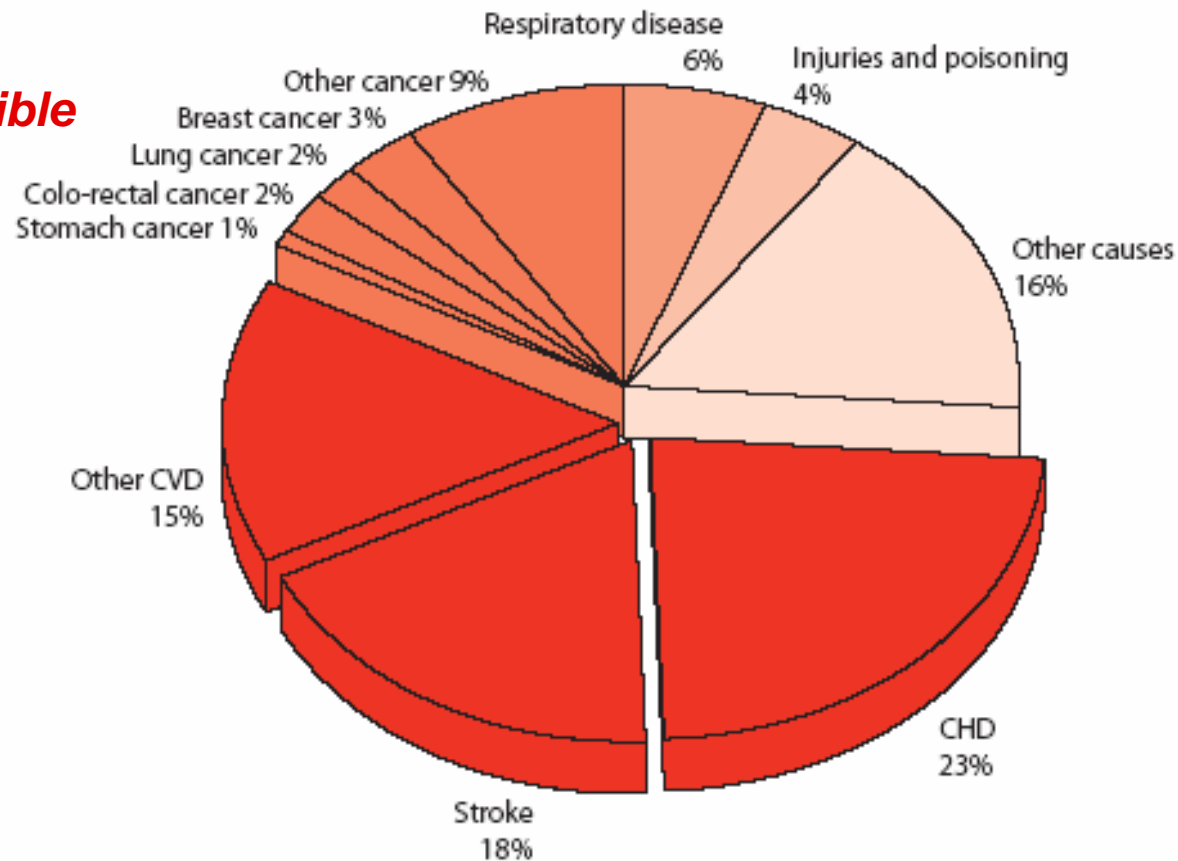
BHF 2006

heartstats.org

Death By Cause - Women 2004 Europe

CVD is responsible for 55% of deaths in women (43% in men)

18 x mortality compared to Breast cancer



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- Many **women** lack the basic awareness that CVD is their leading cause of death
- **Health care professionals-** Mx remains a challenge
- **Research-** women are underrepresented in clinical studies



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CVD in Women – *under-diagnosed, under-treated and under-researched*

Gender Differences

- **Presentation**
- **Investigation**
- **Treatment**
- **Prognosis**



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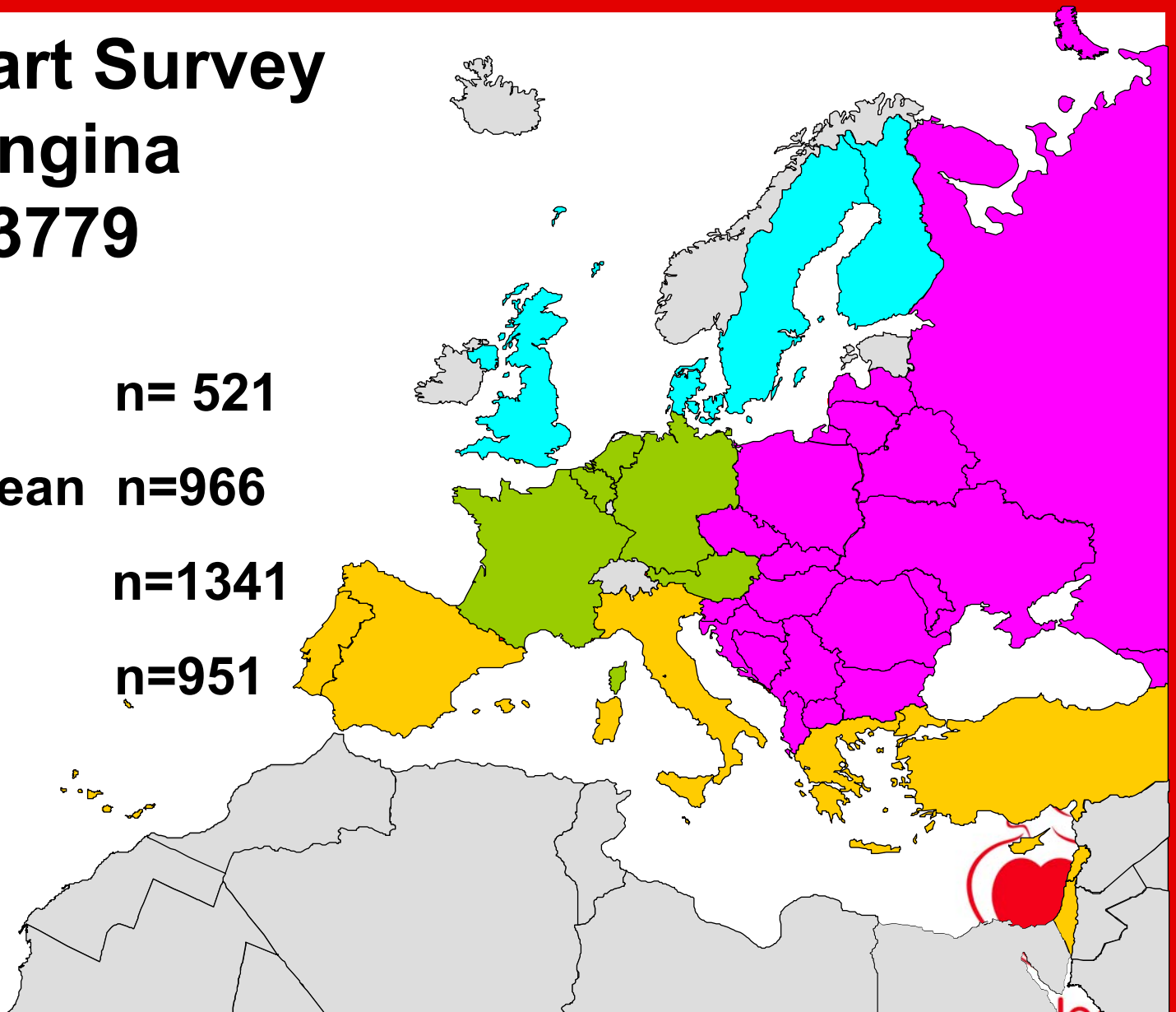
Euro Heart Survey of Angina n=3779

North n= 521

Mediterranean n=966

Central n=1341

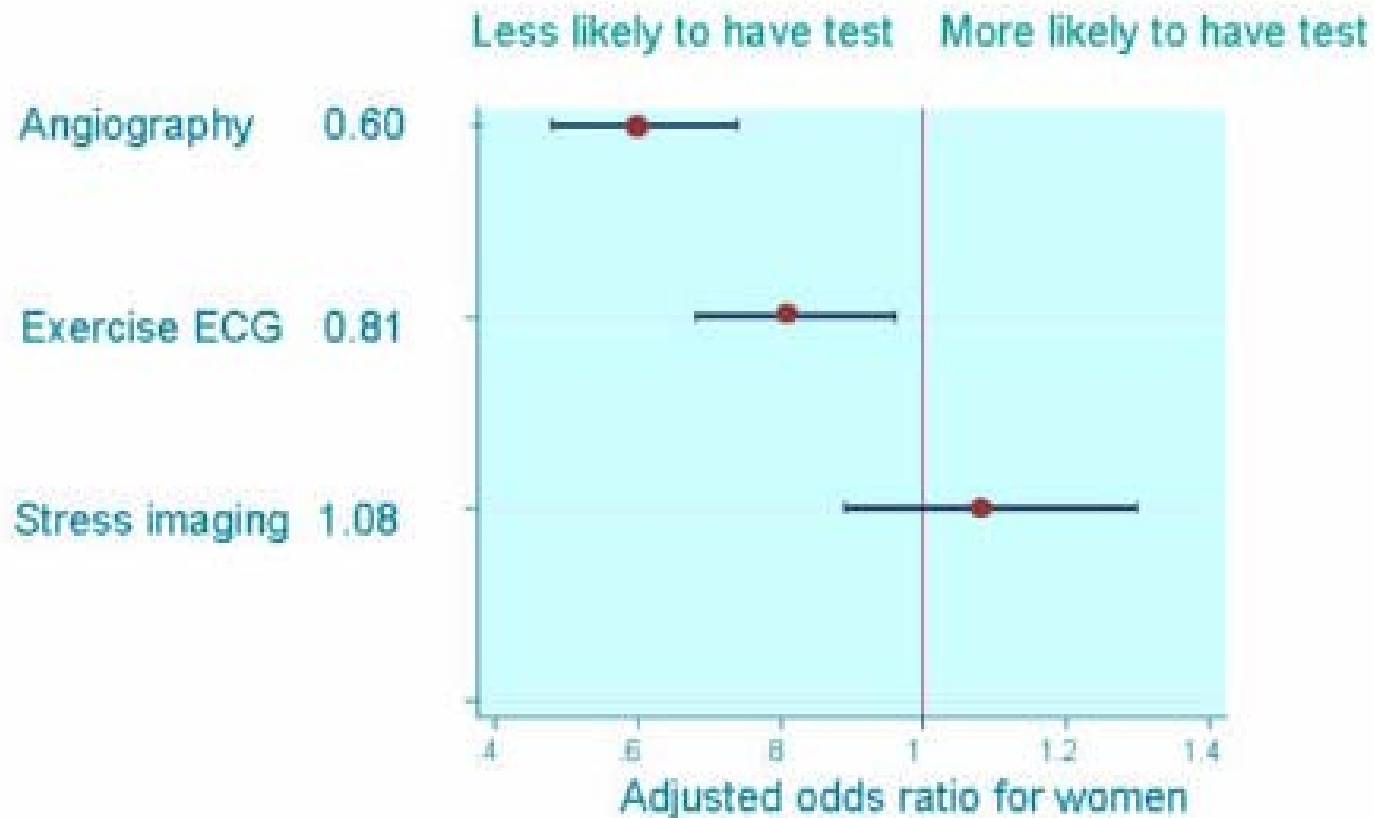
West n=951



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Caroline Daly ESC 2005

Effect of sex on use of investigations: Initial 4wks



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Caroline Daly ESC 2005

Meds at 1 year in those with confirmed CAD

	Male	Female	p value	Overall
Antiplatelet	95%	93%	0.23	94%
Lipid lowering	81%	76%	0.05	80%
Antiplatelet & lipid low.	79%	71%	0.01	76%
B Blocker	77%	82%	0.14	78%



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Caroline Daly ESC 2005

Effect of sex on revascularisation

	*Adj. OR F vs M	p value
Revascularisation planned/performed within 4 wks	0.56	<0.001
Revascularisation at 1 year	0.19	<0.001
Revascularisation at 1 year in women with CAD	0.68	0.002

*Adjusted for age, symptom severity and other factors predictive at univariate level



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Caroline Daly ESC 2005

Effect of gender on risk of death/MI

	*MV HR	95% CI	p value
Female vs Male	2.08	1.13-3.83	0.01
Abnormal LV Fxn.	2.03	1.04-3.94	0.04



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Caroline Daly 2005

Coronary Revascularisation PCI/CABG

At the time of presentation with CAD, women are older and have more co-morbid factors

Increased co-morbid factors

- Older
- Smaller in size
- Hypertension
- Diabetes mellitus
- Hypercholesterolaemia
- Peripheral vascular disease
- Congestive cardiac failure (diastolic dysfunction)



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Coronary Revascularisation- PCI/CABG

- **Smaller vessel size**
- **Coronary lesion distribution and morphology is similar**
- **Women tend to have more ostial vessel disease**
- **Women receive less IMA conduits than men**
- **Stent usage is less**
- **Use of GPIIb/IIIa is less in women**
- **Higher incidence of urgent procedures**



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AMI

- **Older** (approx 20 yrs)
- Higher incidence of **risk factors**
- Increased incidence in **young women** (<45 yrs)
- Present more often with **angina** rather than AMI
- Present more often with **NSTEMI** than with **STEMI**
- Higher proportion of '**silent AMI**' (? older, diabetes, less awareness)
- **Present later** to hospital with AMI (? atypical symptoms, less awareness, man's disease)



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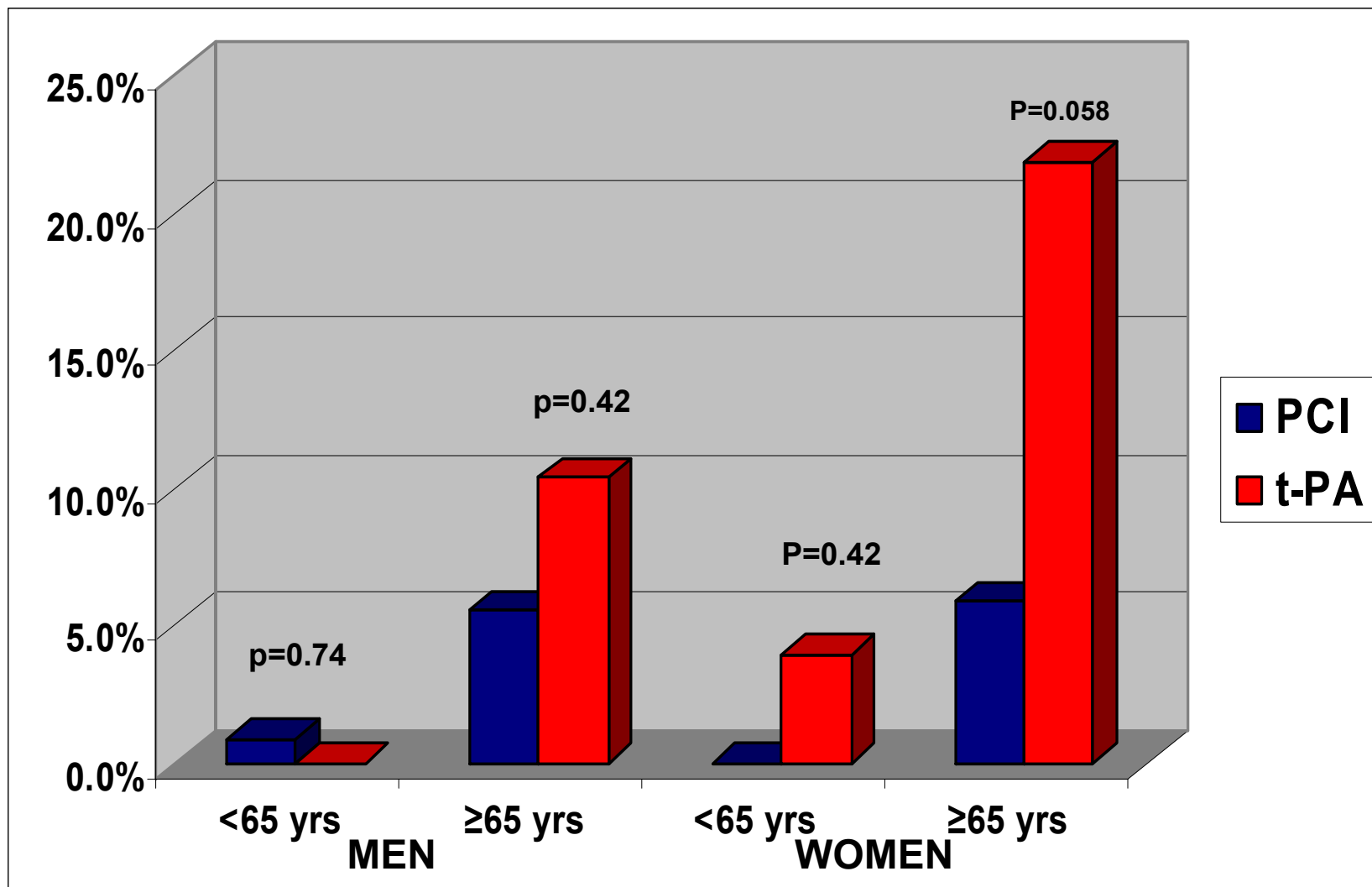
AMI

Women have higher rate of complications:

- **cardiogenic shock**
 - **congestive cardiac failure**
 - **reinfarction**
 - **peripheral bleeding**
 - **stroke**
-
- Higher risk of cerebral bleeding with thrombolysis
 - Higher early mortality than men
 - Gender is an independent risk factor for mortality in AMI
 - Mortality rate in younger women (<45 years) is over twice that in men
 - Late presentation to hospital
 - Less aggressively treated



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AMI

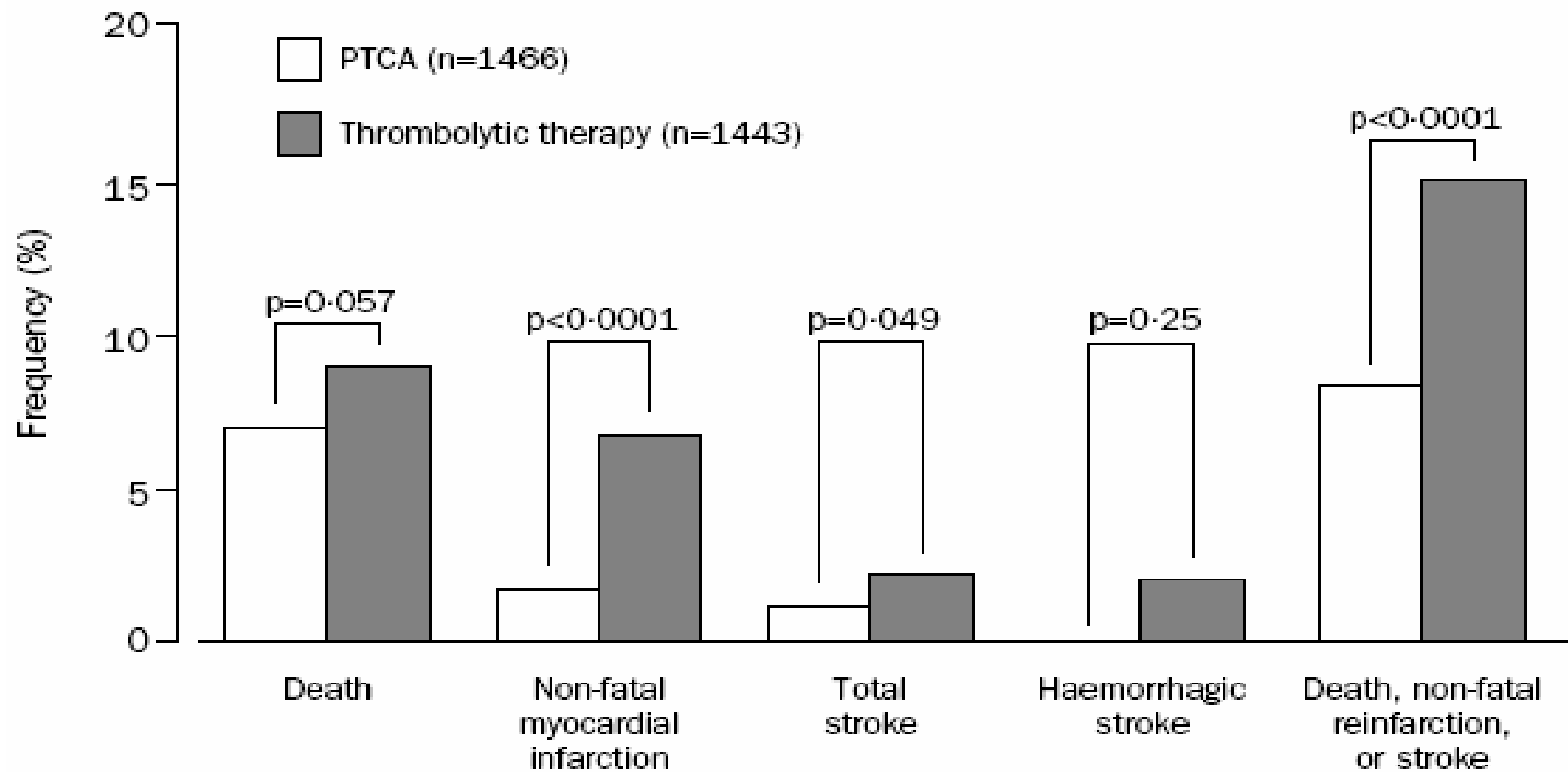


Figure 4: **Short-term clinical outcomes in individuals treated with on-site thrombolysis or after emergent transfer for primary PTCA**^{13,15,27,28,31} **rt**

CADILLAC Trial

N=2082 (27% women) with AMI



PTCA

N= 518



PTCA + Abciximab

N=528



Stenting

N=512



Stenting + Abciximab

N=524



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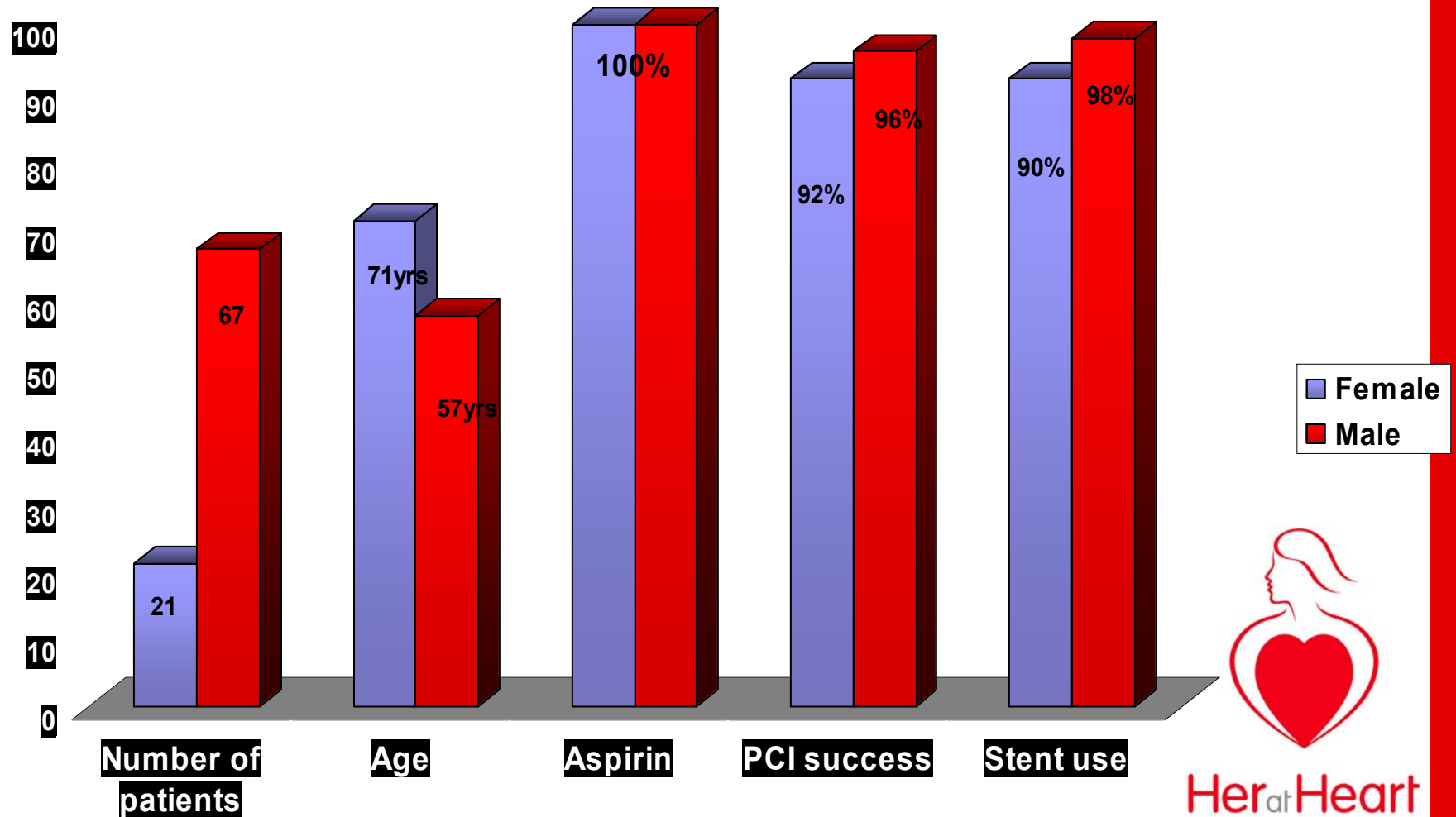
- **Women** - more co morbid factors
- **Women** – higher unadjusted 1 year event rates
 - Death (7.6% vs 3.0% , $p<0.001$)
 - TVR (16.7 % vs 12.1%, $p<0.006$)
 - MACE (23.9% vs 15.3% , $p<0.001$)
- **Female gender-** independent predictor of MACE and bleeding complications
- BSA and co- morbid factors predicted 1 year death NOT gender
- **Women** – primary stenting sig reduced 1 year MACE and TVR
- **Women** – the addition of abciximab sig reduced 30 day TVR without increasing bleeding risk



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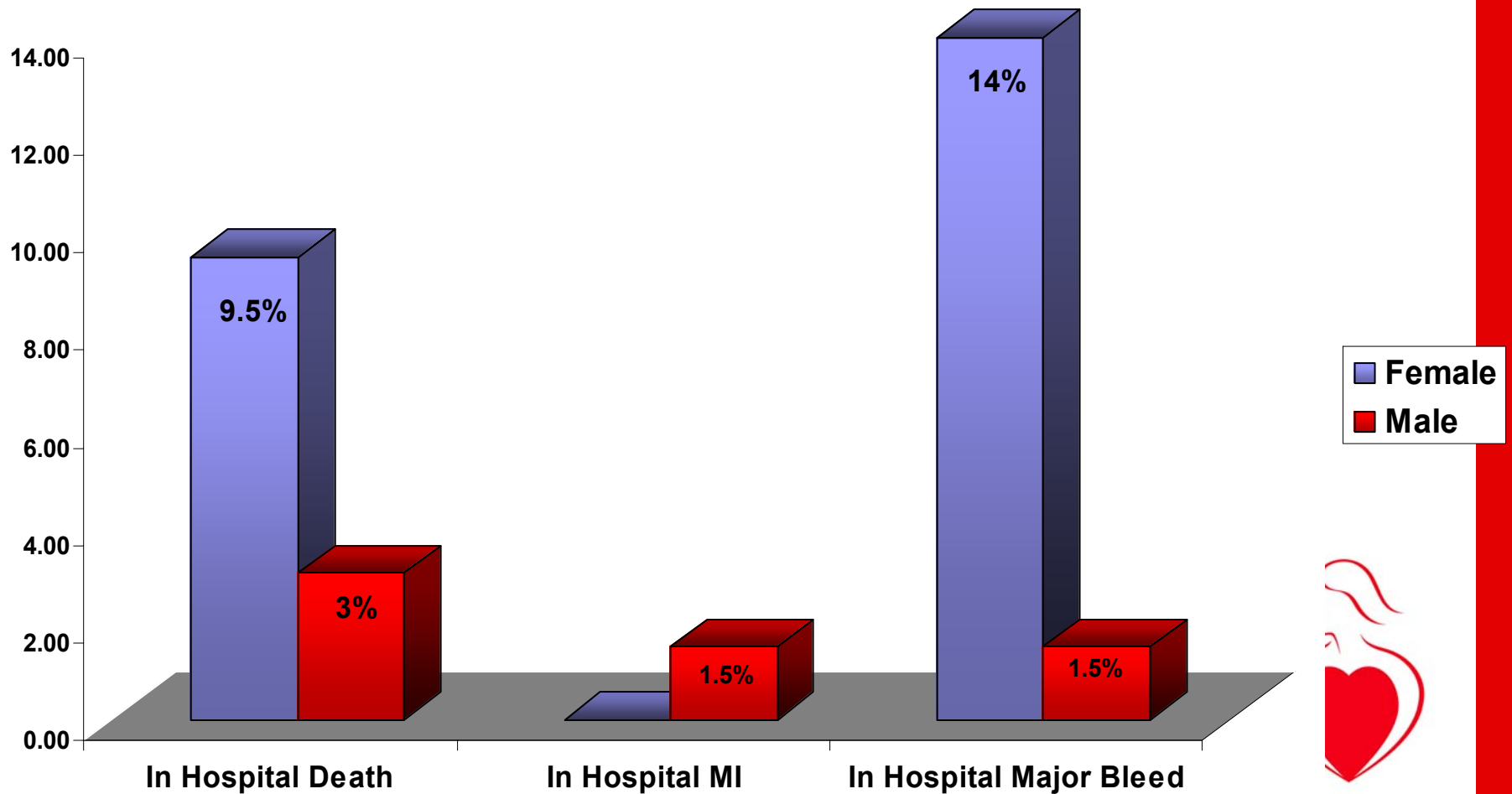
PPCI – St Mary's Hospital

July 2004- May 2005



PPCI – St Mary's Hospital

July 2004 – May 2005



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AMI

- No large study has been performed that systematically examines the presentation, investigation, management and outcomes of **AMI in women**.
- Precise reasons underlying the increase in MACE in women presenting with AMI remains undefined



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PPCI- Gender Analysis

- Proposal for gender specific analysis submitted for **MINAP** data set
- Opportunity to analyse data for PPCI within **Cardiac Network/NIAP**



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General Aims

- To perform gender specific analysis of the PPCI (NWL Network data) to identify differences in the presentation, investigation, treatment and outcomes of **women with AMI**.
- The results will enable the development of further specific studies in this area, as well as identification of areas for improvement in practice.



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Specific Aims

- Determine the age-adjusted incidence of MI in **men and women** in the NW London region
- To investigate differences in the presentation of MI in **men and women**, including cardiovascular co-morbidity, pattern of MI, mode of presentation, and delays in presentation.



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- To investigate **differences in treatments**, including anti-platelets, anti-thrombins, fibrinolytics, angiography and revascularisation during hospital admission, between men and women.
- Examine differences in **incidence of death, reinfarction, readmission and revascularisation**, in hospital, and after discharge from hospital, between men and women.



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- Determine the extent to which differences in presentation, management and outcome can be attributed to recognised co-morbidities, and the extent to which they may be **driven by gender.**



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PPCI- Gender Analysis

Study Population

- All patients presenting with STEMI within the NW London Region.
 - Hammersmith Hospital
 - Harefield Hospital
 - St Mary's Hospital
 - Feeding Hospitals
- From individual hospital database



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- **Primary endpoints** will be the incidence of, and survival after AMI in women compared with men.
- **Secondary endpoints** will include analysis of delays to treatment, co-morbidity factors, and utilization of treatments in the two gender groups.



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Statistical Analysis

- Statistical Analysis from Department of Epidemiology Imperial College.
- **Ethnic analyses** to identify whether there are specific at risk populations.



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- Gender analysis of the use of GIIb/IIIa inhibitors in PPCI
- Increased bleeding risk in women
- ? Platelet function
- ? Adjustment of dosing regime in women



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