

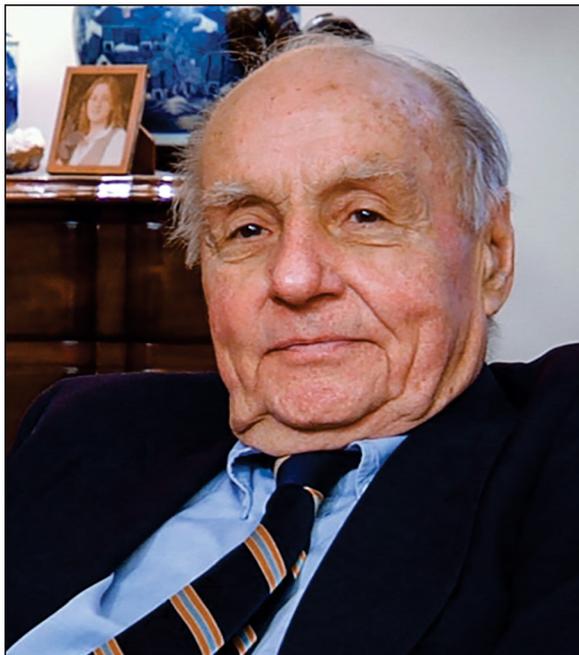
Fletcher H. McDowell 1923–2017

Bruce T. Volpe, MD

Fletcher H. McDowell, MD, died at his home in New York City on April 23, 2017. He was 93 years old.

Fletcher graduated from Dartmouth College and then from Cornell Medical School in 1947. He continued training in medicine there and at Stanford, returning to neurology residency with Harold Wolff at Cornell. He then joined the Army Medical Corps and was chief of neurology at army hospitals in Bad Kanstadt and Landstuhl, Germany, for 2 years. After discharge, he went to Queen's Square for a year and returned to New York in the mid 50s. Wolff appointed him chief of the Cornell Neurological Service at Bellevue Hospital. There he became involved with studies of stroke diagnosis and prevention and also with new treatments for Parkinson's disease. When the Bellevue service folded into one academic line, he returned to Cornell and became the director of the Burke Rehabilitation Hospital. This brief appreciation mentions some pillars in a life of achievement, but only partly describes the man.

He was a founding editor of this journal, *Stroke*. With Clarke Milliken and Irving Wright in 1971 and a cast of neurological and neurosurgical luminaries from the Stroke Council of the American Heart Association, he particularly appreciated the need for a new outlet that would consolidate stroke manuscripts for a growing focused group of investigators. Thanks in large part to Milliken's efforts, when Fletcher took over in 1978, the "child had passed infancy..." and in *Stroke*, under his direction, there were nearly 150 articles per year from investigators from all over the world. He organized over a dozen Princeton Conferences, with Milliken, for the purpose of presenting new information and research about stroke, developing consensus positions for diagnosis and treatment, and giving voice to the improved neuroimaging methods for determining cerebral blood flow and its relationship to cerebral metabolism especially during ischemia.^{1,2} Coupled with



an interest in platelet aggregation inhibitors, his recognition of the possibility for improving cerebral flow and reversing ischemia was prescient given our current age of tissue plasminogen activator and more aggressive invasive clot-busting procedures.

He actually came to study cerebrovascular disorders after making remarkable contributions to the first medical management of Parkinson's disease. Fletcher and his group recognized the brilliance of George Cotzias' observation that patients with Parkinson's disease tolerated a slow titration of L-DOPA (L-3,4-dihydroxyphenylalanine).³ This led him to instigate a clinical trial, the results of which would irrevocably alter the treatment, and more, alter the way we think

about degenerative neurological conditions.^{4,5} These studies were followed by the recognition that motor response fluctuations were related to plasma L-DOPA concentrations,⁶ carbidopa increased the effectiveness of L-DOPA,⁷ sustained release L-DOPA preparations would enhance mobility for some,⁸ and nearly all patients with Parkinson's disease would develop cognitive impairment.⁹

In these chapters of his life, he worked collaboratively and successfully with peers and with young investigators. Although it is not surprising that his peers enjoyed working with him, his relationship with young faculty is noteworthy. Marked by generosity of spirit, he had an uncanny ability to encourage and then share credit, and that fact is supported by simply looking at the author lists of his articles. Again and again, he supported and encouraged new investigators through lean times and replete times, to pursue an interest and develop the argument. As he approached the task of running the Burke Rehabilitation Hospital, then under the auspices of Cornell Medical School, the challenge was not only administrative but how to awaken an interest in clinicians in the active care of the chronically ill, especially those with neurological injury. His straightforward,

Received July 18, 2017; final revision received July 18, 2017; accepted July 19, 2017.

From the Center for Biomedical Sciences, Feinstein Institute, Northwell Health School of Medicine, Hofstra University, Manhasset, NY.

Correspondence to Bruce T. Volpe, MD, Center for Biomedical Sciences, Feinstein Institute, Hofstra University/Northwell Health, 350 Community Dr, Manhasset, NY 11030. E-mail bvolpe1@northwell.edu

(*Stroke*. 2017;48:2335-2336. DOI: 10.1161/STROKEAHA.117.018798.)

© 2017 American Heart Association, Inc.

Stroke is available at <http://stroke.ahajournals.org>

DOI: 10.1161/STROKEAHA.117.018798

hard-working approach led him to recruit specialists from cardiology, pulmonology, rheumatology, and neurology to add to the expertise of the extant therapy teams of nurses, occupational and physical therapists, speech/language therapists, and social workers. This mix led to innovations. For example, experiments from basic science laboratories strongly indicated that actively treating the paralysis resulting from cerebral ischemia might have benefit,^{10,11} yet there was a dearth of rigorous study about the impact of intensive physical training and whether that training, or any training for that matter, produced improved motor recovery after stroke. In a personal aside to one of us, he remarked often that he was baffled by how much time patients spent in bed, and he remained unsatisfied by the eventual rule of 3 hours of therapy a day. Fletcher encouraged his young investigators, a collaborative team of neurologists and engineers, to consider that robotic devices might serve as an effective purveyor of intensive training. New interactive devices that could move a limb in one moment and get out of the way in the next moment had been developed by Neville Hogan's group at Massachusetts Institute of Technology,¹² and naturally a pilot trial ensued,¹³ which eventually led to a definitive multicenter randomized trial.¹⁴ Fletcher had supported and made possible the coming age of bioelectronics in restorative neurology and so he made another important deflection in the arc of science and clinical medicine.

Always looking for a way to improve the lives of patients with neurological injury, he joined with Labe Scheinberg, to start the American Society of Neurologic Rehabilitation, and worked tirelessly to boost high-quality submissions to that society's new journal. He founded the National Stroke Association so that patients could get meaningful and useful information about their condition. He was also a member of the board of United Cerebral Palsy. Perhaps his most enduring legacy was the founding of the Burke Medical Research Institute, a place where he used to great advantage propinquity of basic scientists and clinicians to breach boundaries in the approach to their various concerns. The early group of investigators included Tong Joh, John Blass, Gary Gibson, and Harriet Baker, each of whom has made important contributions to basic science and clinical neurology. Currently, the Burke Medical Research Institute continues as an intriguing model for medical research in a rapidly expanding scientific universe.

He was an honorable and practical man who was a compassionate physician, a dedicated teacher, a generous colleague, and a reliable friend. He was devoted to the active care of those with neurological disease and the instruction and training and medicine they needed to help them live as best they could (Figure 1). It is well known that, among his remarkable

deeds, he made house calls when his patients could not come to clinic. He was an inspirational teacher, and he brought clear and calm rationality to any discussion or case presentation and also an aspirational sense of purpose to the staff of a sleepy suburban rehabilitation hospital. He was a generous colleague, and many have commented fondly about trips taken with him and gracious wife, Electra, who died prematurely at age 55. Fletcher, Electra, and their 3 daughters entertained several dozens of classes of neurology and medical trainees at memorable gatherings at their house. Generations of neurology residents at Cornell have had the honor and privilege to train and work with Fletcher McDowell, and many have been inspired to follow his example.

References

1. McDowell FH, Millikan CH. Summary of 11th Princeton conference on cerebrovascular disease, Nassau Inn, Princeton, NJ, March 5–7, 1978. *Stroke*. 1978;9:429–439.
2. McDowell FH, Millikan CH. Summary of 12th conference on cerebrovascular disease. Williamsburg, Virginia, March 2–4, 1980. *Stroke*. 1980;11:442–451.
3. Cotzias GC, Van Woert MH, Schiffer LM. Aromatic amino acids and modification of parkinsonism. *N Engl J Med*. 1967;276:374–379. doi: 10.1056/NEJM196702162760703.
4. Diamond SG, Markham CH, Hoehn MM, McDowell FH, Muentner MD. Multi-center study of Parkinson mortality with early versus later dopa treatment. *Ann Neurol*. 1987;22:8–12. doi: 10.1002/ana.410220105.
5. McDowell F, Lee JE, Swift T, Sweet RD, Ogsbury JS, Kessler JT. Treatment of Parkinson's syndrome with L dihydroxyphenylalanine (levodopa). *Ann Intern Med*. 1970;72:29–35.
6. Sweet RD, McDowell FH. Plasma dopa concentrations and the "on-off" effect after chronic treatment of Parkinson's disease. *Neurology*. 1974;24:953–956.
7. Sweet RD, McDowell FH. Five years' treatment of Parkinson's disease with levodopa: therapeutic results and survival of 100 patients. *Ann Intern Med*. 1975;83:456–463.
8. Cedarbaum JM, Silvestri M, Clark M, Toy L, Harts A, Green-Parsons A, et al. Results of long-term treatment with controlled-release levodopa/carbidopa (Sinemet CR). *J Neural Transm Park Dis Dement Sect*. 1990;2:205–213.
9. Loranger AW, Goodell H, McDowell FH, Lee JE, Sweet RD. Intellectual impairment in Parkinson's syndrome. *Brain*. 1972;95:405–412.
10. Nudo RJ, Milliken GW, Jenkins WM, Merzenich MM. Use-dependent alterations of movement representations in primary motor cortex of adult squirrel monkeys. *J Neurosci*. 1996;16:785–807.
11. Nudo RJ, Wise BM, SiFuentes F, Milliken GW. Neural substrates for the effects of rehabilitative training on motor recovery after ischemic infarct. *Science*. 1996;272:1791–1794.
12. Krebs HI, Hogan N, Aisen ML, Volpe BT. Robot-aided neurorehabilitation. *IEEE Trans Rehabil Eng*. 1998;6:75–87.
13. Aisen ML, Krebs HI, Hogan N, McDowell F, Volpe BT. The effect of robot-assisted therapy and rehabilitative training on motor recovery following stroke. *Arch Neurol*. 1997;54:443–446.
14. Lo AC, Guarino PD, Richards LG, Haselkorn JK, Wittenberg GF, Federman DG, et al. Robot-assisted therapy for long-term upper-limb impairment after stroke. *N Engl J Med*. 2010;362:1772–1783. doi: 10.1056/NEJMoa0911341.

Stroke

JOURNAL OF THE AMERICAN HEART ASSOCIATION



Fletcher H. McDowell 1923–2017 Bruce T. Volpe

Stroke. 2017;48:2335-2336; originally published online August 3, 2017;
doi: 10.1161/STROKEAHA.117.018798

Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2017 American Heart Association, Inc. All rights reserved.

Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the
World Wide Web at:

<http://stroke.ahajournals.org/content/48/9/2335>

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in *Stroke* can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the [Permissions and Rights Question and Answer](#) document.

Reprints: Information about reprints can be found online at:
<http://www.lww.com/reprints>

Subscriptions: Information about subscribing to *Stroke* is online at:
<http://stroke.ahajournals.org/subscriptions/>