International Scientific & Educational Workshop in CTEPH

Monday 27th & Tuesday 28th June 2011
Robinson College, Cambridge, UK
Professor Kenneth Moser:

“Participating in academic medicine and research is like being a member of a relay team engaged in a race of infinite length. Two forces keep one running through the often difficult terrain: the goal of improving health, and the privilege of passing the baton to many others who will seek that same goal”.

(courtesy of Professor Stephen Archer)
The Association for Research in CTEPH would like to thank the members of the Scientific Committee and Members of the Abstract Review Committee for contributing to the scientific program and abstract review process.

**SCIENTIFIC COMMITTEE**
Professor Gérald Simonneau  
Professor Marion Delcroix  
Professor Irene Lang  
Professor Eckhard Mayer  
Dr Joanna Pepke-Zaba

**ABSTRACT REVIEW COMMITTEE**
Professor Gérald Simonneau  
Professor Marion Delcroix  
Professor Irene Lang  
Professor Eckhard Mayer  
Dr Joanna Pepke-Zaba  
Professor Adam Torbicki

**LOCAL SCIENTIFIC COMMITTEE**
Dr Joanna Pepke-Zaba  
Mr David Jenkins  
Professor Nicholas Morrell
Dear Colleagues and Friends,

On behalf of the Association for Research in CTEPH, Papworth Hospital, University of Cambridge Teaching Hospitals, we would like to extend a warm welcome to the International Scientific & Educational Workshop in CTEPH. After “CTEPH 2008” in Vienna, this is the first International Scientific & Educational Workshop in CTEPH for physicians, surgeons, intensivists and scientists active in the field of CTEPH. The conference has been organised by the Association for Research in CTEPH.

Progress in surgical and medical treatment over the past decade has considerably improved the outcome of CTEPH patients. The conference program will present the latest and most significant developments in clinical practice; clinical, basic and translational research and will help to raise the awareness of the CTEPH between medical professionals through education.

We trust that the meeting will provide a vibrant and interactive venue for the presentation of the original research and exchange of state-of-the-art knowledge regarding CTEPH, to help scientists and clinicians translate the latest findings into improvements in patient care. It is our aim that the major strength of the meeting will be the opportunity for clinicians, surgeons and researchers to interact and exchange ideas.

We would like to thank pharmaceutical companies for their support in the form of unrestricted educational grants.

Finally, we hope that you will enjoy the social programme in the setting of the magnificent historical city of Cambridge.

Joanna Pepke-Zaba
Working group Meeting for PEA Surgeons and Invited Guests
on the occasion of the International Scientific & Educational Workshop in CTEPH

Pulmonary Endarterectomy (PEA) Surgery in 2011 & beyond
Monday, 27th June 2011
Umney Lecture Theatre, Robinson College, Cambridge, UK

08:00 – 08:30  Arrival of Delegates, Registration and Coffee
08:30 – 08:35  Introduction  David Jenkins
08:35 – 09:30  Indication and Evaluation of Operability | David Jenkins / Walter Klepetko
   Imaging and indication for surgery - Michael Madani [15 min]
   Operability scoring system - a first attempt - Eckhard Mayer [15 min]
   Consensus discussions [25 min]
09:30 – 09:45  Break
09:45 – 11:15  Surgical Technique | Philippe Dartevelle / Michael Madani
   Does DHCA for PEA surgery injure the brain? - David Jenkins [15 min]
   The Pavia approach of HCA - Andrea D’Armini [10 min]
   Controversial topics - Walter Klepetko [10 min]
   Consensus discussions [55 min]
11:15 – 11:30  Break
11:30 – 12:00  Forthcoming PEA Projects | David Jenkins / Eckhard Mayer
   Developing Int. Surgical PEA Programs & Network - Michael Madani [15 min]
   Discussion [15 min]
12:00 – 12:05  Conclusions | Eckhard Mayer

Not submitted for CPD Accreditation
INTERNATIONAL SCIENTIFIC & EDUCATIONAL WORKSHOP IN CTEPH 2011

DAY ONE - 27th June 2011

12:00 – 13:30  Arrival of Delegates, Registration & Buffet Lunch – Dining Hall

13:30 – 15:30  Welcome – Joanna Pepke-Zaba

Inaugural lecture:
CTEPH: Where are we today? Unresolved issues – Gérald Simonneau

Basic mechanism of CTEPH | Nick Morrell / Marc Humbert

Medical Risk Factors & Associated Conditions – Diana Bonderman
Pro-thrombotic Risk Factors (linking acute VTE to CTEPH) – Raffaele Pesavento
New biological hypotheses – Jason X.J. Yuan

15:30 – 16:00  Break & Poster Viewing – Dining Hall

16:00 – 17:30  Vascular and right ventricular remodeling | Marius Hoeper / Simon Gibb

Animal models of CTEPH – Elie Fadel
Pulmonary vascular remodeling – thrombus organization vs. pulmonary arteriopathy – bronchial collateral circulation – Irene Lang
Right ventricular adaptation to CTEPH vs. iPAH – Anton Vonk Noordegraaf

18.45 – 22:30  Reception and dinner at King’s College

Endorsed for CME Approval via European Board for Accreditation in Cardiology
DAY TWO - 28th June 2011

08:00 – 08:30  
Arrival of Delegates – Coffee & Poster Viewing - Dining Hall

08:30 – 10:00  
**Surgical Treatment – PEA** | Michael Madani/ Walter Klepetko  
Evaluation of operability - Philippe Dartevelle  
Surgical techniques - David Jenkins  
Post-operative care – Multidisciplinary approach - Kim Kerr

10:00 – 10:30  
Break & Poster Viewing – Dining Hall

10:30 – 12:00  
**Medical therapy in CTEPH** | Ardeschir Ghofrani / Nazzareno Galiè  
Differences in physiology between CTEPH and IPAH - Robert Naeije  
Is there a role of targeted PAH therapy in non-operable CTEPH? - Joanna Pepke-Zaba  
Role of medical therapy for bridging and in residual pulmonary hypertension - Pavel Jansa

12:00 – 13:30  
Buffet Lunch & Poster Viewing - Dining Hall

13:30 – 15:00  
**Interactive Abstract Session** | Andy Peacock / Paul Corris  
Oral presentations of the best 5 abstracts  
Highlights of further abstracts submitted - Adam Torbicki / Marion Delcroix  
Prize for the best abstract

15:00 – 16:00  
**What we have learned from the European CTEPH Registry** |  
Irene Lang / Joanna Pepke-Zaba  
Cohort description - Marion Delcroix  
Conclusions from the CTEPH Registry and the surgical consensus meeting - Eckhard Mayer

16:00 – 16:15  
Summary and Perspective - Nick Kim

16:15 – 16:45  
Break & Poster Viewing – Dining Hall

16:45 – 17:30  
**“Post Meeting” Workshop for surgeons and interested physicians**  
Burning issues of pulmonary endarterectomy [PEA] | David Jenkins / Eckhard Mayer  
Presentation of interesting clinical cases  
Open forum to discuss issues related to PEA
FACULTY BIOGRAPHIES

PAUL CORRIS
Paul A Corris is Professor of Thoracic Medicine, Institute of Cellular Medicine, University of Newcastle and Regional Cardiothoracic Centre, Freeman Hospital. His medical training was at University College London and The Westminster Medical School. He is Director of Cardiopulmonary Transplantation and the National Pulmonary Vascular Service (Newcastle). He is Deputy Chairman of the Transplant Institute and a principal investigator in the Institute of Cellular Medicine Newcastle. He is Respiratory Lead for North East SHA. He is a past President of the International Society for Heart and Lung Transplantation and past chairman of the UK Pulmonary Hypertension Physicians Group. He is immediate past President of the British Thoracic Society. He is a previous member of Council of The Royal College of Physicians London. He sits on the Medical Advisory Council of the Pulmonary Hypertension Patients Association UK. He sits on the Executive and is a Trustee of the Medical Research Society and is a Member of the Association of Physicians of Great Britain and Ireland.

His research interests are in both basic and clinical science with a particular focus on remodelling of airways following lung transplantation. He has published over 200 peer reviewed manuscripts. He has sat on The British Lung Foundation grant committee and has been Associate Editor of Thorax. He is currently Associate Editor for The Journal of Heart and Lung Transplantation and an Editorial Board Member of Transplantation In 1999 he delivered the Bradshaw Lecture of the Royal College of Physicians London.

He enjoys fine wine, fine food, the cinema and theatre. He follows all major sports and is a long suffering member of the Toon Army. He is an enthusiastic skier.

MARION DELCROIX
Marion Delcroix was born in Belgium and studied medicine at the Free University of Brussels where she graduated in 1987. She was Research Assistant and Senior Research Assistant of the Belgian National Fund for Scientific Research (FNRS) for 5 years. She then specialized in Pneumology. She is presently working in the Department of Pneumology of the University Hospital of Leuven and is Professor of Medicine and of Respiratory Physiology at the Catholic Universities of Leuven and Kortrijk. As Director of the Centre for Pulmonary Vascular Diseases in Leuven, she has been involved in the routine care of over 900 patients with pulmonary hypertension and has participated to the main pivotal trials for the treatment of pulmonary arterial hypertension. She was invited expert at the 2003 Third and 2008 Fourth World Symposia on Pulmonary Arterial Hypertension and is vice-president of the Belgian Task Force for Pulmonary Hypertension. Her research interests is focused on pulmonary circulation and gas exchange, gene transfer to lung vessels, Doppler myocardial imaging for pulmonary hypertension, and more recently inflammation of the vessel wall in CTEPH.

ELIE FADEL
Professor at the University Paris-Sud, Thoracic and Cardiovascular Surgery

Research - Director of Laboratoire de Chirurgie Experimentale
INSERM U 999, Hopital Marie Lannelongue, 133 avenue de la Resistance 92350, Le Plessis Robinson, France

Main interests - Heart-lung and lung transplantation; Pulmonary endarterectomy ; Chronic thromboembolic pulmonary hypertension: physiopathology and experimental animal models Lung cancer & Aortic surgery

NAZZARENO GALIÈ
Nazzareno Galiè, MD, heads the Pulmonary Hypertension Centre at the Institute of Cardiology and is Associate Professor of Cardiology at the Medical Faculty of the University of Bologna, Italy. He also teaches at the Postgraduate Medical Schools of Cardiology, Pulmonary Diseases, and Rheumatology at the University of Bologna. He is Director of the International Master Degree in Pulmonary Vascular Diseases of the University of Bologna. He has authored 107 scientific publications indexed in Pub - Med on heart failure, heart transplantation and pulmonary hypertension (Impact Factor = 792). Professor Galiè is a Scholar of the Italian Society of Cardiology, Fellow of the European Society of Cardiology (FESC), and Honorary Fellow of the Royal College of Physicians (FRCP), UK.

He is past-Chairman of the working group on pulmonary circulation of the European Society of Cardiology and of the joint task force of the European Society of Cardiology and the European Respiratory Society for the guidelines on pulmonary hypertension.
SIMON GIBBS

Simon Gibbs is Clinical Senior Lecturer in Cardiology at the National Heart and Lung Institute, Imperial College London and Lead Clinician and honorary Consultant Cardiologist for the National Pulmonary Hypertension Service at Hammersmith Hospital. He is chairman of the Working Group on the Pulmonary Circulation and Right Ventricular Function at the European Society of Cardiology. He trained in cardiology in London and was appointed to his current position in 1997. Since then he has developed and grown the Pulmonary Hypertension Service at Hammersmith Hospital which is now a thriving clinical service focused on obtaining best outcomes for patients through high quality clinical research and audit. Simon is Lead Clinician for the UK National Audit of Pulmonary Hypertension and chairman of its Project Board. He has also served as an Expert European Scientific Advisor to the European Medicines Agency, as a member of the Executive Committee of the International Society of Mountain Medicine, and as Associate Editor of High Altitude Medicine and Biology. His clinical research has taken him above the snow line to investigate the pulmonary circulation at high altitude, while at sea level his recent research interests extend to the failing right ventricle, novel agents for treating pulmonary arterial hypertension, and vasculopathy in sickle cell disease. Over the last few years this programme has been funded by the British Heart Foundation, the Medical Research Council, the National Institute of Health Research and the National Institutes of Health (USA).

HOSSEIN-ARDESCHIR GHOFRANI

Hossein A.Ghofrani received his medical degree from the Medical School at Giessen University in Germany. He is Professor for Internal Medicine at University Hospital Giessen and Marburg GmbH. He currently is Head of the Pulmonary Hypertension Division, Department of Internal Medicine, at Giessen. He also leads a collaborative group on Cardiopulmonary Vascular System research. In addition he is Director of Pneumology at the Kerckhoff Heart and Lung Center in Bad Nauheim, Germany.

Professor Ghofrani has participated in the therapeutic development of surfactant for the treatment of acute respiratory distress syndrome (ARDS); prostanoids, PDE inhibitors, combination therapies, and soluble guanylate cyclase activators and stimulators for pulmonary hypertension; endothelin antagonists for chronic lung disease and pulmonary hypertension; and tyrosine kinase inhibitors for pulmonary vascular diseases.

He has received four awards for investigations in pulmonary vascular science and is a reviewer for several medical scientific journals including the American Journal of Respiratory and Critical Care Medicine, European Respiratory Journal, Circulation, and Lancet.

MARIUS M. HOEPER

Marius M. Hoeper, MD, was educated at Hannover Medical School, where he specialised in respiratory medicine and intensive care medicine. In 1992, he received a two-year grant from Germany’s National Research Foundation for a post-doc training at the University of Colorado, Denver, USA. After that training had been completed, Professor Hoeper moved back to Hannover Medical School, where he now holds the position of Senior Physician in the Department of Respiratory Medicine. He is in charge of the pulmonary hypertension programme and is the clinical director of the medical intensive care unit. His main scientific interest lies in the field of pulmonary hypertension, where he has published more than 120 papers. In addition, Professor Hoeper serves as a regular reviewer for major medical journals in the field and is a member of the editorial board of the American Journal of Respiratory and Critical Care Medicine as well as an associate editor with the European Respiratory Journal.

Prof. Hoeper has been a task force member at the 3rd World Symposium on Pulmonary Hypertension in Venice (2003) and a task force chair at the 4th World Symposium on Pulmonary Hypertension in Dana Point (2008). In addition, he has been an author and section editor of the 2009 European guidelines for Pulmonary Hypertension.

MARC HUMBERT

Marc Humbert, MD, PhD, is Professor at the South Paris University in Clamart, France. In addition to his academic responsibilities, Marc Humbert is consultant and specialist at the National Reference Centre for Pulmonary Hypertension and Severe Asthma Clinic, Department of Respiratory and Intensive Care Medicine, Hospital Antoine Béclère, Clamart, France. Marc Humbert is Chairman of the South Paris Pulmonary Hypertension Centre for Research and Care (CTRS INSERM), Director of the INSERM Unit 999 ”Pulmonary Hypertension: Pathophysiology and Innovative Therapies”, Chairman of the European Respiratory Society Group “Pulmonary Circulation and Vascular Diseases”, Editor of the 4th World Congress of the Pulmonary Circulation, Vice Dean of the South Paris School of Medicine, Editor of the European Respiratory Review, Associate Editor of the European Respiratory Journal, Member of the Editorial Board of the American Journal of Respiratory and Critical Care Medicine. Marc Humbert has published widely in the fields of asthma, pulmonary hypertension and pulmonary inflammation and has been awarded with the European Respiratory Society Cournand Lecture in 2006 with a lecture on “The Burden of Pulmonary Hypertension”. Marc Humbert has recently received the Descartes-Huygens Prize 2009 from the Royal Netherlands Academy of Arts and Sciences.
PAVEL JANSA
Educated at the Charles University in Prague, 1st Faculty of Medicine (1996). He specialized in internal medicine (1999) and cardiology (2005). He is chief of Centre for Pulmonary Hypertension at the Department of Cardiology and Angiology, General University Hospital in Prague and Assistant Professor at the 1st Faculty of Medicine, Charles University, Prague. He is vice chairman of the Working Group on Pulmonary Circulation of the Czech Society of Cardiology. Research interest have included genetics of pulmonary arterial hypertension, coagulation disorders in pulmonary hypertension and epidemiology of pulmonary hypertension. He is main author of the Czech National Guidelines for Diagnosis and Treatment of Pulmonary Hypertension.

DAVID JENKINS
I graduated in 1989 and trained in surgery in London. I completed a period of research into myocardial protection at the Hatter Institute at UCL and was awarded the degree of Master of Surgery from The University of London.

I trained in cardiac surgery on the west London rotation at Hammersmith, Harefield and St Georges hospitals and was appointed as consultant surgeon at Papworth hospital in 2001.

I have experience in all aspects of adult cardiac surgery. Specialist experience includes heart and lung transplantation, mechanical circulatory support including ventricular assist devices and ECMO for cardiac and respiratory failure. I was appointed lead surgeon for the national pulmonary endarterectomy programme in 2004. My research interests are related to pulmonary hypertension and pulmonary endarterectomy surgery.

KIM KERR
Dr. Kerr is a Clinical Professor of Medicine in the Division of Pulmonary and Critical Care Medicine at the University of California San Diego. She has been with the UCSD Pulmonary Thromboendarterectomy (PTE) Program since 1993, participating in the preoperative evaluation and postoperative care of PTE patients. She supervises clinical trials involving PTE patients and her research interests include acute lung injury, particularly reperfusion lung injury following pulmonary endarterectomy, as well as medical therapy of chronic thromboembolic disease. In addition to her work with the PTE Program, she is also the Director of the Thornton Intensive Care Unit and Director of the UCSD Pulmonary & Critical Care Clinical Trials Group.

NICK H. KIM
Dr. Kim is an Associate Clinical Professor of Medicine and Director of the Fellowship Training Program in the Division of Pulmonary and Critical Care Medicine at the University of California San Diego. Dr. Kim’s clinical and research interests are in pulmonary arterial hypertension and chronic thromboembolic disease. He heads the pulmonary arterial hypertension program and also attends on the pulmonary thromboendarterectomy service at UCSD. He is PI on numerous clinical trials, and has published and lectured extensively on the subject of pulmonary hypertension.

He received his Medical degree from the University of Chicago, Pritzker School of Medicine and Bachelor of Arts degree form Harvard University. He completed Internal Medicine internship and residency at the University of Chicago. He also received training in Anesthesiology for one year at the University of California, San Francisco. He completed Fellowship in Pulmonary and Critical Care at the University of California, San Diego. He chose San Diego for the weather and discovered pulmonary hypertension. He has been on the faculty of Pulmonary and Critical Care Medicine at UCSD since 2002. He is boarded in Internal Medicine, Pulmonary Medicine and Critical Care Medicine. He is married to a Rheumatologist, whom he met during internship. They do not talk about medicine or work at home. They are wondering when their life won’t revolve around their two children ages 12 and 9.
WALTER KLEPETKO
Prof. Dr. Walter Klepetko graduated at the Vienna Medical School in 1978 and started working at the University Hospital of Vienna first as a fellow in 1983. He then served there as a staff surgeon, followed by appointments as assistant professor and associate professor of surgery at the Department of Cardiopulmonary Surgery. In 1989 he founded the Vienna Lung Transplant Programme and remained as a director until now. Since then the centre has become one of the largest lung transplant centres in the world.

2008 Prof. Klepetko was promoted to full professor of thoracic surgery and became head of the newly founded Department of Thoracic Surgery.

Prof. Klepetko has a large number of professional appointments in scientific societies including the European School for Thoracic Surgery, Bergamo, where he served as a president in the years 2002 to 2003 and the American Association of Thoracic Surgery, where he was the European representative in the board of directors in the years 2006 to 2009. Besides, he was a member of the board of directors of the International Society of Heart and Lung Transplantation during the year 1990.

Prof. Klepetko's special interests are surgery of lung carcinoma, lung transplantation and surgical treatment of pulmonary hypertension. In parallel to the existing lung transplant programme an active pulmonary thromboendarterectomy programme has been built up at the Medical University of Vienna since 1995. Transplantation of patients with different forms of pulmonary hypertension and pulmonary endarterectomy has since then become one main field of research within the department.

IRENE LANG
Irene M. Lang, MD, carried out her medical education and residency at the University of Vienna, before taking on a postdoctoral research fellowship at the University of California San Diego, which included a joint appointment with the Scripps Research Institute. In 1994, she returned to Vienna to continue training at the Vienna General Hospital and the Medical University of Vienna, where she has since been working. Since 2004, she has been Professor of Vascular Biology at the Medical University of Vienna, Austria. Professor Lang leads a clinical and an experimental group in vascular medicine. She was nominated by the World Medical Association as a "Caring Physician of the World" in 2006. She is currently Past-President of the "Austrian Society of Cardiology", and of the "Fonds zur Förderung der Wissenschaft und Forschung im allgemeinen Krankenhaus der Stadt Wien und den Universitätskliniken" in Vienna. She is deputy chair of the Division of Cardiology at the MUV.

MICHAEL M. MADANI
Dr. Madani is a cardiothoracic surgeon with more than 10 years experience working in this field. He is nationally and internationally recognized for his expertise in the treatment of chronic thromboembolic pulmonary hypertension. Dr. Madani is an Associate Clinical Professor in Surgery and currently holds several distinguished leadership positions at the University of California San Diego (UCSD). He is the Co-Director of the UCSD Cardiovascular Center, the Surgical Director of Lung Transplantation, and Co-Director of UCSD's Pulmonary Endarterectomy Program. In addition, Dr. Madani serves as the Secretary General of the World Society of Cardiothoracic Surgeons.

Dr. Madani has over 50 publications including peer-reviewed journal articles and book chapters on a variety of therapeutic focus areas, with particular emphasis on chronic thromboembolic pulmonary hypertension, lung and heart transplantation, and cardiothoracic surgical techniques. In addition, Dr. Madani has been an invited lecturer for numerous professional and academic organizations both nationally and internationally.

Notable professional memberships for Dr. Madani include the American Medical Association, American College of Surgeons, the Society of Thoracic Surgeons, the International Society for Heart and Lung Transplantation, the World Society of CardioThoracic Surgeons, the Western Thoracic Surgery Association, the Cardiothoracic Surgery Network, and San Diego County Medical Society.

Throughout his successful career, Dr. Madani has been the recipient of several prestigious awards and honors. In 2004, he was awarded the Best Healthcare Provider of the Year in California, by the VFW foundation. In addition, Dr. Madani has been awarded the physician of the year award at University of California and also has been recognized nationally as one of the Best Doctors in America. In 2010, he received an Honorary Professorship in Surgery form Beijing Capital Medical University, Chao Yang Hospital in Beijing, China.

Dr. Madani received his Doctor of Medicine from the University of Toronto. He completed his residencies in general surgery and cardiothoracic surgery at the Berkshire Medical Center at University of Massachusetts and the University of California, San Diego Medical Center.
ECKHARD MAYER
Eckhard Mayer is Professor of Thoracic Surgery at the Johannes Gutenberg University Mainz, Germany. His surgical training was at the Dept. of Cardiothoracic Surgery at Mainz University Hospital with a research fellowship at the Division of Thoracic Surgery at the University of Toronto. He is director of the Dept. of Thoracic Surgery at Kerckhoff Heart and Lung Center, Bad Nauheim, Germany. From 1989, he was involved in the first successful European Pulmonary Endarterectomy program at Mainz University and has been the director of this program at Mainz and Giessen universities and the Kerckhoff Heart and Lung Center for 17 years. He has published widely in the field of chronic thromboembolic pulmonary hypertension and has been involved in the Venice 2003, Dana Point 2008 and several European and National PH Guideline conferences.

NICK MORRELL
Nick Morrell is the British Heart Foundation Professor of Cardiopulmonary Medicine at the University of Cambridge School of Clinical Medicine. He is the research director of the National Pulmonary Hypertension Service at Papworth Hospital and leads a basic science laboratory at Addenbrooke’s Hospital, focusing on the cell and molecular biology of pulmonary hypertension. He undertook a 2 year Fellowship in Denver, Colorado, 1993-1995 before returning to complete his training in Respiratory Medicine at the Royal Postgraduate Medical School, Hammersmith Hospital and Imperial College. He was a Medical Research Council Clinician Scientist at Imperial College before moving to Cambridge in 2000. Since then he has grown a team of scientists and clinicians across a range of disciplines relevant to understanding the molecular basis of pulmonary hypertension. The group is particularly focused on the mechanisms by which mutations in the bone morphogenetic protein type 2 receptor [BMPR2] cause heritable pulmonary arterial hypertension. The group is committed to pulling discoveries in basic science through to the clinic by experimental medicine studies in patients. He has published over 120 peer-reviewed articles on pulmonary hypertension and is editor-in-chief of the new journal, Pulmonary Circulation. He has been or is presently a member of grant review committees for the Wellcome Trust, British Heart Foundation and Medical Research Council. He has chaired the program committees for the British Thoracic Society and the Pulmonary Circulation Assembly of the American Thoracic Society. He was elected to the Academy of Medical Science in 2011.

ROBERT NAEIJE
Robert Naeije, MD, PhD, is Professor of Physiology and Medicine, and Chairman of the Department of Pathophysiology at the Faculty of Medicine of the Free University of Brussels. He is also Consultant at the Pulmonary Hypertension Clinic of Department of Cardiology of the Erasme University Hospital, Brussels. Professor Naeije has a long publication record of fundamental and clinical research on the pulmonary circulation. He has served on scientific advisory boards of several randomized controlled trials of new specific pharmacologic treatments of pulmonary arterial hypertension. He was actively involved in the Évian (1998), Venice (2003) and Dana Point (2008) world expert consensus conferences on pulmonary hypertension. Professor Naeije’s current research interests include various pathophysiological and therapeutic aspects of pulmonary arterial hypertension, and the pathobiology of experimental animal models of pulmonary hypertension and right heart failure. On the clinical side, his team has developed original methods for an improved non invasive evaluation of the pulmonary circulation and right ventricular function, with recent focus on tissue Doppler imaging techniques and exercise stress testing. His publication list currently reaches 300 peer reviewed articles. Professor Naeije has been member of the editorial board of the American Journal of Respiratory and Critical Care Medicine and is currently Associate Editor of the European Respiratory Journal.

ANDREW PEACOCK
Andrew Peacock is the Director of the Scottish Pulmonary Vascular Unit, which looks after all the patients with pulmonary hypertension in Scotland (population 5 million). He is also Professor in Medicine at the University of Glasgow [Respiratory Medicine]. Andrew trained at St Bartholomew’s Hospital Medical College, London, Caius College Cambridge, Brompton Hospital, London, UK and at the University of Colorado Health Sciences Center, CO, USA, where he studied the effect of high altitude on the pulmonary circulation of chickens! Hypoxia remains the main theme of his research because it combines the science of the pulmonary circulation with an unhealthy interest in mountains. His laboratory studies the effects of hypoxia on pulmonary vascular-cell proliferation and on the physiological responses of the human pulmonary circulation. He has been involved in many of the clinical trials of new therapies for pulmonary hypertension in the last years, and has spent time developing new end points in the assessment of patients with pulmonary vascular disease. He is Secretary of the Pulmonary Circulation Group of the European Respiratory Society and the author of more than 150 papers, reviews and chapters on pulmonary vascular disease. He is co-editor with Lew Rubin of Pulmonary Circulation (2nd Edition): diseases and their treatments (3rd Edition in process).
JOANNA PEPKE ZABA
Graduated from Warsaw University School of Medicine in Poland before undertaking a fellowship in Respiratory Physiology at Papworth and Addenbrooke’s Hospitals, Cambridge which resulted in PhD: “The role of the endothelial derived nitric oxide (EDNO) in the pathophysiology of pulmonary hypertension”. Recently she has mainly concentrated on the translational research programs, which encourages young researchers to investigate basic science questions in terms of clinical applicability. This provides a unique potential for scientific breakthroughs, technological advances and new treatments in the field of pulmonary hypertension with specific interest into Chronic Thromboembolic Pulmonary Hypertension and Idiopathic Pulmonary Arterial Hypertension. She has been involved in many of the clinical trials of new therapies for pulmonary hypertension. Her main scientific interest lies in the field of Pulmonary Hypertension where she has published more than 60 papers.
Since 1999 she has been the lead physician and since 2004 the Director of the National Pulmonary Vascular Diseases Unit at Papworth Hospital, the sole provider of Pulmonary Endarterectomy Service in the UK. She has previously chaired the National Pulmonary Hypertension Centres Committee for the UK and Ireland. She serves on various National and International Committees.

RAFAELE PESAVENTO
Dr. Raffaele Pesavento received his medical degree from the University of Padua, Padua, Italy and did postgraduate training in internal medicine and cardiology at the same University. He is Chief of the Cardiovascular Section and the Centre for prevention of arterial and venous diseases and adjunct Professor of Vascular Medicine, 2nd Chair of Internal Medicine, University of Padua, Padua, Italy. Dr. Pesavento’s clinical and research interests include the prevention, diagnosis and therapy of venous thromboembolism and arterial vascular diseases. He is currently the coordinator of both a nationwide scientific clinical project on the natural course of pulmonary embolism and a regional multicentre cohort study on the significance of chronic residual pulmonary embolism. For many years now he has been a collaborator in Prof. Prandoni’s research workgroup.
He has co-authored or authored over 40 scientific publications in international and national journals.

GÉRALD SIMONNEAU
Gérard Simonneau, MD, is head of the Department of Pneumology, Hôpital Antoine Béclère, Clamart, Paris-Sud University, France. In addition, Professor Simonneau is director of the national reference centre for severe pulmonary hypertension since 2004. He has been President of the Working Group and Pulmonary Circulation of the European Society of Cardiology. He has published widely in the fields of pulmonary hypertension in high impact factor peer-review journals including New England Journal of Medicine, Lancet, Annals of Internal Medicine and Circulation. Gérard Simonneau is also director of the team on clinical research in pulmonary hypertension (ISERM U999).

ADAM TORBICKI
Graduated from Warsaw University School of Medicine in 1978. Fellowships in University of Freiburg (Germany) and Pavia (Italy). Currently Head of the Department of Chest Medicine in Institute of Tuberculosis and Lung Diseases in Warsaw Poland, a reference centre for pulmonary hypertension and embolism. Professor of Medicine, specialist in Internal Medicine and Cardiology. Author of publications in Thrombosis and Hemostasis, Heart, Chest, Thorax, Eur Heart J, Am J Cardiol, J Am Coll Cardiol, Circulation, NEJM. Since 1982 involved in research related to pulmonary circulation with special interest in non-invasive evaluation, prognostic staging and follow-up of pulmonary hypertension and right ventricular function. Contributed to many recent trials assessing pharmacologic treatments in pulmonary hypertension and to ESC Guidelines on PAH. Coordinator of the Task Forces which published European Society of Cardiology Guidelines on Diagnosis and Treatment of Pulmonary Embolism in 2000 and 2008. Chairman of the Organizing Committee of “Pulmonary Circulation 2006 European Forum” in Warsaw. Chairman of the Working Group on Pulmonary Circulation and Right Ventricular Function of the European Society of Cardiology (2004 - 6). Past-President of Polish Cardiac Society (2004 – 2007) and current Vice-President of the Board of European Society of Cardiology.

ANTON VONK NOORDEGRAAF
Professor in the division of Pulmonary Sciences at the Vrije Universiteit Amsterdam, a tertiary referral centre for pulmonary arterial hypertension (PAH) in the Netherlands. Prof. Dr. Vonk Noordegraaf obtained his medical degree with honours from the Vrije Universiteit Medical Centre, Amsterdam, in 1995. Between 1995 and 1997 he studied for his PhD, exploring the function of the right ventricle in COPD-related PH. He then spent 1 year as a post-doc at Pennsylvania University, Philadelphia, USA, where he was dedicated to the research of the pulmonary circulation in ARDS. After completing a 6-year fellowship in pulmonary medicine at Vrije Universiteit in Amsterdam, he joined the division of Pulmonary Sciences at the University in 2003, where he remains to the present day. He published more than 150 papers in peer reviewed journals. His research is dedicated to mechanisms and treatment of right ventricular failure, pulmonary hemodynamics and clinical studies in the field of pulmonary hypertension.
In 2009 he received the 'Pulmonary Hypertension Research Award' from the European Respiratory Society.
JASON X-J YUAN

Jason X.-J. Yuan, M.D., Ph.D., is Professor of Medicine and Pharmacology in the University of Illinois at Chicago (UIC). He is also Director of the Pulmonary Hypertension Translational Research Program in the Institute for Personalized Respiratory Medicine at UIC.

Dr. Yuan’s research interests center on pathogenic mechanisms of pulmonary hypertension. His work has yielded key knowledge on the pathogenic role of ion channels in regulating contractility, proliferation and apoptosis in the development of pulmonary arterial hypertension. His lab has also examined intracellular Ca2+ signaling mechanisms in pulmonary vascular smooth muscle and endothelial cells, particularly the putative role of transient receptor potential channels in the pulmonary vascular remodeling associated with pulmonary artery hypertension.

In addition, he has also studied potential pathogenic and therapeutic roles of adult stem cells in idiopathic and thromboembolic pulmonary hypertension.

He is a Fellow of the American Association for the Advancement of Science, the American Heart Association (AHA) and The American Physiological Society. He is an inducted member of the American Society for Clinical Investigation and a Guggenheim Fellow of the John Simon Guggenheim Memorial Foundation. He has served as Chair of the Respiratory Integrative Biology and Translational Research study section of the National Institutes of Health (NIH), and as a member for many advisory committees and reviewing panels of various scientific and medical associations. Currently, he is Associate Editor of American Journal of Physiology Cell Physiology and serves on the editorial board of Respiratory Research and American Journal of Physiology Lung Cellular and Molecular Physiology.
ABSTRACTS SELECTED FOR ORAL PRESENTATION

PREOPERATIVE PARTITIONING OF PULMONARY VASCULAR IMPEDANCE PREDICTS OUTCOME AFTER PULMONARY ENDARTERECTOMY IN PATIENTS WITH CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION

Maria J Ruiz-Cano, Juan C Grignola, Pilar Escribano, Carmen Jimenez, Juan Delgado, Miguel A. Gomez, Maria T. Velazquez, J. Cortina.

Pulmonary Hypertension, Heart Failure and heart Transplantation Unit. Cardiology and Cardiovascular Surgery Department. 12 de Octubre University Hospital. Madrid. Spain.

ABSTRACT

Background: Optimal characterization of the reciprocal contributions of large vessels and small vessel disease [so called microvasculopathy] in the elevation of pulmonary vascular resistance [PVR] in patients with chronic thromboembolic pulmonary hypertension [CTEPH] is crucial for the indication and outcome of pulmonary endarterectomy [PEA]. More pronounced microvasculopathy contributes to greater PVR, which increases postoperative mortality. The quest for the optimal test to assess the degree of microvasculopathy remains unsolved.

The aim of this retrospective study was to analyze the ability of preoperative upstream impedance (Zup), a novel hemodynamic index that assesses both pulsatile and steady afterload, to predict post–operative mortality and its relationship with residual pulmonary hypertension [PH] one year after PEA. We hypothesized that lower Zup, in patients with CTEPH, might be a consequence of inaccessible distal thrombi and/or secondary pulmonary hypertensive changes, and therefore would be associated with higher early post–operative mortality and residual PH.

Methods: Thirty-three patients (52 ± 14 years) underwent PEA between 1997–2010. Hemodynamic measurements [right atrial pressure (RAP), cardiac output [CO], cardiac index [CI], systolic pulmonary arterial pressure [Ps], diastolic pulmonary pressure (Pd), mean pulmonary arterial pressure (Pm), pulmonary vascular resistance (PVR), and pulmonary capillary wedge pressure (PAOP)] were recorded during preoperative right heart catheterization (RHC) and one year after PEA. Pulmonary artery (PA) impedance was partitioned into proximal (Pm-Pd) and distal small vessel (Pm-PAOP) components, and the ratio (Zup) was calculated by (Pm-Pd)x100/(Pm-PAOP). Pulsatile afterload component was assessed by the fractional pulse pressure ([fPp=Pp/Pm]) and the capacitance index ([Cp=stroke volume/Pp]). Persistent PH was defined as PVR of 240 dyn.s.cm-5 or greater.

Results: Seven patients died during short term (< 30 days) follow–up. Preoperative lower Zup [OR 0.82, 95% CI 0.68–0.98, p=0.029] and cardiac index [OR 0.039, 95% CI 0.003–0.45, p=0.01], as well as higher PVR [OR 1.35, 95% CI 1.09–1.67, p=0.004] and RAP [OR 1.24, 95% CI 1–1.5, p=0.03], were significantly associated with early mortality after PEA. A low Zup value [cutoff point 47 %] predicted mortality after PEA with a sensitivity of 81% and a specificity of 86% [area under the curve [AUC] = 0.87, p = 0.003]. In the subgroup of patients with higher preoperative PVR (>9 WU), Zup was the only hemodynamic parameter that stood as a mortality risk predictor after PEA with sensitivity of 86% and a specificity of 100% [AUC = 0.93, p = 0.005] for a cut–off point of 47%. Persistent PH was associated with lower improvement in Cp [1.8 ± 0.8 vs 3.8 ± 1.4 ml/mmHg; p<0.01], Pp [41 ± 14 vs 23 ± 11 mmHg; p<0.01], and Zup [60 ± 9 vs 93 ± 9 %; p <0.001] than patients without PH, despite similar preoperative values.

Conclusions: In patients with CTEPH suitable for PEA, lower values of Zup are associated with higher early postoperative mortality. In the group of patients with higher PVR (>9 Wood U) Zup discriminates better the population at highest risk. Therefore Zup could be a complementary tool to improve risk assessment for PEA in patients with CTEPH. Persistent PH after 1 year is associated with lower improvement in Zup, capacitance index and pulse pressure, which reflects a persistent impairment of the viscoelastic properties of the pulmonary vessel wall.
THE ROLE OF B-LYMPHOCYTES IN THROMBUS RESOLUTION

MK Frey1, MP Winter1, A Alimohammadi1, A Panzenboeck1, D Bonderman1, IM Lang1

Department of Cardiology1, Medical University Vienna, Austria

ABSTRACT

Purpose: Splenectomy is associated with complex venous thromboembolism such as recurrent deep venous thrombosis, portal vein thrombosis, and chronic thromboembolic pulmonary hypertension (CTEPH). The spleen serves not only as a red blood cell filter but also as immunological organ. The aim of our study was to decipher the population of spleen cells responsible for misguided thrombus resolution after splenectomy.

Methods: We utilized a mouse model of stagnant flow venous thrombosis to characterize thrombus resolution. Splenectomy was performed one month before vena cava ligation. In defined groups, whole spleens, spleens depleted of B-lymphocytes or B-lymphocytes alone were reinfused intraperitoneally. On days 3, 7, 14 and 28 after vena cava ligation thrombi were harvested for histology.

Results: Thrombus areas of splenectomized mice were significantly larger than those of controls at all time points (ANOVA, n=8, p<0.03). Reinfusion of autologous whole spleen-homogenates reconstituted a normal pattern of thrombus organisation. Reinfusion of spleen tissue depleted of B-lymphocytes did not affect thrombus resolution. However, reinfusion of autologous splenic B-lymphocytes in previously splenectomized mice normalized thrombus resolution. (Figure 1)

Discussion: Reinfusion of spleen cells restores normal venous thrombus resolution in a mouse model. Our data demonstrate that spleen B-lymphocytes play a key role in thrombus resolution.
OUTCOMES IN CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION

J Hurdman\textsuperscript{a}, R Condliffe\textsuperscript{a}, CA Elliot\textsuperscript{a}, C Davies\textsuperscript{a}, C Hill\textsuperscript{a}, J Wild\textsuperscript{a}, P Sephton\textsuperscript{a}, N Hamilton\textsuperscript{a}, I Armstrong\textsuperscript{a}, and DG Kiely\textsuperscript{a}

\textsuperscript{a} Sheffield Pulmonary Vascular Disease Unit, \textsuperscript{b} Department of Radiology, \textsuperscript{c} Academic Unit of Radiology, Royal Hallamshire Hospital, Sheffield, UK

ABSTRACT

Objective: To describe characteristics and outcomes between the subgroups of chronic thromboembolic pulmonary hypertension (CTEPH).

Methods: Review of 1737 consecutive patients evaluated 2001-10 for suspected PH identified incident, treatment-naïve cases of CTEPH.

Results: 218 patients with CTEPH were included. 3-year survival in CTEPH operated (undergoing pulmonary endarterectomy [PEA]) was 83%, superior to surgically inaccessible CTEPH or surgically accessible CTEPH not operated (\(p<0.05\); figure a). There was no significant difference in hemodynamic severity between these groups (table). 3-year survival in patients who were not candidates for PEA due to the presence of significant comorbidities (37%) was inferior to that in patients who declined PEA (69%) which was inferior to those with haemodynamics considered too mild to require intervention (100%, \(p<0.05\); figure b). Between 2001-09 the incidence of patients diagnosed at our centre with CTEPH increased from 0.3 to 3.7 cases/million/year respectively.

<table>
<thead>
<tr>
<th></th>
<th>CTEPH operated</th>
<th>Surgically accessible CTEPH not operated</th>
<th>Surgically inaccessible CTEPH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>n = 108</strong></td>
<td></td>
<td><strong>n = 52</strong></td>
<td><strong>n = 58</strong></td>
</tr>
<tr>
<td>Age [yrs]</td>
<td>57±15†</td>
<td>70±12*</td>
<td>63±16</td>
</tr>
<tr>
<td>Female [%]</td>
<td>44†‡</td>
<td>67*</td>
<td>60*</td>
</tr>
<tr>
<td>WHO III/IV [%]</td>
<td>72/14</td>
<td>65/24</td>
<td>74/14</td>
</tr>
<tr>
<td>ISWD (m)</td>
<td>203±174</td>
<td>129±122</td>
<td>177±141</td>
</tr>
<tr>
<td>mRAP (mmHg)</td>
<td>10±5</td>
<td>10±6</td>
<td>11±5</td>
</tr>
<tr>
<td>mPAP (mmHg)</td>
<td>49±10</td>
<td>45±11</td>
<td>46±13</td>
</tr>
<tr>
<td>CI [L.min.m\textsuperscript{-2}]</td>
<td>2.3±0.6</td>
<td>2.5±0.9</td>
<td>2.6±0.8</td>
</tr>
<tr>
<td>PCWP (mmHg)</td>
<td>10±4</td>
<td>10±5</td>
<td>11±6</td>
</tr>
<tr>
<td>PVR (dyn.s.cm\textsuperscript{-5})</td>
<td>780±389</td>
<td>740±373</td>
<td>689±424</td>
</tr>
<tr>
<td>MVO2 (%)</td>
<td>60±8</td>
<td>60±9</td>
<td>61±10</td>
</tr>
</tbody>
</table>

* \(p<0.05\) in comparison to CTEPH operated, † \(p<0.05\) in comparison to surgically accessible CTEPH not operated, ‡ \(p<0.05\) in comparison to surgically inaccessible CTEPH
Conclusions: Patients with operable disease who underwent PEA had the best long-term outcome. Patients with surgically accessible CTEPH not operated had similar outcomes to those with surgically inaccessible disease. This reinforces the importance of identification and counselling of patients with potentially operable CTEPH. The observed incidence of diagnosed CTEPH increased markedly during the study period in keeping with increased awareness of this condition and reflects the success of the UK PH network.
IN Volvement of platelet-derived growth factor and thrombin in vascular remodeling in chronic thromboembolic pulmonary hypertension


1Department of Clinical Science, National Hospital Organization Okayama Medical Center, Japan
2Department of Surgery and 3Department of Medicine, University of California, San Diego, USA
4Department of Medicine, University of Illinois at Chicago, USA

ABSTRACT

Objective: The pathogenic mechanisms involved in proximal and distal pulmonary arterial remodeling in patients with chronic thromboembolic pulmonary hypertension (CTEPH) remain unclear, although cellular and molecular mechanisms of idiopathic pulmonary arterial hypertension have been extensively studied during the last decades. Platelet-derived growth factor (PDGF) and thrombin are known as important stimuli for proliferation and migration of pulmonary artery smooth muscle cells (PASMC). This study aimed at investigating whether PDGF and thrombin are involved in pulmonary vascular remodeling in CTEPH.

Methods: The endarterectomized tissues from patients with CTEPH were used to isolate and prepare pulmonary vascular smooth muscle cells with the written informed consent and the IRB approval. The pulmonary vascular segments of the endarterectomized tissues were digested with collagenase and elastase to isolate vascular cells (CTEPH cells). The cells were resuspended and plated onto Petri dishes in smooth muscle growth media (SMGM). Normal human PASMC were cultured under the same condition as were CTEPH cells. When reached 80% confluence, the cells were growth-arrested and then PDGF or thrombin (along with rapamycin or Akt inhibitor) was added to the media. Western blot analysis was performed to determine phosphorylation of signaling proteins in Akt and ERK pathways. Intracellular Ca2+ imaging system was used to measure changes in cytosolic Ca2+ with fura-2.

Results: In CTEPH cells and normal PASMC, PDGF and thrombin induced marked phosphorylation of multiple signaling proteins in the Akt/mTOR and ERK pathways, and enhancement of store-operated Ca2+ entry (SOCE). Chronic treatment with rapamycin or Akt inhibitor significantly attenuated the PDGF-mediated augmentation of SOCE and thrombin-mediated Ca2+ release in these cells.

Conclusions: The data suggest that both PDGF and thrombin play an important role in pulmonary vascular remodeling in CTEPH. PDGF and thrombin cause CTEPH cell proliferation by enhancing SOCE through activation of the Akt/mTOR pathway. Modifying this pathway may have potential to develop novel therapeutic approach for CTEPH patients with persistent post-operative pulmonary hypertension.
ABSTRACT

Introduction: Pulmonary endarterectomy (PEA) is the treatment of choice for patients with proximal chronic thromboembolic pulmonary hypertension (CTEPH). The UK has a single centre performing this operation since 1997 and this programme became nationally funded in 2000. Patients were referred from seven specialist pulmonary hypertension centres.

Method: All 625 patients treated with PEA from 2000-2010 were mapped according to their primary care trust (PCT) and divided up into referral years. Mapinfo software was used to generate the referral maps. The two aspects that were analysed include historical accumulative/million population and incidence/million population, between the two periods 2000-2002[early] and 2009-2010

Results:

Fig.1 Accumulative historical data/million population up to the end of 31/12/2010
The data from the accumulative PEA historical mapping shows an increase in geographic coverage across UK with a reduction in the number of PCT’s not referring patients for PEA from 123 in the period of 2000-2002 to 31 at the end of 2010.

The new patient incidence ranges from no referrals in 90 PCT’s to 0.1-4.9 patients/million in 62 PCT’s; 5.0-9.9 patient/million in 31 PCT’s; 10-35.6/million in 11 PCT’s between 2009 and 2010. From our PEA data mapping analysis we have calculated that the incidence of operated patients was 0.4 per million population in 2000 (n=22) and 2 per million population in 2010 (n=122).

**Conclusion:** There has been a 5 fold increase in PEA activity in the UK over the last decade. However, even with increased awareness of CTEPH, there are still areas in the UK where no patients are referred for PEA. The analysis of our data is limited to surgical cases of CTEPH. The current incidence of PEA in the UK is already higher than historical estimation of the incidence of all CTEPH (0.1-0.5/million, Fedullo, N Engl J Med 2001.), and higher than data from recent follow up studies of patients with acute pulmonary embolism. Since 30% of patients with CTEPH have distal disease that is not treated surgically and some patients with proximal CTEPH do not proceed to surgery due to choice or co-morbidities, the overall incidence of CTEPH is likely to be significantly higher than previously suspected.

**Acknowledgements:** The authors would like to acknowledge the national pulmonary hypertension centres in the UK.
ABSTRACTS PRESENTED AS POSTERS

1. Aortopulmonary Collaterals a tool diagnosis of chronic thromboembolic pulmonary hypertension: Clinical and Experimental Data
   *1st Dept. of Medicine, University Hospital, Hradec Králové and ×2nd Dept. of Medicine, Charles University, Prague

2. The operability evaluation of chronic thromboembolic pulmonary hypertension
   Hui-li Gan, MD, Jian-qun Zhang, MD, Cardiac Surgery Department, Beijing Anzhen Hospital, and Capital Medical University (BAZH—CMU), & Beijing Institute of Heart, Lung and Blood Vessel Disease, Beijing 100029, China

3. Non-Tuberculosis Mycobacteria Lung Disease in the patients with Chronic Thromboembolic Pulmonary Hypertension (CTEPH) and Idiopathic Pulmonary Hypertension (IPAH) – The Occurrence, Clinical Course and Prognosis
   M. Szturmowicz, E. Wilińska, K. Oniszh, E. Augustynowicz-Kopeć, A. Zabost, A. Fijałkowska, J. Kober, M. Kurzyna, A. Torbicki

4. Long-term Results of Pulmonary Endarterectomy
   Keiichi Ishida1, Masahisa Masuda2, Nobuhiro Tanabe3, Hideo Tanaka2, Toru Ishizaka1, Hiroki Kohno1, Goro Matsumiya1, Koichiro Tatsumi3, Nobuyuki Nakajima1.
   1) Department of Cardiovascular Surgery, Graduate School of Medicine, Chiba University
   2) Department of Cardiovascular Surgery, National Hospital Organization, Chiba Medical Center.
   3) Department of Respirology, Graduate School of Medicine, Chiba University.

5. Preoperative partitioning of pulmonary vascular impedance predicts outcome after pulmonary endarterectomy in patients with chronic thromboembolic pulmonary hypertension
   Maria J. Ruiz-Cano, Juan C. Grignola, Pilar Escrivan, Carmen Jimenez, Juan Delgado, Miguel A. Gomez, Maria T. Velazquez, J. Cortina.
Pulmonary Hypertension, Heart Failure and heart Transplantation Unit. Cardiology and Cardiovascular Surgery Department. 12 de Octubre University Hospital. Madrid. Spain.

6. Angiogenesis in Chronic Thromboembolic Pulmonary Hypertension (CTEPH)
   S. Puthenkalam1, J. Jakowitsch1, A. Panzenboeck1, K.T. Preissner2, R. Voswinckel3, W. Klepetko2, I.M. Lang1
   1) Medical University of Vienna, Department of Internal Medicine II, Division of Cardiology, Vienna, Austria; 2) Institute for Biochemistry, Justus-Liebig-University, Giessen, Germany;
   3) Max-Planck-Institute for Heart and Lung Research, Department of Lung Development and Remodelling, Bad Nauheim, Germany; 4) Medical University of Vienna, Department of Surgery, Division of Cardiothoracic Surgery, Vienna, Austria

7. Clinical Presentation of Patients with Chronic Thromboembolic Pulmonary Hypertension and Pulmonary Arterial Hypertension: A Database Preliminary Study
8. Incapacity to Increase Cardiac Output Determines 6 Minute Walk Distance in Pulmonary Hypertension

9. Balloon Angioplasty in CTEPH Patients Denied Thrombendarterectomy
AK Andreassen¹, A Ragnarsson², O Geiran³, R Andersen⁴.
Oslo University Hospital, Rikshospitalet, Oslo, Norway
¹Department of Cardiology, ²Unit of Cardiac Intervention, Department of Cardiology, ³Department of Thoracic Surgery, ⁴Unit of Radiological Intervention, Department of Radiology.

10. Diagnostic Accuracy of Contrast-Enhanced MR Angiography and Non-Contrast Proton MR Imaging Compared with Pulmonary Angiography in Chronic Thromboembolic Pulmonary Hypertension
S Rajaram¹²³, AJ Swift¹,³, D Capener¹, C Davies², C Hill¹, R Condliffe²,³, C Elliot²,³, J Hurdman², DG Kiely²,³, JM Wild¹.
¹Unit of Academic Radiology, University of Sheffield
²Sheffield Pulmonary Vascular Disease Unit, Sheffield Teaching Hospitals NHS Foundation Trust
³Department of Radiology, Sheffield Teaching Hospitals Trust
⁴Sheffield Cardiovascular Biomedical Research Unit

11. The Role of B-Lymphocytes in Thrombus Resolution
MK Frey¹, MP Winter¹, A Alimohammadi¹, A Panzenboeck¹, D Bonderman¹, IM Lang¹
Department of Cardiology¹, Medical University Vienna, Austria

12. 3D Time-Resolved MR Perfusion in Patients with Chronic Thromboembolic Pulmonary Hypertension
¹A Swift, ¹A Telfer, ¹H Marshall, ²S Rajaram, ¹D Capener, ²R Condliffe, ³J Hurdman, ²C Elliot, ²D Kiely and ¹²JM Wild.
¹Academic Unit of Radiology, University of Sheffield, UK. ²National Institute of Health Research, Cardiovascular Biomedical Research Unit, Sheffield, UK. ³Sheffield Pulmonary Vascular Disease Unit, Royal Hallamshire Hospital, Sheffield, UK.

13. 24 Hour Cytokine Variability in Chronic Thromboembolic Pulmonary Hypertension
G Hagan, M Southwood, E Soon, C Treacy, D Taboada, G Deboeck, K Sheares, D Jenkins, J Pepke-Zaba, N Morrell, Papworth Hospital, UK

14. Balloon Pulmonary Angioplasty for Chronic Thromboembolic Pulmonary Hypertension
Aiko Ogawa¹, Hiroki Mizoguchi², Takashi Kawakami², Shun Minatsuki², Hiromi Matsubara¹,²
Departments of Clinical Science¹ and Cardiology² National Hospital Organization Okayama Medical Center

15. Outcomes in Chronic Thromboembolic Pulmonary Hypertension
J Hurdman¹, R Condliffe⁵, CA Elliot⁵, C Davies³, C Hill³, J Wild³, P Sephton³, N Hamilton³, I Armstrong³, and DG Kiely⁵
¹Sheffield Pulmonary Vascular Disease Unit, ²Department of Radiology, ³Academic Unit of Radiology, Royal Hallamshire Hospital, Sheffield, UK
16. Evaluation of the Left and Right Ventricular Dyssynchrony in Patients with Chronic Thromboembolic Pulmonary Hypertension Treated with Pulmonary Thrombendarterectomy
Nowak J., Streb W., Rozentryt P., Poloniński L., Kalarz Z., Kukulski T., Zembala M.
Silesian Center for Heart Disease, Zabrze, Poland

17. Pulmonary Endarterectomy in Symptomatic Patients with Chronic Thromboembolic Disease and Borderline Pulmonary Hypertension

18. Long Term Quality of Life (QoL) in Chronic Thromboembolic Pulmonary Hypertension (CTEPH): A Comparison of Longitudinal Objective and Patient Reported Outcomes Following Commencement Pulmonary Arterial Hypertension Targeted Monotherapy
N. Doughty, J Twiss, P. McKenna, J. Pepke-Zaba

1 Papworth Hospital Pulmonary Vascular Disease Unit, [PVDU] Cambridge, UK.
2 Galen Research, Manchester UK

19. The Impact of Pulmonary Arterial Compliance, Stroke Volume and Pulmonary Vascular Resistance on Survival in Patients with Chronic Thromboembolic Pulmonary Hypertension
Nika Skoro-Sajer, Patrick Nierlich, Gerald Hlavin, Annabella Kurz, Walter Klepetko, Irene Lang

20. INVOLVEMENT OF PLATELET-DERIVED GROWTH FACTOR AND THROMBIN IN VASCULAR REMODELING IN CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION
1Department of Clinical Science, National Hospital Organization Okayama Medical Center, Japan
2Department of Surgery and 3Department of Medicine, University of California, San Diego, USA
4Department of Medicine, University of Illinois at Chicago, USA

21. CHANGES IN REFERRAL RATES FOR PULMONARY ENDARTERECTOMY IN THE UK DURING THE LAST DECADE
C. Treacy, J. Colledge, K. Page, D.P. Jenkins, S. Tsui, J Dunning, K. Sheares, J. Pepke-Zaba
1Papworth Hospital NHS Trust, Cambridge, UK
2Enterprise Analytics Practice [EAP], Cognizant Technology Solutions

22. Experience and Results with Pulmonary Thromboendarterectomy – A Single Institution Experience in the Indian Subcontinent
Chattuparambil B, Shetty D P, Cherian G, Murali Mohan BV, Karthik GA, Punnen J
Narayana Hrudayalaya Institute of Cardiac Sciences, No. 258/A, Bommasandra Industrial Area, Anekal Taluk, Bangalore, India .PIN-560099

23. Endothelin receptor distribution in pulmonary endarterectomy specimens from patients with Chronic thromboembolic pulmonary hypertension
1Papworth Hospital – Cambridge/UK, 2University of Cambridge – Cambridge/UK
24. **Pulmonary Endarterectomy in Patients with Chronic Thromboembolic Embolism Pulmonary Hypertension in NYHA Functional Class II**

Patrick Nierlich, Mir A. Hoda, Victoria Augustin, Bahil Ghanim, Sharokh Taghavi, Irene Lang, and Walter Klepetko Division of Thoracic Surgery, Department of Surgery, Division of Cardiology, Department of Internal Medicine II, General Hospital Vienna, Medical University Vienna

25. **Evolving Surgical Techniques for Pulmonary Endarterectomy According to the Changing Features of Chronic Thromboembolic Pulmonary Hypertension Patients During 17-Year Single Center Experience**

AM D’Armini, M Morsolini, E Milanesi, S Nicolardi, G Mattiucci, G Silvaggio, A Degani, M Maurelli, M Viganò

Cardiac Surgery, Anesthesia and Intensive Care Unit III, Service of Cardiovascular Perfusion, University of Pavia School of Medicine, “San Matteo” Hospital, Pavia, Italy

26. **An Example of Institutional Learning in the Assessment of Operability in CTEPH**

Hardman GA, Tsui S, Jenkins D P, Pepke-Zaba J

Pulmonary Vascular Disease Unit, Papworth Hospital, UK

27. **Pulmonary Endarterectomy: 18 Years Follow UP**

Favaloro, R; Peradejordi, M; Gomez, C; Santos, M; Caneva, J; Klein, F; Boughen, R; Favaloro, L; Diez, M; Bertolotti, A.

Favaloro Foundation, University Hospital – Buenos Aires, Argentina

28. **Platelet-Activating Factor Acetylhydrolase (PAF-AH): A Predictor of Adverse Event in CTEPH Patients?**

R Quarck, H Durand, E Ninio, M Delcroix

Respiratory Disease Department, Katholieke Universiteit, Leuven, Belgium; INSERM UMRS937, Faculté de Médecine Pierre et Marie Curie, Paris, France

29. **Chronic thromboembolic pulmonary hypertension associated with indwelling Port-A-Cath® central venous access systems**

Xavier Jais, Delphine Natali, Marjorie Abraham, Laurent Savale, Dermot O’Callaghan, David Montani, Azzedine Yaïci, Florence Parent, Marc Humbert, Olivier Sitbon, Gérald Simonneau

French referral centre for Pulmonary Hypertension, Université Paris-Sud, Hôpital Antoine Béclère, Clamart, France

30. **Laboratory predictors of infection complications after pulmonary endarterectomy for chronic thromboembolic pulmonary hypertension**

Jaroslav Lindner, Pavel Maruna, Jan Kunsty, David Ambroz, Pavel Jansa

2nd Surgical Department of Cardiovascular Surgery, General University Hospital

Institute of Pathological Physiology and the 3rd Department of Internal Medicine, Department of Anesthesiology and Intensive Care, General University Hospital

2nd Department of Internal Medicine – Department of Cardiology and Angiology, General University Hospital
31. Programme of Pulmonary Endarterectomy in the Czech Republic
*2nd Department of Medicine - Department of Cardiovascular Medicine, First Faculty of Medicine, Charles University in Prague and General University Hospital in Prague, Czech Republic
**2nd Department of Surgery - Department of Cardiovascular Surgery, First Faculty of Medicine, Charles University in Prague and General University Hospital in Prague, Czech Republic
***Slovak Medical University, Bratislava, Slovakia
****Department of Anesthesiology and Intensive Care, First Faculty of Medicine, Charles University in Prague and Thomayer University Hospital, Czech Republic

32. Pulmonary Endarterectomy: Outcome in Patients Aged Over 70 Years
M Berman1, G Hardman2, L Sharples3, J Pepke-Zaba2, K Sheares1, C Treacy6, S Tsui1, J Dunning1, D Jenkins2
1Department of Cardiothoracic Surgery, Papworth Hospital, Cambridge, UK
2Pulmonary Vascular Disease Unit, Papworth Hospital, Cambridge, UK
3MRC Biostatistics Unit, Robinson Way, Cambridge, UK

33. The 2009 – 2011 International Pulmonary Endarterectomy (PEA) Survey: Update, Preliminary Results, Outlook
M Scheffler1,2, M Wolff3, N Striegl2, M Weigand2, P Roth2, J Gehron4, I Welters5, R Boedeker6, J Herrmann7, E Mayer8
1Department of Anesthesia, QE II Health Sciences Centre, Halifax, Canada
2Department of Anesthesia, University Hospital Giessen and Marburg, Germany
3Division of Cardiac Surgery, University Hospital Giessen and Marburg, Germany
4Perfusion Services, University Hospital Giessen and Marburg, Germany
5Department of Intensive Care, Royal University Hospital, Liverpool, United Kingdom
6Institute for Medical Informatics, University of Giessen, Germany
7Computing Centre, University of Giessen, Germany
8Division of Thoracic Surgery, Kerckhoff Heart and Lung Center, Bad Nauheim, Germany
SOCIAL PROGRAM

CONFERENCE DINNER – MONDAY 27TH JUNE 2011

We are delighted to host the conference dinner at the magnificent King’s College, a unique and prestigious setting. Founded in 1441 by Henry VI and set in historic grounds on the banks of the river Cam. Prior to the dinner there will be an Organ recital performed by Stephen Cleobury CBE, Director of Music, Choir of King’s College, Cambridge in the world renowned Chapel at King’s. One of the most iconic buildings in the world with its splendid example of late Gothic architecture and some of the finest medieval stained glass. There will be a pre-dinner drinks reception on the back lawn of King’s College with stunning views of the river Cam.
NEWTON TREE

“The apple tree which has changed the perception of the world”.

Sir Isaac Newton often told the story that he was inspired to formulate his theory of gravitation by watching the apple fall from a tree.

A descendant of the original tree can be seen growing underneath the room where Newton studied and lived outside the main gates of Trinity College, Cambridge.
The Association for Research in CTEPH would like to thank the following companies who have provided funding for this educational event, but have had no input into the meeting content.

The meeting has been organised by the Association for Research in CTEPH in close collaboration with Papworth Hospital, University of Cambridge Teaching Hospital.

Scientific Programme endorsed by.

The Association for Research in CTEPH would like to thank the following companies who have provided funding for this educational event, but have had no input into the meeting content.