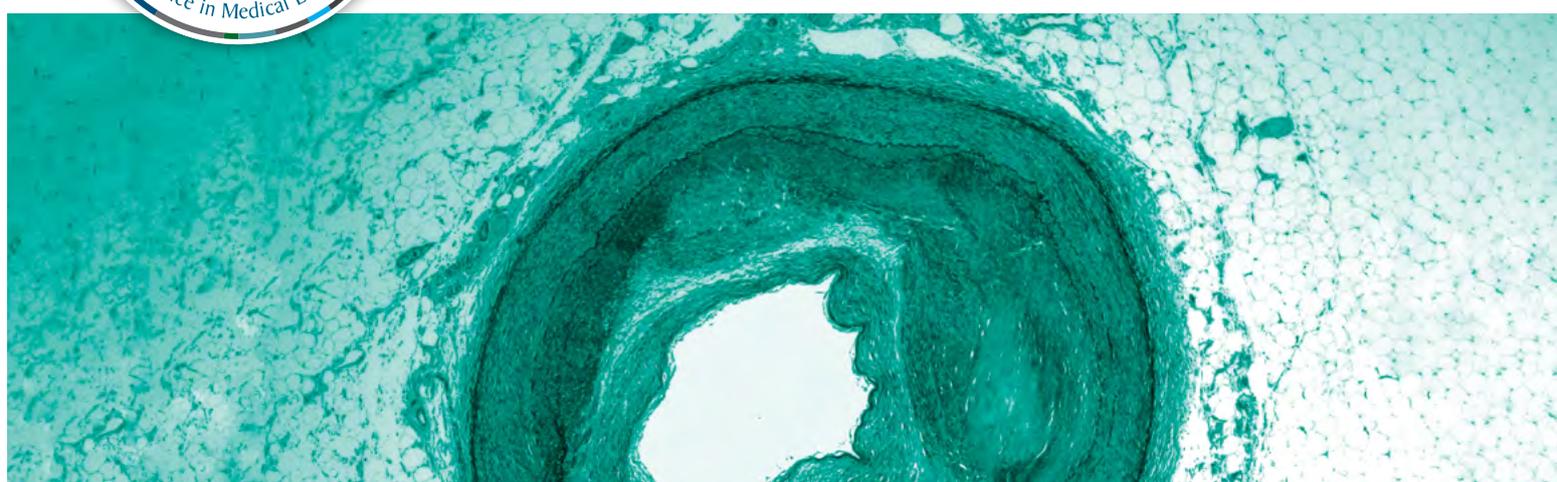




**2016 Latin American conference on
cardiometabolic diseases management:
Health emergencies in focus**
22-23 July 2016 - São Paulo, Brazil



2016 Latin American conference on cardiometabolic diseases management: Health emergencies in focus

Overview

Two of the most challenging global health emergencies of the 21st century are diabetes and hypertension. Both can progress to serious cardiovascular conditions which are the leading cause of death in developed countries; high blood pressure is still considered the highest worldwide risk factor for premature death. In 2015 alone, the International Diabetes Federation estimates that 415 million people were affected by diabetes – a number that is expected to rise over the next two decades. Patients with diabetes are at high risk of developing co morbidities which can cause disability, reduced quality of life and a raised risk of mortality. Pathogenesis of diabetes and hypertension is linked to modifiable risk factors such as diet and lifestyle as well as genetic predisposition. Both hypertension and diabetes are reaching epidemic proportions in Central and South America as both regions engage in increasingly Western lifestyles. Thyroid dysfunction, which poses complex medical problems and requires dedicated treatment, is also common in Latin America due to iodine deficiency as well as genetic factors. Even though modern medicine offers a plethora of therapeutic interventions for diabetes, hypertension and thyroid dysfunction, the management of these conditions is still an enormous burden on the global healthcare community – in part due to insufficient funding allocated to combating cardiometabolic diseases.

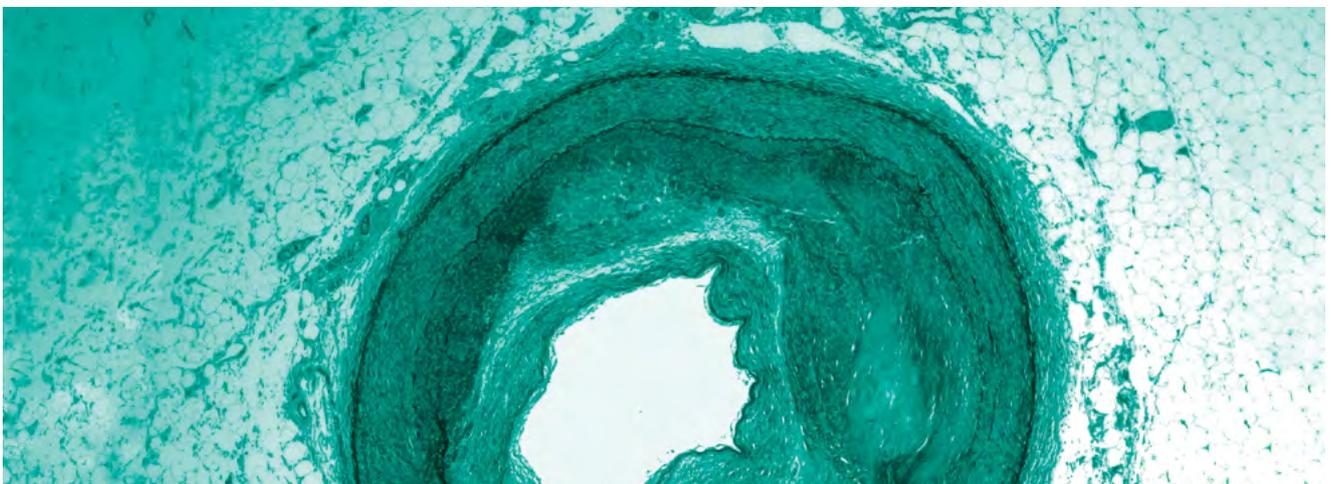
Learning objectives

By attending this conference, participants will be able to:

- Manage hypertension and related cardiovascular complications
- Apply the suggested algorithms for diabetes management
- Manage thyroid disorders
- Improve the proper use of oral anti diabetic agents in different conditions
- Manage the complexity of the relationship between hypertension, diabetes and thyroid disorders

Target audience

This programme is intended for general practitioners, cardiologists, endocrinologists, internists and all other healthcare professionals managing cardiometabolic diseases in Latin America.



CME Provider

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The CME conference “**2016 Latin American conference on cardiometabolic diseases management: Health emergencies in focus**” held on 22-23 July 2016 in São Paulo, Brazil, is designated for a maximum of 8 (eight) hours of European CME credits (ECMEC). Each medical specialist should claim only those credits that he/she actually spent in the educational activity. EACCME® credits are recognized by the American Medical Association (AMA) towards the Physician’s Recognition Award (PRA). To convert EACCME® credit to AMA PRA category 1 credit, please contact the AMA.



EXCEMED adheres to the principles of the Good CME Practice group (gCMEp).



General Information

Venue

This educational conference will take place at the:

Hilton São Paulo Morumbi

Av. das Nacoes Unidas, 12901
São Paulo, SP, 04578-000
Brazil

Language

The official language of the conference will be English.

Simultaneous translation from English to Spanish and Portuguese and viceversa will be provided.

CME Provider

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St Thomas' & Guy's Hospital

King's College & King's Health Partners

London, UK

José Patricio Lopez Jaramillo

FOSCAL/FOSCAL INTERNACIONAL

Bucaramanga, Colombia

Programme

Friday, 22 July 2016

08.30 Registration

09.00 Welcome and introduction

Chairs: G. Brenta (Argentina); J. K. Cruickshank (UK);
J. P. Lopez-Jaramillo (Colombia)

Session I Three questions on pre-diabetes

09.15 L1: **Diabetes, how do we get there?**
J. K. Cruickshank (UK)

09.40 L2: **Lifestyle modifications to prevent diabetes:
is it enough?**
J. P. Lopez-Jaramillo (Colombia)

10.05 L3: **Drugs for type 2 diabetes prevention:
which is better?**
L. Schwerz Weinert (Brazil)

10.30  Question time

11.00 Coffee break

Session II Three questions on overt diabetes

11.15 L4: **Diabetes Management: how to choose the right drug?**
E. Maddaloni (Italy)

11.40 L5: **Gestational Diabetes: when and how should
pharmacological intervention be implemented?**
L. Schwerz Weinert (Brazil)

12.05 L6: **What is the role of new technologies in type 2 diabetes?**
A.R. Maurizi (Italy)

12.30  Question time

13.00 Lunch

Session III Focus on thyroid

14.00 L7: **Cardiometabolic implications of thyroid dysfunction**
G. Brenta (Argentina)

14.25 L8: **Subclinical hypothyroidism: myths, presumptions
and facts**
B. Biondi (Italy)

14.50 L9: **New perspectives in the diagnostic of thyroid nodules**
G. Brenta (Argentina)

15.15  Question time

15.45 Coffee Break

Session IV Debate on hot metabolic topics

16.00 **Optimizing metformin** VS **Combination therapy**
J. K. Cruickshank (UK) J. P. Lopez-Jaramillo (Colombia)

16.20 Let's talk

Session V Bridge lecture: looking at tomorrow

16.40 L10: **Autonomic dysfunction in diabetes: the hidden
diseases complicating blood pressure and heart
rate control**
V. Spallone (Italy)

17.05  Question time

17.30 End of the first day

Legend

L: Lecture

Saturday, 23 July 2016

Chairs: G. Brenta (Argentina); J. K. Cruickshank (UK);
J. P. Lopez-Jaramillo (Colombia)

Session VI Specific problems in hypertension

- 09.00 L11: **New developments from recent trials in Hypertension & Arterial Stiffness**
J. K. Cruickshank (UK)
- 09.25 L12: **High heart rate and cardiovascular risk**
G. Grassi (Italy)
- 09.50 L13: **Is heart rate a target in hypertensive treatment?**
H. Struijker-Boudier (The Netherlands)
- 10.15  **Question time**
- 10.45 **Coffee Break**

Session VII Hot topics in hypertension

- 11.00 L14: **Blood pressure targets after SPRINT study: is it time for changing?**
S. Taddei (Italy)
- 11.20  **Question time**

Session VIII Hypertension treatment issues

- 11.30 L15: **Is hypertension and obesity linked?**
G. Grassi (Italy)
- 11.55 L16: **Combination treatment: RAS blockers are not the only possibility - Relevance of combination therapy in hypertension**
S. Taddei (Italy)
- 12.20 L17: **The prevention of heart failure development in hypertension**
M. J. Rodríguez Gonzalez (Colombia)
- 12.45  **Question time**
- 13.15 **Concluding remarks**
- 13.20 **End of the conference**
- Closing lunch**

Disclosure of faculty relationships

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The following faculty provided information regarding significant commercial relationships and/or discussions of investigational or non-EMEA/FDA approved (off-label) uses of drugs:

Gabriela Brenta	Receipt of honoraria or consultation fees from EXCEMED
Guido Grassi	Declared no potential conflict of interest
José Patricio Lopez-Jaramillo	Receipt of honoraria or consultation fees from Merck, Amgen, Bayer and participation in Abbott speaker's bureau
Ernesto Maddaloni	Receipt of honoraria or consultation fees from EXCEMED
Anna Rita Maurizi	Declared no potential conflict of interest
Vincenza Spallone	Receipt of consultation fees from Angelini ACRAF SpA, Italy and member of advisory boards of TRIGOCare International and Wörwag Pharma, Germany
Letícia Schwerz Weinertt	Declared no potential conflict of interest
Harry Struijker-Boudier	Receipt of honoraria or consultation fees from Durect, Servier, Merck, Fukuda Denshi and stakeholder in Durect
Stefano Taddei	Receipt of grants from Novartis, Menarini, Servier and Pfizer, Menarini, and participation in Pfizer, Menarini, Boehringer speakers' bureau

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Bernadette Biondi

John Kennedy Cruickshank

Maria Juliana Rodriguez Gonzalez

Biographies



Bernadette Biondi

University of Naples Federico II
Naples, Italy

Bernadette Biondi is Associate Professor at the Endocrine Division of the Department of Clinical Medicine, University of Naples Federico II Medical School, Naples, Italy. After receiving her medical degree from the University of Naples Federico II, Prof Biondi completed her internship and residency at the same university where she was a Clinical Research Fellow in the Thyroid Unit and Endocrine Unit. She is a tutorial teacher in Endocrinology and Cardiovascular Endocrinology for the students of the University of Naples Medical School. Prof Biondi's clinical research has focused on the cardiovascular effects of thyroid hormone, subclinical thyroid disease and clinical outcomes in patients with thyroid cancer. She is the author or co-author of numerous papers that appeared in such journals as The Lancet, Journal of Clinical Endocrinology and Metabolism, Annals of Internal Medicine, Circulation, Endocrine Review, Nature Clinical Practice in Endocrinology and Metabolism, New England Journal of Medicine, JAMA, and the European Journal of Endocrinology ,among others.



Gabriela Brenta

Cesar Milstein Hospital
Buenos Aires, Argentina

Gabriela Brenta obtained her M.D. degree from the University of Buenos Aires in 1986, then completed an Internal Medicine residency at the Italian Hospital of Buenos Aires and endocrinology training at the Endocrinology Fellowship Program of the Argentine Society of Endocrinology and Metabolism (S.A.E.M.). She then became a Basic Research fellow at Cedars-Sinai Medical Center in Los Angeles and continued this research with a grant from the "Consejo Nacional de Investigaciones Científicas y Técnicas" (CONICET). She is currently a Consultant Endocrinologist at the Cesar Milstein Hospital of Buenos Aires where she has both clinical and teaching responsibilities as Head of the Thyroid Unit. She is an Assistant Professor at the University of Buenos Aires where she helps with pre and postgraduate education. She is currently the President-Elect of the Latin American Thyroid Society (L.A.T.S.). She is also a member of the Thyroid Department of S.A.E.M. Her main clinical and research interests are directed towards the effects of thyroid hormones on metabolism and the cardiovascular system.

Biographies



John Kennedy Cruickshank

St Thomas' & Guy's Hospital
King's College & King's Health Partners
London, UK

John Kennedy Cruickshank is Professor of Cardiovascular Medicine & Diabetes in the Diabetes & Nutritional Sciences division at King's College (UK), and consultant physician at St Thomas' & Guy's Hospitals, London since 2011. He previously held a chair in Cardiovascular Medicine & Clinical Epidemiology at the University of Manchester (UK) and the post of Consultant Physician at Manchester Royal Infirmary. He spent a further year as visiting Senior Lecturer and Consultant at the University of the West Indies & Queen Elizabeth Hospital, Barbados, before being recruited to Manchester. He coordinated an EU study on nutritional origins of high BP & diabetes in African-origin populations between rural & urban Cameroon, Jamaica & Manchester. He spent a sabbatical at the US Bogalusa Heart study. His research continues on the origin of ethnic differences in high blood pressure, diabetes and cardiovascular disease, particularly via arterial function and stiffness. That is focused on the life course (ie: early causes and mechanisms from fetal life and childhood), developing interventions & treatment strategies at all stages. He founded the Cardiovascular Trials Unit in Manchester and runs similar Trials based in the Clinical Research Facility in St Thomas' Hospital. He is a founder member of the British Hypertension Society. He sat on the Tropical Medicine & Public Health panel for the Wellcome Trust and is incoming President of the Artery Society, dedicated to research in arterial function and disease across all walks of life.



Guido Grassi

Clinica Medica
University of Milano-Bicocca
Milan, Italy

Guido Grassi is Full Professor of Internal Medicine at the Clinica Medica of the University of Milano-Bicocca, and Director of the Clinica Medica Institute at S. Gerardo Hospital-Monza/Milano (Italy). He is also Director of the Post-graduate School of Internal Medicine and of the PHD course in Public Health, University of Milan-Bicocca. He has been Vice-Chairman (2002-2004) and then Chairman (2004-2006) of the Working Group "Hypertension and the Heart" of the European Society of Cardiology. He also served as Treasurer and then Secretary of the Italian Society of Hypertension (2004-2007). In 2006-2007 he was a member of the Task Force of the European Society of Hypertension/European Society of Cardiology for the 2007 Guidelines on Hypertension. In 2007 he was appointed "Wright Lecturer" at the Annual Meeting of the High Blood Pressure Council of Australia. Prof Grassi is also a member of the Scientific Council of the International Society of Hypertension for the periods 2008-2012 and 2012-2016 and member of the Scientific Council of the European Society of Hypertension, 2013-2016. In 2009 he received the Bjorn Folkow Award and Lecture from the European Society of Hypertension. His research areas include the pathophysiology, clinical pharmacology and treatment of hypertension, obesity and metabolic syndrome, cardiac arrhythmias and heart failure. He has published more than 500 original papers and reviews in major international scientific journals (H index 66). He is Executive Editor of the Journal of Hypertension, Section Editor of the Journal of the American Society of Hypertension, current Co-Editor of Hypertension Reviews, Editor of Neuroscience Communication and member of the Editorial Board of several major international journals. In 2014 he was included in the Top Ten Hypertension Expert Ranking created by Expertscape Ranks World's Top Scientists.



José Patricio Lopez-Jaramillo
FOSCAL/FOSCAL INTERNACIONAL
Bucaramanga, Colombia

José Patricio Lopez-Jaramillo MD PhD FACP is a Doctor in Medicine from the Universidad Central de Ecuador in 1978, Fellow in Endocrinology with the Colegio Medico de Pichincha, Federación Medica Ecuatoriana 1984, Doctor in Sciences (Pharmacology) from the Universidade de Sao Paulo (USP), Brazil in 1987 and Fellow in Clinical Hypertension from the Universidad de Guadalajara, Mexico and the Latin America Society of Hypertension (LASH). Nowadays he is the Research Director of The Metabolic Syndrome and Diabetes Clinic in the Fundacion Oftalmológica de Santander (FOSCAL) and Scientific Director of the MASIRA Research Institute in the Medical School of the Universidad de Santander, Bucaramanga, Colombia, as well as being President of the Sociedad Latinoamericana De Hipertensión (LASH). His research interest is in the risk factors of diabetes and cardiovascular diseases. Dr. Lopez-Jaramillo has published more than 150 articles, including in the New England Journal of Medicine, The Lancet and JAMA.



Ernesto Maddaloni
University Campus Bio-Medico of Rome (UCBM)
Rome, Italy

Ernesto Maddaloni earned his Medical Degree at the University Campus Bio-Medico, Rome, Italy, and works as a medical doctor at the department of Medicine, Unit of Endocrinology and Diabetes, at the University Campus Bio-Medico. He is involved in diabetes research as a clinical investigator in several international clinical trials, including trials for the prevention of type 1 diabetes and for the evaluation of cardiovascular outcomes of new agents for the treatment of type 2 diabetes. In 2015 Dr. Maddaloni completed his Post-Doctoral Research Fellowship at the Vascular Cell Biology Section, Research Division, of the Joslin Diabetes Center, Harvard Medical School, in Boston, USA. His commitment to research is also demonstrated by several peer-reviewed papers in the field of diabetes and endocrinology. He has been awarded the "2014 Campus Bio-Medico Alumni Association award for the Internationalization of Research" and the "2015 Albert Renold fellowship" of the European Foundation for the Study of Diabetes.

Biographies



Anna Rita Maurizi

University Campus Bio-Medico of Rome (UCBM)
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Anna Rita Maurizi is a Medical Doctor at the Endocrinology and Diabetes Unit, University Campus Bio-Medico of Rome, Italy. After receiving her medical degree from the University "La Sapienza" of Rome, she completed an internship and residency in the University Campus Bio-Medico of Rome where she was a Clinical Research Fellow in the Endocrinology and Diabetes Unit. Dr. Maurizi's clinical scientific activities concern innovative therapies and the application of new technologies in type 1 and type 2 diabetes management. She is the author or co-author of numerous original articles, reviews, chapters and conference abstracts. She is also a member of the "Società Italiana di Endocrinologia", "Società Italiana di Diabetologia" and the Italian Study Group on Diffusion of CSII in Italy.



María Juliana Rodríguez Gonzalez

Cardiovascular Foundation of Colombia
Bogota, Colombia

Maria Juliana Rodriguez González was born in Bucaramanga, Colombia, in 1975 where she also earned her medical degree. She obtained her internal medicine and cardiology degrees in Bogotá, Colombia, and a major in heart failure at the University of Barcelona, Spain. Dr. González received special training in LVADS from Massachusetts General Hospital (USA). She works as a member of the heart failure and heart transplant unit of the Cardiovascular Foundation in Colombia where she is in charge of the heart transplant unit.



Letícia Schwerz Weinert

Hospital de Clínicas de Porto Alegre
Porto Alegre, Brasil

Letícia S. Weinert is an Assistant Professor at the Medical School in the Clinical Division at Universidade Católica de Pelotas, Brazil. She graduated from the Medical School at Universidade Federal do Rio Grande do Sul, Brazil, and completed a residency in internal medicine and endocrinology at Hospital de Clínicas de Porto Alegre, Brazil. After specializing in endocrinology, she focused on the assistance and research of pregnant women with endocrine diseases at Hospital de Clínicas de Porto Alegre. During these years, she completed a PhD in gestational diabetes and vitamin D at Universidade Federal do Rio Grande do Sul. Dr. Letícia later became Professor of Medicine at Universidade Católica de Pelotas, medical head of the Clinical Division of this University, Professor of the medical residency program of Hospital Universitário São Francisco de Paula, and medical head of the Clinical Division of this Hospital. Dr. Letícia also performs clinical research in diabetes mellitus, gestational diabetes and vitamin D.



Vincenza Spallone

University of Tor Vergata
Rome, Italy

Vincenza Spallone graduated in Medicine, specializing in Endocrinology, and earned a PhD in Endocrinological and Metabolic Sciences at the University of Rome La Sapienza, Italy. She is assistant Professor and Aggregate Professor of Endocrinology at the Department of Systems Medicine, University of Rome Tor Vergata and member of the Executive Committees of Neuropathy Study Group of EASD (NEURODIAB), Italian Society of Diabetology (SID), Italian Society for Neurovegetative Research. She is also a Chairperson of Neuropathy Study Group of SID. Prof Spallone is the author of approximately 320 works in diabetic neuropathy on the following topics: diabetic nephropathy; circadian rhythm of blood pressure; assessment of autonomic cardiovascular control and sudomotor function; painful diabetic neuropathy; impact of neuropathic pain on depression and 24h blood pressure profile. Prof Spallone won the Valsalva Lecture Award of the Italian Society for Neurovegetative Research in 2009. She has organized more than 40 congresses, meetings, and learning activities, chairperson or invited speaker at international and national scientific society meetings (more than 100 congresses, meetings, CME activities). She was member of the Toronto Consensus on Diabetic Neuropathy.

Biographies



Harry Struijker-Boudier

Maastricht University
Maastricht, The Netherlands

Harry Struijker-Boudier is Professor of Pharmacology at Maastricht University, The Netherlands. He graduated in 1973 in Pharmacology and Biochemistry and obtained his Ph.D. in Pharmacology in 1975 at the Radboud University Nijmegen, The Netherlands. Prof Struijker-Boudier worked as a post-doc in the Department of Physiology and Biophysics of the University of Mississippi Medical School in Jackson, Miss., USA in 1976-1977 and took up a position in the newly created Department of Pharmacology at Maastricht University in 1977. He was appointed as Professor of Experimental Pharmacology in 1980 and as chairman of the Department of Pharmacology in 1984. He spent a sabbatical year as visiting professor at the INSERM Unit 141 at the Hôpital Lariboisière in Paris in 1991. He served as scientific director of the Cardiovascular Research Institute Maastricht (CARIM) from 1999-2006. Prof Struijker-Boudier has published over 500 scientific papers in peer-reviewed international journals and books in the areas of cardiovascular pharmacology, hypertension, heart failure and drug design and delivery. The total number of citations of his articles is >19,000. He has served as a board member for numerous international organizations, including as vice president of the scientific council of the European Society of Hypertension and board member of the European Federation of Pharmacological Societies. He is doctor honoris causa of the Université de Liège, Belgium, recipient of the Descartes-Huygens prize of the French Government and Officer of the Order of Oranje-Nassau of the Dutch Royal House.



Stefano Taddei

University of Pisa
Pisa, Italy

Stefano Taddei was born in Pisa, Italy, in 1957. He attended the State University of Pisa, where he graduated in Medicine and Surgery in 1982 and specialized in Clinical Pharmacology in 1986. Prof. Taddei is Professor of Internal Medicine. He is currently the Director of the Hypertension Unit of the Department of Clinical and Experimental Medicine. Prof. Taddei is a Fellow of the European Society of Cardiology, the European, International and American Society of Hypertension, the European Society of Clinical Investigation, the High Blood Pressure Council of the American Heart Association, and of the Italian Society of Hypertension. He has been a councilor of the Italian Society of Hypertension (2007-2009). He is a member of the Editorial Boards of Hypertension, Blood Pressure, Journal of Cardiovascular Pharmacology, Current Hypertension Reviews, High Blood Pressure and Cardiovascular Prevention and Journal of American Society of Hypertension. He is an International Associated Editor of the European Heart Journal. His main research area is local neuro-humoral control of peripheral vessels in primary and secondary forms of hypertension, with particular emphasis on the sympathetic nervous system, the renin-angiotensin system and the endothelium. He is also interested in the assessment of target-organ damage in hypertension, including vascular and cardiac structural alterations and the clinical pharmacology of cardiovascular drugs. Prof Taddei has participated in numerous clinical studies and is the authors of more than 300 original papers, reviews and editorials in international scientific journals (H index: 55; Impact Factor: >1400).

Abstracts



L1. Diabetes, how do we get there?

John Kennedy Cruickshank

St. Thomas' & Guy's Hospital - King's College & King's Health Partners London, UK

The obesity epidemic worldwide, associated with urbanization and greatly reduced physical activity and general energy expenditure, has caused an inevitable upsurge of what we currently called Type 2 diabetes. People with "pre-diabetes", or variations such as the "metabolic syndrome" die from vascular events more often than earlier than those not obese or overweight. That even affects younger women with previous gestational diabetes (GDM) or at risk of GDM.

This talk covers aspects of metabolism related to vascular function before and in T2 DM. Results from bariatric surgery & the apparent "disappearance" of what was labeled as irreversible T2 DM suggest complex patterns of local & systemic cellular & cardiovascular (CVS) disruption. We used a metabolomic approach (PLoS One. 2014 Sep 3;9(9):e103217) that identified metabolites/pathways altered prior to decline into hyperglycaemia, finding lipid molecules & disturbances that other groups have also recently reported. How fat becomes "hypoxic", with resulting mitochondrial dysfunction and the consequences for blood vessels and the heart will be discussed.

For prevention and therapy, increased physical activity first, Hopefully with weight loss of the cornerstones. Metformin and probably starting statin treatment follow. The data all indicate that T2DM management does not benefit from continuing over-focus on glycaemia, and possibly should not continue to be defined solely by it.



L2. Lifestyle modifications to prevent diabetes: is it enough?

José Patricio Lopez-Jaramillo
FOSCAL/FOSCAL INTERNACIONAL - Bucaramanga, Colombia

The International Diabetes Federation estimated that 8.3% (382 million) of adults worldwide had diabetes in 2013, and that the prevalence varies across different countries (1). The prevalence of diabetes mellitus type 2 is rising among adults and youth, paralleling the dramatic increase in obesity (2). Increased incidence of diabetes portends a serious increase in early morbidity, health care costs, and lost productivity. Therefore, diabetes prevention has become a key target for clinicians, patients, and policymakers, as substantial evidence has accumulated that diabetes can be prevented or delayed in those at high risk. Intensive lifestyle interventions that encourage people to change their diet and to increase their level of physical activity should be used to prevent or delay the onset of T2DM in adults with IGT. Several randomized clinical trials involving lifestyle changes with an outcome on incident diabetes conducted in individuals at high risk have been published (3-7). The Da Qing trial (3) in China included 577 individuals with IGT that were randomized to dietary counseling, increased exercise, diet plus exercise, or control (general recommendations). The cumulative 6-year incidence of diabetes was significantly lower in the diet group (44%), the exercise group (41%), and the diet-plus exercise group (46%) than in the control group (67%). The Finnish Diabetes Prevention Study (FDP) randomized 522 overweight volunteers with IGT to usual care or diet plus exercise recommendations. Main dietary goals in the active intervention group were a low-fat diet (<30% energy as fat) with <10% saturated fatty acids (SFA) and dietary fiber intake >15 g/1000 kcal. Participants in this group also received instructions to increase exercise and were targeted for weight loss, which was accomplished to nearly 5% of baseline weight (4). The cumulative incidence of diabetes was 23% in the control group and 11% in the active intervention group, i.e., a 58% reduction. Interestingly, risk reduction was directly proportional to the magnitude of lifestyle changes. In the Diabetes Prevention Program, 3,234 overweight individuals with IGT or abnormal fasting glucose were randomly assigned to placebo, metformin, or a lifestyle modification program with the goals of at least 7% weight loss and 150 min of physical activity per week (5). Main dietary goals in the intensive lifestyle intervention group were a very low-fat diet (<25% energy as fat) with <10% saturated fatty acids (SFA) and increased fiber intake. In this study, 50% of participants in the lifestyle arm had achieved the weight loss goal at the end of the program and this was associated with a 58% reduction in incident diabetes compared to the usual care group. A randomized clinical trial conducted in Japan examined lifestyle intervention for the prevention of diabetes while attempting to achieve and maintain ideal body weight (6). Men with IGT were randomly assigned to standard treatment (control group) or intensive intervention (active group). Participants in the control and active groups were advised to maintain a BMI <24.0 kg/m² and <22.0 kg/m², respectively. Body weight decreased by 0.4 kg in the control group and by 2.2 kg in the active intervention group. The latter changes were associated with a 67.4% reduction in the cumulative 4-year incidence of diabetes. Diabetes risk and improved glucose tolerance were related to changes in body weight, suggesting again that weight loss was influential in reducing diabetes risk. In the Indian DPP (IDPP) a total of 531 were randomized into four groups (control, lifestyle modification, metformin, and combined lifestyle modification and metformin). Lifestyle modification included advice on physical activity (30 minutes of brisk walking per day) and reduction in total calories, refined carbohydrates and fats, avoidance of sugar, and inclusion of fiber-rich foods. After a median follow-up of 30 months, the relative risk reduction was 29% with lifestyle modification, 26% with metformin and 28% with lifestyle modification and metformin, as compared to the control group (7). These clinical trials clearly demonstrate that weight reduction is an essential element of prevention of T2DM prevention. Sustained weight reduction by 5-7% is sufficient to substantially lower the risk of T2DM. An increase in physical activity, even at a level of 30 minutes per day of moderate exercise, reduces the risk of T2DM and is therefore recommended. A diet with high fiber (> 15 g per 1000 kcal), moderate fat (< 35% of total energy) reduced saturated and trans fat (< 10% of total energy) can lower body weight and reduce the risk of T2DM and is therefore recommended.

Burnet et al in his article, "Preventing Diabetes in the Clinical Setting" (8) gives some practical counseling on physical activity and nutrition that we believe could be implemented by each of us in our clinical practice:

Physical activity

- Goal of 150 min of moderate-intensity exercise weekly
- Tailor physical activity to individual's ability and interest
- Walking for most; cycling or water-based for those with arthritis
- Encourage increased activity in daily routines
- Take the stairs; park further away; get off bus 1 stop early
- Previously inactive individuals should begin with short amounts of moderate-intensity exercise (for example, 10 min) and gradually increase the duration and/or intensity
- Goal-set with individual on preferred way to accrue 150 min weekly, for example, 30 min of walking 5 d weekly or 50 min of walking 3 d weekly
- Make goals specific in time, amount, and activity
- Encourage self-monitoring of activity by keeping written records, using a pedometer, or using a heart rate monitor

Nutrition

- Emphasize that total calories matter
- Goal of fat intake less than 25% of total calories; minimize intake of saturated fats and trans fats (red meat, deep fried foods, oils solid at room temperature)

- Encourage portion size awareness and reading food labels
- Increase dietary fiber to 20 to 30 g/d
- Diet should be high in whole grains, fruits and vegetables, beans, and nuts
- Goal-set with individual on preferred initial changes to diet, for example, piece of fruit at lunch each day, or red meat no more than once a week
- Make goals specific in time, amount, and type
- Encourage self-monitoring by keeping food logs
- Both
- Encourage self-reward for meeting goals
- Enlist family members to help with goals if acceptable to patient
- Help patient to anticipate potential barriers to exercise and solutions to those barriers
- Let patient know that relapse is the norm; rather than being discouraged, encourage them to think about what led to the relapse and how to overcome that in the next try
- Arrange close follow-up

The take-home message is that we are in the midst of a diabetes epidemic. If we can safely slow or stop this epidemic, we will reduce its impact. We know that lifestyle interventions are highly effective in preventing diabetes. We need to implement the therapeutic changes in lifestyle in our patients and we also need to prevent DM in society in general.

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L3. Drugs for type 2 diabetes prevention: which is better?

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Type 2 diabetes mellitus is characterized by hyperglycemia with micro- and macrovascular complications. Therefore, prevention of this condition is an important public health goal and the objective of this section is to discuss the pharmacologic therapy elements for individuals at high-risk for type 2 diabetes. Selection of the appropriate drug, proper timing of treatment initiation and definition of eligible patients will be reviewed here.

Lifestyle changes should be recommended for all patients at high-risk for type 2 diabetes. For patients with prediabetes (impaired fasting glucose, impaired glucose tolerance or A1C between 5.7 and 6.4%) who failed to improve glycemic levels with diet and exercise or are unable to participate in lifestyle change programmes, metformin is recommended. This indication is particularly relevant for patients younger than 60 years, or with body mass index above 35 kg/m², or who have a personal history of gestational diabetes^{1,2}. Treatment with metformin significantly reduces the incidence of type 2 diabetes in persons at risk³ and patients receiving drug therapy require monitoring of glycemic levels. Acarbose is another option for selected patients with impaired glucose tolerance⁴. Other pharmacologic alternatives are not widely recommended. Many clinical trials and international guidelines support the above recommendations as the Diabetes Prevention Program³, American Diabetes Association¹ and National Institute for Health and Care Excellence (NICE)².

In conclusion, healthy diet and regular exercise should be recommended to all high-risk patients; for patients who fail to improve glycemic control, metformin is considered the best drug therapy for type 2 diabetes prevention.

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L4. Diabetes Management: how to choose the right drug?

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A broad spectrum of therapies to cure type 2 diabetes is currently available, with many molecules associable with each other in several combinations. While this is a rich development for clinicians, the variety of therapeutic options can also cause difficulties in management and decision making related to therapies. A smart approach is therefore required in order to transform this therapeutic complexity from a problem into an opportunity. Current guidelines strongly suggest not using a univocal treatment, but to rather take a personalized approach to people affected by type 2 diabetes. The therapeutic choice must also account for the complex interplay between pathological mechanisms operating in type 2 diabetes, which vary from patient to patient. The heart, kidneys, liver, peripheral nerves as well as the adipose tissue, the bone and the brain are all organs involved in the pathophysiology of or damage associated with type 2 diabetes. Their involvement greatly influences the therapeutic strategy: kidney or heart failure contraindicates some molecules, while pleiotropic effects of such drugs should also be considered. The most recent evidence also specifically suggests cardio-protection related to the use of some anti-diabetic agents.

During the lecture, the speaker will discuss evidence supporting a patient-centred approach for the treatment of type 2 diabetes, including discussion on the main algorithms to set for the glycaemic target and the correct choice of drug for each patient. Overall, the pathophysiology of diabetes and the importance of a multifactorial approach when treating people with type 2 diabetes will be discussed.



L5. Gestational Diabetes: when and how should pharmacological intervention be implemented?

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Abstract not in hand at the time of printing.



L6. What is the role of new technologies in type 2 diabetes?

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Recent evidence from clinical trials indicates that new technologies applied to type 2 diabetes (T2D) can be very useful to improving metabolic control in affected patients. Continuous Subcutaneous Insulin Infusion (CSII) is well established as the most physiologically compatible method of insulin administration currently available for T2D patients as well as for type 1 diabetes (T1D) patients. Like intensive insulin treatment, CSII offers the opportunity to achieve tight glycaemic control without increasing the risk of hypoglycaemia, while reducing the risk for long-term diabetic complications in insulin-treated patients. The first study using CSII, published by Weng in *The Lancet* in 2008 showed that the use of CSII may induce clinical remission and protect residual beta cell function. In a study published in 2014 in *The Lancet*, it was shown that in patients with poorly controlled T2D, despite using multiple daily insulin injections (MDI), the pump treatment can be considered as a safe and valuable treatment option. On the other hand, despite data from recent studies showing better glycaemic control with CSII when compared to multiple daily injections (MDI), the effectiveness of CSII in different T2D populations and on other outcomes remains unconvincing and controversial. In this regard, there are many discrepancies between the impact on quality of life and patient satisfaction reported by insulin-pump users and there is limited data on quality of life benefits reported in clinical trials. CSII management is certainly more challenging in T2D patients than the conventional MDI treatment; therefore to ensure the achievement of successful outcomes, CSII management requires specific knowledge and skills among patients and the healthcare team. In order to provide the knowledge and abilities required by pump users, and to support and encourage their self-management through insulin pump therapy, overall diabetes management requires a comprehensive approach by a multidisciplinary team of healthcare professionals.

Continuous glucose monitoring (CGM) in T2D is also useful for improving metabolic control. Providing information on the day-to-day changes in blood glucose levels, CGM also helps to achieve treatment targets without increasing the risk of hypoglycaemia. Barriers to using technology in T2D include older age in some patients and lack of proper patient education regarding the advantages of using technology in disease management. Diabetes technology is therefore an example of personalized medicine that should be designed according to patient features and therapeutic targets.



L7. Cardiometabolic implications of thyroid dysfunction

Gabriela Brenta

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This presentation will express the importance of thyroid regulation on the cardiovascular system and the consequences that thyroid dysfunction - in particular hypothyroidism - may exert upon this system.

Hemodynamic changes due to exposure to thyroid hormones result in increased cardiac output. The cellular mechanisms behind this regulation include genomic and non genomic effects of thyroid hormones in the cardiomyocyte, smooth muscle cells and endothelium.

The cardiovascular risk associated with overt hypothyroidism is characterized by reduced cardiac contractility and increased peripheral resistance. In turn, pro-atherogenic factors, such as quantitative and qualitative changes in the lipid profile present in hypothyroid patients may also explain the excess risk in these patients.

To a lesser extent, similar changes may occur in subclinical hypothyroidism. Therefore, the presence of diastolic dysfunction in early stages of hypothyroidism - at rest and during exercise and of an atherogenic lipid profile - is one of the highlights of moderate deficit of thyroid hormones. The association of increased risk of coronary heart disease with mortality in subclinical hypothyroid patients has been mainly observed in subjects under 65 years and in those with co-morbidities.

All changes to the cardiovascular system caused by lack of thyroid hormones can be reversed by using physiological doses of thyroid hormone. In elderly patients or carriers of pre-existing heart disease with hypothyroidism, thyroid replacement requires great caution. In subclinical hypothyroidism, recovery after treatment with levothyroxine has been observed for several of the mentioned alterations, although due to a lack of randomized control trials, clear indications for levothyroxine replacement therapy are reserved only for patients with higher TSH values.



L8. Subclinical hypothyroidism: myths, presumptions and facts

Bernadette Biondi

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Subclinical hypothyroidism is present when serum TSH is above the upper limit of the normal reference range and free thyroid hormones are within their reference range. Patients with subclinical hypothyroidism are often classified into two groups: those with mild subclinical hypothyroidism, in whom TSH is mildly increased (TSH 4.5-9.9 mU/L), and those with a more severe dysfunction when TSH is equal or greater than 10 mU/L.

The serum TSH concentration represents the most important predictive factor of progression to overt hypothyroidism. Patients with severe subclinical hypothyroidism have a significantly increased risk of progression to overt hypothyroidism, are more frequently symptomatic and may have an increased risk of heart failure and coronary heart disease (CHD) events and mortality. Two important meta-analyses provide sufficient evidence to justify the treatment of patients with SHypo having a serum TSH level above 10 mU/L in order to avoid the risk of CHD and HF.

Data in the available literature appear substantive for a beneficial effect of L-T4 replacement therapy in patients with TSH > 10 mU/L that could serve to reduce progression of cardiovascular risk. Prospective randomized clinical trials will be necessary to assess the beneficial effects of L-T4 in patients with SHypo and establish guidelines for the optimal TSH cut-off level that would provide an improvement in symptoms, quality of life and cardiovascular morbidity and mortality.

Whether or not to treat patients with mild SHypo remains controversial. This is especially true in patients with negative antithyroid antibody titers because patients with mild TSH increase frequently have transient TSH elevation. An argument against treatment may be made based on two recent meta-analyses indicating that mild subclinical hypothyroidism was not associated with an increased risk of CHD and HF events. However, recent data support that mild subclinical hypothyroidism may be associated with a greater cardiovascular risk in young and middle-aged people and indicate that treatment of mild SHypo with L-T4 is associated with better outcomes in younger people.

Although some studies have demonstrated the potential beneficial effects of L-T4 therapy to improve cardiovascular risk patients with mild SHypo, large randomized controlled studies will be required to assess the importance of this treatment in the presence of minimal TSH elevation.



L9. New perspectives in the diagnostic of thyroid nodules

Gabriela Brenta

Cesar Milstein Hospital - Buenos Aires, Argentina

In this presentation, participants will learn how to study a patient presenting with a nodular goiter. The first step includes analysis of the functional thyroid status with the determination of thyrotropin (TSH) and free thyroxine (Free T4) as well as an ultrasound scan to define the location, dimensions and characteristics of each nodule. In case hyperthyroidism is detected, the next step would be to perform a scintiscan with radioiodine uptake to identify an autonomous goiter. Conversely, in the presence of euthyroid status, the next step would be a fine needle aspiration biopsy (FNAB). According to its result, patients would be either monitored or referred to surgery. Unfortunately, in about 20% of patients, the cytologic yield would not be distinctive. Different resources such as the analysis of suspicious ultrasound characteristics, molecular markers, ultrasound elastography and core needle biopsy (CNB), might help in the decision of surgery referral. Core needle biopsy in particular may also be useful in nodules with previously non-diagnostic FNAB or patients with suspicious lymphoma or anaplastic cancer, in whom it proved to be superior to repeat FNAB. In the future, the ideal evaluation of patients with indeterminate cytologic results should include these new diagnostic tools to avoid unnecessary thyroidectomies.



L10. Autonomic dysfunction in diabetes: the hidden diseases complicating blood pressure and heart rate control

Vincenza Spallone

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This presentation will highlight the clinical relevance of diabetic cardiovascular autonomic neuropathy (CAN) with regard to its prevalence and impact on morbidity and prognosis. Mechanisms involved in this excess of morbidity and mortality will be explored – in particular those involving blood pressure (BP) and heart rate. The issue of CAN under-diagnosis will be considered together with an indication as to how to detect CAN in clinical practice. Finally, preventive and therapeutic strategies will be reviewed.

Diabetic autonomic neuropathy: a common diabetic complication.

Diabetic autonomic neuropathy (DAN) is a widespread disorder of the autonomic nervous system in the context of diabetes and CAN is the impairment of autonomic control of the cardiovascular system. CAN affects at least 20% of patients with diabetes, and up to 65% of those with increasing age and diabetes duration. CAN is present already at diagnosis in ~7% of patients with type 2 diabetes and its prevalence increases by 4.6-6% per year.

CAN - a heavy burden for patients with diabetes.

If diabetes per se impairs survival, mainly for cardiovascular mortality, the diagnosis of CAN is associated with an even worse prognosis. There is definite evidence of its prognostic relevance and an independent predictive role of CAN has been confirmed in recent studies, such as the ACCORD trial, after correcting for multiple diabetes-related and traditional cardiovascular risk factors. Moreover, there is some evidence that CAN is a risk marker and a likely risk factor for cardiovascular morbidity (perioperative morbidity, silent myocardial ischemia, stroke, and renal function decline).

Attenuation (non-dipping) and complete loss of the nocturnal fall in BP (reverse dipping) in diabetes were both associated with CAN and cardiovascular or renal events. Reverse dipping was found to predict, independently of 24h BP level, the progression from overt nephropathy to renal failure or dialysis in type 2 patients.

Insights into mechanisms of excess mortality associated with CAN.

The mechanisms of the CAN-associated excess mortality and morbidity are not known. A number of cardiovascular abnormalities might be involved: reduced heart rate variability (HRV), rest tachycardia, silent myocardial ischemia, left ventricular dysfunction, QT interval prolongation, impaired baroreflex sensitivity (BRS), sympathovagal imbalance, reduction in sympathetically mediated vasodilation of coronary vessels, dysregulation of cerebral circulation, non-dipping, increased arterial stiffness, and medial arterial calcification.

While methods investigating HRV and BRS are usually reserved for research, the diagnosis of CAN relies on cardiovascular reflex tests. Screening of symptoms and signs may, however, be easy to perform in any clinical setting as with orthostatic hypotension, yielding useful clinical insights.

CAN assessment is clinically relevant.

Despite its prevalence and clinical impact, CAN is still widely under-diagnosed. Nevertheless, CAN assessment in clinical practice may allow: detection and tailored treatment of its clinical correlates (e.g. tachycardia, orthostatic hypotension, non-dipping), risk stratification for cardiovascular complications, and modulation of targets in diabetes therapy. There is in fact a bidirectional relationship between autonomic dysfunction and hypoglycaemia, and both are associated with increased cardiovascular risk and frailty. Presence of CAN may identify individuals more prone to severe hypoglycaemia and to its cardiovascular effects, who warrant caution regarding aggressive blood glucose lowering treatment.

Preventive and therapeutic options for CAN.

Established risk factors for CAN are glycaemic control in type 1 and a combination of hypertension, dyslipidemia, obesity and glycaemic control in type 2 diabetes. Therefore, there is evidence that intensive diabetes therapy delays the development of CAN in type 1 diabetes, whereas intensive multifactorial cardiovascular risk intervention hinders the development and progression of CAN in type 2 diabetes. Lifestyle intervention (weight loss and/or physical activity) improves HRV and BRS mostly in pre-diabetes. There is no conclusive evidence for pharmacological disease modifying treatment for CAN (true also for diabetic polyneuropathy). Symptomatic treatment of orthostatic hypotension and of clinical correlates of CAN such as nocturnal hypertension is available and advisable.

Conclusions.

While diabetes is burdened with an increased mortality risk compared to the general population, the presence of CAN is accompanied by (and possibly determines) additional worsening of prognosis. CAN is a common diabetic complication, albeit often under-recognized. More widespread diagnosis and treatment of the clinical consequences of CAN may help avoid its dangerous burden going undetected and might indeed have an effective impact on clinical practice.



L11. New developments from recent trials in Hypertension & Arterial Stiffness

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Abstract not in hand at the time of printing.



L12. High heart rate and cardiovascular risk

Guido Grassi

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The first study reporting an association between elevated heart rate values and cardiovascular disease dates back more than 60 years and showed evidence that subjects with a resting tachycardia state were more prone to developing hypertension. Since then, about 50 epidemiological studies, including the Framingham study, have provided evidence that heart rate is independently associated with cardiovascular and all-cause mortality.

The association between heart rate and cardiovascular events:

- is present at all ages and even in subjects older than 70 years
- takes place in patients with and without cardiovascular complications
- appears to be independent of other risk factors for the atherosclerotic disease
- is consistent as the association between other "classic" risk factors and cardiovascular disease

In several studies, the heart rate displays a positive relationship with blood pressure values, body weight, triglycerides, insulin and glucose metabolism, raising the possibility that the ability of this haemodynamic variable to predict cardiovascular events is somewhat aspecific and at least in part dependent on other well known cardiovascular risk factors. However, in the follow-up to two recent surveys, an association between heart rate sudden death and acute coronary events has been reported, and it remained significant even after adjustment for age, body mass index, smoking, blood pressure, lipid profile, diabetes and history of cardiovascular disease. Interestingly, in these studies the predictive power of heart rate for fatal cardiovascular and non-cardiovascular events was:

- often greater than that of hypertension and/or hypercholesterolemia
- manifest not only in ischaemic heart disease, but also in heart failure, hypertension and diabetes

The evidence discussed so far implies that lowering heart rate through therapeutic interventions should result in favourable prognostic relevance. This presentation will review the evidence indicating the epidemiological relevance of elevated heart values in hypertension, its importance as a cardiovascular risk factor as well as a target of pharmacological intervention. The controversial issues regarding the above mentioned topics will be discussed.



L13. Is heart rate a target in hypertensive treatment?

Harry Struijker-Boudier
Maastricht University - Maastricht, The Netherlands

Despite of the often held belief that resting tachycardia in physicians' is a benign sign of transient nervousness there is strong evidence that tachycardia:

- Is not transient
- Is not a marker of BP lability
- Is a predictor of hypertension
- Is a predictor cardiovascular mortality
- Mechanisms of its harmful effects are well understood
- Is associated with hypertension but is an independent risk factor
- Is frequent
- The risk of tachycardia is nonlinear. Understanding the nonlinearity is clinically relevant.

After reviewing this evidence:

- Tachycardia is not yet recognized as a risk factor in hypertension guidelines.
- This reflects the fact that outcome trials of lowering the heart rate in hypertension have not yet been executed.

It is important to note that of necessity guidelines are evidence based.

However lack of evidence should not be considered as evidence and I will propose the hypothesis that treatment of hypertension with drugs which also lower the heart rate may show benefits above and beyond the BP decrease.



L14. Blood pressure targets after SPRINT study: is it time for changing?

Stefano Taddei
University of Pisa - Pisa, Italy

Abstract not in hand at the time of printing.



L15. Is hypertension and obesity linked?

Guido Grassi

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Abstract not in hand at the time of printing.



L16. Combination treatment: RAS blockers are not the only possibility - Relevance of combination therapy in hypertension

Stefano Taddei
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Control of cardiovascular risk factors, particularly hypertension, is still unsatisfactorily causing excess cardiovascular morbidity and mortality worldwide. The risk is linearly associated with the increase in blood pressure values and clinical studies have clearly demonstrated that blood pressure lowering represents the most effective measure to prevent cardiovascular events. However, adequate blood pressure control (<140/90 mmHg) is obtained only in a minor percentage of the hypertensive population.

Despite extensive debate about what is the first choice for treating essential hypertension, monotherapy effectively normalizes blood pressure values in only a limited number of hypertensive patients. In contrast, evidence from clinical trials strongly supports combination treatment as the most effective strategy to control blood pressure. Nevertheless, combination therapy is still poorly used in clinical practice.

Thus, combination therapy should always be considered for improving both blood pressure control and reducing cardiovascular events. Antihypertensive drugs can be effectively combined if they have different and complementary mechanisms of action. This is crucial to obtaining additive blood pressure-lowering effects without impacting on tolerability. One typical combination is the association of drugs blocking and stimulating the renin-angiotensin system (RAS) (ACE-inhibitor or angiotensin receptor blocker or beta-blocker and calcium antagonist or diuretic, respectively). In contrast, some combinations (e.g. calcium antagonists plus diuretics or beta-blockers plus RAS blockers) have no additive blood pressure-lowering effects while other combinations (e.g. clonidine plus alpha-1 blockers) can have a negative interaction.

Fixed-dose combinations are recommended by guidelines since it is well established that the reduction of the number of pills is associated with an increase in therapeutic adherence.

Recently, a fixed combination tablet of the beta-blocker bisoprolol and the calcium channel blocker amlodipine was developed as substitution therapy for patients whose blood pressure can be adequately controlled by the simultaneous administration of both substances at the same dose. Results indicate that this new fixed-dose combination is effective and can increase patient adherence, therefore resulting in blood pressure control, and hence reducing hypertension-related morbidity and mortality.



L17. The prevention of heart failure development in hypertension

María Juliana Rodríguez Gonzalez

Cardiovascular Foundation of Colombia - Bogota, Colombia

Heart failure (HF) is the leading cause of death and re-hospitalization in the cardiovascular field; this could be the reason why we have to deal with principal etiologies that can produce some alterations in ventricular function. The objective is to try to avoid the end point of heart failure.

There are multiples etiologies of heart failure.

Myocardial ischemia and hypertension are most often the causes of HF.

A lot of clinical trials have studied all cause mortality, cardiovascular mortality and strokes as main outcomes of hypertension. Just few have deal with heart failure as an outcome.

This talk reflects:

1. Evidence of HF as an outcome in hypertension trials and the strategies to diminish it
2. Physiopathology of HF in hypertension
3. Strategies to manage hypertension in order to prevent HF



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