

# PERSONALIZED CARE FOR AORTIC DISSECTION AND GENETIC VASCULAR DISEASE

## *At UW Medicine*

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**T**HE AORTA IS THE LARGEST ARTERY that carries oxygen-rich blood from the heart to the body; an aortic dissection, a tear in the innermost layer of the aorta, is a painful and life-threatening condition that demands immediate medical attention. A dissection impairs blood flow to vital organs and can lead to heart failure, full aortic rupture and death.

High blood pressure is a culprit in aortic dissection. Genetically triggered diseases that affect aortic wall integrity — such as Marfan syndrome and vascular Ehlers-Danlos syndrome — are also common factors. Although aortic dissection is somewhat rare, 10,000 people in the United States are diagnosed every year, making this the most common aortic catastrophe.

UW Medicine physicians are committed to improving the long-term survival of patients with aortic dissection through a personalized (or precision) approach to treatment. This approach begins with identifying the mechanisms related to aortic dissection, the body's inflammatory response and genetic factors.

Understanding these mechanisms will enable clinicians to identify the molecular targets that will lead to improved therapeutic interventions, predict a patient's risk for developing this disease, and devise a personalized treatment plan best suited to each patient. We invite your partnership in this important work.

### ***Personalized Care and Genetic History***

The genetic alterations that may lead to aortic dissection are often found in young people. Imaging techniques can be quite useful in their treatment. With the help of this technology, aortic dissection can often be detected in its early stages and managed medically with minimally invasive surgical procedures, such as thoracic endovascular aortic repair (TEVAR). These procedures allow patients to live longer and healthier lives.

Detection is the first step. Continuing care is the second. To help these young patients manage their health, physicians at UW Medicine are working to provide them with the most comprehensive, personalized care possible. Knowing a patient's genetic history — including the likelihood of developing long-term complications such as dissection-related aneurysmal degeneration (DRAD) — is a key part of this comprehensive care.

### ***Improving Survival Rates in Cases of DRAD***

DRAD is an important focus of UW Medicine's work in aortic dissection, since degeneration can lead to dissection. And in the case of people with descending thoracic aortic dissection, there is only a 75 percent **three-year** survival rate. Sherene Shalhub, M.D., MPH, UW assistant professor of surgery in the Division of Vascular Surgery, believes we can do better.

Dr. Shalhub's research, ADAPTIVE (Aortic Dissection and Aneurysm Personalized Treatment Investigation), is focused on studying the known gene mutations that give rise to DRAD and the best methods for predicting the onset and progression of this disease.

By creating a comprehensive aortic dissection registry and databank that will include patients' full family histories, systemic inflammatory response markers, treatments and subsequent outcomes, Dr. Shalhub will be able to link this data and build a predictive model for future patients, one that will inform personalized treatment plans.

Support for this work would allow Dr. Shalhub to accelerate data analysis and generate proof-of-concept data. In turn, this data would strengthen her case in seeking more significant funding from the National Institutes of Health in the future.

### ***The Multidisciplinary Vascular Genetics Program***

UW Medicine has extensive expertise in vascular care and personalized medicine. Dr. Shalhub intends to leverage these areas of expertise to advance the detection, management and treatment of aortic dissection. Her bold vision includes establishing a Multidisciplinary Vascular Genetics Program at UW Medicine to provide care for patients with aortic dissection and other complex vascular conditions in the Puget Sound region and beyond.

This program would bring together vascular surgeons, cardiologists, cardiothoracic surgeons and geneticists to provide consultation services, make recommendations for genetic testing through UW Medicine's Center for Precision Diagnostics, and offer genetic counseling. Private support is key to developing the Multidisciplinary Vascular Genetics Program.

### ***Join Us***

We seek support to complete the aortic dissection registry and databank (ADAPTIVE). This databank will be essential to improving patient outcomes, and it will be a foundational step in realizing Dr. Shalhub's ultimate vision: the creation of the Multidisciplinary Vascular Genetics Program.

To learn more about this work, or to invest in UW Medicine's commitment to detecting, managing and treating aortic dissections and other vascular diseases, please contact Anne C. Aumell, M.A., CFRE, director for philanthropy, at [aumell@uw.edu](mailto:aumell@uw.edu) or 206.221.0832. Thank you for your interest in our work.



### **Sherene Shalhub, M.D., MPH**

*UW Assistant Professor of Vascular Surgery*

Dr. Shalhub's practice includes the use of open surgical techniques as well as minimally invasive wire- and catheter-based interventions for the treatment of vascular disease. Dr. Shalhub received a 2014 UW Medicine PRAISE (Patient Reported Assessment in Satisfaction and Excellence) Award and was named a 2015 "rising star" by the Institute of Translational Health Sciences at UW Medicine.