Contents

Review from the PVRI President 2016 // Paul Corris 05
Chief Executive Officer’s Report 2016 // Stephanie Barwick 06
*Pulmonary Circulation* Report 2016 // Jason Yuan & Nick Morrell 10

International Scientific Meetings

1st Annual Symposium for Young Investigators Overview 2016 // Djuro Kosanovic, Mariola Bednorz & Michiel Alexander de Raaf 16

Regional Task Force Reports

Central Asia & High Altitude Report 2016 // Max Gassmann & Qadar Pasha 18
China Report 2016 // Zhengo Zhai, Chen Wang & Martin Wilkins 20
Europe Report 2016 // Stefano Ghio & Dario Vizza 24
India Report 2016 // BK Sstrya 25
South America Report 2016 // Gabriel Díaz & Dora Haag 28
South Africa & Sub-Saharan Africa Report 2016 // Paul Williams 30
South East Asia Report 2016 // Helmy Haja Mydin & Roslina Abd Manap 31

Disease & Speciality Task Forces

Exercise Report 2016 // David Systrom & Aaron Waxman 33
Imaging Report 2016 // David Kiely & Andy Swift 34
Paediatric & Congenital Heart Disease Report 2016 // Maria Jesus del Cerro, Ian Adatia & Steven Abman 35
Pre-Clinical & Molecular Science Report 2016 // Mandy MacLean 36
Schistosomiasis Report 2016 // Brian Graham 37
Women’s Health & Pregnancy Report 2016 // Anna Hemnes & Barbara Cockrill 38
Introduction

In 2016 the PVRI built on the solid foundations established in 2015 following our governance review. We made good progress as THE professional, global organisation focused on improving the care of patients with pulmonary vascular disease and facilitating research into this devastating disease. We have, I think, achieved a great deal.

Any charitable organisation requires a sound financial footing and, this year, we were able to consolidate our income both via more efficient collection of membership dues, increased “Roundtable” core funding from pharma and, of course, a maintained grant from the Cardiovascular Medical Research and Education Fund. I would like to convey my personal thanks to these latter benefactors. Grateful thanks also to Lynette Swift, who organised a most successful auction and dinner on behalf of the PVRI in May 2016. As a result of all these efforts, I am happy to advise all our members that we have never been so financially secure since our inception! Our financial backing has also been made more secure through specific grants from GSK to fund our e-learning programme, by United Therapeutics to enable us to sponsor PVRI membership for over 60 doctors from the developing world and the recruitment of a new and experienced Treasurer to our Board and Executive Committee, John Harrington.

I have encouraged our Task Forces to recognise that they too act as our engines for action and also for them to identify areas of focus on an annual basis, including the sharing of good practice. We have established two new Regional Task Forces in Europe and South East Asia and a new joint Pharma Topic Task Force whose remit is to help facilitate joint academic interests and aid collaboration. There are new faces at the helm of some of our existing Task Forces to help energise fresh activities.

Another exciting piece of news is the signing of a Memorandum of Understanding between The Dinosaur Trust and the PVRI. The Dinosaur Trust was set up by Jamie Strachan and his wife to support research into PAH via the organisation of charitable events, this has been very successful. PVRI will work alongside The Dinosaur Trust to provide a Scientific Committee to establish a mechanism for grant applications and their assessment. This is an important and strategic alliance for both parties.

In addition to our very successful Annual World Congress in Rome and the Drug Discovery & Development Symposium in Bethesda, there were numerous PVRI symposia at major meetings, including the ISHLT, the Malaysian Thoracic Society and the Cuban Cardiac Society (scheduled in 2017) together with stand-alone PVRI associated meetings, including the High-Altitude meeting in Central Asia, the Eastern Mediterranean (SAPH) meeting and Indian meetings.

In 2016 we also held the inaugural Committee for Young Clinicians & Scientists Symposium organised by, and run specifically for, the younger members of the PVRI.

The PVRI’s journal Pulmonary Circulation has experienced major beneficial changes in 2016 whilst maintaining its high standard thanks to the drive and initiative of its Editors, Jason Yuan and Nick Morrell, ably assisted by Michael Brown and Mary Reynolds. The journal is now all set for the next decade with a change in publisher leading to significant advantages in the medium term for the PVRI and the expectation of a satisfactory initial Impact Factor in 2017.

We are only now beginning to exploit the huge potential of the PVRI as a global organisation committed to helping patients with pulmonary vascular disease. There is much work to do but with your enthusiastic membership and a cohort of bright young colleagues we can expect to go far.

I hope you agree with me that 2016 has been a big step in the long walk we face. Importantly, the PVRI remains true to its aims and ensures a definitive focus on helping to improve the care of patients with PH living in the developing world.

Finally, in my current role as President of the PVRI, I would like to thank our CEO Stephanie Barwick for all her hard work and unfailing commitment to the PVRI. She is ably supported by her team in the UK, Aaron Shefras, our media guru; Administrative Assistant Margaret Carver who will continue in a part-time role and our newcomer Georgie Sutton; as well as colleagues in the USA, Andrea Rich, our Events Manager, and Mary Reynolds, PC Editorial Associate. Their contributions have been essential to the advances made in 2016.

The day to day course of the PVRI is steered by the Executive Committee, advised by its Council, and their collective wisdom has been a great source of strength during 2016.

I am personally humbled and grateful for the confidence shown in electing me to be your President, a position I am immensely proud of, and assure you that I intend to continue to work tirelessly on your behalf to maintain progress and success in 2017.
PVRI Chief Executive Officer’s Report 2016
Stephanie Barwick, CEO

2016 has been a year of steady growth, consolidating our strengths as the only global independent voice of authority in the field of pulmonary vascular disease. The outline below highlights some of our achievements and operational activities during the year.

OPERATIONAL ACTIVITIES

PVRI Board of Directors/Trustees Meetings & Annual General Meeting
Board of Director meetings, to oversee the strategic direction of the PVRI, were held twice in 2016 - in January in Rome and in July in Bethesda, ahead of our two major scientific meetings. The Annual General Meeting, unifying all our members, was held on the first evening of our 10th Annual World Congress in Rome on 14 January 2016.

Changes to the Board included the handover of the presidency from Sheila Glennis Haworth to Paul Corris and the appointment of Paul Hassoun as President Elect. After many years of service, Sir Simon Campbell, Treasurer of the PVRI, resigned from the Board in January and in July we welcomed John Harrington to the Board and Executive Committee as the PVRI’s new Treasurer. We would like to express our sincere thanks and best wishes to Simon for all his hard work and support to the PVRI since its inception in 2007. A big welcome to John and good luck in his new role.

PVRI Finances
Thanks to the continued Roundtable membership contributions from the pharma industry, support from the Cardiovascular Medical Research and Education Fund (CMREF), income from registration fees to our scientific meetings and membership contributions, effective fundraising activities and income received for special projects; we are now in a solid position to take the PVRI to the next level. Accurate financial monitoring of income and expenditure has resulted in regular management accounts for review by the Executive Committee and annual audited accounts. During the last annual audit of the PVRI 2015 UK accounts, we have received the highest rating with no recommendations for improvement. Well done to everyone involved!

New Members of Staff
During the year, our two different offices in the UK and USA welcomed new members of staff. In the USA, following the resignation of Annisa Westcott, we recruited Mary Reynolds in June as ‘Editorial Associate’ for our journal Pulmonary Circulation. She is based in Arizona with PC’s Chief Editor Jason Yuan, working alongside our Publishing Consultant Michael Brown.

In the UK, we recruited Georgie Sutton to the team in November as full-time Marketing & Admin Officer to provide consistent admin support to the office and to support Aaron Shefras, PVRI Marketing Manager, with some of our activities.

A big welcome to Georgie and Mary and thanks to both for all your contributions so far.

MARKETING ACTIVITIES

New Joint PVRI/PC Website and Social Media
Our new website was officially launched on 14 January 2016 during the AGM. This investment certainly paid off with a 310% year on year increase on site views. A total of 245,311 page views was recorded during 2016, compared to 80,437 in 2015. The homepage film has been viewed over 13,000 times and nearly 60% of visitors engaged with our site, visiting more than three pages. We now have over 870 e-learning materials on the website which consist of lecture recordings, interviews, atlas images, abstract submissions and PC journal articles, all linked together via search words and related content criteria. Our e-learning materials have been viewed by 43% of visitors who also click on four or more pages of related content.

Facebook likes have increased by 45% to 805 and Twitter followers are up by 11% to 533. Electronic adverts promoting the PVRI and our Annual World Congress in Miami were placed in PH News reaching out to over 6,000 PH professionals in the USA. Also, there were email campaigns by the International Society for Heart & Lung Transplantation (ISHLT), the Pulmonary Hypertension Association (PHA) in the USA and the American Heart Association (AHA), to all their members. Thank you to everyone who has helped promote our Congress.

The PVRI online newsletter featuring the ‘President’s blog’ and other current topics was produced quarterly, reaching out to over 6,000 PH professionals in 75 different countries from across the world.

This is a great result and a massive thank you goes to Aaron Shefras, our Marketing Manager.

INTERNATIONAL SCIENTIFIC MEETINGS

As has become tradition in the PVRI calendar, during 2016 we held two major international conferences - the 10th Annual World Congress on PVD in Rome, Italy, from 14-19 January and the 3rd Annual Drug Discovery & Development Symposium in Bethesda, USA, on 11-12 July. In addition to these, the PVRI Committee for Young Clinicians & Scientists (CYCS) organised its 1st Annual Symposium for Young Investigators, which was held in Germany from 8-12 September.

Annual World Congress
After many years, we decided to organise our 10th PVRI Annual World Congress on PVD in Rome without a partner organisation - a big risk that paid off: 223 international delegates from 28 different countries enjoyed the active...
discussions over the three and a half days of the Congress. 73% of delegates rated the overall scientific programme as 'excellent'. The most popular topics were ‘Advances in our understanding of PVD’ and the session on ‘Chronic Thromboembolic PH’. Many thanks to our scientific meeting planners Dario Vizza and Stefano Ghio for putting together a great programme and to Andrea Rich, our Events Manager, for the exciting mix of social activities, including Vatican tours and pasta cooking courses. During the Gala Dinner on Saturday evening, we presented the PVRI Awards.

2015 PVRI Award Winners
Despite a lengthy bus journey to the Gala Dinner restaurant through the hidden streets of Rome, we finally celebrated the achievements of some of our most distinguished and active members and President Paul Corris presented the following awards:

- The Lifetime Achievement Award 2015 was presented to Lewis Rubin in recognition of his distinguished contribution to patient care and research in PVD.
- The Achievement Award 2015 went to Nick Morrell, Chief Editor of Pulmonary Circulation, for his outstanding contribution to medical research, the PVRI and its journal Pulmonary Circulation.
- The Certificate of Excellence 2015 was presented to Ian Adatia and the Paediatric & Congenital Heart Disease Task Force in recognition of their outstanding contributions to the PVRI.

Congratulations to all our winners. The prize winners of 2016 will be announced at our Gala Dinner in Miami in January 2017.

Drug Discovery & Development Symposium
Our Bethesda Drug Symposium was attended by 112 delegates from academia, industry and regulatory bodies who participated in stimulating discussions and debates over a day and a half. Sincere thanks to the three Co-chairs Stuart Rich, John Newman and Surpil Erzurum for putting together a diverse scientific programme featuring excellent talks on potential new targets for therapy, including BMPR2, estrogen and mitochondria. There was also a great demonstration that exercise induced PH is a real clinical entity leading to symptomatic breathlessness, a topic which received much interest from the audience.

Symposium for Young Investigators
CYCS Chair Djuro Kosanovic together with Mariola Bednorz organised the inaugural 1st PVRI Annual Symposium for Young Investigators, which was held in the beautiful Castle Waldeck in Germany in September. Twelve young scientists from around the world attended the event which was spread over a weekend and included stimulating scientific sessions as well as an exciting social programme enjoyed by all delegates. Our thanks to Djuro and Mariola for organising a great event. We hope that this will become a regular annual meeting attracting more young researchers from around the world.

Last, but not least, a big thank you to Andrea Rich, the PVRI Events Manager, for looking after all the logistics of our scientific meetings and making sure everything runs smoothly. This is by no means a small task. Thank you Andrea!

For more information on all our international scientific meetings, please have a look at pages 13-16.

MEMBERSHIP
PVRI Membership
The PVRI network has expanded to over 6,000 people spread across 75 different countries worldwide, including an active membership of 1,250 PH professionals. We are immensely proud of our international reach and global representation as the PVRI is the only global charity dealing in PVD. Thank you to everyone for your continued support.

Task Force Activity
The unsung heroes of the PVRI are most definitely our Task Force leaders and active members throughout the world. It is through them that we fulfil our mission and bring the PVRI to the rest of the world. A sincere thanks to everyone who is involved in a Task Force, leaders and members, for all their hard work, commitment and support.

Our Task Forces have had an active year with many regional PH meetings held in Jordan, Bolivia, India, USA, Europe and China. During 2016 we formed a new Regional Task Force in South East Asia with Task Force leaders Helmy Haja Mydin and Roslina Abd Manap stimulating PH activity in Malaysia and Singapore and the leadership of the South Africa & Sub Saharan Africa Task Force has been passed to Paul Williams from Karen Sliwa-Hahnine and Ana Mocumbi. Our thanks go to all present and past Task Force leaders for their immense hard work and a warm welcome to everyone who has joined during the year.
The newly established Pre-clinical & Molecular Science Task Force, led by Mandy McLean, had its first inaugural meeting ahead of the Annual World Congress in Rome with participation from 40 scientists, as did the Imaging Task Force led by David Kiely. A new Pharma Task Force has been brainstormed during our Bethesda Drug Discovery & Development Symposium and will have its first official meeting during our Congress in Miami in January 2017.

For more information on our Task Forces, please have a look at pages 18-38.

Industry Support & Roundtable Membership 2016
I would like to express my most heartfelt thanks to all our industry partners who have supported us during 2016 and engaged in the PVRI Roundtable membership, which is the PVRI-industry alliance. Without their continued sponsorship and support we simply could not fulfil our mission. Roundtable members for 2016 included Bayer, Bellerophon, Gilead, GSK and United Therapeutics.

In addition to the Roundtable membership, particular thanks go to United Therapeutics and GSK. United Therapeutics has agreed to sponsor PVRI membership for 67 doctors from developing countries over two years, which will further enhance our mission and focus in the developing world. GSK has provided substantial financial support over two years for our e-learning initiative. Thank you to both!

Discussions have already started for 2017 and I am delighted to announce that in addition to the 2016 Roundtable members, Merck has also agreed to participate and discussions have started with Actelion.

PVRI PUBLICATIONS & E-LEARNING INITIATIVE
Pulmonary Circulation
2016 has been an exciting and successful year for our journal with historic high numbers of citations and downloads of journal articles and new members joining the team, including Michael Brown in January and Mary Reynolds in June. Michael is an experienced Publishing Consultant and currently combining the roles of Business Manager and Managing Editor, ably assisted by Mary Reynolds, employed as Editorial Associate to support the Chief Editors Jason Yuan and Nick Morrell.

During the year we published a total of 91 articles as well as an additional journal supplement in March, sponsored by Bayer, which featured research articles on Bayer’s new drug Riociguat. We are grateful to Bayer for their support.

Kurt Stenmark has been appointed as Depty Editor and we have formed a Publications Committee chaired by Past-President Sheila Glennis Haworth who oversees the strategic business plan of the journal, monitoring milestone achievements.

In addition to the above, we have started the transition of the journal from University Chicago Press (UCP) to a new publisher, SAGE, who will take over in January 2017. Our thanks to UCP for publishing *Pulmonary Circulation* over the past three years and helping us consolidate our position in the market. We look forward to the announcement of our Impact Factor in the summer of 2017 and the exciting times that lie ahead.

We are immensely proud of *Pulmonary Circulation* and our thanks go to everyone involved in the journal, but most importantly, the Chief Editors Jason Yuan and Nick Morrell who have made the journal what it is today by devoting endless hours of their voluntary time. We cannot thank them enough for all that they do!

A full report on *Pulmonary Circulation* is on pages 10-11.
PVRI Chronicle
Two editions of the PVRI Chronicle have been published online during the year in February and October. Many thanks to the PVRI CYCS (Committee for Young Clinicians & Scientists) and Aaron Shefras for all their hard work in putting these together.

E-learning Course
Following a successful feasibility report in 2015, we have now started to implement its findings and are in the process of producing an e-learning course on PVD aimed at pulmonary vascular clinicians throughout the world. GSK has provided us with a generous grant over two years to support this initiative and we have appointed Martin Johnson and Colin Church in Glasgow, UK, to produce the content for the course. We are aiming for this to be a completely unique course in the field of PH, focusing on various real-life patient case studies, which will provide the clinician with an experiential learning tool for the accurate diagnosis and management of PVD. An experienced media agency has been appointed to assist in the development and we are hoping to launch the first part of the course at our Drug Discovery & Development Symposium in July 2017.

PVRI GRANTS
During 2016 the PVRI supported its membership by awarding research and travel grants for speakers to attend various scientific meetings across the globe.

Travel Grants
Nineteen travel grants were awarded during the year to various PVRI members in support of national and international PVRI meetings and initiatives. These included the 10th Annual World Congress on PVD in Rome, Italy in January, the SAPH 2016 Annual Symposium in Jordan in February, the La Paz meeting in Bolivia in February and the High-Altitude meeting in Issyk-Kul, Kyrgyzstan in September.

Travel Grants for the PVRI CYCS
Ten travel grants were awarded to the most active members of the CYCS during 2015 to enable them to attend our Annual World Congress in Rome. All winners were presented with a certificate during the Gala Dinner.

PVRI FUNDRAISING ACTIVITIES
Annual Fundraising Event
Under the leadership of Lynette Swift, a committed volunteer directly affected by PVD through her son, the PVRI held its second major fundraising event, an Auction & Dinner on 19 April 2016 at the Foundling Museum in London, UK. The event was a huge success with over 100 invited guests attending the dinner and many more bidding for over 60 online auction prizes, which included activity and sports days, pieces of art and memorabilia as well as exciting holiday destinations. A total of £20,000 ($25,000) was raised in net profits for the PVRI and we are extremely grateful to Lynette for all her hard work and support.

Agreement with The Dinosaur Trust
During the year, the PVRI has signed a Memorandum of Understanding with The Dinosaur Trust, a UK Charity founded in 2013 by Jamie and Julia Strachan, who have a young son with PVD. The Dinosaur Trust is extremely successful in raising funds to help those affected by PVD. Both, The Dinosaur Trust and the PVRI, are aligned in their missions and this newly established partnership will help provide vital funding for some of our most active researchers and clinicians. We look forward to working with The Dinosaur Trust in 2017.

I would like to thank everyone for their support during 2016, especially our President Paul Corris for his hard work during the year and his inspiring vision for the future.

It is a pleasure to serve you all and I look forward to working with you in 2017.

Stephanie Barwick
Chief Executive Officer
Canterbury, UK
The year 2016 has been an exciting one for *Pulmonary Circulation!* We have seen historic high numbers of citations and downloads of journal articles; we welcomed new editors and staff to the team; received confirmation of our impending Impact Factor; and embarked on a new partnership with a leading publisher. We also revisited our business plan and publishing model for *Pulmonary Circulation* and put plans in place to improve services and benefits for our authors and readers in 2017.

**New Impact Factor**
We have received confirmation that the *Pulmonary Circulation*’s first Impact Factor will be released in 2017. This is excellent news and further confirmation that our journal has become established as a major location for communication in our field.

**Expanding Editorial Team**
In October 2016, Deputy Editor Kurt Stenmark joined the editorial team. He is Director of the Cardiovascular Pulmonary Research Laboratory at the University of Colorado and is a world-leading cardiovascular and pulmonary scientist. Along with the Editors-in-Chief, Dr Stenmark will invite review articles from authors, guide manuscripts through the review process, and participate in strategic planning for the journal’s future.

Mary Reynolds joined the team as Editorial Associate. She brings 20 years writing and editing experience to the journal.

Michael Brown, a Publishing Consultant, joined the team negotiating a new publishing contract and guiding the journal’s self-sustaining business model in the first year with SAGE.

**Journal Supplement on Riociguat Clinical Pharmacology**
In March 2016, we published a special supplement on Riociguat, a novel oral soluble guanylate cyclase stimulator developed for the treatment of pulmonary arterial hypertension and chronic thromboembolic pulmonary hypertension. The supplement contained a series of articles describing the pharmokinetic and pharmodynamic effects of Riociguat. We are very grateful to Bayer for their generous sponsorship of the supplement issue.

**Change of Publisher**
After three successful years with University of Chicago Press (UCP) as our publisher, our contract came to an end in December 2016. We express thanks to UCP for their contribution to the development of our journal, and we appreciate their advice and support over the past three years.

We have negotiated a multi-year agreement with our new publisher, SAGE Publishing. SAGE is one of the world’s leading journal publishers and publishes many journals in science and medicine. *Pulmonary Circulation* will benefit from increased global visibility, faster publication times and SAGE’s commitment to scholarship and innovation.

**Translation and Language Editing Services**
We are pleased to provide access to translation and language editing services for authors to make use of before submitting their article. For a modest fee, the service can provide translation into English from Chinese, Portuguese and Spanish. For authors whose article is already written in English and who wish to improve the grammar or language, stylistic editing and formatting services are also available.

**Sustainable Publishing Model**
During 2016 we revised our long-term business plan for *Pulmonary Circulation*. The journal was launched with grant funding support and we will now be moving towards a self-sustaining model. This means that we need to recover our publishing costs and to do so we need to increase the article processing charges (APCs).

For two years our APCs have been very low in comparison with other open access journals at $1,000 for a research article and lower fees for other article types. Publishing a journal is a labour-intensive endeavour and with our journals expansion, it has not been possible to keep the APC below that of other journals. From 1 January 2017, we will be increasing the APC for research articles to $2,000. This will enable us to work towards a sustainable model and continue publishing the journal through the long term. We are pleased to say that the APC still remains considerably lower than the majority of open access journals in our field.

**Promotional Activities**
*Pulmonary Circulation*’s Editors promoted the journal at various international conferences, including the PVRI Annual World Congress, the American Thoracic Society International Conference and the American Heart Association Scientific Sessions. In addition, we have increased promotional email blasts, continue to grow our mailing lists and are sustaining our work on developing a social media presence for the journal and increasing its visibility on various platforms.

**Looking Forward to 2017**
The changes we have implemented during 2016 will bring a number of benefits for our authors and readers. We plan to reduce both our reviewing and production times after articles are accepted. Our target for acceptance to online publication is to reduce this from the current eight weeks to four weeks.

In addition, our website for *Pulmonary Circulation* will include innovative tools to use and share articles, and we will continue to post articles online immediately after they are accepted. We will broaden our readership through wider visibility of content and cross-promotion of articles with PVRI educational resources in order to increase the likelihood of those articles being cited.
Our goal is to make our journal one of the world’s leading outlets for research on pulmonary vascular disease. We are ambitious in pursuing this goal, and during 2016, we have laid the foundations for growth that will build on during the years to come and we will be actively seeking to publish the highest quality articles. We look forward to receiving your submissions.

**Statistics**

Number of Downloads of Pulmonary Circulation Articles by Year

![Number of Downloads of Pulmonary Circulation Articles by Year](image)

Number of Downloads of Pulmonary Circulation Articles by Month, from October 2013 through October 2016

![Number of Downloads of Pulmonary Circulation Articles by Month](image)

**Articles Published to Date (all years). Total: 496 items:**

- **Editorials** - (37) 7%
- **Review** - (101) 20%
- **Original Research** - (242) 49%
- **Guidelines & Other** - (68) 14%
- **Case Reports** - (48) 10%

**Accept and Reject Rates**

From January 2014 through October 2016, *Pulmonary Circulation* reviewed 211 Original Research articles, and 58 Case Reports.

- Original Research accepted: 171 (81%)
- Original Research rejected: 40 (19%)
- Case Reports accepted: 32 (55%)
- Case Reports rejected: 26 (45%)

**Top 15 Most Accessed Articles in 2016**

1. Postural tachycardia syndrome is not caused by deconditioning, Svetlana Bitlisheteyn, David Fries. Vol. 6, No. 3, September 2016. # Accesses 10,630
7. Sildenafil in heart failure with reactive pulmonary hypertension (Sildenafil HF) clinical trial (rationale and design), Maya Guglin, Navin Rajagopalan, Paul Anaya, Richard Charnig. Vol. 6, No. 2, June 2016. # Accesses 620
8. Transthoracic echocardiography in the evaluation of pediatric pulmonary hypertension and venricular dysfunction, Martin Koestenberger, Mark K. Friedberg, Eirik Nestaa, Ina Michel-Behnke, Georg Hansmann. Vol. 6, No. 1, March 2016. # Accesses 562
15. Mechanisms regulating endothelial permeability, Sukriti Sukriti, Mohammad Tauseef, Pascal Yazbeck, Dolly Mehta. Vol. 4, No. 4, December 2014. # Accesses 410
PVRI 10th Annual World Congress in Rome
Report 2016
Sheila Glennis Haworth, Past President 2014-2016

The aim of this Annual Congress was to facilitate friendship, collaboration and interaction across the globe and to keep the programme relevant to all people. The speakers and chairmen came from all over the world. The highlights of the programme are detailed below.

Activities New to This Programme
The title of this organisation includes the word ‘research’ and to this end a new Task Force held its first meeting, and was led by Mandy MacLean, a one day meeting that preceded the scientific programme. This meeting of the Pre-clinical & Molecular Task Force had a very full, successful programme which facilitated communication and collaboration between basic scientists. It is envisaged that work facilitated by this Task Force will eventually feed into the Drug Discovery & Development Symposium. Other Task Forces met as usual, including the Paediatric & Congenital Heart Disease and the Women’s Health & Pregnancy Task Force; two Task Forces among our most active groups. It is anticipated that the high-level conclusions of this and other Task Forces will be published in *Pulmonary Circulation*, as has occurred in the past.

The future of the PVRI rests with the young. Therefore we held the First Annual PVRI Meeting of the Committee for Young Clinicians and Scientists, which will become an annual event.

The Annual Congress has been accredited by the European Accreditation Council for Continuing Medical Education (EACCME).

Day 1: Advances in Our Understanding of PVD
We tried to begin at the beginning, given the present understanding that most of our ills, including pulmonary hypertension, originate in intra-uterine life. Kent Thornburg, a friend and colleague of Dr Barker, began by discussing the early roots of chronic disease. Nick Morrell addressed the role of genetics. He has an interest in BMPRII, but acknowledged that other recently discovered genes can play a role in the aetiology and/or maintenance of pulmonary vascular disease. Evangelos Michelakis is interested in the metabolic basis of pulmonary hypertension, starting with the Warburg Hypothesis and then the role of the electron transport chain within the mitochondria and the possibility of therapeutic intervention. Lastly, Brad Maron incorporated the molecular knowledge into an integrated, systems approach to pulmonary hypertension, emphasising the complexity of the mechanisms involved.

It was appropriate to consider whether the pulmonary hypertension community is moving in the right direction. Lewis Rubin summarised the current guidelines clearly and concisely while Majdy Idrees addressed the difficult issue of how best to secure good quality care in developing countries. Pulmonary hypertension is frequently undiagnosed throughout the world and Ian Adatia spoke of his new approach to the analysis of heart sounds using the non-invasive device he and his colleagues have just developed.

Having made the diagnosis, it remains challenging to assess the functional capacity/functional reserve of each patient. Difficulties in assessing the reserve of the right ventricle, particularly by transthoracic echocardiography were discussed by Stefano Ghio and the pros and cons of exercise studies were assessed in adults and children by Robert Naeije and Astrid Lammers respectively.

Turning to basic science, we were all excited by the possibility of studying pulmonary function using the human lung-on-a-chip model, presented by Donald Ingber who pioneered this technique. Ralph Schermuly then questioned the relevance of the numerous rat, mouse, and pig models we all use to study human disease - a very helpful, critical appraisal.

Day 2
During the second day we considered new frontiers in diagnosis, beginning by evaluating the role of imaging in the clinic, presented by David Kielty. We then considered the contribution of nuclear medicine and CT imaging, led by Horst Olschewski while Onno Spruit asked how repeated assessment of RV structure and function could help in patient management.

A talk by Kurt Stenmark on the biology of the lung and cardiac stiffening helped put the clinical work into perspective as did the experimental work by Lan Zhao 18FDG positron emission tomography. Recognising the recent advances in echocardiography Michele D’Alto reviewed its potentially useful role in differentiating pre-from post-capillary PH.
We cannot cure pulmonary vascular disease and therefore it is imperative to prevent it when it is possible to do so. One of the commonest, if not the commonest cause of pulmonary vascular disease worldwide is the Eisenmenger Syndrome, un-operated congenital heart disease. The burden, and therefore the cost, of the disease is frequently unknown and so we heard a public health perspective from Krishna Kunar from India. South America was represented by Alexandra Heath from Bolivia and Maria Angelica Binotto from Brazil while others from Saudi Arabia spoke of their experiences in a lively discussion led by Sir Magdi Yacoub and Sheila G Haworth.

Day 3
On day three we learnt about current therapies and considered future possibilities, beginning with an overview of current regimes from Ardi Ghofrani and comments on the current use of combination therapy by Paul Hassoun. Mandy MacLean discussed the impact of gender and Anna Hemnes talked about pharmacogenetics, both striving to answer the question, will this drug improve my patient? Thinking of those patients who have become unresponsive to all current therapies, Damien Bonnet presented his promising findings on the Potts Shunt, a classic operation with a new application which shows great promise for some of our patients. In the developing world prescribing current approved medicines with limited financial resources remains challenging, as we heard from BKS Sastry from India.

The PVRI is anxious to push ahead and constantly evaluate our present, clearly inadequate, treatment strategies. The session on advancing our approach to medical therapy opened with Lewis Rubin considering new trial designs for PH, led to a lively debate chaired by John Newman and Pilar Escribano-Subías. The selection of new therapeutic targets included immune targets (John Wort) and infectious agents, mediators of inflammation in congenital heart disease, recent work presented by Antonio Lopes. Evangelos Michelakis discussed targeting metabolic disturbances and the potential of several metals, particularly iron, was assessed by Martin Wilkins. Warning of potential interaction between treating an underlying disease and treating PH, Nicolas Petrosillo commented on the interaction of ante-retroviral drugs and PH specific therapies. The contribution of inflammation to the disease process is well documented and Allan Lawrie and Nick Morrell wondered if antibiotics could be helpful therapeutic agents in PVD.

Day 4
On day four we considered the emerging clinical challenges for the PH specialist, particularly the growing problem of PH in heart failure, a major challenge for the cardiologist. Stephan Rosenkranz and Marco Guazzi spoke, respectively, of the diagnostic and therapeutic difficulties. Paul Hassoun emphasised phenotypic differences in RV remodelling. It was left to Werner Seeger to discuss the scale of the problem in lung disease and the indications for therapeutic intervention when PH is present.

Lastly, we joined the International Heart & Lung Transplantation Society - a first joint symposium on Thrombo-embolic PH - in which aetiology, diagnosis and, medical and surgical treatment were discussed by Mark Toshner, Zhenguo Zhai, Andrea D’Armini and Paul Corris.
The 3rd PVRI Annual Drug Discovery & Development Symposium 2016
Stuart Rich & John Newman

The 3rd Annual Drug Discovery & Development Symposium took place in Bethesda, DC, this year and proved an excellent well-attended event. It attracted physician scientists, scientists and representatives from the pharmaceutical industry and drug regulatory bodies.

BETHESDA DRUG SYMPOSIUM FACTFILE

Duration: 1½ days
Participation: 112 delegates from science, pharma and regulatory bodies
Content: 12 presentations on new trials, new targets, new drugs

The Symposium remains true to its ideal, offering a unique coming together of all stakeholders involved in translating promising molecules into proven licensed therapies for clinical use within the field of pulmonary vascular disease.

The meeting offered much more than this, however, with excellent talks on potential new targets for therapy, including BMPR2, oestrogen and mitochondria. There was also a great demonstration that exercise-induced pulmonary hypertension is a real clinical entity leading to symptomatic breathlessness.

In 2017, the meeting will be held in Berlin and the PVRI would urge you all to keep an eye on our website and to register early.

This meeting offers a unique opportunity to participate in vibrant debate and listen to excellent state-of-the-art talks on contemporary and future therapeutic approaches to pulmonary hypertension.
Blog by Michiel Alexander de Raaf:

When Djuro sent me an email that he had rented a castle for the weekend and asked me to join him, I had mixed feelings of surprise and excitement. Would this finally be the moment to push our scientific collaborative friendship further? Perhaps I misjudged the situation a bit, I thought, especially when I noticed that I was not the only one to be invited. And then I understood. It was the PVRI Symposium for the Committee of Young Clinicians & Scientists (CYCS). It was work. Science is, though, a game.

The first - and therefore historical - PVRI Annual Symposium for Young Investigators was located at the Waldeck Castle in Germany. The castle is known to have had substantial influence on world history. In 1858 for example, Emma of Waldeck and Pyrmont was born there. She married the Dutch King William III who needed to stabilise his legacy after his unsuccessful previous marriage to his niece Sophia of Württemberg. Emma gave birth to our later Queen Wilhelmina and after the death of William III, was regent when Wilhelmina was still a child. With this in mind, we tried to let the influence of Waldeck castle be reflected in our support for evolving the PVRI.

The programme started on Friday afternoon with the welcoming and was followed by a lovely dinner. The CYCS board discussed the agenda. Later that evening, we had a tour of the castle and saw the dungeons, prisons and well, which was dug by two prisoners who were promised to be released if they found water! After 27 years and digging 140 meters, having lost their eyesight they eventually found water. Upon release, one of the prisoners was so excited that he died of a heart attack.

On Saturday, there was a CYCS plenary council meeting in the morning, addressing all ongoing topics, some of which were discussed immediately and others postponed to the following day. In the afternoon we had a splendid social teambuilding event, which involved leaving the castle via a cable track and then sailing on the lake. In the evening, after dinner, we started our scientific session which was full of interactive discussions. In total we had 14 presentations (from the 11 attendees) and covered a broad spectrum of present day cutting-edge science in the field of PVD.

On Sunday the day started with the second half of the CYCS plenary council meeting, where we discussed the remaining topics. For me unfortunately, the Waldeck Symposium finished slightly early because my wife, also a scientist, was on her way to a congress and I headed back home to continue my duties as a father. The others remained and continued in the same spirit and ambiance as the previous days, having the second part of the scientific sessions closed by a dinner at the castle.

Aside from the scientific achievement, there were other successes. Regarding the PVRI CYCS tasks, the timing of this retreat was superb, as we were able to discuss ongoing projects and start preparations for the Annual Congress in Miami. We had two ‘plenary council meetings’ (and one board meeting) to discuss and evaluate all ongoing projects. I sincerely believe we made great progress and the topics discussed at Waldeck will result in a more effective CYCS for a long time to come. We were able to produce and provide something for the PVRI, which is an important benefit of the Waldeck retreat and could also be capitalised upon in the future.

Regarding friendship, this Symposium had a marvelous atmosphere; giving ample possibility to start and strengthen friendships. This is already reflected in the increased dedication and activity being experienced now by our members. All attendees are so enthusiastic that they are keen to make a possible future Symposium an even greater success.

All attendees of the 1st PVRI Annual Symposium for Young Investigators at Waldeck, would like to acknowledge Mariola Bednorz for the wonderful organisation of the historical meeting. This Symposium showed the strength of our CYCS and, personally, I feel very fortunate to have had this experience.
Regional Task Force Reports

Annual Report 2016
Annual Report 2016

Cardio-Pulmonary Acclimatisation and Adaptation to High-Altitude: from Physiology to Clinical Practice.

The High-Altitude Task Force meeting took place on 24-28 September 2016, in Cholpon Ata (Lake Issyk-Kul), Kyrgyzstan.

Background and Aim

The Issyk-Kul Leh Symposium took place on 24-28 September 2016, in the Karven Four Seasons Hotel on the shore of Lake Issyk-Kul, Kyrgyzstan. Its aim was to bring together the knowledge and information gathered from recent advances in high-altitude research. The Symposium followed the tradition of three previous high-altitude medicine conferences held in Leh, Ladakh (India) from 2010 onwards. As in previous years, the conference was held in a highland area to draw attention to the needs of highland populations, as well as individuals travelling to altitude. Additionally, this was the first opportunity for high-altitude researchers from Central Asia to take centre stage, be directly involved in the preparations for the conference as well as present their own original research for discussion with their colleagues from all over the world (UK, USA, India, Germany, Switzerland and others). Thus, throughout the Symposium, an atmosphere of constructive dialogue and maximum engagement of young researchers was maintained.

Research Presentations

An international faculty of outstanding experts in various fields of high-altitude physiology and medicine presented original research and up-to-date reviews on selected topics.

Hypoxia and Genetics

The first full day of the Symposium was opened with a presentation from a young researcher, Dr Eichstaedt (Heidelberg, Germany), on genetic and phenotypic adaptation of populations to altitude. More lecturers reported on genetic mutations in Kyrgyz highlanders, underlining the necessity of further research on this particular population, since (compared to Andeans and Tibetans) it is a recent newcomer to high-altitude; thus, processes of human adaptation to this environment are a particularly interesting and important study subject.

Response to Hypoxia at the Molecular Level

This section also contained presentations of original studies, in particular that of young researchers like Dr Hodson (Oxford, UK), on hypoxia-inducible factor (HIF) in mice models, which showed the importance of HD2/HIF-2 in ventilator acclimatisation. Connected to this was the session on hypoxia and pulmonary and systemic circulation, with presentations by Japanese researchers (Dr Mizuno and team) on micro-RNA profiling of models of pulmonary hypertension, and German colleagues (Dr Pak, University of Giessen), on the reaction of pulmonary vasculature to hypoxia.

Blood at Altitude

This diverse session covered blood diseases and conditions connected with response of the blood to hypoxic conditions, such as those at high altitude (Dr Muckenthaler, Heidelberg). It included a retrospective of treatment of aplastic anemia in Kyrgyzstan by the highly respected academic, A. Raimjanov (Kyrgyzstan), to unique research on genetic diseases that cause unregulated hypoxic response in normoxic conditions (Dr Gordeuk, USA/Russia), to studies of factors that influence hemoglobin concentration (Dr Prchal, USA).

Good Clinical and Research Practice and Education

Several lectures were specifically dedicated to transferring knowledge and experience of established researchers to their young colleagues. Specifically, methodology of study protocols, writing of scientific papers (Dr Russi, Switzerland), as well as reports on successful educational programmes (Dr Schoch, Switzerland) were presented.
Altitude Related Illness in High-Altitude Travellers
Since millions of people travel to high-altitude every year for work or leisure, one of the most important aspects of this Symposium was the exchange of knowledge and discussion of the newest research on acclimatisation, as well as the detection and prevention of altitude-related illness (presentations by Dr Roach, USA; and Dr Burtcher, Austria).

COPD: Causes, Clinical Presentation at Low and High-Altitude
Particularly interesting were the presentations of original research borne out of the recent Swiss-Kyrgyz cooperation projects, made by young researchers who participated in those studies (eg, M. Furian and M. Lichtblau, Switzerland, M. Mademilov and B. Estebesova, Kyrgyzstan).

Health Problems in Highlanders
Problems related to insufficient adaptation of the human body to altitude can severely impact the quality of life of high-altitude residents. Presentations by Kyrgyz and international researchers (Dr S. Ulrich, young scientists - B. Osmonov, S. Müller-Mottet) were concentrated on prevalence and treatment of diseases related to altitude, such as high-altitude pulmonary hypertension (HAPH), as well as other diseases tied to the lifestyle of highlanders (eg, prevalence of COPD and indoor pollution due to biomass heating).

Tuberculosis in Different Settings
Tuberculosis, particularly multi-drug resistant (MDR) TB, is a grave problem for many developing and emerging societies, and Kyrgyzstan in particular. Data presented by Dr Isakova (Kyrgyzstan) show the large extent of the problem, particularly in the penal system of the country, while Dr Schoch (Switzerland) shared valuable experience on early diagnosis options for TB in developing countries.

Altitude Physiology in Early Life and During Sleep
Drs Reiss and Merkus, both established researchers from the Neonatology section of the Erasmus Medical Centre (Netherlands), provided their insight into the newest research on the effects of altitude on the foetus and the newborn child.

Physiology at the Extremes and Mountain Medicine
Athletes and persons travelling to more extreme altitude conditions deserve special attention, which is why the conference also included presentations from researchers who have not only studied those conditions but experienced them personally. This included prevention of common health problems related to high-altitude (Dr Hess, Switzerland), relationships between doping and high-altitude training (Dr Suchy, Czech Republic) as well as a historical/philosophical retrospective of climbing aids (Dr Kayser).

Education
One of the main goals of this conference was to bring together young and established researchers from all over the world, particularly from developing nations who do not get enough international exposure in medical research. Thus, two special educational sessions were carried out. The first was dedicated to methodology of research and papers, which would help young scientists create and publish their own work according to accepted international standards (by Dr Russi, Switzerland). The second included presentations on existing educational programmes in developing countries, as well as experience of improving the quality of diagnosis in low-income countries (by Dr Schoch, Switzerland). As noted above, special attention was given to original research studies by young scientists. Among these, the winner of the international Young Investigator Award named after Academician M. Mirrakhimov was selected and presented with a diploma (M. Furian, Switzerland).

Total Participants
- Number of faculty members (Intl.): 27 (Kyrgyzstan, Switzerland, USA, UK, Germany, Canada, Netherlands, Spain, Czech Republic, Japan).
- Number of young researchers (total): 26.
- Number of participants from Kyrgyzstan (total): 37.

Conclusions and Outlook
Over four days, the Symposium brought together scientists of different interests tied to high-altitude medicine from a dozen countries across the globe. For Central Asia and for the field of high-altitude medicine, it became a unique event. Both the diversity of the participants, as well as the variety of topics were unprecedented: from pulmonary diseases and public health issues in highland and lowland, to specific physiological responses to hypoxia; from theoretical models and historical retrospectives, to the newest research, clinically relevant results and practically applicable advice for patients at altitude.

In addition, the forum facilitated communication between young and established researchers, whilst the separate poster session helped researchers receive direct feedback on ways of improving their research methodology and generated ideas for new research. Young and established scientists were able to freely participate in scientific discussions, informal dialogue and team building events that are crucial for improving intercultural communication, building lasting relationships and establishing long-term partnerships. This had an invaluable educational value for both researchers from developed and developing countries alike; long term, this will undoubtedly lead to more international cooperation and more quality medical research, particularly in areas that are severely lacking in resources, knowledge, and opportunities for young people.

We all are very grateful for the PVRI central office’s sponsorship, which has provided a cornerstone for future medical cooperation, particularly in the challenging environment of the Central Asian region, and given us hope to see more unique research contributions from that region at future conferences.

Organising Committee of the Symposium
- Prof. Talant M. Sooronbaev, MD (Bishkek, Kyrgyzstan).
- Prof. Konrad E. Bloch, MD (Zurich, Switzerland).
- Prof. Max Gassmann, DVM (Zurich, Switzerland and Lima, Peru).
The PVRI China Task Force continues its active participation in organising national and international meetings and education courses on pulmonary vascular diseases (PVDs) in China, aiming to extend/update the understanding of pulmonary embolism and pulmonary hypertension among Chinese physicians, exchange clinical experiences and create future international collaboration opportunities. The PVRI China Task Force encourages collaboration at international level. Joint force research has resulted in several collaborative joint publications and promoted both clinical and basic science PVDs research in China.

National Congress on Pulmonary Embolism and Pulmonary Vascular Diseases and International Conferences of Pulmonary Circulation Disorders

The 8th National Congress on Pulmonary Embolism and Pulmonary Vascular Diseases and the 6th International Conferences of Pulmonary Circulation Disorders, through the collaboration between The Pulmonary Vascular Research Institute (PVRI) and the Chinese Thoracic Society (CTS), were held in Suzhou, Jiangsu, China, 8-10 April 2016.

Leaders covered the most updated guidelines of venous thromboembolism (VTE) and pulmonary hypertension, especially the updated antithrombotic and prevention of thrombosis guidelines and pulmonary hypertension guidelines, which provided the latest knowledge of diagnosis, treatment and prevention of pulmonary vascular diseases. The PVRI also enhanced its educational programme during the meeting.

World Pulmonary Hypertension Day

May 2016: World Pulmonary Hypertension Day was celebrated on a national scale. Physicians from different cities organised meetings to raise awareness of the disease by staging various events involving both the scientific community and the general public. A series of educational and social activities for pulmonary hypertension were held in Beijing with the support of the I-seek pulmonary hypertension advisory group. More than 200 multi-disciplinary physicians participated in the activities and the issues of health education, social support, medical insurance and standardised treatment for Chinese pulmonary hypertension patients were discussed.

China Heart Congress

August 2016: China Heart Congress. The day and a half pulmonary vascular disease session was attended mostly by cardiology physicians. Professors Martin Wilkins, Xiansheng Chen, Lan Zhao and Zhenguo Zhai gave lectures at the meeting, covering topics in advances in PAH, as well as in congenital heart disease and medical and surgical treatment of chronic thromboembolic pulmonary hypertension.

The 15th National Conference of The Chinese Thoracic Society

22-25 September 2016: The 15th National Conference of The Chinese Thoracic Society was held in Xian, China. This meeting provided a communication stage for physicians, scientists and other healthcare providers in China to ensure further progress in the diagnosis and treatment of pulmonary vascular disease including, pulmonary embolism and pulmonary hypertension.
Education programme
February and July 2016: Two education programmes on standardising the diagnosis and treatment of pulmonary vascular diseases were published in the Chinese Medical Journal. These provided updates on several important aspects, including diagnosis and treatment of pulmonary hypertension, diagnosis technology and standard thrombolytic and anticoagulant therapy, as well as clarifying standardised operational procedure for imaging pulmonary hypertension. More than 10 multidisciplinary physicians jointly explored and distributed some special points on the clinical practice of evaluation and management of pulmonary embolism and pulmonary arterial hypertension.

A Multidisciplinary Consultation Platform for PE-PVD
A multidisciplinary consultation platform for diagnosis and management of pulmonary vascular diseases was set up in the China-Japan Friendship Hospital. Up to the end of October 2016, more than 250 complicated PVD patients were discussed. This platform provides a good support for individualised diagnosis and treatment of pulmonary embolism and pulmonary hypertension. The platform also provides excellent learning and communication opportunities for physicians.

The Pulmonary Hypertension Academy
The Pulmonary Hypertension Academy, a multicentre and multidisciplinary education platform for diagnosis and management of pulmonary vascular diseases, was set up in Beijing China. The Academy includes: China-Japan Friendship Hospital, Peking Union Hospital, Fuwai Hospital, Anzen Hospital, Chaoyang Hospital and Beijing Hospital and it provides excellent learning and communication opportunities for young physicians interested in pulmonary hypertension.

The China Day of ERS
The China Day of ERS was held in London in September 2016 with more than 500 multidisciplinary physicians, including some physicians from ERS and CTS in attendance. The aim was to explore China’s clinical practices of respiratory and pulmonary vascular diseases. Dr Zhenguo Zhai gave a talk about the progress of pulmonary embolism and pulmonary vascular diseases in China and detailed discussion of the cooperation also took place.

Major publications
Number of members
Total local/regional members was 162.

Educational events/meetings
The following scientific and educational activities took place in 2016:
• The 9th Annual Conference for EMR (SAPH 2016).
  - February 2016 at Amman, Jordan.
• The 1st CTD-PAH meeting for rheumatologists.
  - November 2016, Riyadh, KSA.
• Awareness Day for PH for internist & family physicians.
  - March 2016, Riyadh, KSA.
  - June 2016, Jeddah, KSA.
  - September 2016, Dammam, KSA.
  - June 2016, Madinah, KSA.
  - September 2016, Dammam, KSA.
• Awareness Day for PH for the public (PH Annual Day).
  - May 2016, Jeddah, KSA.
• Central Asian PH meeting (in collaboration with SAPH/EMR).
  - September 2016, Issyk-Kul, Kyrgyzstan.

Regional activities
• PHUTURE programme for future PH physicians (in collaboration with Bayer).
  - February 2016, Abu Dhabi, UAE.
  - April 2016, Kuwait City, Kuwait.
  - June 2016, Cairo, Egypt.
  - November 2016, Muscat, Oman.

Research (current research initiatives)
• The prevalence of PH in sickle-cell disease in the Eastern Provence in Saudi Arabia.
• Inhaled Iloprost in severe pulmonary hypertension in COPD patients.
• Genetic studies in Saudi patients with congenital heart disease.
• Bronchiectasis and PH in Saudi patients.
• Prevalence of PH in the high altitude in Saudi Arabia.
• Prevalence of CTEPH in Saudi Arabia.
• Phenotyping of pulmonary hypertension.
• PAH in scleroderma patients in Saudi Arabia.
• PAH in CHD in Saudi patients.
• Morbidity and mortality of right heart catheterisation in a tertiary care centre in Saudi Arabia.
• Contribution in the PVRI consensus statement for the management of pulmonary hypertension in the developing world.

Other initiatives
• SAPH/EMR is working on establishing a further collaboration with PHA Europe and PHA Canada.
• SAPH/EMR is also planning to expand its collaboration and share experience through working with PHA South Africa and many early initiatives/groups in North African countries.
• SAPH has established a partnership with the Central Asian PH group (CAPH).

Summary of activities for 2017
• Organise the 10th Annual Joint (SAPH/PVRI) meeting in Dubai, UAE, 2-4 February 2017. For more information about this meeting, please visit the conference website (www.saph2017.com) or the SAPH website (www.saph.med.sa).
• Continue holding the paediatric PH master class in February and the adult PH master class in October 2017.
• Continue holding frequent awareness days in different areas in the EMR region.
• Continue to participate in the international PH annual day on 5 May 2017.

Goals for year 2017
SAPH/EMR is planning to continue expanding its activities. It is now recognised regionally and, increasingly, internationally for its services in the field of PH.
SAPH will continue seeking to increase the number of active members, improving awareness and creating a positive environment between physicians and healthcare providers interested in the field. Attracting more nurses, paramedics and patients is now SAPH’s main aim.
A meeting, firmly supported by the PVRI, was held in Pavia, Italy, at the end of October 2016. Located in Northern Italy’s Lombardia region, Pavia is a small town and home to a famous University founded in 1931.

Over the past few years, the Heart Failure and Pulmonary Hypertension Centre of the Cardiology Division of the S. Matteo Hospital in Pavia has been leading a regional network, which includes all specialists who look after patients affected by this rare and severe disease.

The aim of the meeting was to increase awareness of pulmonary hypertension and to strengthen cooperation among the medical staff of all Lombard centres who work in this field.

Distinguished international speakers who participated were: Prof. Paul Corris, President of the PVRI, Dr Juan Barberà from Barcelona, Dr Robert Naeije from Brussels, Dr Luke Howard from London and Dr Henning Gall from Giessen. Italian speakers included Prof Marco Guazzi from Milano, Prof. Dario Vizza from Rome and Dr Michele D’Alto from Naples.

The speakers focused on the diagnostic difficulties and the therapeutic possibilities both in Group 2 and in Group 3 pulmonary hypertension. In addition, the latest randomised, placebo-controlled clinical trials were also discussed in depth. Preliminary data from the regional registry, which so far includes nearly 900 patients, were presented by Dr Stefano Ghio, Laura Scelsi and Claudia Raineri from S. Matteo Hospital.

The meeting in Pavia was also an excellent opportunity to discuss and to plan future patho-physiological research to be shared by the European Task Force of the PVRI.

The Task Force is, in fact, firmly committed to sharing research objectives and addressing patho-physiological issues which cannot be pursued by a single centre. It is acknowledged that a multi-centre approach has to be adopted, which is more in line with the objectives in pharmacological trials.
The Task Force has set up a PH club, which meets quarterly in Hyderabad and Chennai, to discuss cases of interest.

On 5 May 2016, World PH Day, a series of webinars was held. The Task Force also conducted a PH education programme and introduced yoga training in Hyderabad hospital. While it may not be scientifically proven, many patients felt better and some are now attending, under supervision, regular yoga sessions - this could be called rehabilitation.

On 2 and 3 July, a national level webinar took place. With the support of the PVRI and the active support of Cipla, the Task Force conducted a national level webinar on 2 July 2016 in Chennai and on 3 July 2016 in Mumbai. In addition, the India PVRI Task Force meeting was a success.

Nearly 270 doctors attended and a total 650 doctors either logged in online or attended webcast meetings at satellite centres.

Dr Rubin from the USA and Dr Gerhard Diller from Germany were the international faculty.

There were nearly 20 Indian faculty and a wide variety of topics related to the practice of PH in India were covered. It was much appreciated with lively audience participation.
The primary focus for this past year has been the planning of the PVRI 11th Annual World Congress in Miami, January 2017. Drs. Archer and Stenmark, along with colleagues Brian Graham, Mark Ormiston, Brad Maron, and Thenappan Thenappan have put together an extensive and exciting programme. Prestigious speakers from both North America and Europe will be attending.

The conference will cover everything from the newest, basic science discoveries to translational and clinical state-of-the-art talks. There will be debates on clinically important topics and opportunities for young investigators to present at highly interactive electronic poster sessions. This will facilitate interactions between both senior and junior investigators.

The PVRI leadership has also worked with and acted as the liaison to the Critical Care and Cardio-Pulmonary Research (3CPR) council of the American Heart Association (AHA). The long-term goal is to better integrate the work going on among these two important organisations. There will be a presentation by Dr. Brad Maron at the PVRI 2017 Miami meeting describing the immediate and long-term goals of this affiliation.

In addition to the above, the North America Task Force organised the annual PVRI Get-Together 2016 at the ATS, which was held on 17 May in San Francisco.

This social event was a great success, with 83 delegates attending from around the world.
Activities in 2016
The Tracking Outcomes and Practice in Paediatric Pulmonary Hypertension (TOPP 2) Registry on Pulmonary Hypertension in Children was held in Chicago on 5 November 2016.

The Task Force gave a presentation on pulmonary hypertension in children at altitude and specifically on PH at moderate altitude (2,640 meters over sea level). There were some interesting results related to the effect of hypobaric hypoxia on epidemiology, pathogenesis, diagnostic approach and treatment. Emphasis was made on the importance of early diagnosis to avoid the remodelling of pulmonary vasculature (40% of patients diagnosed this year were three years old and younger).

It is interesting to note the frequency of PH in children at altitude: 23 new patients registered in the last 12 months: 19 patients are still registered to date, one died before catheterism and therefore not registered; and four are awaiting catheterism.

Altitude related PH pertains to Group 3 of Nice Classification (as Hypoxia). However, as for hypobaric hypoxia, the categorisation of PH hypertension at altitude may need to be considered as a special sub-group as it differs to other pathologies of Group 3 but also relates to pathologies in Groups 1, 5 and, possibly, 2.

Outlook for 2017
March 2017
The Second Edition of the textbook CARDIOLOGÍA PEDIÁTRICA (in Spanish) will be launched in March 2017 during a small symposium on paediatric cardiology.

The textbook will comprise 75 chapters, five dedicated to pulmonary hypertension, and will have around 1,100 pages.

Chapters related to pulmonary hypertension will be:
- Development of Pulmonary Vasculature: Dr Marlene Rabinovitch (USA).
- Persistent Pulmonary Hypertension of the newborn: Dr John Kinsella (USA).
- Idiopatic Pulmonary Hypertension: Dr Julio Sandoval (México).
- Pulmonary Hypertension and Congenital Heart Disease: Dr Maurice Beghetti et al (Switzerland).
- The Children with Pulmonary Hypertension at altitude: Gabriel Diaz (Colombia).

Additional contributions by PVRI participants:
- Dr Dunbar Ivy: Transposition of the great arteries.
- María Jesús del Cerro: Congenital anomalies of coronary arteries.
- Ian Adatia: Atrioventricular septal defects.
April 2017

The Second Latin American Symposium on Pulmonary Hypertension in Children (Segundo Simposio Latinoamericano sobre Hipertensión Pulmonar en Niños) will be held in Buenos Aires 20-21 April 2017 with the support of the PVRI.

The main objective of the event is to analyse the problem in Latin America; round tables and conferences will be developed by different professionals of the world. On the morning of 20 April 2017 two successive didactic and interactive workshops of non-invasive diagnosis and cardiac catheterisation will be held respectively.
The past few years have seen the efforts of the South Africa & Sub-Saharan Africa Task Force produce pivotal data published in highly respected journals, which has provided extensive insight into the incidence, prevalence and nature of pulmonary hypertension in Sub-Saharan Africa, thus highlighting the importance of this clinical problem to the region.

The imperative now is to translate this data into better care for our patients, irrespective of the great differences in access to sophisticated medical care and vast disparity in economic resources.

A step toward a more united approach to the management of pulmonary hypertension has been made over the past two years with the establishment of the Working Group for Pulmonary Hypertension in South Africa, which was the first attempt of the pulmonology and cardiology community at a formal collaborative approach.

Publication of recommendations in the South African Medical Journal is aimed as a first step toward endorsement of the ESC/ERS 2015 Guidelines in a form adapted to local conditions and, at the same time, broadening the awareness of, and improving access to, better medical care for patients with pulmonary hypertension.

While the above efforts were conducted independently of the PVRI, or indeed any other formally constituted organisation, there is a pressing need for and eagerness to have collaborative input over and above that of the many individual members of the international PH community who have been so willing to assist our efforts thus far.

**Congratulations to Karen Sliwa-Hahnle**

In June 2016, during the World Congress of Cardiology and Cardiovascular Health in Mexico, Professor Karen Sliwa-Hahnle was elected President Elect of the World Heart Federation.

We would like to thank Karen for her enthusiasm, hard work and commitment as the previous Task Force leader.
The South East Asia Task Force is a new geographical Task Force and has only been established since the end of 2016. The Task Force leaders are already engaging interested physicians in Malaysia and have established contact in the Philippines.

2017 Activities
The first regional Task Force meeting will be held on 21 - 23 July 2017 with the Malaysian Thoracic Society at their Congress.

The Task Force, with the support of the PVRI, will organise a CTEPH-related Pre-Congress workshop on 20 July, which has a working title of Acute PE to CTEPH: State of the Art Management.
Achievements So Far
At the Rome PVRI Congress in January 2016, the Task Force membership agreed on a broad framework of a consensus statement on exercise pulmonary hypertension as a disease. The document outline is as follows:

- ePH is associated with exertional intolerance.
- ePH substantively affects exercise tolerance through decreases in oxygen delivery and its peripheral utilisation.
- Transpulmonary flux of biomarkers suggest ePH is associated with an early vasculopathy.
- Event free survival is reduced and untreated ePH.
- Treatment of ePH with pulmonary vasodilators improves symptoms, exercise capacity and long-term outcome.

Publications
New guidelines for standardised invasive exercise testing


The first large study of the upper limits of normal for exercise pulmonary hemodynamics in a ‘true’ normal population
Oliveira RKF, Agarwal M, Tracy JA, Karin AL, Opotowsky AR, Waxman AB, Systrom DM. Age-related upper limits of normal for maximum upright exercise pulmonary hemodynamics.

Eur Respir. DOI: 10.1183/13993003.01307-2015 Published 17 December 2015

A paper describing early compliance changes in precapillary exercise PH which differ from heart failure preserved ejection fraction
Oliveira RK, Waxman AB, Agarwal M, Badr Eslam R, Systrom DM. Pulmonary hemodynamics during recovery from maximum incremental cycling exercise.


Goals/Aims For 2017
- Better understanding of the functional relationship between borderline and exercise pulmonary hypertension.
- Effect of pulmonary vasodilator treatment on exercise pH.
- Long-term outcomes of untreated ePH.
- Deep phenotyping of ePH, including imaging and transpulmonary flux of biomarkers (metabolomics, proteomics, transcriptomics and coagulomics).
**PVRI Imaging Report 2016**
David Kiely & Andy Swift

**Strategy for 2017-19**

**Phase 1**
To develop a comprehensive position statement for publication in *Pulmonary Circulation*. The production of this document brings together experts in the field of imaging and pulmonary hypertension and is expected to act as a springboard for further collaborations.

The position statement includes the following sections with a number of work-streams in each section with all imaging task force members involved:

- Introduction: overview current pulmonary hypertension landscape and potential role for imaging.
- Review of established and emerging imaging modalities with respect to their use in the assessment of pulmonary vascular disease.
- Focused sections covering clinical challenges, radiology controversies, technical aspects and developing networks of imaging excellence and sharing of expertise.
- Diagnostic algorithms include state of the art approaches to imaging and algorithms based on image availability.

**Phase 2**
Plan to develop educational interactive online cases.

**Phase 3**
Roll out of centres of PH imaging excellence.

**Goals for 2017-2018**

**January 2017**
Meeting of the Task Force in Miami on Friday 27 January 2017, (2pm to 5pm) to review individual sections of the position statement.

- Lead of each work-stream or deputy to present core findings at the PVRI Imaging Symposium to finalise the scope of the document.

**January 2017 to June 2017**
Refine the initial draft of position statement prior to voting on recommendations and subsequent refinements prior to submission to *Pulmonary Circulation*.

**October 2017**
Submit position statement to *Pulmonary Circulation*.

**January 2018**
Present final guidelines in dedicated Imaging at the PVRI Symposium meeting to be launched.
2016 Activities

- Paediatric Pulmonary Hypertensive Vascular Disease organised by Paediatric Task Force members, and with major contributions from Paediatric Task Force members.
- 14-17 January 2016: Paediatric & Congenital Heart Disease Task Force Meeting during the Annual PVRI Meeting, Rome (Italy).
- 24 June 2016: First Paediatric and Neonatal Pulmonary Hypertension Update. Kokilaben Dhirubhai Ambani Hospital, Mumbai, in association with IAP Mumbai and PVRI, organised by Prashant Bobhate and Shreepal Jain.
- 26 June 2016: Amrita Paediatric Pulmonary Hypertension Update organised by Shine Kumar and KK Kumar, Cochin, Kerala.

2016 Achievements

- Publication of consensus document: “Cardiac catheterisation in children with pulmonary hypertensive vascular disease: consensus statement from the Pulmonary Vascular Research Institute, Paediatric and Congenital Heart Disease Task Forces”.

2017 Goals

- To celebrate the Annual Paediatric & Congenital Heart Disease Task Force Meeting, on 25 January 2017, in Miami.
- To publish a new consensus document: Management of Pulmonary Vascular Disease in Bronchopulmonary Dysplasias.
- To collaborate in the organisation of the Second Latin Meeting on Paediatric Pulmonary Hypertension, to be held in Buenos Aires on 19-20 April 2017.
- To celebrate on 9-11 March 2017 the 10th International Conference Neonatal & Childhood Pulmonary Vascular Disease, San Francisco, CA, USA organised by Ian Adatia and Jeff Fineman.

To update the Panama Paediatric Classifications on Functional Class and Diagnostic Phenotypes.
The Pre-Clinical & Molecular Science Task Force met for the first time at the PVRI Congress in Rome in January 2016.

They held a well-attended one-day workshop discussing pre-clinical animal models and their relevance to disease, taking sex into account. Also discussed were pre-clinical studies on biomarkers and novel therapeutic approaches.

There was a lively discussion and a poster session over lunch. The workshop was co-organised by Mandy MacLean and Duncan Stewart.

During 2016, the Pre-Clinical & Molecular Science Task Force has been organising another one-day workshop for Miami 2017, which will be run with the Women’s Health Task Force to discuss issues of female sex in PAH. This will be run by Mandy MacLean and Anna Hemnes.
Members

• Angela Bandeira - University of Pernambuco, Brazil
• Ghazwan Butrous - University of Kent, United Kingdom
• Alexi Crosby - University of Cambridge, United Kingdom
• Ana Lucia Coutinho Domingues - University of Pernambuco, Brazil
• Rita Ferreira - University of Pernambuco, Brazil
• Brian Graham - University of Colorado, United States
• Essam Hamoda - Kuwait
• Rahul Kumar - University of Colorado, United States
• Nicholas Morrell - University of Cambridge, United Kingdom
• Rubin Tuder - University of Colorado, United States

Looking Back at the Past Year

Members of the Schistosomiasis Task Force had multiple publications relevant to the mission of the Task Force, including (but not limited to):


The Women’s Health and Pregnancy Task Force met during the PVRI Annual Meeting in Rome and discussed potential future directions for our group.

The Task Force decided to co-sponsor a Pre-Congress Symposium with the Pre-Clinical & Molecular Science Task Force. This has been planned with input from both Task Forces. The meeting promises to be an exciting, thought-provoking discussion of the role of sex hormones at the intersection of basic science and human disease in pulmonary hypertension.

The Task Force is working on a book based on our recent consensus statement published in Pulmonary Circulation that is being spearheaded by Tim Lahm.

Finally, the Task Force is considering future studies to promote women’s health with regard to the pulmonary circulation in the future, as well as surveys of exposures and practice patterns.
“Today’s work, tomorrow’s possibility...”