Precision medicine and pharmacogenetics: Here’s why certain drugs work better for some people than others

UCSF [soon] will start a genetic testing program for patients, believed to be the first of its kind in California and among only a handful in the United States, that helps tailor medications to patients based on their individual genetic makeup.

The move, announced by UCSF [May 2], marks an advancement in precision medicine — the treatment and prevention of disease personalized for each person’s genes and environment — at one of the Bay Area’s leading academic medical centers and largest health care providers. UCSF’s leaders hope it will help reduce adverse drug reactions, which nationwide lead to thousands of deaths each year, according to federal data.

The testing approach, known as pharmacogenetics or pharmacogenomics, will involve conducting a blood test that analyzes 15 genes that affect the body’s response to 56 drugs. These drugs have been found to cause adverse reactions, harmful side effects and other responses that render the medication less effective in patients who have certain variants in those 15 genes. The drugs include both oral medications and intravenous therapies, and treat a range of conditions such as cancer, high cholesterol, pain and psychiatric disorders.

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A recent study published in the medical journal the Lancet found that pharmacogenetic testing at hospitals in seven European countries resulted in a 30% reduction in adverse drug reactions.

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