3CPR Update

The Council on Cardiopulmonary, Critical Care, Perioperative and Resuscitation (3CPR) is the preferred member organization for the advancement of research and improved patient care.

MESSAGE FROM THE CHAIR

Monique Anderson, MD

Q. What advice do you have for early-career investigators interested in getting involved in quality and outcomes research? A. There are five essentials for residents, fellows and new faculty interested in quality and outcomes research: research training, time, mentorship, money and data. A number of research training programs in the U.S. offer two-year research training and direct mentorship. I was a part of the AHA’s Pharmacological Roundtable Outcomes Fellowship, a two-year fellowship devoted to mentor training in cardiovascular outcomes research. I completed this fellowship concurrently with my cardiology fellowship.

Mentorship is equally important. Mentors help to mold and develop ideas, and most have resources to carry your ideas from thought to analysis to publication. I remember having a discussion with my mentor within a month of starting my fellowship. I shared with him my plan to improve outcomes for cardiac arrest in Alabama, my home state. This would involve going there and setting up CPR training programs. He reminded me that I was a now a researcher and could potentially have a bigger impact by asking and finding scientific answers to the right questions. During that conversation, we conceived an idea of examining CPR programs. He reminded me that I was a now a researcher and could potentially have a bigger impact by asking and finding scientific answers to the right questions. During that conversation, we conceived an idea of examining CPR programs.

Q. What needs to be done to increase the rates of CPR training in the U.S.? A. In my research, we discovered that CPR training in the U.S. is highly variable and low. The median CPR training rate is 2.39 percent. After dividing 3,143 U.S. counties into tertiles, the rates of CPR training in the U.S. exist. We found highly variable practices throughout the U.S. To help shed light on variation in outcomes for out-of-hospital cardiac arrest.

Q. What is the importance of having access to data? A. Becoming a good researcher takes time, perhaps years. After developing skills in grant and manuscript writing and biostatistics methodology, it’s essential to secure jobs with protected time for career development. Starting faculty jobs with at least 50 percent protected time for career development is the right question. During that conversation, we conceived an idea of examining CPR programs. He reminded me that I was a now a researcher and could potentially have a bigger impact by asking and finding scientific answers to the right questions. During that conversation, we conceived an idea of examining CPR programs.

Improving CPR Training Rates

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teams often involve project managers, seniors and masters level biostatisticians and statistical programmers.

Finally, one must have access to data to answer questions. Given my interests in cardiac arrest, my sources of data have been both internal and external to my institution. Examples include large registry databases housed within the Duke Clinical Research Institute, where I work, and many external resources, including the Get with The Guidelines-Resuscitation registry for in-hospital cardiac arrest, Resuscitation Outcomes Consortium and Cardiac Arrest Registry to Enhance Survival databases for out-of-hospital cardiac arrest.

Q. Tell us about your resuscitation event at Scientific Sessions 2014. A. I presented a life-saving approach abstract on the association between hospital process performance and patient outcomes after in-hospital cardiac arrest care. This study examined the variability in quality of care across U.S. hospitals for patients with in-hospital cardiac arrest and studied whether an association between quality and outcomes existed. We found highly variable practices among hospitals participating in Get with The Guidelines Resuscitation registry and outcomes improved with quality.

Hours after my presentation, I attended a JAMA reception. As my mentor and I were leaving the reception, we saw a man face down on the ground about 200 feet away. My mentor and I briefly looked at each other to ensure what we saw was real. We ran toward him and assessed him for responsiveness. My mentor called 911, and I started chest compressions. We were able to resuscitate him and the ambulance arrived after a few minutes. I think this points to the importance of knowing this life-saving skill.
P-EC in Idiopathic PAH

Q. Please describe your research interests?
A. After a PhD in cell biology and cardiovascular research from the University Paris-Est Créteil in France and a first post-doctoral fellowship, I spent two years in the Rabinovitch/Bland Cardiopulmonary Research Laboratory (Stanford University School of Medicine, Stanford, California) where I worked with Marlene Rabinovitch, MD, and studied the role of the endothelial peroxisome proliferator-activated receptor (PPAR)γ in pulmonary vascular remodeling and Pulmonary Hypertension. On my return to France in 2008, I joined Marc Humbert’s Research Laboratory as a research scientist in molecular and cellular biology associated to pulmonary hypertension. Since then, I have established my own research group focusing on the aberrant pulmonary endothelial cell phenotype in pulmonary arterial hypertension and on the identification of new molecular targets to normalize this abnormal endothelial phenotype in PAH.

Thus, my primary research for the past several years seeks to:
• Provide a better understanding of the role played by the pulmonary endothelial cells in idiopathic PAH
• Improve our knowledge on the P-EC communication with local immune cells and the other resident vascular cells [i.e. pulmonary artery smooth muscle cells, myofibroblasts and pericytes]
• Identify target genes potentially involved in the modulation of pulmonary endothelial (dys)function

My research group is investigating how P-ECs interact with their environment in the pulmonary vascular wall with particular emphasis on their communication with vascular cells. In particular, we are pursuing several research programs investigating key known modulators of pulmonary endothelial cell (dys)function in PAH: the importance of the macrophage inhibitory factor (MIF)/CD74 signaling pathway at the crossroad of inflammation and endothelial dysfunction, interactions between P-ECs with pericytes, but also hemodynamic forces, bone morphogenetic protein (BMP)/BMP receptor-2 pathway, microparticles and drugs (dasatinib and interferon-β). To probe these questions in novel ways, we have developed a repertoire of unique tools: ex vivo studies of cells in primary cultures, including P-ECs, pulmonary arterial smooth muscle cells and pulmonary pericytes, from patients with PAH and from controls; in situ immunohistochemical studies in lung specimens from patients with PAH and controls without pulmonary vascular disease; several in vivo models of pulmonary hypertension. Using these tools in combination with traditional molecular approaches, we are increasing our knowledge on pulmonary endothelial dysfunction in PAH which we hope will lead to the development of new strategies against dysfunctional P-ECs.

Q. What role has AHA played in developing your career?
A. The American Heart Association helped me in developing my career since I was a post-doctoral fellow with Dr. Rabinovitch. In 2012, I was one of the five finalists of the AHA Courmand and Conroe Young Investigator Award from 3CPR for my work conducted in Dr. Rabinovitch’s lab, titled “Tie2-Mediated Loss of Peroxisome Proliferator-Activated Receptor-Gamma in Mice Causes PDGF Receptor-Beta-Dependent Pulmonary Arterial Muscularization.” It was a great learning experience that I strongly recommend to all early career researchers. Since then, I have regularly attended AHA’s Scientific Sessions and present my ongoing research. AHA meetings allow scientific networking, in particular with other early career researchers working in the cardiovascular field or in pharmaceutical industries. This scientific gathering leads to improvements in my research projects.

Q. Already in your research career, you’ve worked in both Europe and in the U.S.? How did those experiences differ and what advice would you give early career researchers about traveling internationally to further their training?
A. I strongly encourage all early career researchers to take advantage of opportunities to gain experience abroad and to complete their training. Varying scientific experiences will widen their career prospects leading to a high level of scientific excellence. I personally had a wonderful experience with Dr. Rabinovitch and Dr. Humbert. Combining both experiences helped me discover my passion for science and medical research. Interacting with people from different scientific fields at Stanford University and in Paris helped me to further identify my research goals. Thanks to these experiences, I’m now developing my own research group in translational research, which aims to develop curative therapies for PAH.

Christophe Guignabert, PhD

Warren Zapol, MD, delivered the after-dinner talk dedicated to Kenneth D. Bloch, MD.