



Anthony M. DiGioia, III MD (CMU BS 1979, MS 1982)

Anthony (Tony) DiGioia, III, M.D., is an engineer, entrepreneur, and practicing orthopaedic surgeon. He is the Founder and Medical Director of both the UPMC Bone and Joint Center and The UPMC Innovation Center. Tony graduated with university honors from Carnegie Mellon University's Civil Engineering program, obtained a graduate degree in Civil and Biomedical Engineering, then attended Harvard Medical School where he graduated with Honors in a Special Field. He completed his orthopaedic residency in

Pittsburgh and a Fellowship at Massachusetts General Hospital. Evident in his formative education, Tony has always focused on bridging the gaps between clinical medicine, engineering, and supportive technologies – merging the art and science of medicine.

Tony is recognized as a pioneer and world leader in the early development of medical robotics and computer assisted surgery. He co-founded the Center for Medical Robotics and Computer Assisted Surgery within the Robotics Institute here at CMU.

During his collaboration with CMU, Tony was part of a team of engineers, clinicians, and business experts in developing state of the art technology to improve surgical outcomes. As one example, the team took an idea and developed a prototype that eventually became a product called "Navio." This patented, hand-held robotic tool, Navio provided highly individualized and accurate surgery for partial and total knee replacement procedures and improved patient outcomes.

One of the first medical robotics companies in Pittsburgh, Bluebelt Technologies, Inc., transformed Navio into a commercially available and FDA approved platform. In 2016, Bluebelt was acquired by an international orthopaedic implant company for \$275 million dollars.

More recently, Tony developed the Patient Centered Value System (PCVS), which combines process and performance improvement with supporting technologies to improve clinical outcomes and patients' care experiences while reducing costs. The Patient Centered Value System is a simple, replicable, and sustainable approach for viewing all care through the eyes of patients and families, identifying opportunities to improve value, and building the implementation teams needed to drive change. Dr. DiGioia recently published his book, ***The Patient Centered Value System: Transforming Healthcare Through Co-Design***, which details the step-wise approaches of the PCVS – shadowing, team building for patient centered system improvement, and determining the true cost of care delivery. Shadowing and the Patient Centered Value System have been implemented in over 65 different clinical conditions and are increasingly being adopted nationally and internationally.

To support these efforts, Dr. DiGioia's team developed "goShadow," a product that is grounded in the experience-based design sciences - an area of research in which CMU has been a world leader. goShadow captures subjective and objective information from patients' and families' perspectives, allowing experience-based information to be harvested from "big data." goShadow integrates a mobile app to collect information in the field and a cloud-based platform that easily aggregates both the qualitative and quantitative aspects of any experience. goShadow allows providers to continuously view their current state, identify and adjust organizational goals, and pinpoint areas for improvement and opportunity without ever losing sight of the patient's perspective. Although initially focusing on healthcare, goShadow can be used by any industry wanting to understand their customers' and end users' experiences and needs. The PCVS, supported by goShadow, is Dr. DiGioia's most recent work exemplifying the power of merging technology with patient-centered approaches to create impactful changes in healthcare delivery systems.

In addition to his academic pursuits, Dr. DiGioia is Founder of the not-for-profit **AMD3 Foundation**, which develops charitable services for patients and educational programs for health professionals. The most impactful Foundation program has been **Operation Walk Pittsburgh**, which provides free joint replacement surgery for patients in developing countries who have severe hip and knee arthritis.

Since its inaugural trip in 2009, Operation Walk Pittsburgh had made nine international mission trips, performing more than 550 joint replacement surgeries

in Cuba, Guatemala, Panama and Honduras. For each trip, a team of 60 to 65 surgeons, anesthesiologists, physical therapists, technicians, nurses, humanitarian volunteers, and family members come together to not only provide needed surgeries and post-operative care, but to promote international medical cooperation. This past August, Operation Walk Pittsburgh traveled to Antigua, Guatemala where they performed 47 joint replacements for 40 patients.

In addition to their international work, Operation Walk Pittsburgh was one of the first teams to perform free hip and knee replacement for patient in need in the Western Pennsylvania region, allowing the team to give back to those in their own communities.

In the spring of 2018, Tony and Dr. Michael Weiss, Co-Medical Director of Operation Walk Pittsburgh, accepted the Allegheny County Medical Society's Physician Volunteer Award on behalf of the more than 300 Operation Walk volunteers. This award recognizes providers for the donation of their time and talents for charitable, clinical, educational or community service activities, domestically or internationally.

Dr. DiGioia is board certified in orthopaedic surgery and a Fellow of the American Academy of Orthopaedic Surgeons and the American College of Surgeons. He is a Faculty Member for the Institute for Healthcare Improvement and an Adjunct Faculty Member in the Department of Biomedical Engineering and the Robotics Institute at CMU. He has authored and co-authored many scientific papers and book chapters and serves on several editorial advisory boards.

In addition to being named one of the city's Best Doctors by Pittsburgh Magazine for the last several years, Dr. DiGioia has received numerous professional awards for his clinical and technical achievements including:

- The John McGrady Award from the Pittsburgh Catholic Charities
- The History Makers' Award for Medicine and Health from the Senator John Heinz Pittsburgh Regional History Center
- The Design News Special Achievement Award from the Design News Education Engineering Foundation
- The Pittsburgh Man of the Year Award for Science and Medicine from Vectors/Pittsburgh

-The Mulach Award from Life's Work

-Engineer of the Year from the Engineer's Society of Western Pennsylvania

-The Allen Newall Medal for Research Excellence, School of Computer Science, Carnegie Mellon University

-The Maurice E. Müller Award for Excellence in Computer Assisted Surgery from the International Society for Computer Assisted Orthopaedic Surgery

-The Otto Aufranc Award from the Hip Society for HipNav

Tony and his wife, Cathy, are native Pittsburghers and live in Shadyside. They have three daughters, Angela, Noelle and Maria, and a granddaughter, Eleanor, and all have traveled together as volunteers of the Operation Walk Pittsburgh Team.