4th Congress
International Society of Gender Medicine (IGM)
- Sex and Gender in Medicine -

In Cooperation with DHZB, DFG (FOR 1054, GK 754), BMBF (PPGM) and the EU (EUGIM)

Program

November 6-8, 2009
Contents

Program 3
Welcome 6
The International Society of Gender Medicine 7
Abstracts of the Congress Lectures 8
Abstracts of the Poster Sessions 30
Speaker Biographies 71
Speakers and Chairs 84
Hotel Floorplan 88

The congress takes place in cooperation with
the 6th Berlin Symposium on Mechanical Circulatory Support of the German Heart Institute Berlin (DHZB), the DFG Research Group FOR 1054, the DFG Research Training Group 754: Sex-Specific Aspects in Myocardial Hypertrophy, the “Pilot Project Gender Medicine” (BMBF), and the EU-FP7 (EUGIM).


This documentation was issued by the Institute of Gender in Medicine (GiM) at Charité – Universitätsmedizin Berlin

Berlin, November 2009
## Program

### Friday, November 6

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>08.30</td>
<td>Welcome</td>
</tr>
<tr>
<td></td>
<td>Annette Grüters-Kieslich, Berlin</td>
</tr>
<tr>
<td>09.00</td>
<td>Gender Medicine – Definition, Impact, and Support throughout the World</td>
</tr>
<tr>
<td></td>
<td>(Hall Maritim IB)</td>
</tr>
<tr>
<td></td>
<td>Chair: Vera Regitz-Zagrosek, Berlin; NN</td>
</tr>
<tr>
<td></td>
<td>Speakers:</td>
</tr>
<tr>
<td></td>
<td>Masako Matsuda, Yamaguchi</td>
</tr>
<tr>
<td></td>
<td>Cardiovascular Diseases and Gender Aspects in Japan</td>
</tr>
<tr>
<td></td>
<td>Virginia Miller, Rochester</td>
</tr>
<tr>
<td></td>
<td>Politics of Sex/Gender Research in North America</td>
</tr>
<tr>
<td></td>
<td>Sabine Oertelt-Prigione, Berlin</td>
</tr>
<tr>
<td></td>
<td>Pilot Project Gender Medicine (BMBF)</td>
</tr>
<tr>
<td>10.00</td>
<td>Keynote Lecture (Hall Maritim IB)</td>
</tr>
<tr>
<td></td>
<td>Londa Schiebinger, Stanford</td>
</tr>
<tr>
<td></td>
<td>Gendered Innovations in Science, Medicine, and Engineering</td>
</tr>
<tr>
<td>10.45</td>
<td>From Bench to Bedside – from IGM (Hall Maritim IB)</td>
</tr>
<tr>
<td></td>
<td>Chair: Maria G. Modena, Modena; C. Noel Bairey Merz, Los Angeles</td>
</tr>
<tr>
<td></td>
<td>Speakers:</td>
</tr>
<tr>
<td></td>
<td>Vera Regitz-Zagrosek, Berlin</td>
</tr>
<tr>
<td></td>
<td>Are Gender Aspects Helpful in Medicine – in Heart Failure Management?</td>
</tr>
<tr>
<td></td>
<td>Marek Glezerman, Tel Aviv</td>
</tr>
<tr>
<td></td>
<td>Gender Differences in Intrauterine Life</td>
</tr>
<tr>
<td></td>
<td>Jeanette Strametz-Juranek, Vienna</td>
</tr>
<tr>
<td></td>
<td>Hypertension: Do We Treat Women Properly?</td>
</tr>
<tr>
<td></td>
<td>Maria G. Modena, Modena</td>
</tr>
<tr>
<td></td>
<td>Sex Hormones and the Heart</td>
</tr>
<tr>
<td>11.15</td>
<td>Lunch Session – German Society of Gender Medicine (DGesGM) General Assembly (Hall Maritim IB) - open to potential members</td>
</tr>
<tr>
<td>13.15</td>
<td>Common Sessions with DHZB: Mechanical Circulatory Support (Hall Maritim II)</td>
</tr>
<tr>
<td></td>
<td>Gender, Heart Transplantation, Mechanical Support, and Stem Cells</td>
</tr>
<tr>
<td></td>
<td>Chair: Doris Taylor, Minneapolis; Roland Hetzer, Berlin</td>
</tr>
<tr>
<td></td>
<td>Speakers:</td>
</tr>
<tr>
<td></td>
<td>Hannah A. Valantine, Stanford</td>
</tr>
<tr>
<td></td>
<td>Gender in Heart Transplantation</td>
</tr>
<tr>
<td></td>
<td>Roland Hetzer, Berlin</td>
</tr>
<tr>
<td></td>
<td>Gender in Mechanical Circulatory Support</td>
</tr>
<tr>
<td></td>
<td>Doris Taylor, Minneapolis</td>
</tr>
<tr>
<td></td>
<td>Sex and Estrogens in Stem Cell Function</td>
</tr>
<tr>
<td>14.45</td>
<td>Gender and Myocardial Recovery</td>
</tr>
<tr>
<td></td>
<td>Chair: Emma Birks, London; Michael Dandel, Berlin</td>
</tr>
<tr>
<td></td>
<td>Speakers:</td>
</tr>
<tr>
<td></td>
<td>George Sopko, Bethesda</td>
</tr>
<tr>
<td></td>
<td>Opportunities / Challenges of Gender Related Cardiovascular Research: NHLBI Experience</td>
</tr>
<tr>
<td></td>
<td>Wolfram-Hubertus Zimmermann, Göttingen</td>
</tr>
<tr>
<td></td>
<td>Gender Tailored Myocardial Repair</td>
</tr>
<tr>
<td></td>
<td>Michael Dandel, Berlin</td>
</tr>
<tr>
<td></td>
<td>Current Echocardiographic Criteria for the Prediction of Successful Weaning</td>
</tr>
<tr>
<td></td>
<td>Emma Birks, London</td>
</tr>
<tr>
<td></td>
<td>Update of Weaning Enhancement by Clenbuterol</td>
</tr>
<tr>
<td></td>
<td>Brigitte Stiller, Freiburg</td>
</tr>
<tr>
<td></td>
<td>Weaning in Acute Myocarditis</td>
</tr>
</tbody>
</table>
Saturday, November 7

07.30  IGM Board Meeting I

European Society of Gender Health and Medicine (Hall Maritim IB)

08.15  Integration of Gender Medicine in the Clinical Practice

Chair: Rodolfo Paololetti, Milan
Speakers:
Walter Malorni, Rome
Cell Sex: a New Look at Cell Fate Studies
Giovannella Baggio, Padua
Different Gender Impact of Risk Factors in CVD, Diabetes, and Metabolic Syndrome: Do We Have Data Enough to Differentiate Treatment in Women?
Flavia Franconi, Sassari
Gender-Specific Safety of Pharmacotherapy
General Discussion

09.15  DFG 1054 Research Group (Hall Maritim IB)

Gender and Cardiovascular Function

Chair: Wolf-Hagen Schunck, Berlin; Katharina Hein, DFG
Speakers:
Dorothy E. Vatner, Newark
Mechanisms of Gender Cardiovascular Differences in Longevity and Aging Models
Jean-Francois Arnal, Toulouse
Estrogen Receptor Modulation and Vasculoprotection
Jean-Jacques Mercadier, Paris
Gender Aspects in Cardiac Arrhythmia
Michael Bader, Berlin
Androgen Receptors in Cardiovascular Regulation
Burkert Pieske, Graz
Gender Differences in Diastolic Function

11.00  Moderated Poster Sessions/Chairs (Hall IA)

I  Metabolic Syndromes: Christine Marie, Jackson
II  Healthcare: U. Maschewsky-Schneider, Berlin
III  Basic Research: Jane Reckelhoff, Jackson

12.30  Lunch – IGM General Assembly (Hall IB)
open to potential members

13.30  Pilot Project Gender Medicine (Hall Maritim IB)

Chair: Sabine Oertelt-Prigione, Berlin; NN
Speakers:
Ronald Ma, Hong Kong
Gender Issues in Diabetes and the Metabolic Syndrome – a Chinese Perspective
Kathryn Sandberg, Washington
Sex Chromosome and Gonadal Hormone Effects in Angiotension II-Dependent Hypertension
Matthias Endres, Berlin
Gender and Stroke

14.30  Sex/Gender Research in North America – from OSSD – and the World (Hall Maritim IB)

Chair: Karen Berkley, Tallahassee; Marek Glezerman, Tel Aviv
Speakers:
C. Noel Bairey Merz, Los Angeles
Sex/Gender Differences in CVD – a Model for Translation to Improved Outcomes
Karen J. Berkley, Tallahassee
Sex/Gender Differences in Pain
Gillian Einstein, Toronto
Reconciling Sex and Gender: The Interaction of Biology and Society
Meir Steiner, Hamilton
Depression and Cardiovascular Disease: Does Sex Matter?
XiaoHan Fa, Beijing
Sex Differences in Risk Factors and Blood Pressure Response to Four Antihypertensive Drugs in Chinese Patients
Joy Johnson, Vancouver
Gender Matters! Charting Future Directions in Gender, Sex, and Health Research in Canada

16.30  Coffee Break
17.00  **Gender Differences in Drugs and Devices**  
(Hall Maritim IB)  
Chair: Ulrich Kintscher, Berlin; Karl Broich, Bonn  
Speakers:  
**Duska Dragun, Berlin**  
Sex Related Differences and Inequities in Renal Donation and Transplantation  
**Stephanie Krüger, Berlin**  
Gender Differences in Depression

---

**Sunday, November 8**

08.15  **Free Communications: Complementary Medicine, Pregnancy, Estrogen Receptors, Psychosocial Aspects**  
(Hall Maritim IB)  
Chair: Karin Schenck-Gustafsson, Stockholm  
Speakers:  
**Claudia Witt, Berlin**  
The Role of Gender in Complementary Medicine  
**Gerdi Weidner, Tiburon**  
Psychological Treatment of Patients with Coronary Heart Disease: Does Gender Matter?  
**Matthias Barton, Zurich**  
ER\(_x\), ER\(_β\), and gpER: Time to Re-Think Estrogens in Cardiovascular Medicine?  
**Denise Hilfiker-Kleiner, Hanover**  
Psychological Treatment of Patients with Coronary Heart Disease: Does Gender Matter?

09.30  **Gender in Healthcare – EuroheartPolicy**  
(Hall Maritim IB)  
Chair: Vera Regitz-Zagrosek, Berlin  
Speakers:  
**Maria Kopp, Budapest**  
Gender and Mental Health in Central-Eastern Europe  
**Karin Schenck-Gustafsson, Stockholm**  
Gender in Acute Coronary Syndromes (ACS)

12.30  **Gender in Medical Education**  
(Hall Maritim IB)  
Chair: Toine Lagro-Janssen, Nijmegen  
Speakers:  
**Ann-Maree Nobelius, Melbourne**  
Developing a global network to integrate gender competence into medical education

12.50  **Poster Prizes – Adjourn**  
Vera Regitz-Zagrosek

13.00  **Lunch – IGM Board Meeting II**
Welcome

Dear Colleagues and Friends of Gender Medicine,

We welcome you to 4th Congress of the International Society of Gender Medicine (IGM). We will discuss relevant issues in gender research from a broad spectrum of medical fields, basic and clinical research, health care, prevention and medical education. The congress aims to promote gender research and to network gender researchers all over the world. It is supported by the IGM, its national member societies and the Organization for the Study of Sex Differences (OSSD). Together with the 6th Symposium on Mechanical Circulatory Support of the DHZB, we will discuss sex/gender in end-stage heart failure, in stem cell function and myocardial recovery. We will present the most recent data from a multi-disciplinary project that aims at the definition of gender medicine and from a European project on curriculum development.

It will be a splendid congress due to a highly renowned faculty, outstanding talks, and 82 moderated posters with great science. You will have exciting opportunities for networking and making new friends in the field.

Welcome in Berlin!

_Vera Regitz-Zagrosek, President of Congress_

_Karin Schenck-Gustafsson, President of IGM_
The International Society of Gender Medicine - IGM

The International Society of Gender Medicine (IGM) is an umbrella organisation for associations of gender medicine worldwide. It was founded during the 1st World Congress on Gender-Specific Medicine in Berlin 2006. IGM is an international, multidisciplinary, scientific organisation, bringing together experts on gender medicine for professional exchange and collaboration.

Aims:

To establish and promote gender medicine by

- Position papers and guidelines
- Distribution of results
- Organisation of congresses
- Implementation into medical education

Organisation

Board

- Prof. Marek Glezerman
- Prof. Marianne Legato
- Prof. Maria Grazia Modena
- Prof. Vera Regitz-Zagrosek
- Prof. Karin Schenck-Gustafsson
- Prof. Jeanette Strametz-Juranek

Members

- Everybody with interest in gender specific medicine
- Companies/organisations
- National societies

Benefits to members

- Reduced rate for yearly congresses
- Reduced rates for the journal 'Gender Medicine'
- Reduced rate for books
- Newsletter and networking (science, teaching, policy)
Abstracts of the Congress Lectures

S1: Gender Medicine – Definition, Impact, and Support throughout the World
Cardiovascular Diseases and Gender Aspects in Japan ........................................................................................................................................................................... 10
The Politics of Sex-based Medicine in the United States ........................................................................................................................................................................... 10
Pilot Project Gender Medicine (BMBF) ................................................................................................................................................................................................. 10

Keynote Lecture
Gendered Innovations in Science, Medicine, and Engineering ......................................................................................................................................................... 11

S2: From Bench to Bedside - from IGM
Are Gender Aspects Helpful in Medicine – in Heart Failure Management? ............................................................................................................................................... 11
Gender Differences in Intrauterine Life .......................................................................................................................................................................................... 11
Women’s High Blood Pressure: Do We Treat Women Properly? .................................................................................................................................................. 12
Sex Hormones and the Heart .............................................................................................................................................................................................. 12

CS1: Gender, Heart Transplantation, Mechanical Support, and Stem Cells
Gender in Heart Transplantation ............................................................................................................................................................................................ 13
Gender Differences in Long-term Mechanical Circulatory Support ...................................................................................................................................... 13

CS2: Gender and Myocardial Recovery
Opportunities/Challenges of Gender Related Cardiovascular Research: NHLBI Experience .................................................................................................................................. 14
Therapeutic Potential of Oocyte-derived Stem Cells ............................................................................................................................................................... 14
Weaning in acute myocarditis ......................................................................................................................................................................................... 15

S3: Integration of Gender Medicine in the Clinical Practice
Cell Sex: A New Look at Cell Fate Studies ......................................................................................................................................................................................... 16
Different Gender Impact of Risk Factors in CVD, Diabetes, and Metabolic Syndrome: Do We Have Data Enough to Differentiate Treatment in Women? ........................................................................................................................................ 16
Gender-Specific Safety of Pharmacotherapy .................................................................................................................................................................................. 16

S4: Gender and Cardiovascular Function
Mechanisms of Gender Cardiovascular Differences in Longevity and Aging Models ................................................................................................................................ 17
Estrogen Receptor Modulation and Vasculoprotection ................................................................................................................................................................. 17
Gender Aspects in Cardiac Arrhythmia .......................................................................................................................................................................................... 18
Androgen Receptors in Cardiovascular Regulation ............................................................................................................................................................... 18
S5: Pilot Project Gender Medicine
Gender Issues in Diabetes and the Metabolic Syndrome – a Chinese Perspective ................................................................. 19
Sex Chromosome and Gonadal Hormone Effects in Angiotensin II-Dependent Hypertension ................................................... 19
Gender and Stroke ................................................................................................................................................................... 19

S6: Sex/Gender Research in North America - from OSSD - and the World
Sex/Gender Differences in CVD – a Model for Translation to Improved Outcomes .................................................................. 20
Sex/Gender Differences in Pain .................................................................................................................................................. 20
Reconciling Sex and Gender: The Interaction of Biology and Society ........................................................................................ 21
Depression and Cardiovascular Disease: Does Sex Matter? ..................................................................................................... 21
Sex Differences in Risk Factors and Blood Pressure Response to Four Antihypertensive Drugs in Chinese Patients........... 21
Gender Matters! Charting Future Directions in Gender, Sex, and Health Research in Canada .................................................. 22

S7: Gender Differences in Drugs and Devices
Sex Related Differences and Inequities in Renal Donation and Transplantation ................................................................. 22
Gender Differences in Depression ................................................................................................................................................. 23
The Impact of Sex on Vascular Diseases and Implications for Novel Therapeutics ................................................................. 23
Sex Differences in Drugs and Devices: Views from FDA ............................................................................................................ 24
Gender Differences in Clinical Trials for Drug Approval: Experience by BfArM ..................................................................... 24

S8: Free Communications: Complementary Medicine, Pregnancy, Estrogen Receptors, Psychosocial Aspects
The Role of Gender in Complementary Medicine ..................................................................................................................... 25
Heart Disease: Does Gender Matter? ........................................................................................................................................ 25
ERα, ERβ, and gpER: Time to Re-Think Estrogens in Cardiovascular Medicine? ................................................................. 26
Peripartum Cardiomyopathy ...................................................................................................................................................... 26

S9: Gender in Healthcare - EuroheartPolicy
Gender and Mental Health in Central-Eastern Europe ................................................................................................................... 26
Gender in Acute Coronary Syndromes (ACS) ............................................................................................................................ 27
Women and Research on Cardiovascular Diseases in Europe: the European Heart Health Strategy (EuroHeart) Project .... 27
Gender Aspects in Health Care in Austria ................................................................................................................................ 28
Influence of Gender of Physicians and Patients on Guideline Recommended Treatment of Chronic Heart Failure in a Cross-Sectional Study ................................................................. 28

S10: Gender in Medical Education
Developing a Global Network to Integrate Gender Competence into Medical Education ........................................................ 28
S1: Gender Medicine – Definition, Impact, and Support throughout the World

Cardiovascular Diseases and Gender Aspects in Japan
Masako Matsuda
Yamaguchi University Graduate School of Medicine, Japan

Japan is one of the countries with the low incidence of cardiovascular death including coronary heart disease (CHD). Age-adjusted death rate keeps decreasing. However, cardiovascular disease (CVD) has emerged to the 2nd leading cause of death in 1980ies, and its decreasing rate is slower than other countries. It is an urgent task for the country like Japan entering an era of an aging population to reduce risk of heart and blood vessel disease.

Age-adjusted death rate in Japanese women has been about the half of those of Japanese men. However, the difference of total number of cardiovascular death of both sexes has been equivocal, and even more women have died of CVD last 10 years. Women live longer than men by 7 years in Japan, and develop CHD later in their lives with poorer prognosis than men.

The role of major risk factors seems to be different in men and women. A study showed smoking and diabetes seriously increased risk of developing CHD in women than men, and high blood cholesterol level did not affect women.

I will talk about CVD contrasting Japanese to others, and Japanese women to Japanese men.

The Politics of Sex-based Medicine in the United States
Virginia Miller
College of Medicine, Mayo Clinic, Rochester, MN, USA

Interest in sex/gender-based medicine as a discipline began in the United States with government initiatives to increase participation of women in clinical trials, the opening of Women’s Health Centers and specific funding initiatives for basic science research into the cardiovascular actions of estrogen. These initiatives provided the background for the Institute of Medicine Report “Exploring the Biological Contributions to Human Health: Does Sex Matter? Board on Health Sciences Policy.” This report identified clear areas where research is needed to define sex/gender specific differences in incidence, presentation, diagnosis and treatment of disease. Now almost a decade after that report was published while advances have been made understanding sex-based differences in health and disease, many areas remain unexplored. This presentation will discuss possible collaborative ways to address these areas with the ultimate goal of improving health. In the era of personalized treatments and pharmacogenomics, understanding biological differences between males and females has become an imperative.

Pilot Project Gender Medicine (BMBF)
Sabine Oertelt-Prigione, Vera Regitz-Zagrosek
Institute of Gender in Medicine (GiM), Center for Cardiovascular Research, Charité – Universitätsmedizin Berlin, German Heart Institute Berlin, Germany

Background: Gender related research has produced an exponentially growing body of evidence in recent years. However, comparative evaluation and management of the present literature is complicated by the lack of methodical categorization and analysis.

Aims: We systematically collected gender-specific publications with the objective to define the current state of research on sex/gender differences in the medical field and identify commonalities and differences between clinical subspecialties. Furthermore, results could direct future research endeavours, suggest topics for guideline development and be included into medical teaching.

Methods: 10 clinical subspecialties were chosen and 6-8 relevant conditions were identified in each field. Using a text-mining program and standardized methodology the PubMed database was searched for relevant publications. Abstracts were systematically analyzed and divided into 5 broad categories (Epidemiology, Pathophysiology, Clinical, Management and Outcomes. The database will subsequently be publicly accessible to registered individuals and institutions.

Results: Relevant differences could be detected in several subspecialties at both the quantitative and qualitative level.
970 articles were retrieved in the field of Cardiology, 334 in Pulmonology, 147 in Rheumatology and 129 in Gastroenterology/Hepatology. Qualitative divergences were evident, with some fields directed more towards basic research on sex/gender differences and others on management and outcomes research. The overall trend was a progressive increase in sex/gender-specific literature over the last decade, with a slight decrease in 2008.

Conclusion: Significant quantitative and qualitative variations exist in the analysis of sex/gender differences in clinical subspecialties. Relevant knowledge gaps in multiple specialties need to be addressed to improve translation into clinical practice.

The project is supported by BMBF grant 01FW0803.

Keynote Lecture

Gendered Innovations in Science, Medicine, and Engineering

Londa Schiebinger
Stanford University, CA, USA

Gendered Innovations documents how gender analysis profoundly enhances human knowledge. Gender analysis—when turned to science, medicine, and engineering—can spark creativity by opening new perspectives, new questions, and new missions for future research. This is where the action is today. This project seeks to train research scientists how to design gender analysis into basic and applied research. We provide concrete examples of how taking gender into account opens the door to innovation in science, medicine, and technology—and by doing so enhances human health and well-being.

S2: From Bench to Bedside – from IGM

Are Gender Aspects Helpful in Medicine – in Heart Failure Management?

Vera Regitz-Zagrosek
Institute of Gender in Medicine (GiM), Center for Cardiovascular Research, Charité – Universitätsmedizin Berlin, German Heart Institute Berlin, Germany

Background: Gender related differences have been found in animal models and clinical studies in heart failure (HF) and its frequent precursor myocardial hypertrophy (MH). Female rodents exhibit better outcomes in HF and differ in disease mechanisms from males. Women and men with HF differ in aetiologies, clinical manifestation, outcomes and management.

Aims: Analyse and understand sex differences in animal models of physiological and pathological hypertrophy, and in cell culture studies; translate findings to clinical sex/gender differences in patients with HF and aortic stenosis, coronary heart disease and dilated cardiomyopathy (DCM).

Methods: We started an interdisciplinary basic research group to analyse sex differences in animal models of MH and HF. Female mice develop more concentric hypertrophy than males after TAC, exhibit better survival after myocardial infarction (MI) and respond differently to treatment. In addition we analysed outcomes in women and men after bypass surgery, with DCM and after heart transplantation and studied interaction of gender with psychosocial and socioeconomic variables.

Results: Female rodents develop more physiological hypertrophy than males with voluntary exercise (cage running). They present with less pathological hypertrophy after pressure overload and better survival after MI. They exhibit less dilatation, better maintenance of energy metabolism, less fibrosis and apoptosis than males. In human hearts regression of aortic stenosis after valve replacement is faster in women than in men and there is less matrix remodelling in female hearts. Women with DCM and HF differ in a number of clinical features from men.

Conclusion: Rodents and humans exhibit sex/gender differences in MH and HF. Understanding underlying molecular mechanism could help to improve management in both genders.

Gender Differences in Intrauterine Life

Marek Glezerman
Professor and Chairman, Hospital for Women, Rabin Medi-
Intrauterine events have a tremendous impact throughout life. A male fetus is more vulnerable than his female counterpart and we and others have shown that pregnancies with a male fetus have a less favorable outcome than pregnancies with a female fetus. Pregnancies with unlike-sex twins can be regarded as experiments of nature which permit the assessment of affects exerted by the twins on each other. Our studies on twin pregnancies indicate that a female fetus fares better if her "uterus mate" is a sister instead of a brother. On the other hand, male fetuses are better off with a female than with a male co-twin. Some gender differences in unlike-sex twins seem to develop as a result from paracrine interaction between the twins, including but not limited to the transamniotic transfer of hormones. These processes may affect intrauterine and postpartum morbidity and may exert their effects throughout life including future fertility potential. In recent years powerful tools have been developed which permit to define the "fetus as a patient". High resolution ultrasound, maternal and fetal blood tests, amniotic fluid assessment and techniques used for intrauterine therapy may enable us to gain new insight into the largely unexplored intrauterine world and focus research on very early processes which determine later gender differences. Therapeutical implications may be enormous. This presentation will include new data from ongoing research from our group and others and some pertinent research hypotheses will be discussed.

Women’s High Blood Pressure: Do We Treat Women Properly?
Jeanette Strametz-Juranek
Dep. of Cardiology & Stabsstelle Gender Mainstreaming, Medical University of Vienna, Austria
Hypertension is an important worldwide public-health challenge, the leading riskfaktor for cardiovascular and kidney diseases and ranked third as cause of disability-adjusted life-years in women and men. However, there are major genderspecific differences in prevalence, pathophysiology, awareness and treatment of hypertension. After menopause the incidence and prevalence of hypertension is markedly increasing in women. Before menopause endogenous estrogens seems to protect the endothelium, but after menopause, the continous decline of estrogens is a associataed with a marked increase of vasoconstrictors such as Endothelin, Angiotensin, leading to subsequent stiffness and vasoconstriction in the endothelium. Further is comes to an activation of the symphatetic nerve activity, increased insulin resistance, weight gain and salt sensitivity all leading to hypertension in postmenopausal women. Also in treatment of hypertension are genderspecific differences. In a recent study in Sweden it has been shown that women are less treated with ACE-inhibitors/AT-II-receptor-blockers and receive more beta-blockers and diuretics. Furthermore, they received less statins to minimize their cardiovascular risk.

In most hypertension guidelines „sex and gender“ are not included, so women and men right now have the same treatment goals in hypertension, not emphazining that the cardiovascular risk is markedly increasing in postmenopausal women.

In future more women have to be included in large clinical trials, focusing on the specific role of estrogens, estrogen receptors, salt sensitivity and optimal blood pressure target values in the female population to fight against the increasing hypertension-associated morbodity and mortality in women.

Sex Hormones and the Heart
Maria Grazia Modena
Institute of Cardiology, University of Modena and Reggio Emilia; Women`s Clinic, University of Modena and Reggio Emilia, Italy
Estrogens modulate cardiovascular pathophysiology through the binding to intra-cellular estrogen receptors (ERs). Two ERs (ERα and ERβ) have been identified in most cells, including atrial and ventricular myocytes, fibroblast and endothelial cell, but others are going to be identified.

The results of the first randomize trial with Hormone Replacement Therapy (HRT) in postmenopausal women (PEPI trial) showed a strong beneficial effect of estrogens on lipid
profile. This effect was considered responsible of atherosclerosis protection in women (lipidocentric theory). More recently results of several randomized clinical trials (HERS, WEST, WHI) have not confirmed the previous results showing an increase of coronary risk and stroke, mainly in the. Recent trials suggest an important role of HRT in women with advanced heart failure, improving endothelial-dependent vasodilatation and cardiac output. For these reasons there are no doubt that estrogens have important biological effect on cardiovascular system, through modulation on the endothelial dependent vasodilation, lipid profile, insulin-resistance, all factors antagonizing atherosclerosis onset and development; the strongest demonstration is represented by the protection of female gender until menopause. Transdermal ERT, without hepatic estrogenization, does not increase pro-coagulative proteins, C-reactive protein and angiotensinogen, decreases VLDL cholesterol (transporting triglycerides) and glicemia. There are our data demonstrating that transdermal ERT has beneficial effects in improving forearm blood flow and coronary vasomotion, i.e. endothelial function, blood pressure and left ventricular hypertrophy. In conclusion research on estrogens has to continue, because their potential benefits are not completely known.

Common Sessions with MCS

CS1: Gender, Heart Transplantation, Mechanical Support, and Stem Cells

Gender in Heart Transplantation

Hannah A. Valantine, Kiran Khush, Luciano Potena
Stanford University, CA, USA

Sex and gender disparities may negatively affect outcomes after heart transplantation. Discordance relative to donor/recipient sex is documented across all solid organ transplants, most marked in heart transplants. Amongst the 2000 annual US heart transplants, women constitute less than 25% of recipients but more than 30% of donors, unchanged for over a decade. Similar recipient/donor discordance (23%/29%) is reported from the International Society of Heart and Lung Transplantation registry despite the decreasing rate of coronary artery disease (more frequent in men) as the indication for heart transplantation. Key factors that might explain these disparities include: 1) Women recipients as a risk factor for mortality after heart transplant, an association that has diminished with improved immunosuppressants. 2) Men recipients of hearts from women donors, a risk factor for 10-year mortality in earlier transplant cohorts. 3) Pregnancy and allosensitization resulting in HLA antibodies that limit donor availability and increase risk for antibody mediated rejection. 4) Cardiac allograft vasculopathy (CAV), a major cause of morbidity and mortality, is associated with interactions between donor age, donor sex and recipient sex: donor age appears to have the most impact on hearts from men, but negligible effects on hearts from women donors, regardless of recipient sex. 5) Gender biases limiting women’s access to transplant, including the fact that fewer women than men accept transplant when offered the option. Further research is needed to unravel the role of sex (biological) and gender effects in heart transplantation, with the goal of individualizing patient care and improving outcomes.

Gender Differences in Long-term Mechanical Circulatory Support

Roland Hetzer, T. Krabatsch, A. Stepanenko, E. Potapov
German Heart Institute Berlin (DHZB), Germany

Aims: Long-term mechanical circulatory support (MCS) with ventricular assist devices (VADs) is now an acceptable option for patients with end-stage heart failure. Since 1987, 1427 VADs have been implanted in 1314 patients. We analyzed our experience in this field in regard to gender differences in the pediatric (<16 years old) and adult population.

Results: There were 82% men and 18% women supported by a VAD or total artificial heart (TAH).

In children under 16 years old the mean age at MCS implantation was 6.7±5.6 years in male patients compared to 4.8±5.6 in females (p=0.097). There were no gender differences regarding diagnoses, as shown in table 1. Procedural success (survival for 30 days, transplantation or weaning from the VAD) was achieved in 75% of the male and in 71% of the female patients. The Kaplan-Meier analysis showed
trend towards better outcome in women in long-term survival (1-year survival 38.3±11% vs 59±8%, p=0.08).

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Boys</th>
<th>Girls</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postcardiotomy syndrome</td>
<td>17</td>
<td>12</td>
<td>0.425</td>
</tr>
<tr>
<td>Congenital heart disease</td>
<td>17</td>
<td>20</td>
<td>0.763</td>
</tr>
<tr>
<td>Acute myocarditis</td>
<td>15</td>
<td>16</td>
<td>0.966</td>
</tr>
<tr>
<td>Dilative cardiomyopathy</td>
<td>40</td>
<td>43</td>
<td>0.777</td>
</tr>
<tr>
<td>Toxic cardiomyopathy</td>
<td>0</td>
<td>4</td>
<td>0.495</td>
</tr>
</tbody>
</table>

Diagnosis(%)                            Boys           Girls            p
Postcardiotomy syndrome        17               12           0.425
Congenital heart disease          17               20           0.763
Acute myocarditis                     15               16           0.966
Dilative cardiomyopathy           40               43           0.777
Toxic cardiomyopathy              0                 4             0.495

In adults the mean age was 51.4±13.5 years in men compared to 47.8±15.1 years in women (p=0.001). The gender differences regarding diagnoses are presented in table 2. Procedural success was achieved in 61% of men and 59% of women. The Kaplan-Meier analysis showed no significant differences in long-term survival.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Men</th>
<th>Women</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postcardiotomy syndrome</td>
<td>6</td>
<td>11</td>
<td>0.009</td>
</tr>
<tr>
<td>Congenital heart disease</td>
<td>9</td>
<td>14</td>
<td>0.021</td>
</tr>
<tr>
<td>Acute myocarditis</td>
<td>2</td>
<td>8</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Ischemic cardiomyopathy</td>
<td>29</td>
<td>17</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Dilative cardiomyopathy</td>
<td>44</td>
<td>32</td>
<td>0.002</td>
</tr>
<tr>
<td>Toxic cardiomyopathy</td>
<td>0.2</td>
<td>2</td>
<td>0.007</td>
</tr>
</tbody>
</table>

Conclusion: Gender has significant impact on the distribution of diagnoses in the adult population only. The early success after MCS implantation is similar in male and female patients in both age groups, while female children show a trend towards better long-term outcome.

CS2: Gender and Myocardial Recovery

Opportunities/Challenges of Gender Related Cardiovascular Research: NHLBI Experience

George Sopko
National Institutes of Health, Bethesda, USA

Heart failure is growing health problem and therapeutic challenge. Cell-based cardiac repair therapies focusing on stem cells offer exciting opportunity. Gender differences exist in cardiac injury recovery. Sex hormone specificity plays a key role in bone marrow progenitor cells dynamics. Estrogen has multifunctional roles influencing stem cell growth, differentiation, and metabolism and their final product destination and effect in many tissues. Estrogen exerts both positive and negative physiologic effects. Estrogen exerts its regulatory functions via estrogen receptors, which are found on multiple types of progenitor cells including embryonic stem cells and MSCs. Gender-based cellular modulation represents a new promising therapeutic paradigm. There is a need for better understanding of gender differences in/after acute cardiac injury, such as gender differences in stem cell function and repair required gender targeted stem cell strategies, gender regulation of progenitor cell populations, stem cell based paracrine myocardial protection, gender stem cell identification, stem cell homing facilitation by estrogen application, and therapeutic efficacy improvement focusing on modification of the function of stem cells through estrogenic or anti-androgenic stimulus facilitating formulation of “super stem cells” with better therapeutic efficacy.

Therapeutic Potential of Oocyte-derived Stem Cells

M. Didié, P. Christalla, Wolfram-Hubertus Zimmermann
Department of Pharmacology, Georg-August University Göttingen, Germany

Cell-based tissue repair is hampered by the scarcity of potentially therapeutic cells. These should be technically easy to harvest and exploit, not associated with ethical caveats, devoid of immunological issues, and not associated with secondary pathologies. In an effort to identify a cell source that may fulfill all or at least most of these requirements, we have recently explored the utility of parthenogenetic stem cells (PSCs). Unfertilized oocytes can be activated to generate parthenogenetic blastocysts containing pluripotent stem cells. The latter can be harvested, cultured in an undifferentiated state, and differentiated to yield derivatives of all three germ layers, including cardiomyocytes. Derivation of PSCs from αMHC-GFP transgenic mice allows for cardiomyocyte enrichment and subsequent applications in cardiac tissue engineering. Resulting engineered heart tissues display
structural and functional properties of native myocardium. Parthenogenesis can be induced in murine as well as human unfertilized oocytes by simple pharmacological stimulation. It does neither require genetic manipulation nor destruction of an embryo and may therefore offer an interesting alternative to embryonic and induced pluripotent stem cells in cell-based organ repair applications. In addition, a variety of multi-histocompatibility complex (MHC)-homologous and -heterologous PSC-lines can be generated from a single oocyte donor. Consequently, only a limited number of oocyte donations would be required to generate potentially immune compatible therapeutic cells. Given these findings, we suggest PSCs as a promising cell source in cell-based organ repair and specifically discuss their application in tissue engineering-based cardiac muscle repair.

**Weaning in acute myocarditis**

**Brigitte Stiller**

Congenital Heart Disease / Pediatric Cardiology at the University Hospital of Freiburg, Germany

Acute myocarditis is an important cause of morbidity and mortality in children as in adults. It is defined as inflammation of the myocardium in association with non-ischemic myocellular necrosis. Clinical presentations range from non-specific systemic symptoms to fulminant haemodynamic collapse and sudden death. Male gender and younger age are risk factors for developing a fulminant course.

The fulminant form of myocarditis is characterized by a distinct, sudden onset of cardiac failure, severe left ventricular dysfunction and cardiogenic shock. Endomyocardial biopsy reveals extensive inflammation and myocyte necrosis. Fulminant myocarditis, manifested by severe haemodynamic compromise requiring high-dose vasopressor support or mechanical circulatory support, was identified in 15 of 147 patients (10.2%) in a large prospective study. The fulminant form of myocarditis was an independent predictor of survival after adjustments were made for age, histopathological findings, and haemodynamic variables. Patients with fulminant myocarditis were significantly less likely to die or require heart transplantation during follow-up than were patients with acute myocarditis, as long as they survive the acute fulminant days and weeks.

“The worst are the best”: means that the excellent long-term prognosis warrants aggressive haemodynamic support, because in majority recovery and weaning from mechanical circulatory support (MCS) is feasible, as long as the unloading period with MCS is sufficient. MCS has been applied with a broad variety of systems designed to unload the heart and provide adequate perfusion of the organs. It includes extracorporeal membrane oxygenation (not preferable), centrifugal pumps, extracorporeal pulsatile systems and intracorporeal pumps, depending on the different body size and organ failure. Normally hemodynamic induced problems (MOF) disappear due to good cardiac/pump output within the first week on MCS. The blood pressure depends on pump rate and peripheral vascular resistance. Norepinephrine is sometimes necessary during the first few days but afterwards, with recovery of the organs and awakening of the patient, medication with ACE inhibitors and β-blockers is recommended to ensure good protection of the myocardium and potential recovery of the myocytes. Children with acute viral myocarditis are those who do best with the Berlin Heart EXCOR. These patients were healthy until the onset of fulminant myocarditis, and prolonged circulatory support with a pulsatile pneumatic device is an effective method for bridging until cardiac recovery. In case of fulminant myocarditis heart transplantation should never be the primary goal. We do not list these children/patients for at least 3 weeks of MCS to give recovery a chance. Precondition for recovery and weaning is the optimal unloading during the MCS support to give the myocytes the needed rest. Natriuretic peptides combined with echoparameters can be a good marker to prove sufficient unloading. The clinical clinical guideline for weaning and explantation differs from that in patients with cardiomyopathy, because of the much better recovery likelihood in case of optimal treatment. Different weaning protocols and procedures will be presented in the lecture.

**Conclusion:** The treatment of fulminant myocarditis remains haemodynamic and cardiovascular support, including the use of ventricular assist devices, and more than 50% will recover under optimal MCS up to successful weaning.
European Society of Gender Health and Medicine

S3: Integration of Gender Medicine in the Clinical Practice

Cell Sex: A New Look at Cell Fate Studies
Elisabetta Straface, Paola Matarrese, and Walter Malorni

Italian National Institute of Health, Department of Therapeutic Research and Medicines Evaluation, Rome, Italy

Different pathways involved in the complex machinery implicated in determining cell fate have been investigated in the recent years. Different forms of cell death have been described: apart from the “classical” form of death known as necrosis, a well characterized traumatic injury of the cell, several additional forms of cell death have been identified. Among these, apoptosis has been characterized in detail. These studies stem from the implication that the apoptotic process plays a key role in human pathology. In fact, defects in the mechanisms of cell death, i.e. both an increase or a decrease of apoptosis, have been associated with the pathogenesis of a number of human diseases. Some new insights also derive from the study of autophagy, a less characterized form of cell damage mainly associated with cell survival strategies but that also leads, as final event, to the death of the cell. Interestingly, very recently, a gender difference has been found in this respect: cells from males and females can behave differently. In fact, they seem to display several different features (reactive oxygen species formation, cytoskeleton assembly etc), including those determining their fate. The idea that primary cultured cells or ex vivo cells could maintain their sexual features can disclose new scenarios in preclinical and clinical studies in the field of both disease pathogenesis and pharmacology.

Different Gender Impact of Risk Factors in CVD, Diabetes, and Metabolic Syndrome: Do We Have Data Enough to Differentiate Treatment in Women?
Giovannella Baggio

Internal Medicine Dep, Azienda Ospedaliera di Padova, Italy

CHD is the first cause of women mortality in all industrialized countries. Classical risk factors for atherosclerosis have been studied more in men than in women, and their impact is different in the sexes: diabetes is much more dangerous for cardiovascular complications in women, lipids profiles are differently influencing atherogenesis in women (HDL-cholesterol, triglycerides and non-HDL cholesterol are more important than total cholesterol, and LDL-cholesterol), inflammation biomarkers as CPR and cytokines seem to be higher in the presence of risk factors in women. Metabolic Syndrome is one of the stronger clusters of risk factors and has a prevalence of 60% in women over 65 years of age. However women are less treated for diabetes, dislipidemias, hypertension, obesity and the goal of treatment is far less reached. From the biological point of view the main target of risk factors on damaging arterial wall is the endothelial function. Estrogens have a much positive influence on endothelial function and this may be one the most important differences between sexes for the vulnerability to atherosclerosis. This gives reason also to the fact that women develop CHD 10 years after men. However a recent research on young acute myocardial infarction women and men describes strong differences in extent of coronary artery lesions as well as risk factors profile, and suggests sex-related differences in the mechanisms underlying the atherosclerosis process that need further evaluation.

Evidence Base Medicine for prevention of CVD in women is scanty, and Women Guidelines are obtained from populations not existing in the “real word”. Thus how should be treated women in primary and secondary prevention of CVD in our routinely work?

Gender-Specific Safety of Pharmacotherapy
Flavia Franconi

Dipartimento di Scienze del Farmaco, University of Sassari, Italy

Numerous gender and sex differences in the incidence, prognosis, development, treatment and mortality have been described in the last years leading to an increasing awareness for the fact that they have been ignored for so many years.

Regarding pharmacological treatments differences have
been found in pharmacokinetic and pharmacodynamic this occurs even if till the last few women are scarcely enrolled in clinical studies. The increasing in our acknowledge of the gender difference has not yet been translated into gender specific guidelines and recommendations, and to provide curricula with a gender approach. Thus it is not surprising that the adverse reactions are more common in women. Thus it is necessary to perform preclinical studies in a gender specific way such as selecting the most appropriate model of diseases considering the pharmacokinetic differences, the variation induced by the complex women life. Moreover clinical studies should enrol women in all phases and should perform gender analysis, and gender specific data bank should be built and published. The application of the previous strategy will reduce the incidence of sex specific side effects and adverse drug reactions.

DFG 1054 Research Group

S4: Gender and Cardiovascular Function

Mechanisms of Gender Cardiovascular Differences in Longevity and Aging Models

Dorothy E. Vatner

Ledyard Pfund Professor Departments of Medicine and Cell Biology & Molecular Medicine and the Cardiovascular Research Institute, University of Medicine & Dentistry of New Jersey - New Jersey Medical School, Newark, NJ, USA

We examined gender differences in 1) the most extensively studied model of longevity, caloric restriction (CR) in mice, and 2) a novel non-human primate model of aging, M. fascicularis. CR in mice extends longevity, but induces marked gender differences in gene regulation as assessed by DNA microarray techniques. The primate model of aging has several unique attributes compared with rodents; 1) lifespan 10 fold longer than 2-3 years in rodents. 2) The genomic sequence of primates is closer to that of humans, and 3) most importantly for gender studies, non-human female primates have similar hormonal, menstrual and menopausal responses to humans, whereas, rodents do not undergo menopause. In monkeys, 20-25 years of age, females were relatively protected from both aging cardiomyopathy and increases in vascular stiffness. The major vascular structural mechanisms involved decreases in elastin density and disruption of elastin architecture, which were not observed in the older female monkeys. We also examined DNA microarray analysis of aging aortas from old and young male monkeys, identifying 400 genes that were regulated differently in aging males. Interestingly, less than 5% of these genes changed directionally similarly in old vs young females. Thus, mechanisms mediating the vascular changes with aging are more complex than simple changes in the extracellular matrix, and to understand all the molecular changes, a primate model will be valuable, since its genomic signature is close to humans.

Estrogen Receptor Modulation and Vasculoprotection

Jean-Francois Arnal

INSERM U858-I2MR, Université de Toulouse et CHU de Toulouse, France

Whereas hormonal therapy (HT) may increase the risk of coronary heart disease (CHD) and stroke in menopausal women, epidemiological studies (protection in premenopausal women) suggest and experimental studies (prevention of fatty streak development in animals) demonstrate a major atheroprotective action of estradiol (E2). The understanding of the deleterious and beneficial effects of estrogens is thus required at both a cellular and molecular level.

Both the endothelium and the immuno-inflammatory system play a key role in the development of fatty streak deposit as well as in the rupture of the atherosclerotic plaque. Whereas E2 favors an anti-inflammatory effect in vitro (cultured cells), it rather elicits a pro-inflammatory response in vivo at the level of several subpopulations of the immuno-inflammatory system, which could contribute to plaque destabilization. E2 promotes beneficial actions on the endothelium as NO and prostacyclin production.

E2 actions are essentially mediated by two molecular targets: estrogen receptor alpha (ERα) and beta (ERβ), but the former appears to mediate most of the actions of E2 on the endothelium and on the immune system. ERα modulat-
Abstracts Congress Lectures

es target gene transcription through two activation functions (AF), AF-1 and AF-2, even though signalling via ERα located at the plasma membrane (responsible for membrane-initiated steroid signalling (MISS) / « extra-genomic ») also can lead to an indirect effect on gene transcription. Recently, we demonstrated that ERα AF-1 is not required for the vasculoprotective actions of E2, whereas it is necessary for the effects of E2 on its reproductive targets. These results suggest that Selective Estrogen Receptor Modulators stimulating ERα with minimal activation of ERα AF-1 could retain beneficial vascular actions, while minimizing the sexual effects.

Gender Aspects in Cardiac Arrhythmia

Jean-Jacques Mercadier
Paris Diderot University and Inserm UMR698, France

It has become increasingly apparent during the past decades that there are significant differences between men and women in the presentation, time course and outcome of many cardiovascular disorders including arrhythmias. In normal conditions, women have higher heart rates and longer corrected QT intervals than men. Female predominance among patients with the long-QT syndrome (LQTS) is well established - at least during adulthood whereas male subjects are at higher risk before puberty - whereas men exhibit a higher incidence of Brugada syndrome. Acquired long-QT syndrome is also predominantly observed in women and women are at higher risk of dying from sudden cardiac death in both congenital and acquired LQT5. Although the inheritance of the most common LQTS forms is autosomal dominant, it has been shown recently that the female predominance may result from a distortion in the transmission of the mutated alleles that are more often transmitted to daughters than to sons. Also, the presentation of a number of arrhythmias is influenced by women’s menstrual cycle and pregnancy, suggesting an important role of hormones in addition to inherited genetic factors. With the use of a number of animal models, many of these gender differences have been ascribed to differences in myocardial expression of ion channels involved in repolarisation, resulting in a lower density of the global repolarising current that may explain, at least in part, the longer action potential duration in female ventricular myocytes. Greater dispersion of ventricular repolarisation has also been shown as a factor potentially increasing the risk of ventricular arrhythmias in women. A review of the currently available clinical and molecular information regarding these gender differences will be presented.

Androgen Receptors in Cardiovascular Regulation

Michael Bader
Max-Delbrück-Center for Molecular Medicine, Berlin, Germany

Sex hormones and their receptors are responsible for the sexual dimorphism observed in hypertension and cardiovascular diseases. Males generally have worse cardiovascular outcomes than females. Estrogens appear protective; the role of androgens is not yet defined. Androgens may induce or worsen hypertension and cardiac hypertrophy by different pathways. However, also beneficial cardiovascular effects of androgens have been described. Some of these effects are mediated by a rapid non-genomic mechanism involving unknown receptors.

We analyzed the actions of androgens on the cardiovascular system by using specific antagonists and rodent models with altered expression of the nuclear androgen receptor. The androgen receptor antagonist flutamide reduced blood pressure and end-organ damage in the hypertensive transgenic rat model, TGR(mREN2)27. Furthermore, crossbreeding this model with rats lacking functional androgen receptors (TFM) resulted in double transgenic rats with an ameliorated cardiovascular disease state. These findings support a deleterious action of the nuclear androgen receptor in cardiovascular function. To further clarify this issue, we generate mice which lack the androgen receptor exclusively in cardiomyocytes using Cre/loxP technology in order to characterize the function of androgens in this cell type.
**S5: Pilot Project Gender Medicine**

**Gender Issues in Diabetes and the Metabolic Syndrome – a Chinese Perspective**

Ronald Ma, Wing Yee So, Peter Tong, Chun Chung Chow, Juliana Chan

Department of Medicine and Therapeutics, Chinese University of Hong Kong, Hong Kong SAR, China

Asia is in the midst of an epidemic of diabetes. The prevalence of type 2 diabetes in Hong Kong is estimated to be around 10%. There are numerous gender-specific issues in diabetes and metabolic syndrome, which has not received much attention till recently. Gestational diabetes (GDM) is an important risk factor for subsequent diabetes in the mother, but exposure to intra-uterine hyperglycaemia is also an important determinant of the risk of diabetes and cardiometabolic risk in the offspring. In an 8-year longitudinal case-control cohort of mothers with and without GDM, we found that children born to mothers with GDM exhibited early features of metabolic syndrome including high blood pressure and low HDL cholesterol. Another important risk factor for diabetes in female patients is a diagnosis of polycystic ovary syndrome. Women with polycystic ovary syndrome have anovulation +/- clinical features of excess androgens +/- presence of polycystic ovaries. We found women with PCOS have a 5-fold increase in risk of the metabolic syndrome compared with women without PCOS, and a high prevalence of undiagnosed diabetes. Men with type 2 diabetes are at increased risk of hypogonadotropic hypogonadism, which is associated with increased metabolic risk. Using a large cohort of diabetic patients with mean duration of follow-up of 4 years, we identified erectile dysfunction as an independent predictor for new-onset coronary heart disease. In summary, male and female patients have different risk factors for the metabolic syndrome, diabetes and diabetic complications. Further gender-specific studies in diabetes are much needed.

**Sex Chromosome and Gonadal Hormone Effects in Angiotension II-Dependent Hypertension**

Kathryn Sandberg, Hong Ji, Wei Zheng, and Xie Wun

Center for the Study of Sex Differences in Health, Aging and Disease, Georgetown University, Washington, DC, USA

Women exhibit a lower mean arterial pressure (MAP) and a lower incidence of hypertension compared to men up through the fifth decade of life. As women continue to age, their MAP approaches that in men and by the late sixties, exceeds that in men of the same age. While much evidence indicates that the gonadal state (male vs female) influences MAP, it has been difficult to separate gonadal hormone effects from effects due to the sex chromosome complement (SCC). Using the Sry four core genotype (FCG) mouse model in the MF-1 mouse, we show that MAP is affected by the SCC in females independently of gonadal sex in gonadectomized (GDX) mice infused for 7 days with angiotensin II (Ang II). Under these experimental conditions, day (P<0.0001), time (P<0.0001) and the SCC (P=0.0163) were statistically significant at less than the 2% level, while gonadal sex was not (P=0.34). The estimated mean difference between the two SCC groups (XX vs XY) was 19 (SE=3.7952). Analysis of the relationship between MAP and HR in these animals suggests that sex chromosome effects on neural control of the cardiovascular system contributed to the differences in MAP. These findings also suggest that sex chromosome effects that are independent of the gonadal hormone milieu contribute to sex differences in blood pressure control.

**Gender and Stroke**

Matthias Endres, Wiedmann S, Heuschmann P

Center for Stroke Research Berlin, Charité – Universitätsmedizin Berlin, Germany

Stroke is the second leading cause of death and a major cause of adult disability worldwide. Age specific stroke incidence rates are usually lower in women compared to men; however, the absolute number of stroke victims is higher in women because of their higher life expectancy and the late onset of stroke. There are only few studies addressing gender specific variations in stroke risk factors indicating a
higher prevalence of hypertension, atrial fibrillation and prestroke disability, and a lower prevalence of smoking and alcohol consumption in women. The most common pathophysiological hypothesis for gender differences in stroke risk factors suggests a protective role of endogenous oestrogens, while exogenous hormone replacement therapy does not reduce risk of stroke. Contrary to myocardial infarction limited data is available on potential gender differences in the perception of clinical signs at stroke onset. Variations in acute stroke care between men and women are observed in some studies; however, gender differences in in-hospital diagnostic and management procedures often disappear after adjustment for age and potential confounders such as severity of stroke. Poorer long-term functional outcomes as well as a lower quality of life are frequently observed in female stroke survivors compared to males; the reasons for these findings remain largely unclear. Subsequent health care costs after first stroke might be higher for female compared to male patients. Further research is needed for clarifying potential gender differences in stroke, for example for exploring factors causing the poor long-term functional outcome in female stroke victims.

S6: Sex/Gender Research in North America – from OSSD – and the World

Sex/Gender Differences in CVD – a Model for Translation to Improved Outcomes


Cedars-Sinai Medical Center, Los Angeles, California, University of Florida, Gainesville, Florida, University of Pittsburgh, Pittsburgh, Pennsylvania, USA

The NHLBI-sponsored Women’s Ischemia Syndrome Evaluation (WISE) has documented a high prevalence of coronary vascular dysfunction in women with symptoms and evidence of ischemia with no obstructive CAD. The condition is associated with an adverse prognosis and healthcare costs similar to obstructive CAD, there are an estimated 2-3 million women with existent disease, and a projected 100,000 new cases annually. This places the prevalence, morbidity and costs of coronary vascular dysfunction higher than all female reproductive cancers combined. Prospective testing of a noninvasive approach for diagnosis and prognosis is needed as critical next steps toward translation of our findings into clinical care. Established WISE core laboratories and clinical sites have provided new understanding and tools for estimating prognosis for adverse outcomes. The WISE studies have conducted clinical trials to test therapeutic interventions. Results have provided practicing physicians with the ability to translate the findings into clinical care for improved IHD outcomes.


Sex/Gender Differences in Pain

Karen J. Berkley

Florida State University, Tallahassee, FL, USA

Evidence about sex and gender differences in pain and its relief has accumulated rapidly during the past decade. Disease prevalence estimates, epidemiological studies, psychophysical research, and basic science studies all continue to show not only that the burden of pain is greater, more varied, and more variable for women than for men, but that women have a wider array than men of both sex-linked physiological and gender-related sociocultural mechanisms
to modulate pain. Furthermore, some painful conditions evidence themselves differently in women and men, and some therapies—whether drug, somatic or situational—appear to have greater efficacy in one sex than in the other. It is becoming increasingly clear that powerfully interactive genetic, physiological, anatomical, neural, hormonal, psychological, lifestyle and sociological and cultural factors contribute to these sex/gender differences across each individual’s lifespan. The clinical applicability of these emerging findings would appear significant for both sexes. However, because sex/gender characteristics comprise only one complex set of many interacting factors that influence how pain develops across the unique lifespan of each individual, it remains important to recognize the potential danger in making recommendations based simply on whether a person is female or male, lest an overemphasis on female–male difference ‘genderizes’ pain assessment, diagnosis and management to the detriment of the individual.

Reconciling Sex and Gender: The Interaction of Biology and Society

Gillian Einstein

Dep. of Psychology, University of Toronto, Ontario, Canada

In contemporary (especially North American) discussions of health and disease, many of us distinguish ‘sex’ and ‘gender’ - using the former to refer to biological factors and the latter to socio/cultural considerations. This usage assumes the two types of phenomenon are distinct, perhaps even independent. However the literature on medical conditions makes it clear that any such assumption is false. In fact the two are deeply intertwined: biology affects the social, and society affects biology. For example, genetics, geography, developmental history and patient/physician interaction all influence the course of bone health in both females and males. Similarly, cultural practices can affect both reproductive and mental health in females. In general, studying sex or gender without contextualizing it in terms of the other can lead to flawed understanding, uninterpretable results, and poor health outcomes. In this talk, drawing on examples from a growing body of work in women’s health, and neuroscience, I will propose methods for studying sex and gender together, in order to produce stronger science.

Depression and Cardiovascular Disease: Does Sex Matter?

Meir Steiner

Women’s Health Concerns Clinic, McMaster University, Hamilton, Ontario, Canada

Acknowledging the role of stress, anxiety and depression as risk factors in cardiovascular disease (CVD) is a very recent but most welcome development. And since women are at a higher risk for anxiety, mood and stress related disorders it follows that more women might be at risk for comorbid depression and CVD. Both CVD and depression in women are leading causes of morbidity and mortality in North America. Moreover, depression predicts morbidity and mortality among individuals with CVD, with consistent evidence suggesting that it may also act as an antecedent to CVD. Depression seems to be correlated with CVD in both pre- and post-menopausal women. Potential mechanisms by which stress, anxiety and depression may lead to cardiac events include both sex-specific biological vulnerabilities and gender-specific behavioural/environmental/psychosocial factors. CVD may also take a different course as well as response to treatments in women and men. Several recent landmark studies asking whether treating depression will prevent cardiac events are still very much inconclusive. Nevertheless, identifying depression in women with CVD is crucial and treating it will at least improve quality of life in this population.

Sex Differences in Risk Factors and Blood Pressure Response to Four Antihypertensive Drugs in Chinese Patients

XiaoHan Fan, Rutai Hui

Dep. of Cardiology and Hypertension Division, Sino-German Laboratory for Molecular Medicine & Key Laboratory for Clinical Cardiovascular Genetics, Ministry of Education, Cardiovascular Institute & FuWai Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China

Background: It remains not well understood about sex differences in the effect of hypertension on conventional risk factors as well as sex-specific responses to antihypertensive
drugs.

Methods: We conducted a community-based cross-section study including 5389 hypertensive patients and 1285 normotensives of either sex, and then a prospective clinical trial with 3,535 untreated hypertensive patients randomizing to atenolol, or hydrochlorothiazide, or captopril, or sustained released nifedipine for 8 weeks in China.

Results: Dyslipidemia (including high- triglycerides, high-total cholesterol, high-low-density lipoproteins, and low-high-density lipoproteins) was more common in men than in women in either normotensives (28.7% vs. 22.2%, p=0.042) or hypertensives (40.6% vs. 35.1%, p=0.027) before 55 years of age. However, this sex-related difference disappeared in normotensives (24.3% vs. 31.6%, P>0.05) and reversed in hypertensive patients (30.0% vs. 42.4%, P<0.001) after 55 years of age. No effect of hypertension was found on the sex-related difference in the prevalence of central obesity, metabolic syndrome and diabetes mellitus throughout the age span. The clinical trial showed that women had a better response to hydrochlorothiazide with a mean 1.82mmHg more reduction and 57% more likely in control of diastolic blood pressure, and to atenolol with a mean 3.86mmHg greater decrease in systolic blood pressure and 65% and 57% more likely in control of systolic and diastolic blood pressure respectively as compared to men (all P<0.05). The sex-related differences in adverse events were found to be significant in nifedipine (women 15.8% vs. men 9.8%, P<0.05) or captopril (women 14.3% vs. men 8.4%, P<0.05) treatment, but neither hydrochlorothiazide nor atenolol.

Conclusions: Sex-related differences in lipid profiles can be influenced by age and hypertension. Sex may be an important predictor for blood pressure response to some antihypertensive drugs.

Gender Matters! Charting Future Directions in Gender, Sex, and Health Research in Canada

Joy Johnson, Blye Frank, Abigail Forson
CIHR Institute of Gender and Health, University of British Columbia, Vancouver, British Columbia, Canada

From its inception, the Institute of Gender and Health (IGH) has been committed to supporting work on both sex and gender with the conviction that they act together to influence the health and well-being of humans. One of the 13 Institutes of the Canadian Institutes of Health Research (CIHR), the IGH is dedicated to generating evidence that will ensure that research is conducted that examines the biological, clinical, health service, psychological and social factors that influence the health of men, women, girls, and boys. The IGH’s work reaches into all fields of health and the Institute is committed to influencing the uptake of gender and sex considerations in health research through a mainstreaming approach by fostering collaboration across disciplines and pillars in developing new knowledge, fostering knowledge exchange, and ensuring that research evidence is used to improve the health of Canadians. In addition, IGH funds research in key priority areas. These areas are described in a recently launched new Strategic Plan. The plan outlines strategic research directions that will guide the Institute’s work for the next four years.

In this presentation we outline the strategic directions outlined in the plan and discuss the state of gender, sex and health research in Canada. In particular we describe the factors that are facilitating the uptake of gender, sex and health research in Canada.

S7: Gender Differences in Drugs and Devices

Sex Related Differences and Inequities in Renal Donation and Transplantation

Duska Dragun
Dep. of Nephrology and Intensive Care Medicine and Center for Cardiovascular Research, Charité Berlin, Germany

Compared to dialysis, kidney transplantation is treatment of choice for end-stage renal disease (ESRD) patients due to improved survival and quality of life. When no living-related kidney donor is available, many ESRD patients must rely on the limited supply of deceased donor organs. Although the public and allocation systems have emphasized the principle of equity in kidney transplant distribution, several studies have documented that women are less likely to receive both, a living-related, and a deceased donor organ. These dispa-
rities are especially pronounced in older women or women with co-morbidities. The gender disparities may be partly explained by differences in perceptions of women’s ability to benefit from transplantation compared with men. Further studies are needed to elucidate factors contributing to this phenomenon: It is not clear whether physicians are less likely to refer older female candidates, or older female candidates themselves are less likely to seek a referral.

In contrast, females are more likely to donate living-related kidney worldwide. There is also a larger proportion of kidneys donated by deceased females. Fetal and maternal outcomes are an important issue to be considered for living donation in women in reproductive age. Women who had both pre- and post-donation pregnancies are more likely to have adverse maternal outcomes in their post-donation pregnancies. Post-donation pregnancies are associated with higher risk of gestational diabetes, gestational hypertension, proteinuria, and preeclampsia. Moreover, there is lower likelihood of full-term deliveries in post-donation pregnancies.

Increased awareness on gender-related issues is needed in care ESRD patients and kidney donors.

Gender Differences in Depression
Stephanie Krüger, Lisa Schute
Klinik für Psychiatrie und Psychotherapie, Charité Campus Mitte, Berlin, Germany

Depressive disorders affect more than 8 Millionen people in Germany. The spectrum of depressives disorders is associated with a 15% mortality rate. The prevalence of depression in women is twice that in men.

There are several reasons for this: a) women are more likely to seek help for psychiatric problems, whereas men tend to deal with depressive symptoms by themselves. b) The reproductive cycle in women and the hormonal changes associated with it make women prone to depressive symptoms.

The premenstruum, pregnancy, the postpartum and perimenopause are all phases in a woman’s life that hold a high risk of developing depression.

This presentation will focus on the gender-specific aspects of depression across women’s lifespan.

The Impact of Sex on Vascular Diseases and Implications for Novel Therapeutics
Saralyn Mark
Adj Associate Professor of Medicine and Ob/GYN-Yale and Georgetown Schools of Medicine President, SolaMed Solutions, LLC Senior Scientific Policy Advisor-The Cook Group Senior Medical Advisor-National Aeronautics and Space Administration, Washington, USA

The importance of sex and gender in medicine has greatly increased over the past decade because of the expanded efforts in research, public policy and education. During the 1990’s, the United States government began to address the concerns that women were not included in clinical trials. From the U. S. Department of Health and Human Services, including the National Institutes of Health and the Food and Drug Administration, the Department of Defense, and even the National Aeronautics and Space Administration, women are now included in trials and there is analysis by sex and gender as well as other human factors such as age, race and ethnicity. Although there have been expanded efforts from the federal government, it has also taken a concerted effort from the private sector such as the pharmaceutical and medical device industries as well as professional and advocacy societies to propel this effort forward.

During this presentation, a brief overview of the history of the inclusion of women into clinical trials and the highlights from a landmark summit on vascular diseases held at Cedars-Sinai Medical Center sponsored by Cook Medical will be presented. The challenges of translating research findings to clinically relevant practices and procedures will be discussed. Novel approaches are needed for the complete delineation of the similarities and differences between the sexes in the pathophysiology as well as the diagnosis and treatment of all diseases including vascular diseases. The National Network of Sex- and Gender-Based Health (NSH) is a proposal being discussed by clinicians and scientists to help facilitate the gathering, coordination and dissemination of data on sex and gender in all areas of medicine.
Sex Differences in Drugs and Devices: Views from FDA

Kathryn O’Callaghan

U.S. Food & Drug Administration, Center for Devices & Radiological Health (FDA/CDRH), Silver Spring, MD, USA

Since 1997, four of 10 drugs withdrawn from the U.S. market for safety reasons had a higher adverse event rate in women than men (including Torsades de Pointes, bradycardia, and cardiac arrest). Several retrospective studies and meta-analyses suggest a higher risk of complications in women from certain devices, such as pulmonary artery catheters (PA rupture), balloon angioplasty (cardiac death), bare metal stents (access site complications, e.g. bleeding requiring transfusion), drug-eluting stents (1-year composite MACE and TVF; 1-year unadjusted TLR), and MCSD (post-transplant death). In many cases, the study authors attributed sex differences in safety to older age and higher co-morbidities and disease burden in women. Other studies suggest that approved devices are effective in both women and men, but often the availability of sex-specific risk vs. benefit information is lacking.

One major challenge with reporting sex-specific data on new technologies is the under-representation of women in most CVD device trials (women typically comprise approximately ¼-1/3 of the study population, despite representing roughly half of the overall disease population). Therefore, most sex-specific findings are likely to fall short of statistical significance. Further study in certain areas may be warranted. For example, the HeartMate II LVAD was approved in the US despite a higher observed stroke rate in women, with the requirement to perform additional studies to assess whether safety and/or effectiveness differ by sex.

FDA/CDRH (Center for Devices and Radiological Health) recommends increased inclusion of women and more robust analysis of potential sex differences in clinical trials of cardiovascular devices.

Gender Differences in Clinical Trials for Drug Approval: Experience by BfArM

Karl Broich

Federal Institute of Drugs and Medical Devices (BfArM), Bonn, Germany

Controlled, randomized, double-blind parallel-group clinical trials are still the gold standard to establish efficacy and safety of new medicinal products. Criteria for inclusion and exclusion of patients should assure homogeneous patient populations based on international diagnostic criteria and known gender differences. Whereas women have been underrepresented in clinical trials in the 70’s and 80’s, this has increasingly changed with the introduction of the ICH document “Gender Considerations in the Conduct of Clinical Trials”. Nowadays European and German legislation incorporated gender issues, and sponsors of clinical trials have to justify the chosen proportion of men and women in their studies. Though sponsors are not obliged to include an equalized proportion with regard to gender, drug approval can be refused if the trials are not able to establish efficacy and safety independent of possible or probable gender issues with regard to specific indications or proposed mechanisms of action. In clinical trials of phase I and II women are still underrepresented due to safety concerns in these early stages of drug development. Our experience and examples with gender issues in clinical trials for drug approval will be presented.
S8: Free Communications: Complementary Medicine, Pregnancy, Estrogen Receptors, Psychosocial Aspects

The Role of Gender in Complementary Medicine

Claudia M. Witt

Institute for Social Medicine, Epidemiology and Health Economics, University Hospital Charité Berlin

Complementary and Alternative Medicine (CAM) is more frequently used by women than by men; 70% of women versus 54% of men use at least one CAM method within 12 months. Gender and school education are the predominant predictors for CAM utilization. Based on this observation it is interesting to know if effectiveness and cost-effectiveness of CAM treatments differ in women and men. To date, only few studies on CAM have performed gender specific subgroup analysis. From acupuncture research we have some evidence that additional acupuncture treatment is more beneficial for women than for men. For example substantial differences were observed in the analysis of gender-specific cost-effectiveness in patients with allergic rhinitis. In the female study population, acupuncture was more cost-effective. This was due to better outcome and lower costs in the female patients compared to the male patients.

More evidence on the impact of gender on effects and costs is needed and gender specific subgroup analysis should become a standard in CAM studies. However, researchers should keep in mind that these subgroup analyses should be pre-planned and that larger sample sizes are required.

References:

1 Härtel U, Volger E. [Use and acceptance of classical natural and alternative medicine in Germany--findings of a representative population-based survey]. Forsch Komplementarmed Klass Naturheilkd. 2004 Dec;11(6):327-34.


Psychological Treatment of Patients with Coronary Heart Disease: Does Gender Matter?

Gerdi Weidner

Dep. of Biology, San Francisco State University, Tiburon, CA, USA

Background: Psychological treatments of patients with coronary heart disease (CHD) appear to be effective both in terms of morbidity and mortality (27% reduction after 2 years). However this benefit was only observed among men and required reductions in perceived stress (meta-analysis by Linden et al, Eur Heart J. 2007; 28:2972-84).

Methods: We examined changes in perceived stress and changes in coronary risk factors (e.g., obesity, blood pressure, exercise capacity) in an observational study of 1208 non-smoking CHD patients (35% female; mean age = 60.7) participating in a 3 month lifestyle intervention (diet, exercise, stress management, group support). Perceived stress and coronary risk factors [e.g. plasma lipids, blood pressure, obesity, exercise capacity; quality of life (QoL); depression, hostility] were assessed at baseline and at 3 months.

Results: Among women, reductions in perceived stress were associated with improvements in medical coronary risk factors (weight, blood pressure, exercise capacity; p’s <.05), health behaviors (stress management & exercise hrs/wk; p’s <.05), and psychosocial factors (depression, hostility, mental QoL, and physical QoL; all p’s < .01). In contrast, men’s reductions in perceived stress were only associated with increased stress management practices and improvements in psychosocial factors (depression, hostility, mental QoL; all p’s < .05).

Conclusion: Considering that psychosocial stress is more strongly related to myocardial infarction in women than in men (INTERHEART Study; Yusuf et al, Lancet 2004; 364:937-52) and presents a major barrier to cardiac rehabilitation of women, targeting psychosocial stress may be particularly beneficial for women with CHD.
ERα, ERβ, and gpER: Time to Re-Think Estrogens in Cardiovascular Medicine?
Matthias Barton
University of Zurich, University Hospital, Department of Medicine, Zurich, Switzerland

Cardiovascular disease represents the leading cause of death in women worldwide. Endogenous estrogens in premenopausal women contribute to vasodilation and inhibition of inflammation, effects which are attenuated in the presence of atherosclerotic vascular disease. Coronary heart disease (CHD) risk increases after either natural or surgical menopause and in conditions associated with impaired ovarian function. About 95% of women develop CHD after menopause when endogenous oestrogen production has ceased. Another factor affecting vascular health is the physiological aging process, which represents an independent CHD risk factor. The number of postmenopausal women will reach 1 billion worldwide by 2050, indicating the necessity of understanding the cellular consequences of menopause on women's cardiovascular health. The receptors, estrogen receptor α (ERα), oestrogen receptor β (ERβ), and the newly discovered intracellular, transmembrane G protein-coupled oestrogen receptor (gpER), are cellular targets of endogenous estrogens as well as constituents of current hormone therapy regimens or synthetic estrogens. All three receptors are expressed in the arterial wall of both women and men. Currently, the functional role of these receptors is only in part characterized, and hardly any information is available how aging and/or coronary heart disease in humans affects the functionality of these receptors in the vascular wall. Since certain drugs such as SERMs act as agonists on gpER, but are antagonists for ERα or ERβ, demonstrating the need for further understanding of the effects and side effects of ER-targeting drug treatments in cardiovascular medicine, particularly in postmenopausal women.

Peripartum Cardiomyopathy
Denise Hilfiker-Kleiner
Molecular Cardiology, MHH, Hanover, Germany

Peripartum cardiomyopathy (PPCM) is a serious, potentially life-threatening heart disease of unknown etiology in previously healthy women. Clinical and experimental data have identified inflammation, autoimmune processes, apoptosis and impaired cardiac (systemic) microvasculature as features associated with the pathophysiology of PPCM. However, recent data have shown that unbalanced peri/postpartum oxidative stress is linked to proteolytic cleavage of the nursing hormone prolactin into a potent anti-angiogenic, pro-apoptotic and pro-inflammatory factor. These observations strongly suggest that prolactin cleavage can operate as a specific pathomechanism for the development of PPCM. Consistent with these findings inhibition of prolactin secretion by bromocriptine, a dopamine D2 receptor agonist, prevented the development of PPCM in an animal model of PPCM and first clinical experience are promising in this respect. Thus, inhibition of prolactin release may represent a novel specific therapeutic approach to either prevent or treat patients with acute PPCM. In this review we are highlighting the current knowledge on risk factors, potential pathomechanisms and treatment options for PPCM.

S9: Gender in Healthcare - EuroheartPolicy

Gender and Mental Health in Central-Eastern Europe
Maria S. Kopp
Semmelweis University, Institute of Behavioural Sciences, Budapest, Hungary

The WHO describes mental health as “a state of well-being in which the individual realizes his or her abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community”. Mental health has a positive as well as a negative dimension: The positive dimension refers to the concepts of well-being and ability to cope in the face of adversity. The negative dimension relates to the presence of symptoms defined as psychological distress as well as to mental disorders.”

Over the last two centuries, our civilisation and societies have been radically transformed which have resulted in fundamental changes in gender roles. This process is espe-
cially demanding in rapidly transforming Central-Eastern European societies. According to our national representative studies in the Hungarian society mental health characteristics are fundamental determinants of physical health, premature morbidity and mortality but there are different gender patterns in this respect. The consequences of mental health problems include increased absenteeism, work disability, reduced human capital investment, and subsequent increased health care costs. Decreasing social capital (e.g., trust, civic society) influences male and female mental health differently. The main sources of poor mental health are inadequate childhood environment, family disruption, chronic family-job related stress, increasing socio-economic differences and weak civic society.

Gender in Acute Coronary Syndromes (ACS)
Karin Schenck-Gustafsson
Center for Gender Medicine, Karolinska Institute, Stockholm, Sweden

Large studies have shown that women have a different riskfactor impact, poorer short-term outcomes (in-hospital or 28-day death) after hospitalisation and from interventions including cardiac surgery and PCI. Explanations for the disadvantage include the older age, more co-morbidities, and, especially in relation to surgery, smaller coronary vessels and lower body weight. Different symptoms and delayed presentation are reported as barriers to optimal diagnosis and treatment. This has lead to less aggressive and less timely investigation, intervention and management of acute coronary events together with less likelihood to be admitted to an acute care hospital or to a CCU. Numerous studies have shown that women are less likely to be managed with invasive strategies and with the recommended medication in-hospital and at discharge. In addition, women with STEMI have been shown to have significantly longer door-to-needle and door-to-balloon times than men. Relative underuse of therapies has been seen. However, the evidence for bias is contradictory, with factors such as age and delayed presentation, rather than gender per se, associated with delayed reperfusion therapy. So, compared with men, women with ST-elevation myocardial infarction benefit equally from timely primary percutaneous coronary interven-}

ion. Women with unstable angina or non ST-elevation myocardial infarction with high-risk features benefit equally from early interventional strategies. Women benefit equally from secondary preventive medications and life style management. Ref.: Berger JS et al Sex differences in mortality following ACS JAMA;2009,302(8):874-882

Women and Research on Cardiovascular Diseases in Europe: the European Heart Health Strategy (EuroHeart) Project
Marco Stramba-Badiale
Director, Department of Rehabilitation Medicine, IRCCS Istituto Auxologico Italiano, Milan, Italy

Cardiovascular diseases represent the major cause of mortality in women and in men. However, gender differences in the clinical presentation of cardiovascular diseases have been demonstrated and some therapeutic options may not be equally effective and safe in men and women. Under representation of women in cardiovascular research has been clearly demonstrated in the past. Scientific societies and foundations undertook initiatives in order to increase the awareness of cardiovascular diseases in women and the representation of female gender in clinical research. Regulatory agencies in the USA but also in Europe have tried to encourage the inclusion of a higher proportion of women in clinical trials and some studies have been performed in populations of women only. The European Heart Health Strategy (EuroHeart) project is a joint initiative between the European Society of Cardiology (ESC) and the European Heart Network (EHN), co-funded by the European Commission and launched in April 2007. One of the objectives of this project was to address the issue of women representation in cardiovascular clinical research by collecting information on clinical trials and registries in Europe. Furthermore, possible gender differences in the primary outcomes of these trials and in the current clinical practice together with the presence of gender issues in Scientific Guidelines of European scientific societies have been assessed. The results of the analysis will be presented by critically reviewing the most significant findings.
Gender Aspects in Health Care in Austria

Margarethe Hochleitner
Innsbruck Medical University, Austria

In keeping with the EU Action Plan 2000 the Austrian Government enacted a law ensuring gender mainstreaming throughout the Austrian health care system and the Austrian universities. And that was supposed to take care of that.

But, of course, we in the medical professions constantly encounter problems involving various gender aspects. These were first dealt with everywhere on a large scale in relation to cardiology. The reasons are, of course, multifaceted. One aspect that I feel can not be neglected is that Austrian society has always viewed heart death as a male phenomenon. Thus, in cardiology women are not infrequently the victim of preconceived ideas. In other medical disciplines, the same can be said of men. For example, of the comprehensive health checks conducted in Austria osteoporosis leads the pack, but only for women. Bone density scans, certainly the most popular preventive check-up for women, and the corresponding medication therapy are practically exclusively for women. The fact that not least of all demographic shifts cause a rapid increase in the number of men with osteoporosis should be undisputed and is also reflected in the very spotty data collected by Statistics Austria on this subject.

In conclusion, even the serious attempts to implement gender aspects and thus also gender fairness in the health care system are rendered difficult by the preconceived opinions we all hold on health issues. Here, we see that gender mainstreaming in the health care system can not be achieved solely by passing laws.

Influence of Gender of Physicians and Patients on Guideline Recommended Treatment of Chronic Heart Failure in a Cross-Sectional Study

Magnus Baumhäkel1, Ulrike Müller2, Michael Böhm1

1Klinik für Innere Medizin III, Kardiologie, Angiologie und Internistische Intensivmedizin, Universitätsklinikum des Saarlandes, Homburg/Saar, Germany; 2AWD.pharma GmbH & Co. KG, Radebeul, Germany

Background: Clinical outcome of patients with chronic heart failure (CHF) improved, but evidence based treatment appears to be imbalanced depending on patients’ and physicians’ gender.

Aims: To determine the interactions of gender with medical treatment of CHF.

Methods: 1857 consecutive patients with CHF were evaluated regarding co-morbidities, NYHA-classification, current medical treatment, as well as dosage of ACE-inhibitors and beta-blockers dependent on gender of patients and treating physicians.

Results: Baseline characteristics of patients and physicians were comparable in males and females. Female patients were less frequently treated with ACE-inhibitors, ARBs, or beta-blockers. Achieved doses were lower in female compared to male patients. Guideline-recommended drug use and achieved target doses tended to be higher in patients treated by female physicians. There was no different treatment of male or female patients by female physicians, whereas male physicians significantly used less medication and lower doses in female patients. In multivariable analysis, female gender of physicians was an independent predictor of use of beta-blockers.

Conclusion: Treatment of chronic heart failure is influenced by patients’, but also physicians’ gender with regard to evidenced based drugs and their dosage. Physicians should be aware of this problem in order to avoid gender related treatment imbalances.

S10: Gender in Medical Education

Developing a Global Network to Integrate Gender Competence into Medical Education

Ann-Maree Nobelius, Jo Wainer and Sundari Ravindran
Centre for Medical and Health Sciences Education, Monash University, Melbourne, Victoria, Australia

At the behest fo the Ford Foundation in the US, Dr. Jo Wainer, Professor Sundari Ravindran, and myself met to discuss the possibility of building a Network of experts to
assist the integration of gender competence into medical curricula world wide.

The meeting produced a plan of action to develop the Global Knowledge-building Network on Gender Competence in Medical Education, the objectives of which are three-fold:

- To facilitate the dissemination of information and resources to assist individuals, universities and nations to integrate such sex and gender competence into their medical curricula

- To facilitate the ongoing documentation of gender competence integration in diverse curriculum types globally

- To facilitate the funding of research to fill existing knowledge gaps in the medical evidence related to sex and gender difference and its impact on clinical outcomes

A 12-member Advisory Committee of experts in gender and medical education from all regions was assembled to develop the strategic plan. The Global Financial Crisis put a halt to the first Advisory Committee Meeting planned for September 2009 in Melbourne, Australia, but the Committee is undeterred as we believe this is an idea whose time has come. So we are pushing on and seeking funding to make this idea a reality. A list of potential collaborators in this project was also drawn up and we would like to invite all those interested in participating in this Network to join us to achieve the Network goal of universal gender competence in medical education and practice.
<table>
<thead>
<tr>
<th>MD: Metabolic Diseases</th>
<th>Nov. 7, 2009 – 11.00-12.30am</th>
<th>Hall Maritim I A</th>
<th>31</th>
</tr>
</thead>
<tbody>
<tr>
<td>HC: Healthcare</td>
<td>Nov. 7, 2009 – 11.00-12.30am</td>
<td>Hall Maritim I A</td>
<td>37</td>
</tr>
<tr>
<td>BR: Basic Research</td>
<td>Nov. 7, 2009 – 11.00-12.30am</td>
<td>Hall Maritim I A</td>
<td>44</td>
</tr>
<tr>
<td>HP: Health Psychology</td>
<td>Nov. 8, 2009 – 11.00-12.30am</td>
<td>Hall Maritim I A</td>
<td>51</td>
</tr>
<tr>
<td>CV: Cardiovascular</td>
<td>Nov. 8, 2009 – 11.00-12.30am</td>
<td>Hall Maritim I A</td>
<td>56</td>
</tr>
<tr>
<td>MT: Mixed Topics</td>
<td>Nov. 8, 2009 – 11.00-12.30am</td>
<td>Hall Maritim I A</td>
<td>63</td>
</tr>
</tbody>
</table>
Poster Session I – MD: Metabolic Diseases

**MD1: Prevalence of hypogonadism in male type 2 diabetic patients on insulin therapy**

1Abrahamian H, 1Prager R, 1Vetter St, 2Kautzky-Willer A

13.med. Abteilung im Krankenhaus Hietzing mit Neurologischem Zentrum Rosenhügel und Karl Landsteiner Institut für Stoffwechselkrankungen und Nephrologie, Austria; 2KIM III, Endocrinology, Medical University Vienna, Austria

**Aims.** The aim of our study was to assess prevalence of hypogonadism, based on biochemical measures in male type 2 diabetic patients under insulin therapy and good metabolic control. Further we examined associations between metabolic parameters and total testosterone.

**Patients and methods.** In a cross sectional study we investigated 87 male type 2 diabetic patients, aged 40-75 years. Subjects had to be on insulin therapy with a daily dose of >0.5 units per kg body weight. Patients were recruited from a large outdoor patient clinic and measurements of HbA1c, BMI, serum lipids and blood pressure were done in line with the annual metabolic evaluation. Additionally a complete hormonal status was assessed by determining FSH, LH, SHBG, total testosterone and BAT. Overt hypogonadism was defined as total testosterone levels (TT) of <2.31 ng/dl and borderline hypogonadism was defined as TT ranging from 2.32-3.45 ng/dl.

**Results.** Mean age of study population was 63.1±8 years, mean BMI was 28.7 ±9 kg/m² and mean HbA1c was 7.5%. Prevalence of hypogonadism (overt and borderline) was 38% in our study population. TT correlated significantly positively with HDL-cholesterol (p<0.0001) and SHBG (p<0.0001). A negative correlation of TT was observed with BMI (p=0.0029), HbA1c (p=0.0350) and triglycerides (p=0.0001). No significant association was found between TT and hypertension. The gonadotrophic hormones FSH and LH were comparable in the 3 groups.

**Conclusion.** In our study prevalence of hypogonadism was lower than in previous studies. A possible explanation for this finding could be the lower BMI of our patients and the fact that BMI is a major determinant of hypogonadotrophic hypogonadism. However the role of other factors and in particular of exogenous insulin therapy in diabetic patients is not known so far.

**MD2: Female sex and estrogen receptor β attenuate cardiac remodeling and apoptosis in hypertrophy**

Daniela Fliegner1,2, Carola Schubert1,2, Adam Penkalla1, Christina Westphal1,2, Ulrich Kintscher2, Henning Witt2, Jan-Ake Gustafsson3, Vera Regitz-Zagrosek1,2

1Institute of Gender Medicine and 2Center for Cardiovascular Research, Charité Medical University, Germany; 3Department of Medical Nutrition, Karolinska Institute, Sweden

**Background:** The estrogen receptors (ER) are believed to be key regulators of cardiovascular sex differences mediating estrogenic effects. We investigated the influence of ERβ on the development of sex-specific differences in cardiac remodeling and the transition to heart failure.

**Methods:** We performed transverse aortic constriction (TAC) or sham surgery in male and female C57Bl6 wild-type (WT) and with genomic deletion of ERβ (ERβ-/-) mice. All mice were characterized echocardiographically and hemodynamically. Left ventricles (LV) were analyzed by histological and proteomic assays.

**Results:** Nine weeks after TAC, there was a significantly smaller degree of LV hypertrophy in female WT mice than in males observed. Females developed a concentric form of hypertrophy, while males developed an eccentric form. This was accompanied by the impairment of systolic and diastolic function. Hearts of WT TAC females showed no changes in collagen content, whereas male WT TAC mice had a strong increase in cardiac fibrosis. The opposite trend was observed in ERβ-/- mice, where females developed more hypertrophy than males. Systolic and diastolic function was strongly impaired and dilation of the LV was significantly increased in male ERβ-/- TAC mice in comparison to male WT mice. In contrast, female ERβ-/- mice developed more severe fibrosis than their male counterparts and WT females. Notably, there was a significant induction of apoptosis in both sexes of ERβ-/- TAC mice, with females exhibiting less apoptosis than males.

**Conclusions:** Female sex offers protection against ventricular chamber dilation. In addition, the effect of ERβ on fibrosis differs in both sexes; female sex and ERβ attenuate the development of fibrosis. Lastly, ERβ alone limits the induction of apoptosis in both sexes; thus slowing the progression to heart failure.
MD3: Sex-specific differences in glycemic and metabolic control in patients with type 1 and type 2 diabetes

Christian Göbl, Ammon Handisurya, Latife Bozkurt, Mona El-Samahi, Johannes Lueck, Anton Luger, Alexandra Kautzky-Willer

Department of Internal Medicine III, Division of Endocrinology and Metabolism, Medical University of Vienna, Austria

**Background:** Only insufficient information on sex-related differences in glycemic and metabolic control is available to date. Thus, the aim of the study was to assess sex-specific differences in type 1 (T1D) and type 2 diabetes (T2D) as well as to compare metabolic parameters in both diabetic subgroups.

**Methods:** In this retrospective cross-sectional study we analysed data of the first visit of 857 patients with T2D (f:392; m:465) and 124 patients with T1D (f:55; m:69) in the setting of the diabetes outpatient clinic of the Medical University of Vienna.

**Results:** Patients with T1D were younger (37.6±13.7 vs. 57.9±11.6, p<0.001), had lower BMI levels (21.6±8.7 vs. 29.0±8.9, p<0.001) and showed significantly higher HbA1c (B=0.59, 95%CI 0.09-1.1, p=0.02) and HDL-cholesterol (B=15.6, 95%CI=10.8-20.3, p<0.001) but lower LDL-cholesterol levels (B=-21.2, 95%CI -35.0--7.5, p=0.002). Sex-specific differences were observed mainly in the subgroup with T2D, who showed higher serum levels in HbA1c (8.96±1.83 vs. 8.55±1.73), LDL-cholesterol (124.1±39.2 vs. 113.6±36.8), and HDL-cholesterol (52.4±13.0 vs. 47.5). Except higher HDL-cholesterol levels in T1D women, no further sex-specific differences were observed.

Regarding therapeutic interventions, men affected by T2D had a higher chance to be treated with statins (OR=1.84, 95%CI=1.16-2.93, p=0.01), ACE inhibitors or AT1 receptor antagonists (OR=1.89, 95%CI=1.22-2.97, p=0.005) or acetylsalicylic acid (OR=2.2, 95%CI=1.3-3.8, p=0.004). However, male patients had a higher risk for coronary heart disease (OR=5.1, 95%CI=2.4-12.3, p<0.001).

**Conclusion:** Sex-specific differences were mainly observed in the subgroup with T2D. Despite higher HbA1c and LDL-cholesterol levels, women received pharmacotherapeutic treatment less often. This might be explained by a higher risk for coronary heart disease in male subjects.

MD4: The angiotensin II type 2-receptor gene (+1675G/A) polymorphism affects left ventricular geometry in treated hypertensive women but not in men

Huber M1, Jakob S1, Wegscheider K2, Völler H3, Kreutz R1

1Institute of Clinical Pharmacology and Toxicology, Charité-Centrum für Therapieforschung, Charité – Universitätsmedizin Berlin, Germany; 2Department of Medical Biometry and Epidemiology, University Medical Center Hamburg-Eppendorf, Germany; 3Klinik am See, Rehabilitation Center for Cardiovascular Diseases, Rüdersdorf, Germany

**Objective:** A genetic polymorphism in AGTR2 (+1675 G/A) has been associated with left ventricular (LV) hypertrophy (LVH) and geometry. The impact of this polymorphism was tested in treated hypertensive patients.

**Methods:** We analyzed a cohort of 1238 patients (83% male) with established essential hypertension and cardiac disease including coronary heart disease (81%), myocardial infarction (MI, 51%), and LVH (49%). LV function was preserved in all patients (ejection fraction >40%). Patients were treated according to guidelines. Parameters of LV mass, structure, and function were determined by echocardiography. Genotyping was performed by allele specific PCR. Data for women and men were analysed separately by univariate and multivariate analysis.

**Results:** The mean age in males and females was 58 ± 9.8 / 60.4 ± 10.5 years and mean 24 hours blood pressures were systolic 124.5 ± 14.3 / 125.6 ± 16.4 mmHg and diastolic 74.2 ± 9 / 73.2 ± 11.3 mmHg. In men statistical analysis for genotypes A/ versus G/- revealed no significant association with any of the echocardiographic parameters. Similar findings were obtained in women, with the exception that the thickness of the interventricular septum (IVST) was significantly lower in A allele carriers (-11%) in both unadjusted (p=0.014) and adjusted analysis (p=0.028).

**Conclusion:** In hypertensive patients treated according to guidelines AGTR2 (+1675 G/A) exhibits only a minor effect in women but not in men.
MD5: Gender differences in a Caucasian population with normal glucose tolerance
Kautzky-Willer A 1, Vrbikova J 2, Bendlova B 2, Moro E 3, Brazzale RA 4, Sbrignadello S 5, Tura A 5, Pacini G 5
1 Medicine 3, Vienna Medical Univ., Austria; 2 Institute of Endocrinology, Praha, Czech Rep.; 3 Regional Hospital, Venice, Italy; 4 Univ. Reggio Emilia, Italy; 5 Metabolic Unit, ISIB-CNR, Padova, Italy

Introduction: Recently, attention was devoted to evaluation of metabolic parameters considering gender of subjects. The aim of this study was the characterization of insulin sensitivity (IS) and beta cell function (BF) in a normal Caucasian population in relation to body mass index (BMI) and age. IS was measured with OGIS and BF with insulinogenic index. Student t-test was used for comparisons; multiple regressions to account for covariates.

Subjects: A 2h 75g-OGTT was performed in 611 females (F) and 361 males (M), normotolerant according to fasting and 2h-glucose (85±0.3 mg/dl (means±SE) in F and 89±0.4 in M (p<0.0001), and 93±1 in F and 89±1 in M (p=0.005), respectively). F were younger (37±1 yrs) than M (40±1, p=0.00001), but no difference (p=0.34) was found in mean body mass index (BMI=25.8±0.2 kg/m² in both).

Results: Following the OGTT, F has lower glucose (area under the curve AUC 133±1 mg/ml .2h vs. 148±2; p<0.00001), while insulin was the same (AUC 5.3±0.1 mU/ml.2h vs. 5.7±0.2, p=0.15). IS remained higher in F (47±3 mU/min/m² vs. 45±3, p<0.0001) also after having accounted for age and BMI (p=0.015). Fasting insulin was the same and no difference was observed in BF (136±10 pmol/mmol vs. 126±27, p=0.71). However, BF increased by 46% with BMI and when accounting for age and BMI, BF of F was significantly higher (p<0.0001).

Conclusion: Since IS and BF are higher in F than in M, when accounting for age and BMI, caution must be observed when using males or females as control population in metabolic studies.

MD6: Males feature a better cardiometabolic risk profile than females with type 2 diabetes
Alexandra Kautzky-Willer, Mayid Reza Kamyar, Dora Gerhat, Ammon Handisurya, Anton Luger, Rosa Lemmens-Gruber

93 women and 108 men with type 2 diabetes of our outpatient department were included in this prospective cross-sectional study. Men and women were comparable for age (60.5±8.6 vs. 58.2±9.6 years), duration of diabetes (10.1±7.7 vs. 8.4±7.0 years) and the body mass index (BMI: 31.6±5.6 vs. 31.8±6.2 kg/m²). The diabetic women had higher systolic blood pressure (155±23 vs. 141±20 mmHg, p<0.0005) and total cholesterol (205±52 vs. 189±50 mg/dl, p<0.03) but a lower total cholesterol/HDL-cholesterol ratio (4.1±1.1 vs. 4.5±1.2, p<0.03). LDL-cholesterol and diastolic blood pressure tended to be higher in women (116±43 vs. 106±42 mg/dl and 87±12 vs. 83±13 mmHg, p=0.07 women vs. men), but HbA1c, fasting glucose and triglycerides showed no difference. More males had a history of smoking or alcohol consumption. Women with shorter duration of disease (less than 10 years) had less frequently (p<0.04) oral antihyperglycemic therapy but comparable HbA1c. Women with longer duration of disease featured more frequently hypertension (100% vs. 86%) and a family predisposition to coronary heart disease (CHD: 46 vs. 26%) compared to their male counterparts. Of note despite a similar rate of CHD the rate of transiluminal coronary angioplasty and coronary bypass graft surgery doubled (25 vs. 13%, p<0.04) in male patients. Women with CHD also had a higher rate of cerebral ischemia than men (28 vs.5%, p<0.04) but a lower rate of acetylsalicylic acid therapy (p<0.0001).

We conclude that although HbA1c did not differ between men and women, overall diabetic women showed a worse cardiovascular risk profile than diabetic males.

MD7: Prevalence of changes in undiagnosed glucose intolerance according to age and gender in Japanese middle aged working people
Hiroaki Kawano, Hirofumi Soejima, Hiromi Fujii, Shigeki Nakayama, Hisao Ogawa
Department of Cardiovascular Medicine, Graduate School of Medical Sciences, Kumamoto University, Kumamoto, Japan

Background: Undiagnosed diabetes and impaired fasting
Abstracts Poster Sessions

MD8: Nature of hypertrophic stimulus determines β-estradiol mediated effects on Akt/mTOR-signaling in cardiomyocytes

Kusch, A., Hegner, B., Guergen, D., and D. Dragun
Dept. of Nephrology and Intensive Care Medicine/Center for Cardiovascular Research, Charité, Berlin

Background/Aims: Activation of PI3K/Akt/mTOR pathway is a hallmark of both, adaptive and maladaptive myocardial hypertrophy (MH). Hormonally induced differences in regulation of this pathway might influence clinical outcome in a sex-specific manner. Aim of our study was to investigate how β-estradiol (E2) may modulate PI3K/Akt signaling in response to hypertrophic stimuli and determine consequences of mTOR inhibition in the context of “female cardiomyocyte”.

Methods/Results: Female HL-1 cardiomyocytes were treated with „physiologic“ (IGF-1) and „pathologic“ (ET-1) stimuli in the presence or absence of E2 or mTOR inhibitor rapamycin. Cell size was determined by immunocytochemistry and FACS-analysis. Signal transduction was assessed by westernblotting using phospho-specific antibodies of Akt and p70S6K and immunoprecipitation with mTOR. E2, IGF-1 and ET-1 induced phosphorylation of Akt and p70S6K in a time-dependent manner. Long-time pretreatment with E2 lead to reduced basal phosphorylation of p70S6K downstream of mTOR. E2 potentiated increase in p70S6K-phosphorylation upon IGF-1-, but not upon ET-1-stimulation. mTOR-complex formation with raptor and rictor was increased by E2-cotreatment. Rapamycin inhibited cardiomyocyte hypertrophy and p70S6K-phosphorylation by IGF-1 and ET-1 irrespective of E2-cotreatment, whereas positive feedback loop towards Akt-phosphorylation was differentially regulated by rapamycin dependent on presence or absence of E2.

Conclusions: Rapamycin effectively inhibits cardiomyocyte hypertrophy in the presence or absence of E2. However, E2 differentially modulates mTOR signaling towards p70S6K and Akt phosphorylation dependent on the nature of hypertrophic stimulus and rapamycin treatment. Functional and genomic consequences of these differential effects beyond cell size will be addressed in further studies.

MD9: Beneficial effects of inhibiting estradiol synthesis in experimental model of diabetic renal disease

Christine Maric and Michaele B. Manigrasso
Department of Physiology and Biophysics, University of Mississippi Medial Center, Jackson, MS, USA

Our previous study has shown that male streptozotocin (STZ)-induced diabetic rats exhibit reduced levels of circulating testosterone and supplementation with low doses of testosterone (i.e. to levels observed in non-diabetics) partially attenuates diabetic renal disease. Interestingly, alongside reduced testosterone levels, male STZ-induced diabetic rats also exhibit increased circulating and renal estradiol levels. Therefore, we hypothesized that increased estradiol levels in males are damaging to the diabetic kidney. The aim of this study was to examine if blocking estradiol synthesis by inhibiting aromatase activity is renoprotective.

The study was performed in 12 week-old male Sprague-Dawley rats either kept non-diabetic (ND) or rendered diabetic with a single intraperitoneal injection of 55mg/kg strep-
tozotocin. The diabetic rats were then randomly divided into a non-treated group (D, n=8) or a group treated with a non-steroidal aromatase inhibitor, anastrozole (0.15mg/day by oral gavage, D+A, n=6/group) for 90 days. Urine albumin excretion (UAE) was measured by ELISA and glomerulosclerosis (GSI) by a semi-quantitative scoring method.

Our data (summarized in Table 1) shows that diabetes-associated increase in UAE (mg/day) and GSI (AU) is partially attenuated by treatment with anastrozole.

<table>
<thead>
<tr>
<th></th>
<th>ND</th>
<th>D</th>
<th>D+A</th>
</tr>
</thead>
<tbody>
<tr>
<td>UAE</td>
<td>4.8±2.5</td>
<td>18±4.6*</td>
<td>10.8±4.6#</td>
</tr>
<tr>
<td>GSI</td>
<td>0.06±0.01</td>
<td>1.9±0.1**</td>
<td>1.4±0.2#</td>
</tr>
</tbody>
</table>

* p < 0.001 vs ND, ** p < 0.01 vs ND, # p < 0.05 vs D

This data suggests that blockade of estradiol production in male diabetic rats is partially renoprotective. Given that our previous study showed only partial renoprotection with testosterone supplementation, we hypothesize that the combined treatment with anastrozole and low doses of testosterone would provide complete renoprotection.

MD10: Sex differences in left atrial size in diabetics are mediated by blood pressure differences

Pamela Ouyang, Edward P. Shapiro, Harry A. Silber, Theodore Abraham, Sandra D. Lima, Kerry J. Stewart

Johns Hopkins University School of Medicine, Division of Cardiology, Baltimore, MD, USA

Diabetes increases cardiovascular risk more in women, reducing the difference in risk between men and women. Left atrial (LA) enlargement, a marker of overall ventricular diastolic dysfunction, predicts cardiovascular risk. We hypothesize that LA size is affected more in diabetic women than men. We analyzed baseline echocardiograms from stable sedentary non-insulin requiring diabetics (53 women, 77 men) without cardiac disease, for individual measures of diastolic dysfunction (E/A), E/E’ and isovolumic relaxation time (IVRT)), overall diastolic function (LA indexed to body surface area, LA-I) and a measure of overall heart size (left ventricular mass, indexed to body surface area, LVM-I). Variables significantly associated with LA-I were entered into a general linear regression analysis along with sex and age.

There was no sex difference in age (56±6 y), SBP (127±14 mmHg), or fasting glucose (143±46 mg/dl). Women had lower DBP (68±8 versus 75±9 mmHg, p<0.0001), higher PP (58±11 mmHg versus 54±10 mmHg, p=0.03), and higher BMI (34±5 versus 32±4, p=0.015). Despite having smaller LVM-I, (86±21 versus 105±23, p<0.0001), women had larger LA-I, (8.1±1.2 versus 7.52±1.4 p<0.027). E/E’ was higher in women (9.9±2.5 vs 9.0±2.2, p=0.029) while IVRT was slightly longer in men (110±22 vs 102±22, p=0.048) LA-I was significantly associated with SBP (p=0.032) and PP (p=0.0001). General linear regression model showed that only PP and age contributed to LA-I.

In diabetics, women have larger LA-I that appears mediated by sex differences in pulse pressure, despite having smaller hearts. Sex differences are seen in cardiac structure which may represent early markers of risk.

MD11: Relationship between Testosterone and NT-proBNP in men with type 2 diabetes


Affiliation Medical University of Vienna, Karl Landsteiner Institute Hietzing Hospital Vienna, Kaiser-Franz- Joseph Hospital Vienna, Austria

Introduction: Low testosterone levels have been shown to be an independent risk factor of cardiovascular and all-cause mortality. As NT-proBNP is currently establishing as a cardiovascular risk marker in diabetic patients, we studied the relationship between NT-proBNP and total and bioactive testosterone as well as sex hormone binding globulin.

Methods: This was an observational prospective study in 306 men with diabetes mellitus treated at a tertiary care center. We measured HbA1c, NT-proBNP, testosterone, bioactive testosterone, sex hormone binding globulin and several other demographic parameters. Spearman’s rank sum correlation coefficient and linear regression analysis were performed to evaluate a possible relation of NT-proBNP with testosterone, bioactive testosterone and sex hormone binding globulin.

Results: The characteristics of this population corresponded to a common collective of unscreened diabetic patients,
mean age being 60 ± 12 years, mean duration of diabetes being 15 ± 13 years. NT-pro BNP significantly related to testosterone and bioactive testosterone (r = -0.161 p = 0.005; r = -0.330 p < 0.001). In patients with NT-proBNP levels below 125 pg/ml adjusted for age and creatinine bioactive testosterone remained a significant predictor of NT-proBNP. Furthermore patients with testosterone levels below 2.32 ng/ml had significantly higher NT-proBNP values (median = 154 pg/ml).

**Discussion:** NT-proBNP as an established cardiovascular risk marker significantly correlates with testosterone, underscoring the link between testosterone levels and the cardiovascular system.

**MD12: Left ventricular diastolic function in type 2 diabetes: effects of exercise training in men and women**

Kerry J Stewart, Edward P Shapiro, Harry A Silber, Theodore Abraham, Sandra D Lima, Pamela Ouyang

Johns Hopkins School of Medicine, Division of Cardiology, Baltimore, MD, USA

Left ventricular (LV) diastolic dysfunction, which contributes to developing heart failure, is common in type 2 diabetes. Limited data suggests that exercise improves LV diastolic function; responses to training by gender are unknown. We studied men and women (N=94) with non insulin-requiring diabetes and without cardiovascular disease who were randomly assigned to 6-months of supervised exercise (moderate aerobic exercise for 45 minutes and 7 resistive exercises, 3 times/week) or a control group (given general advice about increasing activity). Maximal oxygen uptake (VO2max) was assessed on a treadmill. LV diastolic function was assessed using pulsed Doppler derived E/A ratio and tissue Doppler derived Em/Am ratio. With adjustment for baseline values, a General Linear Model tested for group differences and gender by group interactions at 6-months.

There were no differences between baseline VO2max in the overall Control versus Exercise groups. As expected, men had higher VO2max than women (mean ± SD, 24.4 ± 5.0 versus 18.2 ± 3.8 ml/kg/min, p<0.001; E/A, 1.06 ± 0.99 versus 0.95 ± 0.89 p=0.01; and Em/Am, 0.84 ± 0.78 versus 0.78 ± 0.73, p=0.04. There were no sex differences in the response to training.

In Type 2 diabetics, exercise improved fitness and parameters of LV diastolic function. Similar benefits accrued in men and women.


Dhananjay Vaidya1, Sherita H. Golden1, Moyses Szkelo1, Adrian Dobs1, Kiang Liu2, Pamela J. Schreiner3, Susan M. Gapstur2, Pamela Ouyang1.

1Johns Hopkins University, Baltimore, MD, 2Northwestern University, Chicago, IL, 3University of Minnesota, Minneapolis, MN, USA

**Background:** There are conflicting reports regarding the role of endogenous sex hormones and specific metabolic risk factors. We investigated the cross-sectional association of the Metabolic Syndrome (MetSyn) with endogenous sex hormones (total testosterone, T; estradiol, E2; dehydroepiandrosteronediene, DHEA; sex hormone binding globulin, SHBG).

**Methods:** We studied postmenopausal women who were not on hormone therapy (n=2041) and men (n=3149) at the baseline visit of MESA, a NIH multicenter cohort study of individuals aged 45-84 years without clinical cardiovascular disease. Sex-stratified association of MetSyn presence (NCEP-ATP-III) with all log-transformed sex hormone levels was estimated using logistic regression adjusted for age, ethnicity (White, Chinese, Black, Hispanic), current smoking, and lipid-lowering medication use.

**Results:** In adjusted models, E2 was directly (p<0.001) and SHBG was inversely (p<0.001) associated with the odds of MetSyn in both men and women, DHEA (p<0.01) and T (p<0.001) were inversely associated with MetSyn in men only (sex interaction significant for T, p<0.001). This qualitative interaction of T association with better metabolic status in men was seen for the metabolic components of abdominal obesity (p<0.001), impaired fasting glucose (p=0.004), and low HDL-cholesterol (p=0.050), independent of the other
MD14: The characteristics of diet and the relation between body mass index and dietary habits in middle aged Japanese. – A study based on the Kamogawa cohort study (Otassya study) –

Ryoko Yanagibori(1), Keiko Amano(1), Akiko Harada(1), Shunsaku Mizushima(2)

(1) Chiba prefectural institute of public health, (2)Yokohama city university, Japan

Purpose: In middle aged Japanese, half of men and twenty percent of women are expected metabolic syndrome and its reserves. The purpose of this study is to clear the characteristics of the eating habits and BMI-related factors based on the self-report of the middle aged.

Method: Data were collected from participants in a cohort study in Kamogawa, Japan. A total of 4209 middle aged residents (aged 40 and over in 2003, 1910 men and 2299 women) completed two times questionnaire survey that evaluated lifestyle and dietary habits. Participants were followed from 2003 to 2008.

Results: Current BMI was decreased significantly along with age in both sexes. Among 5 years, BMI decreased more in elderly in women, but not in men. The intakes of vegetable and fruit were increased along age, and meat and carbohydrate intake was more in under 60-years in men. In women, fish, eggs and fruits intakes at under 60-years were less than other age. The results of multiple regression analysis showed that current BMI increased along with the progress of categorical rate of eating from slow to fast in both sexes. In men, current BMI was lower in smokers significantly and in women the habit of drinking the noodle soup and to prefer salty taste was related to increase of BMI.

Conclusion: Obesity and Westernization of dietary intake seemed to be common in under 60-years person. The positive relationship among current BMI, eating fast and 5-years BMI change suggested that eating fast might lead to obesity.

Poster Session II – HC: Healthcare

HC1: Comprehensive Women’s Health Care Centers: An Innovative Model

Diana Flescher

Comprehensive Women’s Health Care Center, Jerusalem, Israel

A comprehensive approach to health care ascribes to the World Health Organization definition of health as a "state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity". Two women's health care centers operate in Israel based on this model. The objective of these centers is to foster a fundamental change in women's health, by promoting a comprehensive approach to issues that are unique to or different in women, in a framework sensitive to the context of their lives. This biopsychosocial approach emphasizes well-health guidance and management throughout all stages of the woman's lifecycle. Yet these centers do not provide the traditional acute or chronic primary care services.

The two clinics are staffed by female family physicians, internists and nurses trained in women's health issues. One is a private solo consultation practice serving a relatively educated and well-off population. The other is a non-profit consultation center based in a religiously conservative Ultra-Orthodox neighborhood, serving a mostly economically distressed community.

The goals of these centers are threefold: 1) to apply the principles of gender medicine in a clinical context 2) to educate and empower women to take charge of their health and through knowledge ultimately prevent disease, and 3) to disseminate the concepts of women's health and gender medicine as more than gynecological care in both the lay and professional communities.

This presentation will review the background to the founding of these two clinics, their structure and function, the clinical cases, the obstacles encountered, and the successes and failures of the approach.
HC2: Health and working conditions among physicians in five European countries

Ann Fridner1 2 Lövseth L.3 Götestam KG3 Marini M.4 Pavan L.4 Minucci D.4 Jonsdottir LS 5 & Schenck-Gustafsson K.2
1 Stockholm University, Sweden  2 Karolinska Institute, Sweden  3 Norwegian University of Science and Technology, Norway  4 University of Padua, Italy  5 Directorate of Health, Iceland

Background: Female physicians experience unconstructive work conditions, inequality of pay, and less career advancement than their male counterparts in hospitals despite increased share of women in medical education. Signs of ill-health among physicians might have severe consequences for people involved.

Objective: To provide a systematic comparison of hospitals in Europe and how the structure and organization of these hospitals affect the research activity, work load, work satisfaction, gender equality, career advancement, health, and wellbeing of physicians.

Funding: Medical Association in Iceland and Sweden, SLS - Swedish Physician Society, NorFA, Vinnova, Stockholm City Council.

Method: Three level of data collection were executed: Document analysis concerning national frameworks, register data/hospital statistics and a cross sectional survey among permanently employed hospital physicians in each country.

Results: Numerous research projects are scheduled in each country based on these data. Results are presented based on these ongoing analyzes on differences in the prevalence of harassment level, suicide ideation, hospitals emphasize of clinical research, and the tension between work load and interaction between career and role as caregivers at home, inequality of pay between men and women, and between medical and academic position.

Intervention and prevention: Survey feedback seminars (Fridner & Pingel, 2006) with physicians in each clinic and Occupational Stress Index (OSI) for physicians (Belkic, 2003).

Conclusions: Numerous research projects were scheduled in each country based on these data. In addition, data will be able to identify existing practices in management systems of university hospitals and trough comparison between the hospitals highlight best practice.

HC3: Gender Medicine Enhances Diagnostic Ability: Review of the First Founding Department of Gender Medicine in Japan

Miyuki Katai1-2, Jinko Yokota1-2, Miwako Kawamata1, Toshiko Kamo1,2, Noriko Mori1,2, Mariko Kusuyama1,2, Rieko Yamada1, Kumiko Taira1, Yasuko Arai1, Naoko Kikuchi1, Mieko Sato1, Motoko Miyako1, Wookyung Kim1, Toshihito Saitoh1, Kuniaki Otsuka1
1. Department of Gender Medicine, Medical Center East, Tokyo Women’s Medical University; 2. Institute of Women’s Health, Tokyo Women’s Medical University; 3. Nagasaki University School of Medicine, Japan

[Background] The Women’s Health Care Clinics based on Gender Medicine have been founded in Japan since 2001. Our institute was established as the first “Department of Gender Medicine” in Japan in October, 2007. It consists of 12 woman doctors, endocrinologist, cardiologist, psychiatrists, gynecologist, breast surgeon, pain clinician, pediatrician, otolaryngologist, dermatologist, orthopedist, industrial specialist, genetic counselor. [Methods] We summarized the clinical experiences of initial year in our department. The number of new patients and total visits was 285 and 1317 respectively from October, 2007 to September, 2008. Patients range from 15 to 84 years of age. The 195 of 285 (68%) cases visited us related to menstrual or menopausal problem. We analyzed the clinical features and outcome of the 195 patients with menstrual or menopausal problem. [Results] 52 of 195 (26.7%) cases were finally diagnosed at our department as the other organic diseases than just menopausal disorder or irregular menstruation. It means that more than one-fourth cases handling just as menopausal symptoms or ovarian insufficiency did not reach to the correct diagnoses. The details are thyroid dysfunction, collagen disease, pituitary disease, neoplastic lesion and the rest. [Conclusion]Our experience suggests that menopausal symptoms and irregular menstruation are “black boxes” on diagnoses for women. Integration of Gender Medicine enhances diagnostic ability.
HC4: Women show a closer association between educational level and hypertension, obesity as well as diabetes than males

Alexandra Kautzky-Willer, Thomas Dorner, Ann Jensby, Anita Rieder.
KIM III, Dept. Endocrinology & Metabolism and Center of Public Health, MUW, Vienna, Austria

Anthropometric measures and data on health status and behaviour of 13,417 persons (54% females) between the ages 20 and 79 were derived from the Austrian Health Interview Surveys 2006/2007. Only diseases and conditions confirmed by a medical examination were evaluated in this analysis. The associations between educational level (EL) and the risk of obesity, hypertension and diabetes as well as health behaviours such as nutritional habits, physical activity, alcohol consumption and smoking were evaluated, applying logistic regression models, by odds ratios (OR), adjusted for region, occupation class, family status, EU15-citizenship and age. Only required schooling served as reference category (L0), the other levels were required schooling plus apprenticeship (L1), vocational school (L2), high school (L3) and university (L4).

In women the ORs for overweight and obesity were decreasing with an increase of the EL being lowest for L4 (overweight: 0.39[0.31-0.5], obesity: 0.41[0.29-0.6], p<0.001). Similar results were seen regarding daily smoking, diet rich in meat, sedentary lifestyle, but also in regard to diabetes (L4: OR: 0.36 [0.15-0.85]) and hypertension (L4: OR: 0.39 [0.27-0.55]). Such trends were attenuated in males for most variables except for smoking and sedentary lifestyle. However, in men, no association was found between EL and hypertension, and for diabetes EL only related to L4 (OR= 0.49 [0.28-0.88]). Therefore, based on these data, EL affects lifestyle, smoking and overweight in both genders, but has a stronger impact on obesity and diabetes in women. In addition hypertension was influenced by education in females, only. Overall, in females health status seems to be closely related to EL.

HC5: Prescribing patterns of inappropriate medication to nursing home residents in Germany

Marita Kölsch, Kirsten Kopke, Thomas Fischer, Werner Hofmann, Dagmar Dräger, Reinhold Kreutz.

1Institute of Clinical Pharmacology and Toxicology, Charité – Universitätsmedizin Berlin; 2Institute of Medical Sociology, Charité – Universitätsmedizin Berlin, Germany

Purpose: To identify inappropriate drugs for elderly and to analyse their prescribing frequency in German nursing home residents.

Methods: We conducted a retrospective cohort study with prescription data from a German health insurance company. Inclusion criteria were: subjects 65 years of age or older, residing in a nursing home for at least 4 weeks during the observation period 1st April 2007 until 30th June 2007. Residents from hospices or homes for disabled or person under care at home were excluded. According to a French consensus list inappropriate drugs approved and available in Germany were identified and their frequency of prescription in our cohort was analysed.

Results: Overall 8685 subjects were analysed, 7271 (83.7%) females and 1414 (16.3%) males. The most frequently prescribed inappropriate drugs with more than 100 prescriptions were: oxybutynin (104, 3.2%), bromazepam (114, 3.5%), moxonidine (120, 3.7%), trimipramine (139, 4.3%), flunitrazepam (190, 5.9%), diazepam (203, 6.3%), nifedipine (213, 6.6%), doxepin (283, 8.8%), baclofen (345, 10.7%), amitriptyline (396, 12.3%), and promethazine (480, 14.9%). Overall, 1856 (21.4%) residents from the analysed cohort of 8685 individuals were prescribed at least one inappropriate drug during a period of three months.

Discussion: We observed a remarkable difference in the distribution of female and male nursing home residents, with a striking predominance of women (83.7 vs. 16.3%). Our ongoing studies will test whether the frequency and patterns of inappropriate drug prescribing differs between male and female nursing home residents.

HC6: Gender, Employment and Organ Transplantation: A gender sensitive study on kidney transplanted patients' experiences with employment

Helen Krieter, M. Motakef, M. Siegel
The Essen Collegium of Gender Studies / University of Duisburg-Essen, Germany
Employment is not only about earning money but also about being productive, needed and among other people. The importance of these social and psychological effects of employment has been revealed in several empirical studies. To be employed means to be integrated into the social environment and into society itself. Therefore, returning to work is of great importance for organ transplanted patients who have been unable to work before and during their transplantation in order for them to avoid becoming isolated and depressed. Generally, an organ transplantation is associated with “recovery” and “healing”, but studies show that transplanted patients are still sick and even count as handicapped persons. The present study, which is a mix of qualitative (qualitative content analysis) and quantitative approaches (multivariate analysis), investigates how the characteristics “sex”, “physical condition”, “education” and “return to employment” correlate. Using sociologist Talcott Parsons’ term “sick role”, we point out that organ transplanted patients simply exchange their former sick role for a newly-defined sick role; they are still not sufficiently healed or recovered to resume work, especially manual labour. We will present employment experiences from both women and men, discuss their new situation as transplanted employees in the labour market and underscore the enormous impact of education. In our sample of kidney transplanted patients (n=418), the women come off as the big losers: compared to the men in the sample, they are more likely to suffer from low physical condition, are less educated and as a result have rarely returned to employment.

HC7: Fukuoka Dental Health Project in Japan - Dental health based on gender differences -

Takahiko Matsuki

Division of Occlusion & Maxillofacial Reconstruction, Kyushu Dental College, Japan

Both men and women have various health problems during each life stage because men and women have different physical and physiological characteristics. However, in the past, the differences between men and women have not been taken into account in medicine. Most clinical data was obtained from men and have been used to establish diagnosis or therapy for both men and women. In this decade, gender differences have been reported in etiology, pathophysiology and pharmacodynamics. Medicine based on gender differences is an important topic in the world now.

In dental medicine, gender differences were shown in several fields (e.g. the prevalence of advanced periodontitis is higher in men. In older age groups, the mean number of missing teeth per person was higher in women than in men.) Hence, the development of dental health based on gender differences is needed.

The “Fukuoka Dental Health Project” was renewed in March 2009 and is the fundamental policy of the dental health system in Fukuoka Prefecture, Japan. In this project, the concept of ‘gender difference’ was included. This is the first dental health project in Japan to consider the idea of gender difference. We will introduce this project.

HC8: Population-based educational program to reduce prehospital delays in patients with stroke effective only in women


Dept. of Neurology, Campus Benjamin Franklin, Charité – Universitätsmedizin Berlin, Germany

Background: The aim of the study was to reduce pre-hospital delays in patients with acute stroke because therapy needs to be administered as early as possible.

Methods: A cluster-randomized trial with zip code areas (n=48; as cluster units) in the catchment area of the three participating hospitals was performed. Primary endpoint was time between symptom onset and admission to hospital. The intervention consisted of an educational letter about stroke symptoms and the importance of calling the emergency medical services (EMS) which was sent to all inhabitants ≥ 50 years in the intervention areas. We included a bookmark and a sticker with the EMS telephone number.

We fitted a lognormal survival regression model (time-to-admission) with frailty terms shared by inhabitants of the same zip code area.

Results: A total of 75,720 inhabitants received the intervention. Between 2004 and 2005, 741 patients were admitted with stroke from the control areas (n=24) and 647 from the intervention areas (n=24). A prehospital time ≤ 2 (≤ 3) hours
was achieved by 22% (28%) of patients in the control group compared to 26% (34%) in the intervention group. In the lognormal model, time to hospital was significantly reduced by 25% in the intervention group in women (acceleration factor 0.75; 95% CI 0.58; 0.96) while we found no effect in men.

Conclusions: The population-based intervention was effective in reducing prehospital delays in women only. Women are more susceptible to medical education than men.

HC9: Gender- and sex-specific research patterns in different cardiovascular diseases: a comparison between myocardial infarction and stroke

Sabine Oertelt-Prigione1, Silke Wiedmann2, Vera Regitz-Zagrosek1,3, Matthias Endres2,4, Peter Heuschmann2

1Institute of Gender in Medicine, Charité-Universitätsmedizin, Berlin, Germany; 2Centre for Stroke Research Berlin, Charité-Universitätsmedizin, Berlin, Germany; 3Center for Cardiovascular Research (CCR), Charité-Universitätsmedizin, and German Heart Institute, Berlin, Germany; 4Department of Neurology, Charité-Universitätsmedizin, Berlin, Germany

Background-Cardiovascular diseases represent the leading cause of mortality and disability worldwide. Variations in gender-/sex-specific research patterns between different cardiovascular endpoints are unclear. This data might help identifying research gaps in specific cardiovascular diseases.

Aim-To compare frequency and content of published gender-/sex-specific cardiovascular research between stroke and myocardial infarction (MI).

Methods-Systematic literature search in Pubmed was performed for identifying gender-/sex-specific research articles in stroke and MI published between 1978 and 2008. A specifically designed text-mining programme including gender-/sex-specific search terms was used. Content of abstracts was screened for gender-relevance and classified into the categories: epidemiology, pathophysiology, clinical presentation, management, outcomes research, and reviews. All abstracts were rated by two independent investigators.

Results-The initially retrieved 962 articles were limited to 407 (42%) gender-relevant publications; 131 (33%) in stroke and 276 (68%) in MI. Reviews represented 8% of the literature in MI and 14% in stroke. Clinical presentation (5% vs 3%) and outcomes research (23% vs 21% for MI and stroke, respectively) displayed little difference, while epidemiological (25% vs 13%) and pathophysiological topics (20% vs 11%) were more frequently investigated in stroke compared to MI. Management received little attention (17%) in stroke, while representing the major focus in MI (40%). Gender research in both diseases progressively increased in recent years, although an 8-10 year time lag was present for stroke compared to MI.

Conclusions-While gender and sex differences are increasingly considered in MI research, this topic appears to be neglected in stroke research, especially in the area of management.

The project is supported by BMBF grant 01FW0803.

HC10: Do women and men receive equal treatment for ST-elevation myocardial infarction?

Tadeusz Osadnik, Mariusz Gasior, Marek Gierlotka, Bozena Szygula-Jurkiewicz, Lech Polonski

IIId Chair and Department of Cardiology, Medical University of Silesia, Silesian Centre for Heart Diseases in Zabrze, Poland

Aim: To compare gender-related differences in treatment and in-hospital outcomes among patients hospitalized due to ST-elevation myocardial infarction (STEMI) enrolled to the Polish Registry of Acute Coronary Syndromes (PL-ACS).

Material and Methods: PL-ACS registry is a nationwide, multi-center, prospective, observational registry of consecutively hospitalized patients with myocardial infarction and unstable angina. The present analysis includes 20104 patients (6719 women and 13385 women) with STEMI enrolled to the Polish Registry of Acute Coronary Syndromes (PL-ACS) between October 2003 and September 2005.

Results: Women, as compared to men, were on average older (68.7 vs. 61.4 yrs, p<.0001), more often hypertensive obese and diabetic and less often current smokers. Pulmonary edema and cardiogenic shock at admission was more frequent among women as compared to men (5.1% vs. 3.4%, p<.0001 and 11.0% vs. 7.0%, p<.0001 respectively).
Women were less often treated invasively than men (50.5% vs. 60.0%, p<0.0001). Use of fibrinolytic agents was however slightly higher in women (10.0% vs. 9.1% p=.02). In-hospital mortality was significantly higher among women as compared to men (13.5% vs. 7.5%, p<0.0001).

**Conclusions:** In-hospital mortality among patients hospitalized due STEMI is higher among women. Despite more unfavorable clinical characteristics women tend to receive invasive treatment less often than men. Joint effort should be undertaken to reduce this bias.

**HC11: Prescription of Chinese herbal medicine, Banxia Houpo Tang by experienced physicians for menopausal anxiety is associated with polymorphism of Estrogen receptor alpha gene**

Chikari Takeo1, Keiko Amano1, Koichi Ueno2, and Aizan Hirai1

1 Chiba Prefectural Togane Hospital, 2 Chiba University, Japan

**Objective:** Banxia Houpo Tang (BHT) is effective for anxiety and globus hystericus in middle aged women. However, to prescribe Kampo medicine needs abundant experience for physicians considering proper “sho” for the medicine. To determine to which women BHT is mostly prescribed by experienced physicians to relieve menopausal symptoms, association of BHT prescription and polymorphisms of estrogen receptor α (ERα) gene was analyzed.

**Methods:** The subjects of the analysis were 189 women who visited the hospital for relief of climacteric symptoms. Clinicians who are experts for treating with climacteric symptoms medicated the patients. Period and efficacy of BHT for each woman were determined by using ordering system and medical records. PvuII and XbaI polymorphisms of ERα gene were analyzed by melting curve analysis.

**Results:** Twenty-three patients were effectively medicated by BHT for more than 3 months and 166 received other treatment. Homozygous for PvuII polymorphism (OR 4.21, 95% CI 1.63-10.88, P = 0.003) is associated with medication of BHT. Patients medicated with BHT experienced significantly more severe psychiatric symptoms (P = 0.020) than those not treated with BHT.

**Conclusions:** BHT medication to relieve climacteric symptoms is associated with polymorphisms of the ER gene. Tailored decisions can be expected on the future use of BHT to relieve climacteric psychiatric symptoms more usefully.

**HC12: Self-rated health and functional impairments in the elderly: Interaction of gender with socio-economic, demographic and health factors?**

Zemp Stutz Elisabeth, Dratva Julia, Coda Paola, Weiss Carine, Staehelin Katharina

Institute of Social and Preventive Medicine at Swiss Tropical Institute, Associated Institute of the University Basel, Switzerland

**Background and aim:** Women more often report poor self-perceived health and are more frequently affected by functional impairments than men in later life. Elderly women are also more often disadvantaged regarding social and economic resources. In Britain, older women have a more positive self-assessment of their health status than men, once age, class, income and their greater level of functional disability are taken into account (Arber & Cooper 1999). The aim of this study was to examine whether gender differences in self-rated health and in functional impairments can be explained by socio-economic, demographic and health characteristics in the elderly in Switzerland.

**Methods:** Data from the Swiss health survey 2002 was used of the population above age 64 (1774 men, 2588 women). Weighted prevalence rates for moderate/poor self-rated health and functional impairment in daily activities were calculated for men and women, and logistic regression analysis performed separately for the two outcomes, stepwise introducing socio-economic, demographic and health factors.

**Results:** 26% of women and 20% of men rated their health to be moderate or poor. The prevalence of functional impairments in the daily activities was 20% in women and 11% in men. The crude odds ratios for women compared to men was 1.35 (95%-CI: 1.17-1.55, p<0.0001) for moderate/poor health, and 1.7 (95%-CI: 1.43-2.02, p<0.0001) for functional impairments. The higher risk of women for moderate/poor self-rated health disappeared after inclusion of education (OR=1.07, p=0.433) and inversed even after inclusion of the presence of physical symptoms (OR=0.71, p=0.030). For
functional impairments, the higher odds Ratio of women compared to men remained significantly higher after full adjustment (OR=1.51, p=0.015).

Discussion: The interaction of gender with socio-economic, demographic and health factors varies for different health outcomes. While education explains the gender difference in self-rated health and physical symptoms even lead to a reversal of the association, the relationship between gender and functional impairments in daily life is not modified by socio-demographic factors.

HC13: Psychic health, help seeking, and gender in adolescents and adults
Zemp Elisabeth, Dratva Julia, Staehelin Katharina, Weiss Carine, Coda Bertea Paola
Institute of Social and Preventive Medicine at Swiss Tropical Institute, Associated Institute of the University Basel, Switzerland

Background and aim: Gender differences are widely known for indicators of psychic health worldwide (WHO 2000, Burt 1997), and use of ambulatory services is more common among women. It is not known to what extent gender differences in help seeking behaviour contribute to the observed differences in use of health services. We aimed to review epidemiological information in Switzerland with regard to gender differences in self-reported psychic health and help seeking behaviour for psychic problems.

Methods: Using available information from national statistics and surveys (Swiss Health Survey, Swiss Household Panel, SMASH, HBSC), we reviewed gender differences in self-reported psychic health and in help seeking for psychic problems.

Results: Remarkable gender differences are seen with regard to self-reported psychic health, with higher morbidity consistently reported by women than by men except for alcohol abuse. While women more frequently use ambulatory services than men, hospitalisation rates show no or small gender differences. However, the type of psychic morbidity differs between men and women, and the duration of hospitalisation of women exceeds that of men. Gender differences are most pronounced in adolescents and young adults. Information on help seeking behaviour is scarce for the adult population. Among adolescents, a higher proportion of women than men report needing help for nervousness and depression (34 versus 19%), to seek help for psychic problems from their partner (34 versus 20%), or from a friend (57 versus 37%). Also among adolescents diagnosed as depressed, adolescent women more frequently sought professional help (25 versus 10%), and they more frequently communicate a suicide attempt to friends or relatives (34 versus 29%).

Conclusion: Gender differences in reported psychic health and in help seeking are most marked in adolescents and young adults. Adolescent women seem to articulate more readily their needs with regard to psychic health and to seek help earlier than adolescent men. Gender representations and gender norms seem to be linked to help seeking already in adolescence, preventing an early recognition of psychic morbidity especially in men.

HC14: Smoking cessation in young women: Are ageing images a promising approach?
Zemp Stutz Elisabeth, Coda Bertea Paola, Dratva Julia, Staehelin Katharina, Weiss Carine
Institute of Social and Preventive Medicine at Swiss Tropical Institute, Associated Institute of the University Basel, Switzerland

Background and aim: Despite increasing tobacco prevention efforts and virtually universal awareness of tobacco related health consequences, smoking prevalence among young people, especially women, remains high in many countries, and relapse rates in the young are high (Samet & Yoon 2001). The challenge of reaching and retaining young people in smoking cessation programs is high (Sussman, 2002). Gender-specific techniques have not been used so far to recruit or motivate young men or women to stop smoking. The present study aims to evaluate whether an intervention approach using ageing images succeeds to sensitize and motivate young women to quit smoking and whether it is able to recruit them for smoking cessation courses.

Methods: Interventions targeting young women by the use of an ageing software displaying the age of an individual’s face from adolescence to adulthood as a smoker and non-smoker, were conducted at 13 public events and 4 schools.
in Switzerland between January 2006 and December 2007. Questionnaires were filled in before and after the imaging, assessing opinions on smoking, effect of ageing images, smoking status and the motivational stages of change (Prochaska). Data are available for 1711 women aged 14-25 years.

Results: Significant trends were seen across motivational stages of change in opinions on smoking and beauty and in number of previous quit attempts. The ageing images evoked strong emotions, especially in those in advanced motivational stages. 24% of current smokers reported that the ageing images highly increased their motivation to quit smoking (among those in precontemplation: 8%, contemplation: 35%, preparation: 68%). In multivariate analysis, intention to quit smoking, numbers of previous quit attempts and a perception of the ageing images as shocking and realistic were positively associated with reporting that the ageing images motivated highly to quit smoking. The interventions failed however to recruit this population for smoking cessation courses.

Conclusions: Smoking effects was successful in sensitizing young women for quitting smoking, but not for recruiting them for smoking cessation courses. The stages of change and motivational factors should be taken into account when recruiting young women for smoking cessation.

Poster Session III – BR: Basic Research

BR1: Impact of 17-beta-Estradiol on extracellular matrix associated gene expression in fibroblasts from males and females
Elke Dworatzek1,2, S. Mahmoodzadeh1,2, V. Regitz-Zagrosek1,2,3

1Institute of Gender in Medicine (GiM), Charite-Universitaetsmedizin Berlin, Germany, 2Center for Cardiovascular Research (CCR), Charite-Universitaetsmedizin Berlin, Germany, 3German Heart Institute Berlin (DHZB), Germany

Background and aims: Clinical and animal studies show sex-differences in cardiac remodeling process of extracellular matrix (ECM), suggesting a regulatory role for 17β-Estradiol (E2). Here, we analyze the E2-effect on collagen I, III and matrix metalloproteinase-2 (MMP-2) gene expression in cardiac fibroblasts of both sexes. Moreover, we study the molecular mechanisms involved in the E2-dependent regulation of MMP-2 promoter in a human fibroblast cell line.

Methods: Isolated cardiac fibroblasts from adult male and female rats were treated with E2 (10-8M). A series of hMMP-2 promoter-luciferase reporter constructs were co-transfected with human estrogen receptor alpha (ERα) expression-vector. After E2-treatment or vehicle and/or pretreatment with ICI182, 780 (10-5M) or PD98059 (10µM), luciferase reporter assays were carried out. Electrophoretic mobility shift assays (EMSAs)/supershift assays were used to identify regulatory elements, important for E2/ER-mediated hMMP-2 gene expression in HT1080 cells.

Results: In rat cardiac fibroblasts E2 regulates collagen I and III gene expression in a sex-specific manner. E2 significantly decreased MMP-2 gene expression in cardiac fibroblasts of both sexes. Co-transfections with the hMMP-2 and hERα expression-constructs showed a significant reduction of promoter activity after E2-treatment. The E2-effect is mediated through a defined region between -324bp to -259bp of the hMMP-2 promoter. EMSA and supershift assays revealed the binding of Elk-1 within the regulatory region. Pretreatment of HT1080 cells with ICI182, 780 or the MAPK inhibitor PD98059 significantly abolished the inhibiting E2-effect on hMMP-2 promoter activity, as well as on MMP-2 gene expression in rat cardiac fibroblasts.

Conclusion: E2 regulates collagen I and III and MMP-2 gene expression in cardiac fibroblasts of both sexes and inhibits hMMP-2 promoter activity via ERα and MAP-Kinase pathway. These data suggest that a deficiency or excess of E2 may cause a dysregulation of the ECM turnover in female and male hearts. Sex-specific regulation of collagen I and III gene expression by E2 may be responsible for sex-differences in cardiac remodeling.

BR2: Sex specific differences in the expression of miRNAs and their role in the evolution of myocardial hypertrophy
Claudia Eschen, Hugo Sanchez Ruderisch
Institute of Gender in Medicine, Center for Cardiovascular Research, Charité Universitätsmedizin Berlin, Germany

**Background:** MicroRNAs (miRNAs) are endogenous, small non-coding RNA molecules that negatively regulate gene expression by pairing to the 3’ UTR of target mRNAs. There is growing evidence for miRNAs to be important regulators in cell biological processes as well as in diseases.

Cardiac hypertrophy is a compensatory response to stress situations like pressure overload. Pathological hypertrophy leads to re-expression of foetal genes, which is accompanied by a differential expression of a set of miRNAs.

**Aims:** Identification of miRNAs with a sex-specific expression in the left ventricle (LV) of mice under normal and hypertrophic conditions and their influence on gene expression.

**Methods:** Using a transverse aortic constriction (TAC) mouse model miRNA expression pattern 2 weeks after TAC is analyzed (qRT-PCR validation, functional target validation) in order to identify miRNAs involved in the early development of cardiac hypertrophy.

**Results:** We describe here the differential expression of specific miRNAs in the LV of mice. After TAC operation many miRNAs are significantly up- or downregulated. While some miRNAs are regulated similarly in both sexes, others are differentially expressed after TAC in male mice compared to their female siblings. In our preliminary results a differential expression after TAC has been confirmed.

Biological differences in hypertrophy development after 2 weeks are considerable, basically due to the fact that the onset of the hypertrophic process varies from mouse to mouse.

**Conclusion:** We described here for the first time the sex-specific expression of miRNAs in mouse cardiac tissue (LV) two weeks after TAC surgery. Some miRNAs are differentially expressed after TAC in male mice compared to female siblings. Differences in the expression of specific miRNAs at this stage of hypertrophy can be functionally important for the sex-specific development of the pathology. The functional relevance, i.e. the regulation of important target genes for the sex-specific differences in the development of cardiac hypertrophy is under investigation.

---

**BR3: Polymorphisms lead to sex specific expression of heart proteins. Investigation of consomic mouse lines**

Stefanie Forler, Oliver Klein, Yvonne Kläre, Joachim Klose
Institut für Humangenetik, Charité – Universitätsmedizin Berlin, Germany

**Background:** Male and female mammalian genomes differ by only a few genes located on sex-specific chromosomes. That implies that the majority of sexually dimorphic traits result from the differential expression or translation of genes that are present in both sexes. In our project we cut down the high complexity in the regulatory network of the proteome by using consomic mouse strains (C). Consomic mouse strains represent C57BL/6 mice which contain one homozygous chromosome from another inbred mouse strain, in this case from strain PWD/Ph.

**Method:** We investigated sex-specific protein expression in heart of different consomic strains by high resolution large-gel two-dimensional electrophoresis (2-DE). Proteins showing sex and strain specific expression were identified by mass spectrometry (MS). Complete heart proteome was analyzed so far from consomic mice strains: C1, C5, C12, C14, C16, C19 and CY.

**Results:** The results show that the impact of different chromosomes on the expression of protein in males and females is quite different. Moreover, also the frequency of variant proteins within the proteome varies drastically between certain strains (e.g. C12 versus C14). Variant proteins are presently identified by mass spectrometry.

In the next step we will induce aortic stenosis in different consomic strains in order to study the modifying effect protein polymorphisms may have on the development of heart hypertrophy.

---

**BR4: Sex-specific modulation of adipose fatty-acid metabolism**

Anna Foryst-Ludwig, Carola Schubert, Vera Regitz-Zagrosek, Ulrich Kintscher
Center for Cardiovascular Research (CCR), Charite, Berlin, Germany

Adipose tissue undergoes profound molecular changes during exercise such as increased lipolysis as a result of an
activation of hormone-sensitive lipase (HSL) and possibly additional adipose tissue lipases, such as adipose tissue triglyceride lipase (ATGL). Women show higher adipose tissue lipolysis than men during exercise. Importantly, HSL is regulated in a sex-dependent manner that might be mediated through direct estrogen actions.

The aim of the present project was the identification and characterization of molecular and biochemical lipolytic targets such as HSL/ATGL in 3T3-L1 preadipocytes, overexpressing estrogen receptor alpha (ERalpha) and ERbeta, and in fully differentiated adipocytes, under catecholamins (Isoproterenol) and Forskolin treatment. The involvement of HSL was proven by pharmacological treatment of cells with a small molecule inhibitor for HSL. At first HSL and ATGL gene regulation by estrogen receptors was studied. ERalpha and ERbeta were overexpressed in 3T3-L1 cells. Expression level of ATGL and HSL lipases was significantly elevated in cells overexpressing ERalpha or ERbeta in comparison to mock transfected cells. In addition HSL expression level was significantly elevated in abdominal fat from the C57Bl6J female mice challenged with voluntary wheel running when compared to male mice.

Sex-specific modulation of adipose fatty-acid metabolism during exercise may result in alteration of circulating fatty acid levels leading also to changes in cardiac substrate utilization. Dysregulation of cardiac fatty oxidation could play an important role in the development of cardiac hypertrophy.

BR5: Estrogen receptor-beta dependent regulation of blood pressure independent cardiac hypertrophy in DOCA-salt mice

Gürgen D, Björn Hegner, Chaykovska L, Catar R, Kusch A, Kintscher U, Gross V, Luft FC, Dragun D

Clinic for Nephrology and Intensive Care Medicine Charité, Center for Cardiovascular Research, Max Delbrück Center for Molecular Medicine, and Experimental and Clinical Research Center, Berlin, Germany

Attenuated renal and cardiac pathology in pre-menopausal women is attributed to less severe and more delayed hypertension. We described that more pronounced renal (RH) and myocardial hypertrophy (MH) occurs in male mice following deoxycorticosterone acetate (DOCA) + salt treatment even after blood pressure normalization and implicated an importance of calcineurin pathway. We now analyzed the contribution of estrogen receptor beta (ERβ) on these sex differences.

Blood pressure independent MH was induced in ERβ-/- female and male mice and their wild type (WT) littermates by uninephrectomy, 6-weeks release DOCA-pellet, 1% NaCl and hydralazine in drinking water. Radiotelemetric blood pressure measurements excluded blood pressure differences. Body composition analysis excluded differences in volume retention. ERβ had no influence in males, as male WT and ERβ-/- mice had similar increases in renal and cardiac hypertrophic indices after DOCA + salt. In contrast, female ERβ-/- mice developed more pronounced RH and MH than their WT littermates. Maladaptive MH in female ERβ-/- mice was accompanied by increased levels of BNP and TGF-β. MCIP-1, a positive modulator of calcineurin signalling was upregulated in DOCA male WT and female ERβ-/- mice but not in DOCA male ERβ-/- and female WT mice indicating an inversion of maladaptive calcineurin signalling in ERβ-/- animals.

We provide evidence for importance of ERβ in the regulation of compensatory RH and maladaptive MH in normotensive female DOCA/salt mice. ERβ dependent sex differences in calcineurin signalling might be responsible for relative protection of female individuals. Our findings may provide a rationale for sex-specific therapeutic strategies to prevent MH in chronic renal diseases.

BR6: Female-specific resistance to ENU-induced carcinogenesis in the rat peripheral nervous system is mediated by gene variant(s) located on chromosomes 6

Bernd Koelsch, Bettina Winzen-Reichert, Christine Fischer and Andrea Kindler-Roehrborn

Institute of Pathology and Neuropathology, University of Duisburg-Essen, University Hospital of Essen, Essen, Germany

A number of human malignant tumors not affecting the sexual organs arise with a marked sex bias. Part of this variation is due to the oncogenic potential of gender-specific life styles. Animal studies however have shown, that naturally occurring genetic variation, too, contributes to sexual
dimorphisms in cancer risk. BDIX and BDIV rats are highly susceptible and resistant, respectively, to the development of N-ethyl-N-nitrosourea (ENU)-induced malignant peripheral nerve sheath tumors (MPNST), predominantly in the trigeminal nerves. Female (BDIV x BDIX) F2 intercross rats have a lower MPNST incidence and longer survival times than males. This is due to two autosomal gene loci (Mss4 and Mss7), exerting strong allele- and sex-specific effects on tumor development. Homozygous BDIV alleles at Mss4 located on rat chromosomes 6 cause resistance to ENU-induced MPNST development in female F2 rats while having little effect on male cancer risk. We have constructed congenic rat strains bearing chromosomal fragments of BDIV origin corresponding to Mss4 in a homozygous state on a BDIX genetic background. ENU-treated rats of the BDIX(Mss4a).BDIV strain showed a significantly lower MPNST incidence and a prolonged survival time independent of their sex with the latter effect being by far more pronounced in females. As the autosomal genome is shared by both sexes differential gene regulation is most likely to be causative for sex-specific cancer risk. Expression profiling using trigeminal nerves of female BDIX and BDIX(Mss4a).BDIV revealed several genes located in Mss4 to be differentially expressed thereby potentially contributing to strain- and sex-specific cancer risk.

BR7: Effect of heart-specific estrogen receptor-alpha overexpression on outcome of myocardial infarction in male and female mice

Joachim Leber1,2, Shokoufeh Mahmoodzadeh1,2, Frederic Jaisser3 and Vera Regitz-Zagrosek1,2
1 Institute of Gender in Medicine (GIM), 2 Center for Cardiovascular Research (CCR), Charité Universitätsmedizin Berlin, Germany, 3 INSERM, Paris, France

Background: During and after myocardial infarct (MI), administration of ERα-selective agonist has protective effects in the heart. ERα-KO animals have a poorer outcome and abnormal mitochondrial morphology after MI. We hypothesize that ERα contributes to protection of ischemic myocardium and this differs in male and female.

Aims: we generate and evaluate the phenotype of a transgenic mouse model with an inducible, myocardial ERα-overexpression (ERα-OE). Furthermore, we perform functional and biochemical analysis of the transgenic mice in unstressed condition and after induction of MI, in a sex-specific context.

Methods: A transgenic mouse model with heart-specific ERα-OE was generated using the Tet-Off system. Morphological and functional analysis of the hearts was performed by echocardiography at basal conditions (female-WT: n=14, male-WT: 14, female-OE: n=16, male-OE: n=8) in 2.5 month old mice. Cardiac fibrosis was measured by Sirius red staining, gene expression analysis was performed by RT-PCR and Western-Blot. After 2 weeks of coronary artery occlusion (MI), cardiac output was measured by echocardiography (female-WT: n=5, male-WT: n=4, female-OE: n=4, male-OE: n=2). Hearts were harvested for measurement of heart weight and biochemical analysis.

Results: At basal conditions, ERα-OE mice of both sexes develop hypertrophy. There were no sig. differences in ejection fraction (EF) in both sexes of ERα-OE mice versus WT. Cardiac fibrosis was sig. increased only in female ERα-OE. Extracellular matrix associated genes like collagens, MMP2 and TIMP2 were predominantly up-regulated in females ERα-OE. MMP2 protein expression was significantly increased only in the heart of male DT-mice. Protein expression of metabolic genes such as PGC1α and UCP2 was sig. reduced in the heart of both female and male ERα-OE. After MI, the preliminary data showed that the left ventricular mass was reduced about 16% in both female and male ERα-OE mice. EF in ERα-OE mice was reduced in both sexes to the similar degree as in the WT-mice. Histological- and gene expression analysis in these mice will be performed in the future.

Conclusions: Transgenic ERα-overexpressing mice develop hypertrophy and sex differences in matrix turnover. We expect major deviations from WT in stress model.

BR8: Analysis of sexual hormone estrogen on cardiomyocyte hypertrophy (CMH)

Shokoufeh Mahmoodzadeh1,2, Eike Dworatzek1,2, Eva Brozova1,2, Karina Nawrath1,2, Anne Kühne1,2, Britta Fieltz1,2 and Vera Regitz-Zagrosek1,2,3
1 Institute of Gender in Medicine (GIM), 2 Center for Cardio-
vascular Research (CCR), Charité Universitätsmedizin Berlin; 3 Deutsches Herzzentrum Berlin, Germany

**Background:** Under a number of different loading conditions, females develop different form of myocardial hypertrophy than males. Male hearts have a higher incidence of cardiac dysfunction and heart failure in response to stress. Several studies have reported that estrogen (E2) is involved in the development of myocardial hypertrophy and heart failure. We hypothesize that E2 and its receptors, ERα and ERβ modify the cardiac response to mechanical load by regulating mitochondrial function and energy metabolism. Therefore, we investigate:

1) Effect of E2 and pharmacological/mechanical load on cellular growth and metabolic genes. 2) Effect of E2-activated ERα and ERβ on gene expression and activity of the mitochondrial key regulators such as PGC1α and MEF2.

**Methods:** Cell size and protein levels of ANP and alpha-Actinin were measured in a human left ventricular cardiomyocyte cell line (AC16 cells) in response to pharmacological (PE, and ET-1 treatment) or mechanical stretch with and without E2-treatment. Luciferase-reporter-assays were performed with PGC1α-, MEF2A- and MEF2C-promoter-constructs in AC16 cells in presence or absence of E2.

**Results:** In AC16 cell line, cell size increases in response to pharmacological and mechanical stretch. E2 reduces the hypertrophy-induced increase in cell size as well as the higher expression of ANP and alpha-Actinin in cells treated with PE and ET-1. Furthermore, E2 increases the transcriptional activation of PGC1, MEF2A and MEF2C-promoter reporter constructs.

**Conclusions:** Our preliminary data suggest that E2/ER may be involved in sex-specific hypertrophic response of the heart to mechanical load by regulating the gene expression of metabolic enzymes.

**BR9: Identification and functional analysis of novel interaction partners of estrogen receptor-α in the human heart**

Hang Pham1,2, Miriam Schanz1,2, Shokoufeh Mahmoodzadeh1,2, Georgi Petrov3, Elke Lehmkuhl3, Mercy M. Davidson4 and Vera Regitz-Zagrosek1,2,3

1 Institute of Gender in Medicine (GIM), 2 Center for Cardiovascular Research (CCR), Charité Universitätsmedizin Berlin; 3 Deutsches Herzzentrum Berlin, Germany, 4 Department of Neurology, college of physicians and surgeons, Columbia university, NY, USA

**Background:** Sex differences in cardiac function exist in spite of comparable expression of both estrogen receptor-alpha (ERα) and -beta (ERβ) in both sexes. ERα interact with cytosolic proteins and nuclear factors to mediate estrogenic effects. Sex specific myocardial effects of estrogens may be mediated by sex specific expression of co-activators and co-repressors of ER in the heart

**Aims:** Identification and functional analysis of the interaction partners of ERα in the human heart

**Methods:** Yeast two hybrid assays (YTH) were performed with ERα as bait and a human heart cDNA library as prey in the presence/absence of E2. Co-immunoprecipitation (Co-IP) with human atrial protein was carried out to confirm the interaction in a mammalian system. Immunofluorescence (IF) method was employed on a human cardiomyocyte cell line (AC16) to analyze the co-localization of ERα and its binding partners.

**Results:** YTH revealed that ERα interacts with atrial natriuretic peptide precursor type A (NPPA), myosin light chain-4 (MYL4) and medium chain acyl-coA dehydrogenase (MCAD) in presence of E2. Retransformation experiments showed that NPPA and MYL4 each, interacts with full-length ERα and ERα-EF domain. MCAD interacts with full-length ERα only. The interaction of ERα with NPPA, MYL4 and MCAD was also confirmed by Co-IP. Immunofluorescence data revealed that ERα co-localizes with NPPA and MYL4 in nuclei and in the cytoplasm of AC16 cells and with MCAD only in cytoplasm in the presence of E2.

**Conclusions:** The interaction of E2-activated ERα with NPPA, MYL4 and MCAD lead to the transcriptional regulation of these genes and/or these interactions might regulate the contractile properties of cardiomyocytes and cardiac energy metabolism.

**BR10: Deprivation of androgens protects against albuminuria in the Munich Wistar Frömter rat**

Angela Schulz, Sabrina Schütten, Leonard Schulte, Johan-
A sexual dimorphism leads in the polygenetic hypertensive Munich Wistar Frömter (MWF) model to a more rapid progression of albuminuria and subsequent renal failure in male rats. It is still unclear why this progression is significantly more accelerated in males compared to females, despite a similar nephron reduction of 30-50% observed in both male and female MWF. We previously showed that genetic factors on rat chromosome 6 and 8 have both a major influence of a gender-independent development of albuminuria. Thus, we evaluated the role of androgens on the progression of albuminuria in male MWF rats.

One set of male MWF (n=8) was orchiectomized at week 4, while a second set was sham-operated (n=12), respectively. Urinary albumin excretion (UAE) was measured at 4 and 12 weeks and systolic blood pressure (SBP) was analyzed at 12 weeks, respectively.

Sham-operated MWF developed a progressive increase in UAE between week 4 and 12 (0.1±0.02 vs. 24.8±2.5 mg/24h, p<0.0001). In contrast, albuminuria in orchietomized MWF was markedly suppressed compared to the sham group (5.1±0.9 mg/24h, p<0.0001) at week 12. At the same time-point sham-operated MWF exhibited SBP values of 162.1±2.4 mmHg, while orchiectomized MWF were not significantly different.

We demonstrate for the first time that the removal of androgens, i.e. testosterone, protects against the development of progressive albuminuria in MWF males. Interestingly, this is not related to a blood pressure lowering effect. Thus, despite similar genetic mechanisms, the sexual dimorphism is evidently attributable to non-genetic factors, such as the deleterious influence of androgens.

BR12: CYP2J2 overexpression improves cardiac hypertrophy in male, but not in female mice
Christina Westphal1,2, C. Schmidt, A. Konkel, C. Schubert1,2, R. Fischer, R. Dechend, F.C. Luft1, V. Regitz-Zagrosek1,2, D.C. Zeldin, W-H. Schunck1, D.N. Müller3
1Institute of Gender in Medicine, 2Center for Cardiovascular Research, Charité Berlin, 3Experimental and Clinical Research Center (ECRC), Charité Berlin, 4Max-Delbrück-Center for Molecular Medicine Berlin-Buch, Germany
Cytochrome P450 (CYP)-dependent eicosanoids like epoxyeicosatrienoic acids (EETs) and 20-hydroxyeicosatetraenoic
Abstracts Poster Sessions

50

noic acid (20-HETE) contribute to the regulation of cardiac function. EETs mediate cardioprotective mechanisms whereas 20-HETE aggravates cardiac injury. Since estrogens increase EETs and androgens raise 20-HETE, we hypothesized that these eicosanoids also contribute to sex differences in the development of cardiac hypertrophy. We analyzed the response to transverse aortic constriction (TAC) in male and female transgenic mice (TGM) with cardiac-specific overexpression of the human EET-synthase CYP2J2 and wild type littermates (WT). Echocardiography was performed before and eight weeks after surgery. Under baseline conditions, ejection fraction (EF) was significantly higher in TGM compared to WT. WT mice exhibited a higher mortality (malesWT: 54%, femalesWT: 36%) than TGM (malesTGM: 17%, femalesTGM: 15%) 9 weeks after TAC. Left ventricular hypertrophy was clearly present in all groups. Male WT TAC mice showed significantly increased hypertrophy compared to female WT TAC mice, while male and female TGM TAC hearts were not different. Male TGM TAC hearts developed significantly less hypertrophy compared to male WT TAC hearts. EF was similarly decreased in all TAC operated mice. Our data show that cardiac hypertrophy develops in a sex-specific manner. Cardiac CYP2J2 and its eicosanoid products improve cardiac hypertrophy in males, but not in females and protect both sexes against mortality associated with compromised cardiac function.

BR13: 17β-estradiol and estrogen receptor α and β agonists maintain cardiac function in chronic pressure overload in female mice

1,2Christina Westphal, 1,2Carola Schubert, 1Katja Prelle, 1,2Daniela Fliegner, 1,2Adam Penkalla, 1,2Vera Regitz-Zagrosek
1Institute of Gender in Medicine and 2Center for Cardiovascular Research, Charité Berlin; 3Bayer Schering Pharma AG
Animal studies showed that 17β-estradiol (E2) treatment attenuates pressure overload-induced myocardial hypertrophy offering a beneficial outcome. E2 effects are mainly mediated by the estrogen receptor (ER) α and ERβ.

The aim of this study was to investigate the influence of E2, an ERα agonist (ERαA), an ERβ agonist (ERβA) and the selective estrogen receptor modulator Raloxifen on pressure overload-induced cardiac hypertrophy.

Release Pellets with E2, ERαA, ERβA, Raloxifen or placebo were implanted in female ovariectomised (OVX) C57Bl6/J mice. At the age of nine weeks, transverse aortic constriction (TAC) or sham (STAC) surgery was performed. Echocardiographic measurements were taken nine weeks after surgery. TAC operated animals showed increased mortality after surgery. The lowest survival rate occurred in E2- (63.2%) and ERαA- (66.7%) treated animals, while the highest survival rate was observed in the placebo-treated group (92.3%). All animals developed a significant left ventricular hypertrophy after TAC. Raloxifen-treated animals developed the strongest hypertrophy. Ejection fraction (EF) was significantly decreased in the placebo- and the Raloxifen-treated TAC animals, but not in the E2-, ERαA- and ERβA-treated animals compared to the STAC group. Placebo- or Raloxifen-treated animals were associated with an increased expression of the hypertrophic marker BNP.

Treatment with E2, ERαA or ERβA maintains the EF after TAC, while Raloxifen does not and it significantly induces the hypertrophic marker BNP. We conclude that both ERs are necessary for the anti-hypertrophic effects of E2.

BR14: Renal and cardiovascular features of a new model of polycystic ovarian syndrome

Licy L. Yanes, Damian G. Romero, Huimin Zhang, Deborah Davis and Jane F. Reckelhoff
Department of Physiology and Biophysics, University of Mississippi Medical Center, Jackson, MS, USA
Polycystic ovary syndrome (PCOS) affects 15 % of women of reproductive age. PCOS is characterized by hyperandrogenism, polycystic ovaries and amenorrhea. Cardiovascular disease risk is higher in PCOS patients than age-matched controls. In order to elucidate the cardiovascular consequences of hyperandrogenism in PCOS, 3 week-old female Sprague Dawley rats were given dihydrotestosterone (DHT) (pellets, 7.5mg/90days) or placebo. After 12 weeks, plasma DHT was increased 5-fold and plasma estradiol was unchanged compared to untreated females. Mean arterial pressure (by radiotelemetry) was significantly elevated (96±2 vs 108±2 mmHg; p<0.05), as was glomerular
Abstracts Poster Sessions

sclerosis and albuminuria. Plasma renin activity and aldosterone were decreased in PCOS, and adrenal glands were atrophic. In summary, androgen supplements in young female rats induce physiological characteristics found in women with PCOS, and cause increased risk of cardiovascular-renal disease. These data suggest that treatment with anti-androgens is crucial in the management of women with PCOS; and we propose that this is a new experimental model in which to identify the potential mechanisms responsible for cardiovascular-renal disease in women with PCOS. The work was supported by HL66072, HL69194, HL67501, from National Institutes of Health.

Poster Session IV – HP: Health Psychology

HP1: Psychosocial rehabilitation in women with coronary heart disease and the effects on sickness absence, disability pension and the need of medical care
A. Andersson1, I. Eriksson1, K. Lindvall Sundell2, K. Schenck-Gustafsson2
1Cardiology Unit, Karolinska University Hospital, Department of Medicine, Karolinska Institutet, Solna, Sweden; 2Department of Psychiatry, St Görans Hospital, Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden

Purpose: Cardiovascular disease is the dominant diagnose in in-patient care in Sweden and the third most common cause for long-term sick leave. The focus of this study was to examine if a rehabilitation program for young women (<65 years) with coronary heart disease (CHD) had effects on health-seeking and sick leave in patients compared with their controls during five years after enrollment in the program.

Methods: 130 women with CHD were randomized to stress management (n=69) with a behavioural program during five years, or to standard medical care (n=61). All patients went through a baseline examination including exercise test and a questionnaire with self ratings of health, life style factors, quality of life and questions on sick leave. This procedure was repeated yearly. The frequency of health care use was followed via official registers.

Results: Mean age was 52.4 in the intervention group and 54.3 in the control group (n.s.). Planned doctor visits and number of in-patient day’s decreased significantly in both groups from year one to five while emergency visits remained unchanged in the control group but decreased significantly in the intervention group (p<0.05). There were no significant differences between groups regarding proportion of women on sick leave after one, three and five years.

Conclusions: This intervention program reduced visits at emergency wards which in the long run may have beneficial effects on public finances and the patient’s quality of life. The study also confirmed previous findings from intervention programs that have failed to affect sick leave rates.

HP2: Escitalopram (SSRI) for insomnia during the perimenopausal period/gender differences
Zippora Dolev
Psychiatrist, Private Practice for Women Mental Health, Israel

Introduction: The perimenopausal period is characterized by many physiological and emotional symptoms. One of the main complaints is the disturbance of sleep. The current study aimed to examine:
- the effects of Escitalopram in addressing sleep disturbances during the perimenopausal period in women
- the effects of Escitalopram in addressing sleep disturbances in men of the same age group.

Methods: 60 women age 45-57; 30 men ag 45-57. Main complaint was disturbance of sleep and sleep quality. Exclusion criteria: psychiatric disorders, HRT, psychotropic drugs, sedative-hypnotic drugs. The trial included 41 women and 30 men. Assessment included CG-I CGI-S.

Results: All patients were given Escitalopram 5-20mg. Women: Sleep quality as well as total sleep time of 39 patients improved. 2 patients did not improve. Men: In all 30 men sleep disturbances were related to psychiatric disorders (depression or anxiety).

Conclusion: The vast majority of women who suffered from sleeping disturbance during the perimenopausal period responded positively to the treatment with Escitalopram. Most of the responders who did so were treated with 5mg.
Escitalopram. At this age group, there are gender differences related to sleep disturbances. The conclusions to this study are limited by its non randomized design and lack of control.

HP3: Predictors of preoperative depressive risk in women and men undergoing coronary artery bypass graft (CABG) surgery
Anne Dunkel1, Friederike Kendel2, Elke Lehmkuhl1,3, Birgit Babitsch4, Sabine Oertelt-Prigione1, Roland Hetzer5, Vera Regitz-Zagrosek1,3
1Institute of Gender in Medicine (GiM), Charité - Universitätsmedizin Berlin, 2Institute for Medical Psychology, Charité - Universitätsmedizin Berlin, 3German Heart Institute Berlin (DHZB), 4Berlin School of Public Health, Charité – Universitätsmedizin Berlin, Germany

After coronary artery bypass graft surgery (CABG), young women have a greater mortality than men. Depression is highly prevalent among patients undergoing (CABG) surgery and is reported to be more frequent in women than in men. It represents a significant risk factor for longer hospitalization, increasing health costs and worse outcomes. Thus, we sought to develop risk models to determine the depressive risk before CABG based on sociodemographic, clinical and treatment variables.

1272 CABG-patients completed the 9-item Patient Health Questionnaire (PHQ-9) prior to surgery. Clinical and sociodemographic data were collected by trained study investigators. Overall 21.6% of patients displayed elevated depression scores, which were twice as common in women than in men (34.7% versus 17.9%, p<0.001). Following bivariate analysis, multiple regression revealed that both dyspnea at rest (OR 1.69, 95% CI 1.11-2.57, p=.015) and dyspnea on exertion (OR 2.48, 95% CI 1.61-3.81, p<0.001), previous myocardial infarction (MI) (OR 1.53, 95% CI 1.12-2.08, p=0.007), comorbidities and medication with tranquilizers; in addition to younger age, female gender, lower school education and living alone are significantly and independently associated with preoperative depressive symptoms.

Knowledge of these risk factors will allow for better identification of patients at high depressive risk and thereby facilitate optimal treatment in order to improve postoperative outcomes which might be particularly beneficial for women.

HP4: Sex Differences in Dental Anxiety and Pain Perception
Christiane Gleissner1, M. Gleissner2, B. Willershausen1, B. Azrak1
1Universitätsmedizin der Johannes Gutenberg-Universität, Poliklinik für Zahnerhaltungskunde, Mainz, 2Praxis Zahnärzte Gleissner, Reichelsheim/Wetterau, Germany

Study aim: To investigate sex differences in the prevalence and extent of dental anxiety (DA), in anxiety-related variables and in dental pain perception.

Methods: 398 patients (156m/242w, 39.9±12.8 years) completed a 3-page-questionnaire about demographic variables, frequency of dental attendance, use of analgetics, fear of dental treatment and rated the painfulness of previously experienced dental procedures on a Likert-Scale (1=not painful to 5=unbearable pain). Dental anxiety was measured by Dental Anxiety Scale (DAS) and Dental Fear Survey (DFS). Statistical analysis was performed using Spearman’s test, Student’s t-test or Mann-Whitney-U test.

Results: Mean DAS and DFS was significantly higher in women (DAS: 10.55±3.59; DFS: 44.79±16.36) than men (DAS: 8.95±2.74; DFS: 41.59±15.8; p <0.05). According to the DAS, 2.6% of men and 13.6% of women were classified as highly anxious (DAS ≥15). In males and females, DAS and DFS were significantly correlated with pain associated with certain treatment procedures (p <0.0001). Pain was significantly higher in patients who expressed high dental anxiety or visited the dentist only occasionally. Men rated almost all dental procedures more painful than women, this was statistically significant for the extraction of wisdom teeth and local anaesthesia (p <0.05).

Conclusions: This study confirms sex differences in the prevalence and extent of dental anxiety and fear and the pain perception of dental procedures. Dental pain perception is enhanced by elevated dental fear.

HP5: Gender-specific adverse health effects of work-related stress
Yvonne Kasten, Bethge M, Radoschewski FM
Lehrstuhl für Versorgungssystemforschung und Grundlagen der Qualitätssicherung in der Rehabilitation, CCM, Charité-Universitätsmedizin Berlin, Germany

Purpose: The aim of this analysis was to investigate if work-related stress affects the health of men and women differently and which personal and environmental factors probably determine gender-specific adverse health effects of work-related stress.

Methods: A total of 1320 working men and women aged 30 - 59 years from the baseline survey of the German Socio-medical Panel of Employees were included in the analysis (Bethge et al. 2009). Work ability was assessed by the Work Ability Index (WAI) (Ilmarinen 2009). Work-related stress was defined in terms of the effort–reward imbalance (ERI) model (Siegrist 1996).

Results: 15.0 % of men and 10.5 % of women reported an ERI. Our findings support previous observations of an impact of psychosocial work stress on work ability. However, an imbalance of effort and reward at work is a stronger burden for men as for women. Men with ERI reported a decrease of 8.1 points on the WAI while work ability of women was only reduced by 5.7 points (ERI * gender: b = 2.407; p = 0.040).

Conclusion: Additional analysis of moderator variables, e.g. volume of employment or educational level, indicate that different effects of ERI at work are determined by gender-specific working and living conditions. Although our findings require confirmation from longitudinal analyses they imply that stress coping trainings and workplace health promotion should consider gender-specific components.

HP6: Sensitivity of depressive symptoms in predicting mortality in patients undergoing CABG

Friederike Kendel1, Anne Dunkel2, Elke Lehmkühl2,3, Roland Hetzer2, Vera Regitz-Zagrosek2,3

1Institute for Medical Psychology, Charité - Universitätsmedi- dizin Berlin, 2Berlin Institute of Gender in Medicine (GIM), Charité - Universitätmedizin Berlin, 3German Heart Institute Berlin (DHZB), Germany

The depression module of the Patient Health Questionnaire (PHQ-9) is widely used for the screening of depression. Focusing on gender differences, we analyzed the sensitivity of different depressive symptoms on mortality in patients undergoing coronary artery bypass graft surgery (CABG).

The PHQ-9 depression subscale was administered to 1,617 CABG-patients (mean age 67.2; 22.5% women) 1-3 days before surgery. Clinical and sociodemographic data were collected by trained study investigators.

Somatic depressive symptoms and the depressive symptom of the PHQ-9 “fatigability” were more prevalent in women than in men. In both genders, elevated depressive symptoms contributed significantly to one-year mortality, even after adjusting for several other risk factors.

Screening and treatment of depression in this patient population should be considered in an early stage.

HP7: Emotional status and responses during in vitro fertilization treatment: an inter-spouse study

D. Merari1, M. Glezerman2, D. Feldberg2

School of Health Professions, Tel Aviv University Faculty of Medicine and Hospital for Women, Rabin Medical Center and Tel Aviv University Faculty of Medicine, Israel

Objective: To evaluate the emotional reactions and attitudes of women and men during IVF treatment.

Design: Clinical and psychological data analysis in a prospec-tive study.

Materials and Methods: One hundred and thirteen infertile, childless couples composed the cohort of this study. After exclusion of 19 couples according to pre-determined criteria, 94 couples were included in the study group. Indications for IVF therapy were unexplained and mechanical factors of infertility. A "Personal Background Questionnaire", especially designed for this study was filled by wives and husbands prior to each IVF cycle. In addition, the following questionnaires were used: Lubin Depression Adjective Checklist (DACL), Spielberger's State Trait Anxiety Inventory (STAI) and Olson's Evaluation Scales (FACES). After completion of the IVF treatment, women and their spouses who succeeded in conceiving (group C) were compared with those who failed (group NC).

Results: The pregnancy rate among the couples who started the treatment was 20.4%. Women had significantly higher state and trait anxiety and depression scores than...
normative levels, irrespective of treatment outcome. Group C husbands scored higher on depression than group NC husbands. Group NC husbands had significantly lower depression and trait anxiety scores than the normative level. High emotional responses to the treatment, especially in men, were correlated positively with treatment outcome.

**Conclusions:** The ability of the couple as a unit to cope with the stress of the IVF treatment depends, to large extent, on the emotional strength of each individual and his/her attitudes towards the treatment, as well as on the compatibility of these attitudes with each other.

There was greater emotional compatibility between wives and their spouses in group C than between wives and their spouses in group NC. The extent to which intra-couple emotional compatibility may influence success in IVF treatment requires further investigation.

**HP8: Gender differences in health-related quality of life of patients with hepatocellular carcinoma**

Nobuaki Nakayama¹, Sumiko Nagoshi¹, Satoshi Mochida¹, Kenji Fujiwara² and the Study Group for Improvement of HRQL in Patients with HCC in Japan³

¹Department of Gastroenterology and Hepatology, Saitama Medical University, Moroyama, ²Yokohama Rosai Hospital for Labor Welfare Corporation, Yokohama, and ³The Ministry of Health, Welfare and Labor, Japan

We report on our prospective study for gender differences in health-related quality of life (HRQL) of patients who received treatments of hepatocellular carcinoma (HCC), including liver transplantation, surgical resection, radiofrequency ablation (RFA) or interventional radiology. [Patients & Methods] Using SF-36 and our novel questionnaire specific for HCC patients, we evaluated HRQL in 227 male and 83 female patients before and 3, 6, 9 and 12 months after treatment of HCC. [Results] (1) SF-36: Three months after RFA, the scores of role physical (RP) and role emotional (RE) were worsened transiently in female patients, although scores of all subscales were almost unchanged after RFA in male patients. (2) Our novel questionnaire: The score of the question concerning the memory of bodily pain during HCC treatment was significantly worse in male patients 3 months after receiving RFA compared with those undergoing surgical resection, although such deterioration of the score after RFA was not seen in females. Furthermore, the score of the question concerning the scar of skin was significantly better in patients of both sexes 3 months after receiving RFA compared with those undergoing surgical resection, and afterward the difference was reduced in males, but not in females. [Conclusion] RFA could provide male patients with the best HRQL among all treatments of HCC by controlling bodily pain during therapy. On the other hand, female-specific medical care for the decreased role activity after RFA should be further established.

**HP9: Gender differences on pain assessment**

Ora Shamay-Rosler, I. Goor-Aryeh A. Grinefeld, S. Brill, A. Weinbroum

¹Pain Management Unit, Department of Anesthesiology, Sheba Medical Center, ²Pain Management, ³Department of Anesthesiology, Tel-Aviv Sorasky Medical Center, all affiliated to the Sackler Faculty of Medicine, Tel-Aviv University, Tel Aviv, Israel

Introduction: Pain assessment at Sheba Medical Center – a tertiary hospital, implemented by nurses following Israel MOH head-nurse, for the last 6 years. Electronics data base with pain assessments measurements are established, and gathered to see the trends during the years.

Aims: Rather to increase the nurse’s performance of VAS procedure under the hospital policy and quality control assurance, to learn about gender differences on pain assessment, correlated to pain care management.

Methods: 519,821 total VAS measurements of all population were statistically analyzed at day 1 (before operation), day 2, average of day 3 to 10, and last day. The VAS were observed for every patient during its hospitalization, and for all the patients compared between internal, surgery and oncology departments.

Results: Electronic data regarding pain assessment during the years 2003-2007 were retrospectively retrieved. 159,162 hospitalizations from the sample, and VAS measures were taken from 85,470 patients. Evarage VAS was 3.26±6.06, and showed increase over the hospitalization days. The data presented significant differences between genders (higher at woman), and correlation between department segregation
and VAS procedure.

**Conclusion:** The pattern of higher average pain assessment at women, consistent with days of hospitalization, at all departments was shown during 5 years. It improves the departmental nurses to understand and treat pain by using systematic guidelines to manage daily pain appropriately to gender.

**HP10:** Low perceived emotional support is an independent predictor of death and clinical deterioration in men, but not in women in the Waiting for a New Heart Study


Psychologisches Institut, Johannes Gutenberg-Universität Mainz, Germany

**Objective:** We examined the role of emotional support and the potentially moderating role of gender for the prognosis of patients awaiting heart transplantation (HTx). **Methods:** A multi-site prospective study was conducted enrolling 58 female and 260 male (51±1 and 53±5 years of age) HTx candidates at 17 German-speaking HTx centers. Baseline demographics and perceived emotional social support (Experienced Social Support Index; ESSI) were assessed by questionnaires. Eurotransplant provided medical baseline data and 12-month waiting-list events (death/delisting due to clinical deterioration, high urgency HTx, elective HTx, delisting due to improvement). Using a competing risk approach, multivariate cause-specific Cox proportional hazard models were run to test the association of gender and time till death/deterioration. **Results:** Heart failure survival score, creatinine, comorbidities, and medications were comparable across genders. Men were disadvantaged compared to women regarding smoking history and critically low emotional support, despite their greater likelihood of being married and higher educated (all ps < 0.05). After controlling for disease severity and baseline differences, female gender was associated with a higher risk of death/deterioration (hazard ratio [HR] = 2.24; 95% confidence interval [CI] 1.06 to 5.34, p < 0.05). Low emotional support predicted death/deterioration only in men (HR = 2.24, 95% CI 1.04 – 4.83, p < 0.05). Gender did not predict any of the other three events. **Conclusion:** Women had worse survival while awaiting HTx than men, independent from disease severity and baseline differences. While emotional support may indeed be an important buffer for men, protective factors for women warrant further investigation.

**HP11:** Gender differences in taking health risks

Lora Warshawsky-Livne1, Lena Novack2, Fatina Awad3, Allison B. Rosen4 and Joseph S. Pliskin2

1Sapir Academic College, Israel; 2Ben-Gurion University of the Negev, Israel; 3Afeka Academic Engineering College, Israel; 4University of Michigan, USA

**Objectives:** This study examined the differences between men and women in taking health risks, and examined how gender influences health utilities. **Methods:** We studied 600 students at Ben-Gurion University, a homogenous population in terms of education and age. Data were collected by questionnaires. The 12 chosen states of health and illnesses were familiar to the tested population, and are prevalent among men and women. Time Tradeoff (TTO) and Standard Gamble (SG) were chosen for measuring utilities. Data analyses were divided into: (1) Descriptive statistics; (2) Finding utility functions for longevity; and (3) Finding an association between health risk attitude and financial risk attitude **Results:** Descriptive statistics – For some health states men are willing to take more risk than women, for some states men are willing to take less risk and for some states there were no significant difference in attitudes towards risk. **Utility functions** – Men are risk averse for health. Women are neutral to health risk. **Health risk attitude (life expectancy) and financial risk attitude (monetary)** – Gender has an effect on the attitude toward financial risk, but has no effect on health risks. An ordinal regression model was found to predict a person's heath risk attitude from their financial risk attitude. **Conclusions:** The results of this study show a statistical correlation between gender and health decision making, and it must be remembered that gender can explain the variance in using health services and the effect on decision making, including economic considerations.
**Abstracts Poster Sessions**

**HP12: Physician gender, heart attack and psychosocial aspects in hospital**

**Julia Willrodt**
Akutkrankenhaus Kiel, Fachhochschule Kiel im Fachbereich Soziale Arbeit und Gesundheit, Germany

**Background** Patients who survived a heart attack are affected by psychosocial issues, i.e. coping processes, family and professional responsibilities, which interact with their gender, age, class etc. Because of the dominate role of physicians and their biomedical orientation in medical encounters the impact of physician gender needs to be explored. Whereas young and female physicians seem to be more patient-centred as male and more experienced colleges new studies report that male patients are least satisfied with young female physicians. The question is if there are any differences in male and female physicians’ psychosocial encounters while controlling patient gender and physician experience.

**Method** Three male and four female physicians with different work experiences have been interviewed and these data descriptively analyzed.

**Results** Young female physicians reported more confrontations with psychosocial issues than the young male college and different issues than the experienced (only male) physicians as well. Furthermore, female physicians seem to prefer communication to handle their patients’ psychosocial needs whereas male physicians seem to delegate more often. Besides, cross gender interactions showed challenging psychosocial topics, i.e. patients who reject any further treatment due to psychosocial problems.

**Conclusion** According to physician gender and heart attack, there are differences in the physicians’ reported confrontations and handlings with their patients’ psychosocial needs. It may be that physicians and patients feel more comfortable in same gender dyads. How gender dyads are related to psychosocial problems still needs to be observed.

**Poster Session V – CV: Cardiovascular**

**CV1: A comparative analysis of major clinical outcome-susing drug-eluting stents versus bare metal stents in male versus female patients**

**Tamir Bental, Avital Porter, Abid Assali, Hana Vaknin-Assa, Eli I. Lev, Ran Komowski.** Cardiology Department, Rabin Medical Center (Beilinson and Golda/Hasharon Hospitals), Petach-Tikva, and "Sackler" Faculty of Medicine, Tel-Aviv University, Israel

**Background:** Gender differences have not been addressed in the evaluation of drug eluting stents (DES). We aimed to check the safety and possible benefit of DES use in males versus females.

**Methods:** We compared risk-adjusted total mortality, myocardial infarction and event-free survival in a consecutive cohort of 4700 patients undergoing PCI at our institution between 1/4/2004 and 30/6/2007, of whom 3544 (75.4%) were male and 1156 (24.6%) were female. Follow up time was 9 months to 4 years (mean 2.44 years).

**Results:** Drug eluting stents were used in 42.0% of males vs. 42.6% of females (p=NS). Female patients were older, had more diabetes mellitus and hypertension, and were more likely to be treated for proximal main vessel disease. They had less 3 vessel disease and smoked less. The distribution of risk factors in males vs. females was equal in the DES and the BMS treated groups. Both males and females derived a significant benefit from use of DES vs. BMS (see table). Whereas female patients treated using BMS had a worse 4 year cumulative mortality compared to males (16.6% vs. 11.61% adjusted hazard ratio 1.58 CI-1.15-2.19; p=0.005), DES-treated patients had no gender-related mortality difference (9.47% vs. 7.39%; p=NS). This pattern was similar in other outcome measures.

**Conclusions:** Both males and females benefit from DES use. The benefit of DES among females attenuates the gender difference in cardiac prognosis.
CV2: Percutaneous Coronary Intervention: is there a periprocedure difference between men and women?
CA Collet, D Siqueira, Elizabeth RG Alexandre, AR Elmec, F Feres, A Abzaid, R Staico, R Costa, R Costa, A Sousa, JE Sousa
Dante Pazzanese Institute of Cardiology São Paulo, Brazil

Objective: The aim of this study was to compare clinical and angiographic differences and outcomes of Percutaneous Coronary Intervention (PCI) between men and women.

Methods: This is a retrospective, single center, observational and transversal study of consecutive patients (pts) who underwent to PCI over the period of January/2002 to December/2008.

Results: 7,283 pts underwent to PCI, of those 2,328 were women. The mean age were 62.9 ± 10.9 years (women) and 60.2 ± 10.9 years (men). Women had more often High Blood Pressure and Diabetes and less Chronic Renal Disease. There were considerable differences at clinical presentation with Stable Angina (CCS II and III) in 44% vs 39% (p=0.001), Unstable Angina 22% vs 18% (p=0.001 and Myocardial Infarction with ST Elevation 4.5% vs 5.9% (p=0.001) in women and men respectively. There were no differences in angiographic characteristics – type of lesion, presence of thrombus, coronary diameter, number of treated vessels. Complication were more common in women and the rate of hematomas were 3.7% vs 1.8% (p=0.001) and the necessity for transfusion was 0.3% in women vs 0% in men with no difference for urgent vascular surgery (0.1% vs 0.1%). Mortality, periprocedure myocardial infarction, acute coronary occlusion did not differ between the genders.

Conclusion: The main findings of our study are that PCI short outcomes did not differ between men and women, showing comparable results. However, vascular complications due to hematomas in the puncture site were more often in women and the necessity for transfusion happened few times only in women.

CV3: Early and midterm mortality after coronary artery bypass grafting in women depends on the surgical protocol: retrospective analysis of 3441 conventional and minimally invasive CABG procedures
Sandra Eifert, Kilian E, Beiras-Fernandez A, Schmoeckel M, Juchem G, Reichart B, Lammm P
Department of Cardiac Surgery, Ludwig Maximilians University Munich, Germany

Objective: Since 2002 MI and stroke are the leading causes of death in women. Historically, after CABG, mortality of women was much higher than compared to men.

Patients and Methods: Between 2004 and 2008, 3441 patients (733 women, 2708 men) underwent CABG. 252 women/ 854 men were operated using OPCAB, 481 women/ 1854 men using extracorporeal circulation (ECC). Medical data was prospectively entered and retrospectively reviewed. 30-day and one year mortalities after CABG depending on surgical protocol and gender were analyzed with Kaplan-Meier estimates and Cox proportional hazards models. Linear and logistic regression models were used to test gender differences.

Results: a) 30-day mortality using ECC: 5.2 % in women vs. 2.5% in men (p=0.001). One year mortality: 8.7% in women vs. 4.8% in men (p=0.0008). b) OPCAB: 30-days and 1 year mortality in women measured 1.7%. Mortality in men was 2.1% after 30 days and 3.7% after one year (p value n.s.) c) gender specific mortality: 30 days mortality in women was 1.7% using OPCAB and 5.2% using ECC (p=0.002), one year mortality in women was 1.7% using OPCAB vs. 8.7% using ECC (p=0.0004). In men, 30-days mortality in OPCAB was 2.1%, one year mortality was 3.7%. Using ECC early and midterm mortality was 2.5% and 4.8% (both n.s.).

Conclusions: Female gender is the only strong independent risk factor of increased early and midterm postoperative mortality rates under ECC. OPCAB significantly reduces early and midterm mortality in women and should therefore be the by far preferred revascularization technique in women.

CV4: First Genome-wide Association Study in Patients underwent Coronary Artery Bypass Grafting (CABG) under Gender specific Perspectives
Sandra Eifert1,2, Anika Goetz3, Christina Willenborg3, Christian Hengstenberg3, Bruno Reichart1, Vera Regitz-Zagrosek5, Heribert Schunkert1, Jeanette Erdmann2
1Herzchirurgische Klinik, Ludwig-Maximilians-Universität München, 2Medizinische Klinik II and 3Institut für Medizini-
Background: Twenty-three reports on gender specific mortality after CABG under extracorporeal circulation (ECC) in the medical literature, recruited by several cardiac surgery departments worldwide, describe an average mortality rate of 3.3% in men and 7.1% in women. Reported clinical gender related diagnostic and therapeutic differences are not capable of interpreting this mortality difference between men and women. Female gender seems to be a significant risk factor in many multivariate analyses. Our hypothesis is, that genetic factors play a major role in this gender-specific outcome after coronary artery bypass grafting under ECC.

Patients and Methods: We performed a genome-wide association study in patients from the German Myocardial Infarction Family Study (GerMIFS I and GerMIFS II, CABG: 384 men and 115 women, CAD patients: 368 men and 195 women) using genotype information based on imputed SNP data from an Affymetrix 500K and 1M Array. GWA studies received quality control for minor allele frequency ≥ 1%, p-value of deviation from Hardy-Weinberg Disequilibrium ≥ 0.001, Armitage’s p-trend test was ≤ 10⁻⁷.

Results: In an exploratory analysis of GWAS data we identified 5 SNPs clustering in three genomic regions which were significant between both groups (p-value between 1.86x10⁻⁵ and 9.11x10⁻⁵). In a gender adjusted analysis we identified a total of 94 SNPs with p-values <0.001. Replication with other data sets is currently underway and the results of this analysis will be reported.

Conclusions: This is the first genome-wide association study in CABG patients. Several SNPs were significant among groups and interaction of gender could be demonstrated.

Conclusions: Women demonstrated a variety of differences of myocardial motion. Therefore gender has to be taken into account if age dependent myocardial motion is assessed. Interestingly, long-axis velocity, which is known to be altered early in cardiac disease showed an increased decline in women during aging. These findings may be associated with the deteriorated prognosis of women with heart diseases for increased age.
CV6: Gender gap and differences in risk factors for coronary artery disease vs. cerebrovascular accidents in men and women aged 45-65 years
Drorith Hochner-Celnikier1, Gotzman O2, Garbi B3, Lotan H2, Chajek-Shaul T4, and Manor O4
Departments of Obstet & Gynecol1, Internal Medicine2, Cardiology3 and school of public health4 Hadassah University Hospitals, Jerusalem, Israel

Introduction: Few data are available on the gender gap in risk factors for CAD versus CVA among relatively young adults.

Aims: 1) to characterize risk factors for CAD and CVA in relatively young women, vs. similar-age men; 2) to compare risk factors for CAD in men and women aged 45-65, to those for CVA in both genders in a similar age range.

Material and Methods: 753 patients (293 women, 460 men) aged 45-65 years hospitalized in the Hadassah Medical Centers were included in this retrospective study. 449 patients had confirmed diagnosis of CAD; 304 of CVA. Information was retrieved from medical records.

Results: In the CAD group, women had a significantly higher prevalence of diabetes (40.2% vs. 24.1%), hypertension (63.1% vs. 47.4%) and hypercholesterolemia (81.6% vs. 51.9%) than men. Significantly more men had no risk factors (30% vs. 7.3%); more women had all 3 risk factors (22.9% vs. 5.6%).

In the CVA group, a significant gender gap in co-morbidity with diabetes (40.9% vs. 31.7%), and hypercholesterolemia (66.7% vs. 51.6%) was found. No gender difference was found in proportion of patients with no risk factors, but significantly more women had all 3 risk factors (22.9% vs. 7.3%).

Prevalence of risk factors was significantly higher in men with CVA than in men with CAD.

Conclusions: Major differences were found between the genders regarding risk factors for CAD and CVA.

Characterization of risk factors for CAD and CVA in both sexes may aid in developing prevention strategies to reduce AS and its consequences in this age group.

CV7: Brachial Artery Vasoconstriction Predicts Adverse Events in Women Referred for Coronary Angiography. The NHLBI-Sponsored Women’s Ischemia Syndrome Evaluation (WISE) Study
B Delia Johnson1, Steven E Reis2, Sheryl F Kelsey1, Carl J Pepine3, Vera Bittner4, William J Rogers4, Eileen Handberg4, Wafia Eteiba1, George Sopko2, C Noel Bairey Merz5
1University of Pittsburgh, Pittsburgh, PA, USA; 2University of Pittsburgh Medical Center, Pittsburgh, PA, USA; 3University of Florida, Gainesville, FL, USA; 4University of Alabama at Birmingham, AL, USA; 5National Heart, Lung, and Blood Institute, NIH, Bethesda, MD, USA; 6Cedars-Sinai Medical Center, Los Angeles, CA, USA

Background: Limited brachial artery (BA) flow-mediated vasodilation (FMD) is a recognized non-invasive test of endothelial dysfunction. However, BA vasoconstriction (BAC) during brachial artery reactivity testing (BART) has received limited attention.

Methods: We studied 377 women referred for clinically indicated coronary angiography who underwent BART. Baseline evaluations included demographics, risk factors, blood assays and quantitative angiography. Calcium antagonists/nitrates were withheld for ≥24 hours prior to BART. Resting BA diameter was measured. Forearm ischemia was induced with 4 minutes occlusion by a cuff placed just distal to the BA and inflated to 40mm Hg > systolic pressure. BA diameter was then reassessed for 2 minutes following release. BAC was defined as >5% artery constriction. Major adverse events included all-cause mortality, MI, heart failure, or stroke over 6.8 years median follow-up.

Results: Mean age was 58±11 years. FMD ranged from -20.6% to 44.9% diameter change; 40 (11%) experienced BAC. These rates were consistent across the 4 WISE sites (p=0.50). Of women with BAC, 32.5% had a major event versus 14.5% without BAC (p=0.005). Univariate predictors (p-values) of BAC included high follicle stimulating hormone (0.0009), low estradiol (0.007) (but not age or menopause), pulmonary disease (0.01), recent aspirin (0.02) and psychotropic medication (0.05) use, high insulin (0.03). Together, these predictors explained only 13% of the variance of BAC.

Conclusion: In women referred for coronary angiography, BAC predicts major adverse events and is linked to non-
traditional risk factors. Further investigation of BAC is warranted given the observed incidence of major adverse events in this population.

CV8: Gender differences in early mortality after CABG

Elke Lehmkuhl\(^1\), Vera Regitz-Zagrosek\(^2,4\), Friederike Kendel\(^3\), Hugo Sanchez-Ruderisch\(^1,2\), Roland Hetzer\(^4\)

\(^1\)Institute of Gender in Medicine, \(^2\)Center for Cardiovascular Research, Charité - Universitätsmedizin Berlin, \(^3\)Institute for Medical Psychology, Charité - Universitätsmedizin Berlin, \(^4\)German Heart Institute Berlin (DHZB), Germany

Women show a higher early mortality after aortocoronary bypass graft surgery (CABG) than age matched men with highest rates in the youngest women. Risk factor analysis so far did not identify the causes.

We analysed the causes of early mortality in women after bypass graft surgery with analysis of clinical parameters, psychosocial variables, and hormones.

1676 consecutive patients admitted to the DHZB for CABG were included in this prospective study (subproject of the Competence Network Heart Failure) between January 2005 and July 2008. Data from pre-, peri, early and late postoperative time points were analysed. Clinical data and psychosocial variables were determined. Hormonal levels in a subgroup of 306 patients (203 male and 103 female) were measured by ELISA.

In a preliminary data analysis on 1238 patients we identified a high risk for depression in both sexes. Predictive markers of depression were younger age, female gender, less than 10 years of school education, and living alone; dyspnea - both at rest and on exertion, previous myocardial infarction (MI), comorbidities and medication with tranquillizers were most closely associated to depressive symptoms. We identified a predictive priority of depression over physical functioning and not vice versa.

We found elevated concentrations of LH and FSH in male patients compared to healthy male controls in contrast to decreased LH and FSH levels in female patients. DHEA-S is elevated in male and female patients. Further analysis is ongoing.

Conclusions: Timely diagnosis and treatment of depression may improve quality of life in patients especially women after CABG. Hormone analysis reveal gender specific risk factors that might offer individual therapy options in the future.

CV9: Effect of lifestyle on vascular function and metabolism in post menopausal hypertensive and obese women

Annachiara Nuzzo\(^*\), Giulia Gorlato\(^*\), Emilio Chiurlía\(^*\), Giorgia Origliani\(^*\), Nino Carlo Battistini\(^**\), Giuseppe Fantini\(^*\), Rosario Rossi\(^*\), Maria Grazia Modena\(^*\)

\(^*\)Institute of Cardiology, University of Modena and Reggio Emilia; \(^**\)Nutrition Clinic, University of Modena and Reggio Emilia, Italy

Background: Cardiovascular disease (CVD) remains the leading cause of death and disability in industrialized nations. Poor habits and choices also have been shown to have adverse effects on vascular endothelial leading to the development of endothelial dysfunction. Aim of this study is the evaluation of the effects of lifestyle modifications on vascular function and metabolism in post menopausal hypertensive and obese women.

Methods: Forty-five postmenopausal women (mean age = 54.5 ± 7.4) with arterial hypertension and moderate obesity were randomized to an intensive lifestyle change group or to a usual-care control group. All the patients have a baseline anthropometric and metabolic assessment, ambulatory blood pressure monitoring and a non-invasive ultrasound estimation of endothelial function through flow mediated dilation (FMD). All these parameters were re-evaluated after three months in both groups.

Results: The patients who have modified their life-style achieved a loss of fat mass compared with an increase in lean mass. The control group, instead, doesn’t this goal. The group of “active” patients decreased the levels of PCR (inflammatory indices) and significantly improved the endothelial function (FMD) after 3 months of follow-up: the relationship between these two parameters is illustrated in the graph.

Conclusions: The post menopausal period is characterized by a decrease in the concentration of estrogen with a consequent slowing of basal metabolism. This change in women
can increase the incidence of obesity. This study shows that regular physical activity may reduce cardiovascular risk through improved endothelial function.

CV10: Insulin resistance affects remodelling of the systemic conductance arteries in postmenopausal women

Annachiara Nuzzo*, Daniele Iaccarino*, Emilio Chiurlia*, Giorgia Origliani*, Giuseppe Fantini *, Rosario Rossi*, Maria Grazia Modena*

*Institute of Cardiology, University of Modena and Reggio Emilia, Italy

Background: The metabolic syndrome (MetS) and its main component, insulin resistance (IR), are the principal risk factors for the definition of global cardiovascular and cardiometabolic risk. Vascular function correlates with risk of cardiovascular events, so it can be studied in patients with risk factors for cardiovascular disease, in order to better classify the level of risk.

Methods: We studied 124 postmenopausal women in which angiography exam carried out in suspected coronary artery disease. In all we measured the anthropometric parameters (BMI and body surface), the diameter of the left main coronary artery (LMCA), of the left anterior descending (LAD), of the left circumflex artery (LCX) and proximal right coronary artery (RCA). In addition, we measured the diameter of brachial artery (BAD) and flow-mediated vasodilation (FMD).

Results: Our patients were divided in in four groups. Group 1: without coronary lesions, group 2: one coronary lesion, group: 3 two coronary lesions, group 4: three or more coronary lesions. Thirty-eight patients (30.6%) had not coronary lesions (group 1), 34 (27.4%) had one coronary lesion, 30 (24.2%), had two coronary lesions, and 22 (17.8%) a disease of 3 or more vessels. The extension of coronary artery disease (CAD) was correlated with BAD (p<0.0001), with FMD (p<0.001), with HbA1c (p<0.001), with waist circumference (WC) (p<0.001) and with HOMA-IR (p<0.0001), and not with anthropometric parameters.

Conclusions: Our study strongly supports a reciprocal relationship between endothelial dysfunction and insulin resistance, through a close correlation between extension of CAD and indices of IR.

CV11: Myocardial hypertrophy after aortic valve replacement regresses faster in women than in men

George Petrov1,2, Vera Regitz-Zagrosek1,2, Elke Lehmkuhl1,2, Thomas Krabatsch2, Elke Dworatzek, Shokufeh Mahmoodzadeh, Carola Schubert1, Roland Hetzer2

1Institute of Gender in Medicine and Center for Cardiovascular Research, Charité Universitätsmedizin Berlin, Germany, 2German Heart Institute Berlin, Germany

In patients with aortic stenosis, pressure overload (PO) induces cardiac hypertrophy and fibrosis which differ in women and men. Sex differences in its regression after valve replacement (AVR) have not yet been studied. Regression depends partially on the degree of cardiac fibrosis which may be affected by estrogen.

We prospectively obtained pre- and early postoperative echocardiography in 92 patients, 53 women and 39 men with isolated aortic stenosis (AS) undergoing AVR. We analysed matrix gene expression in left ventricular biopsies in a subgroup and determined the effect of E2 on collagen synthesis in isolated cardiac fibroblasts.

Preoperatively, similar percentages of women and men had increased left ventricular (LV) diameters (37 and 38 %). Postoperatively, increased LV diameters persisted in 34 % of men but only in 12 % of women (p <0.023). Preoperatively, women had more frequently LV hypertrophy (LVH) than men (W 86, M 56 %, p<0.01). LVH reversed more frequently in women than in men, leading to a similar prevalence of LVH after surgery (W 45 %, M:46 %). In surgical biopsies, men had significantly higher collagen 1 and 3 and MMP2 gene
expression than women. In isolated rat cardiac fibroblasts, 17β-Estradiol (E2) significantly increased collagen I and III gene expression in male cells, but decreased gene expression of both collagens in females.

Women may adapt to PO with a more benign form hypertrophy, characterized by less ventricular dilatation, less collagen synthesis and faster regression.

CV12: Gender aspects in heart transplantation for dilated cardiomyopathy

George Petrov*, Elke Lehmkuhl*, Jaqueline M Smits, Birgit Babitsch, Claudia Brunhuber, Beate Jurmann, Julia Stein, Carola Schubert, Noel Bairey Merz, Hans Brendan Lehmkuhl, Roland Hetzer, Vera Regitz-Zagrosek

1Institute of Gender in Medicine and Center for Cardiovascular Research, Charité Universitaetsmedizin Berlin, Germany, 2German Heart Institute, Berlin, Germany, 3Eurotransplant International Foundation, Leiden, The Netherlands, 4Berlin School of Public Health, Charité Universitätsmedizin Berlin, Germany, 5Women’s Heart Center, Heart Institute, Cedars Sinai Medical Center, Los Angeles, USA

Dilated cardiomyopathy (DCM) is responsible for over half of all heart transplants. Fewer women with DCM undergo heart transplants than men with DCM; the reasons for this state-of-affairs are unclear. We analyzed a prospectively cohort of 702 DCM patients that were referred to our heart transplant center. Only 16% were women. Women and men did not differ in age (W: 46.1, M: 47.8 years) or ejection fraction (24%). Women were more frequently in NYHA III-IV heart failure, had lower exercise tolerance, worse pulmonary function, and poorer kidney function (all p<0.05) than men. Women were less commonly diabetic (14% vs 23%, p<0.05) than men. Similar percentages of women and men who were referred were eventually transplanted; the women spent less time on the waiting list (W: 153±37, M: 314±29 days, p<0.05). The 10-year survival of women and men after transplantation was similar (W: 56 %; M: 48 %, ns). We compared out current data, to our overall experience from 1985 to the present (n=972), and also with the Eurotransplant heart dataset. Similar to our current findings, far lower percentages of DCM patients in both cohorts were women, although the 10-year survival of female and male DCM patients was not different. We conclude that women are referred with more advanced disease and fewer relative contraindications such as diabetes than men. The relatively lower percentage of women with DCM that undergo heart transplant could be due to referral bias against women, particularly those with complications. If our hypothesis is confirmed, efforts should be undertaken to improve referral of women for heart transplant.

CV13: Gender-based differences in clinical characteristics and outcomes of acute coronary syndrome patients participating in the National Survey of Cardiac Intensive Care Units (ACSIS 2008)

Avital Porter, Zaza Iakobishvili, Solomon Behar*, Shmuel Gottlieb*, Haim Hammerman*, David Hasdai

Institute of Gender in Medicine and Center for Cardiovascular Research, Charité Universitätsmedizin Berlin, Germany

Department of Cardiology, Rabin Medical Center, Petah-Tiqva, Neufeld Cardiac Research Center, Ramat-Gan*, Israel

Background: Prior reports have shown increased early death among women presenting with acute coronary syndrome (ACS) compared with men. Moreover, women with ACS have been reported to receive less medical and invasive treatments.

Aim: To assess gender disparities in treatments and mortality in a contemporary cohort.

Methods: Retrospective analysis of 30-day outcomes based on gender among patients enrolled in the Acute Coronary Syndrome Israeli Survey (ACSIS) 2008 database, using logistic regression and propensity score analysis.

Results: The cohort included 1763 patients (79.4% men). Women were older, more likely to have history of stroke or heart failure, and with more comorbidities. Women were more likely to present with dyspnea and higher Killip class. A slightly larger proportion of women were diagnosed with non-ST-elevation ACS (39.8% women vs. 35.3% men p=NS). At first medical contact, women were treated significantly less with aspirin and unfractionated heparin and more with diuretics. No significant differences were found with respect to the time delay between arrival and primary reperfusion or cardiac interventions. Adjusted 7-day mortality (2.3% men, 3.3% women OR 0.92 ; CI 0.45-1.88), 30-day mortality (3.6% men, 5.4% women, OR 1.0; CI 0.57-1.8), as well as major adverse coronary events (11.5% men, 14.9% women,
OR 1.24; CI 0.88-1.74) did not differ among genders.

**Conclusion**: In this large prospective national survey, we did not demonstrate significant gender outcome disparities among ACS patients previously reported, implicating better adherence to evidence-based treatments in women.

**CV14: Clinical characteristics and outcomes of patients discharged from chest pain unit - Are there gender differences?**

Avital Porter*, Roy Beigel*, Dan Oieru*, David Hasdai, Shlomi Matetzky*

Cardiology Department, Rabin Medical Center, Petah-Tiqva; *Heart Institute, Chaim Sheba Medical Center, Ramat Gan, Israel

**Background**: Prior studies have highlighted the differences in diagnostic and management approaches between men and women presenting with chest pain. There are few data regarding the possible differences in outcomes of male and female patients discharged from a chest pain unit (CPU) after a thorough work-up.

**Methods**: The cohort included 911 consecutive patients (68.5% male) presenting to the emergency room with chest pain that were admitted to CPU for further evaluation and were subsequently discharged. Patients were followed 3 months from discharge.

**Results**: Compared to men women were significantly older (mean age 57.2 women; 51.9 years men p=0.00) with higher rates of hypertension, diabetes and hyperlipidemia, and less prior cardiovascular disease or prior coronary interventions. Non-invasive evaluation was done in 95% of women and 94% of men with similar rates of stress echocardiography (4% women and men), isotope scan (39% women), and men), and higher rates for multidetector computed tomography (53%women, 52% p=0.013). During the follow up period (data available for 70% of patients), re-admission rates to CPU were similar among genders (3% women, 5% men p=NS). No women was hospitalized with acute coronary syndrome as opposed to 0.5% of men (p=NS), or underwent coronary intervention. All-cause mortality rates were similar among genders (0.6% women, 0% men p=NS).

**Conclusion**: In this large cohort of patients discharged from a CPU after thorough evaluation, we demonstrated similar rates and mode of non-invasive evaluation, and similar short-term outcomes. Therefore we conclude that equal CPU evaluation in men and women is justified and probably safe.

**Poster Session VI – MT: Mixed Topics**

**MT1: Gender in the air: exposure to cosmic radiation in air crews and frequent flyers**

Nur Ali, Ingo Jarsumbeck, Kyounga Kim, Sanna Lönnfors

Master Students at Health and Society; International Gender Studies Berlin – Charité Universitätmedizin Berlin, Germany

Cosmic radiation is ionizing radiation originating from space. As the Earth’s atmosphere protects the lower altitudes, airline crews and frequent flyers are more exposed to it than people at sea level. Cosmic radiation cannot be directly compared with other types of radiation. However, a flight from Tokyo to New York is roughly the equivalent of three days at sea level or seven chest x-rays.

Health effects of cosmic radiation are still partly unknown, but studies suggest that it is an occupational health risk for aircrews and a consideration for frequent flyers. Stewardesses have a 40 % increased risk for breast cancer. Increased risk of skin cancer has been observed in aircrews, and pilots develop cataracts three times more often than controls.

Most flight attendants are women in childbearing age. The mother’s body provides no protection: the recommended fetal radiation dose is exceeded if a woman flies two 10-hour flights monthly during pregnancy. Prenatal exposure may increase cancer risk later in life. Conversely, an increased prevalence of chromosomal translocations that may have an effect on future generations has been observed in pilots with long careers. Most pilots are men.

Aircrews are monitored for occupational exposure. As no amount of radiation can be considered safe, it is recommended that aircrews and frequent flyers be better informed about the possible health risks, record their personal cumulative radiation doses, and limit flying during pregnancy.
MT2: Doping- and drug abuse among adolescents in Bavaria (Germany): a survey of prevalence, knowledge and attitudes

Tobias Borucker, Thorsten Schulz, Renate Oberhoffer
Institute of Public Health Research, Technische Universität München, Munich, Germany

To create effective prevention programs against doping and drug abuse for youth, it is essential to collect empirical data. The purpose of the study was to collect reliable data of the current situation in Bavaria. Furthermore it was important to give information on possible interventional steps with scientific support. 700 adolescents from 13 Bavarian schools were surveyed by a questionnaire. 30.0% used prohibited drugs or doping substances at least once in their life: 2.6% anabolic-androgenic steroids (AAS), 0.9% growth hormones, 6.3% stimulants, 29.0% cannabis, 6.2% cocaine, 3.4% heroin/acid and 0.9% erythropoietin. Prevalence of male youth (35.6%) was significantly higher than of female youth (24.6%). Moreover, a significant interrelation between prevalence and the age of adolescents was detected. The consumption of the three age groups nearly doubled at each age bracket. A determination among “sportive youth” and “non-sportive youth” revealed a positive correlation between sport and less prevalence of legal drugs. However, all groups performed poorly on a knowledge test regarding side effects of several substances. Furthermore significant differences in consumers’ behaviour of substances hold the comparison of gender. Male youth justify their consumption above all by achieving „more power“ (27.7%) and a „more muscular appearance“ (18.9%), female youth mainly by „overcoming stress and pressure“ (48.7%) and an „aspired weight reduction“ (15.5%). Nevertheless, both indicated “having fun” (62.4%) as the most influencing factor. Besides, 64.9% of the participants never wondered themselves about the issue of doping and 25.8% argued for legalization of doping under specific circumstances. In summary, improving specific knowledge of doping prevention among students is needed. The goal is to get through to the minds of youth and test the effectiveness of appropriate scientific intervention in behaviour.

MT3: Relevance of sex and gender in sports medicine – Development of guidelines to consider sex and gender issues in sports medical research

*Interdisciplinary Centre of Gender Issues in Sport Sciences (IGiS), Cologne, Germany

Surveys concerning sex and gender issues in medicine show a strong gender bias in the process and outcome of research. The current project acts on the assumption that this gender bias, i.e. a de-thematization of sex and gender, appears also in sports medical research. The central aim of our analysis is to take stock of research in sports medicine and to shed light into its framework of knowledge production. Three main aspects are focused:

- Identification of gender bias in publications with sports medical content.
- Identification of subjects and fields in which sex/gender is more or less focused.
- Identification of mechanisms and processes that promote gender biased.

The research is based on a variety of methods:

- A content analysis of abstracts of all publications in sports medicine (2004 – 2008)
- An indepth content analysis of a sample of publications in sports medicine based on the above results.
- Interviews with central stakeholders of the scientific community of sports medicine
- Process evaluation of current research.

The theoretical background of our analysis is based on sociological models of production of knowledge. The general approach as well as first results concerning relevance of sex and gender in sports medical publications will be presented at the congress.

MT4: Chronic hypertension after a history of early preeclampsia (Preeclampsia Risk EValuation in FEMales (PREVFEM) study)

José T Drost1, Ganiye Arpaci1, Jim van Eyck2, Jan Paul Ottervanger1, Yvonne T van der Schouw3, Angela HEM Maas1
Abstracts Poster Sessions

Isala klinieken Zwolle, department cardiology; Isala klinieken Zwolle, department gynaecology/obstetrics; University Medical Centre Utrecht, Julius Center for Health Sciences and Primary Care

Background Preeclampsia, defined as proteinuria (≥0.3 gr/24h) and hypertension (≥140/90 mmHg) occurring after the 20th week of pregnancy, complicates approximately 3-5% of all pregnancies. Besides the perinatal complications, there also is an increased maternal risk for the development of chronic hypertension (RR 1.5-8.8) and at least a twofold lifetime risk on cardiovascular events. We investigated the prevalence and treatment of hypertension in women with a history of early preeclampsia (partus before 34 weeks) at 10 years postpartum.

Methods Women with a history of preeclampsia in our hospital (1991-2005) were sent a questionnaire and invited for a cardiovascular screening at the outpatient clinic. Demographic data and physical examination were performed. We accomplished an interim analysis of 193 women.

Results Mean age of the 193 women was 40.7±3.9(SD) years and they were 11.1±2.7(SD) years post index-pregnancy. In the questionnaire 33.7% of women reported current hypertension, of whom 80% developed hypertension directly after the index-pregnancy. Antihypertensive medication was used by 63% of these women (21.2% of all participants).

At physical examination mean systolic blood pressure (SBP) and diastolic blood pressure (DBP) of 193 participants were 128.2±17.7(SD) mmHg and 86.5±11.9(SD) mmHg respectively. In 23.8% of women SBP was >140 mmHg and in 36.3% DBP was >90mmHg.

16.6% of all participants (n=32) were not familiar with hypertension. Only 34.1% of women using antihypertensive medication were normotensive at physical examination.

Conclusion Chronic hypertension is a common cardiovascular risk factor after early preeclampsia in young women and is often poorly treated.

MT5: Incidence of adverse drug events (ADEs) and gender-specific aspects

Christina Hofer-Dückelmann1, Erika Prinz2, Wolfgang Beindl3, Jacek Szymanski4, Günther Fellhofer5, Maximilian Pichler6, Jochen Schuler7

Affiliation Pharmacy Department at the St. Johanns Spital1,3,5 and Department of Cardiology at the Salzburger Landesliniken, Private Paracelsus Medical University2,6,7, Salzburg, Austria; Helios Klinikum Wuppertal, Universität Witten/Herdecke4, Germany

There are many drugs with different pharmacodynamics and pharmacokinetics in men and women resulting in gender-specific differences in ADEs (1,2). In an Austrian study, incidence and nature of ADEs at hospital admission where evaluated under special consideration of gender-specific aspects.

In 2007 and 2008, 3190 medical records of internal ward patients were assessed during a total period of six months. ADEs were identified in 242 patients (7.6%). Significantly more women than men were affected by an ADE (9.7% versus 5.8%, p < 0.005).

Only in patients with 81 years of age and older there were significantly more women in the ADE group than in the control group without an ADE.

The most common ADEs were 1) electrolyte imbalances, 2) over-anticoagulation and bleeding complications, 3) renal insufficiency and dehydration or 4) syncope/arrhythmia. Women were mainly affected by electrolyte imbalances and over-anticoagulation. In particular, hyponatremia was a “female” problem. Women in the ADE group had a slightly higher intake of diuretics than men.

According to the „Common Terminology Criteria for Adverse Events“, 43.8% of ADEs were severe, 16.1% were life-threatening and in 1.7% cases, death was related to the ADE. In women, a significantly higher proportion of life-threatening ADEs and ADEs related to death occurred in comparison to men (22.7 versus 11.9%, p=0.031).

Although there was no significant difference in the number of drugs taken by men and women in the ADE group, women were more significantly affected by ADEs. The causalities still have to be evaluated.

1Schuler, J. et al. Wien Klin Wochenschr 2008; 120: 733-741
MT6: Skin diseases in the elderly: a survey in 5,364 patients aged sixty and over
Antonia Jeskowiak, Daisy Kopera
Department of Dermatology, Medical University Graz, Graz, Austria

Background: Increasing life expectancy in western populations deserves more consideration of age related diseases. Cutaneous tumors, consequences of metabolic diseases, immobility, chronic venous insufficiency and reduced immunity represent the most frequent skin diseases in the elderly.

Objective: This survey offers a review of the spectrum of skin diseases in patients aged 60+ in the Austrian province of Styria. Gender differences concerning the frequency of consultation of the clinic and the age of manifestation are pointed out.

Methods: Data of 5364 elderly patients (≥60 years) seen within the year 2007 in the policlinic of the Department of Dermatology, Medical University Graz, Austria, were statistically evaluated. To review the spectrum of skin diseases in this population, all diagnoses were standardized and classified into ten categories and four age groups.

Results: Distribution of diseases was similar in both sexes. NMSC (non-melanoma skin cancer) represented the main part in both sexes, followed by phlebologic disorders and allergies & eczema. Inflammatory diseases and malignant melanoma ranged number four and five. With regard to the most frequently diagnosed entities the majority of male patients was between 60 and 69 years old, while females were older.

Conclusion: Many skin diseases in the elderly are far from life-threatening, however they increase morbidity leading to economic and psychosocial problems, as well as to reduced quality of life. Effective preventive strategies could reduce a large part of these diseases, thus indicating the importance of health education.

MT7: Delayed Gadolinium-Enhanced MRI of Cartilage (dGEMRIC) at 3 Tesla: Is there a gender difference in biochemical cartilage properties? - Preliminary data
Kautzky-Willer Alexandra, Stelzeneder David, Domayer Stephan E., Hirschfeld Clemens, Welsch Götz H., Trattnig Siegfried

1KIM III, Dept. Endocrinology & Metabolism and 2NMR Center, Dept. of Radiology, MUW, Vienna, Austria

Background: Although there is evidence for a gender difference in onset and prevalence of osteoarthritis (OA), limited data on differences in biochemical cartilage composition is available. It has been suggested, that estrogen has an influence on proteoglycan synthesis.

The objective of our investigation is to compare cartilage proteoglycan content measured via dGEMRIC between females and males after matrix-associated autologous chondrocyte transplantation (MACT).

Methods: We analyzed previously acquired data from 11 knee patients (4 female, 7 male) and 10 ankle patients (7 female, 3 male) after MACT surgery. A 3 Tesla MR unit was used for the dGEMRIC examination.

The regions of interest (ROI) for the healthy control cartilage were drawn in the posterior cartilage surface of the femoral condyle and on the posterior proportion of the talar dome. This control cartilage and the site of chondrocyte transplantation (femoral condyle and talar dome) were evaluated throughout 2 contiguous slices.

Results: The mean age for the knee and ankle patients was 36 and 31 years respectively. T1 after administration of gadolinium (T1Gd, in ms) was significantly lower in the repair tissue (RT) and control cartilage of male ankle patients (454 vs. 605 and 487 vs. 632 ms), but no differences were observed in the knee patients (male vs. female, 681 vs. 759 for RT and 992 vs. 901 ms for control). T1 without the contrast agent showed no differences at all.

Conclusion: Our results indicate a gender difference in proteoglycan content of ankle cartilage in patients after MACT. Limitations are the lack of histological data and the low number of patients.

MT8: Gender differences in amoebiasis
Hannelore Lotter1, Claudia Marggraf1, Iris Gaworski2, Thomas Jacobs2 and Egbert Tannich1

1Department of Molecular Parasitology, 2Department of Immunology, Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany
Amoebiasis is a widespread human parasitic disease caused by the intestinal protozoan *Entamoeba histolytica*. There are two major clinical manifestations of the disease, amoebic colitis and amoebic liver abscess (ALA). Interestingly, ALA greatly predominates in adult males (>85%) but is rare in females and children. The risk for the development of ALA in females is more or less equally distributed between the different age groups with a slight increase in elder women above 60 years. In contrast, the risk for ALA in males increases after puberty with a peak incidence at approximately 40 years of age. This sexual dimorphism for the risk of ALA is independent from the prevalence of the parasite, which is usually higher in children and adult females than in adult males. Moreover, it appears to be independent of the cultural or ethnic background as it has been observed in individuals from all parts of the world. Since humans are the only relevant host for *E. histolytica*, experimental studies concerning this sexual dimorphism have been hampered by the lack of a suitable animal model. We recently established an ALA model in immunocompetent mice, which revealed a similar sexual dimorphism as found in humans. When intrahepatically challenged with cultured *E. histolytica* trophozoites, female mice were able to rapidly control the infection whereas male mice harboured the parasite within the liver for at least 14 days and developed significant abscesses. This model was used to investigate the role of immune functions as well as sexual hormones for ALA development. The results indicate that upon amoebic infection of the liver female mice produce more protective interferon gamma (IFNg) than male mice and that testosterone has a major impact on the production of IFNg, the survival of parasites within the liver and accordingly on the size of ALA lesions.

MT9: Broadening nurses' perspectives relating to gender and health: A unique curriculum for baccalaureate nursing students
Betty Meir, I. Margalith

Dina Academic School of Nursing, Rabin Medical Center, Beilinson Hospital, Petach Tikvah, Israel

The impact of gender on health is a relatively new issue in health research, education and practice. Awareness of the linkage between gender and health has only been partially incorporated into the medical and nursing school curricula. The Dina Academic School of Nursing in Israel has integrated this important issue into a unique curriculum called: Nursing - a socio-political power. This program focuses primarily on nurses' professional obligations to promote the potential of vulnerable groups in exercising their basic right to good health. Non awareness of the influence of gender on health contributes to the vulnerability of certain populations.

“Health and Gender”, a course developed for 4th year BA nursing students examines gender and the biological, psychological and social aspects which influence health and illness. Theoretical aspects are taught in addition to practical implementation. The students’ perspectives are broadened relating to these vulnerable groups in general and gender differences in particular. New generations of nurses are being trained to change, influence and ensure qualitative and equal treatment to both sexes.

This presentation will focus on the development of the curriculum, its uniqueness compared to other baccalaureate nursing curricula and its implementation.

MT10: The impact of fetal gender on pregnancy outcome in twin pregnancies
Melamed N, Yariv Yogev, Marek Glezerman

Hospital for Women, Rabin Medical Center, Petach Tikva, and Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel

Objective: To assess the association between fetal gender and pregnancy outcome in dichorionic twin pregnancies and to determine the effect of male and female fetuses on their opposite-sex co-twin

Methods: Retrospective study of all dichorionic twin pregnancies at a tertiary hospital from 1995 to 2006. Pregnancies were classified into three groups according to fetal gender (i.e., female-female (FF), male-female (MF), and male-male (MM)). Pregnancy outcome was compared for the three groups. Neonatal outcome of female infants from FF pregnancies was compared with that of female infants from MF pregnancies. Similarly, the outcome of male infants from MF pregnancies was compared with that of male infants from MM pregnancies. Multivariate logistic regression and Cox proportional hazards model were used to adjust the risk of
prematurity and adverse neonatal outcome for potential confounders.

**Results:** 2,704 twin pregnancies were included in the study, of which there were 436 (16.1%) FF pregnancies, 1,878 (69.5%) MF pregnancies, and 390 (14.4%) MM pregnancies. The risk of preterm delivery at less then 31 and 28 weeks was highest in the MM group (OR=1.7, 95%-CI 1.2-2.6 and OR=2.3, 95%-CI 1.3-4.2, respectively) and intermediate in the MF group (OR=1.4, 95%-CI 1.1-1.9 and OR=1.8, 95%-CI 1.2-3.0, respectively) using the FF group as the reference group, and was related to a higher rate of spontaneous preterm delivery. Male neonates in MM twin pairs were characterized by a lower mean birth weight and a lower growth rate when compared to male neonates in MF pairs. Female neonates from MF pregnancies had a rate of respiratory and neurologic morbidity similar to that of male infants and significantly higher than that of female neonates from FF pregnancies. Male neonates from MM pregnancies had a higher risk for convulsions compared to males from unlike-sex twin pregnancies.

**Conclusion:** Our results clearly demonstrate an effect of male and female fetuses on their opposite-sex co-twins, and the analysis of neonatal outcome for preterm twin infants indicates a male-detrimental factor related to a twin pregnancy with a male fetus. Further studies are necessary to investigate the possible factors that are involved in this intrauterine effect.

**MT11: Gender differences and menstrual cycle variation in platelet aggregation**

Melamed N(1), Yariv Yogev(1), Buganim T(1), Altman E(1), Calatzis A(2), Marek Glezerman(1)

Hospital for Women, Rabin Medical Center, Petach Tikva, and Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel(1), Transfusionsmedizin und Hämostaseologie, Klinikum der Universität München, Germany(2)

**Background:** Previous studies have documented the effect of ovarian sex steroid hormones on platelets function. However, there is lack of data regarding the change in platelets function along the different phases of the menstrual cycle. Moreover, there is a paucity of data related to gender differences of platelet aggregation.

**Objective:** To assess gender differences and changes in platelets aggregation along the menstrual cycle

**Methods:** In a prospective observational study, we included 16 healthy women with regular menstrual cycle of 26-30 days duration which were compared to a control group of 14 healthy males. Exclusion criteria were age < 18 years of > 45 years, use of oral contraceptives or any other forms of hormonal therapy, and medical disorders or medications the might affect platelets aggregation. Blood samples were taken from each of the women at four different time points throughout the menstrual cycle: day 1±1, day 7±1, day 14±1, and day 21±1. A single blood sample was taken from the males. Platelets aggregation was assessed in whole blood samples using the Multiplate™ analyzer. All samples were processed within 10-20 minutes following blood collection. Platelets aggregation was studied in response to three agonists (ADP, arachidonic acid (AA), and thrombin-receptor activating peptide (TRAP)), and two negative controls. Platelets aggregation was measured for 6 minutes and is expressed in arbitrary units (AU). Platelets aggregation for each of the women was expressed as percent change from the day 1±1 value.

**Results:** The females and males groups were similar with regard to age and platelets count (30±9 vs. 35±9, P=0.1 and 257±55 k/ul vs. 231±63 k/ul, P=0.4, respectively). The mean aggregation activity was significantly higher in females compared with males for all agonists. For females, there was no statistically significant difference in aggregation activity between menstrual days 1, 7, 14 and 21 for the three agonists. We next analyzed the relative change in aggregation at days 7, 14, and 21 for each of the female subjects using day 1 as reference. There was a considerable variability in the results with some patients demonstrating increased aggregation and others decreased aggregation at each of the time points.

**Conclusion:** Women consistently demonstrate a higher aggregation activity than men. There is no consistent change in platelets aggregation in females along the menstrual cycle.

**MT12: A gender comparison of economic health measurements**

Lora Warshawsky-Livne1, and Joseph S. Pliskin2
Research, planning and health policy have neglected the special needs of women in many aspects. In this study we focused on the economic decision making side of gender medicine. There are economic measurements, mainly cost-effectiveness analysis, used to evaluate and compare different health statuses, diseases, and treatments. Most analyses take into account the assessment of quality of life by one of two alternatives: (1) Quality Adjusted Life Years (QALYs); (2) Disability Adjusted Life Years (DALYs). Both measures of life years are calculated by estimating value of life, taking into account different risk attitudes of different populations and decision makers.

In this study we searched the literature for different economic health measurements that provide separate data concerning men and women. Comparisons were made between the genders to identify health topics that are meaningfully different. This analysis will allow us to broaden the definition of “gender medicine”.

Of the hundreds of publications dealing with economic health factors only a few actually give an option for gender comparison. The comparative analysis yielded two kinds of results: (1) An additional economic explanation to already proven clinical fields of medicine and health that women’s health is not only gynecology, and (2) Certain fields of medicine and health, although not clinically different, have different economic impact on men and women. These findings are important for decision makers and policy legislators in the field of gender medicine. In addition, these findings suggest that more studies should be done comparing men and women with regard of different health economic factors.

MT13: Fetal gender and pregnancy outcome

Yogev Y, Melamed N, Marek Glezerman

Hospital for Women, Rabin Medical Center, Petach Tikva, and Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel

Objective: To examine and quantify the effect of fetal gender on pregnancy, delivery and neonatal outcome

Materials and Methods: Retrospective study of all singleton pregnancies at a university-affiliated tertiary hospital between January 1995 and December 2006. Exclusion criteria included gestational age at delivery <24 weeks or >42 weeks, birthweight <500g, women with previous cesarean section (CS), and major congenital anomalies. Outcome measures that appeared to be influenced by fetal gender on univariate analysis were evaluated by multivariate logistic regression analysis to control for potential confounders.

Results: 66,387 women were included in the study, of which 34,367 (51.8%) delivered male and 32,020 (48.2%) delivered female neonates. The rate of preterm delivery (as early as 29 weeks) was higher for male fetuses (OR=1.71, 95%-CI 1.58-1.86), and was attributed to an increased incidence of spontaneous preterm labor and preterm premature rupture of membranes (O=1.49, 95%-CI 1.35-1.65 and OR=1.49, 95%-CI 1.29-1.72, respectively). Women carrying male fetuses were at increased risk for operative vaginal delivery (OVD) for nonreassuring heart rate (NRFHR) (OR=1.46, 95%-CI 1.30-1.64), failed OVD (OR=1.82, 95%-CI 1.35-2.46), and cesarean delivery (OR=1.08, 95%-CI 1.03-1.13) which was related to higher rates of NRFHR and dystocia (OR=1.24, 95%-CI 1.11-1.40 and OR=1.28, 95%-CI 1.07-1.54, respectively). Female fetuses were more likely to suffer from fetal growth restriction (OR=0.67, 95%-CI 0.63-0.71), while males were at increased risk for macrosomia (OR=1.98, 95%-CI 1.84-2.14).

Conclusion: Fetal gender is independently associated with adverse pregnancy outcome.

MT14: Cyclic variation of bronchial hyper-reactivity in pre-menopausal women - Results from the population-based SAPALDIALII cohort

Zemp Elisabeth1, Schindler Christian1, Curjuric Ivan1, Gomez Real Francisco2, Dratva Julia1

1Institute of Social and Preventive Medicine at Swiss Tropical Institute, Associated Institute of the University Basel, Switzerland, 2Department of Gynecology and Obstetrics, Haukeland University Hospital, 5021 Bergen, Norway

Background: Studies on perimenstrual asthma are inconsistent and different methodologies limit comparisons.

Objective: First, to investigate cyclic variations in bronchial hyper-reactivity to methacholine (BHR) in premenopausal women in a population-based cohort. Secondly, to assess
Abstracts Poster Sessions

effect modification by oral contraceptives (OC).

Methods: Day of menstruation cycle at the time of methacholine challenge was calculated in 574 menstruating women without hormonal treatment, age 28-58, based on questionnaire data from the SAPALDIA cohort 2001/02. A window of risk was defined three days before and after the first day of menstruation. Logistic and linear regression analyses were performed adjusting for main predictors of BHR and stratifying for asthma status. Impact of OC’s was studied in the same sample enlarged by 130 women taking OC’s.

Results: Prevalence of BHR was 13% (fall of >=20% in FEV1 up to a maximal cumulative dose of 2 mg), 6% were asthmatics. 143 women had undergone methacholine challenge within the risk window. We observed a significant increase in BHR within the window of risk (OR 2.2, 95%CI 1.16-4.07). A cyclic association pattern was confirmed by trigonometric functions. Effect modification by asthma status, lower OR in non-asthmatics, and oral contraceptives, an OR <1 in women using OC’s, was found.

Conclusion: The data provide evidence of a systematic variation in HBR during menstruation cycle supporting the hypothesis of a hormonal influence. OC’s appear to have a protective effect. Cyclicity, if further confirmed, may be of clinical importance in view of future medication recommendations and timing of respiratory function tests in women.

Michael Bader got his PhD in Biology at the University of Freiburg, Germany and his professorship in Pharmacology at the Charité, University Medicine Berlin, Germany. He is group leader at the Max-Delbrück-Center for Molecular Medicine (MDC), Berlin, where his research focusses on the functional analysis of cardiovascular hormones using molecular biological and transgenic animal technologies. He is in the Editorial Board of Hypertension and author of more than 300 publications.


Since 1999 she is Director of the Internal Medicine Unit of the University Hospital of Padua.

Scientific fields of interest: lipoprotein metabolism, primary and secondary hyperlipidemia, relationship between lipoproteins levels and atherosclerosis; pharmacological and dietary treatment of dislipidemias; lipoprotein metabolism and liver diseases; genetic mutations of apolipoprotein CII and B; lipoprotein metabolism in elderly; epidemiological studies on risk factors for disability in elderly (the Pro.V.A study); genetic and environmental determinants of Longevity (the AKEA study); different gender impact of risk factors for atherosclerosis. She is the founder of the first “Centro Studi Italia no per la Salute e Medicina di Genere”.

C. Noel Bairey Merz, MD, FACC, Director, Women’s Heart Center, Director, Preventive and Rehabilitative Cardiac Center, Women’s Guild Chair in Women’s Health, Cedars-Sinai Medical Center. Dr. Bairey Merz’s research interests include women and heart disease, mental stress and heart disease, the role of exercise and stress management in reversing disease, and the role of nutrition in heart disease. Currently, she is chair of the National Institutes of Health (NIH)-sponsored WISE (Women’s Ischemic Syndrome Evaluation) initiative, which is investigating potential methods for more effective diagnosis and evaluation of coronary artery disease in women. A prolific lecturer, Dr. Bairey Merz, is a member of many professional organizations, some of which include the American Heart Association (AHA), the American College of Cardiology (ACC) and the NHLBI Advisory Council. She has appeared frequently in the media, recognized as an authority on the subject of heart disease and stress. In addition, Dr. Bairey Merz has received numerous awards and honors including the 2008 McCue Female Cardiologist of the Year Award. Dr. Bairey Merz received her bachelor’s degree from the University of Chicago and her medical degree from Harvard University. She completed her residency at the University of California, San Francisco, where she served as Chief Medical Resident. Dr. Bairey Merz also completed fellowships in clinical cardiology and nuclear cardiology at Cedars-Sinai Medical Center.
Matthias Barton is Professor and Attending Physician at the Department of Medicine at the University Hospital Zurich, Switzerland, with special clinical interests in cardiovascular medicine. After predoctoral training at Hannover Medical School, Zurich University School of Medicine, and Harvard Medical School and receiving his M.D., he completed specialty training in internal medicine and cardiology at Hannover Medical School and the University Hospitals Bern and Zurich. He is a Fellow of the American Heart Association (AHA), and his recent professional committee assignments include the Organization and Chairmanship of the 2008 AHA High Blood Pressure Council’s annual workshop, the International Advisory Committee of the International Conferences on Endothelin (ET-10, ET-11); he will be the incoming Chair of ET-12 in Cambridge, UK, in 2011. Barton has received Career Development Awards from the Deutsche Forschungsgemeinschaft and Swiss National Science Foundation (SCORE Award). He is a member of national and international medical and scientific societies, and serves on the Editorial Board or as Editor of prestigious journals such as the American Journal of Physiology, Arteriosclerosis Thrombosis, Vascular Biology, Cardiovascular Research, Circulation Research, and Hypertension. Dr. Barton’s research focuses on atherosclerosis and its risk factors, and over the past 20 years he has studied the role of gender differences, obesity, aging, and hypertension in cardiovascular disease, as well as new pathomechanisms of atherogenesis.


Karen J. Berkley, PhD is currently McKenzie Professor and Distinguished Professor of Psychology and Neuroscience at Florida State University in Tallahassee, FL. She received her Ph.D. from the University of Washington, Dept. of Physiology & Biophysics and Psychology. She has published more than 125 scientific articles/chapters, served on the editorial board of ten scientific journals, was a councilor for both the Society for Neuroscience and the International Association for the Study of Pain, is currently a councilor for the Organization for the Study of Sex Differences, served on three committees of the USA National Academy of Sciences, and speaks frequently at national and international scientific and medical conferences. For the past 46 years, Dr. Berkley has been investigating neural mechanisms of pelvic pain, currently focusing on pains of endometriosis and co-morbid disorders. She is also involved in translational issues concerning women’s health and sex and gender differences in pain.

Karl Broich received his medical degree from the University of Bonn. Professional training was done at the Depts. of Neurology and Psychiatry of
the University of Bonn (1995 to 2003).

This was interrupted by a DFG-sponsored fellowship in neuroimaging (MRI, PET, SPECT) at the Dept. of Nuclear Medicine at the Univ. of Philadelphia, USA. After board-certification for Neurology, Psychiatry and Psychotherapy he worked as senior-resident at the Dept. of Psychiatry and Psychotherapy in Halle/S. from 1993 to 1997 and acted as Vice-Head of the Dept until 2000. In 2000 he became head of the section Neurology/Psychiatry at the Federal Institute of Drugs and Medical Devices (BfArM) in Bonn. After serving as Dept.-Head at the BfArM since 2005 he became Deputy –Head of the Institute in 2009.

From 2004 to 2009 he served as German alternate member at the Committee for Medicinal products for Human Use (CHMP) at the European Medicines Agency (EMEA).

He is member of numerous German and International learned societies in the fields of CNS disorders and neuropsychopharmacology. His scientific focus is on clinical neuropsychopharmacology, neurodegenerative disorders and methodology of clinical trials. More than 90 articles and reviews are published by Dr. Broich.

Duska Dragun graduated at Medical School University of Zagreb in 1993 and received her doctorate from Humboldt University in Berlin. Until 2000 she worked in the clinical department and in laboratories of Professor Friedrich Luft at Franz Volhard Clinic and Max Delbrück Center for Molecular Medicine. In 2002 she was nominated as the Assistant Professor for Nephrology and Transplantation Medicine at the Medical Faculty of Charité and in 2008 received Full-Professorship. Her areas of expertise and interest is cardio-renal interaction, cardiovascular and transplantation immunology, and gender aspects in cardiovascular and renal medicine. She has published over 60 original articles (including articles in Cell and New England Journal of Medicine) and has been awarded numerous international and national awards, among which is also Theodor Freiichs Award of German Medical Society. As one of the founding members of the Center for Gender in Medicine she actively participates in several research and teaching programs of the Institute.

Gillian Einstein is Professor in the Department of Psychology and The Dalla Lana School of Public, Senior Scientist at Women's College Research Institute, Member of the Scientific Staff of Obstetrics and Gynecology at Sunnybrook Health Sciences Centre at the University of Toronto where she founded and directs the Collaborative Graduate Program in Women's Health. Founding member of the Organization for the Study of Sex Differences, and a temporary advisor to WHO on the psychological effects of female genital cutting/mutilation. She served on the faculty of the Department of Neurobiology, Duke University where she founded and directed the first year program, Exploring the Mind and was the recipient of the Alumni Undergraduate Teaching Award. She has been a Scientific Review Officer at the NIH, and the Associate Director of the Centre for Research in Women's Health at the University of Toronto. In 2010 she will be a visiting professor at Harvard University. She studies memory, sex differences, and our scientific understanding of the nervous system and self. Her research focuses on: 1) the neurobiological effects female genital cutting and 2) the effects of the ovulatory cycle on mood and memory; and 3) the representation of the female body in the brain.

Matthias Endres, M.D., Director, Department of Neurology, Charité University Hospital, Berlin, Germany, Director, Center for Stroke Research Berlin, Germany.

Matthias Endres is Professor of Neurology and Chief of Neurology at Charité-Universitätsmedizin in Berlin, Germany. He attained his undergraduate education from the Schools of Medicine in Bochum, New York, Toronto and Hamburg and trained in Neurology at the Medical University of Lübeck, Germany, and subsequently as a Research Fellow at the Massachusetts General Hospital, Harvard Medical School in Boston, USA. Professor Endres is also Director of the Center for Stroke Research in Berlin. Matthias Endres’ research interests involve preventive vascular mechanisms, cell death, regeneration and functional outcome in stroke. He has also contributed and actively participated in several clinical studies. He is on the Editorial Board of Stroke and the Journal of Cerebral Blood Flow and Metabolism. He has authored numerous publications in peer-reviewed scientific journals such as Journal of Clinical Investigation, Journal of Experimental Medicine, Nature Medicine, Circulation, Cir-
culation Research, and Stroke. Professor Endres has received several awards for his work, including the Adolf-Wallenberg Award from the German Society of Neurology and the Niels-Lassen Award from the International Society of Cerebral Blood Flow and Metabolism in 2000.

Flavia Franconi, MD (Department of Pharmacology, Sassari, Italy), is Full Professor of Pharmacology at the University of Sassari, Italy, and Coordinator of PhD in Gender Pharmacology at Sassari University. National Advisory Boards she belongs to are: National Toxicological Commitee, Research and Drugs Gender Guidelines, Menopause Guidelines, Women Health Committee of Health Minister, Committee “Valutazione Piani di Settore” of Italian Agency of Drug. Regional Advisory Board: Sardinian Drug Commitee. She is Coordinator of Gender Group of the Italian Pharmacological Society and appointed in the Advisory Board of the Centre for Biotechnology Development and Biodiversity Research, University of Sassari, Consorzio Interuniversitario Biotrusture e Biosistemi (INBB). Vice President of the Società Italiana per la Salute e la Medicina di Genere (Italian Society of Gender Health and Medicine). She acts as Referee for Alcohol and Alcoholism, American Journal of Clinical Nutrition, Archives of Medical Research, British Journal Clinical Nutrition, Diabetologia, European Journal Nutrition, Food and Chemical Toxicology IUBMB Life, Life Science, Pharmacological Research. Prof. Franconi published about 155 papers in international journals. Recently her activity is focused on gender differences in drug response in order to ameliorate therapy for both genders.

Marek Glezerman is incumbent of the Emma Fein Chair and chairman of the department of Obstetrics and Gynecology at Tel Aviv University and Chairman of Obstetrics and Gynecology at the Rabin Medical Center in Petah Tikva, Israel. In the past he chaired the departments of Obstetrics and Gynecology at Soroka Medical Center in Beer Sheba and Wolfson Medical Center in Holon, Israel. Prof. Glezerman studied medicine in Paris and Frankfurt, has done fellowships in pelvic surgery and gynecological oncology in Munich, Chicago and Montreal and Sabbaticals in Munich, Giessen and at the Weizmann Institute for Science in Israel. He serves on numerous national and international professional and academic committees and is past-president of the Israel Fertility Association. He is currently President of the Israel Society of Gender Medicine, member of the executive committee of the International Society for Gender Medicine, Chairman of the Israel National Steering committee of Obstetrics and Gynecology of the Maccabi Health Sick Fund, member of three National Councils at the Israel Ministry of Health (Obstetrics, Gynecology; Women's Health; Surgery) and is on the FIGO advisory boards for andrology and Gyne-Oncology. He has written/edited 4 books and published more than 300 chapters in obstetric and gynecologic texts and articles in professional journals.

Roland Hetzer obtained his M.D. and Ph.D. degrees at University of Munich1969. He spent time as a Medical Assistant, Haustetten City Hospital, Bavaria, 1969-1971. He did his Training in General Surgery, Trauma Surgery, Thoracic and Cardiovascular Surgery, at Hannover Medical School (Professors Borst, Pichlmayr, Tschenne1971-1976) and during a Fellowship in Cardiovascular Surgery at Pacific Medical Center, San Francisco (Dr. Gerbode) and Stanford University Medical Center (Dr. Shumway (1976-78). From 1978-1985 he was Staff Surgeon at the Department of Thoracic and Cardiovascular Surgery, Hannover Medical School, where he became assistant Professor (1979), and Associate Professor of Surgery (1983). 1983 he initiated the Heart Transplant Program of Hannover Medical School and became program director.

Since 1986 he is Chairman and Chief of Surgery, Deutsches Herzzentrum Berlin;

Since 1986 he is Professor of Surgery/Thoracic and Cardiovascular Surgery, Free University Berlin, and since 1997 Professor of Surgery/Thoracic and Cardiovascular Surgery, Humboldt University Berlin.

He obtained a number of honours and awards: Order of Merit of Berlin (1987);

Order of Merit of the Federal Republic of Germany (1995); Honorary Professorship from the Shanghai Second Medical University (1999) and from the Medical Center Nikiforov in St. Petersburg (2007); Honorary Doctorate from the University in Fujian (2000); 2001 from the Kardinal-Stefan-Wyszynski University in Warsaw; 2002 from the University in Sarajevo; 2006 from the Burdenko Academy in Voronech and
from the Pirogov Center in Moscow.


Joy Johnson is a Professor in the School of Nursing at the University of British Columbia where she serves as the co-director of two research units: NEXUS (a multidisciplinary research unit focused on the social context of health behaviour) and NAHBR (Nursing and Health Behaviour Research Unit). She holds an investigator award from the Canadian Institutes of Health Research. Her research focuses on health promotion and health behaviour change. Drawing on a broad array of theoretical perspectives her work explores the social, structural and individual factors that influence the health behaviour of individuals. A major thrust of her work focuses on sex and gender issues in substance use. She has a particular research interest in the development and treatment of tobacco dependence and other drug use. Her work has been recognized with numerous awards including the UBC Killam Research Prize.

Maria Kopp is medical doctor and clinical psychologist by profession. She received her Phd in Medical Sciences in 1982, and the Doctor of Hungarian Academy of Sciences degree in 1999. She is founder and the first director of the Institute of Behavioural Sciences at Semmelweis University Budapest between 1993-2007. Earlier she served as the head of clinical epidemiology and psychophysiology research laboratories in the Department of Psychiatry of the Semmelweis
University and she was the founder of a Psychosomatic Medicine outpatient department. At present she is leader of a Research Center on Mental Health of the Hungarian Academy of Sciences. She has published 301 scientific publications in interdisciplinary topics, with 567 independent citations, 25 book chapters and 9 books. She edited the „Heart Disease: Environment, Stress and Gender“, NATO Science Series, Life and Behavioural Sciences (with G. Weidner and M. Kristenson). She organized five large national representative surveys in Hungary. The aim of the surveys was to analyze the behavioural, demographic, social, way of life and psychological determinants of health deterioration in the Hungarian population. She is very much interested in the gender differences of health. She was the leader of the “Better Health for Women: a Global Health Program”.

**Stephanie Krüger**, M.D., Assistant Professor of Psychiatry, Head, Mood Disorders Division, Department of Psychiatry, Berlin University Medicine, Charité Campus Mitte, Germany, Education: 1985-1991 Medical Studies at the University of Essen, Germany; 1991-1992 Fellowship at the Mood and Anxiety Disorders Clinic, Center for Addiction and Mental Health (former Clarke Institute of Psychiatry), Toronto, Canada; 1992-1993 Resident at the Department of Psychiatry, University of Bochum, Germany; 1994-1995 Research fellow, Clarke Institute of Psychiatry, Mood Disorders Division and center of Neuroimaging, University of Toronto, Canada; 1996-1998 Residency Programme at the Departments of Psychiatry and Neurology, University of Bochum, Germany; 1999-2001 Postdoctoral Fellowship, Mood and Anxiety Disorders Division, Center for Addiction and Mental Health, University of Toronto, Canada; Professional Appointments: 2002-2003 and 2005-02/2007 Head, Mood Disorders Division, University of Dresden, Germany; 2003-2006 Visiting Professor, Mood and Anxiety Disorders Division and Center of Neuroimaging, Center for Addiction and Mental Health, University of Toronto, Canada; Since 03/2007 Head, Mood Disorders Division, Department of Psychiatry, Berlin University Medicine, Charité Campus Mitte, Germany

**Ronald Ma**, Associate Professor, Department of Medicine and Therapeutics, Chinese University of Hong Kong, Graduated from Cambridge University, UK. Undertook medical training in UK (Guy's and St Thomas's Hospitals, St Mary's Hospital, Hammersmith Hospital), joined Department of Medicine and Therapeutics, Prince of Wales Hospital in 1997. Trained in Endocrinology, Diabetes and Metabolism under Professor Clive Cockram, Professor Juliana Chan, Dr CC Chow and Prof Peter Tong in Hong Kong. Research fellow at the Joslin Diabetes Center, Harvard Medical School 2001-2002, studied molecular pathogenesis of diabetic complications under Dr George King (awarded William Randolph Hearst Foundation Fellowship). Currently Associate Professor, Department of Medicine and Therapeutics, Chinese University of Hong Kong. Vice-President of Diabetes Hongkong. Publications: 96 peer-reviewed articles and 5 book chapters. Received Young Investigator Awards from the Asian Pacific Society of Atherosclerosis and Vascular Diseases and the Hong Kong College of Physicians. Research interests: insulin resistance and the metabolic syndrome, Polycystic Ovary Syndrome (PCOS), genetics of diabetes and diabetic complications, pathogenesis of diabetic complications and cardiovascular complications in endocrine disorders

**Walter Malorni**. After his Biol Sci. Degree in 1976 in the Lab. Psychopharmacology carried out with the Nobel prize Daniel Bovet, from 1978 to 1983. He was Fellow at the Regina Elena Institute for Cancer Research, Rome, Italy. From 1984 to 1988. He was Researcher in the Department of Ultrastructures, Istituto Superiore di Sanita’, Rome where from 1988 he was the Head of the Section of Subcellular Pathology. Nowadays is Head of the Section “Cell aging and degeneration” at the Department of Drug Research and Evaluation at Istituto Superiore di Sanita’ (Italian National Institute of Health). Since 1998 Dr. Malorni was also professor at the University of Modena and of L’Aquila teaching “Cellular toxicology” and “Clinical biochemistry” and at the University of of L’Havana (Cuba) and San Paulo (Brazil) teaching cell pathology. He is reviewer for more than 20 international journals for Italian and international projects. He is author of more than 220 articles included in SCI. Granted from Telethon, National Research Council, Italian Ministry of Research, Italian Ministry of Health, European Community, National Institute of Health (USA). His main interests are focused on cell degeneration and apoptosis in cancer.
Saralyn Mark, MD, an endocrinologist, geriatrician and women’s health specialist, was the first Senior Medical Advisor to the Office on Women’s Health within the Department of Health and Human Services and the National Aeronautics and Space Administration (NASA) for ten years. As Senior Medical Advisor, Dr. Mark was responsible for the development and analysis of initiatives and programs on emerging technologies, public health preparedness, physician workforce issues, sex and gender based medicine and women’s health on earth and in space. Dr. Mark is now President of SolaMed Solutions, LLC. In this capacity, she serves as a medical and scientific policy advisor to organizations and agencies including NASA, the World Health Organization and the Cook Group. Dr. Mark is an Associate Professor adjunct at the Yale University School of Medicine in the Departments of Medicine and Obstetrics and Gynecology as well as at the Georgetown University School of Medicine. Dr. Mark is also an Affiliate Professor and Distinguished Senior Fellow in the School of Public Policy at George Mason University. She is an alumna of the New York University School of Medicine and Barnard College of Columbia University and completed her residency, fellowships and first academic appointment at the University of California at San Francisco School of Medicine (UCSF). She has published and delivered over 400 lectures in the United States and abroad and has chaired and served on over 50 advisory boards and commissions. Dr. Mark continues to foster the development of innovative programs and policies that affect the lives of men and women around the world.

Masako Matsuda, M.D. is a cardiologist with a special interest in women’s health. She has lectured regionally and nationally on topics such as preventive care for women and primary care in women’s clinics. She is currently chief of the Women’s Clinic at Yamaguchi University Hospital and professor for Division of Laboratory Sciences, Faculty of Health Sciences, Yamaguchi University Graduate School of Medicine.

Dr. Matsuda is a graduate of Yamaguchi University School of Medicine in Japan. She had a training of echocardiography for 2 years at the Mount Sinai Hospital of Cleveland in the U.S.A. She had a training of cardiology at the 2nd Department of Internal Medicine, Yamaguchi University Hospital after coming back from U.S. Dr. Matsuda went back to the Mt. Sinai Hospital later and was involved in the basic research on the effect of estrogen to the cardiovascular system. She has been active with giving lectures on gender-specific medicine for the education of medical professionals and lay people. She is co-editor of the book “The handbook of Women’s Health Care”.

Jean-Jacques Mercadier, born 16th February 1953, M.D., Ph.D., Professor of Physiology and Medicine at Université Paris Diderot (Paris 7), Cardiologist at Groupe Hospitalier Bichat – Claude Bernard, Paris, Head of non-invasive cardiovascular investigation laboratory, Department of physiology and non invasive investigations and Department of cardiology, Bichat – C. Bernard hospital, Head of “Heart re-modelling and failure” research group at Inserm U698, Bichat – C. Bernard hospital, Head of Institut Claude Bernard and CEFI (Centre d’explorations fonctionnelles intégrées) core facility for mouse cardiovascular phenotyping at Université Paris Diderot school of medicine, Member of EUGeneHeart (www.eugeneheart.com), integrated project of the 6th Framework Programme dedicated to the genomics of cardiomyocyte signalling to treat and prevent heart failure (HF), JJ Mercadier started his activity of basic research in cardiology in 1979 when he joined the group of K. Schwartz at Inserm U127 (Hôpital Lariboisière). He dedicated his career to investigation of the molecular and cellular remodelling of the heart submitted to chronic biomechanical stress. Especially, he was the first to demonstrate (1) myosin heterogeneity in the human heart and the changes in its expression pattern during cardiac hypertrophy and failure; (2) down regulation of the Ca^{2+}-ATPase of the sarcoplasmic reticulum (SERCA) of cardiac myocytes in failing human hearts. This is now recognised as one of the main pathophysiological mechanisms responsible for HF and HF associated sudden cardiac death. His current research interests are: molecular mechanisms of progression to HF; role of sarcoplasmic reticulum and ryanodine receptor (RyR) dysfunction in HF and HF-associated arrhythmias and sudden cardiac death; identification of new molecular targets to treat and prevent HF.

Virginia M. Miller is Professor of Surgery and Physiology in the College of Medicine, Mayo Clinic. She received her Ph.D. in physiology from the Uni-
University of Missouri in Columbia, MO, and held postdoctoral fellowships at the University of Virginia and the University of Delaware before coming to the Mayo Clinic. She received her Master's of Business Administration from the Carlson School of Management at the University of Minnesota. Dr. Miller was the first director for the Office of Women's Health at Mayo during which time she secured Mayo's participation in the Kronos Early Estrogen Prevention Study (KEEPS). In addition to this project and her mentoring activities, she serves on the editorial board for several cardiovascular journals and on review panels for the sections for the National Institutes of Health and the American Heart Association. She served as a member of the governing council for the American Physiological Society (APS) and is currently President of the Organization for the Study of Sex Differences (OSSD).

**Maria Grazia Modena** is Professor of Cardiology at the University of Modena and Reggio Emilia, Director of the Institute of Cardiology and of the Department of Emergency-Acceptance at the Policlinico of Modena, Italy. At the same Institute she created and directs since 1996 the “Women’s Clinic” dedicated to the research and care of all post-menopausal related disease: 3,800 women have been actually evaluated. Since 2006 she created and directs the “Early Atherosclerosis Clinic” dedicated to the evaluation of cardio-metabolic risk of both gender: 1,550 subjects have been actually evaluated, testing endothelial function, vascular risk (IMT, Ct-Calciun score, arterial stiffness, insulin-resistance) and depression score. The two Clinics are strictly related and have collaborations with other Clinics at the Policlinico of Modena, such as Rheumatology, Endocrinology, Gynecology, Psychiatry, Nutrition’s Clinic. She is member of Italian Society of Cardiology, Italian Society of Echocardiography, American Society of Echocardiography, Fellow American College of Cardiology (FACC), Fellow European Society of Cardiology (FESC), Member of the Committee “Women Health” for the Italian Ministry of Health, Member of International Society of Gender Medicine. She has been Chairman of the Committee of the “Women in Cardiology”, European Society of Cardiology, President Italian Society of Echocardiography, President Italian Society of Cardiology.

**Ann-Marie Nobelius.** She completed an undergraduate medical sciences degree with pharmacology and physiology majors and biochemistry and microbiology minors at Monash University in 1988. She then completed a Masters in Reproductive Sciences at Monash in 1990 with a thesis in endocrine research. Following a stint in medical research she developed an interest in HIV prevention. Realising that HIV prevention rests largely on the modification of social behaviour she returned to university to study social sciences, particularly gender studies and qualitative research techniques for her PhD in Public Health. Originally employed in November 2001 to write several reports for the Commonwealth Government on the Gender Issues in Rural Practice Project for Jo Wainer in the School of Rural Health, Monash University, she became the Project Officer for the Gender Working Party in July of 2002. In this role she has been responsible for demonstrating the need for gender mainstreaming in the new 5 year medical curriculum at Monash. This involved advocating for the mainstreaming by developing relationships with key faculty and curriculum ‘gatekeepers’, outlining the rationale for mainstreaming and demonstrating its value through the development of gender-specific curriculum and assessment.

She is now employed by the Centre for Medical and Health Sciences Education (CMHSE), in the Faculty of Medicine, Nursing and Health Sciences to research and improve the gender competence in the medical curriculum and is working on establishing a network to support the integration of gender competence in to medical education world wide.

**Kathryn O’Callaghan** is a Biomedical Engineer and Scientific Reviewer of cardiovascular devices at the US Food and Drug Administration. At FDA, Katie reviews premarket submissions in a variety of product areas including mechanical circulatory support systems, heart valves, coronary drug-eluting stents, and other interventional cardiology devices. She is also leading the effort at FDA’s Center for Devices and Radiological Health for policy development to improve the inclusion and analysis of women in cardiovascular device trials.

Prior to coming to FDA, Ms. O’Callaghan worked as an engineering consultant in R&D for a medical device manufacturer of mechanical circulatory...
Support devices. She received a BS degree from the University of Pittsburgh in Bioengineering, with a dual concentration in Artificial Organs/Medical Devices and Biosystems/Signals, along with a BA in German Language.

Sabine Oertelt-Prigione studied Medicine at the University of Milan, Italy. After a successful graduation with a dissertation on the role of antinuclear autoantibodies in the pathogenesis of primary biliary cirrhosis, she started her residency in Internal Medicine followed by a fellowship in Internal Medicine and Hepatology. During her fellowship she spent several years at the University of California at Davis, CA, USA were she studied the impact of gender on autoimmune liver conditions and their pathogenesis under the supervision of Dr. M. E. Gershwin. Moreover, through a longstanding and ongoing collaboration with the group of Dr. P. Invernizzi in Milan, she was involved in the seminal work defining the role of X chromosome monosomy in autoimmunity. After completion of her fellowship, she joined the Institute of Gender in Medicine in January 2009. Here she is leading the pilot project “Gender Medicine” aimed at the definition of current knowledge and research topics in the field of sex/gender in medicine. Her other research interests include the role of sex and gender in drug prescription patterns and adverse event incidence, as well as imbalances in health care services attributable to sex and gender.

Vera Regitz-Zagrosek received her medical degree from Saarland University and did her postdoc training at the Max-Planck-Institute for Experimental Cardiology (Prof. Dr. W. Schaper) and at University of Madison, Wisconsin, Dept. of Biochemistry. She completed her residency at the German Heart Institute Munich in 1985 and became senior fellow at the German Heart Institute Berlin with responsibility for a large cardiovascular outpatient department. In 1995 she became professor in Internal Medicine at free University of Berlin and in 2002 the first and only German professor of Cardiovascular Disease in Women at the Charite Berlin/Humboldt University. In 2003, she founded the Berlin Institute for Gender in Medicine (GiM) at the Charite, the working group on cardiovascular disease in women at the German cardiac society (DGK), the German and International Societies for Gender in Medicine (DGesGM, IGM) and served as founding president in both. She is Task Force leader of the European Society Cardiology on cardiovascular diseases in pregnancy. She is the founder and speaker of the DFG Graduate Course GK 754 and the Research Group FOR 1054 on “Sex-specific mechanisms of myocardial hypertrophy”. In the large European IP Eugeneheart, she is project leader and task leader for gender. She is PI in the pilot project “Gender Medicine” sponsored by Federal Ministry of Education and Research (BMBF) and in the Erasmus project EUGIM. She acts as reviewer for national and international funding organizations and journals. She published over 150 scientific papers (including Nature Reviews) and numerous book chapters and organizes yearly congresses.

Kathryn Sandberg, Ph.D. is a tenured professor of medicine and physiology and director of the Center for the study of Sex Differences in health, aging and disease at Georgetown University in Washington, DC, USA. Dr. Sandberg has published extensively on the impact of one’s sex and the gonadal steroids, estrogen and testosterone, on the physiology of blood pressure control and the pathophysiology of hypertension and associated vascular and renal disease. She has been continuously funded by the USA National Institutes of Health for more than 15 years and has received prestigious awards for her work including an Established Investigator Award from the American Heart Association and a Distinguished Scientist Award from the Washington Academy of Sciences. Dr. Sandberg has served in leadership roles in numerous scientific organizations including as the founding President of the Organization for the Study of Sex Differences (ossdweb.org), President of Women in Nephrology, and Chair of the National American Heart Association Peer Review Committee. She has served on the editorial boards of several journals including currently, Hypertension and the American Journal of Physiology. She is also the Section Editor for Sex-based biology in the Journal of Women’s Health and Associate Editor for Gender Medicine.

Karin Schenck-Gustafsson, MD, Ph.D, FESC, Professor, Karolinska Institutet, Stockholm, Sweden 1973, Specialist, Cardiology 1979, Internal Medicine 1980, Ph.D, 1982, Associate Professor 1985, Professor Cardiology, 2006. Present position:

Londa Schiebinger is the John L. Hinds Professor of History of Science and the Barbara D. Finberg Director of the Clayman Institute for Gender Research at Stanford University. She received her Ph.D. from Harvard University.

Her books include: *The Mind Has No Sex? Women in the Origins of Modern Science*; the prize-winning *Nature’s Body: Gender in the Making of Modern Science*; *Has Feminism Changed Science?* (Harvard University Press, 1999); the prize-winning *Plants and Empire: Colonial Bioprospecting in the Atlantic World; Gendered Innovations in Science and Engineering; and Agnotology: The Making and Unmaking of Ignorance*. Schiebinger is the recipient of numerous prizes and awards; her work has been translated into ten languages.

Her research has been featured in the *New York Times*, the *New Yorker*, *Die Zeit*, *Frankfurter Allgemeine Zeitschrift*, *La Vanguardia*, at the London Museum of Natural History, on NPR, and elsewhere. She speaks and consults nationally and internationally on issues concerning women and gender in science, medicine, and engineering.

**George Sopko** is a senior cardiology expert in the Division of Cardiovascular Science (DCVS), the National Heart, Lung, and Blood Institute (NHLBI), at the National Institutes of Health (NIH) since 1987. He plans, develops, directs, and coordinates basic, applied, and clinical research in cardiovascular disease, including directing/co-directing many major international clinical studies or trials (TIMI2, CASS, BARI, WISE, ESCAPE, BARI2D, OAT, STICH, Resuscitation Outcomes Consortium, and Heart Failure Clinical Research Network).

He received his first MD from Masaryk University, Czech Republic in 1967. In 1969 he entered the US, worked as manual laborer and orderly while learning English, received his second MD from Case Western Reserve University; completed training in internal medicine (Georgetown University), cardiology (University of Vermont), and cardiovascular disease prevention and epidemiology as NIH Postdoctoral Fellow receiving MPH (University of Minnesota (UM)) where he was also a cardiologist for the Multiple Risk Factor Intervention Trial and the Lipid Research Clinics program at UM. In 1983, he joined St. Louis University developing the Cardiovascular Risk Reduction Center.

He has served as the NIH or NHLBI representative or co-chaired multiple task forces/panels (NIH/ACC/AHA Task Force on Evidence-Based Guidelines for Cardiovascular Disease Prevention in Women; ACC/AHA Task Force on New Heart Failure Guidelines; Cardiac Rehabilitation Guidelines Project by the AHCPR/NHLBI, International Heart Failure Molecular and Physiological Research Working Group, and Federal Council on Emergency Medical Care).

Dr. Sopko has received a number of awards (notably the Combat Casualty Care Research Program Award for Excellence from the Department of Defense, and several NIH Merit Awards), and has been a guest reviewer (Journal of the American Medical Association, Circulation, and the Cardiac Rehabilitation). He has over 190 scientific publications in peer review journals. He received the American Board of Internal Medicine and Cardiovascular Diseases certifications.

**Meir Steiner**, MD, PhD, FRCPC graduated magna cum laude receiving
his MD from the Tel Aviv University in 1968 and his PhD in Neurosciences in 1979 from the University of Michigan, Ann Arbor.

He is the Founding Director of the Women’s Health Concerns Clinic at St. Joseph’s Healthcare, Hamilton, Ontario, Canada. In addition to his current positions as Professor of Psychiatry & Behavioural Neurosciences and Obstetrics & Gynecology at McMaster University and as Professor, Department of Psychiatry and the Institute of Medical Sciences at the University of Toronto, he is also an Adjunct Scientist at the Hospital for Sick Children in Toronto.

Professor Steiner’s primary areas of research and publications have been the pathophysiology and psychopathology of mood and anxiety disorders related to women’s reproductive cyclicity. He has received continuous research funding since 1971, and has more than 800 publications and abstracts. He regularly supervises medical, graduate and postgraduate students, and postdoctoral fellows at McMaster University and the University of Toronto. He is the editor-in-chief of the Archives of Women’s Mental Health. He acts as a medical consultant, as an advisory board member and is on the speakers bureau of several major pharmaceutical companies.

Brigitte Stiller is director of the clinic for Congenital Heart Disease / Pediatric Cardiology at the University hospital of Freiburg, and has the professorship for Pediatric Cardiology at the Freiburg University since Januar 2008. Her cardiology training at the German Heart Institute of Berlin started in 1993, where she afterwards had an appointment as consultant in pediatric cardiology. She had her graduation as a pediatric intensivist in Berlin in 2000, her graduation as a pediatric cardiologist in Berlin in 1998 and the graduation as a pediatrician in Cologne in 1993, working as a physician since 1988. Her research activities focus on myocardial failure in children, pediatric cardiac mechanical support and heart transplantation. She is author of more than 70 papers published in peer reviewed journals and is member of several societies like DPK, DGPK, ESPR, AEPC and DEGUM. Brigitte Stiller is active in the steering committee of the Kompetenznetz für An geborene Herzfehler (BMBF), where she is the head of one of the main projects (right heart failure).

Marco Stramba-Badiale (born in Milan, Italy; 1958) MD, PhD, Specialist in Cardiology, Specialist in Gerontology and Geriatrics; Adjunct Professor at the Board of Cardiology, School of Medicine, University of Pavia; Director of the Department of Rehabilitation Medicine and of the Laboratory of Research in Rehabilitation and Cerebrovascular Medicine at the Istituto Auxologico Italiano of Milan. His major areas of expertise are primary and secondary prevention of cardiovascular diseases, the arrhythmogenic disorders, especially the long QT syndrome, the effect of gender on cardiovascular disease. In 2005 he organized and chaired the Policy Conference on Cardiovascular Diseases in Women of the European Society of Cardiology and he contributed in 2007 to the Task force of the European Society of Cardiology and the International Menopause Society on the Management of cardiovascular risk in perimenopausal women. He is currently a member of the Advisory Board of the Euroheart study on cardiovascular risk in women of the European Society of Cardiology and the European Heart Network, funded by the European Union. He is invited to participate in international meetings as speaker and chairman; he serves the leading cardiology journals as reviewer and is the author of more than 100 publications, books or chapters in books.

Jeanette Strametz-Juranek, Specialist in internal medicine and cardiology, professor of internal medicine at the Medical University of Vienna, Austria/Dep. of Cardiology

Board member of the Int. Society of Gender Medicine, Founder and President of the Austrian Society of Gender-Specific Medicine

Hannah Valantine, MD, MRCP; Dr. Valantine is Professor of Cardiovascular Medicine and Senior Associate Dean for Diversity and Leadership at Stanford University. She directs Clinical Transplant Research, focusing on the pathophysiology of cardiac allograft vasculopathy (CAV), with a particular emphasis on the role of infection. Her other scholarly interests include heart disease in women and the conduct of clinical trials. Her has been the recipient of several research grants from the NIH and AHA, including Co-Principal Investigator for an NIH-funded Program Project Grant to study the role of cytomegalovirus infection in CAV pathophysiology.

Dr. Valantine received her cardiology
training at the Royal Postgraduate Medical School London, and a postdoctoral research fellowship at Stanford University where her research included Doppler echocardiography for diagnosis of acute reaction; risk factors in CAV; and the application of intravascular ultrasound for monitoring CAV. She was promoted to Professor in 2000.

In November 2004 Dr. Valantine was appointed Senior Associate Dean for Diversity and Leadership, charged with building programs that support faculty career development and foster a diverse leadership capacity in the school of medicine. She is an affiliate faculty member of the Cayman Institute for Gender Research at Stanford. She has served on several editorial boards including Journal of Heart & Lung Transplant, Transplantation and Circulation, authored over 150 peer-reviewed publications and 10 book chapters, and has been an invited speaker at over 100 lectures. She is married and has two daughters, and a passion for travel, fine dining, visits to spas, and exercise.

Dorothy E. Vatner, M.D. She received her BS from the University of California (1971), and MD (1975) from the University of Virginia. She completed her residency in pediatrics and pediatric cardiology fellowship at Children’s Hospital Medical Center and Harvard Medical School (HMS) (1980). Then she completed a research fellowship at Massachusetts General Hospital (MGH) and HMS (1983). In 2000, she became the Pfund Endowed Professor in the Department of Medicine at UMDNJ-NJMS.

As a student she worked with Robert Lefkowitz at MGH, and developed an interest in beta-adrenergic receptor (BAR) signaling, resulting in several genetically engineered mouse models of altered BAR signaling. Other interests include gender differences in heart disease, aging/longevity, cardiac hypertrophy, ischemia, and failure. She is AJP consulting editor, and editorial board member for several journals. She served on several National Institutes of Health (NIH) grant review committees. She is principal investigator (PI) for an NIH program project “Mechanisms of myocardial ischemia and reperfusion”; PI on NIH program project “Longevity and stress-resistance”, PI on two NIH-RO1 grants “Age and gender differences in apoptosis and stem cells”, and “Rescue of BAR cardiomyopathy by inhibition of adenyly cyclase”. Her publications include 118 peer-reviewed articles, including articles in Cell, JCI, Circulation Research, Circulation, and JBC.

Gerdi Weidner, PhD, Dr. Weidner joined the Biology Department at San Francisco State University in 2009, returning to academia after directing research programs in cardiovascular disease and prostate cancer at the Preventive Medicine Research Institute in Sausalito, CA. Prior to her arrival in California, Dr. Weidner was Professor of Psychology and Preventive Medicine (from 1984-2001) at the State University of New York at Stony Brook (now “Stony Brook University”). She also conducts research at the Johannes Gutenberg-University in Mainz, Germany, where she was awarded an Alexander von Humboldt Research Award and a Mercator Professorship from the German Research Foundation Deutsche Forschungsgemeinschaft.

Dr. Weidner examines the role of stress, environment, and gender in the etiology and treatment of chronic diseases, such as cardiovascular disease, diabetes mellitus, and cancer. She collaborates with investigators from a variety of disciplines (e.g., psychology, medicine, public health, epidemiology).

Her research has been funded by NIH, the American Heart Association, DAAD, NATO, the German Research Foundation, and Eurotransplant.

Claudia Witt, MD, MBA holds the Chair for Complementary Medicine Research. She is Vice Director of the Institute of Social Medicine, Epidemiology and Health Economics at the Charité University Medical Center in Berlin, Germany. In addition she serves as President elect of the International Society for Complementary Medicine Research (ISCMR). Her numerous publications include clinical and epidemiological studies as well as basic research on complementary medicine.

Wolfram-Hubertus Zimmermann is the Director of the Department of Pharmacology at the University Medical Center of the Georg-August-University in Göttingen. He graduated from Medical School at the University in Hamburg in 1998 and subsequently completed a postgraduate school for Molecular Biology at the Center of Molecular Neurobiology at the University Hamburg. He trained at the Institutes of Pharmacology and Toxicology at the Friedrich-Alexander University and the University Medical Center in Hamburg, where he was promoted to the rank of an Assistant Professor (Juniorprofes-
Dr. Zimmermann received several awards including the Oskar-Lapp-Award and the Albert-Fraenkel Award from the German Society of Cardiology. He is presently a member of the executive board of the German Society of Cardiology. Dr. Zimmermann’s research interests include cardiac tissue engineering as well as mechanisms of cardiac hypertrophy and development, all aiming at the development of novel treatment modalities for heart failure.
Prof. Dr. Jean-Francois Arnal  
INSERM U858 - I2MR - Equipe 9 -  
BP 84225  
F-31432 TOULOUSE Cedex 4, France  
Email: Jean-Francois.Arnal@inserm.fr

Prof. Dr. Karl Broich  
Vizepräsident Bundesinstitut für Arzneimittel und Medizin-  
produkte (BfArM)  
Kurt-Georg-Kiesinger Allee 3  
D-53175 Bonn, Germany  
Email: k.broich@bfarm.de

Prof. Dr. Michael Bader  
Molecular Biology of Peptides Hormones  
Max Delbrück Center for Molecular Medicine (MDC)  
Robert Rössle Str. 10  
D-13125 Berlin, Germany  
Email: mbader@mdc-berlin.de

PD Dr. Michael Dandel  
Chirurgie – Deutsches Herzzentrum Berlin (DHZB)  
Augustenburger Platz 1  
D-13353 Berlin, Germany  
Email: dandel@dhzb.de

Prof. Dr. Giovannella Baggio  
Hospital Unity of Internal Medicine  
Azienda Ospedaliera di Padova  
Università di Padova  
Padova, Italy  
Email: giovannella.baggio@sanita.padova.it

Prof. Dr. Duska Dragun  
Med. Klinik mit Schwerpunkt Nephrologie und internistische  
Intensivmedizin, Charité - Universitätsmedizin Berlin  
Augustenburger Platz 1  
D-13353 Berlin  
Email: duska.dragun@charite.de

Prof. Dr. Michael Baier Merz  
Director Women’s Heart Center, Director Preventive and  
Rehabilitative Cardiac Center, Women’s Guild Endowed  
Chair in Women’s Health, Heart Institute, Cedars-Sinai  
Medical Center  
444 S. San Vicente Blvd, Suite 600  
Los Angeles, CA 90048, USA  
Email: merz@cshs.org

Prof. Dr. Matthias Barton  
Klinik und Poliklinik für Innere Medizin  
UniversitätsSpital Zürich  
Rämistrasse 100  
CH-8091 Zürich, Switzerland  
Email: matthias.barton@usz.ch

Prof. Dr. Matthias Endres  
Klinik und Poliklinik für Neurologie, CCM/CVK, Charité -  
Universitätsmedizin Berlin  
Charitéplatz 1  
D-10117 Berlin  
Email: matthias.endres@charite.de

Dr. Magnus Baumhäkel  
Department of Cardiology  
University Hospital of the Saarland  
Kirbergerstr.  
D-66421 Homburg Saar, Germany  
Email: matthias.barton@usz.ch

Dr. Xiao-han Fan  
Department of Cardiology and Hypertension Division  
Peking Union Medical College  
167 Bei Li Shi Lu  
Beijing 100037, China  
Email: ehan4348@163.com

Prof. Dr. Karen J. Berkley  
Program in Neuroscience/Psychology  
Florida State University  
1107 W. Call St., P.O. Box 3064301  
Tallahassee, FL 32306-4301, USA  
Email: kberkley@psy.fsu.edu

Prof. Dr. Flavia Franconi  
Department of Pharmacology  
Università degli Studi di Sassari  
Via Muroni 23 a  
I-Sassari 07100, Italy  
Email: franconi@uniss.it

Dr. Emma J. Birks  
National Heart and Lung Institute  
Imperial College London  
South Kensington Campus  
London SW7 2AZ, UK  
Email: e.birks@imperial.ac.uk

Prof. Dr. Marek Glezerman  
Rabin Medical Center & Tel Aviv University  
Jabotinsky Road  
Petah Tikva 49414, Israel  
Email: mglezerman.com
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Address</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Dr. Annette Grüters-Kieslich</td>
<td>Dekanin Charité - Universitätsmedizin Berlin</td>
<td>Charitéplatz 1, D-10117 Berlin</td>
<td><a href="mailto:v-dekan@charite.de">v-dekan@charite.de</a></td>
</tr>
<tr>
<td>Dr. Katharina Hein</td>
<td>Gruppe Lebenswissenschaften 1, Deutsche Forschungsgemeinschaft (DFG)</td>
<td>Kennedyallee 40, D-53175 Bonn</td>
<td><a href="mailto:Katharina.Hein@dfg.de">Katharina.Hein@dfg.de</a></td>
</tr>
<tr>
<td>Prof. Dr. Dr. hc. Roland Hetzer</td>
<td>Ärztlicher Direktor Deutsches Herzzentrum Berlin</td>
<td>Augustenburger Platz 1, D-13353 Berlin</td>
<td><a href="mailto:kendall@dzhb.de">kendall@dzhb.de</a></td>
</tr>
<tr>
<td>Prof. Dr. Denise Hilfiker-Kleiner</td>
<td>Molecular Cardiology, Dept of Cardiology and Angiology, Medizinische Hochschule Hannover (MHH)</td>
<td>Carl-Neuberg-Str. 1, D-30625 Hannover, Germany</td>
<td><a href="mailto:hilfiker.denise@mh-hannover.de">hilfiker.denise@mh-hannover.de</a></td>
</tr>
<tr>
<td>Prof. Dr. Margarethe Hochleitner</td>
<td>Vice Rector for Human Resources, Human Resources Development and Gender Equality, Medical University Innsbruck</td>
<td>Innsbruck, Innrain 66, A-6020 Innsbruck, Austria</td>
<td><a href="mailto:margarethe.hochleitner@i-med.ac.at">margarethe.hochleitner@i-med.ac.at</a></td>
</tr>
<tr>
<td>Prof. Dr. Joy Johnson</td>
<td>School of Nursing, The University of British Columbia</td>
<td>302 6190 Agronomy Rd, Vancouver, BC, Canada V6T 1Z3</td>
<td><a href="mailto:joy.johnson@ubc.ca">joy.johnson@ubc.ca</a></td>
</tr>
<tr>
<td>Prof. Dr. Ulrich Kintscher</td>
<td>Center for Cardiovascular Research, Charité - Universitätsmedizin Berlin</td>
<td>Hessische Str. 3-4, D-10115 Berlin, Germany</td>
<td><a href="mailto:ulrich.kintscher@charite.de">ulrich.kintscher@charite.de</a></td>
</tr>
<tr>
<td>Prof. Dr. Ineke Klinge</td>
<td>School for Public Health and Primary Care, Faculty of Health, Medicine and Life Sciences, Dept. of Health, Ethics and Society</td>
<td>Maastricht University, The Netherlands</td>
<td>K <a href="mailto:Klinge@HES.unimaas.nl">Klinge@HES.unimaas.nl</a></td>
</tr>
<tr>
<td>Prof. Dr. Maria Kopp</td>
<td>Institute of Behavioural Sciences, Semmelweis University</td>
<td>Nagyvárad tér 4, H-1089 Budapest, Hungary</td>
<td><a href="mailto:kopmar@net.sofe.hu">kopmar@net.sofe.hu</a></td>
</tr>
<tr>
<td>OÄ PD Dr. Stephanie Krüger</td>
<td>Klinik für Psychiatrie und Psychotherapie CCM</td>
<td>Charité - Universitätsmedizin Berlin</td>
<td><a href="mailto:stephanie.krueger@charite.de">stephanie.krueger@charite.de</a></td>
</tr>
<tr>
<td>Prof. Dr. Toine Lagro-Janssen</td>
<td>Women's Studies Medicine, Radbou University Nijmegen Medical Centre</td>
<td>HAG 117 P.O. Box 9101, NL-6500 HB Nijmegen, The Netherlands</td>
<td><a href="mailto:A.Lagro-Janssen@elg.umcn.nl">A.Lagro-Janssen@elg.umcn.nl</a></td>
</tr>
<tr>
<td>Prof. Dr. Ronald Ma</td>
<td>Department of Medicine and Therapeutics, Chinese University of Hong Kong</td>
<td>Hong Kong SAR, China</td>
<td><a href="mailto:rcwma@cuhk.edu.hk">rcwma@cuhk.edu.hk</a></td>
</tr>
<tr>
<td>Dr. Walter Malorni</td>
<td>Department of Drugs, National Institute of Health (Istituto Superiore di Sanità)</td>
<td>Rome, Italy</td>
<td><a href="mailto:walter.malorni@iiss.it">walter.malorni@iiss.it</a></td>
</tr>
<tr>
<td>Prof. Dr. Christine Maric</td>
<td>Department of Physiology and Biophysics, Arthur C. Guyton Research Center, University of Mississippi Medical Center</td>
<td>Rm G257 2500 N State St, Jackson, MS 39216, USA</td>
<td><a href="mailto:cmaric@physiology.umsmed.edu">cmaric@physiology.umsmed.edu</a></td>
</tr>
<tr>
<td>Prof. Dr. Saralyn Mark</td>
<td>National Aeronautics and Space Administration, Adj Associate Professor of Medicine and Ob/GYN-Yale and George-town Schools of Medicine</td>
<td>Washington, USA</td>
<td><a href="mailto:saralyn.mark@nasa.gov">saralyn.mark@nasa.gov</a></td>
</tr>
<tr>
<td>Prof. Dr. Ulrike Maschewsky-Schneider</td>
<td>Berlin School of Public Health, Charité - Universitätsmedizin Berlin</td>
<td>Oudenarder Str. 16 – Haus A, D-13347 Berlin</td>
<td><a href="mailto:ulrike.maschewsky-schneider@charite.de">ulrike.maschewsky-schneider@charite.de</a></td>
</tr>
<tr>
<td>Prof. Dr. Masako Matsuda</td>
<td>Faculty of Health Sciences, Yamaguchi University School of Medicine</td>
<td>1-1-1 Kogushi, Ube, Yamaguchi 755-8505 Japan</td>
<td><a href="mailto:matsudam@yamaguchi-u.ac.jp">matsudam@yamaguchi-u.ac.jp</a></td>
</tr>
<tr>
<td>Prof. Dr. Jean-Jacques Mercadier</td>
<td>Dept. of Physiology and INSERM U 698, G. H. Bichat-Claude Bernard</td>
<td>46 rue Henri Huchard, F-75018 Paris</td>
<td><a href="mailto:jjmercadier@wanadoo.fr">jjmercadier@wanadoo.fr</a></td>
</tr>
</tbody>
</table>
Speakers and Chairs

Prof. Dr. Virginia M. Miller
Surgical Research, Medical Sciences 4-62
Mayo Clinic
200 First Street SW
Rochester, MN 55905 USA
Email: miller.virginia@mayo.edu

Prof. Dr. Maria Grazia Modena
Facoltá di Medicina e Chirurgia
Università Di Modena E Reggio Emilia
Via Largo Del Pozzo, No 71
Modena, Italy
Email: mariagrazia.modena@unimore.it

Dr. Ann-Maree Nobelius
Centre for Medical and Health Sciences Education
Faculty of Medicine, Nursing and Health Sciences
Monash University
Melbourne, Victoria, Australia
Email: annmaree.nobelius@med.monash.edu.au

Kathryn M. O’Callaghan
Biomedical Engineer, Div. of Cardiovascular Devices (CDRH/ODE), Food and Drug Administration (FDA)
10903 New Hampshire Ave
Silver Spring, MD 20993
Email: Kathryn.OCallaghan@fda.hhs.gov

Prof. Dr. Rodolfo Paoletti
Emeritus of Pharmacology
Università degli Studi di Milano
Via Balzaretti 9
Milano, Italy
Email: mariagrazia.modena@unimore.it

Prof. Dr. Burkert Pieske
Abteilung für Kardiologie
Medizinische Universität Graz
Auenbruggerplatz 15
A-8036 Graz, Austria
Email: burkert.pieske@medunigraz.at

Prof. Dr. Jane F. Reckelhoff
Physiology and Biophysics
University of Mississippi Medical Center
2500 N. State Street
Jackson, MS 39216-4505, USA
Email: jreckelhoff@physiology.umsmed.edu

Prof. Dr. Vera Regitz-Zagrosek
Institute of Gender in Medicine (GIM), Center for Cardiovascular Research (CCR), Charité - Universitätsmedizin Berlin
Hessische Str. 3-4, D-10115 Berlin, Germany

Dr. Sabine Oertelt-Prigione
Institute of Gender in Medicine (GiM)
Charité – Universitätsmedizin Berlin
Luisenstr. 65
D-10117 Berlin, Germany
Email: sabine.oertelt-prigione@charite.de

Prof. Dr. Brigitte Stiller
Klinik III; Angeborene Herzfehler/Pädiatrische Kardiologie,
Universitätsklinikum Freiburg
Mathildenstr. 1
D-79106 Freiburg, Germany
Email: brigitte.stiller@uniklinik-freiburg.de

Dr. Marco Stramba-Badiale
Dep. of Cardiology, IRCCS Istituto Auxologico Italiano
Via Spagnoletto, 3, I-20149 Milan, Italy
Email: stramba_badiale@auxologico.it
Prof. Dr. Jeanette Strametz-Juranek  
Dept. of Cardiologie & Stabsstelle Gender Mainstreaming  
Medical University of Vienna  
Währinger Gürtel 18-20  
A-1090 Vienna, Austria  
Email: jeanette.strametz-juranek@meduniwien.ac.at

Prof. Dr. Gerdi Weidner  
Department of Biology, San Francisco State University,  
Romberg Tiburon Center  
3150 Paradise Drive  
Tiburon, CA 94920, USA  
Email: gweidner@sfsu.edu

Prof. Dr. Doris A. Taylor  
Center for Cardiovascular Repair  
7-105A NHH University of Minnesota  
312 Church Street SE  
Minneapolis MN 55455, USA  
Email: dataylor@umn.edu

Prof. Dr. Claudia M. Witt  
Institute for Social Medicine, Epidemiology and Health Economics, Charité – Universitätsmedizin Berlin  
Luisenstr. 57  
D-10117 Berlin, Germany  
Email: claudia.witt@charite.de

Prof. Dr. Hannah A. Valantine  
Senior Associate Dean  
Stanford University School of Medicine  
300 Pasteur Drive Alway Bldg Suite M121  
Stanford, California 94305-5119, USA  
Email: hvalantine@stanford.edu

Prof. Dr. Wolfram-Hubertus Zimmermann  
Department of Pharmacology, University Medical Center Goettingen  
Robert-Koch-Str. 40  
D-37075 Goettingen, Germany  
Email: w.zimmermann@med.uni-goettingen.de

Prof. Dr. Dorothy E. Vatner  
Departments of Medicine and Cell Biology & Molecular Medicine and the Cardiovascular Research Institute, University of Medicine & Dentistry of New Jersey, NJMS  
185 South Orange Ave. MSB G-609  
Newark, NJ 07103, USA  
Email: vatnerdo@umdnj.edu
Hotel Floorplan