**BACKGROUND**

Cytochrome P450 metabolism is typically responsible for converting medications to compounds that are more water-soluble and more easily excreted. Genetic variations of cytochrome P450 enzymes may affect metabolism of medications, manifesting phenotypically as ranging from “poor” to “extensive” metabolizers. The P450 enzyme families with major CYP genetic polymorphisms are CYP2D6, CYP2C19, and CYP2C9. Medications themselves may also affect the activity of these enzymes, producing complex interactions between an individual’s P450 enzyme activities and drugs that modify those activities. Both mechanisms may contribute to medication-induced delirium.

**OBJECTIVE**

Objective of the study was to examine whether patients with delirium have higher prevalence of cytochrome-P450 drug-phenotype interactions compared to patients without delirium.

**METHODS**

Study sample included 13 patients (8 patients in a delirium group and 5 patients in a control group). Patients were included if they had diagnosis of a stroke without aphasia, non-traumatic spinal cord injury or cardiac surgery. Study duration was from February 2019 to June 2020. Interventions included UBACC decision capacity tool, Short IQ. Code dementia screening, DRS 98 delirium severity assessment, blood samples for cytochrome CYP2D6 and CYP2C19 isoenzyme genetic testing.

**RESULTS**

We identified two patients in the delirium group with CYP2D6 drug-phenotype interaction due to metoprolol. In addition, one patient in delirium group had fluoxetine and metoprolol drug-drug interaction. There were no control subjects with drug-phenotype or drug-drug interaction associated with metoprolol.

**CONCLUSIONS**

Cytochrome P450 genotyping and phenotyping may play a role in the prevention of delirium by providing additional information to guide safer medication prescribing. We shared results of the study with the Pharmacy Department at Lutheran General Hospital, Advocate Aurora Health. As a result of this communication there is a systemwide warning in Epic electronic medical records software against prescribing a lipid soluble beta blocker Metoprolol in combination with strong cytochrome P450 inhibiting serotonin reuptake inhibitors, like Fluoxetine.

**REFERENCES**