



---

# Carl E. Rosow

Professor Carl Elliott Rosow, MD-PhD passed away on January 21, 2021 at age 74. Carl was a highly accomplished, generous, and inspirational academic anesthesiologist, researcher, teacher, and mentor as well as a husband, father, musician, and music lover.

The grandchild of Yiddish-speaking immigrants from Russia, Carl was born in Detroit, Michigan. While he was still young, Carl's family moved to San Mateo, California where his father, William Arthur Rosow, MD practiced medicine and his mother, Emma (Minkoff) Rosow, was an educator. Carl excelled as a student in both academic subjects and in music as a violinist. He served as concertmaster of the San Mateo High School Orchestra. He continued his education and violin playing at Oberlin College (Oberlin, Ohio), graduating with a Bachelor of Arts in Biology.

Carl's graduate education began at Boston University School of Medicine, where he earned both his MD and a PhD in Pharmacology. His PhD research, under Professor Joseph Cochin, MD-PhD, focused on opioid effects on thermoregulation in mice. After a medicine internship at Framingham Union Hospital, he completed his residency in anesthesiology at Massachusetts General Hospital, and a 1-year postdoctoral research fellowship at the National Institute on Drug Abuse. He joined the faculty of the MGH Department of Anesthesia (now the Department of Anesthesia Critical Care & Pain Medicine or DACCPM) in 1978 and continued working at MGH and HMS for the remainder of his life.

As an MGH anesthesiologist in the general surgery division, Carl provided and supervised peri-operative care for a wide variety of patients, many with complex medical conditions, undergoing surgical procedures ranging from inguinal hernia reduction to aortic aneurysm repairs. Anesthesiologists who trained under Carl's supervision valued his encyclopedic knowledge of pharmacology, his meticulous and expert peri-operative planning, his unwavering focus on patient well-being, and his generosity with his time.

During the 1980s and 1990s, a period of abundant clinical anesthesia research at MGH, Carl contributed to many clinical studies on drugs used in anesthetic practice, with opioids and other sedatives remaining his major research interest. These investigations were collaborations with MGH colleagues who were national leaders in academic anesthesiology, including Jonathan Moss, John Savarese, Daniel Philbin, Nishan 'Nick' Goudsouzian, Edward Lowenstein, Warren Zapol, and Charles Cote. In 1989, Warren Zapol shared with Carl results of the first inhaled nitric oxide (iNO) studies in lambs, which demonstrated selective pulmonary vasodilation. Carl in turn

shared his expertise in pharmacology and FDA regulatory policy, enthusiastically encouraging and advising Warren in his strategy to pursue clinical iNO studies. Countless patients with pulmonary hypertension, newborns and older, have since benefited from iNO therapy. Carl's most productive and durable collaboration at MGH was with his mentee Mark Dershwitz, MD-PhD, another anesthesiologist-pharmacologist. Together, Carl and Mark obtained industry support, recruited a team of researchers, and completed seminal clinical pharmacodynamic and pharmacokinetic studies on new drugs including butorphanol, ondansetron, and remifentanyl. Carl also contributed to early studies on electroencephalographic 'BIS' monitoring as an indicator of general anesthetic depth. EEG monitoring is now widely utilized to reduce the incidence of unintended patient awareness during general anesthesia. Later in his career, when his research collaborators had retired or moved elsewhere and clinical research support was harder to obtain, Carl raised funds and established the Carl Rosow Anesthesia Research Center, located near his former MGH office on the 5th floor of the White building. This facility, a tangible aspect of Carl's legacy at MGH, provides space and equipment for early-stage anesthesiologist researchers studying human subjects.

In addition to his clinical service and research, Carl took on teaching, administrative, and leadership roles at departmental, institutional, and national levels as he ascended the academic ladder. His final promotion, to Professor of Anaesthesia at Harvard Medical School, was in 2003.

Teaching was Carl's greatest professional joy and he generously shared his expertise in clinical pharmacology throughout his career. He loved to teach clinical anesthesia trainees in the MGH operating rooms and mentored many who became inspired to participate in research. He was a passionate advocate for critical thinking and evidence-based medicine. Indeed, another part of his legacy in the MGH DACCPM is the Carl E. Rosow Evidence-Based Medicine Award, given annually to a clinical trainee who exemplifies academic excellence. As a young HMS faculty member, Carl was recruited to lecture for HST150, Principles of Pharmacology, teaching 2nd year MD and PhD students in the Harvard-MIT program in Health Sciences and Technology, inspiring a number of them to become anesthesiologists. An annual highlight of the course was a field trip to the MGH operating rooms, where small groups of students, supervised by Carl's colleagues, observed the profound effects of hypnotic and muscle relaxant drugs on patients during induction of general anesthesia, while recording data for pharmacokinetic analysis. In 1994, Carl began serving as Course Director for HST150 and recruited most of us (Dershwitz, Forman, Walsh, and Zapol) as faculty lecturers. In 2007, he was recruited to develop and direct another clinical pharmacology course for all 2nd year HMS MD students. Thus, Carl profoundly and positively influenced an entire generation of HMS MD students, and indirectly their patients. He also annually lectured to 2nd year MD students at Boston University, where he was appointed Adjunct Professor. The excellence of his contributions to the curriculum there was recognized through establishment of The Carl E. Rosow Award for Pharmacology Education at Boston University, which annually honors an MD-PhD student focusing on Pharmacology research and demonstrating interest in teaching.

Carl delivered hundreds of lectures around the world during his career and his pedagogy

extended beyond the classroom. Whether at departmental grand rounds or at national meetings, he asked incisive questions and encouraged speakers to exhibit nothing less than the highest standards of research and critical thinking. As a reviewer for professional journals, he provided detailed constructive feedback, whether or not he deemed a manuscript worthy of publication. Carl's unrelenting passion and skill as a teacher is evident from his election to the HMS Academy, his multiple teaching awards, and the fact that his CV includes 30 pages under 'Report of Teaching', comprising half of the entire document. He remained actively involved in HST150 (*via* video link due to Covid-19) until shortly before his death.

Carl was a remarkably generous mentor and greatly enjoyed helping junior colleagues develop professionally and attain academic promotions. As an Examiner for the American Board of Anesthesiology, he was frequently consulted by young colleagues preparing for the high-stakes Oral Board Exams, and generously coached them through practice exams. Carl served on and chaired the Academic Appointments and Promotions Committee of the MGH DACCPM. He set a high bar for candidates who submitted their CVs for consideration, but when his committee supported a promotion and he wrote a letter of recommendation, his outstanding writing skills together with his stature at HMS made him highly effective in helping colleagues advance.

Carl's acumen as a clinician and researcher led him to serve on editorial boards for leading academic journals in Pharmacology and Anesthesiology and as an expert reviewer, editorialist, and textbook author. He was invited to join, and then chaired the Anesthesiology Expert Committee of the U.S. Pharmacopeia. Anticipating the trajectory of anesthesia practice decades ahead of time, Carl joined and served on Boards for the Society for Intravenous Anesthesia and the Society for Ambulatory Anesthesia. He was a long-term member of the International Society for Anesthetic Pharmacology, which in 2009 awarded him its Lifetime Achievement Award in recognition of his impact on both research and clinical practice.

Outside academia, Carl was devoted to his family and to music. He met his future wife, Anna Laura (Strow), on a blind date arranged by a mutual friend. Carl was studying toward his MD and PhD at Boston University and Anna Laura was a graduate student at Harvard. She recalls that Carl was witty and "a wonderful kind man." They married in 1974. After the birth of their first child, David, the Rosow family moved to Wayland, Massachusetts, which has remained their home ever since. A second child, Laura, joined the family. Both David and Laura greatly admired their father and followed him into medicine—both received their MDs from HMS and remain in academia. Dr. David Rosow is an Otolaryngologist affiliated with University of Miami and Dr. Laura Rosow is a Neurologist at University of California San Francisco.

Carl's love of violin and classical music was also lifelong and shared with his family and friends. One of his first home projects in Wayland was to build cabinetry for his stereo equipment and music collection and his car radio was permanently tuned to WCRB, Boston's Classical Music station. Anna Laura reports that Carl amassed a collection of violins, including smaller child-size instruments that he trained on in his youth. One of these instruments is now in the possession of their grandchild and Laura's child, Sam Krause. Anna Laura also recalls that during summers while in graduate school, Carl played in the orchestra pit for 'summer

stock' theater at the Cape Playhouse in Dennis, Massachusetts. Carl and Anna Laura were longtime devotees and supporters of the Boston Symphony Orchestra, the Boston Philharmonic Orchestra, and the Harvard Music Association.

Dr. Carl Rosow's life and career were extraordinary. Nonetheless, to fully appreciate his devotion to teaching and mentoring and his generosity of spirit, one must also consider that for more than a decade leading up to his death, Carl was confronted with a malignant disease that led him to undergo multiple major surgeries and numerous chemotherapeutic treatments, resulting in chronic pain and progressive disability. His illness forced Carl to withdraw regrettably from clinical practice, and his response to that setback was to invest himself further in teaching and other activities that benefited students, trainees, junior colleagues, and academic medicine more broadly. His generosity and optimism were truly inspirational to those whose lives he touched.

Respectfully submitted,

Stuart A. Forman, MD, PhD (*Chair*)

Mark Dershwitz, MD, PhD

David Rosow, MD

Laura Rosow, MD

Carol Walsh, PhD

Warren Zapol, MD