PGx Report - Psychiatry

Type: Antidepressant II

Drug Class	Generic	Primary Mechanism Involved	Other Mechanisms Involved	Used As Directed	May Have Decreased Efficacy	May Have Increased Toxicity
Antidepressants						
TCAs that fairly balanced serotonin-norepinephrine reuptake inhibitors	Amitriptyline	CYP2D6	CYP3A4, CYP2C19, CYP2C9, CYP1A2, CYP2B6	✓		
	Doxepin	CYP2D6, CYP2C19	CYP1A2, CYP3A4, CYP3A5	✓		
	Dosulepin	CYP2D6, CYP2C9	CYP3A4, CYP1A2, CYP3A5, CYP2C19	✓		
TeCAs	Mianserin	CYP2D6	CYP3A4, CYP1A2, CYP2B6, CYP3A5	✓		
	Amoxapine	CYP2D6	CYP3A4, CYP3A5	✓		
TCA with antipsychotic and sedative properties	Trimipramine	CYP2D6	CYP2C19, CYP2C9	✓		
MAOI	Tranylcypromine	MAO	CYP3A4, CYP3A5, CYP2C19, CYP2D6	✓		
	Moclobemide	CYP2C19	CYP2D6, CYP1A2, HTR2A	✓		
Atypical antidepressants						
SMSs	Vortioxetine	CYP2D6	CYP2C9, CYP3A4, CYP3A5, UGTs,CYP2C19, CYP2B6	✓		
NaSSAs	Mirtazapine	CYP1A2	CYP2D6, CYP3A4, CYP3A5, SLC6A4, HTR2A	✓		
SARIs	Trazodone	CYP3A4	CYP2D6, CYP3A5	✓		
	Nefazodone	CYP2D6, CYP3A4	CYP3A5	✓		
Antidepressant and smoking cessation aid	Bupropion	CYP2B6	CYP3A4, CYP2D6, CYP1A2, CYP3A5	✓		
Antidepressant and anti-anxiety	Buspirone	CYP3A4	CYP3A5	✓		

Abbreviations: SSRI, serotonin selective reuptake inhibitor; SMS, Serotonin modulator and stimulator; SNRI, serotonin-norepinephrine reuptake inhibitor; NRI, norepinephrine reuptake inhibitor; TCA, tricyclic antidepressant; TeCA, tetracyclic antidepressant; MAOI, monoamine oxidase inhibitor; NaSSA, noradrenergic and specific serotonergic antidepressant; SARI, serotonin antagonist and reuptake inhibitor.

Additional SNPs of Importance for the Treatment of Depression and Psychosis, and the Treatment of Alcohol and Tobacco Use Disorders

Gene	Marker	Genotype	Drug	Level of Evidence	Results
COMT	rs4680	A/A	Fluvoxamine	3	Schizophrenia patients may have an increased risk for developing extrapyramidal symptoms
COMT	rs4680	A/A	Venlafaxine	3	Patients with Depressive Disorder may have a decreased response but patients with Anxiety Disorders may have an increased response
COMT	rs4680	A/A	Paroxetine	3	Depressive patients may have an increased response or increased improvement
ANKK1/DRD2	rs1800497	G/G	Bupropion	1B	Patients may be more likely to quit smoking
ANKK1/DRD2	rs1800497	G/G	Antipsychotics	2A	Schizophrenia patients may have an increased risk for tardive dyskinesia
ANKK1/DRD2	rs1800497	G/G	Ethanol	2B	Patients may have a decreased, but not absent, risk for Alcoholism
ANKK1/DRD2	rs1800497	G/G	Clozapine Olanzapine Risperidone	2B	Patients may have decreased but not non-existent risk of side effects including hyperprolactinemia and weight gain
ANKK1/DRD2	rs1800497	G/G	Nicotine	3	Patients may have a decreased likelihood of smoking cessation when treated with nicotine replacement
ANKK1/DRD2	rs1800497	G/G	Risperidone	3	Schizophrenia patients may have less improvement in symptoms

PGx Report - Psychiatry

Type: Typical Antipsychotic

Drug Class	Generic	Primary Mechanism Involved	Other Mechanisms Involved	Used As Directed	May Have Decreased Efficacy	May Have Increased Toxicity
Typical antipsychotic						
Butyrophenones	Bromperidol	CYP3A4	CYP3A5	✓		
	Droperidol	CYP3A4	CYP3A5	✓		
	Haloperidol	UGTs, CYP3A4	CYP1A2, CYP2D6, CYP3A5, SLC6A4	✓		
Phenothiazines with aliphatic side-chain	Chlorpromazine	CYP2D6	CYP1A2, CYP3A4, CYP3A5	✓		
	Levomepromazine	CYP3A4	CYP1A2, CYP3A5	✓		
	Promazine	CYP1A2	CYP3A4, CYP2C19, CYP2C9, CYP3A5	✓		
	Cyamemazine	CYP1A2	CYP3A4, CYP2C9,CYP3A5	✓		
Phenothiazines with piperazine structure	Fluphenazine	CYP2D6		✓		
	Perphenazine	CYP2D6		✓		
	Prochlorperazine	CYP2D6	CYP3A4, CYP3A5	✓		
	Trifluoperazine	CYP1A2	UGT1A4	✓		
Phenothiazines with piperidine structure	Thioridazine	CYP2D6	CYP1A2, CYP3A4, CYP2C19, CYP3A5	✓		
Phenothiazines used as an anti-histamine, sedative, and antiemetic	Promethazine	CYP2D6	SULTs	✓		
Diphenyl-butylpiperidine	Pimozide	CYP3A4, CYP2D6	CYP1A2, CYP3A5	✓		
Thioxanthene derivative	Thiothixene	CYP1A2	CYP3A4, CYP3A5	✓		
	Zuclopenthixol	CYP2D6	CYP3A4, CYP3A5	✓		
Tricyclics	Loxapine	CYP1A2	CYP3A4, CYP2D6, CYP3A5	✓		

PGx Report - Psychiatry

Type: Atypical antipsychotic

Drug Class	Generic	Primary Mechanism Involved	Other Mechanisms Involved	Used As Directed	May Have Decreased Efficacy	May Have Increased Toxicity
Atypical antipsychotic						
Diazepines, Oxazepines, Thiazepines and Oxepines	Quetiapine	CYP3A4, CYP2D6	CYP3A5, CYP1A2, CYP2C9, CYP2C19, SLC6A4	✓		
	Asenapine	CYP1A2	CYP2D6, CYP3A4, CYP3A5	✓		
	Clozapine	CYP1A2, CYP2D6	CYP3A4, CYP2C9, CYP2C19, CYP3A5, SLC6A3, SLC6A4, SLC1A1, DRD3	✓		
Indole derivatives	Sertindole	CYP2D6	CYP3A4, CYP3A5	✓		
	Ziprasidone	CYP3A4	AOX1, CYP3A5	✓		
	Lurasidone	CYP3A4	CYP3A5	✓		
Benzamides	Sulpiride	Renal Excretion		✓		
	Amisulpride	Renal Excretion		✓		
Other antipsychotics	Aripiprazole	CYP2D6	CYP3A4, CYP3A5, DRD3	✓		
	Risperidone	CYP2D6	CYP3A4, CYP3A5, ABCB1, SLC6A4, SLC1A1, HTR2A, DRD3	✓		
	Iloperidone	CYP2D6	CYP3A4, CYP3A5	✓		
	Paliperidone	CYP2D6	CYP3A4, CYP3A5	✓		
	Zotepine	CYP3A4	CYP1A2, CYP3A5, CYP2D6	✓		

Additional SNPs of Importance in Treatment that Includes the Use of Antipsychotics and for the Treatment of Autism

Gene	Marker	Genotype	Drug	Level of Evidence	Results
COMT	rs4680	A/A	Haloperidol	3	Schizophrenia patients may have an increased risk for developing extrapyramidal symptoms

Other genetic and clinical factors may also influence a patient's response to medications.