

By *Ryan Murphy*

ON THE CUTTING EDGE OF PERSONALIZED

GE Canada rolls out pharmacogenetic testing for all employees after pilot project **CARE**

At General Electric Co. Canada, part of Dr. Sol Sax's job as consultant and medical director is to support and refine the company's disability management process.

That process includes everything from how the company helps to prevent workers from going on disability to monitoring them while they're away and supporting their return to work.

As part of its efforts in the area, the company undertook a six-month pilot project to try out pharmacogenetic testing through Toronto-based company GeneYouIn Inc. and its Pillcheck service.

Pharmacogenetic testing looks at patients' genetic makeup to assess how it affects their response to different medications, including how they metabolize them. Based on the results, programs like Pillcheck identify whether a medication is likely safe and effective for a user. They also provide recommendations on optimal dosages.

The testing, which involves a DNA cheek swab done at home and sent to a lab, includes a secure tracking system to protect privacy.

"The lab gives us the actual genetic fingerprint, meaning the specific variations in your genetics in those specific enzymes that we analyze. That's the technical summary," says Veronika Litinski, chief executive officer of GeneYouIn.

Through the service, patients input

their medication history and concerns into a web-based portal. A specially trained pharmacist reviews the information and provides a letter for the patient's physician outlining the findings and recommendations, including issues metabolizing a drug and increased side-effects.

GE Canada's pilot program included 10 employees. "They were people on disability, short-term disability, and we were monitoring the number of days off work that they were experiencing. . . . Once they got the test, we looked at whether it changed their medication at all. Did a medication change result from the pharmacogenetic testing? And the answer was yes in six out of the 10," says Sax.

"We also looked at whether or not it appeared to shorten their duration of disability. The answer there was equivocal," he adds.

Available to all

The company has decided to open the service up to all employees this year. It's making coverage of the tests, which cost about \$500, available through employees' health-care spending accounts. "We felt that overall there was a benefit to the testing," says Sax. "And so we thought

that if we open up to people with their health spending account, there's no cost to the company and it provides another valuable tool in the health armamentarium for our employees that they otherwise wouldn't . . . have access to."

Sax expects uptake to be slow at first, because it's a new and somewhat expensive technology. "It's still fairly costly, so are you going to use \$500 of your health spending account for something that you don't really know about [and] maybe your family doctor may or may not know about it? So I think a lot of it will depend on whether people's own personal physicians are aware of pharmacogenetic testing and the benefits and the pitfalls and what their belief is about the value of the technology."

Sax believes, however, that while the business case for investing in pharmacogenetic testing remains a work in progress, employee satisfaction is a definite upside.

"We were hoping that our days of disability would show a decrease from the normal, but it was a small sample size, there was wide variability and there's so many other factors that it was a very crude study," says Sax.

"But certainly in terms of employee satisfaction, when we polled our employees and said, 'What's your feedback on the testing? Do you think it's a worthwhile thing to do?' it was a resounding yes. So I think from that perspective, for sure it was successful," he adds, noting many companies will be particularly eager to know whether the testing will

help employees return to work earlier.

"A well-designed study to explore that hypothesis is, to my knowledge, not out there yet. But I'm sure it'll come."

Growing in popularity

Pharmacogenetic testing is a hot topic, according to Dr. Tyler Amell, a partner at Morneau Shepell Ltd.

The interest is mainly coming from mid- to large-sized companies, he says.

"And sometimes, I'm actually getting questions on individual patients and individual employees, rather than an actual setting up programming to support employees."

The testing is a worthwhile consideration for plan sponsors, both in terms of time and money, according to Amell.

"There's ample evidence to show that personalized medicine is very much at the forefront with our approaches to treating people [in] this day and age, particularly for mental-health conditions. But it's not limited to that, obviously. There's definite return on investment from using this. . . . By using this approach, you're essentially leapfrogging to the drug that is most likely going to produce the desired clinical effect in the patient or the worker."

Other issues for plan sponsors

Among the benefits of pharmacogenetics testing is reduced spending on drugs that don't work, according to Litinski.

She cites the example of a commonly prescribed blood pressure medication.

"You get this prescription, you take the pill . . . but then [for] 30 per cent of people, it doesn't work. So you take medication thinking it's protecting you from another stroke or heart attack but, in fact, you're not protected. So that's an example of benefits, where the cost is there — whether you do pharmacogenetics or not — but the benefit is not if you don't optimize the genetics."

The most common drugs that come up in the testing are medications for depression and anxiety, as well as painkillers and statins, says Litinski. "All the medications that are on our . . . list, the reason these medications are on the list is because they have a high risk of drug-gene interaction," she says.

"So if a medication is included on that list, it means that it will be problematic from a genetic perspective. And this information comes from consensus clinical guidelines; it's not our invention. So there's a body called the Clinical Pharmacogenetics Implementation Consortium. And they rank all drugs based on those genetic stats."

The testing isn't without its critics, however, specifically when it comes to antidepressants. Dr. Steven Dubovsky, professor and chair of the department of psychiatry at the State University of New York's University at Buffalo, says there's no reason why measuring genes for enzymes will predict what happens to a drug and whether or not a patient will respond to it.

"One reason for this is that most

RESEARCH UNDERWAY AT CAMH

Among the research underway into pharmacogenetic testing is a study at the Centre for Addiction and Mental Health in Toronto. Launched in 2011 with \$19.5 million in funding, the Impact study has so far enrolled almost 10,000 patients for testing.

In August, Sun Life Financial announced it would be participating in the Impact study. Through the insurer's partnership with CAMH, Sun Life clients on an approved mental health-related disability claim, who are also taking medication as part of their treatment plan, will have the opportunity to join the study and participate in pharmacogenetic testing.

psychiatric drugs are metabolized by multiple enzymes. And if one is low or high in activity, other enzymes will change their activity to compensate for that," says Dubovsky.

"It's something that sounds fancy. It makes psychiatrists sound like real scientists because you're doing gene tests, but if you look at medicine in general, there are only a few areas where genetic testing is really useful at this point in time in routine treatment planning, and that's primarily in the area of cancer treatment," he adds.

Sax, however, feels there's definitely merit in the testing. "I think it's a technology that's here to stay," he says. 

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