Vincent’s Two Cents:

If you did not make it to the 34th Annual ISHLT meeting in San Diego, fear not here in this issue we have provided you a summary of the sessions and made it as if you were actually in San Diego. NOT!!! Hope to see you in Nice, France next year.

Speaking of Nice and to be nice, I know that you know that Nice is the capital of the French Riviera. Also, the origin of the city’s name is Greek derived, Nikao or Nike from the winged Greek goddess personifying victory. She appears to carry a palm branch or caduceus of Hermes in different works of art. During Ancient Greek times, life was associated with air. Birds in the air were associated with the spirit of life and a winged flight is associated with a victory over death. This symbol of victory was seen in the military sphere and in the Greek games or sports, thus we have “Nike” shoes and “Air” Jordans.

The last thing I didn’t know until we knew the 35th Annual ISHLT was in Nice is that the Rolls Royce designers got their inspiration of the hood ornament from the Nike of Samothrace or Winged Victory of Samothrace. This sculpture has been on display in the Louvre since 1884 and is one of the most celebrated sculptures in the world. Of course, I’m not a Rolls man, I’m a rock, only a Rolls man can drive a Rolls. Let’s roll, let ride, let’s run this town tonight. With sports and teamwork we will witness … “how everything still turns to gold. And if you listen very hard, the tune will come to you at last. When all are one and one is all. To be a rock and not to roll….”

Let’s ride this wave of success from San Diego to another smashing meeting in Nice 2015 as we reach for the heavens.
In The Spotlight: A Summary of the Plenary Sessions at ISHLT 2014

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Jason Christie opened the Plenary Sessions for the 34th Annual ISHLT Meeting by “staying classy” in sunny San Diego with the 2014 Program Chair Report. Move over Ron Burgundy. From his report, record breaking attendance with over 3000 attendees and record breaking abstracts with over 1500 submissions and over 1100 (76%) accepted across all categories. Also, there were expanding numbers from “developing nations” which entered the ISHLT from the Middle East, Asia, Eastern Europe and South America. Dr Christie finished his report by pointing out a few innovations ranging from e-Posters, expanded content of Mini-Orals, the OASIS meeting app and a return of the Moderated Poster Sessions to an overview of the content for this year’s meeting. The content included World-Class Speakers, Major Clinical Trials and a Thematic structure for the Plenaries. The Pre-meeting and Sunrise Symposia were member submitted and had a cased-based approach of integrating science with patient care with an emphasis on teamwork. For those of you with children or grandchildren, you might note a little wisdom from the Wonder Pets, with the healthy refrain drilled in our future generations, “What’s it gonna take?” “Team Work!”

Allan Glanville followed with an eloquent Presidential Address aided by an elephant, sheep, crocodiles, the arbiter bibendi, Woody Guthrie and many apologies. He described the duties of the President to: 1/ Interface with the Community (individuals, advocacy groups, other societies and government organizations), 2/ be the Caretaker of the Future (understand the nature, preserve the fabric and map change through innovation for the ISHLT), 3/ maintain the tradition of ongoing service and 4/ preserve the Holy Grail of the ISHLT President, that is The Transition, the most important task of handing over the baton.

The elephant metaphor comes from the pachyderm’s virtue of memory and patience as well as what’s obviously taking up space in the ISHLT. The many elephants in the room this year include: 1/ the ECMO bridge, 2/ Consensus documents, 3/ Advocacy groups, 4/ Donors in China and 5/ CLAD – chronic lung allograft dysfunction. He captured the essence of a herd of sheep by likening them to the ISHLT Board Members or vice versa. He reminded us of the difficult decision goaded by the devil that at times we are “damed if we do” or “damed if we don’t” particularly in reference to transplant off ECMO or rather should it be transplant on ECMO. The arbiter bibendi, you know, “the guest of honor whose sole responsibility was to arbitrate the amount of water used to cut the wine,” referring to Guidelines within the ISHLT. Dr Glanville further reminds us that Our ISHLT “is made for you and me” and that we are custodians of this land for future generations with reference to Woody Guthrie and Sitting Bull…”This land is your land, this land is our land....this land was made for you and me.” His apologies came through a personal glimpse at his career beginning with a snowy summer at the Royal Brompton Hospital in London to Stanford and
his final destination at St Vincent’s Hospital Darlinghurst with Sanity and Survival. Of course, Allan is referring to "Sanity and Survival, Psychological Aspects of War and Peace" by Jerome D Frank, PhD, MD. Allan asked why are roses at the end of each row of grapevines? I immediately thought, history, tradition and beauty. Then I linked it with the ISHLT and fungi. Roses show the first signs of danger ahead for the grapevines in our wine vineyards, the canary in the mine if you will. Allan concluded that the Presidency is a service position. Further, he cannot think of any other Society that functions as collegially and effectively in governing and directing us than the ISHLT. It was a most humbling pleasure for him to hold this office with special thanks given to those who supported him from the wonderful ISHLT administration, members at large, the Committees, the Councils, his workplace, and in particularly the fortitude and patience of his family. His final points, Dr Glanville is always short on lessons: 1/ Eschew Therapeutic Nihilism – The Lazarus Syndrome, alive and well 12 years later and 2/ in reference to obliterative bronchiolitis and the elephant in the room where it all began for Allan in lung transplantation at Stanford in 1986, “Remember me, Professor Glanville? Stanford 1986. If you’re going to shoot at an elephant, Professor Glanville, you better be prepared to finish the job.”

Following the President’s report we had the Thoracic Registry and MCSD Reports given by Drs Josef Stehlik and Jim Kirklin. Dr Stehlik began his report with the near unanimous approval of the new branding of the PowerPoint template and logo for the ISHLT. He showed us successful transplants now populating our registry from Russia, Saudi Arabia, Iran, India, and Korea. The theme from last year's registry report was age, this year's focus is retransplantation. Most adults who undergo heart retransplantation were for CAD and had what appeared to be the best survival curve when compared to those transplanted for cardiomyopathy, primary failure or rejection. In pediatric heart retransplantation, survival was best in those with cardiomyopathy and CAD. In lung transplantation, rates of retransplantation were highest in patients between 18 – 50 years of age, with nearly 1700 retransplants done over two decades and a median survival around 2.5 years. This median survival has been improving with time. Just over 100 retransplants have been performed in the pediatric lung population. Josef finished his report with the regional initiatives of the transplant registry and I2C2 – International and Inter-society Coordination Committee. Turkey and Brazil have been included with registry participation, resources, education and regional outreach.

Dr Kirklin began the MCSD report with goals to capture data on implantation and outcomes related to assist devices for use 30 days or more as well as to identify best practices. He pointed out that the IMAC registry is owned by the ISHLT, the actual governance of IMACS is by the IMACS board appointed by the ISHLT leadership, and the ownership of data remains with the submitting hospital. IMACS web based data entry and hospital enrollment went into effect, January 2013. IMACS and Euromacs signed joint agreements for Euromacs to act as a collective and share of information with IMACS in January 2014. Infectious disease variables were programmed into this registry in March 2014. As of 4/1/14, 181 hospitals and nearly 2800 patients have been enrolled representing 22 different countries. Nearly twice as many implants were for destination therapy followed by currently listed bridge to transplant. Two thirds of the patients were under age 65 years with survival rates better in this cohort at around 85% at 1 year. Infection and bleeding are the most common complications at a rate of 6.6 and 6.4 events/100 patient months, respectively. Future tasks include enrolling more hospitals and collectives, finalizing IMACS agreement, securing
first Euromacs download, monitoring patient enrollment, distributing reports to hospitals and collectives, and formalizing the committee structure for data access and publications.

An innovating, invigorating, and illuminating presentation on *How Digitizing Humans Changes the Future of Medicine* delivered by the inimitable invited lecturer, **Dr Eric Topol** of Scripps Translational Institute went beyond all expectations for the 34th Annual ISHLT. The focus of his talk was on the challenge of caring for the population vs the individual with individualized management from “Prewomb to Tomb.” Its essence brought together all innovative strategies from the exposome, epigenome, microbiome, metabolome, proteome, transcriptome, and the genome to imaging, biosensors and social graphing for future decisions in individual patient care. Technology is here with the digital era transforming medicine through metrics potentially measured by wireless devices. His vision of another APP in health care will be called, ADD-APP-TERS. Dr Topol shared some examples from the Search Atrial Fibrillation study through iPhone ECG in pharmacies to prevent strokes, comparing 24-hour Holter monitoring with 14-day novel adhesive patch electrocardiographic monitoring, heart failure remote monitoring by measuring thoracic fluid, stroke volume, cardiac output, heart rate, respiratory rate and motion, and the use of edible and embeddable sensors. He referenced his recent JAMA article on how mobile health technologies could change every aspect of health care by delivering better outcomes and lower costs. Real world clinical trial evidence is critically needed for mHealth technologies. Blood coagulation testing using the smartphone touchscreens is here with the Qloudlab involving the smartphone, the cloud and healthcare. With the lab-on-a-chip or lab-in-the-body and better sensors, in the near future patients might present to their healthcare provider when their “check my gallbladder” light comes on. Dr Topol pointed out that today a car has over 400 on-board sensors, a smartphone has more than 10 embedded sensors with four radios, and the human has no sensors. This is going to change. For our heart and lung transplant recipients with the promise and challenge of high-throughput sequencing of the antibody repertoire, it will only be a matter of time we will be able to use universal noninvasive detection of transplant rejection by monitoring donor DNA levels over time, signaling the onset of rejection through shotgun sequencing from cell-free DNA from plasma. Finally, in the age of handheld ultrasound devices, Dr Topol warned to stop listening and look to view this technology as an extension of our senses, predicting a future death of the stethoscope, RIP to the stethoscope 1816–2016, long live the ultrasound, medical imaging and electronic technology. In summary, individualized medicine is upon us from Prewomb to the Tomb with baby planning, undiagnosed diseases, cancer, molecular diagnosis, longer health spans and the molecular autopsy. With all its promise, it is conceivable that in the future our heads might hang low buried in the many devices and monitors of rapid communication and its shortcuts with texting, tweeting, twittering, instarammering, twirping, and chirping while no one listens and only looks without eye contact, the world could go silent broken only by occasional grunts at each other in a “virtual existence” resembling WALL-E.

**Sir Terence English** ended the first day’s Plenary sessions with this year’s Lifetime Achievement Award Recipient Lecture: "Follow Your Star.” He provided a captivating summary of his illustrious career in a matter of a few moments. From humble beginnings in South Africa he “followed his star” which shimmered like diamonds. In spite of his father’s death due to silicosis from working in the mines, Sir Terence studied mining engineering. He worked in Rhodesia as a diamond driller and went on to mining exploration in Quebec and the Yukon. Then a “brighter star” came on the
horizon. He started training as a physician at Guy’s Hospital in London. His engineering background proved useful in his training for cardiovascular surgery. He went on to perform Britain’s first successful heart transplant in 1979 and served as the third ISHLT President from 1984 – 1986. He later published his autobiography, Follow Your Star: From Mining to Heart Transplants – A Surgeon’s Story (AuthorHouse, 2011). His message to us today is to remain aware and prepared for a change in direction if a brighter star or “diamond” appears on the horizon during your journey. There are several false starts and mistakes will be made, however along the way embrace these errors, most will provide valuable and enriching experiences.

Saturday, April 12, 2014

Invited lecturer, Dr Lynne Stevenson, kicked off the second day of Plenary Sessions with Trimming Heart Transplantation in the VAD Era. Our Roving Reporters have provided a detailed report of her talk in the article, I Think We Need A Bigger Boat, but I’d like to add to it here. Dr Stevenson closed her presentation with an artistic rendition of the sinking of the Titanic used as a metaphor. The available lifeboats (available donor hearts) fell short in number to evacuate the passengers (the failing hearts) leaving many behind who went down with the ship. The moving and heartfelt centerpiece of this artwork shows an old couple in wheel chairs through the ruptured bow who chose to stay aboard enjoying their last taste of fine wine while listening to the elegant music from the musicians who played on to the end. We refer you to the ISHLT Links April 2012 issue: Titanic, Impact, April, ISHLT. Below are links to the some of the music found in the article:

- Song D’Automne
- My Heart Will Go On
- Nearer My God To Thee
- Rose

In keeping with a demand outstripping supply, we tie into the next invited lecturer, Dr Tom Egan who offers a thoughtful and erudite solution through the Frontiers of DCD in Thoracic Transplantation. Dr Egan shows that there is a potentially unlimited supply of lungs for those with lung failure. He began his presentation with our friendly pig which may either be dinner or a donor? Along with the cartoon of the doctor claiming “he never has any luck with living things” with the dying plants on his desk, Dr Egan proceeds with his proof of concept to use cadaveric lungs as a strategy to increase the donor pool because the lung parenchyma although ischemic is not hypoxic and continues on with cellular respiration for some time after cardiac arrest. With ex vivo evaluation of human lungs strategies and an ex-vivo CT scan technique as many as 40,000 uncontrolled donations after cardiac death donors (uDCDD) could be found suitable for lung transplantation. He points out that though innovative in some respects today, the first uDCDD was described by Hardy’s first case in 1963 and further, until brain death was defined 20 years later, uDCDD were the only donors. Dr Egan did emphasize the many logistical challenges in a process necessary for the desired outcomes. He concluded that there are large numbers suitable for lung recovery with many challenges among which the incidence of both non-pulmonary and pulmonary diseases is higher than anticipated in victims of sudden death and that recovery of organs in uDCDDs is an innovative disruptive technology with logistical obstacles that can be overcome.
The final invited lecturer for the second day of the plenary sessions was given by Alvin Roth of Stanford University entitled *Organ Allocation Policy and the Decision to Donate: An Economist’s Perspective*. Mr Roth posited, how organs are solicited or allocated might influence the supply, by changing donation behavior. He shared with us the editorial about the “Resurrection Men” from the first volume of the Lancet published in 1824 which informs us that the scarcity of deceased donors is older than transplantation. At that time, there was a need for cadavers to study. This report “…deplores that it is illegal to obtain bodies for dissection, except executed murderers.” Also, “the legislature should be entreated to…devise… some plan that would make cadavers legally available and which at the same time would not irritate the feelings of those who are naturally prejudiced against dissection.”

Dr Roth shared with us the importance of design in securing potential donors during the application of a new or renewal driver’s license or ID card. States are beginning to require an “active” or “mandated choice.” Moving from an “opt in” to a “mandated choice’ as one option. “Don’t take ‘No’ for an answer” is another. He also shared with us Israel’s organ allocation of priority categories. The bottom line in the analysis on Israel’s organ allocation, priority on organ donor lists provides an incentive to register as a donor. However, with a loophole, this could undermine the benefit of priority. He concluded his talk that priority allocation rules can increase the number of registered donors, by providing an incentive to be an organ donor. The priority system must be well designed. Ask people to become donors more frequently and that mandated choice frames might not generate more donors and might discourage next of kin. Ultimately, the design of the registration and allocation system is vitally important.

**Sunday, April 13, 2014**

The plenary session lectures on the final day began with Dr Shahid Husain’s *Consensus Report of the 2014 ISHLT Guidelines for the Management of Fungal Infections in Cardiothoracic Organ Transplant Recipients and Mechanical Circulatory Support (MCS)*. The most meaningful evidence identifying risk factors for fungal infections (FI) in lung transplantation from several potential risks scored only a moderate in the cystic fibrosis population. Pre-transplant colonization, post-transplant colonization, acute rejection with prior colonization, chronic rejection, CMV infection, hypogammaglobulinemia and presence of stent had only low evidence. The risk factors for FI in heart transplantation were reoperation, CMV disease, post-transplant hemodialysis, invasive aspergillosis (IA) in the same heart transplant unit three months before or after the transplantation date. The epidemiologic data of FIs in pediatric lung and heart transplantation are sparse. Regarding the diagnosis of FI serum galactomannan (GM) levels, BAL Aspergillus PCR and serum beta D glucan levels are not recommended, however BAL GM levels for the diagnosis and pre-emptive treatment are recommended with grade 1B and 2D evidence. Prophylaxis and treatment strategies will be forthcoming but the salient features of his overview included: that the optimal duration of antifungal prophylaxis following cardiothoracic transplantation is 4-6 months for universal prophylaxis, or 3-4 months with a pre-emptive strategy. If there is a long-term requirement for prophylaxis (> 6 months) an antifungal agent other than voriconazole is recommended. With treatment, nebulized amphotericin should not be used as the sole therapy for Aspergillus and therapeutic drug monitoring is recommended for azole antifungal agents. For prophylaxis in patient with MCS devices routine perioperative prophylaxis is not recommended but can be considered in those on TPN, known recent colonization with Candida spp from > 2 sites or
patients hospitalized on broad spectrum antibiotics > 48 – 72 hours at the time of MCS implantation.

Invited lecturer, **Dr Michael Petty**, next presented *The Invisible Team Member: Family Caregivers of Thoracic Transplantation and Mechanical Circulatory Support Patients*. No kin to Tom Petty, but definitely related to potential “heartbreakers,” he described that Heart failure patients with poor social support have worse outcomes. Lack of social support from a spouse may be worse than lack of social support from others. With Charles Dickens’ best of times, despite the difficulties of heart failure, some caregivers express positive effects on their relationship with significant solidarity between themselves and the patient. Lung failure spouses identified benefit in areas or discovering inner strength, support from others and realizing what is important in life. During the worst of times, most difficult tasks for caregivers are related to motivating the heart failure patient to maintain lifestyle changes. Female caregivers demonstrate lower quality of life scores than male caregivers, but the females did demonstrate improved quality of life when involved with care. He provided ten tips for family caregivers which included: 1/ to seek support from other caregivers, they are not alone! 2/ to take care of your own health to be strong enough to care for your loved one. 3/ to accept offers of help. 4/ to learn to communicate effectively with doctors. 5/ that Caregiving requires hard work and requires frequent breaks. 6/ to watch out for depression. 7/ to be open to new technologies to help care for your loved one. 8/ to organize medical information. 9/ to make sure legal documents are in order. 10/ to give yourself credit for doing the best you can in one of the toughest jobs there is!

Within the ISHLT we depend on family caregivers to help our patients to be successful before and after transplantation or implant periods. Family caregivers experience the best and worst of times. Intervention studies are needed rather than observational studies to allow us to address the needs of family caregivers. Long term strategies to support family caregivers are necessary.

The last invited lecturer for the 34th Annual ISHLT meeting and certainly not the least was from our former President **Dr Lori West** who spoke on Trading Risks of Sensitization in Thoracic Transplantation: ABO-Incompatibility to Achieve HLA-Compatibility? She presented a case of a patient with high class 1 and class 2 calculated PRAs of 98% and 100%, respectively; who would be very unlikely to find a donor. Dr West shared with us the outcomes of ABO-incompatible kidney transplantation in the United States and in Japan. ABO incompatible kidney transplantation accounts for nearly a third of all living donor kidney transplants in Japan with a 9-year graft survival of 83%. Successful experiences of ABO-incompatible adult living donor liver transplantation have been reported with no immunological failure in ten consecutive cases. However, in heart transplantation, unintentional ABO blood group-incompatible (ABOi) transplantation has resulted in poor outcomes with a one year mortality of 32% of 95 identified ABOi transplants. Nevertheless, Dr West pointed out the tools of today can allow consideration for planned ABOi transplantation and include: 1/ non-specific immunoadsorption to remove antibodies, 2/ rituximab to deplete rising B cells, 3/ bortezomib to deplete plasma cells, 4/ eculizimab to protect the endothelial surfaces from complement-mediated damage, 5/ antigen-specific antibody immunoadsorption, and 6/ antibody assessment tools. She further pointed out to us the major differences between ABOi heart and ABOi kidney/liver transplantation. First, appropriate typing is needed to avoid antibodies to either donor or recipient: blood products to prime the cardiopulmonary bypass (CPB) circuit, for clinical management and plasma exchange
from CPB if necessary. The transfusion medicine and perfusion teams are absolutely necessary. As a result, a recent innovation report in the JHLT from Sweden proved that ABOi heart transplantation can be considered, provided that levels of anti-A and anti-B antibodies are low JHLT 2012;31:1307. Another notable point from Dr West’s presentation is that the agglutination assay to describe ABO groups were described in 1900 by Dr Karl Landsteiner, that we use the same technology he used more than a century ago and we monitor and manage incompatible transplant patients with this age-old technology. Today, we can use the microplate hemagglutination assay or iSpot technique. Also, HLA antigens are proteins and ABH antigens are carbohydrates. Red cells express type II-IV, Lewis and sialic acid antigens whereas only type II structures are expressed on vascular endothelium. The heart has fewer cell types of antigens than the kidney and more importantly, IgM antibodies are not the only relevant antibodies. IgG and IgA isotypes are present with IgG and very likely have the greatest impact. Lastly donor-specific antibodies inevitably lead to eventual graft damage, but ABOi grafts are more likely to develop accommodation, because of this, Dr West leaves us with that ABOi heart transplantation should not remain an absolute contraindication for thoracic transplantation in adults.

The plenary sessions ended with the President’s Debate: Stop Treating Secondary Pulmonary Hypertension Right Now! Dr Fernando Torres (PRO) of UT Southwestern pitted against none other than Dr Harrison “Hap” Farber (CON) from Boston University. Though seemingly lopsided with Hap’s near undefeated past performances versus Fernando’s maiden debate, the odds were certainly stacked against Hap. With an allusion to the upcoming Kentucky Derby, Fernando had a clean start out of the gate with thoughtful and methodical data from a randomized trial published in JAMA showing no support of phosphodiesterase-5 inhibition with sildenafil for 24 weeks in patients in heart failure with preserved ejection fractions and from ARIES-3, definitive conclusions about safety and efficacy in patients with non-Group 1 pulmonary hypertension cannot be made on the use of ambrisentan. In the back stretch and around the final turn, Dr Torres had widened his lead.

Then, not to be out done, Hap opened his con argument in the final moments with … “Things aren’t always what they seem!” The audience was instructed to close their eyes and listen to AC/DC’s Highway to Hell (performed by 2Cellos). As the debaters approached the finish line, Hap was closing in fast on Fernando’s commanding lead. Hap acknowledged no data to support the use of pulmonary hypertension therapies in patients with PH related to left heart disease. However, he turned to the individual patient, then Hap poured it on, evoking Dr Topol’s presentation about individualization, as he presented a 63-year-old hypertensive, diabetic dyslipidemic male with obstructive sleep apnea on CPAP who presented with progressive dyspnea on exertion. The ECHO showed normal LV size, with 35-40% LVEF, normal LV diastolic relaxation, normal LA and mild right atrial enlargement. There was flattening of the interventricular septum consistent with RV pressure and volume overload with a dilated IVC and an estimated pulmonary artery pressure of 85 mm Hg. Rest of his workup revealed no clots, normal PFTs and negative serologies. RHC showed RVP of 70/3, PAP 72/34, PCWP 13 and a CI of 1.2. Epoprostenol was started with slow titration. One year later, the patient’s PVR dropped nearly 36%, cardiac output improved by 67% and he became a functional class II patient. Four years later, his daughter was diagnosed with pulmonary arterial hypertension with the same BMPR2 mutation found in him. As the two debaters crossed the finish line, the photo finish confirmed a dead heat! In summary, stop thinking you can
never treat, evoking Dr Glanville’s advice to “eschew therapeutic nihilism”, start thinking outside the box! And look at each patient individually and as an individual human!

Disclosure statement: the author has no conflicts of interest to report.
Our Roving Reporters in Sunsational San Diego!

Each bright and cheerful sun-soaked morning, color copies of the Daily Links were distributed to delegates at the ISHLT Annual Meeting in San Diego. And for those who either had too much fun the night before or perhaps were not early risers and missed seeing the bright blue, yellow, and orange printed newsletters, the fantastic 2014 Annual Meeting Mobile App made it possible for everyone to view the newsletter via their smart phone or tablet. This year's Roving Reporters, Scott Feitell and Anders Andreasson, provided fantastic coverage of the sessions, with a bit of humor and tweeting thrown in for good measure. These guys were busy! If you missed their musings, have no fear. The following pages contain all of their review articles. In addition, all of the Daily Links Newsletters are posted on the Press Page of the Annual Meeting website.
Of Governors & Nihilists: Musings on My First Symposium of the 2014 ISHLT Meeting

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Pre-Meeting Symposium 12: To VAD or to Transplant ... that is the question. Sadly my ability to quote Shakespeare does not go much further, and my boxed lunch is waiting, so we will have to delve straight into our pre-meeting Symposium straight away as we have much to review.

You can always tell when an Austrian is lecturing you, because you know you will see at least three references to Arnold Schwarzenegger in his talk, and Dr. Andrea Zuckermann did not disappoint. Throwing the opening volley in this outstanding "debate," Dr. Zuckermann reviewed all the latest in graft survival. Showing his age, he did reference the "good old days" when his first presentation at ISHLT was probably quite literally "a slideshow," he reminded us all of the wonders and potential transplant were thought to and ultimately did provide. But like so much of the modern era, technique, technology and experience has further enhanced our ability to provide transplant to thousands of patients, but there is still room for improvement. Hailing his motherland, his "Mother Plan" of Vienna has further managed to improve both shortterm complications and perhaps improve long term survival, by enhancing graft procurement procedures, improving communication with his team of ICU docs and anesthesiologists and surgeons, and improving the training of his surgeons. As Dr. Zuckermann points out though, many challenges remain for further improvements to occur, including aggressive treatment of vasculopathy, improved screening and treatment of malignancies, protecting the kidneys and ultimately Mother Nature herself as our patients become octogenarians and older. Most importantly he emphasized the need to individualize immunosuppression to our individual patients, noting a "one-size-fits-all" approach is no longer acceptable.

All compelling arguments, but then Dr. Frank Pagani took the stage and offered his assessment of Mechanical Circulatory Support. Sadly, he did not reference the "Governator" once, so he may have lost the argument before he even started, but he did offer some interesting insight into defining survival and what it means to the post-LVAD patient. Clearly, survival means much more than breathing, and we must be careful to incorporate quality into any metric that includes quantity. He was quick to point out that, like so much of medicine, MCS requires tradeoffs, and though six-minute walk tests might improve and survey scores on quality of life may increase, things like stroke and GI bleed clearly limit "surviving." Though as our use of these newer continuous flow devices increases, so does our learning curve, and suddenly things like screening for co-morbidities and assessing the right heart a little more carefully might further improve survival. In Dr. Pagani's opinion, it seems we are at a crossroads with MCS, and as further developments in medical management come through the pipeline it will be important to compare outcomes and patient quality of life directly to the benefits and risks of LVAD therapy.
Now, I don't know about you, but neither of these guys really sealed the deal for me, (luckily for me I’ve already secured a heart failure fellowship for next year so I can be a little more cavalier and unbiased in assessing this debate), so let's see who wins round 3.

Luckily our next presenter, Dr. Kathleen Grady reviewed some great data and metrics on how we can actually assess quality of life in our VAD and transplant patients. It became abundantly clear listening to her speak, that actually both sets of patients fair pretty well. The rate-limiting step it seems in settling this debate is that long-term data from our MCS patients is just lacking at this point, as it remains the newer technology. Promising though, is that, at one year, it seems both groups of patients give favorable scores in several measures of quality of life. It is interesting she points out that certain differences remain as pertains to disability and depression when we account for our younger patients and our female patients, but overall things do look favorable. Clearly, as Dr. Grady points out, longer-term survival data, and better head-to-head studies will help us settle this debate in the near future.

But what about our patients that can't get a VAD, or don't qualify for a transplant? Or even worse, what if they are one of the patients that get a devastating complication that is not reversible? Dr. Jane Maclver offered a great deal of insight in her talk on Palliative Care in the heart failure setting. Quite poignantly she noted that palliative care is not a “consult team” or a discipline, but a philosophy that we all must adopt to better serve our patients. She offered some very interesting data that showed adopting this philosophy early and often with all our patient interactions can not only make decision making easier for our patients, but help alleviate pain and provide symptom relief throughout the entire course of care we provide our patient.

Now at this point I had lost track of who was winning, the "VAD-ers" or the "transplanters," and I was really thinking of getting another cup of coffee, but then Dr. David Taylor took the stage. Not only is this guy a former president of the ISHLT, but he also offered me my recently acquired Heart Failure Fellowship, so I felt obligated to stick around and hear what he had to say. Now I didn't really picture this guy as a Nihilist, but with a few more quotes from Nietzsche and I would have had to rethink signing my offer letter (or at least brush up on the Apollonian and Dionysian). It also became abundantly clear that I better go on a diet. Heaven forbid I find myself standing on a bridge in Cleveland one day, he may end up pushing me over the edge to save a transplant patient. What does this have to do with heart failure, honestly, I'm not sure. He pontificated on autonomy and beneficence, and non-maleficence and justice and all those other Medical Ethics 101 terms. I had forgotten about since I last needed to renew my IRB "good standings" only to realize what his whole point was. His talk was titled "Patient Selection or Patient Preference" and I think his point was...oh man, I honestly got so caught up in his example of pushing a fat guy over a bridge to stop a train that was about to run into a crowd of people that I missed his actual point (you really had to be there). In all seriousness, it became abundantly clear from his talk that the ethical and philosophical decisions we as physicians make can be just as important and complex as the medical ones, and naturally there are no easy answers.

Wrapping up the session, Dr. James Kirklin, another former president of the ISHLT (I guess I'm not getting my coffee) took to the stage and wrapped up this debate. He made it abundantly clear that risk stratifying our patients better and accounting for co-morbidities and assessing quality of life objectively are all keys to making such difficult decisions. New scoring metrics will need to be
developed that can weigh these factors effectively will help us, and our patients better decide what option will work for them.

Luckily this is not an op-ed piece, so I don’t have to pick a winner. It is clear though that despite all the advancements in technology there are significant drawbacks to both transplant and mechanical circulatory support. As Arnold would say, "I'll be back" with an answer maybe after a few more years and a few more debates.

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Expansion of Donor Pool is INSPIRE-ational

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It took over half a century for the technique to evolve from basic theory to semi-automated circuits fit for clinical use. However, this technology is now rapidly being adopted across transplant centers across the globe. Ex-vivo lung perfusion (EVLP) is one of the hot-topics at this year's ISHLT meeting and with the field in constant evolution the excitement was intense when some of the giants of EVLP took to the stage in the Thursday afternoon Pre-Meeting Symposium 16: Ex-Vivo Lung Perfusion (EVLP): Evolving Strategy for Improved Donor Lung Management.

As the pioneer of clinical EVLP, as well as his recognition for his epic performances that resemble an enthusiastic scientist from a Nordic Noir piece more than a luminary Lund University professor, Prof Stig Steen set the scene with a historical overview of EVLP. Dr. Göran Dellgren and Dr. Bartley Griffith followed up by painting a clear picture of the present-day European and North American experience with the different static EVLP techniques. Dr. Marcelo Cypel furthered this by reviewing the state-of-the-art experimental treatment work carried out on this well suited platform for lung research.

With the recent introduction of portable EVLP, a new era in lung preservation may also be upon us with an opportunity to limit organ ischemic times and potentially improve the outcome of donor lungs already deemed acceptable for transplantation. After Dr. Gregor Warnecke's update on the OCS Lung INSPIRE Trial, this new era doesn't seem far off as long as the current price tag is not of major concern in your transplant unit, some murmured on their way to the coffee break. Dr. Peter Hopkins also addressed this in a very sensible way in the closing presentation on cost justification and criteria definitions in this blooming field.

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It's All for the Children

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If there is one thing I take away from this session almost immediately, it is that I made the right choice going into adult cardiology. It is readily apparent that with so little data and so few options for these poor pediatric patients, that many decisions are made on a "wing and a prayer" (and perhaps a skilled surgeon helps). The Pre-Meeting Symposium 18: Developing a Pediatric VAD Program session began with a great overview by Dr. Peter Weardon on what options are available for our pediatric patients when mechanical circulatory support is needed.

One thing was certain by Dr. Weardon's talk. These devices aren't cheap, and with little data, and such small patient pools to gather data from, it takes a lot of user experience and a lot of troubleshooting to be successful in implanting our young patients. Certainly tools like CT mapping can aid in assessing anatomical limitations and having to "cram" a VAD into a patient as Dr. Weardon put it. Assessing the possibility of recoverability in a few weeks, body size and weight are key parameters.

Dr. Holger Buchholz took the discussion one step further, by asking what next? Just because Dr. Weardon can put one of these VADs into a pediatric patient, what happens once it is in. Trying to get a pediatric patient home after VAD placement is a tremendous undertaking and requires a great deal of education and support. Dr. Buchholz reviewed the program in place in Edmonton, including the team set up, a need for 24/7 on-call physicians and coordinators to help families. Over 30 hours of training is needed for families to master all the skills necessary to triage and help the patient. Modern technology such as the Facetime App on iPhones allows instant communication regardless of distance between physician and patient. For patient's that live farther from the implant center, training must be arranged with local physicians, school nurses and local family/friends so that issues can be addressed in a timely fashion.

Dr. Jennifer Conway then focused on the types of complications that must be contended with, and the many psychosocial issues that must be addressed in this young population. To further complicate management, many treatment options that would otherwise be available to adult LVAD patients are unproven and untested in pediatric populations, such as the use of TPA for pump thrombosis. Dr. Conway further notes the long-term psychological ramifications of LVAD use in pediatric patients is simply unknown.

Aileen Lin, an LVAD nurse at Stanford offered some useful incite into these issues and use excellent case examples to further illustrate these problems. Morbid obesity presents a huge limitation to transplant due to increased complications such as infection postoperatively. She did note that LVAD placement with weight management strategies such as bariatric surgery may provide some help. She also was key to point out that the long-term psychosocial impact on these children remains largely unknown and will require careful observation in the future to ensure they have good quality of life.
The session closed with Dr. Martin Schweiger providing some unique pediatric case reports that presented a great deal of challenges. An interesting case of Kawasaki Vasculopathy and a VSD patch correction that unmasked concomitant myocarditis provided some stunning images under cine in the cath lab as well as the perils of charting into unchartered territories with ventricular support devices.

All in all, the session provided a great deal of insight into the perils and pitfalls of managing the pediatric population with advanced heart failure symptoms, but it also provided a great deal of hope that much can be done to provide these patients with a full and bright future.

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When I was first assigned this Pre-Meeting Symposium 20: Pulmonary Hypertension in Left Heart Disease: WHO Group 2 PH, I thought I was going to meet Roger Daltry. Imagine my surprise to find Howard Eisen, my mentor and program chair, overseeing a session on pulmonary hypertension. Alas, instead of rocking out to My Generation I had to muster the energy this late in the day and on my fourth consecutive session to get excited about DPGs and PAWPs.

Dr. Nazzareno Galie started the conversation off reviewing new definitions and terminology recently decided on at a recent consensus panel. He reviewed the need to clarify terminology, and to ensure we the audience are focused solely on WHO Class 2 pulmonary hypertension due to failing of the left heart, particularly as this comprises of 80 percent of all pulmonary hypertension cases worldwide. Using new terminology, focusing on isolated post capillary pulmonary hypertension and combined post and pre-capillary hypertension, he set the groundwork for the following presenters.

Dr. Myung Park provided some of the data behind assessment of diastolic pulmonary gradients and its role in assessing pulmonary hypertension due to left heart failure. Despite the attractiveness of this concept, it seems that little data bears out its usefulness in predicting outcomes after VAD or Transplant. Perhaps when used as part of a composite assessment with other useful parameters it can still play a key role in RV and transplant studies.

Dr. James Fang furthered the discussion on pulmonary hypertension reviewing many of the benefits and limitations of current values we use every day such as PVR. He pointed out parameters such as RV stroke work index and perhaps simple measurements such as CVP that when done right and measured accurately can provide the best markers of success with VAD and transplant. He advocates for a milrinone bolus during right heart catheterization to assess RV compliance that may be better than any marker.

Finally, Dr. Robert Frantz presented some novel therapeutic options for these difficult patients as we try to get them to successful transplant or VAD placement. I think the most important take home point from his discussion was to treat the underlying problem, i.e., treat the left heart failure, diurese aggressively, and use hemodynamic monitoring to aid in treatment. Many novel therapies have been handicapped by premature study termination, or by failing to demonstrate true survival benefit, but tried and true therapies like ace inhibitors can still help these patients regardless of the pulmonary pressure.

As Roger Daltry would say, the next time I see a case of WHO Class 2 pulmonary hypertension, I Won’t Get Fooled Again. Now time to get some dinner with My Generation.

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The Early Bird Rises to the Challenge

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Friday at daybreak, I tiptoed over to San Diego Bay in a dreamlike peaceful manner. Why am I up so early? It's highly recommended for anyone travelling internationally who is expected to show up at work attentive and alert at 7 a.m. to "jet lag" yourself a little bit with a preparatory long-haul flight 1-2 days in advance. So as I was listening to birds singing during my morning jog at 5 a.m. I knew I was in fact jetlagged. However, I knew this was not going to keep me from attending an early morning session as I get to experience cutting edge discussions in my medical field. In fact, if there are any headhunters out there looking for a nomadic surgical trainee for a split-week post in Europe/North America/Asia, I am your man!

Back to the topic at hand. A complete North American roster of junior presenters and senior experts showed up notably rested, prepared and eager for the kickoff Sunrise Symposium 2: Under too much Pressure: Challenging Cases in Pulmonary Hypertension Management. With three well-selected cases of challenging pulmonary hypertension patients, the junior physicians succeeded with the difficult task of setting up for a very fruitful yet early discussion between the invited expert panel and early bird specialists in the auditorium.

Dr. Amit Banga from Cleveland presented a case depicting the difficulties of combatting high PVRs in hypertrophic cardiomyopathy transplant candidates. This was skillfully tackled by the senior colleague Dr. Adaani Frost on the topic of balancing right and left ventricular function and clearly defining the cause of the pulmonary hypertension to be able to target the intervention toward preload, afterload, or the pulmonary vasculature.

Dr. Kerri Akaya Smith then presented a case of the ill-defined patient group suffering from pulmonary hypertension at exertion, with a following discussion and consensus on the appropriateness of not hurrying with the diagnosis labeling in these often otherwise healthy patients, but to instead offer a generous follow-up strategy.

Finally, Dr. Mitesh Thakrar from Calgary portrayed the challenges in the optimization of patients awaiting a liver transplant with pulmonary hypertension, with the balance between hypo perfusion, control of the pulmonary hypertension and vascular resistance, and the occasional massive cardiac output seen in these patients with port pulmonary hypertension. Well done Docs, a 5+ symposium!

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Natural Born Killers (Cells)

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It's early, I hit the snooze, and didn't have time for coffee for this morning's Sunrise Symposium 10: Exploring Interactions Between Cellular and Humoral Immunity in Cardiac Allograft Rejection, but luckily this highly complex topic got the brain juices flowing faster then Woody Harrelson can pull a gun on Route 666.

Dr. Esmé Dijke opened the session with a great review of all the major players in innate immunity, and the role innate immunity plays in ACR and AMR. Macrophages and Neutrophils and NK cells, oh my! It became readily apparent from Dr. Dijke's talk that our well-balanced immune system provides both good and bad feature that aid and hinder transplant medicine. Unfortunately for every good these cells provide, like aiding wound healing and suppressing allogenic immune responses, these cells can also infiltrate graft tissue and co-stimulate allo-reactive T cells.

Next up, Dr. Annalisa Angelini reviewed the overlap between CMR and AMR, deemed the gray zone (though more like the Twilight Zone for us clinicians trying to help these patients), and reviewed histologic features that may help or hinder deciding which treatment pathway to follow. Staining for CD markers may be one tool that can help the pathologist and clinical team help decide what is going on. Particularly noteworthy, Dr. Angelini pointed out that most "mixed rejection" samples demonstrate a proclivity towards CD4 cells, while acute cellular rejection mostly demonstrates CD8 cells. She also interestingly pointed out varying degrees of inflammation in the endothelial layers of vessels, a capillary predominant vasculitis and a more diffuse vasculitis affecting all vessels, and proposed that perhaps differentiating which components of the vasculature are inflamed may help differentiate AMR, ACR and mixed rejection into more readily identifiable classes of rejection.

Dr. A. G. Kfoury then finished the session by outlining the ramifications of this "mixed rejection" picture and what it may really mean. He proposed several different pathways including the possibility that this mixed rejection is a unique pathophysiologic pathway of rejection, or that perhaps it is some combination of AMR and ACR or perhaps that each of these pathways may devolve into a mixed picture. In terms of treatment options, a confluence of factors including most importantly graft dysfunction, biopsy and antibody screening, donor antibody status and time from transplant should all play a role in deciding the aggressiveness of treatment.

Now I'm no Wayne Gale (another shameless Natural Born Killers movie reference, if you're not familiar with the movie), but that's some pretty good coverage of a 7:00 AM session without caffeine.

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Saturday's *Plenary Session* featured some keynote presenters focusing on the dire shortage of organs that, unfortunately, remains an ongoing theme of these ISHLT meetings. Well, this morning, Dr. Lynne Stevenson presented further data to distress even the most hungover of us in the audience (come on, that Thoratec group put on a good party last night, we all know that). While the Department of Health and Human Services is still tabulating how many cocktail shrimp you ate courtesy of big pharma to place on their Sunshine website today, Dr. Lynne Stevenson jumped right into the biggest problem we face today. Too many sick patients, and not enough hearts.

She took a unique perspective, starting off with an analogy of the sinking ship with a small lifeboat that can only hold so many patients to drive home the point that the sharks are circling our patients if we don't figure out a better way to allocate the limited resources we have. One point she continued to drive home is that the way we list our patients on UNOS for transplant is inefficient and makes the list look artificially large. She points out that almost no Status 2 patients get transplanted anymore (particularly on the east coast) and that not all 1A patients are created equal. She drove this home by quoting her father, Stanley L. Warner, who said, "Anyone who has reached the age of 21 and thinks that life is fair has a learning disability."

She also keenly pointed out that reducing just 20% of those patients listed every year would provide a more reasonable wait list and would provide better access to those who needed hearts. Clearly there are no easy ways to do this, but reevaluating borderline patients with too many risk factors and ensuring patients with higher chances of good outcomes could be a start. She also points out the psychological toll the list takes on patients, especially those who are so-called "bridge to decision" and are kept in limbo with an LVAD with no clear end in site, whether it be destination therapy, or in fact a transplant.

In an effort perhaps to expand the donor pool, Dr. Abbas Ardehali offered data on the PROCEED II trial. Using an Organ Care System (OCS), which can keep a harvested heart "alive and beating" before implantation, his group hopes not only to expand the donor pool, but eliminate such concerns such as cold ischemic times from the equation that are always an issue with the old fashioned "ice chest" method of transporting organs." This novel device provides blood flow, oxygenation nutrients, and inotropes to the explanted donor heart while it is in transit. It also monitors continuously hemodynamic parameters and biochemical markers of ischemia and damage. It could potentially exponentially expand heart transplants in a multitude of ways.

The study was set up as a non-inferiority and safety trial, and luckily it seemed to meet all its primary and secondary endpoints. Most interestingly, I found, is that five potential donor hearts in the study that were in the OCS were found to have abnormally high lactate levels during monitoring which led to pathologic review. All five hearts had significant pathology that would have limited graft survival had they been used. It is not hard to see the usefulness of this device in future evaluation and harvesting of organs. Perhaps this device can one day be used to evaluate resuscitated hearts before implanting into a new host as Dr. Ardehali pointed out.
Cardiac transplants since Barnard have flashed on the cover of Time Magazine (and presumably much earlier than that) have been regarded as something close to science fiction. However, since Professor Shaf Keshavjee gave his iconic talk at TED a few years back, the lung has had its much desired revenge as the audience awed at the possibility of perfusing and ventilating a pair of lungs outside of the human body.

In the Invited Lecture: Frontiers of DCD in Thoracic Transplantation, Prof. Thomas Egan gave an attention-grabbing talk with the key point being that lung recovery from uncontrolled DCDs reassessed on EVLP for transplantation is "an innovative disruptive technology poised to revolutionize therapy for end-stage lung disease". With the potential of increasing the availability of lung transplant donors only in the U.S. with 40,000 lungs a year, Prof. Egan is convinced that the pioneering work of Dr. Moradiellos and colleagues in Madrid must be followed up and adopted into a wider clinical practice to make lung transplantation a reality for more waiting list patients with life threatening lung disease.

As organ perfusion has become one of the "hot topics" in all fields of transplantation, ex-vivo lung perfusion (EVLP) continues to lead its progression and is featured in over 40 presentations at this year's Annual Meeting. The available EVLP methods are being investigated in four ongoing multicenter trials (NOVEL, DEVELOP-UK, EXPAND, and INSPIRE), and the full safety, cost effectiveness and potential impact on graft availability would shortly be revealed. In the well-visited Plenary Session on Saturday, the one-year outcome of the NOVEL lung trial was presented as a featured abstract by the now established front figure Dr. Pablo Sanchez.

The NOVEL trial was the first prospective multicenter trial designed to evaluate the safety of EVLP as a method to screen and identify good quality grafts from the donor pool of lungs rejected for transplantation. It is a non-randomized open label study, where 84 lung transplant recipients were enrolled with the start in August 2011. 42 EVLP transplants with lungs initially found unusable for transplant and rejected by multiple centers (median of 39 times according to Dr. Sanchez) and 42 standard controls. The early outcomes have been very promising, and the primary endpoint of 30-day survival was not significantly different between patients that received EVLP or standard criteria lungs (98% vs. 100%, p=1).

Dr. Sanchez said, "We are excited with the results and believe that the NOVEL trial has helped in establishing the rationale to extend the donor pool and permit the acceptance of donor organs that might have otherwise been not transplanted."

This has, for obvious reasons, also been received with great excitement in the camp of the study sponsor XVIVO Perfusion AB, which has recently had the trial EVLP machine, XPSTM, CE marked for EU distribution and has progressed in the FDA approval process.

Many congratulations to the trial investigators for managing to complete this important multicenter trial. "He who waits gets a tailwind, and he who rows, a harbor" ... right?!

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A Road Less Traveled

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After a much-appreciated symposium taking us through the lifespan of a cystic fibrosis patient, this multidisciplinary "Lifecycle Journey" concept seems to be established and here to stay. Instead of a classic case report followed by a panel discussion, this series was intended to be a sort of practical integrated hybrid, portraying a patient's journey through life with specialist discussions on best clinical practice scattered along the way.

At this year's Concurrent Symposium 25: A Lifecycle Journey in Pulmonary Hypertension, the focus was set on a 17-year-old female patient presenting with rapidly deteriorating severe pulmonary hypertension on top of an HIV infection and previous substance abuse.

Dr. James Coons kept the audience on track with a flowing case presentation, which was often interrupted by Dr. Jean Luc Vachiery, Dr. Patricia Ging, Professor Patricia Uber, and Dr. Francis Pagani who added their individual expert knowledge at key journey intervals. Even though an even more homogenous and case concentrated presentation would have been stimulating, this new format concept was innovative and is here to stay for sure!

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Fear the Biofilm

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This afternoon's Concurrent Symposium 26: Infections in Mechanical Circulatory Support Devices—Understanding and Conquering the Beast provided a harrowing and eye-opening look at what we are up against as we help our LVAD patients with long-term survival. The session started off with a great case presentation that we are all too familiar with, provided by Dr. Pavan Atluri, of the unfortunate gentleman who presented with MRSA bacteremia six months after LVAD placement. After multiple treatments were provided including surgical intervention, the patient presented with bacteremia again and will require lifelong antibiotics. This provided a great opening to our next speaker who explained why we are confronted with such difficult cases in our clinical practice.

Now normally I don't offer much praise to folks from Boston, as I myself am a lifelong Yankees fan, but Dr. Robert Padera provided great insight into the LVAD infection quandary. His talk on "Biofilm Basics" provided a kind of "biofilm 101" on what a biofilm is, and why we have such difficulty treating it. The biofilm is the product of 3.5 billion years of bacteria evolution to protect itself in the environment it lives. In a simple five-step diagram, Dr. Padera demonstrated how attachment and production of an extracellular matrix leads to the development of an early biofilm within minutes of a bacteria touching down on a surface, which then organizes into a mature biofilm from which further bacteria can reproduce and disperse into the host (our LVAD patient!). Breaking through or dissolving this biofilm sadly does not solve the problem as a few select "persister cells" bacteria manage to stick around, and as soon as the offending agents (our antibiotics) are removed, these little suckers rev back up again and infect our patient. As Dr. Padera pointed out, this will remain an ongoing problem as long as LVADs are in use and will likely require a multifactorial approach to treat and ultimately solve this problem.

Linda Staley, an LVAD coordinator at the Mayo Clinic, then took to the stage and offered insight into managing patient drivelines, and how to aggressively manage and triage any issues that can arise with the driveline. She reviewed a great four-stage assessment that patients, family and clinicians alike can use to help quantify the degree of inflammation/infection seen at the driveline site. She reviewed some great techniques to prevent infections as well, including pre-surgery selection of driveline sites by the patient and some simple dressing change protocols in place to maximize sterility and ease of use for the patient.

Dr. Margaret Hannan was tasked with outlining what an LVAD infection actually is, and did an outstanding job outlining terminology and standardization that is being applied through the IMAC database to ensure proper reporting and descriptions of LVAD infections. She also reviewed an LVAD "Duke's Criteria" type approach to work up and diagnose LVAD infections including labs, imaging and clinical picture which will be very useful in patient management.

Unfortunately, Dr. Benjamin Medalion could not make it to his talk, as he was in a helicopter over Israel saving a patient's life with ECMO. Thus, his partner was able to fill in and provide an
overview to surgical approaches to driveline and pump infections. He reviewed several cases from his hospital and demonstrated different surgical techniques that can be used to salvage existing pumps, and how to approach reimplants. The pictures were gruesome, but the results were outstanding. Luckily I had a light lunch.

Finally, Dr. Matthew Romano provided insight into LVAD imaging techniques that can help evaluate driveline and pump infections. His work up often includes a simple ultrasound to start with to evaluate for fluid collections that can be tapped for cultures. He will then follow with a CT scan for further evaluation. While little data exists on the use of PET or WBC scans, he shared some of his experience with these imaging modalities and demonstrated how they may be useful with further study.

This was a great session, with many thought provoking questions posed to the presenters after their talks, and it is clear this will be an ongoing field that will require a lot of research, time and cost to solve.

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En Fuego: The Latin American Transplant Experience

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In the first of its kind session, the ISHLT provided a great forum to voice growing concerns in heart and lung transplant in the developing world and allow members of the organization to highlight "the good, the bad, and the ugly" of transplants, in this growing region of the world, Latin America. The Concurrent Symposium 27: Heart Transplantation and Mechanical Circulatory Support (MCS) in Latin America session kicked off with an introduction by former ISHLT President Lori West explaining why this session was necessary and the potential for growth at future meetings of these types of sessions.

Dr. Juan Mejia opened the session highlighting the challenges facing Latin American countries as transplant and MCS continues to grow worldwide. It became painfully clear that these resources are greatly limited due to numerous reasons in these countries and that just a few centers in each country control the majority of transplants. That said Latin American countries have some of the lowest rates of transplantation per million population of any country in the world. Dr. Mejia was able to highlight several key areas that might improve these numbers including improved multidisciplinary teams and consulting centers that can help in expertise, as well as a need to better preserve/aid in harvesting donor grafts.

Dr. Fernando Bacal then focused a bit on the epidemiology of heart failure in Latin America, particularly highlighting the role Chagas' disease plays in heart failure, in these countries. It is important to make this distinction as he points out, because while these patients have much worse prognosis then other forms of heart failure such as ischemia, patients that do receive a transplant do much better post-transplant with improved survival. One risk is reactivation of disease, which if monitored for closely can be aggressively treated, and perhaps requires a change in immunosuppression including the use of azathioprine instead of mycophenolate which is a different protocol than many Western countries use that don't contend with Chagas' disease.

Dr. Oscar Ortega Duran then shared his experience with a difficult patient with decompensated heart failure, and shared how limited access to transplant and MCS in his country led to a different approach to bridging support using a Vitacor paracorpeal pneumatic pump to support the patient until he was able to be transplanted. It was a very unique concept, and while the patient sadly died in the peri-transplant period, it shed light on a potential cheaper MCS device that can be used in the developing world.

Dr. Mauricio Villavicencio took this discussion one step further and shared his broader experience with managing cardiogenic shock in Latin America where limits to traditional LVADs and transplant make it difficult to manage these patients. He demonstrated his experience with the Centrimag device, which is much cheaper and more accessible, and through a tightly controlled protocol allows the patient to ambulate and perform ADLs while in the hospital waiting for a heart. He has
outstanding results with the use of this device and offers that it may offer a tremendous advantage in countries with limited resources for cardiogenic shock patients.

The session closed with two great presentations by Dr. Roberto Favaloro and Dr. Alexandre Colafranceschi sharing long term results in Latin America from patients with transplant and MCS respectively. The overarching themes of these talks, were that while numbers are small, and the learning curve is steep, the trends are demonstrating that this is a growing field in Latin America and that continued support and lobbying will be necessary for these to be viable fields in Latin America in the future.

Following these presentations, there was a great deal of interest by the audience, and numerous statements of support were made by members from all over the world. There was a strong sense of urgency that the ISHLT should play an active role in lobbying national governments and provide education and data demonstrating the necessity of advanced cardiac support to countries and patients in need around the world. It was made abundantly clear that such international issues will play a prominent role at next year’s meeting in Nice.

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JHLT: The Year in Review
by Scott Feitell and Anders Andreasson

At this year's Concurrent Symposium 28: JHLT at ISHLT: The Year in a Capsule, a "who's who" of transplant medicine presented summaries of the most intriguing and novel publications put out this year in the Journal of Heart and Lung Transplantation.

The session started off with Dr. Martin Schweiger reviewing some of the biggest articles in MCS and Heart Transplants this year. He focused first on the interesting Heartware trial, HVAS Bridge to Transplant, which featured outstanding survival data and some promising hope for this new device that featured over 84% survival with use at one year. He then reviewed a retrospective review of the UNOS registry, which addressed organ allocation for those with congenital heart disease. Sadly as we are confronted with a greater number of these end stage patients, ventricular assist devices are often not feasible due to anatomical or physiologic factors that would otherwise provide a viable bridge to transplant. Unfortunately, our current procurement system does not make allowance for these patients to move higher on the list, and thus time waiting can seriously impede survival. On a similar topic, he reviewed findings of the European experience with the Cardiac Allocation Score to help address several deficits in transplant waiting lists. Using a combination of urgency, wait time and evaluating outcome/survival odds after transplant, this system may better help predict who will benefit most from a transplant. Finally, further addressing donor shortages, he reviewed a fascinating review of the UNOS registry from 1994-2012 to evaluate whether there were any significant differences in outcomes using "marginal hearts" from post-CPR donors. Using a sample size of over 1300 patients, which represented nearly 5% of all donor hearts, there was no significant difference in outcome post-transplant. While there were different features between CPR and non-CPR donors (regarding alcohol use, drug use, smoking, etc.), all recipients did quite well regardless. What should further allay fears to all of us in the transplant community, was that the amount of time CPR was administered had no bearing on outcomes either, with some donor hearts receiving upwards of 50 minutes of CPR, and a mean time of nearly 20 minutes for all CPR donors.

Dr. Heather Ross then took to the stage to congratulate Dr. Schweiger on his review of cutting edge literature, and echoed many of his sentiments from these articles, raising concerns from the Heartware trial that pump thrombosis remains a critical limiting step in the use of MCS. She also agreed with many of the limitations of the UNOS criteria for transplant waiting lists, and pointed out that many of these articles reviewed should further discussion on how better to improve the system.

Dr. Me-linh Luong reviewed three articles dealing with CMV, C diff and hepatitis E. While several of her topics pertained more to lung transplantation, her review of the emerging threat hepatitis E plays in all of our transplant patients was of significant concern. Emerging case series are demonstrating that hepatitis E, common in undercooked pork products and various other sources can activate in immunocompromised hosts. In a single center review six patients were found to have this virus. Fortunately if it is caught relatively early in its course it can be easily treated with medication and augmentation of immunosuppression. Dr. Shahid Husain then reviewed this topic further, and it is clear that appropriate screening in transplant patients with abnormal liver function tests and/or evidence of fibrosis and cirrhosis should trigger immediate testing.

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Third Time's the Charm

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As part of the mission, ISHLT aims to provide and update international guidelines, consensus documents, standards statements, and policy statements regarding end stage heart and lung disease and cardiothoracic transplantation. The first edition of international guidelines for the selection of lung transplant candidates was published in 1998, and this was last updated in 2006. Given the continued evolution of the field, the Pulmonary Transplantation Council now presents a Third Edition of the Consensus Report for the Selection of Lung Transplant Candidates.

The goal is to assist physicians, both those who refer candidates and those who work in the lung transplant field, in properly identifying patients who are the most likely to benefit from lung transplantation. The new consensus document follows the current trend of more open selection terms adhering less strictly to age limitation, co-morbidities, type and severity of concurrent infection and support the conditional acceptance of patients supported with mechanical lung ventilation or extracorporeal life support. Importantly, an updated list of absolute contraindications include untreatable or significant dysfunction of another major organ system, malignancy, and acute medical instability.

"We've had a unique opportunity to pull together physicians and surgeons who are considered to be experts in their field, to come up with these guidelines to assist both patients and non-patients," stated a satisfied Chair of the Writing Group, Dr. David Weill. With 14 invited thoracic physicians and surgeons having taken part in the writing process, there is good hope for a broad agreement on these updated guidelines for lung transplant recipient selection.

A complete list of ISHLT Guidelines and Consensus Reports can be found at: https://www.ishlt.org/publications/guidelines.asp.

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Infectious Diseases: Vaccines, Immune Monitoring and Potential New Biomarkers at the 34th Annual Meeting and Scientific Sessions

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Heart and lung transplant candidates and recipients are at significant risk for infection and efforts should be optimized to limit these risks. Vaccine-preventable diseases continue to affect solid organ transplant recipients and can be minimized with proper vaccination. E. Stimpson (abstract 733)* evaluated the effect of hepatitis B vaccination on patients who are awaiting a heart transplant. Those patients who were hepatitis B surface antibody positive after vaccination were transplanted at a higher rate compared to those who were hepatitis B surface antibody negative. K Gould (abstract 477)* presented data on a high influenza vaccination rate amongst cardiothoracic transplant patients (Season 2012/2013, Heart 86%, Lung 95%). E. Sarmiento (abstract 36)* suggested that a lower antibody response (low anti-PnPS antibody titers) to the 23-valent pneumococcal polysaccharide vaccine was associated with a significant risk of bacterial infection in heart recipients.

In the Sunrise Symposium CMV Infection in Lung Transplant Recipients: Are We Ready for Personalized Medicine?, J McDyer spoke about T cell Function (low CD107 expression on CD8+ T-cells, CD4+ pp65 responses and CMV-specific CD4+ memory T cells with multifunctional cytokine production) and relapses of CMV infection in high-risk lung transplant recipients. Following on, G Westall discussed about prediction of CMV reactivation risk by evaluating specific anti-CMV CD8+ responses in lung transplant recipients. Prolonged antiviral therapy can be guided by results of these responses. In the Sunday Plenary Session, L Potena (featured abstract 406)* presented interesting data on immune monitoring of specific anti-CMV T-cell responses as a guide to anti-CMV prophylaxis in a prospective randomized study. He concluded that a lack of CMV-specific immune reconstitution after heart transplantation was associated with increased risk of CMV infection and identified patients likely to benefit of specific anti-CMV approaches.

D Ruttens (abstract 61)* discussed the role of genetic variation in immunoglobulin G receptor on survival after lung transplantation. Multivariate analysis showed that carriers of the TT variant had worse survival compared to the CC genotype. The TT genotype demonstrated more respiratory infections compared to the other genotypes. E Sarmiento (abstract 33)* showed that a combination of post transplant IgG hypogammaglobulinemia with lower complement C3 levels identified CMV-seropositive heart recipients at risk of CMV disease in a prospective multicenter study. Screening for IgG deficiency and supplementation with intravenous immunoglobulin was associated with comparable survival as compared to patients with sufficient IgG levels in a cohort
of post transplant IgG hypogammaglobulinemic lung recipients presented by WM Tsuang (abstract 173)*.

Although this is not related with infections, as I was born in Peru I have to write that I was fortunate to attend the Concurrent Symposium 27: Heart Transplantation and Mechanical Circulatory Support in Latin America. Interesting presentations about long term results from patients with heart transplantation and MCS demonstrated that this is a growing field in Latin America. There is a clear and evident need for mutual learning in this area.

Disclosure statement: the author has no conflicts of interest to report.

*All of these abstracts are available to view using any of the digital media available on the ISHLT website at http://www.ishlt.org/meetings/annualMeeting.asp.
A highlight of the recent ISHLT 2014 San Diego meeting was a pre-meeting symposium entitled, “Global Perspectives on Donation after Cardio-circulatory Determination of Death (DCD) in Lung Transplantation (LTx)”. A large audience attended, and were subsequently educated (and at times entertained!) about the past, present and future of DCD LTx and ex-vivo lung perfusion (EVLP).

Just over 50 years ago, in 1963, the first successful human LTx was carried out by James Hardy, using lungs retrieved from what we now would classify as a ‘controlled’ Category III DCD donor. It would be nearly 30 years (1991) before Tom Egan revisited the concept of using ‘non-heart-beating-donors (NHBD)’ as a potential solution to increase the lung donor pool. Bob Love reported his center’s first successful LTx using a ‘controlled’ NHBD donor lung, at the ISHLT meeting in 1995. Years passed before the LTx world was reanimated by Stig Steen’s seminal Lancet article in 2001, describing successful LTx from an ‘uncontrolled’ NHBD donor, and the first clinical use of EVLP to determine the suitability of the donor lung. The work of these 3 NHBD (or DCD) pioneers has certainly stood the test of time. Over the intervening 5 or so years, up to 2006, only a small number of individuals and their LTx programs had the courage to follow in their footsteps.

Fast forwarding to 2014, global results and trends of DCD LTx were outlined by a multi-national panel of speakers. Without doubt, increasingly over the past 10 years, DCD has added a significant number of quality donor lungs for LTx with consistently excellent results. Widespread adoption of DCD LTx has occurred in some countries including Australia, Belgium, Canada, Netherlands, Spain and the UK. Paradoxically, Sweden and the USA have been slower on the uptake of DCD LTx. And if you are wondering about Switzerland’s involvement, don’t ask John Dark … he seems to have a problem with European geography!

International differences in DCD practice and experiences (eg. controlled vs uncontrolled DCD, EVLP vs no EVLP) provided fuel for an entertaining and energetic debate. It was obvious that Bob Love had employed an Australian voice coach to enhance the cultural appeal of his presentation, hoping to win the debate. Greg Snell on the other hand, in typical Australian fashion, ‘played the man—not the ball!’ The winner was obvious....

The future of DCD LTx is guaranteed. The solid clinical outcomes presented in this Symposium will surely encourage units currently not utilizing DCD to push forward with developing clinical protocols and engaging with their donation networks. It is evident (unless you come from Toronto!) that EVLP is not required to commence a Category III (controlled) DCD LTx program. There is huge potential for Category I & II (uncontrolled) DCD activity, although EVLP is most likely required for...
lung quality assessment. The Chapel Hill and Madrid 'uncontrolled’ DCD experiences provide excellent templates to emulate.

To facilitate capture of contemporary and evolving DCD practices and outcomes, active DCD programs successfully lobbied for the development of a mini DCD LTX Registry. Results are coming to an ISHLT meeting near you soon!

Disclosure statement: the authors have no conflicts of interest to report.
ISHLT Academy: Core Competencies in Basic Science and Translational Research: Bringing Us Together

Tereza Martinu and Esmé Dijke
BSTR Academy Co-chairs

It was a challenge: developing a program for an Academy that provided a review of basic and translational research in the field of both heart and lung transplantation. And all of that in only one day ... one l.o.n.g Academy day. The planning involved many conference calls, discussions, brainstorm meetings, a survey to ask for the opinion of the ISHLT membership, and a few bottles of wine ... but there it was: the first Core Competencies Curriculum and Academy in Basic Science and Translational Research!

The ISHLT Basic Science and Translational Research Academy took place on April 9th, 2014. The goals of this activity were 1) to provide a concise review of basic concepts in transplant-related immunology and molecular biology, 2) to define and promote the clinical relevance of basic science and translational research related to heart and lung transplantation and, last but not least, 3) to encourage the interaction between basic scientists, translational researchers and clinicians. Simply said: we wanted to create a lot of ‘aha’ and ‘eureka’ moments and remove the language barrier between researchers and clinicians. Because - let’s be honest - whether you are a basic scientist or a clinician, we all have looked at the other with the thought, “what on earth is this person talking about?!”

The list of speakers was a nice blend of junior and senior presenters and included basic scientists, translational researchers and clinicians in the field of both heart and lung transplantation. The content of the Academy covered overviews of the basic mechanisms of ischemia reperfusion injury, acute cellular rejection, antibody-mediated rejection and chronic rejection, followed by specific considerations for heart and lung transplantation. Members of the Junior Faculty and Trainee Council presented clinical vignettes on these topics. There were additional lectures about pharmacology and molecular biology. All lectures were excellent and instrumental in providing a broad and balanced view of the basic and translational science behind heart and lung transplantation.

This is the first year that the “best educational presentation award” was given out for each academy. The winner of the BSTR Academy was chosen based on the following criteria: 1) voted for by the majority of participants using the audience response system, 2) submitted slides on time prior to the academy, and 3) satisfied all criteria that have been determined by the ISHLT Education Committee to define a high quality educational presentation. It is our pleasure to announce the winner of the “best educational presentation award” for the BSTR academy: Dr. Michael Shullo, who presented an outstanding lecture about “Antidotes for Alloimmunity – Principles of T cell-Directed Therapies.”

Another ‘first’ was the introduction of brain breaks. We all know that no matter how great the presentations are, after a while our brain tends to stop absorbing information. The attention span
of an audience drops dramatically as presentations progress (H.R. Mills, Techniques of Technical Training, 1977). Brain breaks are simple 1-2 minute mind and body challenges which activate the brain and help regain focus. Brain breaks at the Academy included activities of snapping fingers while blinking, waving both arms in opposite directions, and the Mexican Wave (thanks to Chris Wigfield for this great suggestion!). The breaks did not only energize the group of participants, but were also a nice refresher for the chairs: it was absolutely hilarious to see ISHLT members doing these exercises all in harmony.

The last part of the Academy focused on research priorities in basic and translational research in heart and lung transplantation and failure. As some of you may remember, we had previously administered a survey on this topic to the ISHLT membership. We presented the priorities that emerged from this survey to attendees at the Academy and allowed everyone to rank them using the audience response system. Priorities that emerged from this activity included chronic rejection, artificial organs and mechanical circulatory support, organ regeneration/engineering, and biomarkers. Importantly, we learned that the priorities in the view of clinicians and researchers are actually quite aligned. So even though it sometimes feels like basic scientists and clinicians speak a different language, they actually seem to say the same thing just with different words.

Developing an Academy that assists clinicians in improving their understanding of the scientific background behind clinical practice, updates researchers on recent discoveries in the field of heart and lung transplantation, and encourages interaction between scientists and clinicians seemed at first like “mission impossible”. We were pleased that it all happened. The BSTR Academy brought ISHLT members together to learn from each other and brainstorm about future priorities for growth and advancement of the field.

We would like to end with two quotes:

“To effectively communicate, we must realize that we are all different in the way we perceive the world and use this understanding as a guide to our communication with others.” – Tony Robbins

“Tell me and I will forget. Show me and I might remember. Involve me and I will understand.” – Benjamin Franklin

Disclosure statement: the authors have no financial disclosures and no conflicts of interested related to this article.
ISHLT 2014 Abstract Award Winners

The winners of the 2014 Abstract Awards, as well as additional awards, were announced at the Awards Presentation hosted by Grants & Awards Committee co-chairs Andrew J Fisher and Daniel R Goldstein during the Closing Plenary Session on Sunday, April 13, 2014, at the ISHLT 34th Annual Meeting & Scientific Sessions in San Diego.

More information about the ISHLT Awards, including current and past recipients, can be found on the Awards page of the ISHLT website at http://www.ishlt.org/awards/.

Philip K. Caves Award

The Philip K. Caves Award is named for Philip K. Caves, who developed and pioneered the technique of transvenous endomyocardial biopsy for use in the monitoring of cardiac graft tolerance. Established in 1982 to encourage and reward original research in transplantation performed by residents, fellows, and graduate students, this $1,000 award is bestowed annually on the resident/fellow/student whose oral presentation is judged to be the best at the Annual Scientific Meeting.

2014 Recipient:  Jessica Spahn  
Washington University School of Medicine  
St. Louis, MO, USA

Abstract:  DAP12 Expression By Lung-Resident Macrophages Mediates Pulmonary Ischemia Reperfusion Injury By Promoting Neutrophil Extravasation

Mentor:  Daniel Kreisel, MD, PhD

Nursing, Health Sciences and Allied Health Excellence in Research Award

This award was established in 2005 to recognize excellence in Nursing and Social Science research, with the purpose of encouraging original investigation and professional excellence in the preparation of scientific papers. This award recognizes an outstanding contribution by a nurse or social scientist whose work makes an important contribution to the field of heart and lung transplantation. This $1,000 award is bestowed annually on the nurse or social scientist whose oral presentation is judged to be the best at the Annual Scientific Meeting.

2014 Recipient:  Louise Fuller, PT  
The Alfred Hospital, Melbourne, AUSTRALIA

Abstract:  Longer Versus a Shorter Duration Exercise Rehabilitation Program Following Lung Transplant: A Randomised Controlled Trial
Branislav Radovancevic Memorial Best MCS Abstract Award

Established in 2009 and funded through a grant from Thoratec, the Branislav Radovancevic Memorial Best MCS Abstract Award is a $2500 travel award to the ISHLT Annual Meeting designed to encourage submission of high quality abstracts in the mechanical circulatory support category. The goal of the award is to encourage scholarly clinical work in MCS and to facilitate scientific exchange regarding MCS. Dr. Radovancevic, a long-time member of ISHLT, was devoted to the encouragement of scientific collaboration with Eastern European physicians and scientists. This award is designed to encourage others to continue his efforts to develop MCS and provide mentorship to others.

2014 Recipient:  
**Jason O. Robertson, MD**  
Washington University, St. Louis, Missouri, USA

Abstract:  
*Concomitant Aortic Valve Procedures in Patients Undergoing Implantation of Continuous-Flow LVADs: An INTERMACS Database Analysis*

Mentor:  
**Scott Silvestry, MD**

JFTC Clinical Case Dilemmas in Thoracic Transplantation Best Presentation Award

To recognize the outstanding contributions by junior faculty and trainees, the ISHLT Junior Faculty and Trainees Council (JFTC) sponsors a session each year at the Annual Meeting entitled, "Clinical Case Dilemmas in Thoracic Transplantation." Cases are submitted during abstract submission (in the Case Reports category) by junior faculty and trainees, and the top abstracts from this category are selected for presentation in the session. Master clinicians are invited to discuss the intricacies of these cases and share clinical pearls. At the conclusion of the session, the best case presentation is selected by a panel of JFTC judges and the presenter is awarded complimentary registration to the next ISHLT Annual Meeting.

2014 Recipient:  
**Lauren Sacha**  
University of Pittsburgh, PA, USA

Abstract:  
*Carfilzomib for Refractory Antibody Mediated Rejection and Allosensitization in Heart Transplantation*

Mentors:  
Michael Shullo, PharmD and Adriana Zeevi, PhD
Claim Your CME Credit

To get your certificate, go to www.CmeCertificateOnline.com. Scroll down to the International Society for Heart & Lung Transplantation listing and click on the "34th Annual Meeting & Scientific Sessions" event. On the site, you will be asked to enter a password which is 2014ISHLTAM and evaluate various aspects of the program. You may then print your certificate immediately. A copy of the certificate will also be emailed to you in case you need to print additional copies (check your spam filter and junk email folder if you do not see it come through). Your certificate will show the hours you entered. Please address any questions about the process to: Sheryl Morgan at Sheryl@AmedcoEmail.com or 651-789-3730.

IMPORTANT NOTE FOR NURSING, ALLIED HEALTH, SOCIAL SCIENCES: This meeting is accredited for CMEs and for CEPTCs. Please consult with your certification/licensing board regarding acceptance of CMEs. For those seeking CEPTC credit, please follow the above instructions to obtain a CME certificate. Once received, please fax, mail, or email this to Phyllis Glenn at ISHLT (972-490-9499, phyllis.glenn@ishlt.org) and she will prepare a CEPTC certificate for you.

Passwords to claim CME credit for the Academy meetings can be found on our home page (www.ishlt.org) under QUICK LINKS.
ISHLT Call for 2015 Symposium Proposals – Deadline June 2

Andreas Zuckermann, MD
2015 Scientific Program Chair
Medical University of Vienna
Vienna, AUSTRIA
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Dear ISHLT Members and Colleagues:

Even though the wonderful 2014 meeting in San Diego has just barely ended, it is already time to start developing content for the ISHLT 35th Annual Meeting to be held in the French Riviera city of Nice, France, April 15-18, 2015.

As program chair for the Nice meeting, I encourage you to submit ideas for satellite symposia and/or invited Plenary talks. Your input into this process will be very valuable to the Scientific Program Committee: the majority of the invited scientific content for the Annual Meeting will stem from proposals submitted by ISHLT Members and Scientific Councils.

This year, the symposium submission process will take place fully online. The link is available here: 2015 Symposium Proposal Submission Site. It is also available on the Future Meetings page of the ISHLT website. If you have any questions about the submission process, please contact Susie Newton (susie.newton@ishlt.org) at the ISHLT office.

You are strongly encouraged to consult with the Education Workforce Chair(s) and Council Chair(s) appropriate to your topic before submitting a proposal. They will provide guidance regarding educational areas identified as priorities for the Annual Meeting. You are also encouraged to develop proposals that will encourage collaboration among the different ISHLT specialties. The list of current committees and councils can be found at http://www.ishlt.org/ under the "Boards and Committees" and "Councils" tabs.

The deadline for receipt of proposals is Monday, June 2, 2014.

All proposals will be reviewed by program committee representatives from the relevant area. The final development of invited scientific content will take place during the Program Committee meeting in July.

Please accept my thanks in advance for your valuable input. I look forward to seeing you in Nice!

Sincerely,

Andreas O. Zuckermann, MD
2015 Scientific Program Chair
ANNOUNCING TWO NEW GRANT AWARDS!

The ISHLT is pleased to announce two new Grant Awards:

1. The ISHLT/Bayer Pulmonary Hypertension Research Grant Award was created to further the scientific understanding of Pulmonary Hypertension, with the ultimate aim of improving patient's lives. The Award is designed to support young scientists, doing research in Pulmonary Hypertension at a critical time in their independent research careers. The goal of the study must be to investigate a relevant clinical or translational science question in PH, irrespective of the PH subtype.

2. The ISHLT/HeartWare Award for Translational Research in Mechanical Circulatory Support was created to support research utilizing MCS that would result in an increased understanding of the biologic effects, use as sole or combined therapy, insights into patient/MCS management, innovative use/application or improved outcomes for the treatment of heart failure. The Award is aimed to support rising stars in the field of mechanical circulatory support at a critical time in their career. The Award recipient will have already established a track record in the field of mechanical circulatory support and will aim to further develop their career in this area. The intent is that the Award will be for a junior faculty position dedicated to a career in the use of MCS as a treatment option for heart failure. It is anticipated that the individual will be clinician or clinician scientist at an active VAD/transplant program with a faculty appointment in either cardiology or cardiac surgery.

General information including the application and deadlines, eligibility requirements, funding stipulations and awards policies can be found on each award's page via the above links. For questions about the application process, please contact Phyllis Glenn at the Society headquarters office.
ACC 2014: Highlights of Interest to ISHLT Members

Rey Vivo, MD  
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The 2014 Scientific Sessions of the American College of Cardiology were held in Washington DC from March 29 – 31, 2014. Given the scope of the Scientific Sessions, it is challenging to attend all sessions relevant to ISHLT members. We present a meeting summary to highlight important studies presented in advanced heart failure, heart transplantation and mechanical circulatory support.

These late breaking clinical trial and registry presentations have the potential to significantly impact the care of patients with advanced heart disease including:

1. **MADIT-CRT** (*Multicenter Automatic Defibrillator Implantation Trial with Cardiac Resynchronization Therapy*): Long-term follow up was reported in the MADIT-CRT trial in which the effect of CRT-D on long-term survival was evaluated in 1691 surviving patients (phase 1) and 854 patients enrolled in post-trial registries (NYHA Class I/II). At 7 years of follow up, the cumulative rate from any cause among patients with left bundle-branch block (LBBB) was 18% among those randomly assigned to CRT-D as compared to 29% among those randomly assigned to defibrillator only. CRT-D was not associated with benefit and possibly harm in those without LBBB. The authors conclude that in those with mild heart failure symptoms with LBBB and left ventricular dysfunction, early intervention with CRT-D was associated with significant long-term survival benefit. This study has subsequently been published – [NEJM 2014 DOI: 10.1056/NEJMoa1401426](http://nejm.org/doi/10.1056/NEJMoa1401426).
2. **MSC-HF** (*Autologous Mesenchymal Stromal Cell Therapy in Heart Failure*): In this trial, 59 patients with chronic ischemic heart failure despite maximal medical therapy without coronary revascularization as an option with LVEF < 45% and NYHA Class 2 to 3 were randomized 2:1 to autologous mesenchymal stromal cell therapy or placebo. Cells were obtained from patients and amplified in the laboratory, and then injected into ischemic viable myocardium. Of those randomized, 37 of 39 receiving cell therapy and 18 of 20 controls completed follow up at 6 months. At that time, mean LV end-systolic volume, LV ejection fraction, stroke volume and end-systolic myocardial mass had improved significantly in the cell therapy group, both with respect to baseline and the control group. However, improvements were noted in NYHA class, six-minute-walk and quality of life in both groups. Notably, the sample size is small and improvement in ejection fraction was by a five-percentage point increase. It is unclear whether the gains noted in this study translate into clinical benefit. Further study is needed.

3. **Factors associated with hospital length of stay in acute heart failure in the United States.** Sharma PP, Yu AT, Johnson KW et al. In this cross-sectional study of the 2011 NIS from the Healthcare Cost and Utilization Project the length of stay and cost of heart failure hospitalization is examined closely. Patients are divided into those admitted for < 4 days, 4 to 7 days and > 7 days. Discharged with stays > 7 days had higher percentage of comorbidities (i.e. renal insufficiency, COPD). In addition, adjusted costs were close to 2-fold and 5-fold higher for hospitalization with stays 4 to 7 days and > 7 days, respectively, compared to < 4 days.

Additional presentations of interest to ISHLT members include the following:

1. **30-Day Readmissions in Continuous-Flow Left Ventricular Assist Device Patients Are a Marker for Adverse Outcomes.** Sayer G, Cotts W, Macaluso G et al.
   In this single-center study, Sayer et al examined their cohort of LVAD patients implanted between 2005-2013 to evaluate the causes of 30-day (30d) readmissions and their association with long-term outcomes. Among 239 patients (mean age 60, 77% male, 82% destination therapy) with a median follow-up of 1.3 years, 29% were readmitted within 30 days. The most common causes of 30d readmission were GI bleeding (21%), infection (16%) and HF (13%). Regression analysis showed that 30d readmission significantly predicted readmission rate (β=4.0, p<0.001). In Kaplan-Meier analysis, survival was worse in patients with a 30d readmission. The results demonstrate that 30d readmissions are common in LVAD patients and are associated with a high rate of subsequent admissions as well as increased mortality. These findings suggest that readmitted LVAD patients may need to be more closely monitored for adverse outcomes.

2. **The Total Artificial Heart: An Effective Bridge to Transplantation in Patients with Advanced Heart Failure.** Gurudevan SV, Arabia F, Esmailian F et al.
   This is the largest single center series of patients supported with the total artificial heart (TAH). Gurudevan et al evaluated the clinical outcomes of 22 patients with end-stage heart
failure who were referred for heart transplantation (HT) and underwent implantation of the Syncordia TAH (Syncordia Systems, Tucson, AZ) as a bridge strategy. Mean LVEDD was 60 mm and mean LV ejection fraction was 24%; right ventricular function was normal in 5 patients, but mildly, moderately and severely depressed in 9, 2 and 6 patients, respectively. There were a total of 7 deaths (32%). 3 patients had cerebrovascular accidents and there were no device-related infections. 5 successfully underwent HT, while the remaining 10 patients are alive and awaiting a donor organ. 36% were discharged home with a portable home drive-line. This data reveals that the TAH may be considered as an effective bridge strategy to HT and may allow patients to wait at home.

3. **Cardiac Retransplantation: How Far Have We Come?** DePasquale E, Cheng R, Nsair A et al.
   In this single-center study, the outcomes of 1378 primary transplant and 95 redo transplant recipients were examined by era (1987-2001 & 2002-2012). Transplant vasculopathy was the most prevalent indication in the redo heart transplantation group. Overall, mortality was increased in the redo transplant group (HR 1.52, CI 1.15-2.02). However, in the more recent era survival is comparable to primary heart transplantation. The authors suggest that in selected patients redo heart transplantation is associated with comparable short and long-term outcomes as first-time heart transplantation.

4. **Pre-transplant Chemotherapy does not Affect Post-transplant Outcome in Patients Undergoing OHT for AL Cardiomyopathy.** Sarwat N, Niehaus E, Tabtabai S et al.
   Working on the hypothesis that pre-HT chemotherapy (CTX) targeting clonal plasma cell light chain production may lead to improved survival (versus the conventional method of HT followed by CTX and autologous stem cell transplant), Sasrwat et al conducted a multinational database study spanning 7 HT centers that manage patients with heart failure due to AL cardiac amyloidosis. Among 103 patients, 89 (86%) were waitlisted for HT and 56 (64%) survived to HT. 44% of the waitlisted patients received plasma cell targeted chemotherapy with bortezomib, lenalidomide, melphalan, or cyclophosphamide. Chemotherapy use did not differ in waitlisted patients who survived to HT (45%) and those that died prior to HT (42%, p=1.0). Post HT infection rates were similar in +CTX (21%) and -CTX (14%, p=0.72). Post HT survival was similar in +CTX and -CTX patients.

5. **Severe Breathlessness at Rest is not the most important Presentation of Acute Heart Failure.** Shoaib A, Kassianides X, Cleland J et al.
   Cleland and his colleagues from the United Kingdom performed a retrospective study examining patients who were short of breath at rest or comfortable at rest but breathless on slight exertion. The object of this presentation was to better identify, risk stratify, and classify heart failure patients by their symptoms. Interestingly, more patients died by 180 days after a heart failure presentation who were breathless on slight exertion rather than short of breath at rest. It was noted clinical trials may exclude this very sick group of patients by focusing on breathlessness rather than peripheral congestion.
6. **Survival in Adults Undergoing Primary Heart Transplant after Fontan Palliation.**
Reardon LC, DePasquale E, Cruz D et al.
Heart transplant survival in pediatric and adult recipients with pretransplant failing Fontan physiology has previously reported to be significantly reduced with 77% one-year survival. In a single-center study, the outcomes of adult failing Fontan patients undergoing heart transplantation were examined. Of 744 recipients, 13 patients were identified between 2002 and 2013. In this cohort, 90-day and one-year survival was 100% with three-year survival of 83% and 5-year survival of 80%. The authors conclude that survival in this cohort in a modern era was similar to non-congenital patients at their center.

Disclosure statement: the authors have no conflicts of interest to report.