The Ethics of Pharmacogenomics and Pharmaceutical Research

Pharmaceutical research into the way a patient’s genetic makeup can predict drug effectiveness — known as pharmacogenomics — has come under ethical scrutiny — like any up-and-coming medical work — as technology has improved precision.

Today, researchers are able to see how drugs will affect patients before they even need them and can hone in on drugs that are geared for very specific genetic makeups. But when is this information too much information? And what are the ethical issues that doctors, pharmacists, and researchers have to deal with on the front lines of pharmaceutical medicine?

Pharmaceutical Research, The Power of Information

Dr. Martin Zdanowicz, chair and professor of Pharmaceutical Science at the South University School of Pharmacy in Savannah, Georgia, says that one of the major ethical concerns with doing genetic testing for the predisposition toward certain conditions or probable reactions to certain drugs is, “What do you do with the information once it’s collected?”

“What happens with this information when you gather it?” Zdanowicz says. “Who’s going to use the information?”

There are laws protecting a patient’s genetic information. Patients cannot be discriminated against by employers based on their genetic information or testing. Employers that may be less likely to promote an employee who is predisposed to a certain disease, and there are laws to protect patients from insurance companies that might want to charge a larger premium to a patient who may be predisposed to a certain illness due to their genetic makeup. But Zdanowicz points out that records of all kinds are hacked into on a regular basis, and that in the wrong hands, some of this genetic information could be very detrimental to the patient.

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So what is the ethical obligation of the facilities that hold this medical information obtained through pharmaceutical research? And should patients, doctors, and researchers be pursuing this kind of information about genetic predisposition?

“Do you test ahead of time for a genetic disease for which there is currently no cure?” Zdanowicz asks. “It’s kind of an interesting little dilemma there.”

Targeted Pharmacogenomics

Another ethical debate that stems from pharmacogenomics involves how the information is used to target drugs for certain diseases and certain genetic demographics.

“In the long run, it will probably be to [patients’] benefit, with the most effective drugs and lowest number of side effects,” Zdanowicz says about the ability to target the best drugs, doses, and cocktails for sick patients. “You are targeting the drug that is the most likely to work in a specific patient.”

He says the drugs used for chemotherapy for both colon and breast cancers are engineered specifically for the genetic makeup cancer cells.

http://cmsdeploy.content.ednc.edu/assets/marketing/Insite/genetics_in-text_image.jpg

“This is the mainstay — the gold standard,” Zdanowicz says about the method used to fight these two common, but in many cases fatal, cancers. “Some of the current chemotherapy drugs are only used in cancer cells that express certain genetic characteristics.”

Genetic research also allows doctors and pharmacists to better control drug dosing based on the genetics of a patient’s metabolism. Genetic profiles will tell whether a patient has a particularly high or low metabolism, and the amount of a drug that is necessary can be dosed out appropriately, Zdanowicz says.
Ethical issues regarding this ability to hone drugs for specific genetic makeups arise when drug companies may not be willing to invest time and money into drugs to combat common diseases for patients with uncommon genes.

“Is it really worth developing a drug for a few thousand people?” Zdanowicz says some drug companies may ask. “It happens with rare diseases today.”

Although genetic pharmaceutical research brings up some tough issues, ethical questions have to be answered with all new medical science, and pharmacogenomics is no different. Researchers, doctors, and Pharmacists will have to come together to find out what is the best use of this genetic information, and figure out how it can best be utilized in the most ethical ways to benefit the health of patients.