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This Week's Citation Classic

Wright B M & McKerrow C B. Maximum forced expiratory flow rate as a measure of ventilatory capacity—with a description of a new portable instrument for measuring it. *Brit. Med. J.* **2:**1041-7, 1959. [Natl. Inst. Med. Res., Mill Hill, London, England and Pneumoconiosis Res. Unit (Cardiff), Llandough Hosp., Penarth, Glamorgan, Wales]

The advantages of the maximum forced expiratory flow rate as a measure of ventilatory capacity are considered and the history of the use of the measurement is reviewed. A new instrument, the peak flow meter, for making the measurement is described, and an account given of the method of calibration. [The *SCI*® indicates that this paper has been cited over 270 times since 1961.]

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"I developed the peak flow meter (PFM) while working as a pathologist at the MRC Pneumoconiosis Research Unit (PRU) in the Welsh coal fields, studying the effect of dust on the lungs of animals. Although officially a pathologist my real love was gadgeteering, and the PRU was ideal for it because the respiratory physiologists were all gadget-minded so the unit had a well equipped workshop.

"My experiments were long term so I had time on my hands and began to poke my nose into other people's business. One of the basic physiological problems was the measurement of ventilatory capacity for which the standard test, the Maximum Breathing Capacity, was exhausting for the subject and the apparatus so cumbersome that Colin McKerrow, who was working on it, when asked whether it would be suitable for field use, remarked, 'You'd be l-lucky to g-get it into a f-field!'

"Mike Kennedy[1] started the idea of peak flow measurement in 1949, using a spirometer which was still too clumsy and complicated for survey use. As Ian Higgins said, if someone opened the door to you, but you had to go back for your apparatus, when you returned the door would be shut. I therefore set out to design something simple and portable and the result was the PFM. Charles Fletcher, the unit director, who had rowed for Cambridge, broke the blade of my first model by blowing nearly 1000 1/min. Nevertheless he backed it enthusiastically, especially after he returned to clinical medicine and became a world expert on bronchitis.

"The physiologists were a bit sniffy about the PFM, holding that the proper way to measure flow is by volume and time, but Colin McKerrow and Margery McDermott kindly did a very thorough calibration study. I wrote the paper after I had left to become a full-time gadgeteer at the National Institute for Medical Research in London, and sent it back to the PRU for comments. I got many, some quite rude, but the result was a much improved paper which Colin decided he would quite like to have his name on after all.

"I think the paper has been cited so much because it describes a test and an instrument which are practical and useful. In those days there was also room to put in a decent historical review and quite a bit of discussion and useful detail. Some years ago I noticed that, although the PFM was mentioned, and was often the key to the whole work, there was no longer any reference to our paper. It was evidently assumed that the PFM had been created by Cod. I have never got any award or honour but the Minimeter,[2] a sort of paperback version, got a Design Award and is selling hundreds of thousands, because it can be used by patients at home. My reward is knowing that I have made a substantial and perhaps permanent contribution to clinical medicine."

1. Kennedy M C S. Practical measure of maximum ventilatory capacity in health and disease. *Thorax* **8:**73-83, 1953.
2. **Wright B M.** A miniature Wright peak flow meter. *Brit. Med. J.* **2:**1627-8, 1978.