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How Genetics Can Help to Solve One of Health Care's Billion-Dollar Problems Today

04.13.15 by Marty Stempniak *H&HN* Staff Writer

Pharmacogenomics tells hospitals how patients will react to drugs before they even take them.

Precision medicine — tailoring care to each unique individual based on his or her genetics — has long been talked about in fuzzier, gee-whiz terms. Now it's quickly becoming a hot topic in everyday clinical reality.

Since President Obama announced his Precision Medicine Initiative during the State of the Union address earlier this year, it seems as if every other day I get an announcement from another hospital or insurer dipping its toes into the space.

While cutting-edge provider organizations like the Mayo Clinic and Geisinger already have dived headfirst into this field, the uptake has been slow industrywide. Hospital leaders have a lot on their to-do lists to worry about and may loath to add another item. Yet, precision medicine has the potential *today* to ease some of the biggest pain points that hospital execs are dealing with on an everyday basis.

Adverse drug events are a massive problem in health care — Medicare spends some $3.5 billion in extra medical costs on them every year, and they are responsible for 2 to 8 percent of readmissions, John Nelson, M.D., former president of the American Medical Association and practicing obstetrician in Utah, told me. Pharmacogenomics, or analyzing a patient's genetic information with the swab of a cheek to see how he or she will react to a drug before taking it, has the potential to eradicate that problem.

Medical practice needs to catch up with medical science, and it's "repulsive" that it can take 17 years for innovations to make it from bench to bedside, says Nelson. "It's fair to say that, in our industry, there is some frustration given that we have something that could be very beneficial, but the adoption of this has been somewhat slow for various reasons," he says, one of which is an estimated shortage of 30,000 clinical geneticists. "Hospitals

and other organizations are going through a trying time. There's a lot on their plates right now, and to add one more very complex, often not well-understood circumstance is a challenge. But I think we've got to find a way to show that this meets the goals of the Triple Aim."

In a webinar that Nelson hosted last month, he argued that health care needs to reach a point where it sees gene-drug interactions in the same light as drug-drug interactions. About one-third of significant risk of an adverse drug event, he noted, is tied to a patient's genetic makeup. Some patients break down a drug far too fast, while others may metabolize too slowly, both impacting its effectiveness. About 75 percent of patients have at least one variation in the metabolic factories in their livers and intestines, and do not metabolize drugs normally, he added.

Nelson gave one example of an elderly man who was processing his antidepressant too slowly, causing the drug to build up in his system, leading to dizziness and falls. With such a genetic test up front, the doctor would know before a pill is taken, and then switch to an alternative medication to avoid a hospital stay that could have cost the system tens of thousands of dollars.

Hospital leaders need to start seeing such efforts as worthy of investment today, he believes, to help alleviate problems that could pop up tomorrow.

"I'm afraid right now that most hospital leaders see this as a cost, not as a benefit, and I think it's up to us in the industry to make sure that we show that cost-benefit, which is exactly what we're trying to do at our company, as well as many others," he told me, later adding, "There is no magic bullet for fixing the health care system. However, I do believe that there is some magic buckshot — good-sized things that could help, and this is one of them."

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