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I'm a physician anesthesiologist at Dartmouth Medical School. I spend about half my time providing clinical care to a variety of patients, ranging from adults having very minor operations to very sick premature babies having very complex procedures. Often there is no one right answer in a particular situation (though there are clearly wrong answers), and that is sometimes called the art of medicine. My clinical decisions need to be based on a solid understanding of the results from journal articles and research. Sometimes those articles are good and sometimes they are not so good and I, as well as all doctors, need to be able to sort out the good from the not so good. More on that later.

I was always interested in science. As an undergraduate at Pomona College, I liked physics, math, and computers, especially in the context of solving applied problems. In my sophomore year I took my first statistics course and found statistics to be the perfect fit between very abstract mathematics and the ability to use mathematics to solve very practical problems. After graduating with a major in Mathematics with a concentration in Statistics, I then received both a Ph.D. and an M.D. at the University of Chicago. A medicine internship at the University of Washington and a residency in anesthesia at Harvard University followed, and I settled at Dartmouth where I have been both a clinician and statistician for the last 6 years.

As it turns out doctors with an interest in and understanding of statistics are not very common, so I have become very much a resource at the medical center at Dartmouth. The time I spend not directly caring for patients is related very much to statistics. I am involved in a wide variety of projects which demand not only an understanding of the medical issues, but also an understanding of the statistical issues that are related to study design and analysis. Some of the projects involve complex statistical models with computer simulation. Some projects are very straightforward and require techniques learned in undergraduate courses. Often there is no one correct approach or model to solving a particular problem, though there are approaches and models that are clearly wrong. In this respect statistics is a lot like medicine, in which there is both rigor and art involved in the solution to a particular problem. And like medicine, I am involved in dealing with a wide variety of problems.

I am also involved in teaching statistics to medical students, fellows, and attending physicians. Almost all medical students are required to take an introductory course in statistics during either the first or second year in medical school. While these survey courses are valuable in providing an introduction to statistics, they cannot duplicate the solid foundation obtained in an undergraduate curriculum.

Let me describe some of the projects with which I have been involved. One project involves teenage smoking and the role of advertising. Teenagers start smoking for a variety of reasons: peer pressure, living with family members who smoke, and curiosity are some factors. But do those Marlboro t-shirts or Camel key chains make a difference? We thought they might and so we surveyed several hundred teenagers and asked them questions about their personal lives as well as the cigarette to which they were exposed. We used complex statistical models to determine the effect of advertising after controlling for other factors such as the whether or not a parent smokes or whether or not friends smoke. We found that while family and friends play a strong role, advertising also gets kids to smoke, in contrast to what cigarette companies have said. Another project involves the prevention of nausea and vomiting after surgery which for some patients is the most miserable part of having an operation. In these studies we give a medicine that we hope will prevent nausea to some people and give a placebo (sugar pill) to the other group. We don't tell the patients which pill they are getting in case knowing might influence what patients feel. We then see what proportion of patients vomit in each group and use statistical models to determine if the new drug helps prevent vomiting.

My expertise in statistics allows me to play a pivotal role in the design and analysis of these studies and my medical experience allows me to see relationships, form hypotheses, and become an integral member of many research teams. The ability to work on complex problems has provided me a unique niche in the medical school. Statistics and medicine have been a perfect combination for me.