



Guest Editorial

Outcomes of the 10th International Conference on Pediatric Mechanical Circulatory Support Systems and Pediatric Cardiopulmonary Perfusion

The 10th International Conference on Pediatric Mechanical Circulatory Support Systems and Pediatric Cardiopulmonary Perfusion was held at the Hall of Flags, University of Pennsylvania, Philadelphia, PA, USA, May 28–31, 2014.

The overall objective of the meeting has been and still is to bring together internationally known clinicians, bioengineers, and basic scientists involved in research on pediatric mechanical circulatory support (MCS) systems and pediatric cardiopulmonary bypass (CPB) procedures. Primarily, we focus to explicitly describe the problems with current pediatric mechanical circulatory support systems, methods, and techniques during acute and chronic support, and to suggest solutions and future directions for research. Year after year, we not only maintain our primary objective, but also improve by adding several wet-labs with cutting-edge new devices along with in vivo experiments (1–4).

This unique event has become not only the international forum to share the latest developments in terms of devices and techniques on pediatric CPB and MCS, but also to start new national and international collaborations in this underserved research area during the past decade (4). To date, more than 2400 leading international scholars from 33 countries have participated in the past 10 events. The peer-reviewed publications are the most significant outcomes of the past 10 events. Over 410 publications, including original articles, editorials, special reports, and case reports have been peer reviewed and published in *Artificial Organs*. These publications have become the largest resource for investigators in their research projects related to pediatric CPB and MCS.

10TH INTERNATIONAL CONFERENCE

Chitra Ravishankar, MD, was the local scientific chair of the 10th event (Fig. 1). The co-chairs of the event were Tami Rosenthal, CCP, MBA (Perfusion);

Kerem Pekkan, PhD (Bioengineering); and Vinay M. Nadkarni, MD (emergency cardiopulmonary resuscitation [ECPR]), Shigang Wang, MD, J. Brian Clark, and John L. Myers, MD. Conference participants had the opportunity to hear two keynote lectures during the morning sessions on Thursday, May 29, and Friday, May 30. The first keynote, presented by Thomas L. Spray, MD, Chief, Division of Cardiothoracic Surgery, Alice Langdon Warner Endowed Chair in Pediatric Cardiothoracic Surgery, Professor of Surgery, Perelman School of Medicine at the University of Pennsylvania, The Children's Hospital of Philadelphia, Philadelphia, PA, was titled "Aortic Valve Surgery in Neonates, Infants, and Children: Has Anything Changed during My Career?" The second keynote, presented by Emile Bacha, MD, FACS, Calvin F. Barber Professor of Surgery, Chief, Division of Cardiothoracic Surgery, New York-Presbyterian/Columbia University Medical Center, Director, Pediatric Cardiac Surgery, Morgan Stanley Children's Hospital, New York, NY, was titled "Individualized Strategy for HLHS: Norwood/Sano, Norwood/BT Shunt or Hybrid?" (Fig. 2).

Six plenary sessions were held throughout the morning and afternoon sessions on Thursday, Friday, and Saturday (Fig. 3). The topics of these sessions included: "Pediatric MCS and Heart Transplantation: Current and Future Trends" (moderated by William S. Pierce, MD, and Joseph Rossano, MD); "Minimizing Adverse Effects of CPB & ECLS: A Multi-disciplinary Team Approach" (moderated by Paul Chai, MD); "ECPR & ECLS: Utilization, Management, and Outcomes" (moderated by Vinay M. Nadkarni, MD, Stephanie Fuller, MD, and Ravi Thiagarajan, MD); "Engineering Approach to Pediatric Cardiovascular Medicine" (moderated by Kerem Pekkan, PhD, and Giovanni Battista Luciani, MD); "VAD & ECLS" (moderated by Atif Akçevin, MD, and Jack G. Copeland, MD); and "Pediatric Perfusion: 2014 Update" (moderated by Talya Frey, CCP, and Akif Ündar, PhD). Oral presentations



FIG. 1. Chitra Ravishankar, MD, the local scientific chair.

were held in the afternoon sessions on Friday and Saturday. Poster presentations were displayed throughout the duration of the conference. The faculty gala dinner was also held on the first night of the event (Fig. 4).

Extracorporeal life support (ECLS) simulator training at Children's Hospital of Philadelphia

This session was for intensive care unit (ICU) physicians, cardiothoracic surgeons, nurses,

perfusionists, and respiratory therapists involved in extracorporeal membrane oxygenation (ECMO) cannulation and management. Instructors Roxanne Kirsch, MD, Stacie B. Peddy, MD, and Roberta L. Hales MHA, RRT-NPS, RN, used simulation to facilitate ECPR hands-on training. In addition, this program focuses on techniques to train residents/fellows and nurses for a successful ECMO program, as well as techniques to build a simulation program.

Cardiac ICU rounds and case presentations at Children's Hospital of Philadelphia

These sessions were held in the CICU at The Children's Hospital of Philadelphia and led by Joseph Rossano, MD. Each session was interactive, during which active discussion from attendees was invited regarding all aspects of management and outcomes. The session was suitable for all staff involved in the management of critically ill children with heart disease, and included a tour of the unit and discussion regarding resources and staffing requirements.

Wet-labs were also organized as a parallel session on Friday afternoon (Fig. 5, Table 1).

EDUCATIONAL CREDITS

The 10th International Conference was approved for the following educational credits: 19.5 AMA PRA Category 1 Continuing Medical Education (CME); 24.3 Category 1 Continuing Education Unit hours by the American Board of Cardiovascular Perfusion; and 19.5 Category 1 Continuing Education Unit hours by the California Board of Registered Nursing.

These educational credits demonstrate the high-quality scientific program we provide year after year.



FIG. 2. The Keynote Lecturers, Thomas L. Spray, MD (left), and Emile Bacha, MD (right).



FIG. 3. Plenary sessions.

Young Investigator Awards

This unique event continued to recognize young investigators in all related disciplines. Young Investigator Awards were based on full manuscripts. In addition, a special travel award was given to the investigator who traveled the longest distance to attend the conference

(Fig. 6, Table 2). Jude Clark, CCP, from Auckland, New Zealand, received the travel award this year. All details regarding this event including scientific program, young investigator awards, and publications can be accessed via the conference website: <http://pennstatehershey.org/web/pedsdcpb/home>.



FIG. 4. Faculty gala dinner.



FIG. 5. Wet-Labs—Hands-on experience with the newest pediatric ECLS, MCS systems, and CPB devices.

Artificial Organs

The January 2015 issue (this particular issue) of *Artificial Organs* is dedicated to the 10th conference manuscripts (all peer reviewed), in addition to the

May 2014 issue for accepted abstracts. Special thanks to Carol Malchesky, Editorial Assistant, Angela T. Hadsell, Executive Editor, and Paul Malchesky, DEng, Editor-in-Chief, for making this issue, along

TABLE 1. *Wet-Labs*

Title	Instructors	Company
DP3 system	Andreas Spilker, CCP, and Dr. Jürgen Böhm	Xenios Pediatrics
NIRS	Jennifer Matson	Covidien
A revolution in ECMO	Talya Frey, CCP	Sorin
TAH	Dr. Jack Copeland	SynCardia
ECLS Set 2.8	Thomas Markmann, MBA, and Tom Shannon	Maquet



FIG. 6. Young Investigator Awardees.

TABLE 2. *International Conference Awards*

Award	Awardee	Title of manuscript
John A. Waldhausen, MD, Young Investigator Award	Mehmet Ağırbaşı, MD	Apolipoprotein E levels in pediatric patients undergoing cardiopulmonary bypass
William S. Pierce, MD, Young Investigator Award	Shigang Wang, MD	Evaluation of different diameter arterial tubing and arterial cannulae in simulated neonatal/pediatric CPB circuits
Aydin Aytaç, MD, Young Investigator Award	Ali Can Hatemi, MD	Determination of a new mutation in MT-ND1 gene of a patient with dextrocardia, ventriculoarterial discordance, and tricuspid atresia
Special Travel Award	Jude Clark, CCP	For traveling the longest distance to attend the conference

with all previous issues, possible, and for their continued support year after year.

Financial support

We thank the Penn State Hershey Pediatric Cardiovascular Research Center, the Penn State Hershey Children's Hospital, Department of Pediatrics of the Penn State Hershey College of Medicine, and the International Society for Pediatric Mechanical Cardiopulmonary Support for providing financial support to this event, year after year. Dr. Ündar also contributed from his personal funds to balance the budget during the past four events. In addition, we received funds from the following companies for the 10th event.

Gold level supporter

Xenios Pediatrics (Germany)

Bronze level supporters

Covidien (USA)
Maquet Medical Systems (USA)
Sorin Group USA, Inc. (USA)
SynCardia Systems, Inc. (USA)
Terumo Cardiovascular Systems (USA)
Wiley-Blackwell (USA)

SUMMARY

Research findings reported during the past 10 conferences have already made a significant impact on the treatment of pediatric cardiac patients worldwide. To date, a total of 920 presentations have been made at our conferences and over 410 peer-reviewed articles have been published based on the conference proceedings. All of the details regarding the 10th International Conference, as well as the previous nine events and information on future events, can be found at our conference website: <http://pennstatehershey.org/web/pedscpb/home>.

11th International Conference

The 11th International Conference will be held at the University of Verona School of Medicine, Verona, Italy, June 10–13, 2015. Giovanni Battista

Luciani, MD, Professor and Head, Pediatric Cardiac Surgery University of Verona, will be the local chair of the 11th event. We hope to see all of our past participants and look forward to another outstanding scientific event in Verona. As we have written several times before, our motto continues to be “If the course of just one child's life is improved as a result of this event, we have reached our goal.”

Acknowledgments: Special thanks go to Heather Stokes, Erlee Meyers, MBA, Jessica Beiler, MPH, and Jennifer Stokes, RN, from the Pediatric Clinical Research Office of the Penn State Hershey Milton S. Medical Center for their assistance in the coordination of this event (Fig. 7). We would specifically like to thank Dr. Shigang Wang, of the Pediatric Cardiovascular Research Center at Penn State Hershey, for organizing this event from start to finish. We also appreciate Ann Hagan's invaluable help organizing CME from the Department of Continuing Medical Education of The Children's Hospital of Philadelphia.

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*Shigang Wang, MD, ‡Kerem Pekkan, PhD,
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FIG. 7. The Hershey Team—Jennifer Stokes, Erlee Meyers, Akif Ündar, Heather Stokes, and Jessica Beiler (left to right).

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