Alan Davison, PhD, 1936–2015

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Alan Davison, PhD, Fellow of the Royal Society, professor emeritus at the Massachusetts Institute of Technology (MIT), and a leader in the fields of inorganic and radiometal chemistry for more than 4 decades, died on November 14 at the age of 79 at his home in Falmouth, MA.

Davison earned his undergraduate degree at the University College of Swansea in Wales in 1959, followed by a PhD in 1962 in inorganic chemistry from Imperial College London under Geoffrey Wilkinson, who would later (1973) be awarded the Nobel Prize for Chemistry. After 3 years as an instructor in chemistry at Harvard University, Davison joined the Department of Chemistry at MIT in 1964 as an assistant professor. He rose through the ranks to become a full professor in 1974, about the time he began to explore the fundamental chemistry of technetium, an element that, until that time, was not believed to be particularly interesting or useful.

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His research interests were not confined to the study of technetium or radiochemistry. Throughout his illustrious career, Davison also made important contributions in organometallic chemistry, boron chemistry, metal–metal bonding, coordination chemistry, and bioinorganic chemistry. He was a serial innovator whose various inspiring discoveries provided starting points for generations of researchers. Over the years he served as thesis advisor to more than 50 graduate students, 24 of whom received their degrees in the field of technetium chemistry—a large number for such a specialized field and one among many indicators of his remarkable productivity. Numerous graduate and postdoctoral students from his laboratory have become leaders in nuclear medicine and continue to make valuable contributions to molecular imaging.

In a more than 30-year collaboration with the late Alun G. Jones, PhD, a professor of radiology at Harvard Medical School, Davison brought a rational understanding of the chemistry of technetium to the field of nuclear medicine. The study of technetium chemistry was severely limited until the mid-1970s, when milligram quantities of ^{99}Tc were isolated by the U.S. Department of Energy and made available to researchers to determine the structure of technetium-containing compounds. The fundamental chemistry would originate in Davison's labs at MIT using macroscopic quantities of the long-lived isotope ^{99}Tc and then be translated to the tracer level using shorter-lived ^{99m}Tc in Jones's labs at Harvard Medical School.

Davison and Jones's early work focused on elucidation of the structures of the numerous species produced in the early technetium kits, including the kidney- and bone-seeking agents. They are, however, best known for their work with hexakis-isonitrile complexes of technetium(I), research that led to the development of ^{99m}Tc-sestamibi (Cardiolite), the first successful technetium-based myocardial perfusion agent. ^{99m}Tc-sestamibi turned out to be not only an extremely successful myocardial perfusion agent but also to be useful in tumor imaging and as a marker for drug resistance in cancer. The introduction of Cardiolite caused an explosion in the field of nuclear cardiology and a doubling of the number of nuclear medicine studies performed.

Chris Orvig, PhD, professor of chemistry at the University of British Columbia and a 1981 MIT doctoral graduate, remembers the day he first met with Davison to be his teaching assistant: "Alan told me about his research project on the 'new element' Tc....I was hooked. . .for life. Alan's breadth of knowledge in chemistry and his unselfish devotion to students were legendary. He always had time to encourage and mentor. I was privileged to share a few years with him." He added, "I use the lessons of patience and understanding that I learned from him every day of my life."

"Alan Davison's mentorship had a profound effect on his many students and postdocs," said former Davison group member, Michael Abrams, PhD (MIT, 1983), Executive Vice President and Chief Discovery Officer of Tekmira Pharmaceuticals Corporation. "His brilliance and chemical insight matched with humor and compassion were a precious gift to all of us."

Davison authored or coauthored more than 250 publications and was a coinventor on 9 patents. He received many awards, including the Alfred P. Sloan Foundation Fellowship (1967), the SNMMI Paul C. Aebersold Award for Outstanding

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of life, or improved survival?" All other indications for ^{18}F-NaF PET will remain nationally noncovered.

The National Oncologic PET Registry, which has led CED efforts in PET imaging, is considering options for collection of additional data that CMS may consider sufficient to answer these questions. The complete final decision memo is available at www.cms.gov/medicare-coverage-database/details/nca-decision-memo.aspx?NCAId=279&bc=AAAAAAAAAAEAAA%3d%3d&.

Centers for Medicare & Medicaid Services

SNMMI Comments on 2016 Final Rules for HOPPS and MPFS

On December 16, SNMMI submitted letters with comments to the Centers for Medicare & Medicaid Services (CMS) on the 2016 Final Rules for the Hospital Outpatient Prospective Payment System (HOPPS) and the Medicare Physician Fee Schedule (MPFS). These letters were submitted in response to a CMS request for comments by a December 29 deadline. In the HOPPS letter, SNMMI commented on Ambulatory Payment Classification (APC) restructuring for nuclear medicine services, OPPS treatment of new Current Procedural Terminology and Level II Healthcare Common Procedure Coding System codes, Off-Campus Provider-Based Departments, CMS Offset File, and Q9969 Code. Although SNMMI met with CMS earlier in 2015 with concerns about APC restructuring, SNMMI recommendations were not included in the Final Rule. In the MPFS letter, SNMMI commented on 2016 identification of potentially misvalued services, colon transit imaging, and Appropriate Use Criteria (AUC). SNMMI noted in an online statement that it supports the CMS decision to delay the AUC provision and adopt policies regarding claims-based reporting requirements in the CY 2017 and CY 2018 rulemaking cycles.

SNMMI

Imaging in Privately Insured Patients, 2007–2013

In a study published in the December issue of the *Journal of the American College of Radiology* (2015;12:1380–1387), Horný et al. from Boston University (MA) reported on a study designed to determine whether increases in utilization of advanced diagnostic imaging for privately insured patients in 2011 were the beginning of an upward trend in imaging growth or merely an anomaly in what had appeared to be a declining trend beginning in 2008. The study looked at out- and inpatient data on CT, diagnostic ultrasound, MR, and PET imaging from 2007 through 2013. Calculated data included numbers of procedures per person-year covered by private health insurance, proportion of office and emergency visits that resulted in imaging, average payments per procedure, and total payments per person-year covered by private health insurance. Results showed that outpatient utilization of CT and PET imaging decreased in both 2012 and 2013 and that outpatient utilization of MR imaging increased slightly in 2012 but decreased in 2013. Outpatient utilization of diagnostic ultrasound increased each year throughout the study. Inpatient utilization of all imaging modalities except PET decreased in 2012 and 2013. Adjusted payments for all imaging modalities increased in 2012 and then dropped significantly in 2013 (except for diagnostic ultrasound, where adjusted payments increased in 2013). The authors concluded that "the trend of increasing utilization of advanced diagnostic imaging seems to be over for some, but not all, imaging modalities. A combination of policy (e.g., breast density notification laws), technologic advancement, and wider access seems to be responsible for at least part of an increasing utilization of diagnostic ultrasound."

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Achievement in Basic Science Applied to Nuclear Medicine (1993), the Ernest H. Swift Lectureship at the California Institute of Technology (1999), the American Chemical Society Award for Creative Invention (2006), the Carothers Award for outstanding contributions and advances in industrial applications of chemistry (2006), the Jacob Heskel Gabbay Award in Biotechnology and Medicine (2006), and the SNMMI Georg Charles de Hevesy Nuclear Pioneer Award (2009). Upon his retirement, the MIT Department of Chemistry established an endowed lectureship for junior faculty in his name, a reminder of his commitment to mentoring junior faculty.

Davison is survived by Lynne Davison, his wife of 21 years; 5 children; 2 stepchildren; 16 grandchildren; and 3 great-grandchildren. A memorial service is planned for March.