



Targeting pregnancy risk with the EHR

By Joanna Weiss | June 1, 2016

Everyone knows that certain medications aren't safe for pregnant women. Among them are ACE inhibitors, some of the most common drugs for hypertension, which can cause kidney malformations in fetuses. A black box warning from the FDA says ACE inhibitors should be discontinued during pregnancy.

But what if a woman is pregnant and doesn't know it yet?

This has long been a concern for Barbara Levy MD, vice president of health policy at the American College of Obstetricians and Gynecologists (ACOG). Research shows that nearly half of pregnancies are unplanned, Levy says. So women could be taking ACE inhibitors for weeks, if not months, before learning they've exposed their fetuses.

But it's been hard to get that message to the public and physicians, Levy says – even as the Zika virus has sparked heightened awareness about pregnancy and risk.

So ACOG is embarking on a new effort: using electronic health records and the power of a health care network.

This spring, ACOG and athenahealth used the company's EHR to find and inform patients who may be at risk. athenahealth conducted a search of its national database of 63 million patient records and identified women of childbearing age who are currently prescribed ACE inhibitors. Then the company notified the women's doctors, suggesting they prescribe a different hypertension drug or urge their patients to get on effective contraception.

The project, the first of its kind for athenahealth, represents a different way of managing pregnancy risk – by focusing on women who might become pregnant, rather than women who already are.

And it represents a new way for doctors to view technology: as a tool, not just for individual practice, but for population-level surveillance and intervention.

"We have an opportunity to identify risk that... our providers haven't even thought about," says Adam Wolfberg MD, a maternal-fetal medicine specialist who is athenahealth's director of clinical effectiveness. "It's kind of like practicing public health through the EHR. We're beginning to call that 'network medicine.'"

The project began as a side conversation. Wolfberg and Brian Anderson MD, a family medicine doctor on his team, were meeting with Levy at ACOG's Washington, D.C. offices to talk about ways to incorporate the society's clinical guidelines into athenahealth's cloud-based platform, which is used by 75,000 doctors nationwide.

As the meeting wound down, they started mulling other uses for that network. Levy brought up ACE inhibitors. Technically known as angiotension-converting enzyme inhibitors, they're the go-to drug for treating hypertension in some patients, although they can be replaced by equally effective drugs, such as beta blockers, most of the time.

The majority of pregnant women on ACE inhibitors will have normal pregnancies and healthy babies, Wolfberg says. But in a small number of cases, the drug is known to cause structural abnormalities – most commonly, malformation of the kidneys – and to decrease levels of amniotic fluid.

ACOG has issued warnings about those potential side effects, Levy says. But she realizes that doctors in other specialties might not be aware of ACOG guidelines. And they might not be asking about contraception in the course of a normal visit.

"If you've got a 39- or a 42-year-old woman who is seeing a cardiologist for hypertension, birth control is not the first thing on their minds. Or pregnancy intent is not the first thing that that they'll ask about," Levy says. "What ends up happening is that women are not using effective forms of contraception, and they're placed on medications that could potentially be risky during pregnancy."

After the conversation, Wolfberg and Anderson returned to athenahealth's Watertown, Massachusetts headquarters and put a query into the network, searching for women between ages 14 and 49 who had been prescribed ACE inhibitors. They excluded women who had had hysterectomies, and used birth dates and other identifying information to make sure they weren't counting patients twice.

In just three hours, they had come up with a number: 62,468 women of childbearing age, seen by 9,157 providers. Of those doctors, 630 were OB/GYN who might have been aware of the ACOG warnings. Another 8,527 practiced primary care or other specialties.



Next, athenahealth sent an email to those doctors, pointing them to a similar query they could run themselves – to identify their own patients who were taking ACE inhibitors and had the potential to get pregnant. Included in the message was a related ACOG guideline and a suggestion: if the patients are sexually active, switch them to another medication, or urge them to consider a highly effective contraception such as an intrauterine device.

The reaction wasn't overwhelming, Wolfberg says – unsurprising for a first initiative, at a time when doctors are bombarded with emails and warnings. About 30 percent of doctors opened the email, and a disappointing 3 percent ran the report.

"The medical literature is filled with great public health interventions that had a minimal or nonexistent impact," Wolfberg said. "And I don't think we should be rosy-eyed about the fact that changing physician and patient behavior, just because we have a mechanism to communicate to them, won't be easy."

That's especially true, Anderson says, for an effort that involves changing the way doctors think about pregnancy and risk.

"When they think about pregnancy, it's either 'you're pregnant' or 'you're not,'" Anderson says. "There's this new way of thinking about medication and contraception and women of reproductive age."

The response to Zika may provide some hope. Amid signs that the mosquito-borne virus caused serious birth defects, public awareness soared. The World Health Organization called for greater use of contraception in affected nations.

But given the worries and warnings that doctors and patients always face, Wolfberg says, it's hard to drum up attention for drugs whose side effects aren't as common or catastrophic.

"Something as dramatic as Zika will always bounce us out of our stupor," Wolfberg says. "But ACE inhibitors won't, because they're boring and the risk is relatively low. But then on a population basis, the risk's probably higher."

Next, ACOG and athenahealth are looking to experiment with other tactics for changing behavior, such as incorporating the warnings directly into the patient record.

"We get so much coming across our desks every day, so it's much more effective to make it pop up in the patient's record the next time the patient comes up for a refill," Levy says. "It's getting that attention from people that's the most important thing."

Image credit: Darlene DeVita



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