

Personalized Medicine: Just for You

Over the past decade consumers garnered great control over their treatment plans. Physicians are working in a more collaborative manner than ever with their patients to review care options and formulate treatment approaches. In addition, patients now utilize the Internet to access multiple Web sites and blogs to gather valuable information that they can use during these discussions with their caregivers.

Recent advances in genetics are about to raise this customization of care to a completely different level. Most clinicians are familiar with the fact that breast cancer has a familial relationship and certain gene mutations put women at a greater risk at developing both breast and ovarian cancer. Although presence of a mutated BRCA1 or BRCA2 gene does not assure the development of cancer, it does provide an additional data point used by some clinicians and their patients in determining treatment paths. There continues to be some controversy around the use of genetic screening and gene markers in breast cancer treatment. Nevertheless, genetic screening gives some additional data that can be used in this personalized clinical decision-making.

On the Verge of Personalization

Medicine is on the verge of a tremendous leap in the personalization of care. The decoding of the human genome has opened up an entirely new science for diagnosis

and treatment of disease. Advances in material science, information technology, and nanotechnology are allowing for the development of inexpensive and finely tuned diagnostic testing that provides clinicians with patient-specific information that was never available previously. Unlike diagnostic tests that are performed on millions of patients, many of these new tests are targeted at only thousands of patients.

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Personalized medicine utilizes specific genetic patient information to determine which of the various disease treatment options is most likely to deliver the best outcome. Researchers learn what works best through their analysis of large patient experiential databases, knowledge of cellular biology, and understanding of pharmacokinetics.

Currently, patients are treated according to what works best for the majority of patients with a particular disease. There is only rudimentary customization of care and little information or justification for it to be truly personalized. Medical experts just do not know enough

about what works better in which patients. This is all about to change.

In the near future, a patient with diabetes and a family history of coronary artery disease will be able to use a genetic diagnostic test to determine what treatment regimen—specifically, drugs in what combination and dose (e.g., insulin, cholesterol-lowering medications, etc.)—is most likely to deliver the greatest glucose control, lowest cholesterol levels, and highest quality of life. Today, physicians utilize only gross guidelines and trial and error to determine what might be best for each patient.

Although this promising area of medicine seems to offer a very bright future, it is not free of challenges. Today, clinicians struggle mightily to keep up with all the newly released medical knowledge. In addition, medicine tends to integrate new discoveries very slowly into mainstream practice.

Personalized medicine with all of its new permutations of results and treatments is surely poised to overwhelm even the most accomplished practitioner. In fact, some biotech companies worry more about getting clinicians to use their new tests than they do about their ability to develop them. These biotech companies understand the huge task ahead to educate clinicians in the value of their tests, and more importantly, how their findings should be used in different patients. These companies fear that physicians will be overwhelmed by the complexity of these tests and not be able to take advantage of the potential

results they deliver. They believe some physicians will shun the tests altogether because many have been taught that a test should never be ordered unless the results will be used.


Problem for Physicians

The personalization of medicine really does present a big problem for the physician. It is impossible to effectively use these tests without the help of some type of information technology system that analyzes the results of the test, the characteristics of the patient, and offers the physician recommendations for treatment that can be discussed with each patient.

The introduction of clinical decision-support tools embedded within

computerized physician order entry systems are one possible way to integrate the personalized medicine clinical knowledge into a clinical information system that can be utilized by physicians. Unfortunately, these systems are being slowly adopted by organizations and clinicians. Nevertheless, some form of easy to use, workflow friendly, clinical decision support is needed before personalized medicine will become widespread.

Over the next decade, personalized medicine will be heavily marketed to patients and their clinicians. It offers tremendous benefits through its fine tuning of treatment protocols to deliver the best outcomes with the least morbidity. Its advent only makes the deployment of clinical decision

support more urgent, and it might possibly be a major force in getting clinical information technology more widely deployed and utilized through all levels of care. 

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