
12th International Conference on Pediatric Mechanical Circulatory Support Systems & Pediatric Cardiopulmonary Perfusion

May 18-21, 2016
New York, NY, USA

UPDATED SCIENTIFIC PROGRAM

Wednesday, May 18, 2016

1:00pm – 5:00pm **On-Site Registration (only if space is available) Exhibit/Wet-Lab Setup**

Thursday, May 19, 2016

7:00am – 8:00am **Registration, Breakfast & Vendor Exhibits**

8:00am – 8:10am **Welcome Remarks**
Emile A. Bacha, MD

8:10am – 10:30am **PLENARY SESSION 1:**
Pediatric Mechanical Circulatory Support Systems: 2016 Update
Moderator: *Emile A. Bacha, MD and Robert D.B. (Jake) Jaquiss, MD*

8:10am – 8:30am **Current Pediatric Mechanical Support: Berlin Heart/Centrimag-2015**
Antonio Amodeo, MD

8:30am – 8:50am **Use of Adult VADs in Pediatric Patients**
Michael Hubler, MD, PhD

8:50am – 9:10am **Use of VAD/Mechanical Support in Single Ventricle Patients**
Paul Chai, MD

9:10am – 9:30am **Use of the Syncardia TAH**
Robert D.B. (Jake) Jaquiss, MD

9:30am – 9:50am **Anticoagulation During VAD Therapy**
Ravi Thiagarajan, MD, MPH

9:50am – 10:10am **Pediatric Cardiac Transplantation Following VAD Therapy**
Marc E. Richmond, MD, MS

10:am – 10:30am **Panel Discussion**

10:30am - 11:15am	Coffee Break, Vendor Exhibits & Posters
11:15am - 11:45am	Keynote Lecture #1 ECMO for CHD <i>Giles J. Peek, MD</i>
11:45am - 12:15pm	Key Note Lecture #2 Surgical Management of Pediatric Heart Failure - The Boston Approach <i>Francis Fynn-Thompson, MD</i>
12:15pm - 12:30pm	Presentation of Young Investigator's Awards
12:30pm - 1:30pm	Lunch Break & Vendor Exhibits
1:30pm - 3:30pm	PLENARY SESSION 2: Minimizing Adverse Effects of CPB in Neonates and Infants Moderator: <i>Giovanni Battista Luciani, MD and Edward Hickey, MD</i>
1:30pm - 1:50pm	History of CPB <i>Viktor Hraska, MD, PhD</i>
1:50pm - 2:10pm	Attenuating the Systemic Inflammatory Response and Blood Conservation Techniques for a Diverse Patient Population - The Columbia Experience <i>Michael Brewer, MS, CCP</i>
2:10pm - 2:30pm	Inflammation in CPB/MUF: Is This Still an Issue? <i>Ross M. Ungerleider, MD, MBA</i>
2:30pm - 2:50pm	Use of NIRS/Other Monitoring Techniques in CPB/Cerebral Protection Techniques During CPB <i>Giovanni Battista Luciani, MD</i>
2:50pm - 3:10pm	Temperature Management in CPB: Is it Still Relevant/ Myocardial Protection <i>Edward Hickey, MD</i>
3:10pm - 3:30pm	Impact of Translational Research on Optimization of the Neonatal CPB Circuits and Techniques - The Penn State Hershey Approach <i>Akif Üндar, PhD</i>
3:30pm - 4:15pm	Coffee Break & Vendor Exhibits/Wet-Labs
4:15pm - 5:30pm	Regular Slide Presentations #1: Moderators: <i>Ross M. Ungerleider, MD, MBA and Francis Fynn-Thompson, MD</i>



5 slide presentations – 15 minutes each (selected from submitted abstracts)

S1. Development of a Pediatric Cardiac Mechanical Support Program

Abhishek Kashyap, MD¹, Joseph W. Turek MD PhD¹, Samantha J. Wagner¹, Laura Felderman RN BSN CCTC¹, Elizabeth A. Jagers MBA CPA¹, R. Erik Edens MD PhD², and Peter J. Gruber MD PhD¹

Department of Cardiothoracic Surgery, Division of Pediatric Cardiac Surgery¹, Stead Family Department of Pediatrics², University of Iowa Hospitals and Clinics, Iowa City, IA, USA

S2. Hybrid Continuous-Flow Total Artificial Heart for Pediatric Patients

Carson Fox, MS¹, Nohra Murad¹, Paul Allaire, PhD², Tim Dimond, PhD², Robert Mentzer, Jr, MD³, Francisco Arabia, MD³, Joseph Rossano, MD⁴, and Amy Throckmorton, PhD¹

¹School of Biomedical Engineering, Science, and Health Systems, Drexel University, Philadelphia, PA USA; ²Rotor Bearing Solutions International, Charlottesville, VA, USA; ³Cedars-Sinai Heart Institute, Los Angeles, CA, USA; ⁴Pediatric Cardiology, The Children's Hospital of Philadelphia, Philadelphia, PA, USA

S3. Evolution of Mitral Regurgitation in Berlin Heart EXCOR LVAD Patients Less Than 10kg

A. Di Molfetta*, S. Filippelli*, G. Ferrari^o, R. Iacobelli*, R. Adorisio*, M. Pilati*, A. Toscano*, S. Morelli*, A. Amodeo*

*Department of Pediatric Cardiology and Cardiac Surgery- Pediatric Hospital Bambino Gesù- Rome, Italy ^oCardiovascular Engineering Laboratory- Institute of Clinical Physiology-Rome, Italy [^]KU-Leuven- Department of Cardiac Surgery, Belgium

S4. Successful Bridge-to-Transplant of Functionally Univentricular Patients with a Modified Continuous-Flow Ventricular Assist Device

Michael C. Monge MD^{1,3}, Bradley T. Ku/at, CCP¹, Osama El tayeab, MD^{1,3}, Neale R. Zingle, CCP¹, Steven T. Moss, CCP¹, Jeffrey G. Gossett, MD^{2,4}, Elfriede Pahl, MD^{2,4}, John M. Costello, MD^{2,4}, Carl L Backer, MD^{1,3}

Divisions of Cardiovascular-Thoracic Surgery¹ and Cardiology², Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois Departments of Surgery³ and Pediatrics⁴, Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA

S5. A Computer Controlled Hydraulic Simulator of the Pediatric Circulation

Daniel S. Torres^{1,*}, Idágene A. Cestari, PhD^{1,2}

Biomedical Engineering Program of the Polytechnic School of Engineering¹, Bioengineering Division of the Heart Institute (InCor)², University of São Paulo, SP, Brazil. *Scholarship granted by FAPESP (São Paulo Research Foundation)

Friday, May 20, 2016

7:00am – 8:00am **Registration, Breakfast & Vendor Exhibits**

8:00am – 10:00am PLENARY SESSION 3:

ECLS: Utilization, Management and Outcomes

Moderators: *Paul J. Chai, MD and J. William Gaynor, MD*

8:00am – 8:20am **Setting Up a New ECMO Program**

Eva Cheung, MD

8:20am – 8:40am **ECMO in the Field/Transport**

Matthew Bacchetta, MD, MBA, MA

8:40am – 9:00am **E-CPR**

Ganga Krishnamurthy, MD

9:00am – 9:20am **Long-term Follow-up E-CPR**

John E. Costello, MD

9:20am – 9:40am **Long-term ECLS Follow-up**

Hanneke Ijsselstijn, MD, PhD

9:40am – 10:00am **Outcomes of the Multi-Center European Trial on a New ECLS System for Neonates and Infants**

Brigitte Stiller, MD

10:00am – 10:45am **Coffee Break, Vendor Exhibits & Posters**

10:45am-11:15am Key Note Lecture #3

Complex Cardiac Repairs: Are they justified?

Emile A. Bacha, MD

11:15am-11:45am Key Note Lecture #4

Surgical Risk Stratification

J. William Gaynor, MD

11:45am-12:00pm **Panel Discussion**

12:00pm-1:00pm **Lunch Break & Vendor Exhibits**

1:00pm – 3:00pm Regular Slide Presentations #2

Moderators: *John E. Costello, MD, MPH and Brigitte Stiller, MD*

8 slide presentations – 15 minutes each (selected from submitted abstracts)

S6. Routine Use of Distal Arterial Perfusion in Pediatric Femoral Venous-arterial Extracorporeal Membrane Oxygenation

Christine A. Schad, MD¹, Brian P. Fallon, BA², Julie Monteagudo, MD¹, Shunpei Okochi, MD¹, Eva W. Cheung, MD³, Nicholas J. Morrissey, MD⁴, Angela V. Kadenhe-Chiweshe, MD¹, Gudrun Aspelund, MD¹, Steven Stylianos, MD¹ and William Middlesworth, MD¹

¹Department of Surgery, Division of Pediatric Surgery, ²Columbia University College of Physicians and Surgeons, ³Division of Pediatric Cardiology, Pediatric Critical Care Medicine, Department of Surgery, ⁴Division of Vascular Surgery, New York-Presbyterian, Columbia University Medical Center, New York, NY, USA

S7. ECMO Outcomes After the Comprehensive Stage II Procedure in Patients with Single Ventricles

Daniel Gomez, CCP, Vicky Duffy, RRT, Diane Hersey, RN Carl Backes, MD, Peter Rycus, MPH, Patrick McConnell, MD, Jordan Voss, CCP, Mark Galantowicz, MD, Clifford L Cua, MD

The Heart Center, Nationwide Children's Hospital, Columbus, OH, USA

S8. Selective Cerebro-Myocardial Perfusion in Complex Neonatal Aortic Arch Pathology: The Midterm Results

Stiljan Hoxha, MD, Riccardo Giuseppe Abbasciano, MD, Salvatore Torre, MD, Daniele Ferrarini, CCP, Tiziano Menon, CCP, Luca Barozzi, MD, Giuseppe Faggian, MD, and Giovanni Battista Luciani, MD

Division of Cardiac Surgery, Department of Surgery, University of Verona School of Medicine, Verona, Italy

S9. Myocardial Protective Effect of Cardioplegic Cardiac Arrest Versus Ventricular Fibrillation During Cardiopulmonary Bypass on Immediate Post-Operative and Mid-Term Left Ventricular Function

Sang Yoon Kim, MD¹, Sungkyu Cho, MD¹, Ji-Hyun Lee, MD², Jin-Tae Kim, PhD², Woong-Han Kim, PhD¹

¹Department of Thoracic and Cardiovascular Surgery, College of medicine, Seoul National University Hospital, Seoul, Korea, ²Department of Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Korea

S10. A Hybrid Pediatric Cardiopulmonary Bypass Circuit for Complex Suprahepatic Inferior Vena Cava Reconstruction

Daniel R Duncan, CCP FPP, and Paul J Kerins, CCP

The Nemours Cardiac Center, A.I. duPont Hospital for Children, Wilmington, DE, USA

S11. Development of a Droplet Based Microfluidic Immunoassay for Biomarker Measurement during Cardiopulmonary Bypass

Andrew Pskowski and Jeffrey D. Zahn

Department of Biomedical Engineering, Rutgers University, Piscataway, New Jersey, USA

S12. HeartWare Ventricular Assist Device Implantation for Failing Fontan Physiology

Bartłomiej Imielski, MD¹, Robert Niebler, MD², Steven Kindel, MD³, Ronald Woods, MD PhD¹

Department of Cardiothoracic Surgery, Medical College of Wisconsin, Milwaukee, WI¹; Department of Pediatrics, Section of Critical Care²; Section of Cardiology³, Medical College of Wisconsin, Milwaukee, WI

S13. Ventricular Energetics in pediatric LVAD patients: a retrospective clinical study

*A. Di Molfetta**, *G. Ferrari*^o, *R. Iacobelli**, *R. Adorisio**, *M. Pilati**, *A. Toscano**, *S. Filippelli**, *S. Morelli**, *A. Amodeo**

*Department of Pediatric Cardiology and Cardiac Surgery- Pediatric Hospital Bambino Gesù- Rome^o Cardiovascular Engineering Laboratory- Institute of Clinical Physiology-Rome^o KU-Leuven- Department of Cardiac Surgery

3:00pm – 3:45pm **Coffee Break, Vendor Exhibits, Posters & Wet-Labs**

3:45pm – 5:45pm **Parallel Sessions**
Session I: Wet-Labs by Exhibitors– TBA - (4 sessions, 30 minutes each)
Session II: Hospital tours

Saturday, May 21, 2016

7:00am – 8:00am Registration, Breakfast & Vendor Exhibits

8:00am – 10:00am PLENARY SESSION 4:

Engineering Approach to Pediatric Cardiovascular Medicine: New Devices

Moderators: *William M. DeCampli, MD, PhD and Akif Ündar, PhD*

8:00am – 8:20am **Completing the Development of the Infant Jarvik 2015 Ventricular Assist Device**

Robert Jarvik, MD

8:20am – 8:40am **Flow Dynamics During Mechanical Support**

William M. DeCampli, MD, PhD

8:40am – 9:00am **Transplant Following Long-term Non-pulsatile LVAD Support**

Hiroo Takayama, MD, PhD

9:00am – 9:20am **Pulsatile Versus Non-pulsatile Flow During ECLS**

Akif Ündar, PhD

9:20am – 9:40am **Clinical Evaluation of Medos Hilite LT Oxygenators in ECLS**

Kellie Schiavo, CCP

9:40am – 10:00am **Pediatric Mechanical Circulatory Support Systems in Latin America**

Luiz Fernando Caneo, MD, PhD, Sao Paulo, Brazil

10:00am – 10:45am Coffee Break, Vendor Exhibits & Posters

10:45pm – 1:00pm Regular Slide Presentations #3

Moderator: *Emile A. Bacha, MD and Viktor Hraska, MD, PhD*

8 slide presentations – 15 minutes each (selected from submitted abstracts)

S14. Tapered Hypothermic Cardiopulmonary Bypass Allows Reduction of Air Microembolism in Infants.

Abbasciano RG, MD, Torre S, MD, Hoxha S, MD, Biondani E, CCP, Barozzi L, MD, Menon T, CCP, Faggian G, MD, Luciani GB, MD

Division of Cardiac Surgery, Department of Surgery, University of Verona School of Medicine, Verona, Italy

S15. Continuous Hemofiltration Balance as a Predictor of Outcomes in Congenital Cardiac Surgery

Ragab S. Debis¹, Mazen S. Faden¹, Mahmoud A. Abdulaziz¹, Ahmed A. Elassal^{1,2}, and Osman O. Al-Radi¹

¹Abdulla Bakhsh Children's Heart Center, King Abdulaziz University, Jeddah, Saudi Arabia; ²Cardiothoracic Surgery Department, Zagazig

University, Egypt

S16. Externally Applied Compression Therapy for Fontan Patients

Joe Hernandez, MS¹, Sam Lee, MD², William Moskowitz, MD², Steven Chopski, PhD³, and Amy Throckmorton, PhD³

¹Biomedical Engineering, Virginia Commonwealth University, Richmond, VA USA; ²Pediatric Cardiology, Children's Hospital of Richmond, Virginia Commonwealth University, Richmond, VA USA; ³School of Biomedical Engineering, Science, and Health Systems, Drexel University, Philadelphia, PA USA

S17. Effects of Prime Volume on Serum Ionized Calcium in Children on Venous-Arterial ECMO

Shunpei Okochi, MD¹, Christine A. Schad, MD¹, Michael P. Brewer, MS CCP², Angela V. Kadenhe-Chiweshe, MD¹, William Middlesworth, MD¹, Eva W. Cheung, MD³

¹Department of Surgery, Division of Pediatric Surgery, ²Cardiovascular Perfusion, ³Department of Pediatrics, Division of Pediatric Cardiology and Critical Care Medicine, Morgan Stanley Children's Hospital of New York - Presbyterian, Columbia University Medical Center, New York, NY, USA

S18. An In-Vitro study for Comparison of Artificial Heart Valve Prostheses Using Hemodynamic Energy

Duck Hee Lee, MS^{1,2}, Jong Tae Lee, BS², ChiBum Ahn, PhD⁴, YeonSoo Shin, BS², Jaesoon Choi, PhD¹, Jae Seung Jung, MD^{2,3}, Ho Sung Son, MD^{2,3} and Kyun Sun, MD^{2,3}

Biomedical Engineering R&D Center, Asan Institute for Life Science, Asan Medical Center, Seoul, Korea¹, Korea Artificial Organ Center, College of Medicine, Korea University, Seoul, Korea², Department of Thoracic and Cardiovascular Surgery, College of Medicine, Korea University, Seoul, Korea³, Department of Molecular Medicine, Graduate School of Medicine, Gachon University, Incheon, Korea⁴

S19. A Novel Method for Evaluation of Intracellular Calcium during Electrical Stimulation inside a Plate Reader

Douglas M. Veronez^{1,}, Ismar N. Cestari, PhD²; Idágene A. Cestari, PhD^{1,2}*

Biomedical Engineering Program of the Polytechnic School of Engineering¹, Bioengineering Division, Heart Institute (Incor)², University of São Paulo, São Paulo, SP, Brazil. * Scholarship granted by FAPESP (São Paulo State Research Foundation)

S20. Acute Biventricular Interaction in Pediatric Patients Implanted With Continuous Flow and Pulsatile Flow LVAD: A Simulation Study

A. Di Molfetta, G. Ferrari^o, R. Iacobelli*, L. Fresiello[^], M. Pilati*, A. Toscano*, S. Filippelli*, S. Morelli*, A. Amodeo**

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S21. Building a Better Neonatal ECLS Circuit: Comparison of Hemodynamic Performance and Gaseous Microemboli Handling in

Different Pump and Oxygenator Technologies

Payal Trivedi, DO^{1,2}, Shigang Wang, MD¹, Karl Woitas CCP¹, Allen R. Kunselman, MA³, Akif Ündar, PhD^{1, 4}, and Kristen Glass, MD^{1,2}

Penn State Hershey Pediatric Cardiovascular Research Center, Department of Pediatrics¹, Division of Newborn Medicine², Public Health and Sciences³, Surgery and Bioengineering⁴. Penn State Milton S. Hershey Medical Center, Penn State Hershey College of Medicine, Penn State Hershey Children's Hospital, Hershey, PA, USA

Digital Poster Presentations – May 19-21, 2016

P1. In-vitro Evaluation of an Alternative Neonatal ECLS Circuit on Hemodynamic Performance and Bubble Trap

Shannon B. Spencer, BSc¹, Shigang Wang, MD¹, Karl Woitas, CCP¹, Kristen Glass, MD¹, Allen R. Kunselman, MA², and Akif Ündar, PhD^{1,3}

Penn State Hershey Pediatric Cardiovascular Research Center, Department of Pediatrics¹, Public Health and Sciences², Surgery and Bioengineering³. Penn State Milton S. Hershey Medical Center, Penn State Hershey College of Medicine, Penn State Hershey Children's Hospital, Hershey, PA, USA

P2. Mechanical Circulatory Support for Pediatric Patients with Fulminant Myocarditis

Shu-Chien Huang, Yih-Sharnng Chen, Heng-Wen Chou, Nai-Hsin Chi, Chih-Hsien Wang, Shoei-Shen Wang

Cardiac Surgical Division, Surgical Department, National Taiwan University Hospital, Taipei, Taiwan

P3. Trend of Echocardiographic Parameters in Pediatric Patients with Berlin Heart EXCOR LVAD: A Prospective Observational Study

R. Iacobelli¹, A. Di Molfetta¹, S. Filippelli¹, A. Toscano¹, S. Morelli¹, G. Ferrari², MG. Trivella², A. Amodeo¹

¹Department of Pediatric Cardiology and Cardiac Surgery- Pediatric Hospital Bambino Gesù- Rome; ²Cardiovascular Engineering Laboratory- Institute of Clinical Physiology-Rome^KU-Leuven- Department of Cardiac Surgery

P4. Continuous Metabolic Monitoring Allows Tapering of Hypothermic Cardiopulmonary Bypass During Open-Heart Repair in Infancy.

Salvatore Torre, MD, Riccardo Giuseppe Abbasciano, MD, Stiljan Hoxha, MD, Elisa Biondani, CCP, Luca Barozzi, MD, Tiziano Menon, CCP, Giuseppe Faggian, MD, Giovanni Battista Luciani, MD

Division of Cardiac Surgery, Department of Surgery, University of Verona School of Medicine, Verona, Italy

P5. Validation of a new model of cardiopulmonary bypass in rat with Circulatory Arrest and Selective Antegrade Cerebral Perfusion

Daniele Linardi¹, Elisabetta Milani¹, Tiziano Menon¹, Maddalena Tessari¹,

Grygory Tsenov², Andrea del Pilar Rodriguez², Giang Tong³, Katharina Schmitt³, Giovanni Battista Luciani¹, Giuseppe Faggian¹, Alessio Rungatscher¹

University of Verona, Verona, Italy, Department of Cardiac Surgery¹

University of Verona, Verona, Italy, Department of Anatomy and Histology² University of Berlin, Berlin, Germany, Klinik für angeborene Herzfehler und Kinderkardiologie Deutsches Herzzentrum Berlin³

P6. Does Flexible Arterial Tubing Retain More Hemodynamic Energy During Pediatric Pulsatile ECLS?

Shigang Wang, MD¹, Allen R. Kunselman, MD², Akif Ündar, PhD^{1,3}
Pediatric Cardiovascular Research Center, Department of Pediatrics¹,
Department of Public Health Sciences², Surgery and Bioengineering³,
Penn State Milton S. Hershey Medical Center, Penn State Hershey College
of Medicine, Penn State Hershey Children's Hospital, Hershey, PA, USA

P7. Contemporaneous Use of Continuous and Pulsatile Flow VAD on A Fontan Patient: A Simulation Study

A. Di Molfetta*, G. Ferrari[°], R. Iacobelli*, L. Fresiello[^], M. Pilati*, A. Toscano*,
S. Filippelli*, S. Morelli*, A. Amodeo*

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Hospital Bambino Gesù- Rome; [°]Cardiovascular Engineering Laboratory-
Institute of Clinical Physiology-Rome[^]KU-Leuven- Department of
Cardiac Surgery

P8. Biventricular Assistance Using Both Continuous and Pulsatile Flow VAD: A Simulation Study on Pediatric Patients

A. Di Molfetta*, G. Ferrari[°], R. Iacobelli*, L. Fresiello[^], M. Pilati*, A. Toscano*,
S. Filippelli*, S. Morelli*, A. Amodeo*

*Department of Pediatric Cardiology and Cardiac Surgery- Pediatric
Hospital Bambino Gesù- Rome[°]Cardiovascular Engineering Laboratory-
Institute of Clinical Physiology-Rome[^]KU-Leuven- Department of
Cardiac Surgery

P9. Does an Open Recirculation Line Affect The Flow Rate and Pressure in A Neonatal ECLS Circuit with A Centrifugal or Roller Pump?

Shigang Wang, MD¹, Shannon B. Spencer, BSc¹, Karl Woitas, CCP¹, Kristen
Glass, MD¹, Allen R. Kunselman, MA², and Akif Ündar, PhD^{1,3}

Penn State Hershey Pediatric Cardiovascular Research Center,
Department of Pediatrics¹, Public Health and Sciences², Surgery and
Bioengineering³. Penn State Milton S. Hershey Medical Center, Penn State
Hershey College of Medicine, Penn State Hershey Children's Hospital,
Hershey, PA, USA

P10. Can Pulsatile Flow be Synchronized with Various Heart Rates and Cardiac Arrhythmias During ECLS? An In-Vitro Study

Shigang Wang, MD¹, Shannon B. Spencer, BSc¹, Allen R. Kunselman, MD²,
Akif Ündar, PhD^{1,3}

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Department of Public Health Sciences², Surgery and Bioengineering³,
Penn State Milton S. Hershey Medical Center, Penn State Hershey College
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