

**REVIEWED**

By Chris Tighe at 1:27 pm, May 07, 2015

< The Potential Impact Of Big Data On Medicine

JANUARY 25, 2015 8:04 AM ET

RACHEL MARTIN, HOST:

Big data - it's a term for the ever-expanding cloud of information that's increasingly searchable. In the field of medicine, big data can include things like genetics information or searchable electronic health records. And theoretically, big data could provide a trove of answers to important medical questions like whether certain drugs have side effects or if a particular treatment works. Amy Standen from member station KQED in San Francisco has more.

AMY STANDEN, BYLINE: In 2011, a young girl from Reno, Nevada, was flown by helicopter to the pediatric intensive care unit at Stanford's Lucile Packard Children's Hospital. Jenny Frankovich was an attending physician there.

JENNY FRANKOVICH: She was gravely ill. Her kidneys were shutting down.

STANDEN: Tests showed the girl had lupus, a disease in which the immune system goes rogue. Frankovich had seen kids like this before. And she recalled that some of them also developed blood clots, which can be deadly. Blood clots can be prevented with an anticoagulant, but that too carries risks.

FRANKOVICH: You could stroke. A patient could bleed into another organ.

STANDEN: Giving the drug was risky. Not giving the drug was also risky. So Frankovich asked the other doctors around the girl's bed, what should we do here? The answer - we don't really know.

FRANKOVICH: There wasn't enough published literature to guide this decision. And

that really, the best route was to not do anything.

STANDEN: And that's when she had her big idea.

FRANKOVICH: I knew I had the patients' charts, all electronic, in a database that was searchable.

STANDEN: Not long ago, she says, this data would have filled an entire office room with boxes of paper files. Now, she could search it with a keystroke.

FRANKOVICH: I brought the data back to that big team of doctors that was around her bed. And I said, hey, this is the number of lupus patients we've had. This is the number that had a clot. And what do you think? Universally everybody said, wow, based on those numbers, you know, it seems like we should try to prevent a clot in her.

STANDEN: So they did. It worked.

FRANKOVICH: She didn't develop a clot. And over time, her lupus did get better. And she's, as far as I know, doing well.

STANDEN: This may sound kind of obvious, like something doctors would do all the time. But it's actually really unusual, the only time her hospital had used medical records in a situation like this. And to Atul Butte, who studies medical data at Stanford, this is a big step, an example of a seismic shift he believes is happening right now in medicine.

ATUL BUTTE: The idea here is the scientific method itself is growing obsolete.

STANDEN: This idea draws from an essay published in Wired magazine back in 2008 called "The End Of Theory." And according to the essay, in the future, so much information will be available at our fingertips that there will be almost no need for experiments.

BUTTE: Think about it - the scientific method, we learn this in elementary school. You come up with a question, or what we call a hypothesis, and go make the measurements to address and answer that question or hypothesis.

STANDEN: The answers already exist.

BUTTE: We already have the measurements and the data. The struggle is to figure out what do we want to ask of all that data?

STANDEN: To Butte, this cloud of data means that pretty soon, we shouldn't need so many controlled trials. The answers are already there in the patient records and other digital health databases. If Butte's right, you might think that what Frankovich did has become standard practice at her hospital. In fact, the opposite happened.

FRANKOVICH: We're actually not doing this anymore.

STANDEN: The system just isn't ready, the hospital decided. What if Frankovich had used the wrong search terms or the engine itself had bugs? What if the records had been mis-transcribed? Even Frankovich agrees that it's just too risky.

FRANKOVICH: I mean, for sure, the data is there, right? Now we have to develop the system to use it in a thoughtful, safe way.

STANDEN: Getting that system in place, she and others hope, will lead to better, faster, cheaper medicine. But it's still many years away. For NPR News, I'm Amy Standen.

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