

Introduction

Office-Based Clinical Issues

"In 1492, Columbus sailed the ocean blue."

Do we really know where we are?

Someday, our present scientific era may be termed the science of the micromasurement.

As with previous eras in humankind's history, when great technologic marvels have enhanced and enlarged "the ability to see and do," we are overwhelmed with our tools of micromethods, statistical analyses of the highest power, and the ability to share information at a pace that no previous era enjoyed. But do we really know what we are seeing?

Columbus based his voyages on information and ideas provided by others. Columbus had the determination to carry out the practical application of the theories of others. He navigated by a relatively new device that accurately measured the relationship between stars and a position on earth. The astrolabe made it possible for Columbus to get back to where he came from. However, it did not allow him to know where he really was when he sighted land after his monumental journey. He believed that he was on the western side of Asia, probably on the Indian subcontinent.

He interpreted his new findings based on what he previously knew and had learned from others. The American continents, as big as they are, seemed to have been a mystery to most of "history recording civilizations."

If Columbus could have seen the whole picture, as does an astronaut in space, he obviously would have interpreted his findings in a different light.

It is this lack of the whole picture that is disturbing when one rushes to interpret the results of the techniques described in the review on the clinical immunology laboratory or any of the newer micromolecular technologies.

Almost all of these techniques yield measurements whose importance is unclear. Many times, the normal controls used to

establish the standard range of values do not adequately represent the populations measured in investigations or clinical studies. Often, we do not know how much variation there is in an assay system. Intuitively, it seems that in measuring these very small quantities or activities a greater inherent variation is likely to occur. We do not yet have sufficient information to evaluate the extent of expected diurnal variations in many of the analytes we measure.

In the excitement of Columbus's voyages, a number of pseudomythological concepts about the new world and its noble savages were offered by "learned experts." One example is the pervasive idea that the Amerindians were the 10 lost tribes of Israel. Convincing arguments were expounded by sages and wise men to support this theme. Bits and pieces of misinformation were connected to create a story believable by the people.

There is an analogy to the pseudomythology accompanying Columbus's discoveries in the pseudoscience that has accompanied the vast technologic leaps in the clinical immunology laboratory. The supporters of this pseudoscience are not the clergy, but a segment of the legal profession, which somehow has managed to believe that a courtroom is an arena not for facts, but for playing with the complexity of human emotions, especially greed. Their allies are most often the bad apples in the medical barrel, the pseudoscientific pseudodoctors. It is amazing how often the expert physicians or PhDs have an unacceptable track record with their peers or have failed at mainstream pursuits. It is almost as if, by having been rebuffed, they obtain justification for charlatan behavior in the courtroom.

The unanswered questions raised by new assays, which are often difficult to interpret except when grossly distorted, lend themselves to pontification by these pseudoexperts. The pseudoexpert can speak in a courtroom with a surety that is impossible for the honest scientific physician.

In reality, the pseudoexpert does not know what any differing value means. He or she just knows it is different. This is very much like Columbus not knowing where he was, but knowing where he wasn't. Columbus knew he wasn't in Spain, or else he wouldn't have had his return voyage. The problem for honest scientific experts is that they often know what the results don't mean, but not what they do mean.

Several years ago, in a personal voyage of discovery spurred on by curiosity, I attended a lecture by Dr. William Rhea, a noted clinical ecologist, who taught me how the new laboratory findings could be misused to give an aura of science to lunacy. Dr. Rhea described food challenges that within 30 min caused a reduction of >50% in

total immunoglobulin G (IgG) levels. Having no concept to comprehend this finding, I asked Dr. Rhea several reasonable questions.

The first was how many times the values were determined to see if the changes from baseline were accurate. He said three or four times, and that they had been done by an immunologist in his laboratory. For the sake of fairness, I asked by what method these changes were measured, what the method's coefficient of variation (CV) was for IgG determinations in his lab, and how it was determined.

To this day, after a 15-min explanation mixed in with pulmonary function standards, I have no idea what the CV was, how it was determined, or how IgG was measured.

Subsequently, I had the pleasure of reviewing several manuscripts submitted by Dr. Rhea and several PhD colleagues. They gave details of measuring emissions in the hospital and on the streets outside of it. After finding that some emissions were in higher concentrations outdoors and others were higher indoors, they then stated it was the higher indoor or higher outdoor levels that made their patients sick. The poor patients had no haven except for a porcelain room with hepa filter and a diet of pure magic spring water. I was never certain whether the spring water was from an above-ground or belowground spring. I just knew that somehow this ought to have mattered to the patients.

The above incidences and recollections might have been comical, except that, at the conference, a number of physicians were busily taking notes of Dr. Rhea's lecture. Except for my own, I saw not one questioning look from the audience. Certainly there were no questions regarding methodology afterward.

There are patients who are dissuaded from correct therapy by the psuedoscience of these practitioners. When did you last tell a patient to buy a new house, avoid all shopping malls, and have all their food and clothing delivered to them?

In a courtroom, these psuedoscientists as experts often are more charming and convincing to a jury than the honest expert witness. They radiate a confidence unblemished by intellectual doubt. Unless the opposing lawyer is skilled enough to unmask the phony science by education of the judge and jury, the charlatans do very well. In the courtroom of greed, the psuedoexperts may earn many times what an honest practitioner or academician can earn.

New tests without adequate information or long-term follow-up are a scientific bonanza for these psuedoscientific experts and certain lawyers. This windfall will persist until judges and juries become aware of scientific reality.

I return to the story of Columbus, since I am basically an optimist and wish to end this essay on a positive note. How did people eventually know that America was not Asia? It happened after a number of voyages by a number of explorers. Inadvertently, they applied the scientific method of testing and retesting a hypothesis. Finally, it all became so clear that it was “common knowledge.”

It is my cherished belief that we will learn how to use these new “astrolabes” in a way that will have meaningful effects on medical care. We will know where we are as well as where we aren’t.

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Recommended Reading

1. Huber, P. (1991), *Gallileo's Revenge*, Basic Books division of Harper Collins, New York.