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is Professor of Clinical Neurology and Honorary Consultant Neurologist at the Stroke Research Centre, UCL Institute of Neurology, Queen Square, and the National Hospital for Neurology and Neurosurgery (NHNN), University College Hospitals (UCH) NHS Foundation Trust. Dr Werring contributes to delivering hyperacute and acute stroke care, and runs a specialist service for patients with intracerebral haemorrhage and small vessel disease. He leads a research programme in intracranial haemorrhage, including observational and neuroimaging studies of intracerebral haemorrhage, subarachnoid haemorrhage, and cerebral amyloid angiopathy. He is Chief Investigator for CROMIS-2 (Clinical Relevance of Microbleeds in Stroke) study ([www.ucl.ac.uk/cromis-2](http://www.ucl.ac.uk/cromis-2)), and for studies of new imaging biomarkers and treatments for cerebral amyloid angiopathy. He is a member of the Association of British Neurologists Stroke Advisory Group, Stroke Specialty Lead for the NIHR North Thames Clinical Research Network. He is Chair of the European Stroke Organization Education Committee.



### Steven M Greenberg, MD, PhD

is a Professor of Neurology at Harvard Medical School and holds the John J. Conway Endowed Chair in Neurology, directs the Hemorrhagic Stroke Research Program, and is Vice-Chair of Neurology for Faculty Development at the Massachusetts General Hospital. He has served in many national and international leadership roles in the fields of stroke and neurology including President of the International CAA Association, Chair of the NIH Acute Neurologic Injury and Epilepsy grant review committee, session Co-chair for the NINDS Alzheimer's Disease-Related Dementias Summit, and Chair of the American Heart Association International Stroke Conference.



### Suman Gill

is a Consultant in Stroke Medicine working within the UCLH stroke service where she contributes to the hyperacute, TIA and out patient stroke services. She is also an educator and working as a Clinical Teaching Fellow at UCL where she is developing a Stroke MSc. She is also on the curriculum development committee of the IMPACT course.



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#### Conflict of interest statement

The authors declare that there are no conflicts of interest.

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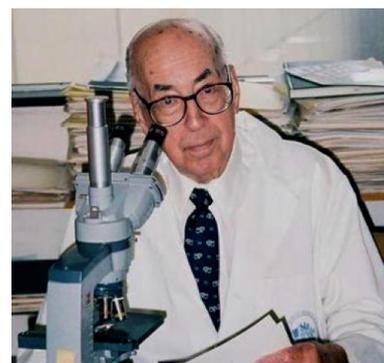
Werring D, Greenberg SM, Gill SK. ACNR 2015;15(5):18-19.

# Foundations of Modern Stroke Medicine:

## The legacy of C Miller Fisher

Dr Charles Miller Fisher (December 5, 1913 – April 14, 2012) developed and wrote about the key scientific ideas that underpin almost every aspect of modern stroke medicine. His insatiable curiosity and formidable scientific ability were applied to meticulously describe clinical and pathological features of many types of stroke. A major theme that Dr Fisher developed can be summed up as the idea that: “strokes do not occur at random”, but instead follow characteristic patterns according to their cause and mechanism. He authored more than 200 publications detailing his observations.<sup>1</sup> Some of the most significant discoveries are listed in Table 1. Every stroke clinician will immediately recognise the impact these have had on both our conceptual understanding and daily clinical practice.<sup>2</sup> A single stroke unit ward round today might include the recognition of lacunar stroke syndromes, the urgent recognition and treatment of symptomatic carotid artery thrombo-embolism, and the diagnosis of a “late life migraine accompaniment” mimicking stroke or transient ischaemic attack (TIA).

Life before becoming a physician held great challenges for Miller Fisher, which may have shaped his extraordinarily determined and productive career in stroke medicine. He was born in 1913 in Ontario, into a large family of eight siblings, and then studied medicine in Toronto, where he was awarded his degree in 1938. He joined the British Royal Navy at the outbreak of war and spent three and a half years interred in a German Prisoner of War Camp, after his boat, HMS *Voltaire*, was sunk off the coast of Cape Verde.



C Miller Fisher

He spent nine hours in the sea, waiting to be rescued, on the very day his wife was due to give birth to their first child, and – in typically uncomplaining manner – reportedly said: “I thought perhaps she was in more trouble than I was”. He trained as a neuropathologist in Boston, and then returned to Montreal, where he began to define what he called “transient ischaemic attacks”. In perhaps his most famous observation, he repeatedly noted “premonitory fleeting symptoms” (including limb sensory symptoms, and monocular visual loss) experienced by patients prior to a hemispheric ischaemic stroke, and made the crucial link to carotid artery atheromatous disease. This led to wide acceptance of the thrombo-embolic theory of ischaemic stroke and TIA. He then moved to Massachusetts General Hospital in the 1950s where he had a long and highly productive career, in the process creating the first stroke service. He died at the age of 98, in 2012, leaving two sons and a daughter.<sup>1,3</sup>

**Table 1. Some of Miller Fisher's outstanding contributions to stroke medicine<sup>2</sup>**

1. Thromboembolism as a stroke and transient ischaemic attack mechanism
2. Carotid artery disease and stroke
3. Characteristics and causes of TIA
4. Causes and treatments of atrial fibrillation related stroke
5. The lacunar hypothesis and stroke due to small vessel occlusion
6. Localisation of brainstem injury
7. Post subarachnoid haemorrhage vasospasm
8. Mechanism of haematoma growth in intracerebral haemorrhage
9. Reversible cerebral vasoconstriction syndrome
10. “Late life migraine accompaniments” and the associations between migraine and stroke

**Table 2: Fisher's Rules: our personal pick**

• Make the patient bedside your laboratory: study the patient seriously
• Settle an issue as it arises at the bedside: whenever possible, don't leave a "maybe"
• Always be working on one or more projects; it will make the daily routine more meaningful
• Always try as hard as you can to disprove your hypothesis before accepting it
• Describe quantitatively and precisely: the details are important
• Fully accept what you have read or heard only when you have verified it
• Write often and carefully. Let others gain from your work and ideas.
• Resist the temptation to place the patient into a diagnostic cubbyhole which fits poorly
• The patient is always doing the best they can. Be supportive and never be angry with a patient or their family.
• Maintain a lively interest in patients as people

Miller Fisher thrived on the intellectual challenge of clinical practice and became legendary for his dedicated care and teaching, which inspired generations of physicians who trained with him. Louis Caplan, one of his clinical fellows, captured this approach in "Fisher's Rules", which remain a blueprint for becoming a great stroke clinician and scientist. We have listed our personal pick, but urge you to read the full publication in order to better understand the attitudes and values he promoted (Table 2).<sup>4</sup>

Miller Fisher's ideal of lifelong learning through detailed observation was uniquely coupled with tremendous communication skills and empathy for the plight of patients affected by stroke. Descriptions abound of Miller Fisher in his office poring through his copious notes to correlate clinical observations with pathological findings. After his death his colleagues carefully collected these notes: one trainee doctor reportedly even checked through the bins to retrieve some that were accidentally disposed of!

One of the greatest lessons we can take from Miller Fisher's life is that he made every day's work an opportunity to make an observation or original contribution. "If you could describe that," he would tell the attendees of his weekly case conference, "if you could really describe that patient's findings and disease mechanism carefully and accurately, you would be the first to do so." While evidence based medicine in large populations is key to modern neurological practice (and especially to stroke medicine), Miller Fisher reminds us of the power of detailed narrative observations on the symptoms of disease and its impact in the individual patient. This is the way in which new patterns and mechanisms of disease are recognised, and by which the correct treatment for each patient can be determined through logical principles. Dr Miller Fisher (or CMF, to those who knew him) continued ward rounds until he was almost 90 years old, always asking the question "what can the patient teach us?" – a lesson which we would all do well to remember, even in this era of ever more sophisticated investigative techniques.

## REFERENCES

- Mohr JP, Caplan LR, Kistler JP. *In Memoriam: C Miller Fisher*. *Stroke* 2012;43:1739-40.
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- Caplan LR, Mohr JP, Ackerman RH. *In Memoriam: Charles Miller Fisher (1913-2012)*. *Arch Neurol*. 2012;69(9):1208-9. doi:10.1001/archneurol.2012.1743.
- Caplan LR. *Fisher's Rules*. *Archives of Neurology*. 1982;39:389-90.

To list your event in this diary, email brief details to Rachael Hansford at [Rachael@acnr.co.uk](mailto:Rachael@acnr.co.uk) by 6th December, 2015

**2015 – November****Ketogenic Study Evening**

9 November, 2015; Dublin, Ireland  
Jacqui McAleer, E. [jmassociates1@me.com](mailto:jmassociates1@me.com)

**Examining the utility of music interventions in neurological disorders of older people**

Monday 16 November, 2015; RSM London, UK  
Lucy Church, T. 0207 290 3928, E. [rsmprofessionals@rsm.ac.uk](mailto:rsmprofessionals@rsm.ac.uk) – [www.rsm.ac.uk/livemusicnow](http://www.rsm.ac.uk/livemusicnow)

**Modern Thinking in MS Management**

7pm Friday 20 November - 16:40 Saturday 21 November, 2015; The Palace Hotel, Manchester, UK  
[www.modernthinkinginms.com](http://www.modernthinkinginms.com)

**11th Essential Neuro MRI Course**

Saturday 21st November, 2015; Liverpool Medical Institute, UK  
One day intensive course in how to interpret MRI Brain & Spine – 6 Cat 1 CPD  
Contact: Sam Pickup, T. 0151 709 9125 or E. [essentialcourses@hotmail.com](mailto:essentialcourses@hotmail.com)

**Consultant PD Masterclass – Sheffield**

Module 1 - 2, 3rd & 4th June 2015, Module 2 - 26th November 2015 (Both modules must be attended)  
[www.parkinsonsacademy.co.uk](http://www.parkinsonsacademy.co.uk) for further details.

**Ketogenic Study Evening**

25 November, 2015; Liverpool, UK. Jacqui McAleer, E. [jmassociates1@me.com](mailto:jmassociates1@me.com)

**The 2nd British Symposium on the History of Neurology and Psychiatry A commemoration of the centenary of the death of Sir William Gowers**

November 25th, 2015; Institute of Neurology, London, UK  
Programme and registration details: Liz Beckmann at [www.hnps.co.uk2016](http://www.hnps.co.uk2016)

**History of Neurology and Psychiatry in London**

November 26th, 2015; Institute of Neurology, Queen Square, London, UK  
Programme and registration details: Liz Beckmann at [www.hnps.co.uk2016](http://www.hnps.co.uk2016)

**23rd Annual Meeting of the European Charcot Foundation**

26-28 November, 2015; Milan, Italy – [www.charcot-ms.org](http://www.charcot-ms.org)

**December****The Brain Series: Sports and the brain**

Evening of Thursday 3 December, 2015; RSM, London  
Organised by: Clinical Neurosciences Section – [www.rsm.ac.uk/events/cng02](http://www.rsm.ac.uk/events/cng02)

**Bipolar Disorder 2015**

3 December, 2015; London, UK. T. 020 7501 6762, [www.mahealthcarevents.co.uk](http://www.mahealthcarevents.co.uk)

**The Encephalitis Society Professional Seminar**

7 December, 2015; London, UK  
T. +44 (0)1653 692583, E. [admin@encephalitis.info](mailto:admin@encephalitis.info) – [www.encephalitis.info](http://www.encephalitis.info)

**BNPA Neurology & Psychiatry SpRs Teaching Weekend**

11, 12 13 December, 2015; Oxford, UK. T.0560 438 3951, m. 07940 591096, E. [admin@bnpa.org.uk](mailto:admin@bnpa.org.uk)

**2016****January****London Sleep Medicine Training Course 2016**

14 - 16 January, 2016; London, UK. T. 020 7501 6762, [www.mahealthcarevents.co.uk](http://www.mahealthcarevents.co.uk)

**February****Dementia 2016**

11-12 February, 2016; London, UK. T. 020 7501 6762, [www.dementiasconference.com](http://www.dementiasconference.com)

**Is it criminal? Acquired brain injury, challenging behaviour and rehabilitation Partnerships in Care Brain Injury Services Conference 2016**

24 February, 2016; Cambridge, UK  
[www.partnershipsincare.co.uk](http://www.partnershipsincare.co.uk) or contact [samantha.coburn-kett@partnershipsincare.co.uk](mailto:samantha.coburn-kett@partnershipsincare.co.uk)

**March****Treating Depression 2016**

24 March, 2016; London, UK. T. 020 7501 6762, [www.mahealthcarevents.co.uk](http://www.mahealthcarevents.co.uk)

**Neurology 2016: leading edge neurology for the practising clinician**

30th March - 1st April 2016; London, UK. T. 020 344 84460, E. [Jean.reynolds@ucl.ac.uk](mailto:Jean.reynolds@ucl.ac.uk)

**May****ABN Annual Meeting 2016**

17-19 May, 2016; Brighton, UK. T. 020 7405 4060, E. [info@abn.org.uk](mailto:info@abn.org.uk)