

ISHLT ACADEMY
CORE COMPETENCIES IN THE MANAGEMENT OF ADVANCED PULMONARY
HYPERTENSION AND RIGHT VENTRICULAR FAILURE

Scientific Program Committee

Chair: Colin Church, MRCP, Golden Jubilee National Hospital, Glasgow, UK
Co-Chair: Ryan J. Tedford, MD, Medical University of South Carolina, Charleston, SC, USA

Faculty

Paul Corris, MB, FRCP, Freeman Hospital, University of Newcastle, Newcastle, UK
Colin Church, MRCP, Golden Jubilee National Hospital, Glasgow, UK
Robert Frantz, MD, Mayo Clinic, Rochester, MN, USA
Mardi Gomberg-Maitland, MD, MSc, University of George Washington Hospital, Washington, DC, USA
John Granton, MD, Toronto General Hospital, Toronto, Canada
Marco Guazzi, MD, PhD, University of Milano, Milan, Italy
Brian A. Houston, MD, The Medical University of South Carolina, Charleston, SC, USA
Steven Hsu, MD, Johns Hopkins University School of Medicine, Baltimore, MD, USA
Denise Lewis, BSN, RN, George Washington University, Washington, DC, USA
Bradley Maron, MD, Brigham and Women's, Boston, MA, USA
Dana McGlothlin, MD, Kaiser Permanente San Francisco, San Francisco, CA, USA
Steven Nathan, MD, Inova Fairfax, Falls Church, VA, USA
Joanna Pepke-Zaba, PhD, FRCP, Royal Papworth Hospital, Cambridge, UK
Ioana Preston, MD, Tufts Medical Centre, Boston, MA, USA
Ryan J. Tedford, MD, Medical University of South Carolina, Charleston, SC, USA
Jean Luc Vachieri, MD, Erasme University Hospital, Brussels, Belgium

Educational Goals

Pulmonary hypertension (PH) is a life-threatening condition commonly encountered in patients with advanced heart and lung disease. Despite significant advances in the field, patients with PH are complex, their management is challenging, and their survival remains limited. The educational goals of this activity are to provide a concise review of clinical knowledge and essential professional skills to facilitate best practice of surgical and medical aspects involved in the care of patients with pulmonary vascular disease and right ventricular dysfunction, including those with advanced heart and lung disease.

Target Audience

This course is primarily designed to be of benefit for clinicians and allied health professionals who are in the early stages of their careers, or who are in training and/or are part of a new program, or desire an update on the current state of the field. The information presented covers core competencies and is intended to provide a strong foundation of the overarching principles of pulmonary hypertension, rather than as a detailed update for those who are already proficient experts in the field.

Learning Objectives

At the conclusion of this meeting, participants will have improved competence and professional performance in their ability to:

1. Discuss the definitions, diagnosis, and classification of patients with pulmonary hypertension
2. Recognize the indication and use of available pulmonary hypertension specific therapies
3. Understand the epidemiology, pathophysiology, and management principles for the five World Health Organization pulmonary hypertension groups, including patients with advanced heart and lung failure
4. Recognize the role of the right ventricle in pulmonary hypertension and understand the management principles for right ventricular failure and end-stage PH
5. Review perioperative considerations for patients with pulmonary hypertension undergoing surgery, including thoracic transplantation, VAD implantation, and pregnancy.

Disclosure

Current guidelines state that participants in CME activities must be made aware of any affiliation or financial interest that may affect the program content or a speaker's presentation. Planners, Faculty and Chairs participating in this meeting are required to disclose to the program audience any real or apparent conflict(s) of interest related to the content of their presentations or service as Chair/Planner. These disclosures will be distributed at the meeting. Additionally, all speakers have been asked to verbally disclose at the start of their presentation if a product they are discussing is not labeled for the use under discussion or is still investigational.

Accreditation Statement

The International Society for Heart and Lung Transplantation (ISHLT) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Credit Designation Statement

ISHLT designates this live activity for a maximum of *7.00 AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Nurses and Pharmacists



JOINTLY ACCREDITED PROVIDER™
INTERPROFESSIONAL CONTINUING EDUCATION

In support of improving patient care, this activity has been planned and implemented by Amedco LLC and ISHLT. Amedco LLC is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing

education for the healthcare team.

Credit Designation Statement – Amedco LLC designates this live activity for a maximum of 7.25 contact hours for nurses and 3.75 knowledge-based contact hours for pharmacists. Learners should claim only the credit commensurate with the extent of their participation in the activity.

ISHLT ACADEMY
CORE COMPETENCIES IN THE MANAGEMENT OF ADVANCED PULMONARY
HYPERTENSION AND RIGHT VENTRICULAR FAILURE
PRELIMINARY SCIENTIFIC PROGRAM SCHEDULE

7:30 AM – 8:15 AM

REGISTRATION & MORNING COFFEE

8:15 AM – 8:20 AM

WELCOME AND OVERVIEW

Colin Church, MRCP, Golden Jubilee National Hospital, Glasgow, UK

Ryan J. Tedford, MD, Medical University of South Carolina, Charleston, SC, USA

8:20 AM - 9:30 AM

SESSION 1 – LET’S START AT THE START! GENERAL INTRODUCTION TO RV PHYSIOLOGY AND PULMONARY HYPERTENSION

Chair: Ryan J. Tedford, MD, Medical University of South Carolina, Charleston, SC, USA

8:20 AM *What is this New Pulmonary Hypertension? Definitions and Classifications*

Bradley Maron, MD, Brigham and Women's, Boston, MA, USA

Teaching/Discussion Points

- a. Definitions and hemodynamic classification of pulmonary hypertension
- b. WHO clinical classification
- c. Diagnostic evaluation
- d. Update from World Symposium 2018

8:40 AM *Understanding RV Physiology and Coupling to the Pulmonary Circulation*

Steven Hsu, MD, Johns Hopkins University School of Medicine, Baltimore, MD, USA

Teaching/Discussion Points

- a. Normal RV morphology, physiology and function
- b. RV adaptation to pressure overload
- c. RV/PA coupling and ventricular interdependence
- d. Pathophysiology of RV failure and the right heart failure syndrome in PH

9:00 AM *Right Heart Catheterization: Let’s Do It Right*

Brian A. Houston, MD, The Medical University of South Carolina, Charleston, SC, USA

Teaching/Discussion Points

- a. Pulmonary artery catheter and how to perform a diagnostic right heart catheterization
- b. Common mistakes and pitfalls with hemodynamic measures
- c. Indications and performance of vasoreactivity testing
- d. When to consider left heart catheterization for LVEDP assessment

9:20 AM – 10:30 AM

SESSION 2 – THE TRUE PULMONARY VASCULAR DISEASE: GROUP 1 PAH

Chair: Colin Church, MRCP, Golden Jubilee National Hospital, Glasgow, UK

9:20 AM *Understanding the History and Pathophysiology of PAH*

Ioana Preston, MD, Tufts Medical Centre, Boston, MA, USA

Teaching/Discussion Points

- a. Pathology and pathobiology of PAH
- b. Registries and epidemiology of PAH subtypes
- c. Genetics of PAH

9:40 AM *What Treatments Can I Give? Management Strategies and Pharmacotherapy*

Robert Frantz, MD, Mayo Clinic, Rochester, MN, USA

Teaching/Discussion Points

- a. Adjunctive therapies and calcium channel blockers
- b. Available PAH specific therapies
- c. Pivotal trials
- d. Updated treatment algorithm

10:00 AM *How Do I Know When to Change Treatment? All About Risk*

Mardi Gombert-Maitland, MD, MSc, University of George Washington Hospital, Washington, DC, USA

Teaching/Discussion Points

- a. Importance of risk assessment
- b. Key components of risk assessment and why they are important
- c. Utilization of risk assessment tools in the management of PAH
- d. When to assess risk and what to do about it therapeutically

10:20 AM *Panel Discussion*

10:30 AM – 11:00 AM

COFFEE BREAK

11:00 AM – 12:20 PM

SESSION 3 – BUT THE LV IS NORMAL SO IT CAN'T BE LEFT HEART FAILURE: UNDERSTANDING GROUP 2 PULMONARY HYPERTENSION

Chair: Ryan J. Tedford, MD, Medical University of South Carolina, Charleston, SC, USA

11:00 AM *Pathophysiology and Diagnosis of Group 2 PH*

Jean Luc Vachery, MD, Erasme University Hospital, Brussels, Belgium

Teaching/Discussion Points

- a. Pathophysiology of pulmonary hypertension in left heart disease
- b. Epidemiology and impact of pulmonary hypertension in HFrEF, HFpEF, and valvular heart disease (including patients undergoing surgical and percutaneous, eg TAVR and MitraClip, valve interventions)
- c. Definitions and terminology of WHO group 2 PH
- d. Outcomes and risk predictors

11:20 AM *Management and Treatment of Group 2 PH*

Marco Guazzi, MD, PhD, University of Milano, Milan, Italy

Teaching/Discussion Points

- a. Therapeutic options
- b. Pivotal trial data
- c. Management guidelines

11:40 AM PH in LVAD and Transplant Candidates: Before, During and After

Robert Frantz, MD, Mayo Clinic, Rochester, MN, USA

Teaching/Discussion Points

- a. Risks associated with pulmonary hypertension in heart transplantation
- b. Management of pulmonary hypertension in heart transplant candidates, including the role of PH specific therapies and LVAD implantation
- c. Management of right ventricular failure in LVAD recipients
- d. Bridging strategies

12:00 PM Case Presentation

Ryan J. Tedford, MD, Medical University of South Carolina, Charleston, SC, USA

12:05 PM Panel Discussion

12:20 PM – 1:30 PM

LUNCH BREAK (a box lunch is included in the registration fee)

1:30 PM – 2:30 PM

SESSION 4 – JUST TREAT THE LUNG DISEASE: UNDERSTANDING GROUP 3 PULMONARY HYPERTENSION

Chair: Colin Church, MRCP, Golden Jubilee National Hospital, Glasgow, UK

1:30 PM Diagnosis and Classification of Group 3 PH

Paul Corris, MD, FRCP, Freeman Hospital, University of Newcastle, Newcastle, UK

Teaching/Discussion Points

- a. Epidemiology of Group 3 PH
- b. Prognostic significance of PH in COPD and ILD (including idiopathic pulmonary fibrosis and ILD related to connective tissue disease)
- c. Pathophysiology of PH in COPD and ILD, including pulmonary arterial and venous involvement and vasoactive and profibrotic mediators
- d. Significance of PH in advanced lung disease patients being considered for lung transplantation

1:50 PM Treatment of PH in Mild/Moderate/Severe Lung Disease with PH

Steven Nathan, MD, Inova Fairfax, Falls Church, VA, USA

Teaching/Discussion Points

- a. Review the therapeutic options based on clinical trial data in Group 3 PH
- b. Discuss the challenges of mixed PH classification patients

2:10 PM Case Presentation

Colin Church, MRCP, Golden Jubilee National Hospital, Glasgow, UK

Teaching/Discussion Points

- a. Explore the difficulty of diagnosis in Group 3 disease
- b. Focus on sarcoid as an interesting condition with overlap between PH groups

2:15 PM Panel Discussion

2:30 PM - 3:20 PM

SESSION 5 – CLOTS AND ODDITIES? A BRIEF EXPLORATION OF CTEPH AND GROUP 5 PULMONARY HYPERTENSION

Chair: Colin Church, MRCP, Golden Jubilee National Hospital, Glasgow, UK

2:30 PM *A Whistlestop Tour of CTEPH: Current Managements and New Advances*

Joanna Pepke-Zaba, PhD, FRCP, Royal Papworth Hospital, Cambridge, UK

Teaching/Discussion Points

- a. Epidemiology with a focus on incidence and risk factors
- b. Review what is known about the evolution from acute to chronic thromboembolic disease
- c. Describe the contribution small vessel arteriopathy plays in the development of CTEPH
- d. Describe the issues surrounding operability and PEA surgery
- e. Review the appropriate role for specific medical therapy and BPA in CTEPH

2:50 PM *All You Need to Know About Group 5 PH*

Dana McGlothlin, MD, Kaiser Permanente San Francisco, San Francisco, CA, USA

Teaching/Discussion Points

- a. Review the causes of PH with unclear/multifactorial mechanisms
- b. Focus on epidemiology, mechanisms of PH and role of PH specific therapies in sarcoidosis and hematologic disorders

3:10 PM *Panel Discussion*

3:20 PM – 3:50 PM

COFFEE BREAK

3:50 PM - 4:45 PM

SESSION 6 – WHAT TO DO WHEN THE DRUGS STOP WORKING: ADVANCED PH MANAGEMENT, RV FAILURE AND TRANSPLANT

Chair: Ryan J. Tedford, MD, Medical University of South Carolina, Charleston, SC, USA

3:50 PM *What To Do When the RV Stops Performing: Medical Management*

John Granton, MD, Toronto General Hospital, Toronto, Canada

Teaching/Discussion Points

- a. Review the precipitating factors
- b. Discuss management principles, including the role of pulmonary vasodilator therapies, oxygenation, volume management and inopressor use

4:10 PM *What To Do When the RV Stops Performing: Mechanical and Surgical Management*

Paul Corris, MB, FRCP, Freeman Hospital, University of Newcastle, Newcastle, UK

Teaching/Discussion Points

- a. Indications for lung transplantation in PAH
- b. LAS score and its pitfalls
- c. Timing and utilization of atrial septostomy
- d. Mechanical circulatory support indications and bridging strategies

4:30 PM *Panel Discussion*

4:45 PM - 5:35 PM

SESSION 7 – MISCELLANEOUS CASES: PREGNANCY, PERIOPERATIVE AND NURSING

Chair: Colin Church, MRCP, Golden Jubilee National Hospital, Glasgow, UK

4:45 PM *How to Nurse the Patient with End Stage PH*

Denise Lewis, BSN, RN, George Washington University, Washington, DC, USA

Teaching/Discussion Points

- a. Approach to nursing care
- b. Palliative/hospice care
- c. Anticipatory care
- d. Quality of life assessments

5:05 PM *Surgery, Pregnancy and PAH: The Unholy Alliance?*

John Granton, MD, Toronto General Hospital, Toronto, Canada

Teaching/Discussion Points

- a. Reported perioperative morbidity/mortality with cardiac and non-cardiac surgeries in PH patients
- b. Risks of anaesthesia and mechanical ventilation in PH patients
- c. Risks of certain operations in patients with PH (eg laparoscopy, lobectomy, orthopedic surgery)
- d. Preoperative considerations and planning (Principles of intra- and post-operative management)
- e. Risk and outcomes of PAH and pregnancy

5:25 PM *Panel Discussion*

5:35 PM SUMMARY / EVALUATION

Colin Church, MRCP, Golden Jubilee National Hospital, Glasgow, UK

Ryan J. Tedford, MD, Medical University of South Carolina, Charleston, SC, USA

5:40 PM

ADJOURN