



# A framework for the Analysis of Gender Bias in research and medical care

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“Normality is believing that what happens is normal”  
(El Roto, Spanish humorist)



# Definitions of Gender Bias



## Medical practice:

“The differential medical treatment of men and women, the impact of which may be positive, negative or neutral.”

*Lenhart Sh. Gender discrimination: A health and career development problem for women physicians. J Am Med Women Assoc 1993; 48: 155-9.*

## Research purposes:

“A systematic, erroneous gender dependent approach related to social construct, which erroneously regards women and men as similar or different, in the exposure to risk factors and the natural history of disease.”

*Ruiz-Cantero MT, Vives-Cases C, Artazcoz L et al. A framework to analyse gender bias in epidemiological Research J Epidemiol Comm Health 2007; 61: 46-53*

# Coronary Angiographs between women and men

Harvard Hospital (30,000 patients) and New Haven Hospital (30,000 patients)

Ayanian IZ, Epstein AM. *N Engl J Med* 1991; 325: 221-5



## Nº of coronary angiographs per 100 patient admissions

	Men	Women
Whites	18.8 %	9.4%
Non Whites	14 %	8.6%

2011

# 10Q Report:

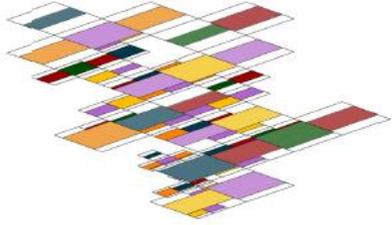
Advancing Women's Heart Health  
through Improved Research,  
Diagnosis and Treatment

**Women Heart**  
The National  
Coalition for Women  
with Heart Disease



**SWHR**  
because **SEHR** matters

June 2011 • Washington, DC



# Presentation Focus



## 1. Gender bias in research is due to an incorrect assumption of:

Equality between women and men

Exposure to risk factors and their consequences.

Early (and even later symptoms) of diseases suffered by both sexes.

Differences between women and men

Responses to treatment

Outcomes/Prognosis

## 2. Gender bias in research specifically related to women's health problems.

# Incorrect assumption of Equality between women and men in research

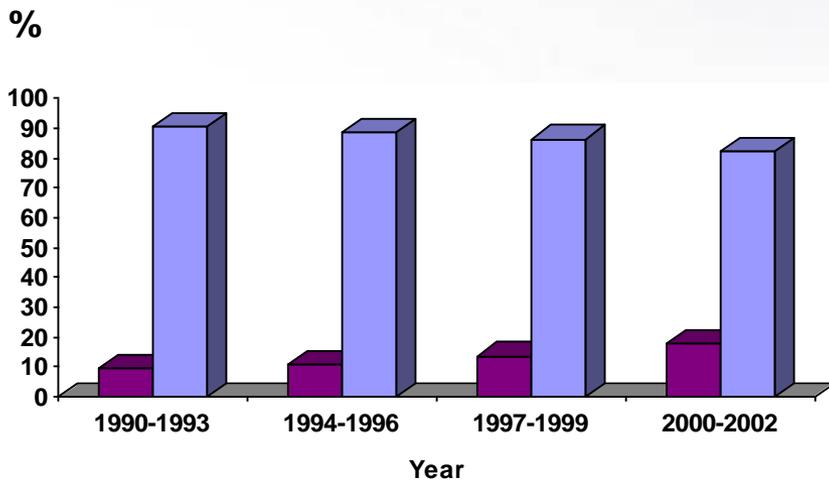


	Epidemiological bias relating to gender insensitivity	
Research context	Selection Bias	Measurement Bias
Clinical	Under-representation of women in clinical trials. See <a href="#">slide 8</a>	
Social		

# Participation by gender in the published clinical trials of specific pharmaceuticals



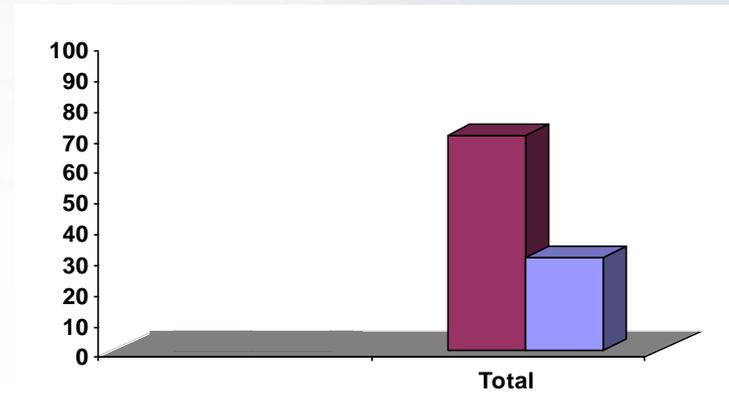
## Antiretrovirals<sup>1</sup>



<sup>1</sup>Ruiz Cantero MT, Pardo MA. European Medicines Agency policies for clinical trials leave women unprotected. *J Epidemiol Comm Health* 2006;60:911-3.

## Etoricoxib<sup>2</sup>

%



<sup>2</sup>Chilet-Rosell E, Ruiz-Cantero MT, Horga JF. Women's health and gender-based clinical trials on etoricoxib: methodological gender bias. *J Public Health (Oxf)* 2009; 31: 434-45



# Incorrect assumption of Equality between women and men in research



	Epidemiological bias relating to gender insensitivity:	
Research context	Selection Bias	Measurement Bias
Clinical	Under-representation of women in clinical trials. See <a href="#">slide 8</a>	Lack of sex stratification in clinical trials. Why? Overall sample size stratified by sex is too small to produce valid results
Social	Under-representation of women in research on exposure to chemical risks	Familism Bias

# Incorrect assumption of Differences between women and men in research



	Epidemiological bias relating to gender insensitivity	
Research context	Selection Bias	Measurement Bias
Clinical	<p>Example: Lower Ferritin values for women incorrectly accepted as normal</p> <p>See <a href="#">slide 11</a></p>	
Social		

Reference Population values vs. Accepted Normal values  
of iron storage protein Ferritin: 50-200 ng/ml.



**Table 1** Reference values of ferritin in public and private health centres in Spain

Public and private health centres	Reference values (ng/ml)	Women	Men
Clinical Laboratory, Cornellá-Barcelona, Catalonia	30-300		
Basurto Hospital, Vasco Country	15-150		
Laboratory Echevame, Granada, Andalusia	10-204		
San Juan de Dios Hospital, Barcelona, Catalonia	10-120		
La Plana Hospital, Vila-Real Valencian Community	5-150	5-150	20-200
Unilabs, Barcelona, Catalonia		5-140	29-280
Hermanos Miralles Primary Care Centre, Madrid		14-150	40-340
Folguera Laboratory, Barcelona, Catalonia		15-150	30-400
Fornells, Oló, Crespo Laboratory, Barcelona, Catalonia		20-200	20-450

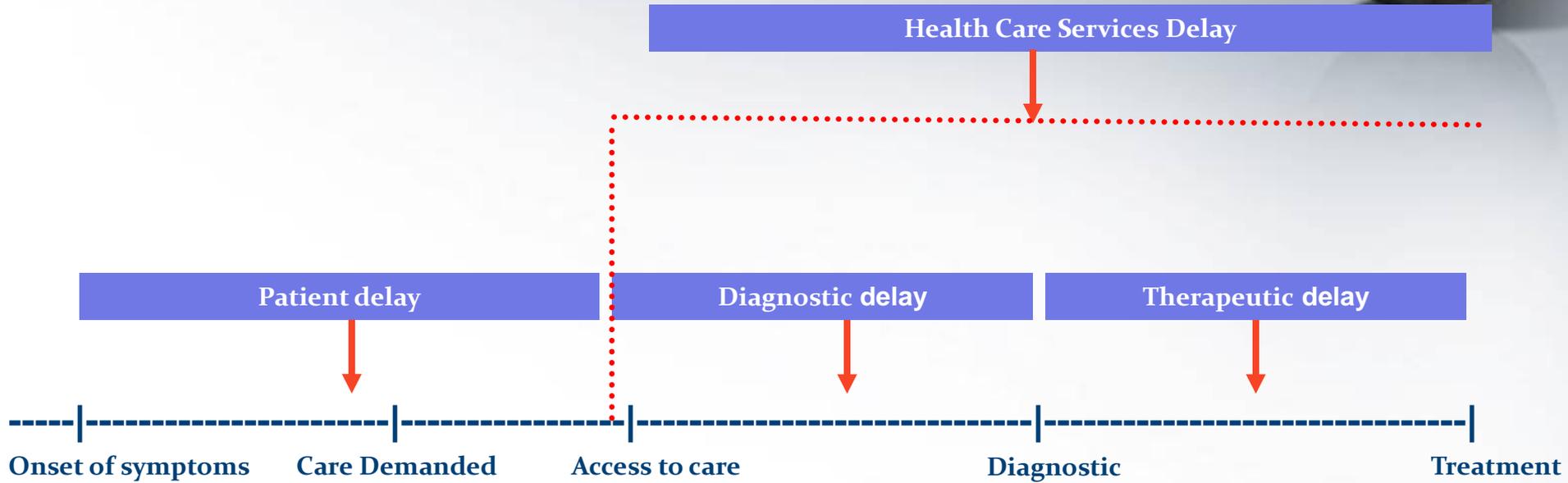
1. Inconsistency of the prevalence of anemia across the Spanish regions
2. Unequal access to treatment based on the patient's geographical location

# Incorrect assumption of Differences between women and men in research



	Epidemiological bias relating to gender insensitivity	
Research context	Selection Bias	Measurement Bias
Clinical	<p>Example: Lower Ferritin values for women incorrectly accepted as normal</p> <p>See <a href="#">slide 11</a></p>	<p>Example: When some studies wrongly attribute the blame to woman patients for the delay in receiving diagnostic and treatment</p> <p>See <a href="#">slide 13</a></p>
Social		

# Delay Timeline in receiving diagnostic and treatment



# Incorrect assumption of Differences between women and men in research



	Epidemiological bias relating to gender insensitivity:	
Research context	Selection Bias	Measurement Bias
Clinical	<p>Example: Lower Ferritin values for women incorrectly accepted as normal</p> <p>See <a href="#">slide 11</a></p>	<p>Example: Some studies wrongly attribute the blame to woman patients for the delay in receiving diagnostic and treatment</p> <p>See <a href="#">slide 13</a></p>
Social	<p>Example: Studies on eating disorders, which tend to exclusively select women for participation in such research</p>	<p>Example: The myth of a higher prevalence of mental health problems in women than in men</p>

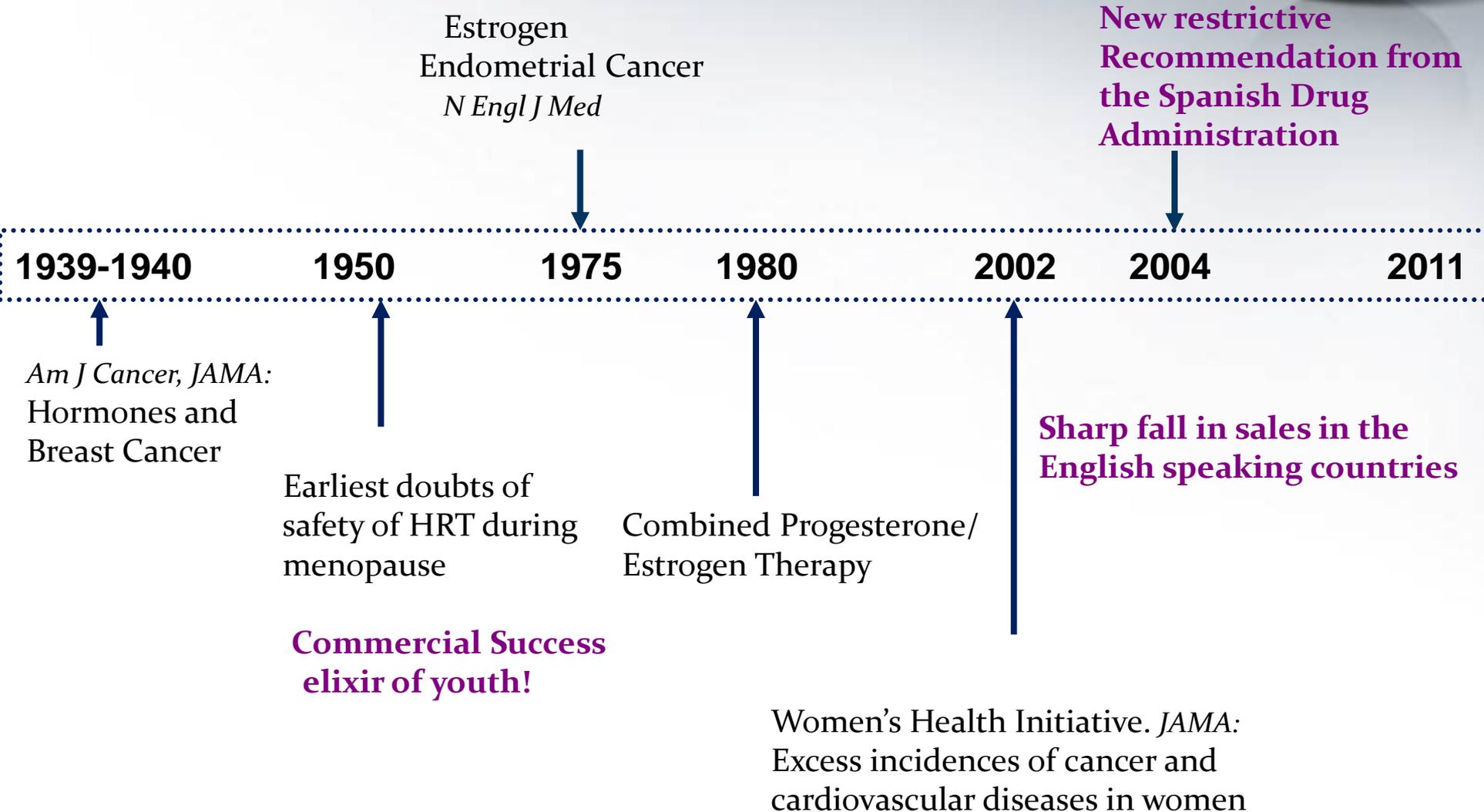
# Gender bias in research and medical care specifically related to women's health problems



1. Hormone Replacement Therapy (HRT)
2. “Ectomies”: Hysterectomies, preventive mastectomies, episiotomy, oophorectomies
3. Aggressive treatments of breast cancer
4. Disease Mongering more frequently aimed at women than men

# Hormonal Replacement Therapy and Related Diseases

N. Krieger. HRT, cancer, controversies and Women's health  
*J Epidemiol Comm Health* 2005; 59: 740-8



## CONCLUDING REMARKS RECOMMENDATIONS



**From the feminist empiricist perspective, we should “Engender” knowledge about disease suffered by both sexes by:**

Developing Systematic Reviews

Analysing research limitations

- Explicitly stated by the authors
- Other limitations that can be observed in the studies

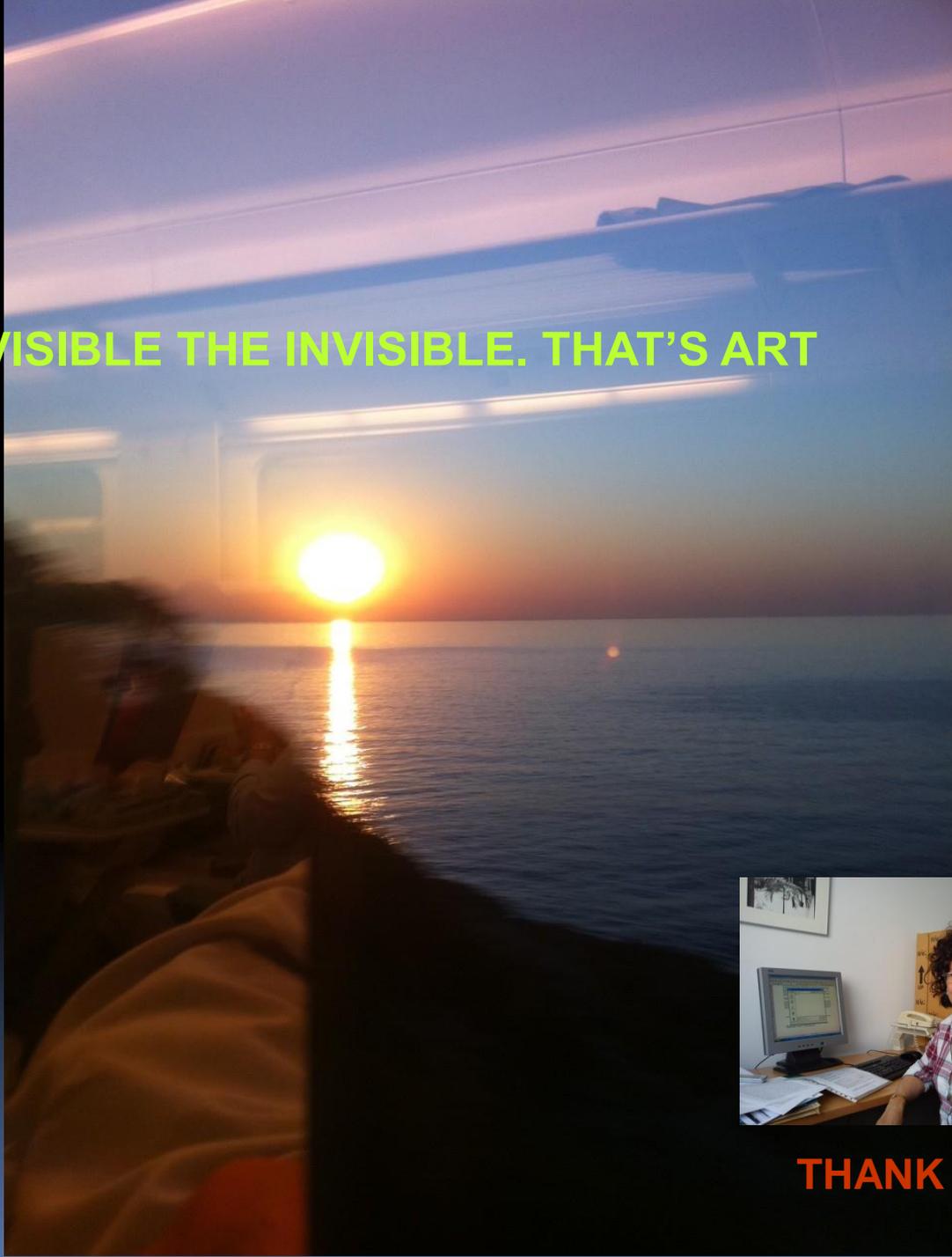
“Looking-twice” at the results, stratifying them by sex; and developing Meta-analysis

Requesting how the cut-off points criteria relating to normality/abnormality were established for women in different diagnostic tests :

- Are they established from a sample size of women?
- Are they established from a sample size of men and inferred to be applicable to women?

Evaluating the effectiveness of diagnostic protocols because many have been established for CT's and may not include some women's symptoms/illness, taken as “atypical”

**MAKE VISIBLE THE INVISIBLE. THAT'S ART**



**THANK YOU!**