In Memoriam: Charles Miller Fisher, MD (1913-2012)

When Charles Miller Fisher, MD, died on April 14, 2012, the field of neurology lost one of its 20th century giants. Fisher was born one of 9 children in 1913 in Waterloo, Ontario, Canada. In 1938, he graduated from the University of Toronto Medical School, soon after marrying his life’s love, Doris. In 1940, as war engulfed Europe, he volunteered for the Canadian Navy but was transferred on loan to the British Royal Navy in response to the United Kingdom’s urgent call for more naval medical officers. In 1941, he was the ship doctor on an armed merchant cruiser called the Voltaire when it was attacked and crippled by a German vessel in the South Atlantic. As the Voltaire listed to 45°, the captain surrendered and all hands were ordered to abandon ship. Lifeboats could not be launched because of the angle of the list, so the survivors had to jump or slide into the (fortunately) warm waters, being plucked out of the ocean by the enemy 6 or more hours later. Fisher spent the next 3½ years as a physician in a German prisoner of war camp, where he taught himself German, principally to read whatever German medical literature his captors made available. Fisher was repatriated in September 1944 as one of the supervising doctors involved in an exchange of wounded prisoners of war.

When he resumed his medical career in Canada, his intention was to focus on diabetes and metabolic diseases. However, as part of a medical refresher course, he had a rotation at the Montreal Neurological Institute, where on morning bedside rounds he came to the attention of Wilder Penfield, MD, Montreal Neurological Institute’s legendary chief. Penfield quickly recognized Fisher’s inquiring mind and became his mentor. He arranged an acting-registrar (residency) position for Fisher at the institute (1948-1950) and subsequently encouraged Fisher to do a neuropathology fellowship with Raymond D. Adams, MD, at Boston City Hospital (1949-1950). At age 36 years, Fisher returned to Montreal to become the neuropathologist at the Montreal General Hospital. It was there that he made the observations that resulted in his groundbreaking report in 1951 that extracranial carotid disease was a fruitful source of cerebral stroke and that the ictus could be preceded by brief warning signs, which he named transient ischemic attacks. Furthermore, he anticipated that carotid-related stroke could be prevented with newly introduced anticoagulation and surgical therapies. This work was facilitated by 2 dedicated pathology assistants (dieners) who, under Fisher’s guidance, broke tradition and actually removed the carotid arteries at autopsy, often retrieving them intact from the aorta to their intracranial bifurcation. Inspired by Fisher, these 2 dieners returned to high school and then went on to medical school. One became a university professor of surgery and president of the Royal College of Surgeons, the other a general practitioner. They could be considered the harbingers of the many fellows whom Fisher would later mentor.

In 1954, Adams was asked to develop a Neuromedical Service (the official name for almost 3 decades) at the Massachusetts General Hospital (MGH). He invited Fisher to return to Boston to join him. This began an intensive collaboration that ultimately impacted the construct and culture of neurology, including the recognition of stroke disease as primarily a neurologic rather than internal medicine discipline. Fisher spent the next half century at MGH and Harvard University, where he created and led the first formal Stroke Service. Many of his Stroke Service trainees (fellows) became leaders in the stroke field throughout the world.

Fisher’s teaching, care, and contributions were pan-neurological. When Adams formed the MGH Pediatric Neurology Service and became its chief, Fisher became the head of the MGH Adult Neurology Service. However, he is best known for his many seminal contributions to stroke, for example, the discovery not just of carotid stenosis but also of carotid dissection as a cause of stroke; the demonstration that atrial fibrillation was a frequent stroke substrate and that initial strokes owing to atrial fibrillation were often catastrophic; recognition of the clinical and pathologic features of thalamic and cerebellar hemorrhage; description of the major clinical and pathologic syndromes of lacunar infarction (pure motor hemiparesis, pure sensory stroke, ataxic hemiparesis, and dysarthria-clumsy hand); reporting that migrainous accompaniments were important causes of stroke-like events in the elderly; and formulation of the Fisher score for the severity (hence, risk for vasospasm) of aneurysmal subarachnoid hemorrhage based on computed tomographic evidence of the volume distribution of blood in the subarachnoid spaces.

He made numerous innovative contributions to general neurology as well, including description of the fol-
lowing syndromes and phenomena: Miller Fisher syndrome (descending Guillain-Barre); normal pressure hydrocephalus; transient global amnesia; one-and-a-half syndrome (ocular-pontine deficit); wrong-way eyes (thalamic hemorrhage); pontine ptosis; oval pupils; and rostral-caudal (brain) deterioration (in the comatose patient). Frequent collaborators in his stroke and general neurology contributions included Adams, Maurice Victor, E. P. (Peirson) Richardson, and Robert Ojemann. Salomon Hakim, a Colombian neurosurgeon, collaborated in the description of normal pressure hydrocephalus.

Even as he approached the age of 96 years, Fisher still published journal articles. He has received many honors and awards, the most singular of which are his induction into the Canadian Medical Hall of Fame; the creation of the annual C. Miller Fisher Award for excellence in stroke care/research by the New England Branch of the American Heart and Stroke Association; and at MGH, the establishment of the C. Miller Fisher Chair of Neurology, the creation of the CMF Annual Stroke Lecture, and the renaming of the Vascular Neurology Service as the CMF Service. In the weeks before his death, the 3-decade-old Greater Boston Stroke Society was renamed the C. Miller Fisher Society.

Fisher was a very large and imposing man and one easy to caricature. His rounds were very long, slow, and thorough, aimed at extracting every kernel of interest from every patient. His focus included attention to small but often critically relevant details of the clinical history or examination. He noted that meaningful retrieval of such details separates the expert from the novice. He was a collector of unusual patient signs and symptoms that were organized into folders titled, for example, “patients who wrote off the paper,” “mumblers,” “irascible patients,” “topplers,” and “pure sensory stroke.” When sufficient instances of any one finding would begin to correlate with pathoanatomic, pathophysiologic, and/or epidemiologic substrates, he would prepare them for publication, for example, his report on 200 cases of pure sensory stroke.

Fisher was a dedicated teacher and mentor. He spent 5 or more hours each day with his stroke fellows. His method of teaching was Socratic. The fellows would see the stroke cases in depth, then meet with Fisher at dinner, after which, from 6 PM to 11 PM or later virtually daily, they would see the patients together. Fisher continually questioned each fellow about his observations and ideas. He would analyze each neurologic finding—a visual field defect, an arterial retinal embolus, an ataxic arm, or a gait abnormality—often for hours, studying and teaching how the nervous system worked. He was a dedicated reader and could often be found in the Harvard library studying and digesting original English and German reports. He emphasized that “we could not afford to redo the history of neurology every 20 years.” That is, continually rediscovering what had been known but forgotten. He was always available for discussions, characteristically long and detailed, in which he and we would explore a topic. As a very effective role model, his forte was showing how to learn and explore a symptom, sign, phenomenon, or behavior by careful bedside and laboratory analysis and by thorough reading of the literature. His method is captured in a presentation given at his formal retirement titled “Fisher’s rules,” which was published in the Archives of Neurology (Figure). For the undersigned, he continued to be our mentor and oracle for the duration of his life. He was always available, if only by phone, which became all too frequent in the past few years. He submitted articles for publication until 1996. Until his very last days, he was cognitively intact, and he retained his knack of always knowing what question to ask that would clarify a clinical conundrum.

Most of all, Fisher considered himself a doctor. He never failed to ask how the patient could be helped. He strived for practical solutions. His efforts at clarification of neurologic signs and symptoms and the mechanisms and causes of stroke were always aimed at improving the condition of patients.

His patients, students, residents and fellows, colleagues, and all physicians and neurologists are richer because of his life’s palpable clinical and scientific productivity. He fulfilled the Horatian boast, “Exeugi monumentum aere perennius” (“I have built a monument more lasting than bronze”).

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Special Article

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Fisher's Rules

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C. Miller Fisher is a clinician whose methods and style deserve the same attention given his accomplishments. The 17 "rules" presented here summarize some of the basic principles he has followed in the practice of medicine.

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The unique capabilities of C. Miller Fisher as astute observer and describer of clinical phenomena, pathologist, investigator, and physician were appropriately recognized by his colleagues and students on Fisher Day, Sept 7, 1960, during a celebration marking his formal retirement. His many accomplishments and publications, especially in the field of cerebrovascular disease, were dealt with by Adams and Richardson. As has been true of clinicians in former eras, the legacy of Dr Fisher's methods and style may prove just as important and enduring as his scientific advances.

Change in medical and technical knowledge is so rapid that we accept constant flux as a fact of life. The Queen of Choice in Lewis Carroll's Alice in Wonderland put it aptly, "Now, here you see, it takes all the running you can do just to keep in the same place." This constant state of change means that some of today's "brightest advances" may be labeled tomorrow as yesterday's mistakes. If gains in knowledge are so fleeting, how can we make our mark on the future? Dr Fisher, as a student and teacher, conveys to colleagues, and students, by his words and personal example, a way of procedure, a methodology. I have chosen to call his method "Fisher's Rules" because he is fond of organizing phenomena into well-ordered patterns and will frequently ask, "does this patient's findings fit the usual rules for a lesion in this anatomic region?" These rules are described herein for those not fortunate enough to have worked with this master, in hope that they may serve as guides for the apprentice clinician. Those who know C.M.F. will recognize that he did not actually state many of these rules, they are inferred from his behavior and his example.

1. The bedside can be your laboratory. Study the patient seriously. Clinical observation takes time and patience. The method of clinical observation should be as rigorous as that of the laboratory bench. Generate hypotheses from your history and observations, and then proceed to devise tests applicable at the bedside that will corroborate or disprove your ideas.

2. Settle an issue as it arises at the bedside. Whenever possible, don't leave a "maybe." The situation may be quite different tomorrow, so that the opportunity to answer an important question will be lost. A loose, indeterminate formulation of the clinical problem is usually not improved or clarified by laboratory investigations.

3. Make a hypothesis and then try as hard as you can to disprove it or find the exception before accepting it as valid. C.M.F.'s publication or formal statement of a concept often appeared years after the idea was originally generated. During that time, he would test and retest the idea to uncover its weaknesses and pitfalls, always trying to "trip it up." He was also wary of stating ideas that had not stood the test of time and inquiry.

4. Always be working on one or more projects; it will make the daily routine more meaningful. Once a hypothesis has bloomed, collection of data at the bedside or in the clinic can begin. Even patients whose problems do not relate to the study at hand can sometimes serve as controls. Also, "normal" patients can teach how a task is ordinarily approached, a story analyzed, or a picture interpreted. One can gain from any clinical encounter.

5. In arriving at a clinical diagnosis, think of the five most common findings (historical, physical findings, or laboratory) found in a given disorder. If at least three of these five are not present in a given patient, the diagnosis is likely to be wrong.

6. Describe quantitatively and precisely. From a verbal or written account of the findings in a given patient, others will need to picture what has been found. Furthermore, when the patient is reexamined months or years later, you will need to compare the findings with your own prior description. "The patient, while supine, could lift his leg to a height of 6 in for 10 s," given a visual picture far superior to a simple statement that the leg had moderately severe weakness.

7. The details of the case are important; their analysis distinguishes the expert from the journeyman. For example, an exacting account of the pace of a stroke frequently helps separate hemorrhage from occlusive disease.

8. Collect and categorize phenomena; their mechanism and meaning may become clearer later if enough cases are gathered. Scattered over, under, and
on C.M.F.'s work area are untold manilla folders containing collections of unusual signs, historical accounts, or unique or poorly understood observations. The headings on these folders might read “patients who write off the paper,” “interruption of behavior,” “nonsense speech,” “irritability,” “numbness,” “oral paresthesia,” “unusual movements ipsilateral to a cerebral lesion,” “laughs,” “smiling while talking of feeling sad.” If we have not collected our observations as we go along, they are often impossible to retrieve later.

9. Fully accept what you have heard or read only when you have verified it yourself.—Whenever possible, test the ideas of others before embracing them as valid or quoting them. The literature and dogma of medicine are filled with hearsay, half-truths, and imaginings. Misinformation and poorly tested “facts” are frequently passed along in rote fashion from one generation to the next.

10. Learn from your own past experience and that of others (literature and experienced colleagues).—C.M.F. knows and reverses the history of ideas and the contributions of others. As Osler had noted, “to study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all.” C.M.F. can frequently be found in the evening among the stacks of one or another of the medical libraries in Boston. Each generation cannot relive the history of neurology. Take advantage of what has been already clarified in the past.

11. Didactic talks benefit most the lecturer. We teach others best by listening, questioning, and demonstrating.—C.M.F. would often casually question bright students months after they attended one of his lectures or after a particularly good talk they had heard together, attempting to gauge retention of the material presented. Often the cardinal points had been forgotten or never learned. We recall best facts and concepts that we ourselves have struggled to obtain.

12. Write often and carefully. Let others gain from your work and ideas.—C.M.F. set a goal of producing at least one major and two minor reports each year. This gave him time lines to aim for that he invariably surpassed but seldom lagged behind.

13. Pay particular attention to the specifics of the patient with a known diagnosis; it will be helpful later when similar phenomena occur in an unknown case.—Many clinicians stop acquiring information when the diagnosis becomes clear; for them, the object of the clinical encounter is simply to make a diagnosis. Listening to detailed descriptions, for example, of visual phenomena in known migraineurs may prove invaluable when confronted later with a patient with an unusual undiagnosed visual experience. Compare the unknown with the 100 prior migrainous visual accompaniments: does it fit the rules?

14. Be a good listener; even from the mouths of beginners may come wisdom.—C.M.F. frequently questioned students, fellows, and colleagues and patiently listened to their replies in hopes of gleaning new thought or insight.

15. Resist the temptation to prematurely place a case or disorder into a diagnostic cubby hole that fits poorly.—Allowing it to remain an unknown stimulates continuing activity and thought. C.M.F. has an uncanny knack for recognizing the unusual patient or the facet of the case that did not quite conform to the rules. He is also keenly aware of the limitations of present medical knowledge. Identifying the unique case led to further analysis and frequently a report of a newly defined condition or variant.

16. The patient is always doing the best he can.—Be supportive. Never become angry with a patient or his family.

17. Maintain a lively interest in patients as people.—C.M.F. also collects people with unusual attributes, for example, a man strong enough to lift a small car, families with a history of impressive longevity, fat people who enjoy excellent health, people who succeed at unusual occupations. His interest in people also extends to his students, residents, fellows, and colleagues. He is never too busy to discuss a vexing clinical problem, share ideas about a new medical advance, or simply chat about the recent news of the day. Perhaps his success as a clinician partially reflects his more general interest in humanity and its trials, tribulations, successes, and sufferings.

References