



*5th International Conference
Pediatric Mechanical Circulatory Support Systems &
Pediatric Cardiopulmonary Perfusion*

*May 27-30, 2009 ~ Dallas, Texas, USA
Hilton Anatole Dallas*

UPDATED SCIENTIFIC PROGRAM (March 16, 2009)

<http://www.hmc.psu.edu/childrens/pedscpb/>

Wednesday, May 27

2:00pm – 5:00pm

PEDS Conference Wet Labs

Co-Chairs: Richard Ginther, Jr, CCP (Dallas, TX), Tami Rosenthal, CCP, MBA² (Philadelphia, PA), and Akif Ündar, PhD, (Hershey, PA)²

Mast Mounted S5 with Neonatal Circuit

Tami Rosenthal, CCP, MBA (Philadelphia, PA)²

“Micro” Circuit

Richard Ginther, Jr., CCP (Dallas, TX)²

Pulsatile vs. Non-Pulsatile Perfusion & Intraoperative Neuromonitoring and Microemboli Detection and Classification (EDAC) system

Karl Woitas, CCP (Hershey, PA), Stephen J. Kimatian, MD (Cleveland, OH)²

MEDOS Deltastream Blood Pump and Console

Shigang Wang, MD (Beijing, China)²

New ECMO Circuit with a Levitronix Centrifugal Pump for Pediatric and Adult Patients

Aly El-Banayosy, MD (Hershey, PA)²

6:00pm – 7:30pm

**PEDS Conference Surgical Videos
(up to 8 videos)**

Co-Chairs: John L. Myers, MD (Hershey, PA) and V. Mohan Reddy, MD² (Stanford, CA)²

7:00am – 8:00am PEDS Conference Registration/Speaker Ready Room Open/
Breakfast

8:00am Posters Placed ~ Posters will remain in place from 8am – 7pm

Combined General Session of ASAIO, IFAO, and Pediatrics

7:45am – 8:00am **Welcome**
Wayne Richenbacher, MD - President ASAIO
Akif Undar, PhD - PEDS Conference Founder

8:00am – 8:20am **IFAO Osbourne Award**

8:20am – 8:50am **LECTURE - In Vitro Organ Models**
Linda Griffith, PhD - Professor of Chemical Engineering, MIT

8:50am – 9:40am **SYMPOSIUM - Artificial Organ Technologies for Women**
Dialysis in Women - Thomas Depner, MD - Professor of Internal Medicine, University of California at Davis
Ob/Gyn Tissue Engineering - James Yoo, MD, PhD - Assistant Director, Associate Professor & Head Clinical Translation, Wake Forest University
Breast Implant Update - Andrea Pozez, MD - Chair Plastic Surgery, Virginia Commonwealth University

9:40am – 10:00am **A TRIBUTE TO DRs. WILLEM KOLFF, ADRIAN KANTROWITZ, PEER PORTNER, & MICHAEL DEBAKEY**

10:00am – 10:45am **Exhibits, Posters & Refreshments**

11:00am – 12:00pm **Key Note Lecture – Clinical**
Historical Perspectives and Personal Experiences
William L. Norwood, Jr., MD (Greenville, DE)

Introduction: John L. Myers, MD (Hershey, PA)

12:00pm – 1:00pm **PEDS Conference Registrant Lunch**

1:00pm – 3:00pm **Plenary Session #1: Clinical Heart Failure and Mechanical Support in Children**

Co-Chairs: Elizabeth D. Blume, MD (Boston, MA) and Anne Dipchand, MD (Toronto, Canada)

Epidemiology of Pediatric Heart Failure (10 min)
Elizabeth D. Blume, MD (Boston, MA)

Molecular Aspects of Childhood Heart Failure and Targeted Therapies (20 min)

Jeffrey Towbin, MD (Cincinnati, OH)

Patient Selection for Mechanical Support (20 min)

Christopher Almond, MD (Boston, MA)

How the Echocardiographer Can Aid in the Management of the Heart Failure Patient on Mechanical Support (20 min)

Anne Dipchand, MD (Toronto, Canada)

Clinical Trials in Pediatric Cardiology: The Pediatric Heart Network Experience (20 min)

Lynn Mahony, MD (Dallas, TX)

Discussion (30 min)

3:00pm – 3:45pm

Exhibits, Posters & Refreshments

3:45pm – 5:00pm

Mini-Symposium: Anticoagulation in Pediatric Ventricular Support: Clinical Lessons

Co-Chairs: M. Patricia Massicotte, MSc, MD, FRCPC, MHSc (Edmonton, Alberta, Canada) and Sabine H. Däbritz, MD (Germany)

Developmental Hemostasis: The Changing Coagulation System in Neonates, Infants, Teenagers and Adults (15 min)

Lisa Bomgaars, MD (Houston, TX)

Anticoagulation Medications: How Can We Monitor Their Effect? (15 min)

Holger Buchholz, MD (Edmonton, Alberta, Canada)

Is a Standardized Anticoagulation Protocol for Pediatric Ventricular Assist Devices Possible? (15 min)

M. Patricia Massicotte MSc MD FRCPC MHSc (Edmonton, Alberta, Canada)

Pediatric VAD Anticoagulation: Three Clinical Case Presentations (15 min)

Christopher Almond, MD (Boston, MA)

Discussion (15 min)

5:00pm – 7:10pm

Regular Slide Presentations #1 – MCS-ECLS-Bioengineering

Co-Chairs: Aly El-Banayosy, MD (Hershey, PA), Kristine J. Guleserian, MD (Dallas, TX), and Adolfo A. Leirner, MD (Sao Paulo, Brazil)

12 presentations – 10 minutes each (7 min. presentation and 3 min. discussion)

Moderator: Aly El-Banayosy, MD (Hershey, PA)

The Berlin Heart EXCOR Pediatrics – The SickKids experience 2004-2008

Tilman Humpl, MD, Sarah Furness, RN, Colleen Gruenwald, RN, CCP, CPC, Cecilia Hyslop St. George, RN, Glen van Arsdell, MD
SickKids, Toronto, Canada

Pediatric Application of the CircuLite Synergy Micro-Pump Technology

Gail G. Farnan, RN¹, Oliver Marsille, PhD¹, Wolfgang Kerkhoffs¹, Robert C. Farnan^{1,2},
Changfu Wu², Zhongjun J Wu, PhD², Bartley P Griffith, MD^{2,3}

¹CircuLite, Inc., Saddle Brook, NJ and ²University of MD, Baltimore, MD.
³University of Maryland School of Medicine, Baltimore, MD.

Bridge-to-bridge-to-Transplantation in Berlin Heart Era

Michiaki Imamura, MD, PhD, Stephanie Rockett, APN, MNsc, Janet Bryant, RN,
BSN, Parthak Prodhan, MD, Michael Schmitz, MD, W. Robert Morrow, MD,
Elizabeth Frazier, Robert D.B. Jaquiss, MD

Arkansas Children's Hospital, University of Arkansas for Medical Sciences,
Pediatric Cardiac Surgery, Cardiology, and Cardiac Anesthesiology, Little Rock,
Arkansas, USA

Exchange Transfusion during Heart Transplantation for Children on Warfarin Therapy

Kim-Chi Tran, Osman O. Al-Radi, Osami Hongo, Jian Wang, Colleen Gruenwald,
Glen S. Van Arsdell
SickKids, Toronto, Canada

Moderator: Kristine J. Guleserian, MD (Dallas, TX)

Better Outcomes with Ventricular Assist Device (VAD) vs ECMO as a Bridge to Pediatric Heart Transplantation

Anne I Dipchand MD, Cedric Manlhiot BSc, Brian W McCrindle MD,
Glen Van Arsdell MD, Tilman Humpl MD
Labatt Family Heart Centre, Hospital for Sick Children, Toronto, Canada

Extracorporeal Life Support in Pediatric Patients - Outcome of a Single Centre

Coskun ST¹, Coskun KO², Popov AF², Hinz³, Özpeker CU¹, Blanz U¹, Weitkemper
HH¹, Schmitto JD², Morshuis M¹, Kececioglu D^o, Sandica E¹, Körfer R¹

^oDepartment of Pediatric Cardiology, ¹Department of Cardiovascular Surgery,
Heart and Diabetes Centre North-Rhine Westphalia, Ruhr-University of Bochum,
Bad Oeynhausen Germany; ²Department of Thoracic and Cardiovascular surgery,
³Department of Anaesthesiology, Emergency and Intensive Care Medicine,
University of Göttingen, Germany

Extracorporeal Membrane Oxygenation Following Norwood Stage 1 Procedures

Shinya Ugaki, Mahito Nakakura, Takuma Doguchi, Eiji Ito, Hironori Ebishima,
Yasuhiro Fujii, Shingo Kasahara, Sadahiko Arai, and Shunji Sano
Department of Cardiovascular Surgery, Okayama University Hospital, Okayama,
Japan

Comparison of Two Types of ECLS Membrane Oxygenators with Pulsatile and Nonpulsatile Perfusion

Nikkole Haines, BS, Shigang Wang, MD, John L. Myers, MD, Akif Ündar, PhD
Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, and Bioengineering, Penn State College of Medicine, Penn State Children's Hospital, Hershey, Pennsylvania, USA

Moderator: Adolfo A. Leirner, MD (Sao Paulo, Brazil)

Evaluation of an Ultra-Compact Extracorporeal Membrane Oxygenation (ECMO) System for Pediatric Use in an Acute Animal Study

Teruyuki Hayashi¹, MS, Eisuke Tatsumi², MD, Nobumasa Katagiri², MS, Toshihide Mizuno², DVM, Toshikatsu Yagihara³, MD

¹Department of Clinical Engineering, ²Department of Artificial Organs,

³Department of Cardiovascular Surgery, National Cardiovascular Center, Suita, Osaka, Japan

Application of Computer Modeling of Systemic VAD Support in Failing Fontan Physiology

Lucian A. Durham, III, MD, PhD, Harold M. Burkhart, MD, Joseph A. Dearani, MD, Frank Cetta, Jr., MD, Sabrina D. Phillips, MD, Kartik Sundareswaran, PhD, Soon J. Park, MD

Divisions of Cardiovascular Surgery and Pediatric Cardiology, The Mayo Clinic, Rochester, MN and Thoratec Corp., Pleasanton, CA. USA

Pediatric Mechanical Support with Artificial Myocardium System with Baroreflex Function

Tomoyuki Yambe, MD, Yasuyuki Shiraishi, PhD, Hidekazu Miura, PhD, Kou Imachi, PhD

Department of Medical Engineering and Cardiology, Institute of Development, Aging and Cancer, Tohoku University, Sendai, Japan.

Development of a Computer-aided 3 D Bioprinting System for Bioartificial Organ

Seung Joon Song^{1,2}, Jaesoon Choi², Yong Doo Park¹, Kyung Sun^{1,3}

¹Korea Artificial Organ Center, Korea University, Korea, ²Department of Biomedical Engineering, Brain Korea 21 Project for Biomedical Science, College of Medicine, Korea University, Korea, ³Department of Thoracic and Cardiovascular Surgery, College of Medicine, Korea University, Seoul, Korea

Poster Presentations - MCS-ECLS-Bioengineering

Posters will be available for viewing from 8:00am – 7:00pm

Left Ventricular Assist for Pediatric Patients with Dilated Cardiomyopathy Using Medos VAD Cannula and Centrifugal Pump

Shu-Chien Huang, MD, Nai-Hsin Chi, MD, Yih-Sharng Chen, MD, Nai-Kuan Chou, MD, Wen-Je Ko, MD, Shoei-Shen Wang, MD, PhD

Departments of Surgery, National Taiwan University Hospital, Taipei, Taiwan

Management of Deep Wound Complications with Vacuum-Assisted Therapy after Berlin Heart EXCOR[®] Placement in the Pediatric Population

Peter C. Kouretas, MD, PhD, Philip T. Burch, MD, Aditya K. Kaza, MD, Linda M. Lambert, MSN, CFNP, Madolin K. Witte, MD, Melanie D. Everitt, MD, Faizi A. Siddiqi, MD

Departments of Surgery, Pediatrics and Critical Care, The University of Utah, Primary Children's Medical Center, Salt Lake City, Utah

Experience with the Levitronix CentriMag[®] in the Pediatric Population as a Bridge to Decision and Recovery

Peter C. Kouretas, MD, PhD, Aditya K. Kaza, MD, Philip T. Burch, MD, Stephen E. Clayson, MD, Melanie D. Everitt, MD, Craig H. Selzman, MD

Department of Surgery and Pediatrics The University of Utah, Primary Children's Medical Center, Intermountain Medical Center, Salt Lake City, Utah

Initial Clinical Experience with the HeartMate[®] II Ventricular Assist System in a Pediatric Institution

William R. Owens¹, Roosevelt Bryant, III², William J Dreyer³, Jack F. Price³, David L. S. Morales²

¹Division of Congenital Heart Surgery, Texas Children's Hospital, Houston, Texas, U.S.A.

²Michael E DeBakey Department of Surgery, Division of Congenital Heart Surgery, Baylor College of Medicine, Houston, Texas, U.S.A.

³Department of Pediatric Cardiology, Baylor College of Medicine, Houston, Texas, U.S.A.

Hemorrhagic Stroke in a Child with a Low Total Serum Cholesterol and New Support with a Berlin Heart Excor[®] Left Ventricular Assist Device

Wesley A. McKamie, C.C.P., Michael L. Schmitz, M.D., Charles E. Johnson, R.N., C.C.P., Michiaki Imamura, M.D., Ph.D., Robert D. B. Jaquiss, M.D.

^aArkansas Children's Hospital and ^bThe University of Arkansas for Medical Sciences

Orthotopic Heart Transplantation in a Child with Hereditary Spherocytosis

Charles E. Johnson, R.N., C.C.P., Michael L. Schmitz, M.D., Wesley A. McKamie, C.C.P., R. Erik Edens, M.D., Ph.D., Michiaki Imamura, M.D., Ph.D., Robert D. B. Jaquiss, M.D.

^aArkansas Children's Hospital, ^bThe University of Arkansas for Medical Sciences, College of Medicine, ^cUniversity of Iowa Children's Hospital

A Novel Implantable Mechanical Circulatory Support System: The Artificial Ventricle

Hisham M.F. Sherif, MD, Newark, DE, USA

Initial in Vivo Evaluation of the 'TinyPump[™]' for LVAD application

Mariko Kobayashi¹, MD, Masaharu Yoshikawa², MD, PhD, Takashi Kitao¹, DVM Satoshi Shoji¹, Shinya Machida¹, Hideyuki Osawa¹, Taisuke Ishii¹, Satoshi Waguri¹, MS, Tomohiro Konno³, PhD, Kazuhiko Ishihara³, PhD, Setsuo Takatani¹, PhD, DMed

¹Department of Artificial Organs, Tokyo Medical and Dental University,

²Department of Cardiovascular Surgery, Toyota Kousei Hospital, and

³Department of Material Science, School of Engineering, The University of Tokyo

The Effect of Pumpless Extracorporeal Lung Assist in Experimental Lung Injury

Feilong Hei, MD, Yulin Tian, MD, Yongli Cui, MD, Kun Yu, MD, Cun Long, MD
Department Extracorporeal Circulation, Cardiovascular Institute and Fuwai
Hospital, Chinese Academy of Medical Sciences, Peking Union Medical College,
Beijing 100037. China

In vitro Thrombogenicity Evaluation of the TandemTot Pediatric Centrifugal Pump

Amber N. Loree, BS, Robert G. Svitek, PhD.
CardiacAssist, Inc. Pittsburgh, Pennsylvania, USA

Optimal Pressure Regulation of the Pneumatic VAD with Bellows-type Driver

Jung Joo Lee, PhD, Bum Soo Kim, MS, Jaesoon Choi, PhD, Hyuk Choi, PhD, Chi Bum Ahn, MS, Young Won Nam, PhD, Gi Seok Jeong, PhD, Choon Hak Lim, MD, PhD, Ho Sung Son, MD, PhD, Kyung Sun, MD, PhD
Korea Artificial Organ Center, Korea University, Biomedical Science of Brain
Korea 21, College of Medicine, Korea University, Department of Anesthesiology
and Pain Medicine, Korea University Medical College Department of Thoracic and
Cardiovascular Surgery, Korea University Medical College, Seoul, Korea

Estimation of Native Cardiac Output of Patients Under Ventricular Assist Device Support Using Frequency Analysis of Arterial Pressure Waveform

Jun Woo Park, PhD², Jaesoon Choi, PhD¹, Jung Joo Lee, PhD¹, Hyuk Choi, PhD¹,
Byoung Goo Min, PhD³, Kyung Sun, MD, PhD, MBA^{1*}

¹Korea Artificial Organ Center, College of Medicine, Korea University, Seoul,

Korea ²Biomedical Engineering Branch, Research Institute, National Cancer

Center, Gyeonggi, Korea ³Dept. of Biomedical Engineering, College of Medicine,

Seoul National University, Seoul, Korea

Cuff-less and Non-invasive Estimation of Continuous Blood Pressure Based on PTT

Youngsung Kim, Jaesoon Choi, PhD, Kyung Sun, MD, PhD, MBA

Korea Artificial Organ Center, College of Medicine, Korea University, Seoul, Korea

Development of a Control Algorithm to Maintain Full-Filling State of the Blood Pump for a Bellow-type Pneumatic Ventricular Assist Device

C.B. Ahn, MS, J.J. Lee, PhD, J. Choi, PhD, and K. Sun, MD, PhD

Korea Artificial Organ Center, Department of Biomedical Engineering, Brain

Korea 21 Project for Medical Science, College of Medicine, and Department of

Thoracic and Cardiovascular Surgery, College of Medicine, Korea University,

Seoul, Korea

Reliability Study of Extracorporeal Electro-mechanical Pneumatic Biventricular Assist Device

Hyuk CHOI, PhD^{1,2}, Jaesoon Choi, PhD², Kyung Won Nam, PhD⁴, Gi Seok Jeong, PhD², Jung Joo Lee, PhD², Ho Chul Kim, PhD², Chi Bum Ahn, MA², Ho Sung Son, MD, PhD³, Kuk Hui Son, MD, PhD³, Choon Hak Lim, MD, PhD⁵, Yong Doo Park, PhD^{1,2}, Chang Mo Hwang, PhD², Kyung Sun MD, PhD^{2,3}

¹Department of Medical Science, College of Medicine, Korea University, Korea.,²

²Korea Artificial Organ Center, Korea University, Korea.,³Department of Thoracic and Cardiovascular Surgery, College of Medicine, Korea University, Seoul, Korea.,⁴

⁴National Cancer Center, Korea.,⁵Anesthesiology and Pain Medicine, Korea University, Seoul, Korea.

Eulerian Method for Numerical Prediction of Hemolysis in PediaFlow VAD

Jeongho Kim, MS¹, Samuel J. Hund, MS¹, Amanda Daly, MS², Marina V. Kameneva², PhD, James F. Antaki, PhD¹

¹Department of Biomedical Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA, ²Department of Bioengineering, Department of Surgery, University of Pittsburgh, Pittsburgh, Pennsylvania, USA

Aortic Valve Surgery in Congenital Heart Disease: A Single Centre Experience

Coskun KO, Popov AF, Tirilomis T, Schmitto JD, Ruschewski W

Department of Thoracic, Cardiac and Vascular Surgery, University of Goettingen, Germany

A Hemodynamic Evaluation of the Levitronix PediVAS Centrifugal Pump and Jostra HL-20 Roller Pump under Pulsatile and Non-Pulsatile Perfusion in an Infant CPB Model

Noel Ressler, MPH, Alan R. Rider, Allen R. Kunselman, MA, J. Scott Richardson, Kurt A. Dasse, Ph.D, Shigang Wang, MD, Akif Ündar, PhD

Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, Bioengineering, and Health Evaluation Sciences, Penn State College of Medicine, Penn State Children's Hospital, Hershey, Pennsylvania, USA

Levitronix LLC, Waltham, MA, USA

The Aachen MiniHLM – in vitro test results of the new design

Jutta Arens, Dipl.-Ing.¹; Heike Schnoering, MD²; Michael Pfennig, Dipl.-Ing.¹; Ilona Mager¹; Jaime F. Vazquez-Jimenez, MD²; Thomas Schmitz-Rode, MD¹; Ulrich Steinseifer, Dr. Ing.¹ ¹ Applied Medical Engineering, Helmholtz Institute, RWTH Aachen University, Germany ² Pediatric Cardiac Surgery, Medical Faculty, RWTH Aachen University, Germany

7:30pm – 10 pm

PEDS Registrants' Gala Dinner & Awards Recognition

- 7:00am – 8:00am** **PEDS Conference Registration/Speaker Ready Room Open/
Breakfast**
- 8:00am** **Posters Placed ~ Posters will remain in place from 8am – 7pm**
- 8:00am – 10:00am** **PLENARY SESSION #2: Minimizing Adverse Effects of CPB:
A Multi-Disciplinary International Approach**
Co-Chairs: J. William Gaynor, MD (Philadelphia, PA) and Shunji Sano, MD (Okayama, Japan)
- Open Heart Surgery and Cardiopulmonary Support/Bypass in the
Premature Infant (15 min)**
V. Mohan Reddy, MD (Stanford, CA)
- Aortic Arch Reconstruction without Circulatory Arrest Using Moderate
Hypothermia (15 min)**
Kristine J. Guleserian, MD (Dallas, TX)
- Warm Perfusion in Pediatric Cardiac Surgery: The European Experience with
8,000 Patients (15 min)**
Yves Durandy, MD (Massy, France)
- Myocardial Protection in Congenital Heart Surgery (15 min)**
Joanne P. Starr, MD (Newark, NJ)
- Pulsatile vs. Non-pulsatile Perfusion in Neonates and Infants (15 min)**
Atif Akcevin, MD (Istanbul, Turkey)
- Neuromonitoring During CPB Procedures (15 min)**
Stephen J. Kimatian, MD (Cleveland, OH)
- Valve Surgery in Congenital Heart Disease (15 min)**
Giovanni Battista Luciani, MD (Verona, Italy)
- A Dual-platform Proteomics Study of Plasma Biomarkers in Pediatric Patients
Undergoing Cardiopulmonary Bypass**
Todd M. Umstead, BS (Hershey, PA)
- 10:00am – 10:45am** **Exhibits, Posters & Refreshments**

10:45am – 12:00pm Invited Lectures

Moderator: John L. Myers, MD (Hershey, PA)

Recent Advances of Brain Protection During Cardiac Surgery – From Deep Hypothermia And Circulatory Arrest to Cerebral Perfusion (20 min)

Shunji Sano, MD, PhD (Okayama, Japan)

Determinants of Neurodevelopmental Outcome for Children with Congenital Heart Defects (20 min)

J. William Gaynor, MD (Philadelphia, PA)

An Update on Tissue Engineering in Heart Valves (20 min)

Sabine H. Däbritz, MD (Germany)

12:00pm – 1:00pm PEDS Conference Registrants Lunch

1:00pm – 3:00pm PLENARY SESSION #3: Engineering Applications in the Pediatric Cardiac Surgery: An International Approach

Co-Chairs: Gerson Rosenberg, PhD, (Hershey, PA) and Ulrich Steinseifer, PhD (Aachen, Germany)

Penn State Hershey - International Center for Pediatric Cardiovascular Research

Akif Ündar, PhD (Hershey, PA)

Miniaturization of ECMO Systems: Engineering challenges and Methods (15 min)

Ulrich Steinseifer, PhD (Aachen, Germany)

Pediatric Assist Device Development in Brazil (15 min)

Adolfo A. Leirner, MD (San Paulo, Brazil)

Microdevices for Measuring Systemic Inflammation

Jeffrey D. Zahn, PhD (Piscataway, NJ)

Towards Quantitative Hemodynamic Prediction in Challenging Single-ventricle Circuits: Surgical Pathway Designs, pVADs and Adult Fontans (15 min)

Kerem Pekkan, PhD (Pittsburgh, PA)

Quantitative Monitoring of Gaseous Microemboli with the EDAC(R) Quantifier (15 min)

Ted Lynch, PhD (Hampton, VA)

Optimizing the circuit design of a pulsatile ECLS in terms of EEP and SHE (15 min)

Kyung Sun, MD, PhD, MBA (Seoul, Korea)

Choon Hak Lim, MD (Seoul, Korea)

3:00pm – 3:45pm Exhibits, Posters & Refreshments

3:45pm – 6:15pm **Regular Slide Presentations #2 – CPB and Bioengineering**
Co-Chairs: Giovanni Battista Luciani, MD, (Verona, Italy), Amy Throckmorton, PhD (Richmond, VA, USA), and Elizabeth L. Carney, DVM (Hershey, PA, USA)
14 presentations – 10 minutes each (7 min. presentation and 3 min. discussion)

Moderator: Giovanni Battista Luciani, MD, (Verona, Italy)

The Benefits of High-flow Management in Children with Pulmonary Atresia with/without Major Atriopulmonary Collateral Arteries

Yasuhiro Fujii, MD, Yasuhiro Kotani, MD, Takuya Kawabata, MD, Shinya Ugaki, MD, Shigeru Sakurai, MD, Hironori Ebishima, MD, Hideshi Itoh, CCP, Mahito Nakakura, Sadahiko Arai, MD, Shingo Kasahara, MD, Shunji Sano, MD, Tatsuo Iwasaki, MD*, and Yuichiro Toda, MD*
Department of Cardiovascular Surgery and Department of Anesthesiology and Resuscitology*, Okayama University Hospital, Okayama, JAPAN

The Re-warming Index Formula for Pediatric Cardiopulmonary Perfusion

Hideshi Itoh, CCP, Shingo Kasahara, MD, Yasuhiro Fujii, MD, Yasuhiro Kotani, MD, Sadahiko Arai, MD, Shunji Sano, MD
Departments of Cardiovascular Surgery, Okayama University Hospital, Okayama, JAPAN

Segmental Differences of Impaired Diastolic Relaxation Following Cardiopulmonary Bypass Surgery in Children – A Tissue Doppler Study

Linda B. Pauliks, MD, Akif Üндar, PhD, J. Brian Clark, MD, John L. Myers, MD,
Departments of Pediatrics, Surgery, and Bioengineering, Penn State Hershey College of Medicine, Penn State Hershey Children's Hospital, Hershey, Pennsylvania, USA

Transcranial Doppler Ultrasonography: a Reliable Method of Monitoring Pulsatile Flow During Cardiopulmonary Bypass in Infants and Young Children

Ashley Rogerson, BS, Yulong Guan, MD, Stephen J Kimatian, MD, Allen Kunselman, MA, J. Brian Clark, MD, John L Myers, MD, Akif Üндar, PhD
Pediatric Cardiac Research Laboratories, Departments of Pediatrics, Surgery, Bioengineering, and Health Evaluation Sciences, Penn State College of Medicine, Penn State Children's Hospital, Hershey, Pennsylvania, USA

Comparison of Bidirectional Glenn Procedure with and without CPB

Hironori Ebishima, Yasuhiro Kotani, Shinya Ugaki, Yasuhiro Fujii, Shigeru Sakurai, Hideshi Ito, Mahito Nakakura, Shingo Kasahara, Sadahiko Arai, Shingo Kasahara, Shunji Sano
Department of cardiopulmonary surgery, Okayama University, Okayama, Japan

Mechanical Aortic Valve Replacement in Children and Adolescents after Previous Repair of Congenital Heart Disease

Popov AF, Coskun KO, Tirilomis T, Schmitto JD, Ruschewski W
Department of Thoracic, Cardiac and Vascular Surgery, University of Goettingen, Germany

Moderator: Amy Throckmorton, PhD (Richmond, VA, USA)

Intravascular Mechanical Cavopulmonary Assistance for Patients with Failing Fontan Physiology

Sonya Bhavsar BS¹, Jugal Kapadia BS¹, Steven Chopski BS¹, and Amy Throckmorton PhD¹

Mechanical Engineering¹, Virginia Commonwealth University, Richmond, VA, USA

A Microfluidic Immunosensor to Monitor Systemic Inflammation During CPB

Lawrence A. Sasso¹, Akif Ündar², Jeffrey D. Zahn¹

¹Department of Biomedical Engineering, Rutgers University, Piscataway, NJ

²Departments of Pediatrics, Surgery, and Bioengineering, Penn State Hershey College of Medicine, Penn State Children's Hospital, Hershey, PA

Comparative Finite-element Model Analysis of Ascending Aortic Flow in Bicuspid and Tricuspid Aortic Valve

Francesca Viscardi, Christian Vergara¹, Luca Antiga², Sabrina Merelli², Alessandro Veneziani³, Giovanni Puppini, Giuseppe Faggian, Alessandro Mazzucco, Giovanni Battista Luciani

Div. of Cardiac Surgery Univ. of Verona, Italy; ¹Mario Negri Institute Ranica (BG) Italy, ²Dept. of Information Technology, Univ. of Bergamo, Italy, ³Dept. of Mathematics, Emory Univ., USA

Performance Validation in Arterial Cannula Representation - A special focus on Three Pediatric Cannulae

Kimberly A. Griffith, Branka Lukic, MS, Shigang Wang, MD, William Weiss, PhD, Gerson Rosenberg, PhD, John L. Myers, MD, Akif Ündar, PhD

Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, and Bioengineering, Penn State College of Medicine, Penn State Children's Hospital, Hershey, Pennsylvania, USA

Effects of the Pulsatile Flow Settings on Pulsatile Waveforms and Hemodynamic Energy in a PediVAS™ Centrifugal Pump

Shigang Wang, MD, Alan R. Rider, Allen R. Kunselman, MA, J. Scott Richardson, Kurt A. Dasse, PhD, Akif Ündar, PhD

Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, and Bioengineering, Penn State College of Medicine, Penn State Children's Hospital, Hershey, Pennsylvania, USA

Moderator: Elizabeth L. Carney, DVM (Hershey, PA, USA)

The Aachen MiniHLM– First Results in a Small Animal Model

Heike Schnoering, MD¹, Jutta Arens, Dipl.-Ing.², Joerg S. Sachweh, MD¹,
Melanie Veerman¹, Rene Tolba, MD³, Thomas Schmitz-Rode, MD², Ulrich
Steinseifer, Dr. Ing.² and Jaime F. Vazquez-Jimenez, MD¹
¹Pediatric Cardiac Surgery, Medical Faculty, RWTH Aachen University, Germany,
²Applied Medical Engineering, Helmholtz Institute, RWTH Aachen University,
Germany, ³Institute for Laboratory Animal Science and Experimental Surgery,
RWTH Aachen University, Germany [†]Both Authors contributed equally to the
manuscript

Effect of the Miniaturized Cardiopulmonary Bypass System on the Inflammatory Response and Cardiac Function in Neonatal Piglets

Ko Yoshizumi¹, MD, Kozo Ishino², MD, Hironori Ebishima¹, MD, Shinya
Ugaki¹, MD, Yasuhiro Kotani¹, MD, Shingo Kasahara¹, MD, Shunji Sano¹, MD
¹Department of Cardiovascular Surgery, Okayama University, Okayama, Japan
²Department of Cardiovascular Surgery, Showa University Northern Yokohama
Hospital, Kanagawa, Japan

Hemodynamic Changes in a Model of Chronic Heart Failure Induced by Multiple Sequential Coronary Microembolization in Sheep

Schmitto JD¹, Coskun KO¹, Coskun ST², Ortmann P¹, Sossalla S³, Vorkamp T¹,
Heidrich F¹, Popov AF¹, Heuer J⁴, Hinz J⁴, Quintel M⁴, Schöndube FA¹
¹Department of Thoracic, Cardiac and Vascular Surgery, University of
Goettingen, Germany, ²Department of Cardiac Surgery, Heart and Diabetes
Centre, Bad Oeynhausen, ³Department of Cardiology, University of
Goettingen, ⁴Department of Anesthesiology, University of Goettingen

Poster Presentations - CPB/CFD/Bioengineering

Posters will be available for viewing from 8:00am – 7:00pm

Clinical study of artificial colloid in cardiopulmonary bypass

Jinxiao Hu, Long Cun

Department of Extracorporeal Circulation, Fuwai Hospital, CAMS & PUMC,
Beijing, China

Perioperative Monitoring of TEG on Haemostatic Function for Cyanotic Infants Undergoing Complexed Cardiac Surgery

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Continuous Hemodiafiltration in Children after Cardiac Surgery

Kenichi Watanabe, MD, Yasuyuki Suzuki, MD, Takeshi Goto, CE, Sanae

Yamauchi, MD, Kazuyuki Daitoku, MD, Kozo Fukui, MD, Kou Fukuda, MD

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of Medicine, Hirosaki, Aomori, Japan

Use of ECMO, surfactant, and HFOV for the management of intra-operative acute pulmonary hemorrhage post palliation of Tetralogy of Fallot with hypoplastic branch pulmonary arteries and anomalous coronary crossing RVOT

Meena Nathan MD, Meena Kalyanaraman MD, Jonathan Blank MD, Joel Hardin MD, Joanne Starr MD

Children's Heart Center, Children's Hospital of New Jersey, NBIMC, Newark.

Coronary Arterio-Venous Fistula: Surgical Indication in Childhood, Treatment and Results

Alkan T., Akcevin A., Türkoğlu H, Paker T, Aytaç A.

V.K.V. American Hospital, Dept. of Cardiovascular Surgery, Istanbul, TURKEY

Left Ventricular Contractility after Cardiac Procedures in Neonatal Piglets

Theodor Tirilomis, Oliver J. Liakopoulos, Lars Nolte, K. Oguz Coskun, Aron-Frederik Popov, Friedrich A. Schoendube

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The Impact of Pump Settings on the Quality of Pulsatility

Alan R. Rider, Noel M. Ressler, MPH, Allen R. Kunselman MA, Shigang Wang, MD, Akif Ündar, PhD

Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, Bioengineering, and Health Evaluation Sciences, Penn State College of Medicine, Penn State Children's Hospital, Hershey, Pennsylvania, USA

Comparison of Pumps and Oxygenators with Pulsatile and Nonpulsatile Modes in an Infant Cardiopulmonary Bypass Model

Nikkole Haines, BS, Shigang Wang, MD, John L. Myers, MD, Akif Ündar, PhD

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Impact of the Post-Pump Resistance on Pressure-Flow Waveform and Hemodynamic Energy Level in a Neonatal Pulsatile Centrifugal Pump

Shigang Wang, MD, Nikkole Haines, BS, Scott Richardson, Kurt A. Dasse, Ph.D., Akif Ündar, PhD

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Endothelium NO release during cardiac surgery: comparison between continuous and pulsatile flow cardiopulmonary bypass.

G. Faggian¹, E. Lanzarone²⁻³, F. Gelmini⁴, A.C. De Prati⁵, M. Tessari¹, T. Menon¹, H. Suzuki⁵, M. Carini⁴, R. Fumero², G.B. Luciani¹, M.L. Costantino²

Div. of Cardiac Surgery, Univ. of Verona¹; Dept. Structural Engineering² and Bioengineering³, Politecnico Milan; Chemical-Pharmaceutical Institute, Univ. of Milan⁴; Dept. Morphological and Biomedical Sciences, Univ. of Verona⁵; Italy

Challenges in International Heart Surgery: Massive Air Embolism of Unusual Origin and Requirement for Modification of Standard Algorithms and Procedural Checks

Joseph Borondy, Peter Allen, Qasim Simmons, Carmen Giacomuzzi, Victor Carcioppolo, Scott Snider, Tom Pezzella, Dan Woodward, Karl Welke, A. Marath, St. Francis Heart Hospital, Indianapolis, IN

Force Reflecting Teleoperation for a Robotized Laparoscopic Gripper System

¹Jaesoon Choi, PhD, Jun Woo Park, PhD, Du Jin Bach, MS, Duck Hee Lee, MS, Jung Joo Lee, PhD, Kyung Sun, MD, PhD, MBA
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Hemodynamics of Sequential Coronary Bypass Grafting Configurations via Sketch-Based Surgical Planning Tool

Onur Dur¹, Sinan Tolga Coskun², Kasim Oguz Coskun³, Levent B. Kara¹, Kerem Pekkan¹

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7:00am – 8:00am

Speaker Ready Room Open/ Breakfast

8:00am – 10:00am

PLENARY SESSION #4: National Heart, Lung, and Blood Institute Pediatric Grants Awardees:

Co-Chairs: Tim Baldwin, PhD, Elizabeth D. Blume MD (Boston, MA) and William Pierce, MD (Hershey, PA)

The Penn State Pediatric VAD: Five Year Development Status (15 min)
William J. Weiss, PhD (Hershey, PA)

In vivo Evaluation of the PediaFlow™ Pediatric Ventricular Assist Device
Harvey S. Borovetz, PhD (Pittsburgh, PA) (15 min)

Development progress of the Ension pediatric cardiopulmonary assist system (pCAS) (15 min)
Mark Gartner, PhD (Pittsburgh, PA)

Summary at Completion of the Jarvik 2000 NIH Pediatric Development Program (15 min)
Robert Jarvik, MD (New York, NY)

The PediPump: A Versatile, Implantable Pediatric Ventricular Assist Device—Update IV (15 min)
Brian Duncan, MD (Cleveland, OH)

Animal Models for Pediatric Circulatory Support Device Pre-Clinical Testing (15 min)
Elizabeth L. Carney, DVM (Hershey, PA)

FDA's Current Thinking on Clinical Trial Design and Patient Evaluation for Pediatric MCSDs (15 min)
Eric Chen, MS (FDA, Rockville, MD)

Discussion (15 min)

10:00am – 10:45am

Exhibits, Posters & Refreshments

10:45am – 12:45pm

**Mini-Symposium: Pediatric Perfusion
Invited Lectures (Five 15-minute talks)**

Co-Chairs: Tami Rosenthal, CCP, MBA (Philadelphia, PA) and Richard Gates, MD (Orange, CA)

Optimizing Venous Drainage During ECMO (15 min)
Tami Rosenthal, CCP, MBA (Philadelphia, PA)

The Use of Bivalirudin/Angiomax for Pediatric Anticoagulation in HIT patients (15 min)

Richard Gates, MD (Orange, CA)

Clinical real-time monitoring of gaseous microemboli in pediatric cardiopulmonary bypass (15 min)

J. Brian Clark, MD (Hershey, PA)

Pediatric Myocardial Protection and Single Dose Cardioplegia (15 min)

Richard Ginther, Jr., CCP (Dallas, TX)

Myocardial recovery and retraining of the ventricular with ECMO after arterial switch operation (15 min)

Long Cun, MD, (Beijing, China)

Ecuador Hearts: The Penn State Hershey Medical Center Experience (15 min)

Robert Wise, CCP (Hershey, PA)

Development of Mechanical Circulatory Support Devices in China (15 min)

Wei Wang, MD, PhD, Deming Zhu, MD, Wenxiang Ding, MD

Shanghai Children's Medical Center, Affiliated by Shanghai Jiaotong

University, School of Medicine

12:45pm

Meeting Adjourns