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Diplomates American Board of Internal Medicine & Cardiovascular Diseases
A medical practice dedicated to the prevention, diagnosis, and treatment of heart disease.

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FROM: The Doctors Desk.

What is Personalized Medicine?

“...when doctors forget the “art” of medicine as the necessary counterbalance to impressive science, medical care becomes “impersonalized.”


Mark K. Urman

The term “personalized medicine” now commonly refers to a type of medical care that will exist after future medical scientific advances, specifically in the field of human genetics. This implies that the centuries old medical profession has never practiced personalized medical care. Sure enough, the public perception is quite different: with the increased use of and reliance on technology, diagnostic tests and modern medical treatments, medical practice is seen as progressively more “impersonal.” Most patients equate the personalizing of their medical care as more dependent on face-to-face time with physicians and health-care team members rather than advanced medical technology. I disagree that personalized medicine has yet to be practiced but, in fact, it is a time-honored tradition.

When a doctor strives to deliver the best outcome for each individual patient in this day and age, what determines if the medical care delivered is personalized? Can personalized medical care be achieved with the ancient humanistic healing traditions in concert with current medical technology? Or is personalized care not fully achievable until further advances in medical genetics occur?

Invariably, all practicing physicians were taught in medical school that no two patients are alike and that concept is reinforced time and again as clinical experience grows. One doesn't need a medical degree to understand that all human beings have individually distinctive physical, genetic, psychological and socioeconomic traits and unique emotional needs. The best clinicians understand that these differences arise not only from different genetics and physiology but also from differences in less easily measured intangibles such as a patient's fears, hopes, life experiences and trust in his or her physicians.

Today, at the start of the 21st century, when doctors treat patients, at least from a purely medical viewpoint, we most often do our best to figure out what works best for most of our patients most of the time. The medical profession is always trying to figure out more precise methods to diagnose and treat patients and we have made strides with improved patient outcomes but arguably our results still have quite a bit of room for improvement. Often our medical testing and treatment, whether with medications, invasive procedures and surgeries, or recommended lifestyle changes are crudely applied to many people with a “one size fits all” approach.



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The potential of better understanding our genetic code has been thought to hold promise to deliver more precise medical care. The Human Genome Project finished mapping and sequencing the humane genome in 2003 by coding approximately three billion strands of DNA and identifying nearly 25,000 genes. This genetic sequence that is a blueprint that makes us all distinctively human and commands how we develop and function is more than 99.9 percent identical from one person to the next (and the difference between species is not much more). A new medical specialty, genomic medicine, was launched toward the end of last century. It aims to study the 0.1 percent difference of genes between all several billion humans that allows each of us to have such unique traits and risk of disease and then apply that knowledge to deliver better care.

The potential of this new type of medical care could be nothing short of revolutionary. Doctors might be able to not only more accurately diagnose diseases and precisely treat them with fewer side effects, but also to predict the risk of future disease in an individual. This might allow better prevention of diseases by targeting the right preventive strategies in the right people. An ancient Chinese proverb states that superior physicians prevent disease as opposed to inferior doctors who treat disease. Genomics might allow more physicians to practice superior medical care, as has been envisioned and hoped for since ancient times.

In the medical literature of the last several years, the term “personalized medicine” usually is used interchangeably with genomic medicine, referring to the future of the discipline as it evolves and matures. The promise of an individualized genetically and molecularly based way of diagnosing and treating patients and even preventing disease is truly exciting. Every physician’s hope is to be able to treat (or when appropriate, to not treat) a patient with as much precision to improve health and avoid unnecessary side effects. After all, physicians are also all taught to “do no harm” to their patients.

Even the most compassionate doctors who want to provide the best care for their patients consider the latest scientific advances to support their efforts.

However, should the term “personalized medicine” refer only to the future of medical science? Or is the centuries old “art” of medicine precisely the basis of personalized humanistic medical care? I would argue that the use of “personalized medicine” to describe genetic diagnosis and management ignores all of the superb clinicians of not only today but also the past several centuries; those who have been practicing true “personalized” medicine with basic clinical tools, instincts and compassion albeit with the latest scientific advances of their generation supporting



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their efforts. This is the type of “personalized” medical care where a physician spends time getting to know his or her patients, understanding their hopes, fears and life goals to help keep them healthy and treating disease in the most appropriate and humane manner possible. It is the type of medical care that involves the intimacy and empathy of the trusted doctor-patient relationship. It often is no more than listening to the patient and holding his or her hand; fairly low-tech and old-fashioned but I think that qualifies as the ultimate in “personalized” care.

Interestingly, when I ask my patients or lay people and frankly even most of my medical colleagues what “personalized medicine” is, their definition is quite different than what is promulgated in the latest professional medical literature. While every one agrees that the term ultimately implies excellent patient-centered care, most people I have asked feel that it is less related to the scientific and technological aspect of medical care, let alone specific genomic evaluation, but more about a doctor’s bedside manner and ability to connect on a personal level with the patient. It is about doing what is best for patients, not only meeting their physical needs, but more importantly meeting their spiritual and emotional needs.

Thus, I have concern that many of our governmental organizations such as the NIH (National Institutes of Health), FDA (Federal Drug Administration), CMS (Centers for Medicare and Medicaid Services) and all of organized medicine might be placing too much faith in the concept that some day, genetic evaluation will perfectly “solve” or predict a given patient’s medical problems. In addition, the lay press and the public likely have unrealistic expectations.

After all, even seven years after “cracking” the human genome in 2003, when treating heart disease, we rarely can find genetic markers that are any better at predicting outcomes than traditional low-tech clinical risk factors. While certainly that will ultimately change, we are likely several decades if not a generation or two from significant gains in fully understanding the genetic basis for the most common diseases. This likely is because the most common medical conditions usually are controlled by a combination of multiple different genes (known as genetic polymorphisms) that establishes a person’s susceptibility to disease, which is then influenced by numerous environmental factors.

Even once the full potential of genomic medicine is realized, true personalized medicine still will require a doctor-patient relationship that leads to mutual trust and that is then supported by the latest medical technology. No genetic test can replace the intimacy that develops when a physician spends quality time with patients to understand all of their fears and personal goals and all the promise—and limitations—that medical care might provide them.



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In past generations, the “art of medicine” was the basis of not practicing “one size fits all” medical care by most physicians. This was true at least when trying to do what is best for an individual patient beyond the purely scientific medical aspects of diagnosing and treating them. Granted, advancements in the science of medicine and prospective randomized trials have allowed a more objective approach in helping patients being treated for a disease or often even preventing clinically evident morbid events. But it is already concerning that as physicians have grown to rely more on objective lab test and imaging results, they have spent less time and effort dealing with the inescapable and always critical subjective aspect of what makes their patients “tick,” as opposed to what makes them sick.

Throughout history, the best doctors have understood the importance of treating the whole person rather than individual medical problems. The ancient physician Hippocrates noted over two millennia ago “It’s far more important to know what person the disease has than what disease the person has.” More recently, at the end of the 19th century, the consummate physician, Sir William Osler stated “The good physician treats the disease; the great physician treats the patient who has the disease.” I submit that these precepts still hold true, and always will, for general practitioners and specialists alike.

As physicians focus more on their patients’ test results let alone their DNA, hopefully they will not forget to care for the person with that DNA. Analogous to seeing the forest through the trees, personalized medicine should mean seeing the whole person through their DNA, no matter how “exact” that DNA might predict a medical “future” or the best medical treatment. There is still a person who has to tell the physician what they think might be best for them (not just the other way around), what scares them the most, what their goals, desires, fears and wishes are.

Translational medical science provides real bench-to-bedside advances and always has and always will benefit patient care. Genomic medicine certainly carries great potential to allow more individually tailored diagnostic and treatment regimens. Undoubtedly, the medical community, our government, and lay public alike should support making progress in genomic medicine to help optimize patient care. Then these newer techniques’ efficacy can be measured objectively.

And yet, physicians, and the public, cannot forget that for an individual patient, quality medical care will ultimately be a subjective personal perception. The most accurate genetic tests and most precise treatments might lead to better outcomes and yet cannot ever fully replace a physician who empathizes with patients and is able to comfort them by holding their hand or patting them on the back. Let us not



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lose sight of what the full promise of personalized medicine truly is - a more precise extension of traditional approaches in understanding and treating not only diseases but individual people. As the ancient healer Hippocrates realized a few thousand years ago, the priority should always be to focus on the person and this always will hold true in delivering the best care no matter what technological medical advances occur.

Progress in medical technology clearly always has and will continue to enable doctors to be more scientific and precise in diagnosis and treatment to improve patient outcomes. But when doctors forget the “art” of medicine as the necessary counterbalance to impressive science, medical care becomes “impersonalized.”

Personalized medicine’s full promise and potential will require the latest scientific advances and genetic understanding in combination with the humanistic qualities that have always defined the best healers throughout history. And hopefully, with the right balance of art and science, individual patients will be kept healthier in more personal and effective ways than ever before.

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