ISHLT2023 Roving Reporters – Reports from Pulmonary Vascular Disease (PAH & CTEPH) (PVD)

- **Wednesday, 19 April, 2023**
  - SESSION 18 (SYMPOSIUM). Chronic Thromboembolic Pulmonary Hypertension: A Decade of Progress
  - SESSION 25 (SYMPOSIUM). Transplants and Pulmonary Hypertension
  - SESSION 12 (ORAL). Four to Go: WHO Group 4 /CTEPH
- **Thursday, 20 April, 2023**
  - SESSION 32 (SYMPOSIUM). Medical Management of PH: Something Old, Something New, Something Borrowed, Something Blue
  - SESSION 39 (SYMPOSIUM). Righting a Wronged Ventricle
- **Friday, 21 April, 2023**
  - SESSION 60 (SYMPOSIUM). What's New With the ESC/ERS Guidelines 2022 For Pulmonary Hypertension
  - SESSION 74 (SYMPOSIUM). Connecting the Clots: Journey of an Acute to Chronic Pulmonary Embolism
- **Saturday, 22 April, 2023**
  - SESSION 86 (ORAL). Medicine is a Science of Uncertainty and an Art of Probability: Patient Selection for Heart Transplantation

Thank you to all of our ISHLT2023 Roving Reporters.

ADVANCED HEART FAILURE AND TRANSPLANTATION (AHFTX)

Jason Goldberg, MD, MS, Inova LJ Murphy Children's Hospital, Fairfax, VA USA
Luise Holzhauser, MD, University of Pennsylvania, Philadelphia, PA USA
Pei Jun Zhao, MD, MPH, London Health Sciences Centre / Western University, London, ON Canada

ADVANCED LUNG FAILURE AND TRANSPLANTATION (ALFTX)

Lourdes Chacon Alberty, MD, MCTM, Texas Heart Institute, Houston, TX USA
Rebecca Klingbeil, MSN, DNP, CRNA, Mayo Clinic, Jacksonville, FL USA

MECHANICAL CIRCULATORY SUPPORT (MCS)

Anju Bhardwaj, MD, University of Texas / McGovern Medical School, Houston, TX USA
Anjan Tibrewala, MD, Northwestern University, Chicago, IL USA

PULMONARY VASCULAR DISEASE (PVD)

Nancy Luo, MD, MHS, Sutter Health, Sacramento, CA USA

SESSION 18. Chronic Thromboembolic Pulmonary Hypertension: A Decade of Progress

This international expert symposium on the advancement in management of chronic thromboembolic pulmonary hypertension (CTEPH) was co-chaired by **Joanna Pepke-Zaba, PhD, FRCP** from Royal Papworth Hospital in Cambridge; **Marc De Perrot, MD, MSc, FRCSC** of Toronto General Hospital; and **William Auger, MD**, of University of California San Diego.

To begin, **Marion Delcroix, MD, PhD**, from UZ Leuven in Belgium began the session with a recap of lessons learned from five major international CTEPH registries, encompassing over 3,600 individual patients from 2007 to 2019. Each era of patient registries has expanded our understanding. CTEPH 3-year survival is now higher in contemporary registries compared to prior eras (89% versus 81%). As experience has grown, immediate surgical outcomes from pulmonary thromboendarterectomy (PTE) have also improved year over year. Interestingly, after soluble guanylate cyclase riociguat became available, its use in inoperable CTEPH disease was associated with significantly better outcomes compared to other pulmonary vasodilators in registry data. Discussants present were unable to explain the physiology behind this finding. Additionally, patients receiving vitamin K antagonists versus direct oral anticoagulants after surgery have similar long-term survival.

Preeminent PTE surgeon **Michael Madani, MD**, presented the over 30-year, 4,800 patient case experience at UCSD. He described some ongoing challenges in patients with residual pulmonary hypertension after PTE and those with distal subsegmental disease. In his experience, endarterectomy is feasible and successful in subsegmental disease, but medical therapy can complement the treatment of residual microvascular disease. Nevertheless, patients with a history of DVT or acute PE, proximal lobar disease, and concordance of clot burden to their RV hemodynamics generally have the most predictable and best long term surgical outcome.

Complementing Dr Madani's discussion, **Elie Fadel, MD**, from Hospital Marie Lannelongue in France described the personalized, multi-modality treatment strategy frequently utilized for subsegmental disease at his center. For patients with overlap in segmental and subsegmental artery disease, his team starts with 3 months of combination medical therapy. In the recently published RACE trial (citation below), this strategy of medical treatment before balloon pulmonary angioplasty (BPA) was associated with decreased procedural complications. These patients then underwent BPA on appropriate subsegmental lesions, before being evaluated again for PTE and ultimately having surgery. In their surgical patients, this approach was associated with decreased circulatory arrest time at the time of PTE surgery compared with controls and other improved surgical outcomes. Professor Fadel described this technique as a way to create a better surgical candidate.

As a pioneer in BPA, **Hiromi Matsubara, MD, PhD**, from Okayama Medical Center in Japan led the discussion on his experience with performing BPA at his center. In Japan, BPA is also often used to treat proximal, surgically-accessible lesions. In his study of BPA outcomes in CTEPH patients

with surgically accessible and inaccessible lesions, outcomes were fairly comparable and more than 80% of patients improved to functional class 1 and 2 limitations. Nevertheless, patients with surgically accessible disease who underwent BPA (primary reasons were patient refusal or age >80 years) had a statistically insignificant lower survival rate and were less likely to achieve NYHA functional class 1 symptoms. Professor Matsubara recommended patients try to be persuaded to have PTE if they have surgically accessible disease.

Lastly, **Isabelle Opitz, MD**, from University Hospital Zurich in Switzerland described her experience in creating a new national PTE surgical center in Zurich to serve the patients of Switzerland.

VIEW SESSION DETAILS

– Commentary by Nancy Luo, MD, MHS

SESSION 25. Transplants and Pulmonary Hypertension

Session 25 provided an update on organ transplantation for pulmonary arterial hypertension and portal pulmonary hypertension, and was chaired by **Goran Dellgren, MD, PhD**, of Sahlgrenska University Hospital in Sweden, and **Ilaria Righi, MD**, of Cà Granda Foundation Policlinico Hospital in Italy.

In a packed, late afternoon session, **Vikramjit Khangoora, MD**, from Inova Fairfax Hospital in Virginia provided an update on transplantation criteria and recommendations for perioperative care for PAH transplant patients. He strongly recommended timely referral for all high risk and intermediate high risk patients, as lung transplantation remains highly underutilized for pulmonary arterial hypertension. Dr. Khangoora showed data of comparable outcomes for PAH patients after lung transplant compared to other indications (7 years versus 7.8 years median survival), and a median 10.6 years if conditional to survival at 3 months post-transplant. Wait list mortality for lung transplantation has also fallen significantly from the 1990s to recent years. To reduce the heightened risk for primary graft dysfunction in PAH patients who undergo lung transplantation, Dr. Khangoora described a strategy of using extended post operative ECMO to tightly control pulmonary circulation blood flow and avoid rapid pre-loading of the left ventricle.

To follow, **Konrad Hoetzenecker, MD**, from the Medical University of Vienna in Austria, described contemporary practices in transplantation for PAH. Since the 1990s-2000s, with the right expertise, Dr. Hoetzenecker has seen successful transplantation of most all patients with double lung transplantation without the need for heart-lung dual transplant. Notable exceptions include in cases with complex congenital lesions or established LV systolic dysfunction. When pressed by the audience regarding ANY hemodynamic or imaging—MRI anyone? Supra-systemic PA pressures-- parameters of RV dysfunction or poor cardiac output that would give caution, Dr Hoetzenecker held firm that almost all of these hearts in his experience can tolerate lung transplantation and have successfully positively remodeled after transplantation. Nevertheless, he does recommend careful management of the post operative transpulmonary blood flow with strict volume management, avoiding grafts more prone to ischemic reperfusion injury, and frequent use of “prophylactic” VA ECMO to control pulmonary circulation flow. In a study at his center, prophylactic VA ECMO of average 2.4 days post op was associated with improved 1 year survival of 90% compared to 77% without prolonged ECMO. Single lung transplantation is not recommended for PAH patients.

With regard to porto-pulmonary hypertension, **Laurent Savale, MD, PhD** of Hospital Bicetre, France described how oral pulmonary vasodilators in single or in combination therapy have changed the landscape for patients needing liver transplantation who also have porto-pulmonary hypertension. After the PORTICO trial showed use of macitentan allowed reduction of PA pressures enough to facilitate successful liver transplantation, endothelin receptor antagonists and other oral combination therapy can reduce PVR by 64%, enough to allow liver transplantation

in 70-80% of patients who would have otherwise been ineligible.

VIEW SESSION DETAILS

– Commentary by Nancy Luo, MD, MHS

SESSION 12. Four to Go: WHO Group 4 / CTEPH

This session, highlighting research abstracts in the field of RV physiology with a focus on Chronic Thromboembolic Pulmonary Hypertension (CTEPH), was co-chaired by **Ivan Robbins, MD**, of Vanderbilt University Medical Center in Nashville, and **Isabelle Optiz, MD**, from Universitätsspital Zürich in Switzerland.

Co-chair **Dr. Opitz** began the session by highlighting the need for better diagnostics in CTEPH. In "***MicroRNA Expression Correlates with Clinical Presentation of Chronic Thromboembolic Pulmonary Hypertension***," her group investigated whether certain microRNAs—small noncoding RNA post transcriptional regulators of gene expression—were expressed in CTEPH pulmonary endarterectomy samples. They found differential expression of miR-942 in right sided pulmonary artery tissue in CTEPH versus reference pulmonary artery tissue. However, the puzzling difference in expression between right and left PA in CTEPH patients remains explained, and further research was encouraged.

Muhammad Asghar, MD, from the University Health Network in Toronto described in the "***Role of Endothelial-to-Mesenchymal Transition in Chronic Thromboembolic Pulmonary Hypertension (CTEPH)***" how endothelial cell transitioning to mesenchymal cells can impact development of CTEPH with vascular remodeling. Markers for mesenchymal cell transition, including ET-1, TGFBeta-1, and aSMA, were visualized in immunohistochemistry staining for both Group 1 and Group 3 PH and CTEPH pulmonary artery tissue, but were much less visualized in controls. Session co-chair Dr. Robbins pointed out that these findings may be alluding to underlying vascular remodeling that occurs in all types of pulmonary vascular disease including CTEPH.

In "***Grading Severity of Right Ventricular Dysfunction in Pulmonary Hypertension, a Mechanical Analysis***," **Bettia Celestin, MD**, from Stanford University brings up an important point that no consensus exists in grading echocardiographic RV dysfunction severity in PAH. She presented data from the Stanford echo lab that suggested RV free wall longitudinal strain and RV fractional area change correlated well with other parameters of RV function and made suggestions for grading of moderate versus severe RV dysfunction using these parameters.

Lastly, **Andrew Vekstein, M**D, described a case series of 14 patients from Duke University Medical Center with "***Early Experience with Minimally Invasive Pulmonary Thromboendarterectomy for High-Risk Patients***." In particular, surgically high risk patients, including those with severe obesity BMI>40, lower extremity immobility, or prior cardiac surgery, were offered minimally invasive, most commonly right sided, anterior thoracotomy pulmonary thromboendarterectomy versus a traditional sternotomy approach. In most instances, patients were deemed to be appropriate candidates due to predominantly unilateral surgically accessible disease of the pulmonary vasculature. The group described excellent short term post operative outcomes with significant reduction in pulmonary vascular resistance and improvement in functional limitations. Due to loss of follow up, less is known about the long-term hemodynamic outcomes in this group. In commentary, **Michael Madani, MD** from UCSD noted that this surgical approach may be more

difficult in patients with very distal subsegmental disease and offered technical tips for consideration to the group.

VIEW SESSION DETAILS

– Commentary by Nancy Luo, MD, MHS

SESSION 32. Medical Management of PH: Something Old, Something New, Something Borrowed, Something Blue

Again taking advantage of the "pecha kucha," a fast-paced presentation format, specialists in pulmonary hypertension presented on the spectrum of new and old treatment strategies for PH, highlighting the additional importance of getting patient buy-in for all successful treatment strategies. This session was chaired by **Sara Strout, PharmD**, of Johns Hopkins Hospital in Baltimore, and **Jordan Whitson, MD**, of Duke University Medical Center in Durham.

To begin, **Olaf Mercier, MD, PhD**, from Marie Lannelongue Hospital in Le Plessis Robinson, presented a broad overview of historical studies into regenerative therapies targeting RV function in "**Something Old: Novel Regenerative Therapies for the Failing RV**." While gene therapy—especially those targeting the SERCA2a pathway—have been shown to be safe in animal and limited human studies, it was generally ineffective. Future regenerative therapy may exploit the paracrine effects from exosome, microvesicle, and mitochondrial transfers.

In "**Something New: Sotatercept and Novel Small Molecules**," James Coons, PharmD, of the University of Pittsburgh Medical Center, reviewed how sotatercept—an activin receptor ligand trap—helps to "tip the scale" between pro-proliferative and anti-proliferative vascular endothelial signaling in favor of more anti-proliferative effects of BMPR-II mediated signaling. The recently published phase 3 STELLAR trial showed significant improvement in exercise tolerance among 323 patients randomized to sotatercept versus placebo. All patients were on strong background PAH therapy, including 40% on parenteral therapy. However, where sotatercept fits in the sequence of therapy initiation remains to be seen. And ongoing studies will need to evaluate sotatercept in different PAH populations from the largely familial and idiopathic PAH patients enrolled in STELLAR.

Next, **Tanya McWilliams, MD, PhD**, of Auckland City Hospital, shared her experience from the New Zealand lung transplant program in the management of PH in ILD. Both Dr. McWilliams and many in the audience spoke with excitement surrounding the use of inhaled treprostinil for pulmonary hypertension due to interstitial lung disease, after encouraging results from the INCREASE trial. Additionally, inhaled treprostinil was associated with improvements in FVC versus placebo, raising questions of possible antifibrotic benefits for inhaled treprostinil in IPF.

Clinical pharmacist **Amy Kiskaddon, PharmD**, from Johns Hopkins All Children's Hospital in St. Petersburg and nurse specialist **Rachel Crackett, MSc**, from Freeman Hospital Newcastle, rounded out the session by highlighting practical aspects surrounding drug class, timing, and patient factors in the initiation of upfront or step-wise combination therapy. Both presentations highlighted the burden for patients of combination therapy with regards to increased side effects, drug-drug interactions, interaction with comorbidities, and cost.

Nurse specialist Rachel Crackett gave a spirited presentation on how she engages patients to take ownership in overcoming the many hurdles—both mental and physical—before starting parenteral

therapy. Practical tips included preemptive review of side effects, bringing in a patient partner as a positive example, and giving preemptive prescription of prophylactics like antiemetics, acetaminophen, and loperamide. The audience was particularly engaged after Nurse Crackett's presentation. From the audience, Dr. Mardi Gomberg from George Washington University recommended setting early expectations of patients for possible need for future parenteral therapy, to help ready the mind if the need should arise.

VIEW SESSION DETAILS

– Commentary by Nancy Luo, MD, MHS

SESSION 39. Righting a Wronged Ventricle

In a filled lecture hall with heightened interest from the audience, this session updated our understanding of RV dysfunction and its contemporary management in the setting of cardiogenic shock. The session was co-chaired by **Marc Simon, MD, MS**, of the University of California San Francisco (UCSF), and **Alessandra Verzelloni Sef, MD**, of Harefield Hospital in London.

To start off the discussion, in "**Pathophysiology of Acute RV Failure: Impact on End Organs?**" **Christopher Barnett, MD, MPH**, from UCSF highlighted the varying adaptive and maladaptive states of RV pathology. He introduced the concept of the "RV death spiral," whereby RV dilatation and RV ischemia loop in a self-perpetuating cycle, leading to systemic inflammation, end organ dysfunction, and ischemia.

In "**Acute RV Failure in PAH: Diagnosis and Management Pearls**," **John Granton, MD**, from the University of Toronto shared management tips on how to move patients backwards on the "RV death spiral." He stressed how tachycardia can portend a clinical decline, reinforcing what Dr. Barnett introduced in the dominance of diastolic coronary blood flow in RV hypertrophy. Dr. Granton paid particular attention to how the pressure-volume relationship differs in a patient with pulmonary vascular disease compared to typical HFrEF or HFpEF physiology, whereby a fall in venous preload shifts the LV filling curve—versus movement along the same curve—to allow paradoxically more LV filling and increase in stroke volume.

In "**RV Failure Management in Hypoxic Lung Failure/Bridge to Lung Transplantation**," **Michael Perch, MD**, from Rigshospitalet in Copenhagen reinforced the importance of optimizing volume status by aggressive preload reduction for his patients with concomitant PH-RV dysfunction with ILD. Additionally, in addition to typical inhaled or oral pulmonary vasodilators used in this setting, Dr. Perch stressed the prevention and reduction of atelectasis with judicious use of PEEP or CPAP as a means to also reduce pulmonary vascular resistance.

When these strategies are not enough, audience members queried speakers on their preferred mode of mechanical support. In "**Toolbox for Acute RV Failure**," **Anna Meyer, MD**, from University Hospital in Heidelberg discussed the mechanical tools available to support the RV and appropriate timing for initiating mechanical support. Most speakers preferred ECMO/ECLS as the best method to support the RV, albeit at a potential cost to increasing LV afterload. Despite advances in the processes of care for cardiogenic shock, mortality for non-AMI (acute myocardial infarction)-associated cardiogenic shock remains extremely high, though incremental improvements have been made in AMI-cardiogenic shock. Data continue to show high mortality after ECMO is initiated.

For her city-wide cardiogenic shock hub-and-spoke algorithm, **Filio (Phyllis) Billia, MD, PhD**, from University Health Network in Toronto advised an individualized approach targeting the primary injury and patient factors leading to cardiogenic shock. Joining from the audience, Professor **Stuart Smith** from University Hospital London stressed a team-based approach to

deciding implementation of mechanical support for RV failure with shock. Panelists Drs. Billia and Perch agreed with Professor Smith that having—and continually reevaluating—an exit strategy the patient after ECMO/ECLS needs to be one of the primary considerations.

VIEW SESSION DETAILS

– Commentary by Nancy Luo, MD, MHS

SESSION 60. What's New With the ESC/ERS Guidelines 2022 For Pulmonary Hypertension

Leading experts and guidelines writers shared with the audience key highlights and perspectives from the new *2022 ESC/ERS Guidelines for Pulmonary Hypertension* in this session co-chaired by **Colin Church, BSC(Hons), PhD, FRCP**, of Golden Jubilee National Hospital in Glasgow, and **Manreet Kanwar, MD**, of Allegheny General Hospital in Pittsburgh.

As champion of the #ThePeoplesVentricle, **Ryan Tedford, MD**, guided the audience through the guidelines for diagnosis of PH in "**Hemodynamic Definition of PH: An Update**." Key changes in the new guidelines include a lowered threshold for defining pulmonary hypertension to a mPAP of greater than 20 mmHg compared to 25 mmHg and a PVR >2 WU. These changes reflected the increase in risk and difference in prognosis seen in observational studies compared to patients with normal pulmonary pressures. Exercise-induced PH was re-introduced into the guidelines, with a new definition based on slope of mPAP/cardiac output > 3 mmHg/L/min between rest and exercise. Dr Tedford shared caution from the guideline writers that despite prevalent risk and diagnosis, treatment is not necessarily obligated at these lower thresholds. He also shared key diagnostic pearls from his lab, including that thermodilution cardiac output is preferred over indirect Fick even in settings of low cardiac output and severe tricuspid regurgitation and the importance—reflected in the guidelines—of confirming a PCWP wedge pressure by obtaining a wedge blood sample if possible.

In "**Initial Treatment Approach and Sequential Escalation of Therapies in PAH**," Professor **Jean-Luc Vachiery, MD**, from Erasme University in Brussels, led the audience through the treatment pathway in the new guidelines. A new emphasis of the guidelines highlights counseling at an initial encounter to women of childbearing potential on risk of pregnancy and to provide clear contraceptive advice given the significant risk of PAH. Together with **Mardi Gomberg-Maitland, MD, MSc**, from George Washington University in Washington, DC, in "**Treatment Goals in PAH**," Professor Vachiery stressed the individualized yet goal-oriented approach in the treatment algorithm, with the aim of reaching and maintaining low risk status.

Dr. Gomberg-Maitland described the risk calculators currently available and recommended consistency in use more than a single particular calculator. Initial dual combination therapy is now recommended for even low risk patients, but parenteral therapy should not be delayed in patients who are at high risk at the time of presentation. Both presenters discussed the carve out in the guidelines for patients with PAH and prevalent or significant cardiopulmonary comorbidities, particularly those encountered in older patients diagnosed with PAH. Compared with patients without cardiopulmonary comorbidities, patients with cardiopulmonary comorbidities respond less well to PAH medication, have greater side effects, less apparent efficacy, and are less likely to reach a low-risk status. As such, the guidelines recommend beginning with monotherapy, and adjusting based on individual patient characteristics and risk factors. Dr. Gomberg-Maitland challenged Dr. Vachiery and other writing member committees to develop clearer definitions for cardiopulmonary comorbidities as well as guidance on how to treat

this increasingly common patient population. All panelists agreed that a fast-track referral process was needed for high risk patients.

To round out the review of the guidelines, Professor **Marco Guazzi, MD, PhD**, from the University of Milan, reviewed "**Management of WHO Group 2 PH (Left Heart Disease)**." Unfortunately, there is still no therapy for these patients in terms of pulmonary vasodilators. In "**Management of WHO Group 3 PH (Lung Disease)**," **Ioana Preston, MD**, of Tufts Medical Center in Boston, reviewed new recommendations in the 2022 ESC/ERS guidelines differentiating non-severe PH associated with chronic lung disease versus severe PH as defined by PVR>=5 WU. Treatment is targeted towards the severe PH group in this setting.

VIEW SESSION DETAILS

– Commentary by Nancy Luo, MD, MHS

SESSION 74. Connecting the Clots: Journey of an Acute to Chronic Pulmonary Embolism

Despite the prevalence of acute pulmonary embolism (PE), less is known about the up to 50% of patients who develop persistent symptoms of dyspnea and exercise intolerance after surviving acute PE. Underlying causes of late symptoms are separated into chronic thromboembolic pulmonary hypertension (CTEPH), chronic thromboembolic pulmonary disease (CTEPD) not associated with PH, post PE RV dysfunction without PH, or post PE functional impairment without PH. In this session, panelists aimed to provide a contemporary update primarily in CTEPD and impairment without PH. The session was co-chaired by **Olaf Mercier, MD, PhD**, of Marie Lannelongue Hospital in Le Plessis Robinson, and **Michael McInnis, MD**, of University Health Network in Toronto.

In "**Just Getting Started: Post-PE Syndrome in the COVID-19 Era**," **Jason Weatherald, MD, MSc**, from the University of Alberta, made a strong case for using CPET testing to help differentiate among the causes of post-PE syndrome. Specifically, he recommended using ventilatory inefficiency (Ve/VCO2>=30) as a useful marker for pulmonary vascular disease during exercise, whereby CTEPD represents a disease of intermediate impairment between CTEPH and normal function. Additionally, he showed evidence that despite the high incidence of venous thromboembolism as a complication of COVID-19 infection, cohort analysis shows no increased incidence of CTEPH in those patients with COVID-19 and VTE.

Recognizing the difficulty in the heterogeneous and incomplete diagnostic testing available for CTEPD without PH, co-chair **Michael McInnis, MD**, a thoracic radiologist from Toronto, described in "**Is This a Roadmap? Imaging in Chronic Thromboembolic Disease**" how he integrates new techniques such as dual energy CT and lung subtraction iodine mapping to increase diagnostic sensitivity. He stressed the lung pathology seen in CTEPD—which may include mosaic lung attenuation, vascular webs, eccentric thickening, and distal occluded segments—is often subtle, requires protocol for thin sections, and a detailed radiological assessment by trained reader. A single visualized occluded PA segment in the setting of perfusion defects and the right clinical scenario may be all that's available to make an imaging diagnosis.

In "**Are We There Yet? The Diagnosis and Management of CTEPD**," **Scott Visovatti, MD**, from the Davis Heart and Lung Research Institute in Columbus, expanded on Dr. Weatherald's recommendations for advanced CPET testing to differentiate the phenotypes in post PE syndrome. He also described data on different treatment options. Limited single center data show patients can improve functional status and quality of life after balloon pulmonary angioplasty or pulmonary thromboendarterectomy. Little to no data is known about medical therapy in CTEPD with PH. However, with input from the audience, panelists recognized that in a proportion of patients, symptoms improve over time, and we know only a little about whether and when a

symptomatic patient should undergo intervention.

VIEW SESSION DETAILS

– Commentary by Nancy Luo, MD, MHS

SESSION 86. Medicine is a Science of Uncertainty and an Art of Probability: Patient Selection for Heart Transplantation

This oral abstract session was co-chaired by Prof. **Michal Zembala**, of ETHP.pl in Zbroslawice, and **Ugolino Livi, MD**, of Az. Osp S. Maria Della Misericordia, in Udine. The session updated our knowledge regarding risk in patient outcomes for heart transplantation in the contemporary era.

In "***Predictors of Survival after Heart Transplantation in the Current Era***," **Dmitry Abramov, MD**, from Loma Linda University, presented how clinical risk factors for post-transplant mortality have changed since UNOS updated the heart transplant allocation system in 2018. Compared to the prior era IMPACT risk score (citation below)—derived from UNOS data more than 10 years ago—key differences were highlighted. Notably, allosensitivity, body size, female gender, IABP status were no longer as predictive for graft loss, while having blood group O and presence of durable LVAD—but not temporary MCS—were now associated with worse outcomes. When queried by the audience regarding the durable MCS finding, Dr. Abramov conjectured that the new allocation criteria may have extended these patient's waitlist times and medical complexity. He also cautioned that this new risk score will need to be externally validated.
Kilic et al, *J Heart Lung Transplant*;32 (5), May 2013

On behalf of the group at Cedars-Sinai Heart Institute in Los Angeles, **Jignesh Patel, MD, PhD,**presented "***Do Older LVAD Patients Have Compromised Outcome after Heart Transplantation: Should They Stay as Destination Therapy?***" He described 35 patients aged 65-70 supported by durable LVAD who underwent heart transplantation at his center. Compared to similar aged controls without LVADs, overall survival was similar: 30-day survival was 97% in the MCS group versus 100% (p= 0.317) and 1-year survival was 94.3% in the MCS group versus 91.4% (p=0.721). There were no significant differences in the rates of AMR, ACR, or CAV. Session co-chair Dr. Livi queried regarding the ethics of choosing a donor for one patient over another who is older. Dr. Patel noted that these ethical concerns were often front of mind for his group. They often accepted extended criteria donors for these older age recipients.

In "***Characteristics and Outcomes of Multiple Cardiac Re-Transplant Recipients***," **Jaya Bastra, MD**, from Columbia University in New York City, presented data from the UNOS registry of 90 patients who had received 3 or more heart transplants between 1990 and 2020. The mean age of first transplantation was 14 years and mean age for third transplant was 32 years. One-year survival after third transplant was 82%, and 5-year survival was 62%. Age < 18, age > 40, retransplant for chronic rejection, or primary graft dysfunction were all associated with increased risk of mortality. Given such a high-risk endeavor, session co-chair Professor Zembala challenged the audience to reevaluate the treatment paradigm for these young patients. He agreed with audience members in considering if durable MCS first may safely delay heart transplantation and ultimately achieve the most longevity.

Rounding out the session was **Yosef Manla, MD**, from Cleveland Clinic Abu Dhabi, who presented data on the rising rates of advanced, symptomatic heart failure in the Eastern Mediterranean

Region (EMR), a WHO defined region spanning Afghanistan through the Arabian Peninsula to Morocco. In "***The Burden of Advanced Heart Failure in the Eastern Mediterranean Region: Time to Address the Unmet Need***," Dr. Manla showed how rates of advanced HF grew in EMR while it was steadily decreasing in the rest of the world. Most common causes were still ischemic and hypertensive heart disease. In the closing moments of the session, Dr. Yael Peled, Director of Transplant at Sheba Medical Center in Israel, roused the audience – and embodied a unifying theme of ISHLT – by warmly inviting Dr. Manla to collaborate with her center in reducing these disparities and advancing the care for all in the Eastern Mediterranean.

VIEW SESSION DETAILS

– Commentary by Nancy Luo, MD, MHS