The Impact of Pharmacogenomic Testing on Psychotropic Drug Selection at the UVA Ryan White HIV Clinic

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BACKGROUND

- About 20-30% of patients engaged in HIV care have a diagnosis of major depressive disorder or various psychiatric diagnoses.
- Those treated with antidepressants are inadequately treated for a period of time before an appropriate regimen is discovered, which is associated with worsened long-term prognosis, increased side effects, increased healthcare cost, and worsening of comorbidities.
- Untreated depression can negatively impact each point in the HIV care continuum from linkage to care to medication adherence.
- Pharmacogenomic testing analyzes 12 different genes and how mutations of these genes may impact response to psychotropic medications.
- These results can support clinicians with medication selection that is unique to each individual's genetic profile.
- The GUIDED trial showed that pharmacogenomics-guided therapy significantly improved response and rate of remission among patients on psychotropics.

PURPOSE

The purpose of this project is to identify the proportion of patients who have significant and moderate gene-drug interactions with psychotropics within the HIV clinic psychiatric sub-population.

METHODS

- Patients who were prescribed psychotropic medications and underwent pharmacogenomic testing between August 1, 2018 and March 31, 2020 at the UVA Ryan White HIV clinic were included.
- A data collection tool facilitated manual capture of patient demographics, indication for psychotropic therapy, number of previous medications trialed, moderate and significant gene-drug interactions with previous and current therapy, and intervention if appropriate. The electronic health record (EHR) and GeneSight reports were utilized.
- Previous therapy was defined as all psychotropics a patient had previously trialed.
- Current therapy was defined as psychotropics on the patient's current medication list at the time of testing.

RESULTS

Table 1. Patient Characteristics

Characteristic	Patients n (%) N=34
Sex	
Male	24 (70.6)
Female	8 (23.5)
Male to female	1 (2.9)
Female to male	1 (2.9)
Age (years)	
18-29	6 (17.6)
30-49	16 (47.1)
50-64	8 (23.5)
≥65	4 (11.8)
Indication for psychotropic medication	
Depression	30 (88.2)
Bipolar disorder	8 (23.5)
Generalized Anxiety	19 (55.9)
Post traumatic stress disorder	5 (14.7)
Panic disorder	1 (2.9)
Social phobia	1 (2.9)
Number of previous psychotropics trialed	
1-3	11 (32.4)
4-5	2 (5.9)
>5	21 (61.8)

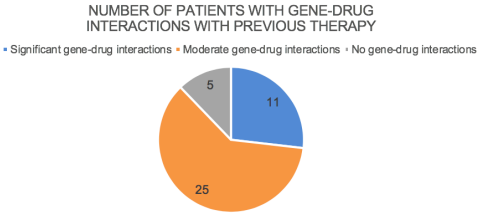

Figure 1. Example of Pharmacogenomic Testing (GeneSight) Results

USE AS DIRECTED	MODERATE GENE-DRUG INTERACTION		SIGNIFICANT GENE-DRUG INTERACTION	
asenapine (Saphris®)	**fluphenazine** (Prolixin®)	1	**chlorpromazine** (Thorazine®)	1,6
cariprazine (Vraylar®)	**olanzapine** (Zyprexa®)	1	**aripiprazole** (Abilify®)	1,6,8
lurasidone (Latuda®)	**quetiapine** (Seroquel®)	1	**brexpiprazole** (Rexulti®)	1,6,8
paliperidone (Invega®)	**clozapine** (Clozaril®)	1,8	**iloperidone** (Fanapt®)	1,6,8
thiothixene (Navane®)	**haloperidol** (Haldol®)	1,8	**perphenazine** (Trilafon®)	1,6,8
ziprasidone (Geodon®)			**risperidone** (Risperdal®)	1,6,8
			thioridazine (Mellaril®)	1,6,9

DISCUSSION

- Two patients who had significant gene-drug interactions with current therapy underwent a change in therapy. Others underwent increased monitoring.
- Some patients did not have psychotropic alternatives due to many gene-drug interactions.
- Of the two patients who had a change in therapy, it was unclear whether the changes in therapy were due to test results or due to other factors.
- Currently, test results are communicated via a telephone note in the EHR. It is possible providers are not aware of these notes. Other barriers to intervention could include lack of timely follow-up or lack of access to medications without interaction.

CONCLUSION

- This cohort of patients was extensively treatment experienced, with 62% trialing >5 psychotropic agents.
- The majority of patients had gene-drug interactions with previous therapy and many patients had gene-drug interactions with current therapy.
- The majority of these patients did not have a change in therapy after results were released.
- It is important to continue testing patients because of the large amount of people who were found to have gene-drug interactions from this study.
- Pharmacogenomic testing can help guide clinical decision making in the selection of psychotropic medications, potentially increasing efficacy and reducing side effects.

FUTURE DIRECTION

Further direction will involve identifying most appropriate pathways to communicate and intervene upon results.

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