A reflection on herbal medicine and Karl Popper

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'The aim of science is not to open a door to infinite wisdom but to set a limit to infinite error.' Bertolt Brecht

***Jim Hefford** has worked in a remote rural practice in Southland (two years), a rural practice in Taranaki (nine years) and in city practice (20 years, some solo and some group practice). He left Palmerston North in 1995 and spent a few years splitting his time between work in Wellington and work in England in the wonderful NHS. Now he is completely retired but extraordinarily healthy, despite being in the second half of his 8th decade. In these last few years he has gone a long way back towards the left wing political views of his youth.*

Last year I was asked by an old friend to help her with an assignment that she was required to do as part of her course in herbal medicine.

She was asked to write, giving examples, about the investigations required in diagnosing cases of respiratory diseases. This was probably intended as a challenge to my prejudices as a mainstream practitioner.

I fell back on what I know about the Karl Popper approach to science. I said that the first step in diagnosis was to form a hypothesis based on the history and the clinical examination. The special investigations that follow this step should not be designed to confirm the hypothesis, but to disprove it. In this way the clinician is practising one of the fundamental lessons of science, which is humility.

'According to Popper, what demarcates the theories of empirical science is not that they are especially well supported by observation, but rather that they are open to observational and empirical criticism and refutation and that severe attempts have been made to discover their falsity by such means. Thus for Popper the distinguishing mark of empirical science is in its insistence that only theories that are falsifiable – and hence testable – by empirical evidence be admitted; those that are admitted should then be subjected to the most severe and rigorous attempts at empirical elimination that we can devise.'

New paradigms are not more valid than the old ones, but simply more useful

I would mention another characteristic of a good hypothesis. It enables us to make predictions. The quotation comes from the first chapter of the *BMJ* publication *'Logic in Medicine'* and the chapter is entitled *'Doctors and witchdoctors: Which doctors are which?'*[1]

The Wellington philosopher and historian Peter Muntz, speaking to the NZ Historical Society, gave a New Zealand example of how the Popper approach can be used. There is a theory that the North Island was fished out of the sea by Maui. One can find empirical evidence for this. The mountainous terrain of the North Island fits in with the story that the hills and valleys were caused by Maui's brothers chopping the fish with their axes. But it is impossible to test the idea to the point where it can be refuted. No one could test it, so the story is dismissed as myth. On the other hand, the theory of Continental Drift was originally rejected, but serious efforts to refute it have failed, so this theory is (at present) part of the body of serious scientific hypotheses about the geology of the North Island in a way that the Maui story is not.

Greig Russell wrote an article in the August 2007 *NZFP*, *'Diagnosis – a logical consideration of the science of medicine.'*[2] He would probably say that the Maui story belongs to a different paradigm and that this type of 'science' may be just as valid as our modern scientific paradigm. In this he is following the philosopher Kuhn, whose idea of 'paradigms' was published in 1962 in the book *'The*

Structure of Scientific Revolutions.' The concept of paradigms has been used by postmodernists ever since. Kuhn and the postmodernists dismiss the idea of scientific progress; scientists, they say, are a self-regulated guild that excommunicates dissenters and is only concerned with 'puzzle-solving'. New paradigms are not more valid than the old ones, but simply more useful.[3]

I have gone out of my way in describing Te Ika a Maui as a myth. This may be offensive to some people. It is similar to a problem that we have when we are dealing with people such as those who are committed to faith-healing and other 'alternative' medicines. How do we remain true to ourselves without exhibiting arrogance and intolerance, nor by saying, 'OK, that is your truth'. That is a copout and, personally, I won't use that phrase. So I do talk to people about such things as the placebo effect and the fearful difficulty of setting up critical trials for every kind of treatment except drug therapies. (I soften that by saying along the way that the pharmaceutical industry's commercial behaviour is generally thoroughly evil!)

I am a bit of a coward; I didn't tackle my herbalist friend head-on, but used the oblique approach by introducing her to Popper's ideas.

Can we do this sort of thing in the everyday consulting room? Can teachers do it in the science classroom?

Competing interests

None declared.

References

1. Philips C, ed. Logic in medicine. BMJ Publications; 1988.
2. Russell G. Diagnosis – a logical consideration of the science of medicine. N Z Fam Physician 2007; 34(4):289-292.
3. See, for example 'Coming to blows about how valid science really is'. Rothstein E & Wilson J. New York Times July 21 2001.

The first issue of the N Z Family Physician

'What might be regarded, perhaps, as the final act in the establishment of the College was the issue of the first number of its own journal, the New Zealand Family Physician, *in March 1974. The issue was financed by the drug firm, Pharmaco. The decision to establish this journal was made at a New Zealand Council meeting on 10 November 1973. The appointment of Dr David Cook of Owaka, Otago, as editor, and of Bill Clay and Rae West as an editorial committee, was made only on 6 February 1974. The speedy issue of the first number the following month is a tribute to Cook's enterprise. Most of the papers in the journal were by general practitioners, except for an early, and typically delightful, series called "Letters from an ENT surgeon", by Noel Roydhouse.'*

Wright-St Clair RE. A history of general practice and of the Royal New Zealand College of General Practitioners. Wellington: RNZCGP; 1989. p 69.

Why most published research findings are false

'Published research findings are sometimes refuted by subsequent evidence, with ensuing confusion and disappointment. Refutation and controversy is seen across the range of research designs, from clinical trials and traditional epidemiological studies to the most modern molecular research. There is increasing concern that in modern research, false findings may be the majority or even the vast majority of published research claims. However, this should not be surprising. It can be proven that most claimed research findings are false.'

Ioannidis JPA. Why most published research findings are false. PLoS Medicine 2005;2(8):e124 http://medicine.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pmed.0020124 Accessed 29 Februuary 2008.

Training GPs

'It is impossible to attribute origins or initiatives as though there was some unique creative impulse. For many years in many places concerned and dedicated family physicians had helped each other both as contemporaries or at a senior-junior relationship. Again many effective family physicians had pursued formal and informal programmes to better their knowledge and serve their patients better. My concern as a hospital physician and administrator had been to see how we could relate post-qualification hospital training to prepare doctors facing entry into general practice with relevant experience.'

Hiddlestone J. FMTP 10th Anniversary Celebrations booklet. RNZCGP College Archives.

Editor's note: John Hiddlestone, together with Eric Elder, was involved in establishing the first training scheme for NZ GPs at Southland Hospital in 1970. John died in Nelson on January 27th this year, aged 82.