Dynamic Chiropractic

PHILOSOPHY

EBM: Thinking Outside of the Pyramid

Anthony Rosner, PhD, LLD [Hon.], LLC

If ever there were meant to be a symbol of impregnability and permanence, the pyramid rates right up there at the top.

Let's face it: Whenever you look at a pyramid, whether it's that bizarre and occult symbol on the dollar bill with that demonic eye glaring out of the apex under the banner *ANNUIT COEPTIS*, or any one of those timeless monoliths standing silently in the Sahara desert - the pyramid seems to say above anything else: "Don't mess with me." The message is not unlike that conveyed by so many of those municipal banks in small villages, built with massive columns and layers of concrete to suggest security and permanence in the vaults within, and would-be intruders cordially invited elsewhere.

The other message a pyramid conveys is a pecking order, beginning with the most humble items buried in the base and tapering with progressively narrower bands toward the vertex. In our childhoods, we were all subjected to a familiar pyramid - the basic and nutritional food groups - and told to follow it if we knew what was good for us. More recently, while growing up in the world of clinical research, we have stared down yet another pyramid - one displaying the types of evidence that support clinical interventions.

An example of such a pyramid is depicted below, in which the totemic relationship of the types of evidence regarded as clinically important is painfully clear. Here, it is evident that systematic reviews and meta-analyses occupy the rarefied top echelon, followed by randomized, controlled, double-blind studies and thence cohort studies, case control studies, case series and case reports. It's only at the second rung from the bottom that one discloses the lowly category of "animal research."[1]

This clearly is absurd. Consider how the history of medicine could not have developed without the use of test organisms. This would encompass everything from our understanding of genetic principles from the plants of Gregor Mendel or the bacteria on the petri dishes of Alexander Fleming, Seymour Benzer or Bruce Ames. It extends to the treatment of anthrax from the sheep of

Louis Pasteur, the isolation of insulin from dogs by Banting and Best, and the identification of the conditioned reflex from Pavlov's dogs. Indeed, no less an authority than the British Royal Society of Medicine argues that virtually every major medical advancement of the 20th century relied upon the use of animals in some fashion.[2]

Chiropractic research is no exception. As Charles Henderson has so aptly pointed out, even the *differences* between animals and humans have opened the way to major discoveries essential for understanding basic concepts in neuroscience.[3] Thus giant squid axons 100-1,000 times larger than their mammalian counterparts have given researchers the opportunity to measure the ionic composition of neural cytoplasm and study changes in membrane potentials.[4] The eggs of the clawed African frog *Xenopus laevis* have allowed the development of a patch-clamp technique to study ionic currents generated by newly formed channels.[5] More recently, degenerative changes following spinal fixation that could be considered attributes of the subluxation have been identified in the rat.[6] This followed the groundbreaking experiments in the 1980s by Sato and Swenson, who clearly identified changes in the sympathetic nervous system that followed mechanical stresses to the spinal column in rats.[7] And finally, there has been a proliferation of data from Xue-Jun Song that has demonstrated the multifaceted analgesic effects of instrument-assisted manipulation[8] or the administration of the B-vitamins[9] in rats which have been subjected to neural injury. These are only a few examples of the significant advances in our understanding of the physiological processes which attend human disorders and their alleviation through health care management.

The point to be established by this argument is astoundingly simple. It's simply not possible for the evidence-based pyramid to satisfactorily account for a significant proportion of the most important scientific observations underlying particular methods of treatment. I have yet to see, for example,

any systematic literature reviews or meta-analyses that admit the basic research described with animal or plant models into the pantheon of the evidence hierarchy exemplified by the traditional pyramid. Lacking this essential element, the pyramid commonly used to summarize the state of EBM is necessarily defective.

What are the alternatives? Obviously, we need to think outside the box or pyramid, as it were. Instead of the family tree in a situation in which the parents have undergone multiple marriages, one must think of a new framework - the orchard. And so it is with the observations in the basic sciences which transcend the hierarchy of clinical research designs that one must allow a higher ranking for the evidence brought forward with animal or plant models. Indeed, it is only with the basic sciences that an actual understanding of the mechanisms involved in both clinical disorders and their management can be brought to bear. In short, the pyramid needs to be either structurally modified or supplemented with a second edifice that can accommodate observations in the basic sciences such as those outlined above.

Reconfiguring the EBM pyramid is not an entirely new concept. Some years ago, Wayne Jonas, as an exponent of complementary and alternative medicine, established the evidence house in which a far more extensive variety of structures ("rooms") could allow for contributions from such disparate sources of information as laboratory studies, health services research and qualitative case reports. In this manner, argues Jonas, full public participation in clinical decisions is made possible in a health care system that must become more transparent and accountable.[10]

Just as architectural revolutions often overtake the landscape, so must we be able to rethink our constructs into ones that are more congruent with our more current concepts of health. The problem extends well beyond chiropractic into all facets of health care. It actually represents some of the best prospects by which chiropractic can become more universally understood and accepted among health care professions and the public alike.

References

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