Finding the Right Drug at the Right Dose the First Time: Has the Era of Personalized Formularies Finally Arrived?

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Every day, millions of Americans take medications that will never work for them fully as intended. Some patients will see little to no benefit. Others may have a variety of adverse reactions, including potentially fatal reactions. This is because individuals metabolize drugs differently, and, in many cases, prescribers must make assumptions as to how a patient will respond to a specific medication. An incorrect assumption can prolong illnesses, increase medication waste, and cost employers, health plans, and consumers billions of dollars. This, however, no longer needs to be the case.

For nearly 300 medications, whether and how a patient will respond is influenced by that person's genetic makeup. Although medical scientists have long understood the links between genes and drugs—a discipline known as pharmacogenomics—the healthcare industry has struggled to find timely and affordable ways to deliver relevant member-specific genetic information to providers at the point of drug prescribing.

As a result, physicians today too often must resort to a trial and error strategy to find the right drug that works for the individual patient or to avoid side effects. Certain classes of drugs are particularly sensitive to a patient's genetics, including medications used for the treatment of depression, pain, mental health, gastrointestinal symptoms, cardiac disease, and neurologic conditions. With the US Food and Drug Administration historically approving as many as 46 new drugs in 1 year, including powerful biologics, the list is likely to grow, and the risks associated with "prescribing by educated guessing" will increase.

The science behind pharmacogenomics is not new. For years, pharmacogenomic testing has been conducted to determine the appropriate drug or dose for patients with cardiac stents or those requiring warfarin, for example, which involves sending a blood sample or mouth swab to a laboratory and waiting for the results. However, for other medications that are typically prescribed during an office visit, this simple test is almost never used.

This is now about to change. The technology and infrastructure now exist to test members proactively for gene–drug interactions for 200 medications.[1] The patient takes a simple mouth swab test at home or in a healthcare provider's office. The results are then sent to providers who have recently written prescriptions for that patient. Providers are also informed with alerts to avoid potential adverse gene–drug interactions with medications prescribed in the future.[1]

This "any provider, any drug, any time" solution may finally take much of the guesswork out of medication prescribing. In a year-long pilot study conducted by MedImpact, an independent pharmacy benefit manager, 65% of providers who were notified of a drug–gene issue adjusted the dosage, prescribed a different drug, or noted they would more closely monitor the patient for adverse events.[1] This led to overall better alignment between patients, drugs, and better health outcomes.

One patient in the pilot program had struggled for years with depression. His physician had prescribed for him various medications, none of which worked for more than a few months. Then, a single pharmacogenomics test indicated which drug would be the most appropriate for him, given the way his body metabolized selective serotonin reuptake inhibitors. After 4 years of trial and error, based on the results of the pharmacogenomics test, he was prescribed a drug that was appropriate for his genetic makeup.

Implementing this approach can accelerate providers' ability to prescribe for patients the right drug at the right time. We also see this as the beginning of something even more transformative, namely, personalized formularies. This means that instead of a health plan using a national drug list or a formulary designed for a population of thousands of people, each member's benefits can be guided by the drugs that work best for that individual patient.

Using personalizing medicine in this way was unimaginable just a few years ago, but it is here now. Personalized medicine may be the most effective tool to date to achieve healthcare's triple aim of lowering costs, achieving better outcomes, and a better member experience.

Author Disclosure Statement

Ms Geary is an employee of MedImpact Healthcare Systems, a pharmacy benefit manager.

Reference

1. MedImpact. MedImpact's personalized medicine program. Pharmacogenomics case study. February 26, 2020. www.medimpact.com/sites/default/files/inline-files/PGx%20Case%20Study%20V4_1.pdf. Accessed September 27, 2020.