By combining a keen ability to identify important needs in patient care with a bold confidence to pursue uncharted territory, Geoffrey Hartzler (Fig. 1) contributed to the foundation of both invasive electrophysiology and interventional cardiology in ways that impact patient care worldwide. He was born in 1946 in the town of Goshen, Indiana, second of three brothers, the youngest of whom died tragically of a berry aneurysm as a teenager. His father was a Mennonite minister who in a later career was instrumental in establishing the first outpatient community mental health center in the United States. His mother contracted polio when Geoff was four years old and survived in an iron lung. She remained the focus of the family’s energy for nearly four decades.

Geoff had an early interest in music and excelled at the bass guitar, forming a band in high school that played throughout Indiana; he also worked odd jobs. He developed an interest in chemistry and, after entering Goshen College, entertained a career as a concrete chemist. He also entertained the undergraduates at a rock and roll performance that got a bit too enthusiastic and shut the church-based school down for three days! As a senior, he decided to pursue medicine to have more contact with people, and entered medical school at Indiana University. While a freshman, he worked a ten-hour shift watching a telemetry monitor and responding to cardiac arrests, and developed an interest in acute care medicine. He won an essay contest sponsored by the Mayo Clinic and spent a 3-month summer externship there as the prize. He went on to complete internal medicine and cardiology training at the Mayo Clinic.

Geoff was selected as the one fellow per year to be trained in angiography and attributes his enthusiasm for catheterization to mentors Drs. Hugh Smith and Barry Rutherford. He also worked closely in training with Dr. James Maloney studying diagnostic electrophysiology. He became a Mayo faculty member in 1977. At Stanford University he studied endomyocardial biopsy with Dr. Jay Mason, then brought the technique to the Mayo Clinic and presented his experience to his peers amid some controversy and criticism. He also was a pioneer in the electrophysiology laboratory at Mayo, working on early burst stimulators to terminate ventricular arrhythmias, intraoperative mapping, and surgical resection of tachycardia foci and bypass tracts.

Geoff first met Andreas Gruentzig in Miami in 1976 when Gruentzig presented data on balloon angioplasty in dogs. After the first human was treated in 1977, a protocol was developed at Mayo to perform peripheral angioplasty in 100 patients before any coronary patients were to be treated. Geoff was referred a patient with an isolated proximal lesion of the left anterior descending artery who knew of angioplasty and asked Geoff to treat him. To gain experience, Geoff quietly took a guide and balloon to the dog laboratory. The patient was taken to the catheterization laboratory under equally quiet circumstances to avoid an uproar. Multiple catheters were placed to measure coronary blood flow, but after almost two hours, Geoff could not get the balloon to cross the lesion. A large crowd was in the laboratory, including many of Geoff’s superiors. At the last minute the balloon crossed the lesion, the angiograms showed a perfect result, and coronary blood flow rose greatly (the first direct measurement of this response in humans). This first Mayo angioplasty was presented to the entire division a few days later.¹

By 1980, the contrast between Geoff’s pioneer spirit and a conservative setting at Mayo led him to look for an opportunity to join former Mayo colleagues at St. Luke’s Hospital in Kansas City, Missouri. He was recruited to be the first electrophysiologist in the city and developed an electrophysiology program that included intraoperative mapping and atrio-ventricular node ablation. He performed the very first ablation

Authors wishing to submit profiles should first contact Dr. J. Willis Hurst to ascertain whether a profile on a particular subject has been published or is in progress. See Instructions to Authors.

Address for reprints:
Joel K. Kahn, M.D.
Michigan Heart Group, P.C.
4600 Investment Drive, Suite 200
Troy, MI 48098, USA
e-mail: Kahn642@aol.com

Received: April 9, 2002
Accepted: April 22, 2002
for ventricular tachycardia in a young female patient with recurrent ventricular tachycardia and cardiac arrest despite all types of therapy soon after arriving in Kansas City.

Although busy with electrophysiology, Geoff’s experience in angioplasty was appreciated. He was able to arrange for a supply of the highly treasured USCI balloon catheters by sending a dozen roses to the supervisor in charge of balloon distribution at USCI. In his first six months in Kansas City, Geoff performed 55 angioplasty procedures, one of the world’s largest experiences at the time. After gaining experience treating a single lesion at a single setting, Geoff reasoned that once one lesion was successfully dilated, the remaining lesion was then essentially single-vessel disease! His boldness led him to embark on treating multiple lesions at a single setting at a time when this was unheard of. His results, along with those of his colleagues, were presented over the years to great controversy at national meetings, but they changed the practice of interventional cardiology worldwide.3,4

Geoff pioneered the field of infarct angioplasty in 1980. A patient who had demonstrated a focal right coronary lesion on diagnostic angiography developed an inferior myocardial infarction in the wards. Geoff brought him down to the laboratory and crossed and dilated his now totally occluded artery. His pain resolved and he was discharged home in a few days rather than the usual standard of 2 to 4 weeks of hospitalization. Geoff wrote a protocol for infarct angioplasty and began applying it to more patients. The initial results were published and influenced practice around the world.5

Geoff’s commitment to research and teaching was legendary. From the first patient treated in Kansas City, a prospective database of procedural details and outcome was maintained. A staff of research assistants was developed, and the database numbered thousands and then tens of thousands of patients. Many seminal observations in interventional cardiology emanated from this database. Beginning in the early 1980s, Geoff also began to offer small courses to teach angioplasty to other physicians. These grew in size and frequency, moving to a larger auditorium and including an annual course in Hawaii. Literally thousands of physicians attended these courses over the course of a decade. Beginning in 1986, Geoff also took on one or two fellows a year. The experience was intense and progressed from watching “the master” demonstrate amazing hand coordination to performing multilesion procedures under his watchful eye. Geoff demonstrated great knowledge of and affection for his patients, who came from all over the world, meeting with them and their families the evenings before procedures.

Geoff’s keen mind was appreciated by industry. Once over-the-wire balloon systems became available in the early 1980s, he realized that the nonsteerable guidewires available were a major limitation. He observed that if he bent the tip of an 0.018 inch guidewire, and then forcibly rotated the distal end several times, occasionally the tip would change orientation in the coronary artery. This seminal observation led to collaborating in the development of the first generation of steerable guidewires. He also worked to develop the first steerable fixed-wire balloon catheter and went on to help design a family of “Hartzler” balloon catheters used worldwide.

Geoff also was involved in the early development of internal defibrillators. He and three other pioneers incorporated Ventritex, Inc., in 1985 to develop a defibrillator superior to what was available. He incorporated programmed stimulation and burst pacing as a means of terminating tachycardias. The corporation was ultimately purchased by St. Jude Medical.

By 1993, Geoff had been practicing invasive cardiology at a pace only few could match. He chose to change direction and stepped back from clinical medicine to become director of the research institute of the Mid America Heart Institute.

Geoff is currently in good health and enjoying his time with his wife Dottie and his four daughters. He is co-founder of Intraluminal Therapeutics, Inc., a company working on incorporating forward-looking optical coherence reflectometry and radio frequency energy to meet the challenge of safely traversing chronic total occlusions. The technology is being tested in humans nationally and internationally and is keeping him very busy. Geoff has a professional music studio and continues to play bass guitar in a band, Heart Rock, that includes several physicians in Kansas City.

References

Fig. 1 Geoffrey Oliver Hartzler, M.D.