



# La Ricerca Industriale e la Medicina di Genere

*Delia Colombo*

*FIMMG Chia (Cagliari) 6 Ottobre 2017*



# The WHO Equity Act



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## Gender, equity and human rights

### Gender



WHO/Anna Kari

Gender—gender requires us to ensure that health policy, programmes, services and delivery models are responsive to the needs of women, men, girls and boys in all their diversity.

Gender refers to the socially constructed characteristics of women and men – such as norms, roles and relationships of and between groups of women and men. It varies from society to society and can be changed. While most people are born either male or female, they are taught appropriate norms and behaviours – including how they should interact with others of the same or opposite sex within households, communities and work places. When individuals or groups do not “fit” established gender norms they often face stigma, discriminatory practices or social exclusion – all of which adversely affect health. It is important to be sensitive to different identities that do not necessarily fit into binary male or female sex categories.

Gender norms, roles and relations influence people’s susceptibility to different health conditions and diseases and affect their enjoyment of good mental, physical health and wellbeing. They also have a bearing on people’s access to and uptake of health services and on the health outcomes they experience throughout the life-course.

- In 2000 the WHO included Gender Medicine in the Equity Act in order to improve the appropriateness of treatment.

# Pharmacological experimentation on women

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## The National Bioethical Committee

published a document entitled

“Pharmacological Experimentation on Women”

which highlighted the fact that there is still **too little commitment** in the field of pharmacological therapy for women.

# Pharmacological experimentation on women

This document is based on the following evidence



Home

Bioetica: parere su sperimentazione farmacologica su donne

Postato il 11/11/2004, 12:33/2008

Tags: bioetica

Il Comitato Nazionale per la Bioetica (CNB) nella seduta plenaria del 28 novembre 2008 ha approvato il Parere "La sperimentazione farmacologica sulle donne". Il documento, a partire dall'analisi dei dati sulla sperimentazione clinica sulle donne, rileva la sottorappresentatività nell'arruolamento e la scarsa elaborazione differenziata dei risultati, con particolare riferimento alle patologie non specificamente femminili.

Si evidenzia, inoltre, che le donne siano le maggiori consumatrici di farmaci, la sperimentazione tende a non tenere sufficiente considerazione la loro specificità e il cambiamento delle condizioni di salute femminile, con un conseguente incremento di danni dovuti all'assunzione di farmaci.

Il documento sottolinea le criticità di questo approccio, ne discute le problematiche etiche, analizza e discute le normative internazionali e nazionali sull'argomento. Il CNB propone linee bioetiche per una equa considerazione della donna nella sperimentazione, rilevando la necessità di una differenziazione, mostrando i pericoli di una farmacologia "neutrale" rispetto alle differenze sessuali.

La donna non può essere assimilata all'uomo, come una mera variabile, ma ha una specificità che la sperimentazione è chiamata a tenere in considerazione per promuovere una medicina che riconosca adeguatamente le pari opportunità uomo/donna.

Ai fini di incrementare la sperimentazione farmacologica differenziata per sesso, il CNB propone di sensibilizzare le autorità sanitarie e incentivare le aziende farmaceutiche a sostenere la sperimentazione distinta per sesso, anche se poco redditizia, incentivando progetti di ricerca sull'argomento; promuovere la partecipazione ai trials clinici delle donne con un'adeguata

- women currently have a longer life expectancy but are generally “**unhealthier**” (a lower quality of life)
- women are increasingly taking more drugs than men (**+40%**) and suffer **+60%** adverse events
- women are the major consumers of drugs, particularly in the **15-54 age range** (Osservatorio Nazionale dei Farmaci)

# Efficacy and safety studies on drugs

- Efficacy and safety studies on drugs are carried out predominantly on the **male population** (as women are considered “the same” as men)
- From 1984 to 2006, **less than 30%** of participants in phase 1 studies were women.
- **Adverse events** are studied mainly on men and generic drugs are studied only on **healthy male volunteers**.
- Very few package inserts **contain gender-correlated side effects** and none include **dosage for women**.

1. Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2009). World Population Prospects: The 2008 revision; 2. Pinnow E, et al. Womens Health Issues 2009;19:89–93; 3. Martin RM, et al. Br J Clin Pharmacol 1998;46:505–11; 4. Evelyn B, et al. J Natl Med Assoc 2001;93:18S–24S

# Involvement of women in clinical studies: Ethical limitations and socio-cultural barriers

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- 1) **Potential effects on the gameta** - female fertility at higher risk
- 2) **Teratogen potential**: risk of exposure in the uterus if experimental treatment is carried out on pregnant women
- 3) **76% of household chores** are done by women – logistic barrier to joining a study
- 4) Women more commonly dedicate their time to being a **caregiver** – logistic barrier to joining a study

# AIFA recommendation to the Pharma industry: carry out analysis of data disaggregated by gender.



Il genere nello sviluppo del farmaco

Luca Pani  
Direttore Generale  
[DG@aifa.gov.it](mailto:DG@aifa.gov.it)

Roma, 31 ottobre 2013



# Gender medicine

*In the news*

## Gender mainstreaming in WHO: what is next?

REPORT OF THE MIDTERM REVIEW OF WHO GENDER STRATEGY



World Health  
Organization

***Women's health has long been a concern for WHO but today it has become an urgent priority***

*WHO 2009*

**nature**

[www.nature.com/nature](http://www.nature.com/nature)

Vol 465 | Issue no. 7299 | 10 June 2010

## Putting gender on the agenda

Biomedical research continues to use many more male subjects than females in both animal studies and human clinical trials. The unintended effect is to short-change women's health care.

EXECUTIVE SUMMARY

# WOMEN AND HEALTH

TODAY'S EVIDENCE  
TOMORROW'S AGENDA



World Health  
Organization



# Randomized Clinical Trials

## Sex-related reporting in randomised controlled trials in medical journals

\*Emily Avery, Jocelyn Clark

Princeton Neuroscience Institute, Princeton University, Princeton,  
NJ 08544, USA (EA); and *The Lancet*, London, UK (JC)

eavery@princeton.edu



Jim West/Science Photo Library

# Randomized Clinical Trials

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Results for male and female are not analysed separately

Aggregate results may mask important clinical differences in the effects of:

**Interventions,  
Toxicity,  
Symptoms  
Adverse Events.**

Review of randomised controlled trials published in **The Lancet** and **The New England Journal of Medicine**, between April 1, 2016, and July 16, 2016.

# Randomized Clinical Trials

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A **57%** of the 60 RCTs did not include sex-specific analyses of any sort

**10%** not even reporting the number and proportion of men and women

**5%** noted the results of any sex differences in the discussion section.

# Clinical Trials

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Researchers need adequate incentives :

To **include** reasonable proportions of men and women

To **reach** sufficient statistical power by gender

To **prepare** prespecified analyses by sex

To **consider** not only demographic characteristics,  
but all the outcomes

**The authors need a stronger push from  
the Funders , the Pharmaceutical Industries  
and Journals**

# Randomized Clinical Trials

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The recommendations  
for the conduct, reporting, editing and publications  
of works in medical journals of the  
**International Committee of Medical Journal Editors  
(ICMJE)**

Indicate:  
to separate data by demographic variables  
(es: age and sex),  
**But not require the pre-planned analyses of  
outcomes  
and sufficiently powered**

# Clinical Trials

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## CONSORT:

(The leading reporting **Guideline for Clinical Trials**)

Requires the «generalizability» of results

**Sex is not mentioned as a factor for which this generalisability must be considered**

FDA. FDA action plan to enhance the collection and availability of demographic subgroup data. 2014. <http://www.fda.gov/downloads/RegulatoryInformation/Legislation/SignificantAmendmentstotheFDCA/FDASIA/UCM410474.pdf> (accessed Nov 17, 2016).

# Novartis promotes the first ever clinical study on the female population



## Influenza del genere sull'incidenza di effetti collaterali in pazienti affetti da psoriasi a placche trattati con ciclosporina. Risultati preliminari dello studio osservazionale italiano GENDER ATTENTION

**D. Colombo<sup>1</sup>, G. Banfi<sup>2</sup>, N. Cassano<sup>3</sup>, A. Graziottin<sup>4</sup>, G. Venja<sup>3</sup>, G. Bellia<sup>1</sup> per conto del GENDER ATTENTION Study Group<sup>§</sup>**

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<sup>§</sup>Chimenti (Roma), Hansel (Perugia), Maiani (Roma), De Simone (Roma), Micali (Catania), Albertini (Reggio Emilia), Bongiorno (Palermo), Lanzoni (Bologna), Congedo (Lecce), Amato (Palermo), Cattaneo (Milano), Kokelj (Trieste), Piccirillo (Potenza), Zichichi (Trapani), Ayala (Napoli), Bardazzi (Bologna), Cusano (Benevento), Di Nuzzo (Parma), Borroni (Pavia), Flori (Siena), Potenza (Terracina), Filotico (Brindisi), Girolomoni (Verona), De Pità (Roma), Donadio (Salerno), Piaserico (Padova), Pau (Cagliari), Parodi (Genova), Stinco (Udine), Calzavara Pinton (Brescia), Peris (L'Aquila), Donelli (Piacenza), Calvieri (Roma), Papini (Terni), Motolese (Varese), Magnoni (Modena), Cannarozzo (Catania), Marconi (Milano), Germino (Udine), Valenti (Catanzaro), Lembo (Como), Locatelli (Bergamo), Colombo (Novara), Trifirò (Messina), Sedona (Venezia), Cicchelli (Torino), Ceschini (Macerata), Ricotti (Ancona), Veller Fornasa (Vicenza), Lombardi (Milano), Amici (Modena)

# The Gender Attention study

## Avviato studio italiano di genere su cure psoriasi

Promosso da Novartis, risultati a inizio 2013

Valutare l'influenza del genere sulla differente incidenza di effetti collaterali in persone colpite da psoriasi e in trattamento farmacologico, come da pratica clinica con ciclosporina. È questo l'obiettivo dello studio osservazionale promosso dalla Novartis. "Lo studio medico italiano or-

ta la medicina della differenziazione maggio 2011 e coinvolge 52 centri di dermatologia convenzionali. Lo studio coinvolge 800 donne e

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NOVITA'  
**Medicina di genere**  
al via uno studio it  
Arruolato il primo paziente  
uomini e donne nella ris



MILANO - Donne e uomini sono diversi. Un'affermazione quanto per nulla banale, almeno in medicina. Perché a lungo, non si è tenuto conto della diversità fra donne e u

la Repubblica.it

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Promosso da **Novartis** il primo studio osservazionale sulla medicina di genere in Italia registra già numerose adesioni da parte di cliniche ospedaliere e centri universitari. In anticipo rispetto alla tabella di Marcia, **già il 26 maggio scorso è stato arruolato il primo paziente presso l'Azienda ospedaliera Universitaria di Siena.**

Lo Studio avrà l'obiettivo di valutare la diversa incidenza di farmaci per la cura di psoriasi come la ciclosporina su pazienti di sesso maschile e femminile, allo scopo di valutare se esistano importanti differenze legate al genere nelle medicazioni farmacologiche.

Lo studio prende il nome di "Gender Attention" e ha già suscitato grande interesse. La presidente del **GISEG (gruppo italiano salute e genere) Flavia Franconi**, professore ordinario di farmacologia cellulare all'Università di Sassari, attribuisce il grande clamore suscitato dall'iniziativa al fatto che sempre più medici si sono resi conto dell'importanza del genere sulla cura delle malattie.

Ecco lo spot che promuove lo studio di Gender Attention



The Italian Gender Attention Study: an observational, perspective, multi-centre study involving 50 authorized dermatological centres

Usa: via libera "viagra femmine" si chiamerà

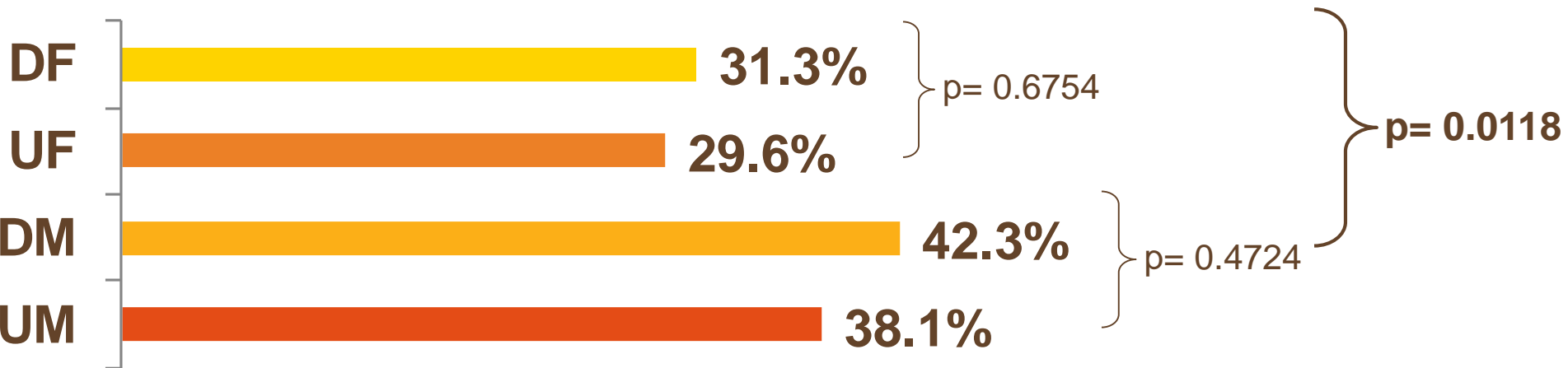
Consiglia 28

ei  
tare le differenze  
anno una



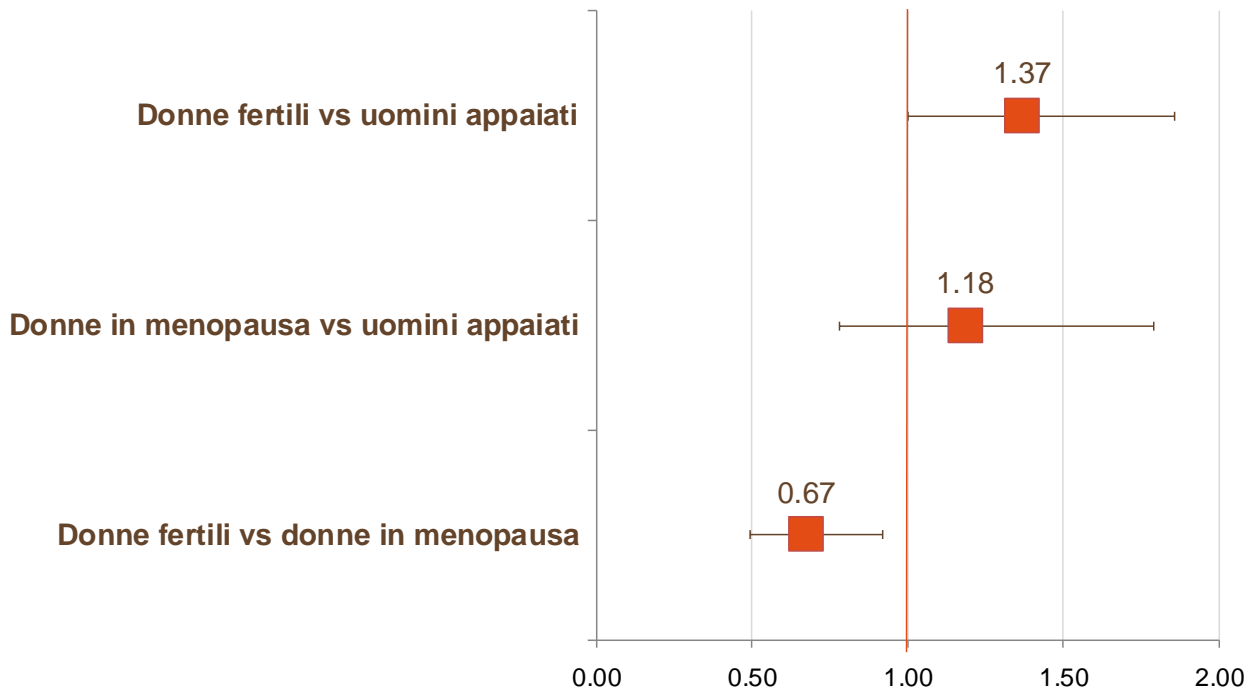
# The Gender Attention Study: Results

- 34% of patients had at least one adverse event during the period of observation



- A significant difference** was observed between fertile women and those in menopause.
- No statistically significant differences** were observed between fertile women and corresponding men or between women in menopause and corresponding men.

# Novartis projects on gender medicine



- The incidence rate of adverse events is 37% higher in fertile women than **relative** Men and 18% higher in menopausal women than corresponding men (not a significant difference).
- **The incidence rate in fertile women is around 33% lower compared to menopausal women (significant difference). This result remains significant also if adjusted for age.**

# The MetaGem Project

Open Access Journal of Clinical Trials

Dovepress

open access to scientific and medical research

Open Access Full Text Article

METHODOLOGY

## A gender-medicine post hoc analysis (MetaGeM) project to test sex differences in previous observational studies in different diseases: methodology

Delia Colombo<sup>1</sup>  
Gilberto Bellia<sup>1</sup>  
Donatella Vassellatti<sup>1</sup>  
Emanuela Zagni<sup>1</sup>  
Simona Sgarbi<sup>2</sup>  
Sara Rizzoli<sup>2</sup>

<sup>1</sup>Novartis Farma, Origgio, <sup>2</sup>MediData, Modena, Italy

The MetaGeM project aims to analyze and describe by means of post hoc analyses and meta-analyses, clinical outcomes, therapeutic approaches, and safety data of these studies, by sex: PSYCHAE; GENDER ATTENTION in psoriasis; Synergy in psoriatic arthritis; ICEBERG in HBsAg carriers; SURF and CETRA in liver- and renal transplanted patients, respectively; DEEP in Parkinson's disease; and EVOLUTION and AXEPT in Alzheimer's disease.

# The MetaGem Project

## Area

### Dermatology (psoriasis)



### Rheumatology (psoriatic arthritis)



### Central nervous system



### Infectious diseases



### Transplants



### Safety

All the studies reported above for which safety data has been gathered.

# The MetaGem Project

Clinical Dermatology 2014; 2 (2): 77-83

Original article

## Therapeutic approaches in psoriasis: a post-hoc analysis of the PSYCHAE study from a gender point of view



Delia Colombo<sup>1</sup>  
Sergio Chimenti<sup>2</sup>  
Alberto Giannetti<sup>3</sup>  
Alberto Caputo<sup>4</sup>  
Flavia Franconi<sup>5</sup>  
Sara Rizzoli<sup>6</sup>  
Gilberto Bellia<sup>1</sup>  
*on behalf of the PSYCHAE study group<sup>7</sup>*

786 patients, of which 61% males.

Italian dermatologists seem to have had the **same approach in treating male and female** patients with psoriasis, although **females** should have been given greater attention due to their higher **psychological distress**.

# The Metagen Project

Prevalence of acute and chronic viral seropositivity and characteristics of disease in patients with psoriatic arthritis treated with cyclosporine: a post-hoc analysis of the SYNERGY study from a gender point of view

*Delia Colombo, Sergio Chimenti, Paolo Grossi, Antonio Marchesoni, Federico Bardazzi, Fabio Ajala, Germana Camplone, Lucia Simoni, Donatalla Vassellatti, Gilberto Bellia on behalf of SYNERGY Study Group*



225 patients, of which 54% males.

**Women with psoriatic arthritis have a greater articular involvement and a higher activity of disease** compared to males. Immunosuppressive treatment with cyclosporine seems not to increase susceptibility to new infections or infectious reactivations, with no gender differences

# The Metagen Project

*Research Article*

## The “Gender Factor” in Wearing-Off among Patients with Parkinson’s Disease: A Post Hoc Analysis of DEEP Study

Delia Colombo,<sup>1</sup> Giovanni Abbruzzese,<sup>2</sup> Angelo Antonini,<sup>3</sup> Paolo Barone,<sup>4</sup>  
Gilberto Bellia,<sup>1</sup> Flavia Franconi,<sup>5</sup> Lucia Simoni,<sup>6</sup> Mahmood Attar,<sup>1</sup> Emanuela Zagni,<sup>1</sup>  
Shalom Haggiag,<sup>7</sup> and Fabrizio Stocchi<sup>8</sup>



Our results suggest **WO is more common among women**, for both **motor** and **non-motor symptoms**. Prospective studies are warranted to investigate this potential gender-effect.

# Review on Gender and Nervous System

## Sex and Gender Differences in Central Nervous System-Related Disorders

Emanuela Zagni, Lucia Simoni, Delia Colombo

- A review on sex differences in pain, neurological and psychiatric diseases with the aim to stimulate interest in sexual dimorphisms in the brain and brain diseases and encouraging more research in the field of the implications of sex differences for treating these conditions.
- Understanding the biological bases of sex differences, as well as the psychosocial and cultural influences on gender differences. At present, the available evidence does not yet support sex-specific tailoring of treatments
- Recommendations shared by most of the authors we have reviewed are (I) the inclusion of both sexes in basic CNS science; (II) the exploration of sex difference as a part of the standard preclinical evaluation of therapeutics; (III) the implementation of research examining sex-specific risk factors, and (IV) the definition and use of relevant sex-specific outcome measures and therapeutic strategies.



# Meta-analysis on safety

## Gender differences in the adverse events' profile registered in seven observational studies of a wide gender-medicine (MetaGeM) project: the MetaGeM safety analysis

Delia Colombo, Emanuela Zagni, Mihaela Nica, Sara Rizzoli, Alessandra Ori, Gilberto Bellia

- ✓ A meta-analysis of seven MetaGeM studies, aimed at evaluating possible gender differences in the incidence and severity of AEs.
- ✓ 4870 patients, 46% females and 54% males.
- ✓ There was no significant gender difference in the percentage of patients with at least one AE. Total SAEs were 47 (72% in men). The frequency of patients with  $\geq 1$  SAE was 0.6% in women vs 1.2% in men ( $\chi^2$  test p-value = 0.0246).
- ✓ This safety analysis, on a large sample of almost 5000 patients affected with different diseases and treated with a wide range of different drugs, provides a useful overview on possible gender differences in drug tolerability, which may be helpful in more accurately designing future clinical trials in a gender-specific perspective.

**Drug Design, Development and Therapy (Dovepress).**

# Review on Gender in Clinical Research

## Le analisi di genere nei trials clinici: puro esercizio di stile o necessità clinica?

Giovanni Pacini, Gilberto Bellia, Emanuela Zagni, Delia Colombo

- There is an ever increasing demand from physicians, patients and associations for personalized targeted drugs
- More focus on gender differences is crucial to have a satisfactory level of patient-specific treatment in each pathology
- Gender medicine is still not fully explored. Crucial to take into account physiopathological gender differences starting from base research to the patient bed-side.

**Gazzetta Medica Italiana**

# The METAGEM project

## *Conclusions*

With the limitations of retrospective unpredefined analyses and of considering clinical data that are not always up to date, the MetaGeM project may lead to useful considerations on **possible sex differences** in a large spectrum of **therapeutic approaches**, **clinical response or safety** of some diseases, in order to more appropriately design further clinical trials from a **sex-specific perspective**.

# The Gender Approach in Novartis Observational Studies

- In CRF patients involved in observational studies, we always gather the following information:
  - sex
  - fertility/menopausal status of women
  - pregnancy and childbirth among women
- We always include objectives outlining specific studies which evaluate gender differences
- We plan ad hoc studies aimed at evaluating gender differences

# Variables and hormonal evaluations in Novartis CRFs

VARIABILI GENDER	VALUTAZIONI ORMONALI
Età menarca Età menopausa <u>N°figli</u> <u>N°parti</u> <u>N°gravidanze unipare</u> <u>N°gravidanze gemellari</u> <u>N°aborti spontanei</u> <u>N°aborti non spontanei</u> Endometriosi Divorzi Lutti <i><u>Altre variabili potrebbe essere individuate in funzione della patologia specifica</u></i>	FSH LH <u>17 beta estradiolo</u> <u>testosterone</u> cortisolo progesterone prolattina DEHA solfato <u>SH-bg (sex-hormone binding protein)</u> Testosterone <u>Free testosterone</u>

# The first examples



*An Italian, 3-year, Multicenter, prospective, cohort observational study to evaluate pharmacological management in **COPD patients***



*Patient Reported Outcomes and Xolair® In the Management of **Asthma***

*Two Italian observational studies aimed at comparing male and female patients affected **by COPD and Asthma***

# Novartis Spontaneous Studies in Gender Medicine



Logo by Ivana Burello painter in Udine

## Age at menopause and severity of coronary artery disease in women with Acute Coronary Syndromes

The LADIES ACS study  
(NCT 01997307)

# The LADIES ACS Study



- **Objective**: to study the relationship between age at menopause and the seriousness of coronary illness in women in menopause with ACS.

- **Rationale**: little data available on the relationship between age at menopause and cardiovascular events in women
- No study has, as yet, attempted to find the relationship between age at menopause and the extension/seriousness of coronary disease by means of a thorough angiographic examination of the coronaries





## Age at Menopause and Extent of Coronary Artery Disease Among Postmenopausal Women with Acute Coronary Syndromes

Stefano Savonitto, MD,<sup>a</sup> Delia Colombo, MD,<sup>b</sup> Nicoletta Franco, MD,<sup>c</sup> Leonardo Misuraca, MD,<sup>d</sup> Laura Lenatti, MD,<sup>a</sup> Iliaria J. Romano, MD,<sup>a</sup> Nuccia Morici, MD,<sup>e</sup> Emilia Lo Jacono, MD,<sup>f</sup> Chiara Leuzzi, MD,<sup>f</sup> Elena Corrada, MD,<sup>g</sup> Tiziana C. Aranzulla, MD,<sup>h</sup> A. Sonia Petronio, MD,<sup>i</sup> Gilberto Bellia, BSc,<sup>b</sup> Enrico Romagnoli, MD,<sup>j</sup> Angelo Cagnacci, MD,<sup>k</sup> Giuseppe Biondi Zoccai, MD,<sup>l</sup> Francesco Prati, MD,<sup>m</sup> the LADIES ACS Study Investigators

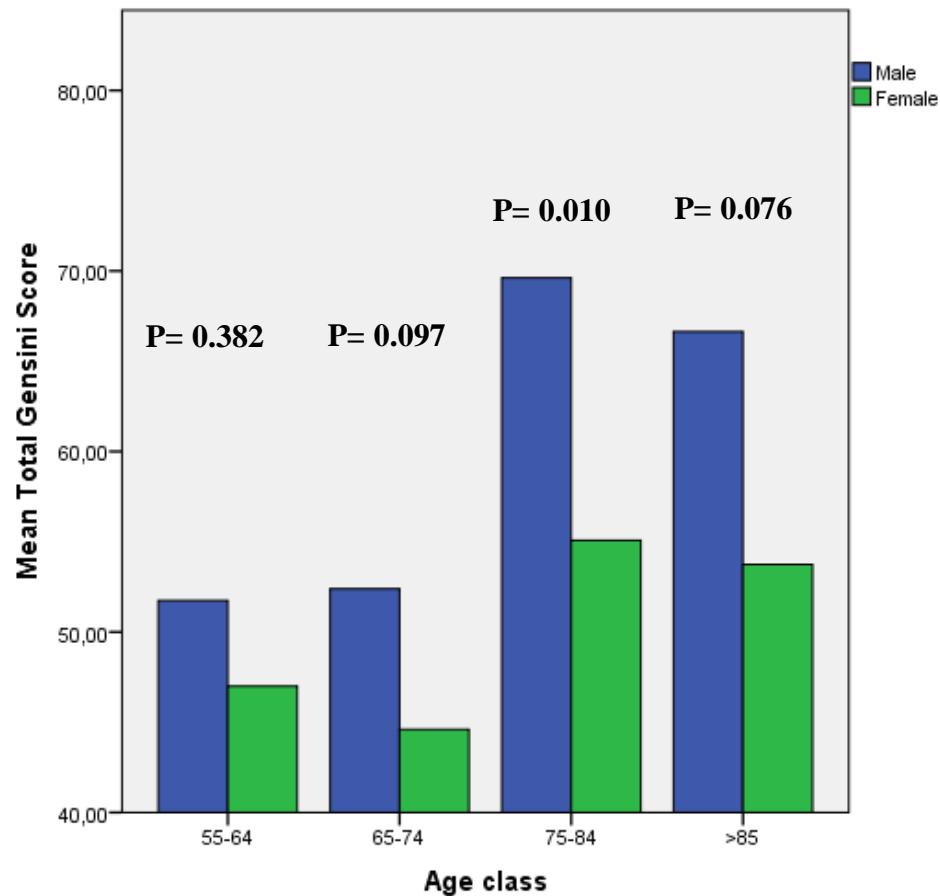
<sup>a</sup>Division of Cardiology, Ospedale Manzoni, Lecco, Italy; <sup>b</sup>Clinical Pharmacology, Milan, Italy; <sup>c</sup>Division of Cardiology, Ospedale Infermi, Rimini, Italy; <sup>d</sup>Division of Cardiology, Ospedale della Misericordia, Grosseto, Italy; <sup>e</sup>Cardiologia Prima, Emodinamica, Ospedale Niguarda, Milano, Italy; <sup>f</sup>Division of Cardiology, IRCCS Arcispedale S. Maria Nuova, Reggio Emilia, Italy; <sup>g</sup>Cardiovascular Department, Humanitas Clinical and Research Center, Rozzano, Italy; <sup>h</sup>Division of Cardiology, Ospedale Mauriziano, Torino, Italy; <sup>i</sup>Cardiovascular Department, Azienda Ospedaliero-Universitaria Pisana, Pisa, Italy; <sup>j</sup>Division of Cardiology, Ospedale Belcolle, Viterbo, and Centro per la Lotta contro L'Infarto - CLI Foundation, Rome, Italy; <sup>k</sup>Department of Obstetrics, Gynecology and Pediatric, Obstetrics and Gynecology Unit, Azienda Ospedaliero-Universitaria of Modena, Italy; <sup>l</sup>Department of Medico Surgical Sciences and Biotechnology, Sapienza University of Rome, Latina, Italy; <sup>m</sup>Division of Cardiology, Ospedale San Giovanni Addolorata, and Centro per la Lotta contro l' Infarto - CLI Foundation, Roma, Italy.

# COMPARISON OF GENSINI SCORE IN MEN AND WOMEN IN RELATION TO AGE CLASSES



Male  
Female

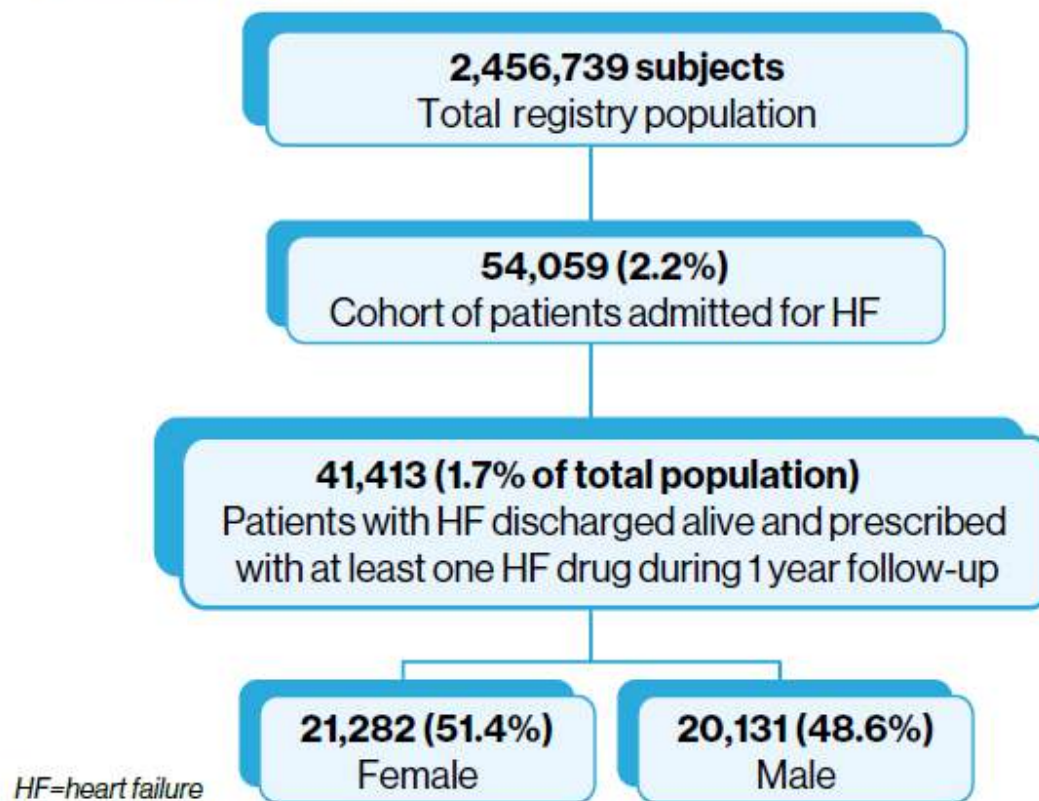
Gensini score  $59.6 \pm 35.9$   
Gensini score  $49.7 \pm 31.7$  }  $P < 0.001$



**GENDER DIFFERENCES IN HEART  
FAILURE IN A REAL WORLD  
SETTING:  
IMPACT ON DRUG UTILIZATION  
AND COSTS FOR THE  
MANAGEMENT OF THIS CLINICAL  
CONDITION**

# Patients' disposition

## Patients' disposition



# RESULTS: PATIENT'S DISTRIBUTION

On average, female were approximately 5 years older than male, as the mean age among them was 80.4 years ( $\pm 10.1$ ) and it was 75.5 ( $\pm 11.4$ ) among male.

## Mean age of patients by sex-gender

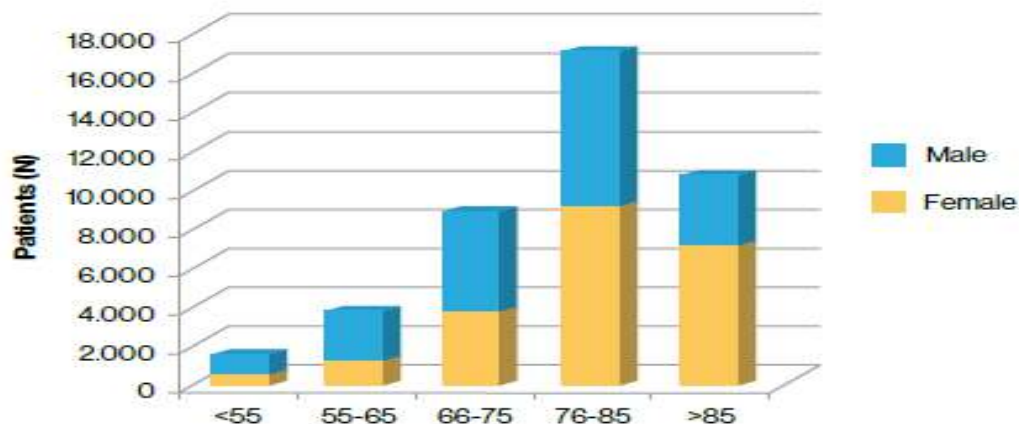
*Female patients older than male patients*

Sex-gender	Female	Male	Total
Mean age	80,37 $\pm$ 10,08	75,46 $\pm$ 11,42	77,99 $\pm$ 10,98

The distribution by age was vastly different in the two genders: in fact, among female, only approximately 25% of them developed CHF before age 75, while approximately 43% of male had CHF before age 75.

## Patients' distribution by age and sex

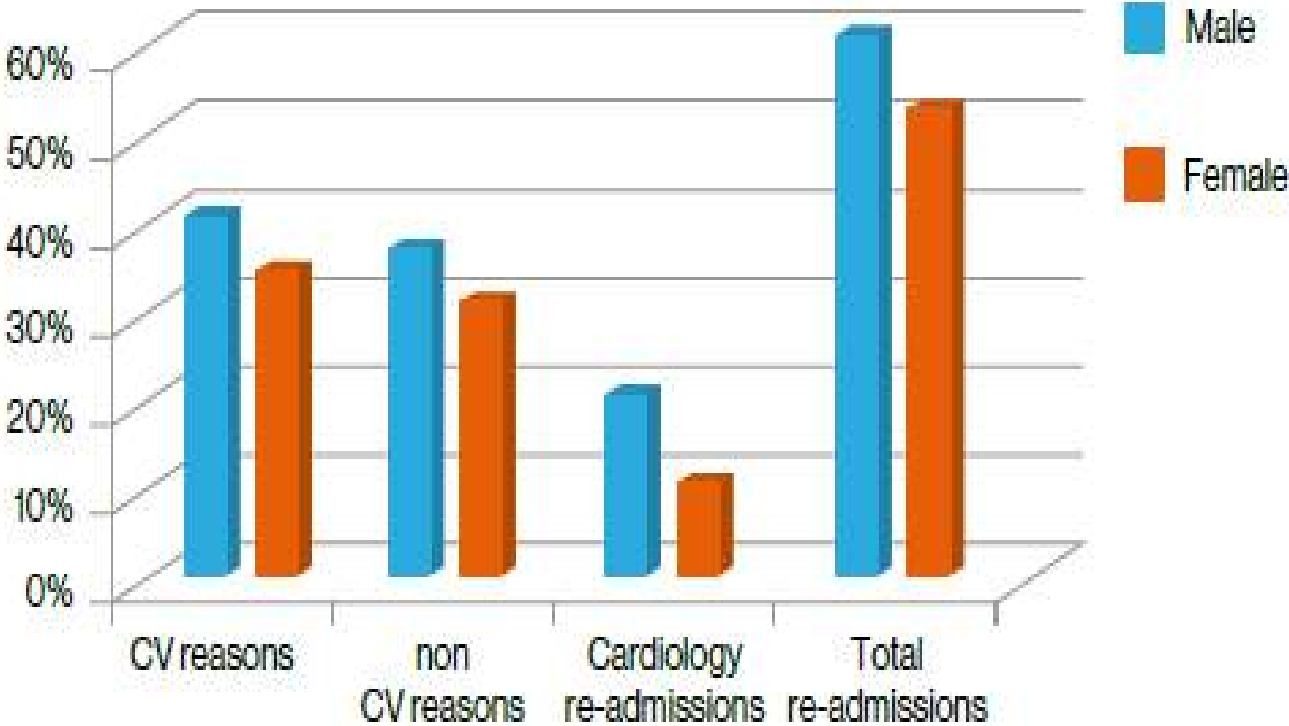
*Male % higher in younger ages, then female increase consistently*



# RESULTS: HOSPITAL RE-ADMISSIONS BY SEX-GENDER

## Re-hospitalizations by sex-gender 1 year of f.u.

Total re-admissions significantly higher in male (60%) than female (53%)



# MORTALITY ESTIMATES BY SEX-GENDER

## MORTALITY

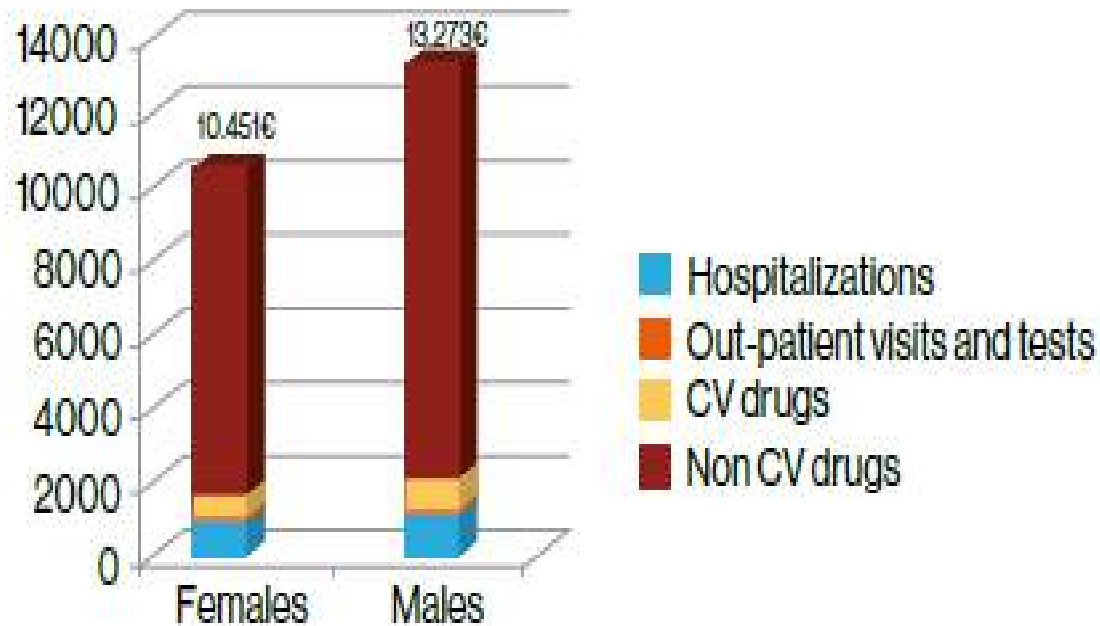
Overall mortality by sex-gender after 1 year of follow up

In-hospital mortality at index event	Female		Male		Total	
	N	%	N	%	N	%
<b>Patients with heart failure</b>	<b>28.202</b>		<b>25.857</b>		<b>54.059</b>	
In-hospital mortality at index event (hospitalization)	2.844	10,1%	2.454	9,5%	5.298	9,8%

# 1 YEAR FOLLOW-UP HEALTHCARE COST BY SEX-GENDER

## 1 year follow up HC costs/patient by sex

*Male patients cost 3.000€/patient/year more than female*





# Publications – Novartis Italy Patient Access in Gender Medicine

- *Gender medicine and psoriasis.* [World J Dermatology, 2014.](#)
- *Therapeutic approaches in psoriasis: a post-hoc analysis of the PSYCHAE study from a gender point of view.* [Clinical Dermatology, 2014](#)
- *A gender-medicine post hoc analysis (MetaGeM) project to test sex differences in previous observational studies in different diseases: methodology.* [Open Access Journal of Clinical Trials, 2014](#)
- *Reazioni avverse ai farmaci e differenze di genere: aspetti epidemiologici, farmacologici e farmacoeconomici. (Adverse Reactions to Drugs and Gender Difference: Epidemiological, Pharmacological and Pharmaco-economic Aspects)* [Quaderni dell'Italian Journal of Public Health, 2014](#)
- *The «Gender Factor» in Wearing-Off among Patients with Parkinsons' Disease: A Post Hoc Analysis of DEEP Study.* [The Scientific World Journal, 2015](#)
- *Efficacy of cyclosporine A as monotherapy in patients with psoriatic arthritis: a subgroup analysis of the SINERGY study.* [GIDV, 2015](#)
- *Gender related differences in chronic spontaneous urticaria.* [GIDV, 2015](#)

# Publications – Novartis Italy Patient Access in Gender Medicine

- *Prevalence of acute and chronic viral seropositivity and characteristics of disease in patients with psoriatic arthritis treated with cyclosporine: a post hoc analysis from a sex point of view on the observational study of infectious events in psoriasis complicated by active psoriatic arthritis.* **Clinical, Cosmetic and Investigation Dermatology, 2015.**
- *Psoriasis in Pregnancy: challenges and solutions.* **Psoriasis: Targets and Therapy 2015**
- *The gender-specific clinical evolution of psoriasis and psoriatic arthritis in patients treated with cyclosporine: a post-hoc analysis of the SINERGY study.* **GIDV 2016**
- *Le analisi di genere nei trials clinici: puro esercizio di stile o necessità clinica?(Gender Analysis in Clinical Trials: an exercise in style or a clinical need?)* **Gazzetta Medica Italiana, 2016**
- *A gender analysis of the real world data of chronic heart failure: findings from 41,413 patients of the ARNO database.* **Eur J Heart Failure , 2016.**

## Publications – Novartis Italy Patient Access in Gender Medicine

- *Gender and Hormonal Status Differences in the Incidence of Adverse Events During Cyclosporine Treatment in Psoriatic Patients: the GENDER ATTENTION Observational Study.* **Published** to Scientific Reports. (Nature Editing Group)
- *Gender Differences in the Adverse Events' Profile Registered in Seven Observational Studies of a Wide Gender-Medicine (MetaGeM) Project: the MetaGeM Safety Analysis.* **Published** on Drug Design Development and Therapy.
- *Sex and Gender Differences in Central Nervous System-Related Disorders (review).* **Published** on Neurological Science.
- *Analisi osservazionale della spesa per farmaci biologici a carico di due ASL del Nord Italia durante il triennio 2009-2011. (Observational Analysis of the Spending in 2 Local Health Authorities in Northern Italy for Biological Drugs)* **Published** on Global and Regional Health Technology Assessment.

# Publications – Novartis Italy Patient Access in Gender Medicine

- *Age at Menopause and Extent of Coronary Artery Disease Among Postmenopausal Women with Acute Coronary Syndromes: the LADIES ACS study.* Published on *The American Journal of Medicine* 2016
- *Gender Differences in Healthcare: Spotlight on Respiratory Diseases and Cardiovascular Drugs (review).* 2016
- *Gender Differences in Suspected Adverse Reactions to ACE Inhibitors and ARBs: Results from Spontaneous Data Reporting System.* Published *Drug Design; Development and Therapy* 2016
- *Access to Medicines and Pharmacological Treatment Adherence and Costs: the Importance of Sex-Gender.* Accepted 2017
- *Gender Differences in Suspected Adverse Reactions to ACE Inhibitors and ARBs: Results from Spontaneous Data Reporting System Data.* Published 2016

# Gender Medicine

## *Dissemination of scientific information*

- Chapter published in the *Manuale di Medicina Sesso-Genere (Manual of Gender Medicine)* by Bononia University Press.

MINIREVIEWS

## Gender medicine and psoriasis

Delia Colombo, Nicoletta Cassano, Gilberto Bellia, Gino A Vena



## Reazioni avverse ai farmaci e differenze di genere: aspetti epidemiologici, farmacologici e farmacoeconomici

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# The Italian Journal of Gender-specific Medicine

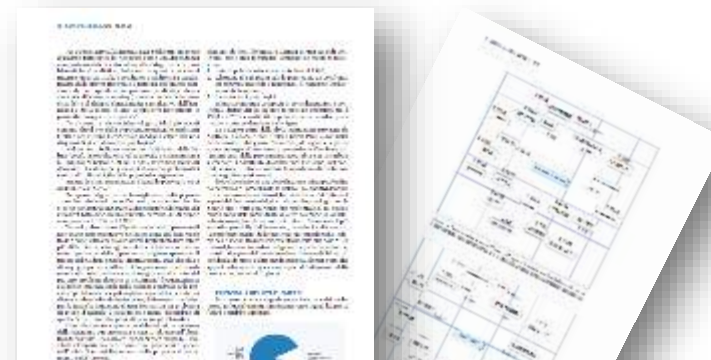


- Internationally-renowned Italian magazine
- Both online and print versions
- “Open Access” diffusion methods
- Both Italian and English versions
- Published quarterly
- Press Conference to launch the magazine in September 2015

# The Italian Journal of Gender-Specific Medicine

## Institutional Editorial Project

- Focused on Gender Medicine
- A point of reference for diverse healthcare stakeholders on the theme of Gender Medicine
- **Contents not only scientific but also political/institutional/social.**
- Space given to protagonists of the Italian healthcare system, summaries of events current affairs in the world of national and regional healthcare politic
- The journal has been registered with *Il Pensiero Scientifico Editore* in collaboration with Novartis





## WORLD VIEW *A personal take on events*



LINDA A. CICERO/STANFORD NEWS SERVICE

# Scientific research must take gender into account

*From car design to drug discovery, the failure to acknowledge sex differences can be costly and even lethal, argues Londa Schiebinger.*

*Londa Schiebinger is the John L. Hinds professor of history of science at Stanford University, California, USA.  
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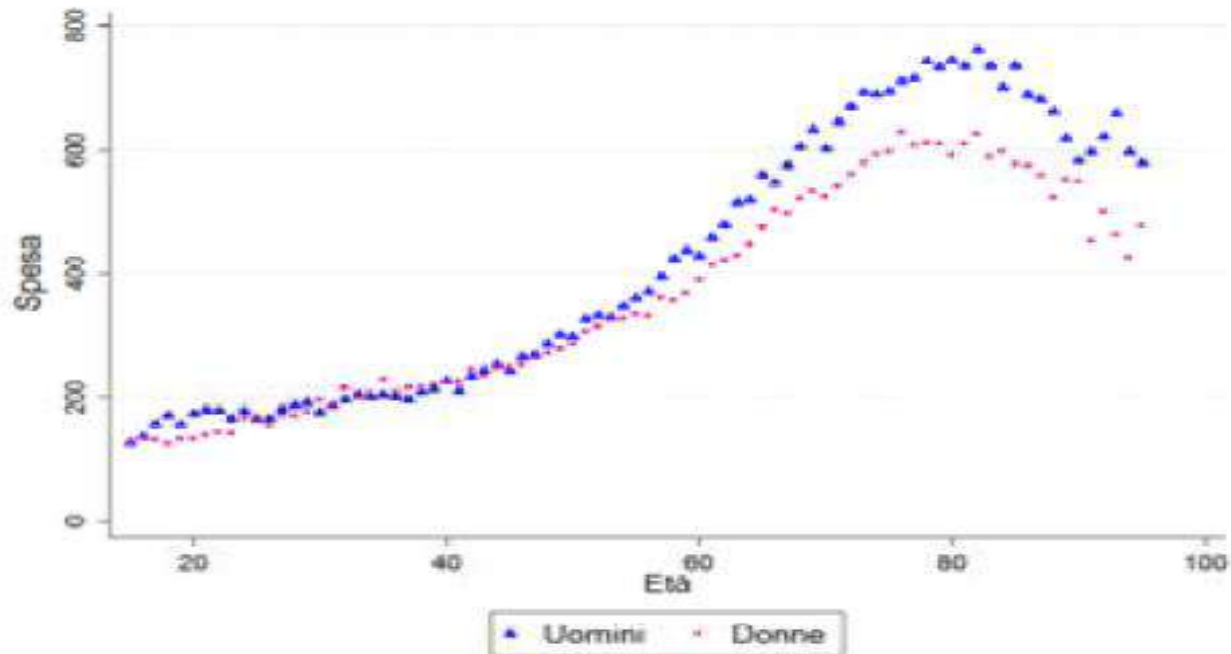






# Health spending per gender

Spesa pro capite totale per età e sesso - 2009



Fonte: Progetto SiSSI, SIMG – CEIS Tor Vergata, 2010