The Statistical Practice Of Medicine

My most valued professor of Statistics opened his graduate course with this declamation: "There are liars, there are damn liars and then there are statisticians". It was some time before I recognized that he was trying to tell us that the word "statistics" is not a synonym for truth. As will be seen below, while any given statistic may be a true statement, none of them tell you anything about the individual event or person you might be interested in. A good example of this is the statistical method that leads to poll results in such things as voting. In most cases the methods are so sophisticated that they can apprise you of who will win the election–but they cannot ever tell you how your neighbor voted. These methods can, of course, tell you the probability of your neighbor voting one way or another but probability is not fact–it is a prediction.

The minute that hospitals became businesses that were expected to make a profit, they changed. Before this change a hospital was expected not to lose too much money but under no circumstances was patient care, comfort or safety to be compromised. As soon as the change occurred, the businessmen got statisticians to analyze the patient care functions, optimize them and see to it that all waste was eliminated; the hospitals' fiscal survival was never to be compromised.

It is easy to see that patient care, comfort and safety took an immediate back seat. With the rapid rise of so-called Health Maintenance Organizations and large-scale Insurance programs, business men and statisticians began telling Physicians and Hospitals what they could or couldn't do in order to stay competitive and successful. These prescriptions and proscriptions have reached into every nook and cranny of hospital and medical/surgical care. They have led to the expectation that all care can be routinized. All you need to do is design a patient care template and all patients will be treated the same. This is the way detailers help physicians to dispense medicine. (Detail women and men are the sales representatives for Drug Companies, surgical tool companies and hospital paraphernalia companies. There have been several stories about physicians being taught surgical procedures by detail men or women;) A statistical analysis is done and the optimum is decided on. From then on, if a patient exhibits "x" percentage of the symptoms associated with "y" disease then they get 6 tablets daily of "z" medication. If one were to take a random sample of the patient population relative to a given disease or a given medication or a given treatment modality, it is reasonable to expect something close to a "normal curve" of distribution. The shape of the curve will, of course, be determined by a number of variables. Regardless of the shape of the curve there will be a curve. (i.e. different people will respond differently thus some will respond well to large doses some will respond well to minimal doses. Some will respond well to very frequent doses some will respond well to very infrequent doses.) If you ask, you will be told that to meet the needs of the individual patient would be vastly too expensive and too labor-intensive. One doesn't go very far down this road before one realizes that all of these changes have to do with the "bottom line", not the care, comfort or well-being of patients.

In the late thirties or early forties, all the "soft sciences" (psychology, economics, medicine, sociology") welcomed with unbridled enthusiasm the advent of what was called "'non-parametric statistics." (This meant that instead of being forced to define clearly and weight properly the relevant characteristics of the field one was studying, one made the assumption that non-controlled or non-identified parameters were randomly distributed and we were under no compulsion to either define them clearly or control them.) At last we could be real scientists. The garbage that was passed off subsequently as scientific research was appalling. Many correlationco-efficients that had no significance at

all were passed off as meaningful. People quickly learned how to "milk the data" which, I learned, was a set of tricks intended to make utterly irrelevant, disconnected or meaningless data appear to be of value.

I am sure that there are scientists who use non-parametric statistics in legitimate and meaningful ways in formulating predictions. My hunch is that such meaningful usage is infrequent. I was taught from the beginning that correlation was not causation. I was taught that statistical analysis taught you nothing about the individual. In the course of this training I learned, among other things, a great respect for individual differences. What this term means is that, regardless of what characteristics of living things you study, each individual will be different from any other individual.Whether it be height, weight, skin color, hair color, teeth, gut function, swallowing, no matter, we all share the same characteristics and yet each of us is different. This respect for individual differences seems not to be taught in Medical School, if one can judge by the behavior of practicing physicians. As I pointed out above, all the statements attributed to "statistical analysis" are probably quite true as they are applied to large groups. They become dangerous only when they are purported to describe or characterize an individual person which you and I happen to be.

Physicians are exposed to statistical analyses in all their training and this style of thinking has made an easy transition to all aspects of hospital care. In late 1979, when my beloved wife was hospitalized for a serious back injury, I first became aware of how severely, and hurtfully, the practice of medicine as it relates to the hospital experience had changed in the previous 30 years. She was admitted on a Friday. When I visited on Saturday morning I found her in agony. She had been calling for a nurse to bring a bedpan for forty-five minutes and no one had answered her call. In the next few minutes an orderly came in with breakfast trays. It was a two-bed ward and the woman in the other bed was in full horizontal traction; she could not sit up at all. The orderly put the tray across her bed and left, saying, "here's your breakfast". I could find neither nurse nor orderly. After helping my wife, and feeding the other ward occupant, I went out and rented a hospital bed and all the accoutrement necessary to care for her at home. I then removed her from the hospital and hired a nurse to care for her. The unthinking, careless disregard for these patients was what started me looking at the practice of medicine as it had changed in the previous thirty years.

I recalled, with much improved insight, the treatments I had received, the treatments I had refused and the ones I had found by rather simple (elementary) research in the past.

When I was diagnosed as suffering from cancer of the bladder and given a 30% chance of surviving five years I started researching the problem. I found a clinic in the mid-west which recommended a minimum of 1500 milligrams of vitamin C for the treatment of cancer of the bladder. The physician treating me scoffed when I approached him about my findings. He disdainfully said, over his shoulder, "that hasn't been proven yet." When I pointed out, I'm afraid in a rather vulgar fashion, that he had predicted my death in three years and I didn't really give a care whether such treatments had been proven, he was a little taken aback but, thank God, went on to advise me to take a little more because my urine wasn't acid enough. As a matter of fact I experimented for a variety of reasons with varying doses of vitamin C.When I reached 30 grams a day my body gave me unmistakable evidence that that was enough. I ended up taking 5 grams a day for the next 26 years. I am free of cancer at this time. It is important to note that the statistics on, Vitamin C indicate that if one takes as much as 3 grams a day, one will be afflicted with diarrhea and nausea; yet, I had no such symptoms until I reached 30 grams daily. The only argument against that is the ad hominem attack–call me a liar. I assure you I am not lying.

As a result of these and many other events, as well as my contact with physician patients, I began looking closely at medical treatment as such. What I found was appalling. The overwhelming majority of physicians and hospitals practice what I choose to call statistical medicine. There is a very strong tendency for statisticians to become, like it or not, "Spin Doctors". Given a set of data and two statisticians with opposite needs and instructions, you will see two reports diametrically opposed to each other–yet neither reporter will be lying.

Let me say at the outset that the only physicians I talked to in person were my patients, and that I make no claim to having used the "scientific method". All of this was observational and anecdotal. However, all science begins with observation and anecdote. With time and persistence, better research methods can be applied however, and, in my opinion, yield interesting results. However, I do not think that the fact that I did not employ the scientific method in any way invalidates my observations. Some things are just not within the purview of the scientific method. It is now twenty years since I first began to look at this problem and it has gotten much worse.

Now, HMOs dictate, based on their statistical and business analyses, what will or will not be done, certainly in hospitals and increasingly by doctors and nurses in their offices. This runs the gamut from medical treatment to nursing care to pharmaceutical care. There are fewer registered nurses and they are usually ove worked and treated abominably. Humane loving care is purposefully discouraged and often punished. If a loving relative is visiting a patient at the hospital the staff tends, if the relative is fit, to put most patient care in their hands. The administration of prescribed medicines is by rote (i.e. so many pills of whatever designation every three (or two or one) hours). I have seen patients given medications, all of which were contra-indicated for their particular problem, that left them semi-comatose. On the weekend, when no change can be made unless one raises the Doctor at home, no change will be made regardless of changed conditions..

We endured the fad for prescribing Miltown and then Valium and now Prozac. I would wager that Miltown and Valium have been directly responsible for thousands and thousands of automobile accidents. From what I have read Prozac may be even more dangerous. More disturbing is the 30-year tendency, which has become ‘routine’ in recent years, to bring active, curious, adventurous children under control by using Ritalin or other ‘psychoactive’ drugs which make them more docile and more controllable and more depressed. This ‘routine’ approach makes life easier on teachers and/or parents. These drugs are being used in appalling quantities in spite of the fact that they can be very, very dangerous. Many years ago a "focus of infection" wasn blamed for everything. Thousands of people had all their teeth out because of it. Hypoglycemia was a scapegoat for a long time. The list is very, very long. None of these drugs, none of these diagnoses are in and of themselves wrong, bad, or evil. They are and were fads. It is their abuse and misuse as a consequence of misuse of an inapplicable statistical model by physicians who understand little about statistics, or the role of individual differences, that is the problem.

Physicians have the strongest union in the country and have been taught that they will not be held accountable for their actions. Flattery, such as that from detailers, sways them readily. They have a strong tendency to view themselves as different from and above ordinary people. They are not being taught, so far as I’ve been able to ascertain, how to listen or why they should listen to their patients. They play with toys, they fight with their girl friends or boy friends or their wives or husbands, they respond just as uncritically to the latest fads as do teen-agers, they are forgetful and often preoccupied etc., etc. In short, they are human beings, not Gods. Their foolish foibles seem to me to stem

from the fact that they have had the mantle of Deity conferred on them–and they have come to believe it is justified.

If doctors could be brought down to earth what would happen? First, they would be much more careful. The primary care Physicians who are at the bottom of the list now, would be given top billing. They, the GP's, the Internists, must make the initial diagnosis upon which future treatment will be based. For the last forty years I have told whoever was listening that a High School graduate who had had a course in Latin, a course in Chemistry, a course in biology or physiology, a course in elementary physics and also owned a recent edition of the PDR could handle ninety percent of what comes into the average primary care physician's office. It's the ten percent that we pay excellent salaries for.

Today, the average person is becoming aware of the limitations of physicians. In the main it is precisely because the HMOs treat doctors as a commodity that they can buy or dispense with at will that there is a dawning awareness that these people (physicians)make mistakes –that their training is not necessarily in the best interest of the patients. We are being shown by the horrifying body count (see the reports on iatrogenic deaths in hospitals) that we have no right to assume that a physician's priorities are patient welfare rather than the stock market, his or her handicap or a fight with someone. More and more frequently Doctors are being sued when they obviously do not take proper care of their patients and bad things result. When Doctors think and react statistically there is real danger waiting in the wings for patients.

When a pharmacist or another physician is afraid to call a physician's attention to a potentially fatal prescription; when physicians take pride in indecipherable handwriting; when a nurse or LVN or orderly is afraid to raise a question when he or she sees a physician make a mistake; when an OR nurse or doctor sees a bad mistake being made and will not or cannot intervene for fear of being severely disciplined, something is terribly wrong with the system. When a particularly egregious example of prolonged mistreatment or incompetence hits the news media, we are made aware that colleagues and other staff observed it, complained about it and lamented it but no one did anything.

It is incumbent upon me to point out that this is not an indictment of all physicians. There are many good women and men out here who take their oath seriously and who practice honestly and very, very skillfully. They feel helpless and completely unable to effect change within the profession. These women and men will, I hope, see this letter as an effort to help. The culture of medicine, however does not favor them and by the nature of the case they rarely blow their own horns. Doctors without borders, I believe they are called, are exemplary of the best that medicine can be. I do honor them. It is very difficult to "kick your culture" but physicians and nurses must "kick" the existing medico-business culture if we are ever to get the medical care we pay for and deserve. The business culture has no legitimate role in setting standards, procedures, or treatment standards for the practice of medicine. There is no bottom line result that justifies a trusting patients death or crippling injury. Money should never be the desideratum in affording a patient the proper treatment.

Other countries and communities take on this burden. Why can't we?

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