

# Isabel, a New Diagnostic Aid For the 21st Century

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What if there were an easy way for physicians to reduce the incidence of misdiagnoses that result in adverse patient outcomes? The technology would take less than a minute to use, and it could be accessed from anywhere at any time. Wouldn't all clinicians want to use a system like this?

There is no question that physicians in every specialty are well trained and have a vast knowledge base. Physicians go through countless hours of training during medical school, residency, and fellowship in addition to acquiring experience during their postgraduate work. Their comprehensive education provides them with a unique set of skills that allows them to effectively take care of patients in both an inpatient and outpatient capacity.

However, having a wealth of knowledge does not make physicians infallible; human error is an inevitable consequence that occurs regularly in practice. Furthermore, errors come with a high cost; erroneous diagnoses are typically the primary or second-leading cause of malpractice claims.<sup>1</sup>

Most claims filed against physicians result from only a small number of causes, such as a failure to diagnose an infection, a heart attack, or a venous thromboembolism. These conditions can occasionally present in an unusual manner and might not be included in a physician's differential diagnosis. As a result, a system that would supplement clinical knowledge with important information about unusual symptoms would likely be in high demand.

This is the viewpoint advocated by Jason Maude, cofounder of Isabel Healthcare. In 1999, his daughter Isabel was incorrectly diagnosed with chickenpox. Instead, she had two rare but well-known complications of chickenpox—toxic shock syndrome and necrotizing fasciitis. Her father formed Isabel Healthcare that same year, with the goal of decreasing misdiagnoses. He spearheaded the development of a Web-based checklist system (Isabel) that was designed to as-

sist clinicians who were uncertain about their diagnoses.

Users of the system pull data from a patient's chief complaint and medical history, and Isabel generates a brief list of the most probable diagnoses. Included in this list are two or three "can't-miss" diagnoses that the clinician can rule out immediately. Isabel can be accessed from anywhere and can be integrated into various electronic medical record (EMR) systems so that there is no need for redundant data entry by the clinician. Isabel also directs the clinician to relevant literature about these conditions and provides information about the gold-standard treatment for each illness. Isabel has correctly diagnosed diseases in several complex scenarios, and the American Medical Association has selected Isabel for its new physician portal.

Naturally, physicians might be skeptical of a powerful computer program that could be perceived as a substitute for the clinical experience that medical professionals have accumulated over years of training and with their thousands of patient encounters. However, according to Jason Maude, the system's development was not meant to replace a doctor's clinical experience; instead, he explains, Isabel can serve as a valuable supplement to a doctor's clinical knowledge. During a telephone interview, Mr. Maude emphasized that the clinician is still essential to the practice of medicine. He said that Isabel is like a library, a tool for clinicians to extract appropriate questions that they might not otherwise ask. He correctly points out that physicians need to accept that it is not possible for humans to know (and remember) every-

When should Isabel be used?

Decision-support systems should not be relied on in every case. A physician's clinical training and the ability to evaluate the severity of subjective symptoms cannot be replicated by a computer program. However, a system like Isabel can be a valuable resource for learning about patients with atypical symptoms and

those patients who are not responding to traditional treatments. Isabel can also be integrated into the teaching curricula of medical education at all levels. Encouraging physicians-in-training to compare their own differential diagnoses with those supplied by Isabel could both supplement their knowledge and give them greater confidence when they treat patients. A system like this is especially relevant to *P&T* readers; it could reassure the clinician that the right drug is being administered correctly by removing doubts about dosing and reducing errors in prescribing. Isabel has the potential to improve quality and safety in our institutions.

Most important, decision-support systems such as Isabel may serve as a way to usher in an important change to the culture of medicine. It is impossible, even for subspecialists, to know everything about every disease that they encounter in practice. Physicians, as a rule, do not tolerate uncertainty well; many physicians feel that uncertainty can mask deficiencies within their knowledge base. However, providing a new generation of physicians with decision-support tools can help eliminate these fears and improve care by encouraging compliance with standards established by evidence-based medicine.

As always, I'm interested in your views. My e-mail address is david.nash@jefferson.edu. Please visit my blog at <http://nashhealthpolicy.blogspot.com>.

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## REFERENCE

1. Berner ES, Graber ML. Overconfidence as a cause of diagnostic error in medicine (Review). *Am J Med* 2008;121(5 Suppl): S2-S23. ■

A handwritten signature in black ink that reads "David Nash". The signature is stylized and cursive.