

Short Bio

Dr. Sawchuk is a full professor of surgery at Indiana University School of Medicine and a board-certified vascular surgeon in the clinic for Wound Care, Diabetic Foot Ulcers, Aortic Aneurysm, Visceral Disease, Renal Vascular Disease, Cerebrovascular Disease, and Peripheral Vascular Disease. Dr. Sawchuk received his bachelor's and master's degree in electrical engineering from Purdue University. He graduated from Indiana University School of Medicine in 1982 and has been in practice for 37 years. He completed a residency and fellowship at the Indiana University School of Medicine and the University of Illinois.

Dr. Sawchuk has a strong interest and background in investigating the relationships between physics, engineering, and medicine. His undergraduate and graduate education in engineering and physics, medical school, and additional training in surgery and vascular surgery have given him the background to pursue topics that interface between all these areas, particularly the topics of noninvasive imaging and measurement, shear stress and atherosclerosis, blood flow hemodynamics, image and signal analysis of biological data and artificial intelligence. He has an extensive background in the interpretation of vascular laboratory studies, the interpretation of CTA and arteriography, and the clinical practice of vascular surgery. He has developed an interdisciplinary flow hemodynamics lab and has extensively used vascular ultrasound in his research. He has also conducted extensive statistical analyses of disease processes and treatments using SAS and R statistical analysis including log-linear regression, correlation, and nonparametric statistical analysis. He has been the principal or co-investigator on over 10 clinical trials and has conducted numerous prospective and retrospective studies. Dr. Sawchuk has been involved in numerous basic research projects and has had many clinical grants to test new diagnostic mechanisms and therapeutic mechanisms in vascular surgery. As a practicing university vascular surgeon in a large group practice, he also has access to an extensive database of deidentified patient data including thousands of carotid duplex ultrasound, LEADs, CTAs, and angiography. He is facile at database analysis to extract needed information from these databases. This includes access to my partner's deidentified patient data.

With his clinical, engineering, and statistical background, Dr. Sawchuk can interface with engineers to develop precise advanced fluid dynamic modeling of blood flow and advanced image processing techniques. He has a background in medicine and biology to help guide the efforts of engineers working on medical problems as well as the ability to be an active contributor to technology. He regularly lectures both physicians and research engineers. He also has over 30 years of experience analyzing ultrasound blood flow studies, CT arteriograms, and conventional arteriograms.

Over the years, he has developed many relationships with medical businesses and has contacts that can help our research effort develop practical methods desired by the industry. These contacts include an array of imaging equipment manufacturers, ultrasound providers, radiologic equipment developers, and artificial intelligence experts. This network will help in our lab efforts to develop improved techniques to manage the many patients in the United States affected by cardiovascular and peripheral vascular disease.