



Medical Science Should Welcome Unconventional Thinking – Commentary

By Jeffrey A. Singer, M.D.

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The medical science priesthood has a long history of treating outside-the-box thinkers harshly. As new knowledge overthrew long-held dogmas in the 20th century, scientists were open to fresh hypotheses.

As a surgical resident in the 1970s, for example, I was taught to excise melanomas with about a five-centimeter margin of normal skin, on the theory dangerous skin cancer should be given a wide berth. A skin graft is needed to cover a defect that size. This approach was never evidence-based but had been universally accepted since the early 20th century.

In the mid-seventies, several clinical researchers challenged the dogma. Multiple studies revealed that five-centimeter margins were no better than two-centimeter margins. Now, the five-centimeter rule is a thing of the past.

For decades, physicians thought the main cause of peptic ulcers was hyperacidity in the stomach, often stress-related.

In the 1980s, gastroenterology resident Barry Marshall noted the consistent appearance of a bacterium, *Helicobacter pylori*, on the slides of stomach biopsy specimens. Suspecting the bacterium caused the ulcers, he ingested it, which indeed gave him ulcers. He then easily cured himself with antibiotics. Several studies confirmed Marshall's discovery by the early 1990s, and today *Helicobacter pylori* is recognized as the cause of most peptic ulcers.

Prescribing Drugs Off-Label

Off-label use of drugs approved by the U.S. Food and Drug Administration (FDA) is another path to medical innovation.

When the FDA approves a drug, it specifies the condition it is meant to treat. But it is perfectly legal to use the drug to treat other conditions. Roughly 20 percent of all U.S. drug prescriptions are off-label, often based on clinical hunches and anecdotal reports. Eventually, the off-label use stimulates clinical studies.

Sometimes the studies fail to validate the initial hunches. But sometimes evidence from clinical trials supports off-label uses.

We surgeons use the antibiotic erythromycin to treat postoperative stomach sluggishness. Lithium was originally used to treat gout and bladder stones; now it is used to treat bipolar illness.

Thalidomide was developed to treat “morning sickness” in pregnant women. Because thalidomide caused horrific birth defects, it is no longer used for that purpose; but, it was subsequently found useful in treating leprosy and multiple myeloma. Tamoxifen, developed as an anti-fertility drug, is now used to treat breast cancer.

These are just a few examples of the rapid advances in understanding and treating health conditions during my medical career made possible by an environment that welcomes heterodoxy. But even health care practitioners who recognize the value of unconventional thinking tend to bridle when they face challenges from nonexperts.

Democratic Health Science

Today, the internet gives everyone access to information previously shared only among medical professionals. Many lay people engage in freelance hypothesizing and theorizing, a development turbocharged by the COVID-19 pandemic.

Every physician can tell stories about patients who ask questions because of what they’ve read on the Internet. Sometimes those questions are misguided, as when they ask if superfoods or special diets can substitute for surgically removing cancers. But sometimes patients’ internet-inspired concerns are valid, as when they ask whether using surgical mesh to repair hernias can cause life-threatening complications.

It may be true that, as writer Theodore Sturgeon said, “90 percent of everything is crap.” But the remaining 10 percent can be important. Health care professionals who see only the costs of their patients’ self-guided journeys through the medical literature tend to view this phenomenon as a threat to the scientific order, fueling a backlash. Their reaction risks throwing the baby out with the bathwater.

Credentials ≠ Competence

It is easy to understand why the scientific “priesthood” views the democratization of health care opinion as a threat to its authority and influence.

Medical experts typically wave the flag of credentialism: If you don’t have an M.D. or another relevant advanced degree, they suggest, you should shut up and do as you’re told. But credentials are not always proof of competence and relying on them can lead to the automatic rejection of valuable insights.

Economists who criticize COVID-19 research, for example, are often dismissed because they are not epidemiologists. Yet they can provide a useful perspective on the pandemic.

Scott Atlas, former chief of neuroradiology at the Stanford University School of Medicine, has published and critically reviewed hundreds of medical research papers. He is a member of the Nominating Committee for the Nobel Prize in Medicine and Physiology.

Yet when Atlas commented on COVID-19 issues, the priesthood and its journalistic entourage derided him because he is “not an infectious disease expert”—as if a 30-year career in academic medicine doesn’t provide enough background to understand and analyze public health data.

Why? Because he had the temerity to contradict the public health establishment. “He’s an MRI guy,” Ashish Jha, dean of Brown University’s School of Public Health, told NPR. “He has no expertise in any of this stuff.”

Expertise Aids Analysis

Credentialism would deny us the benefits of unconventional thinking in other fields as well.

Although David Friedman earned a Ph.D. in physics and never took a course for credit in either law or economics, he spent part of his academic career teaching law and economics at Santa Clara Law School. George H. Smith, despite never graduating from high school, published *The System of Liberty: Themes in the History of Classical Liberalism* through Cambridge University Press. Roy A. Childs Jr., who never graduated from college, was a major intellectual contributor to the libertarian movement in the second half of the 20th century.

Meanwhile, we physicians like to ask, “What do you call the person who graduates last in his medical school class?” The answer: “Doctor.”

Still, it is certainly true the lack of a background in a specific discipline can impede critical analysis of scientific studies by laypeople, making them more vulnerable to quacks and charlatans. Training in the discipline can make it easier to detect data “cherry-picking” and anticipate alternative interpretations of the evidence. Experts are experts for a reason. The question is how we can maximize the benefits of scientific democratization while minimizing its costs.

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