Giants in Chest Medicine
Lawrence D. H. Wood, MD, PhD

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Editor’s Note: This series recognizes and highlights the accomplishments of individuals who have contributed greatly to chest medicine. To listen to the interview with Dr Wood, go to journal.publications.chestnet.org.

Speaking for the remarkable number of mentees of Lawrence D. H. Wood, MD, PhD, who are productive and creative contributors to the field of critical care medicine, of which Dr Wood is a primary founder, I feel both delighted and humbled to offer some thoughts about this extraordinary man. Many others could and should add their own reflections on knowledge and inspiration received from him, and I acknowledge this as but a single step in that process. I believe that all of us regard Dr Wood as a leader in applying rigorous science to test hypotheses or answer questions arising at the bedside of critically ill patients.

The details of Dr Wood’s career include an MD received in 1966 from the University of Manitoba followed by a rotating internship at St. Boniface Hospital in Winnipeg, Manitoba, Canada. After internship he was assigned to the Canadian Forces Institute of Environmental Medicine in Toronto, Ontario, working with Charles Bryan, MD, on the relationship of maximum expiratory flow to the density of gas being breathed. While his rapid evolution as a physician-scientist can be measured by his sophisticated early discoveries with Dr Bryan, his steadfastness and dedication to clinical investigation was illustrated by his completing Navy diving certification along the way, a requirement to permit him to conduct studies of pulmonary physiology using a hyperbaric chamber.

Dr Wood left Toronto to pursue a PhD in physiology at McGill University in Montreal, Quebec, with another great teacher, Peter T. Macklem, MD, continuing his study and mastery of pulmonary mechanics, gas exchange, circulatory function, and heart-lung interactions. Dovetailing completion and defense of his PhD with additional clinical training, he returned to Winnipeg to complete his internal medicine residency and critical care fellowship, working with and guided by Reuben M. Cherniack, MD, who offered him his first faculty position. During this time, Dr Wood’s abiding recognition of both a scientific and spiritual voice speaking from within led him to spend several years living in a Marianist religious community while he continued to hone his skills as a physician and investigator.
Dr Wood’s work during this time period became explosive and wide-reaching relative to the emerging field of critical care medicine. He asked and answered questions central to the management of the critically ill, including the determinants of low-pressure pulmonary edema in acute lung injury, the effects of positive end-expiratory pressure and tidal volume on gas exchange and potential adverse effects promoting lung injury, the effects of and means to reduce pulmonary vascular pressure to improve gas exchange in low-pressure pulmonary edema, the interactions of the lung and circulation during mechanical ventilation of the injured lung, and the effects of alternative modes of ventilation such as constant flow and high-frequency ventilation. In subsequent years, additional areas of investigation would include the limits of aerobic metabolism in sepsis, use of low-density gas in airflow-obstructed patients, effects of hypoxia and respiratory acidosis on myocardial contractility, and methods to reduce oxygen consumption in the critically ill.

I remember well Dr Wood’s recruitment to begin a critical care program at the University of Chicago in 1982. I was a chief resident and attendee at his Grand Rounds presentation on acute hypoxemic respiratory failure during which he presented his elegant studies, concluding with three principles that he believed could be taken from his laboratory studies to the bedside of the patient with ARDS:

1. Seek the lowest tidal volume consistent with adequate ventilation.
2. Seek the lowest positive end-expiratory pressure consistent with an adequate saturation of hemoglobin on a nontoxic FiO2.
3. Seek the lowest pulmonary capillary wedge pressure consistent with an adequate cardiac output.

By the end of his lecture I was convinced that I wished to work with him, a choice which soon came to pass. Little did I know that it would take >20 years for an army of clinical investigators, myself included, to confirm in large clinical trials the principles he laid out so simply and clearly that day.

Dr Wood’s excellence extended deeply into clinical care and teaching as well, and he ranked the enjoyment and rewards of these pursuits as equal if not greater than those of his scholarship. His syllabus of critical care evolved quickly to become a major textbook in the field—Principles of Critical Care—a project I joined him on and have enjoyed through multiple editions. He went on to receive multiple awards for his teaching prowess, and it has never failed to amaze me how many colleagues—including many outside the field of pulmonary and critical care medicine—note how deeply they were at the beginning of their careers by contact with Dr Wood in the classroom or on the wards, learning either the intricacies of physiology or how to help a family and patient through the difficulties and fears of end-of-life care, done by Dr Wood with compassion, reflective listening, and gentle guidance. The science and humanity of medicine have rarely inhabited a person as they have in him.

The sum of these accomplishments can be the making of a great mentor and that is Dr Wood’s continued contribution to our field, still present after his retirement from academic medicine. Many of his trainees, now quite senior in their own right, continue to enjoy this relationship with him. It is in this spirit that I invite the reader and listener to receive and enjoy this interview with a giant of pulmonary and critical care medicine.

Suggested Readings


