MedicalXpress

Profs aim to track drug reactions via social media

October 3 2012, by Michael Felberbaum

Experiencing nausea, headaches or other side effects from prescriptions or over-the-counter medicines? Researchers say tweeting about it or posting your concerns online could one day help alert drug companies and federal regulators to problems more quickly—potentially saving lives and money.

The project at the University of Virginia and West Virginia University, still in its infancy, capitalizes on the idea that many companies—pharmaceutical and otherwise—already use the Internet to get consumer product and service feedback.

Sifting through innumerable posts on Twitter, Facebook, online message boards and blogs, the researchers will search for early warning signs of adverse drug reactions and interactions normally reported to the Food and Drug Administration and pharmaceutical companies through official channels by consumers and doctors.

People are increasingly turning to the Internet to find out what's ailing them, complain about their symptoms or read up on personal health issues, said Ahmed Abbasi, a professor of information technology at University of Virginia's McIntire School of Commerce in Charlottesville. He says using data from social media could help modernize drug surveillance and have major public health, safety and business impacts.

Funded by a $130,000 grant through the National Science Foundation's

Smart Health and Wellbeing program, the project builds on earlier work analyzing online posts from 2000 to early 2012 for mentions of 20 drugs. Researchers say the earlier effort detected adverse drug reactions—in some cases years earlier than current methods.

Abbasi said their data mining of online sources was able to identify patients experiencing tendon ruptures after using the popular antibiotic Cipro at least two years before the FDA issued its most urgent "black box" warning for the drug and similar antibiotics in 2008.

Despite the rigorous testing and clinical trials before new drugs are on the market, sometimes side effects don't show up until they are used by a large number of people.

The FDA primarily relies on physicians and patients to enter suspected adverse events into a database of voluntary reports that have nearly doubled over the last five years and totaled around 800,000 in 2010, the latest figure available from the agency. It can take multiple cases before someone at the agency detects a pattern worth investigating. Then it conducts an investigation to determine whether the drug caused the side effects.

The research team believes using social media would ideally help bring issues to light faster than that.

Speedier discovery of adverse drug reactions could have both pros and cons, according to people who keep close track of the pharmaceutical industry.

"The use of social media is just one way that may improve a company's ability to learn how patients are actually reacting to medicines," said Jeff Francer, assistant general counsel for the industry group Pharmaceutical Research and Manufacturers of America. "We're always looking for

better ways to ensure medicines are being used in a safe manner."

While knowing about drug side effects sooner could help pharmaceutical companies pull a drug or make changes to stave off side-effect related lawsuits that have cost the industry billions, analyst Steve Brozak of WBB Securities noted that knowledge could make a company liable sooner too.

Since the Internet is teeming with spam aimed at exploiting medical fears, selling unregulated remedies or promoting illegal online pharmaceutical sales, Abbasi said researchers will weed out fake medical websites with a fraudulent website detection system co-developed by members of the team. They will use other analytic tools to further filter the information. The results will be reviewed by independent pharmaceutical experts in partnership with medical professors at WVU's medical and pharmacy schools.

Dr. Jerry Avorn, an expert in pharmaceutical safety at Harvard Medical School, called the project intriguing, but added that "... before we take that as gospel, I think we need to understand to what extent those reports might be either exaggerated or distorted."

He suggested that "crowdsourcing" research on something as subjective as drug effects may not yield the most reliable results.

Instead, Avorn pointed to the FDA's Sentinel program, which, at the first hint of trouble, allows the agency to probe medical record databases covering tens of millions of patients to track the safety of drugs and medical devices once they're on the market.

Consumers are still encouraged to report drug reactions to the FDA because its database is currently the official way of tracking those issues, said agency spokeswoman Sandy Walsh.

The research team hopes sharing its findings with the larger medical community through a manageable database would allow the industry and regulators to investigate adverse drug reactions sooner and help patients too, said West Virginia University computer science professor Donald Adjeroh, who is co-leading the team. "If you get one thousand people saying the same kind of thing (about a drug), you know that there is maybe something going on somewhere."