

Cancer and the Power of Placebo

An Interview With Paul A. Offit, MD

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Editor's Note:

Although often grouped together, complementary and alternative medicines are different therapeutic approaches.^[1] Complementary therapies are adjuncts to conventional care, often used in cancer patients for symptom control or to improve physical or emotional well-being during and after treatment. In contrast, alternative medicine involves therapies that substitute for conventional treatments. Both approaches are largely unregulated.

In his book, Do You Believe in Magic? The Sense and Nonsense of Alternative Medicine,^[2] Paul A. Offit, MD, explains why these unregulated industries continue to tempt millions of patients who are desperate for a cure, and who believe that anything that is "natural" must be good for them. Lidia Schapira, MD, spoke with Dr. Offit about his book and the use of alternative therapies for patients with cancer.

Chemo Is More Efficacious Than Emu Oil and Prayer

Dr. Schapira: Your book is a wonderful reminder of the power of stories that people tell themselves to explain illness and bring order to chaotic or terrifying experiences. You say that Steve Jobs "was seduced by bogus cancer cures." What is the seduction of alternative therapies for patients diagnosed with a serious illness, such as cancer?

Dr. Offit: These alternative therapies -- in Jobs' case, acupuncture, bowel cleansings, and fruit and vegetable juices -- are seductive because they exist under an untouchable halo. They can only help; they can't possibly hurt and are far less frightening than chemotherapy, radiation, or surgery. The notion that such therapies can help without the harms associated with conventional cancer treatments is very seductive -- wrong, but seductive.

Dr. Schapira: When patients ask about these treatments, hoping that they have an anticancer effect, how should we respond? Should we confront them with data?

Dr. Offit: Science is what separates fact from ignorance, and the question is how to make it compelling. A 10-year-old girl in Akron, Ohio, the child of Amish parents, was diagnosed with non-Hodgkin lymphoma. An oncologist said that she had an 85% chance of survival with chemotherapy.^[3] Her Amish parents preferred alternative medicine. During her first round of chemotherapy, she was nauseous, so her parents decided to treat her lymphoma with megavitamins and supplements instead.

There are no data to support the alternative therapies that her parents chose for her. Although more toxic than emu oil and prayer, modern therapies offer this patient the best chance of living a long and fruitful life.

Medicine and science are evidence-based systems. They aren't belief systems. How do you get someone away from a religious way of thinking to a more evidence-based way of thinking? That is the challenge.

"You Have Your Science, and I Have Mine"

Dr. Schapira: A theme in your book is that the level of scientific illiteracy makes it hard for patients to understand what we mean by evidence-driven therapies. How do we promote a culture that is more scientifically literate?

Dr. Offit: When I was an intern at Children's Hospital in Pittsburgh, a 5-year-old girl was diagnosed with acute lymphocytic leukemia. Her mother was convinced that it was because the child had eaten peanut butter sandwiches in the past month. I wish that illiteracy was at the heart of the problem. If it were only illiteracy, then we might be able to solve the problem. But I think it is denialism: You have your science, and I have mine.

Dr. Schapira: Where does the denial of science come from?

Dr. Offit: Postmodern thinking: All attitudes and beliefs are of equal value. Your experience or expertise doesn't matter. I know as much as you because I have lived a life. I have experience too, so don't tell me that you went to medical school and spent 30 years taking care of patients with cancer and are trained and have done research and published that research. It doesn't matter. I know as much as you do.

Dr. Schapira: We make an effort in medicine to train our students and residents in cross-cultural care, which in part means recognizing and accepting that patients may be experts in their worldview. But in fostering this view of the patient, have we eroded the physician's role as medical expert?

Dr. Offit: When I was young, doctors had the attitude of "You are going to do what I say, because I am the expert." My mother would never have dared to question the pediatrician. What he said was law. He was the doctor.

At some level, we have ceded our expertise. We want parents and patients to be involved in decision-making, because we think that will make them more likely to do what is recommended. It's a mistake to put patients on an equal level with the experts.

When I needed surgery on my right eye, the ophthalmologist explained what I had and said, "Here is the medical option. Here is the surgical option. What do you choose?" What do I choose? What do I know? You're the ophthalmologist -- you tell me what I should do. But he was hesitant to do that, which seemed odd.

Placebo Effect: More Something Than Nothing

Dr. Schapira: Let's talk about some of the treatments that might work through a placebo effect. Whether it is real or sham, if acupuncture relieves arthralgia from breast cancer treatment, what should we recommend? Should we say, "That's great, Mrs. Jones. I'm glad you found something that works," and leave it there? Should we tell the next patient that many patients say that acupuncture relieved their symptoms? Or should we not express an opinion at all?

Dr. Offit: Studies have shown that at least some people experience a positive effect from acupuncture.^[4,5] But let me take a step back.

The word "placebo" is unfortunate. When people hear placebo, they hear something dismissive -- that it's all in their minds. We know that you can learn to release endogenous endorphins.^[6] You can learn to upregulate your own immune system by releasing gamma-interferon, and downregulate your immune system with cortisol. By making your own cortisol, you can learn to release your own dopamine.

We need to find out how such therapies as acupuncture work so that we can figure out how to do them with the lowest risk, burden, and cost. I would argue that acupuncture has nothing to do with putting the needles under the skin. You probably could use retractable needles and achieve the same effect, as shown in studies by Ed Ernst.^[7] If retractable needles work just as well, then using them would eliminate the problem of needles breaking off or of inadvertently introducing viruses, such as hepatitis B, hepatitis C, or HIV.

I worry that these therapies evoke a kind of magical thinking, prompting proponents to explain their effectiveness by saying, "There are just some things we can't understand." Although this is true in the realm of religion, it isn't true in medicine. We may not understand it yet, but it can be analyzed.

For the most part, acupuncture doesn't hurt. However, it hurt Steve Jobs when he chose acupuncture over conventional therapy for a neuroendocrine pancreatic tumor. Complementary therapies, such as yoga, meditation, and prayer, are all fine to practice because they reduce stress, but not instead of antibiotics for meningitis.

Four Ways to Sniff Out Quackery

Dr. Schapira: How do you draw the line between placebo and quackery? In your book, you outline 4 ways to identify quackery. Could you describe these?

Dr. Offit: There is a line that can be crossed in 4 ways. One is when you choose an alternative remedy instead of something that clearly works. One thing replaces the other; for example, the girl in Akron whose parents are giving her megavitamins and dietary supplements instead of chemotherapy. That is quackery.

The second way is when you take something believing that it can't possibly hurt you, when it could hurt you. This is the problem with the dietary supplement industry. It is unregulated, so you often don't know the product's contents. The label may not reflect what is actually in the bottle. Concentrated garlic can cause bleeding, and people need to know that. These products are billed as natural and harmless, but that may not be true. Anything that has a physiologic effect can have a positive or negative effect.

The third way to identify quackery is the most shameful: when alternative medicine becomes charlatanism. It happens in areas in medicine where we don't have much to offer. Autism is one example; certain severe cancers, such as adenocarcinoma of the pancreas or glioblastomas of the brain, are others. Patients are charged a fortune for purported cures for these disorders -- "cures that your oncologist doesn't want to tell you about," or "cures that the pharmaceutical industry (or the government) doesn't want you to know about." Such appeals to conspiracy theories take advantage of desperate patients. A willingness to relieve them of their bank account before they die is the worst of medicine.

The fourth way is catering to magical thinking. Our path to better health does not lie in meridians and astrological signs. We pay a price for venturing onto that slippery slope.

Mehmet Oz says that when his children get sick, his wife gives them homeopathic arnica; if they stay sick, she calls him. There is some value in that, because 80% of what kids have are self-limited viral illnesses. In that case, the arnica is not going to hurt. But when you create the notion that homeopathic remedies are of value, you have the 6-year-old boy whose parents give him a homeopathic bronchodilator when he has asthma, and he dies.

Dr. Schapira: Are alternative practitioners seizing on the tendency to want to satisfy patients? It is very hard to tell somebody, "Just wait; it will get better."

Dr. Offit: Alternative practitioners do what most conventional therapists don't do: They are very sympathetic to placebo medicine, and they practice it and spend more time with their patients. People have a compelling need to take something, so they should be taking something that doesn't hurt them when they have self-limited diseases.

That is where alternative therapy is good. If acupuncture relieves low back pain, it would be interesting to know why it is working. Do you need to put the needle under the skin, or are there better ways to induce endorphins? Should we burn incense? Should we play East Asian music? What is working there?

The Lure of the "Natural"

Dr. Schapira: It often strikes me as paradoxical that people who accept all of the wonderful advances of technology and live with them believe that anything that is labeled "organic" or "natural" is going to solve their problems. How do you explain that?

Dr. Offit: There is interest in trying to understand who is drawn to alternative medicine. There may be a distrust of or dissatisfaction with conventional medicine, which is viewed as cold and distant and technological, whereas these other therapies have a much softer, warmer feeling, with words like "organic" and "natural." You feel that you are running through meadows and that these products are made by elves. It is all good, and it can't hurt you. That's part of it.

The bigger part of it may be that certain people are drawn to alternative notions. Steve Jobs was drawn to alternative notions very early in his life. He was a food faddist. He would drink carrot juice until he turned orange. That type of person may be more easily drawn to alternative therapies, not just because of dissatisfaction with modern medicine.

If there is anything that I find completely baffling, it is the success of the word "natural." The Ebola virus is natural, polio is natural, mosquitos are natural, and 40% of the drugs on our formulary are derived from plants. You can argue that vincristine and vinblastine are natural because they are derived from vinca plants. Vaccines are natural. Vaccines are derived from bacterial proteins, bacterial polysaccharides, or viral proteins that are available in the environment. But they are not perceived as natural because they are made by the pharmaceutical industry.

Dr. Schapira: Have you, or perhaps your wife or your kids, ever been tempted to use a complementary therapy?

Dr. Offit: My moment of reckoning came when a University of Pennsylvania sports medicine orthopedist recommended chondroitin sulfate and glucosamine for me. You want your doctor to like you, so I went to the store and bought it and took it for a couple of days and thought, this is ridiculous, and I stopped taking it. That is as close as I came. I don't take vitamins.

Dr. Schapira: Your kids haven't started taking high-dose *Echinacea* or vitamin C to improve clarity?

Dr. Offit: My daughter taught me something. She rides crew at the University of Pennsylvania. She would occasionally have tingling of her hands and feet when she was rowing, and was probably hyperventilating. Her teammates told her that she had exercise-induced asthma, so she wanted us to prescribe a bronchodilator.

My wife took her to a nutrition store, and she bought a Himalayan sea-salt puffer. It is salt from the Himalayan mountains that you put in a plastic canister and breathe through holes at the top. She thought it was great -- the Himalayan mountains! I said, "Honey, do you really think that the sodium chloride in this canister is any different than what is in that salt shaker?" She looked at me and said, "Would you let me believe in something, damn it?" Right.

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