

youScript[®] lite

Personalized Prescribing System

The following tables show commonly prescribed medications with drug exposure likely to be impacted by the patient's phenotype indicated. These tables are not all inclusive and do not account for concomitant medication use. Medication dose adjustments reflect usual starting dose or a maximum daily dose when provided. Dose adjustments from the literature may have been modified for simplified dose conversion. Dose adjustments and alternative recommendations do not supersede the clinician's clinical judgment and should be used in context of the patient's status.

For a personalized report based on the cumulative effects of prescription and OTC medications, foods, herbals and DNA test results; visit youscript.net/dnalogin and enter the patient's date of birth and Genelex lab number.

This table shows commonly prescribed medications with drug levels likely to be impacted by the patient phenotype indicated. This table doesn't list all affected medications nor does it take co-medication into account. For a personalized report based on the cumulative effect of all prescription drugs, OTCs, foods, herbals, and other relevant patient factors including DNA test results, consult the YouScript software at www.YouScript.net

Phenotype: CYP2D6 Poor Metabolizer (PM)

Frequency: 5.1% in the U.S. population⁵

Caution	Dose adjustment	Alternative
Psychiatry: antidepressant		
amitriptyline	decrease by 50% ²	select a medication from a different class based on specific indication
doxepin	decrease by 50% ¹	
imipramine	decrease by 75% ¹	
nortriptyline	decrease by 50% ¹	
fluoxetine (Prozac®)	decrease*	citalopram (Celexa®), sertraline (Zoloft®), vilazodone (Viibryd®)
fluvoxamine (Luvox®)	decrease by 25% ³	
paroxetine (Paxil®)	decrease by 50% ³	
vortioxetine (Brintellix®)	max 10 mg/ day ⁴	
venlafaxine (Effexor®)	decrease*	milnacipran (Savella®), desvenlafaxine (Pristiq®)
bupropion (Wellbutrin®)	decrease*	for smoking cessation: varenicline (Chantix®)
Psychiatry: antipsychotic		
haloperidol (Haldol®)	decrease by 50% ¹	fluphenazine, olanzapine (Zyprexa®), ziprasidone (Geodon®), paliperidone (Invega®)
perphenazine	decrease by 50% ³	
aripiprazole (Abilify®)	decrease by 75%; max 10 mg/ day ¹	
risperidone (Risperdal®)	decrease by 50% ³	
benztropine (Cogentin®)	decrease*	trihexyphenidyl (Artane®)
Cardiology		
metoprolol (Lopressor®, Toprolol XL®)	decrease by 75% in patients with heart failure ¹	atenolol, bisoprolol, carvedilol (Coreg®) (low dose)
flecainide	record ECG, decrease by 50% ¹	sotalol, disopyramide, quinidine, amiodarone
propafenone	record ECG, decrease by 75% ¹	
Pain: opioids		
codeine (Tylenol #3®)	Select alternative ¹	morphine (MS Contin®), oxymorphone (Opana®), hydromorphone (Exalgo®), tapentadol (Nucynta®), buprenorphine
oxycodone (Oxycontin®, Percocet®)	increase* (maximum acetaminophen dose of 4,000 mg/ 24 hours)	
hydrocodone (Vicodin®, Lortab®)	increase* (maximum acetaminophen dose of 4,000 mg/ 24 hours)	
tramadol (Ultram®)	Select alternative ¹	
Other		
tamoxifen (Nolvadex®)	Avoid in post-menopausal breast cancer ¹	anastrozole (Arimidex®), letrozole (Femara®), exemestane (Aromasin®)
atomoxetine (Strattera®)	decrease, see product insert ⁴	methylphenidate (Ritalin®, Concerta®), dexamethylphenidate (Focalin®), lisdexamfetamine (Vyvanse®)
dextroamphetamine (Dexedrine®, a component of Adderall®)	decrease*	
clonidine (Catapres®)	decrease*	guanfacine (Tenex®, Intuniv®)
hydroxyzine (Atarax®, Vistaril®)	decrease*	lorazepam (Ativan®), oxazepam (Serax®)
bupirone (Buspar®)	decrease*	
meclizine (Antivert®)	decrease*	ondansetron (Zofran®), prochlorperazine (Compazine®), scopolamine (Transderm-Scop®)
promethazine (Phenergan®)	decrease*	
chlorpheniramine (Chlor-Trimeton®)	decrease*	fexofenadine (Allegra®), cetirizine (Zyrtec®)

Common CYP2D6 Inhibitors (reduce or block the ability of CYP2D6 to metabolize drugs)		
bupropion (Wellbutrin®)	fluoxetine (Prozac®)	quinidine
cinacalcet (Sensipar®)	goldenseal	terbinafine (Lamisil®)
duloxetine (Cymbalta®)	paroxetine (Paxil®)	
Common CYP2D6 Inducers (increase the ability of CYP2D6 to metabolize drugs)		
non-inducible		

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Phenotype: CYP2D6 Intermediate Metabolizer (IM)

Frequency: 36% in the U.S. population⁵

Caution	Dose adjustment	Alternative
Psychiatry: antidepressant		
amitriptyline	decrease by 25% ²	select a medication from a different class based on specific indication
doxepin	decrease by 25% ^{1,2}	
imipramine	decrease by 25% ^{1,2}	
nortriptyline	decrease by 25% ^{1,2}	
fluoxetine (Prozac®)	decrease*	citalopram (Celexa®), sertraline (Zoloft®), vilazodone (Viibryd®)
fluvoxamine (Luvox®)	decrease*	
paroxetine (Paxil®)	decrease by 25% ³	
vortioxetine (Brintellix®)	decrease*	
venlafaxine (Effexor®)	not established*	milnacipran (Savella®), desvenlafaxine (Pristiq®)
bupropion (Wellbutrin®)	decrease*	for smoking cessation: varenicline (Chantix®)
Psychiatry: antipsychotic		
perphenazine	decrease by 25% ³	fluphenazine, olanzapine (Zyprexa®), ziprasidone (Geodon®), paliperidone (Invega®)
haloperidol (Haldol®)	decrease*	
aripiprazole (Abilify®)	decrease*	
risperidone (Risperdal®)	decrease*	
benztropine (Cogentin®)	decrease*	trihexyphenidyl (Artane®)
Cardiology		
metoprolol (Lopressor®, Toprol XL®)	decrease by 50% in patients with heart failure ¹	atenolol, bisoprolol, carvedilol (Coreg®)
flecainide	record ECG, decrease by 25% ¹	sotalol, disopyramide, quinidine, amiodarone
propafenone	record ECG, monitor levels and dose accordingly ¹	
Pain: opioids		
codeine (Tylenol #3®)	Select alternative ¹ or increase*	morphine (MS Contin®), oxymorphone (Opana®), hydromorphone (Exalgo®), tapentadol (Nucynta®), buprenorphine
oxycodone (Oxycontin®, Percocet®)	increase* (maximum acetaminophen dose of 4,000 mg/ 24 hours)	
hydrocodone (Vicodin®, Lortab®)	increase* (maximum acetaminophen dose of 4,000 mg/ 24 hours)	
tramadol (Ultram®)	increase*	
Other		
tamoxifen (Nolvadex®)	not established*	anastrozole (Arimidex®), letrozole (Femara®), exemestane (Aromasin®)
atomoxetine (Strattera®)	decrease*	methylphenidate (Ritalin®, Concerta®), dexamethylphenidate (Focalin®), lisdexamfetamine (Vyvanse®)
dextroamphetamine (Dexedrine®, a component of Adderall®)	decrease*	
clonidine (Catapres®)	decrease*	guanfacine (Tenex®, Intuniv®)
hydroxyzine (Atarax®, Vistaril®)	decrease*	lorazepam (Ativan®), oxazepam (Serax®)
bupirone (Buspar®)	decrease*	
meclizine (Antivert®)	decrease*	ondansetron (Zofran®), prochlorperazine (Compazine®), scopolamine (Transderm-Scop®)
promethazine (Phenergan®)	decrease*	
chlorpheniramine (Chlor-Trimeton®)	decrease*	fexofenadine (Allegra®), cetirizine (Zyrtec®)

Common CYP2D6 Inhibitors (reduce or block the ability of CYP2D6 to metabolize drugs)		
bupropion (Wellbutrin®)	fluoxetine (Prozac®)	quinidine
cinacalcet (Sensipar®)	goldenseal	terbinafine (Lamisil®)
duloxetine (Cymbalta®)	paroxetine (Paxil®)	
Common CYP2D6 Inducers (increase the ability of CYP2D6 to metabolize drugs)		
non-inducible		

This table shows commonly prescribed medications with drug levels likely to be impacted by the patient phenotype indicated. This table doesn't list all affected medications nor does it take co-medication into account. For a personalized report based on the cumulative effect of all prescription drugs, OTCs, foods, herbals, and other relevant patient factors including DNA test results, consult the YouScript software at www.YouScript.net

Phenotype: CYP2D6 Ultra Rapid Metabolizer (UM)

Frequency: 3.5% in the U.S. population⁵

Caution	Dose adjustment	Alternative
Psychiatry: antidepressant		
amitriptyline	increase ²	select a medication from a different class based on specific indication
doxepin	titrate to response, increase up to 200% of normal ¹	
imipramine	titrate to response, increase up to 175% of normal ¹	
nortriptyline	titrate to response, increase up to 150% of normal ¹	
paroxetine (Paxil®)	increase*	citalopram (Celexa®), sertraline (Zoloft®), vilazodone (Viibryd®)
fluoxetine (Prozac®)	increase*	
fluvoxamine (Luvox®)	increase*	
vortioxetine (Brintellix®)	increase*	
venlafaxine (Effexor®)	titrate to response, increase up to 150% of normal ¹	milnacipran (Savella®), desvenlafaxine (Pristiq®)
bupropion (Wellbutrin®)	increase*	for smoking cessation: varenicline (Chantix®)
Psychiatry: antipsychotic		
haloperidol	increase*	fluphenazine, olanzapine (Zyprexa®), quetiapine (Seroquel®), ziprasidone (Geodon®), paliperidone (Invega®)
perphenazine	increase*	
aripiprazole (Abilify®)	increase*	
risperidone (Risperdal®)	increase*	
benztropine (Cogentin®)	increase*	
Cardiology		
carvedilol (Coreg®)	increase*	atenolol, bisoprolol, carvedilol
metoprolol (Lopressor®, Toprol XL®)	titrate to response, increase up to maximum of 250% of normal ¹	
flecainide	record ECG, monitor levels and dose accordingly ¹	sotalol, disopyramide, quinidine, amiodarone
propafenone		
Pain: opioids		
codeine (Tylenol #3®)	Select alternative ¹	morphine (MS Contin®), oxycodone (Opana®), hydromorphone (Exalgo®), tapentadol (Nucynta®), buprenorphine
oxycodone (Oxycontin®, Percocet®)	decrease*	
hydrocodone (Vicodin®, Lortab®)	decrease*	
tramadol (Ultram®)	decrease by 25% ¹	
Other		
atomoxetine (Strattera®)	increase*	methylphenidate (Ritalin®, Concerta®), dexamethylphenidate (Focalin®), lisdexamfetamine (Vyvanse®)
dextroamphetamine (Dexedrine®, a component of Adderall®)	increase*	
clonidine (Catapres®)	increase*	guanfacine (Tenex®, Intuniv®)
hydroxyzine (Atarax®, Vistaril®)	increase*	lorazepam (Ativan®), oxazepam (Serax®)
buspirone (Buspar®)	increase*	
meclizine (Antivert®)	increase*	ondansetron (Zofran®), prochlorperazine (Compazine®), scopolamine (Transderm-Scop®)
promethazine (Phenergan®)	increase*	
chlorpheniramine (Chlor-Trimeton®)	increase*	fexofenadine (Allegra®), cetirizine (Zyrtec®)
Common CYP2D6 Inhibitors (reduce or block the ability of CYP2D6 to metabolize drugs)		
bupropion (Wellbutrin®)	fluoxetine (Prozac®)	quinidine
cinacalcet (Sensipar®)	goldenseal	terbinafine (Lamisil®)
duloxetine (Cymbalta®)	paroxetine (Paxil®)	
Common CYP2D6 Inducers (increase the ability of CYP2D6 to metabolize drugs)		
non-inducible		

This table shows commonly prescribed medications with drug levels likely to be impacted by the patient phenotype indicated. This table doesn't list all affected medications nor does it take co-medication into account. For a personalized report based on the cumulative effect of all prescription drugs, OTCs, foods, herbals, and other relevant patient factors including DNA test results, consult the YouScript software at www.YouScript.net

Phenotype: CYP2C19 Poor Metabolizer (PM)

Frequency: 2.3% in the U.S. population^{5,†}

Caution	Dose adjustment	Alternative
Psychiatry: antidepressant		
amitriptyline	decrease by 50% ²	nortriptyline, desipramine or based on specific indication
doxepin	decrease by 50% ²	
imipramine	decrease by 50% ^{1,2}	
citalopram (Celexa®)	20 mg/ day max ⁴	vilazodone (Viibryd®), paroxetine (Paxil®)
escitalopram (Lexapro®)	decrease*	
fluoxetine (Prozac®)	decrease*	
sertraline (Zoloft®)	decrease by 50% ^{1,3}	
Cardiology		
clopidogrel (Plavix®)	Select alternative ¹	prasugrel (Effient®), ticagrelor (Brilinta®)
Other		
clobazam (Onfi®)	5 mg/day initial, titrated to 10-20 mg/day. 40 mg/day max. ⁴	lorazepam (Ativan®), oxazepam
diazepam (Valium®)	decrease*	
carisoprodol (Soma®)	decrease*	baclofen, cyclobenzaprine, methocarbamol, tizanidine
voriconazole (Vfend®)	based on plasma level ¹	posaconazole, itraconazole
omeprazole (Prilosec®)	decrease*	rabeprazole (Aciphex®), famotidine (Pepcid®), ranitidine (Zantac®)
esomeprazole (Nexium®)	decrease*	
Common CYP2C19 Inhibitors (reduce or block the ability of CYP2C19 to metabolize drugs)		
esomeprazole (Nexium®)	fluvoxamine (Luvox®)	voriconazole (Vfend®)
fluconazole (Diflucan®)	omeprazole (Protonix®)	
fluoxetine (Prozac®)	ticlopidine (Ticlid®)	
Common CYP2C19 Inducers (increase the ability of CYP2C19 to metabolize drugs)		
phenobarbital	rifampin	
primidone (Mysoline®)	St John's Wort	

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Phenotype: CYP2C19 Intermediate Metabolizer (IM)

Frequency: 25.4% in the U.S. population^{5,†}

Caution	Dose adjustment	Alternative
Psychiatry: antidepressant		
amitriptyline	decrease*	nortriptyline, desipramine or based on specific indication
doxepin	decrease*	
imipramine	decrease*	
citalopram (Celexa®)	decrease*	vilazodone (Viibryd®), paroxetine (Paxil®)
escitalopram (Lexapro®)	decrease*	
fluoxetine (Prozac®)	decrease*	
sertraline (Zoloft®)	decrease*	
Cardiology		
clopidogrel (Plavix®)	Select alternative ¹	prasugrel (Effient®), ticagrelor (Brilinta®)
Other		
clobazam (Onfi®)	decrease*	lorazepam (Ativan®), oxazepam
diazepam (Valium®)	decrease*	
carisoprodol (Soma®)	decrease*	baclofen, cyclobenzaprine, methocarbamol, tizanidine
voriconazole (Vfend®)	based on plasma level ¹	posaconazole, itraconazole
omeprazole (Prilosec®)	decrease*	rabeprazole (Aciphex®), famotidine (Pepcid®), ranitidine (Zantac®)
esomeprazole (Nexium®)	decrease*	

Common CYP2C19 Inhibitors (reduce or block the ability of CYP2C19 to metabolize drugs)		
esomeprazole (Nexium®)	fluvoxamine (Luvox®)	voriconazole (Vfend®)
fluconazole (Diflucan®)	omeprazole (Protonix®)	
fluoxetine (Prozac®)	ticlopidine (Ticlid®)	
Common CYP2C19 Inducers (increase the ability of CYP2C19 to metabolize drugs)		
phenobarbital	rifampin	
primidone (Mysoline®)	St John's Wort	

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Phenotype: CYP2C19 Rapid (RM) or Ultra Rapid Metabolizer (UM)

Frequency: 24.2% for RM; 3.5% for UM in the U.S. population^{5,†}

Caution	Dose adjustment	Alternative
Psychiatry: antidepressant		
amitriptyline	increase*	nortriptyline, desipramine or based on specific indication
doxepin	increase*	
imipramine	increase*	
citalopram (Celexa®)	titrate to response, for UM's increase up to 150% of normal ¹	paroxetine (Paxil®), vilazodone (Viibryd®)
escitalopram (Lexapro®)	titrate to response, for UM's increase up to 150% of normal ¹	
fluoxetine (Prozac®)	increase*	
sertraline (Zoloft®)	increase*	
Cardiology		
clopidogrel (Plavix®)	not established*	prasugrel (Effient®), ticagrelor (Brilinta®)
Other		
clobazam (Onfi®)	increase*	lorazepam (Ativan®), oxazepam (Serax®)
diazepam (Valium®)	increase*	
carisoprodol (Soma®)	increase*	baclofen, cyclobenzaprine, methocarbamol, tizanidine
voriconazole (Vfend®)	based on plasma level ¹	posaconazole, itraconazole
omeprazole (Prilosec®)	titrate to response, for UM's increase up to 300% of normal ¹	rabeprazole (Aciphex®), famotidine (Pepcid®), ranitidine (Zantac®)
esomeprazole (Nexium®)	titrate to response, for UM's increase up to 200% of normal ¹	
lansoprazole (Prevacid®)	titrate to response, for UM's increase up to 300% of normal ¹	
Common CYP2C19 Inhibitors (reduce or block the ability of CYP2C19 to metabolize drugs)		
esomeprazole (Nexium®)	fluvoxamine (Luvox®)	voriconazole (Vfend®)
fluconazole (Diflucan®)	omeprazole (Protonix®)	
fluoxetine (Prozac®)	ticlopidine (Ticlid®)	
Common CYP2C19 Inducers (increase the ability of CYP2C19 to metabolize drugs)		
phenobarbital	rifampin	
primidone (Mysoline®)	St John's Wort	

This table shows commonly prescribed medications with drug levels likely to be impacted by the patient phenotype indicated. This table doesn't list all affected medications nor does it take co-medication into account. For a personalized report based on the cumulative effect of all prescription drugs, OTCs, foods, herbals, and other relevant patient factors including DNA test results, consult the YouScript software at www.YouScript.net

Phenotype: CYP2C9 Poor Metabolizer (PM)

Frequency: 3.4% in the U.S. population⁵

Caution	Dose adjustment	Alternative
Cardiology		
warfarin (Coumadin®)	VKORC1 sensitivity	consult warfarindosing.org or if initiating consider: starting at decreased dose ^{18,19,20,21} rivaroxaban (Xarelto®), apixaban (Eliquis®) or dabigatran etexilate (Pradaxa®)
	low (A/A)	
	intermediate (A/G)	
	high (G/G)	
carvedilol (Coreg®)	decrease*	atenolol, bisoprolol, metoprolol (Lopressor®, Toprolol XL®)
Other		
phenytoin (Dilantin®)	standard loading dose; decrease maintenance dose by 50% ¹	gabapentin (Neurontin®), levetiracetam (Keppra®), lamotrigine (Lamictal®), topiramate (Topamax®), pregabalin (Lyrica®)
celecoxib (Celebrex®)	decrease by 50%. Avoid in juvenile rheumatoid arthritis patients ⁴	acetaminophen, naproxen (Aleve®), ketoprofen, oxaprozin (Daypro®)
ibuprofen (Motrin®)	decrease*	
indomethacin (Indocin®)	decrease*	
meloxicam (Mobic®)	decrease*	
glyburide (Micronase®)	decrease*	metformin, insulin, sitagliptin (Januvia®), exenatide (Byetta®), saxagliptin (Onglyza®)
glipizide (Glucotrol®)	decrease*	
glimepiride (Amaryl®)	decrease*	
tolbutamide	decrease*	

Common CYP2C9 Inhibitors (reduce or block the ability of CYP2C9 to metabolize drugs)		
fluconazole (Diflucan®)	amiodarone (Pacerone®)	
Common CYP2C9 Inducers (increase the ability of CYP2C9 to metabolize drugs)		
carbamazepine (Tegretol®)	primidone (Mysoline®)	St John's Wort
phenobarbital	rifampin	

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Phenotype: CYP2C9 Intermediate Metabolizer (IM)

Frequency: 28.2% in the U.S. population⁵

Caution	Dose adjustment	Alternative
Cardiology		
warfarin (Coumadin®)	VKORC1 sensitivity	consult warfarindosing.org or if initiating consider:
	low (A/A)	standard dose in CYP2C9 IM (*1/*2, *1/*8, *1/*11) ^{18,19,20,21} ; decreased dose in CYP2C9 IM (*1/*3 or *1/*5) ^{18,22}
	intermediate (A/G)	slightly decreased dose in CYP2C9 IM (*1/*2, *1/*11, *1/*3 or *1/*5) ^{18,19,20,21}
	high (G/G)	slightly decreased dose in CYP2C9 IM (*1/*2, *1/*11); decreased dose in CYP2C9 IM (*1/*3 or *1/*5) ^{18,22}
carvedilol (Coreg®)	decrease*	atenolol, bisoprolol, metoprolol
Other		
phenytoin (Dilantin®)	standard loading dose; decrease maintenance dose by 25% ¹	gabapentin (Neurontin®), levetiracetam (Keppra®), lamotrigine (Lamictal®), topiramate (Topamax®), pregabalin (Lyrica®)
celecoxib (Celebrex®)	decrease*	acetaminophen, naproxen (Aleve®), ketoprofen, oxaprozin (Daypro®)
ibuprofen (Motrin®)	decrease*	
indomethacin (Indocin®)	decrease*	
meloxicam (Mobic®)	decrease*	
glyburide (Micronase®)	decrease*	metformin, insulin, sitagliptin (Januvia®), exenatide (Byetta®), saxagliptin (Onglyza®)
glipizide (Glucotrol®)	decrease*	
glimepiride (Amaryl®)	decrease*	
tolbutamide	decrease*	
Common CYP2C9 Inhibitors (reduce or block the ability of CYP2C9 to metabolize drugs)		
fluconazole (Diflucan®)	amiodarone (Pacerone®)	
Common CYP2C9 Inducers (increase the ability of CYP2C9 to metabolize drugs)		
carbamazepine (Tegretol®)	primidone (Mysoline®)	St John's Wort
phenobarbital	rifampin	

This table shows commonly prescribed medications with drug levels likely to be impacted by the patient phenotype indicated. This table doesn't list all affected medications nor does it take co-medication into account. For a personalized report based on the cumulative effect of all prescription drugs, OTCs, foods, herbals, and other relevant patient factors including DNA test results, consult the YouScript software at www.YouScript.net

Phenotype: CYP3A4 Intermediate Metabolizer (IM)

Frequency: 5.3% of Caucasians²¹

Caution	Dose adjustment	Alternative
Psychiatry: antipsychotic		
aripiprazole (Abilify®)	decrease*	olanzapine (Zyprexa®), asenapine (Saphris®), paliperidone (Invega®)
quetiapine (Seroquel®)	decrease*	
risperidone (Risperdal®)	decrease*	
Cardiology		
atorvastatin (Lipitor®)	decrease*	rosuvastatin (Crestor®), pitavastatin (Livalo®), pravastatin (Pravachol®)
lovastatin (Mevacor®)	decrease*	
simvastatin (Zocor®)	decrease*	
amiodarone (Cordarone®)	decrease*	flecainide (Tambocor®), propafenone (Rythmol®), sotalol (Betapace®), disopyramide
quinidine	decrease*	
Pain: opioids		
buprenorphine	decrease*	morphine (MS Contin®), oxymorphone (Opana®), hydromorphone (Dilaudid®, Exalgo®)
fentanyl (Duragesic®)	decrease*	
oxycodone (Oxycontin®, Percocet®)	decrease*	
Other		
ethinyl estradiol	decrease*	ethinyl estradiol (low-dose)
cyclosporine (Neoral®, Sandimmune®)	monitor levels, decrease may be necessary*	mycophenolate mofetil (CellCept®), azathioprine (Imuran®)
tacrolimus (Prograf®)		
sirolimus (Rapamune®)		
eszopiclone (Lunesta®)	decrease*	zaleplon (Sonata®), ramelteon (Rozerem®), melatonin
trazodone (for sleep) (Desyrel®)	decrease*	
alprazolam (Xanax®)	decrease*	temazepam, oxazepam, lorazepam (Ativan®), hydroxyzine (Atarax®, Vistaril®)
buspirone (Buspar®)	decrease*	
clonazepam (Klonopin®)	decrease*	
saxagliptin (Onglyza®)	decrease*	
Common CYP3A4/5 Inhibitors (reduce or block the ability of CYP3A4/5 to metabolize drugs)		
ciprofloxacin (Cipro®)	grapefruit juice	posaconazole (Noxafil®)
clarithromycin (Biaxin®)	indinavir (Crixivan®)	ritonavir (Norvir®)
diltiazem (Cardizem®)	itraconazole (Sporanox®)	saquinavir (Invirase®)
erythromycin (Ery-Tab®)	ketoconazole	verapamil (Verelan®)
fluconazole (Diflucan®)	nelfinavir (Viracept®)	voriconazole (Vfend®)
Common CYP3A4/5 Inducers (increase the ability of CYP3A4/5 to metabolize drugs)		
carbamazepine (Tegretol®)	phenytoin (Dilantin®)	St John's Wort
efavirenz (Sustiva®)	primidone (Mysoline®)	
phenobarbital	rifampin	

This table shows commonly prescribed medications with drug levels likely to be impacted by the patient phenotype indicated. This table doesn't list all affected medications nor does it take co-medication into account. For a personalized report based on the cumulative effect of all prescription drugs, OTCs, foods, herbals, and other relevant patient factors including DNA test results, consult the YouScript software at www.YouScript.net

Phenotype: CYP3A5 Rapid (RM) and Ultra Rapid metabolizer (UM)

Frequency: 17.8% RM; 3% UM in the U.S. population⁵

Caution	Dose adjustment	Alternative
Cardiology		
nifedipine (Adalat®, Procardia®)	increase*	nicardipine, felodipine
verapamil (Calan®, Verelan®)	increase*	diltiazem (Cardizem®)
Pain: opioid		
oxycodone (Oxycontin®, Percocet®)	not established*	hydromorphone (Dilaudid®, Exalgo®), oxymorphone (Opana®)
Other		
raloxifene (Evista®)	increase*	ospemifene (Osphena®)
cyclosporine (Neoral®, Sandimmune®)	increase*	mycophenolate mofetil (CellCept®), azathioprine (Imuran®)
tacrolimus (Prograf®)	increase*	
sirolimus (Rapamune®)	increase*	
Common CYP3A4/5 Inhibitors (reduce or block the ability of CYP3A4/5 to metabolize drugs)		
ciprofloxacin (Cipro®)	grapefruit juice	posaconazole (Noxafil®)
clarithromycin (Biaxin®)	indinavir (Crixivan®)	ritonavir (Norvir®)
diltiazem (Cardizem®)	itraconazole (Sporanox®)	saquinavir (Invirase®)
erythromycin (Ery-Tab®)	ketoconazole	verapamil (Verelan®)
fluconazole (Diflucan®)	nelfinavir (Viracept®)	voriconazole (Vfend®)
Common CYP3A4/5 Inducers (increase the ability of CYP3A4/5 to metabolize drugs)		
carbamazepine (Tegretol®)	phenytoin (Dilantin®)	St John's Wort
efavirenz (Sustiva®)	primidone (Mysoline®)	
phenobarbital	rifampin	

These tables show commonly prescribed medications with drug levels likely to be impacted by the patient phenotype indicated. These tables do not list all affected medications nor do they take co-medication into account. For a personalized report based on the cumulative effect of all prescription drugs, OTCs, foods, herbals, and other relevant patient factors including DNA test results, consult the YouScript software at www.YouScript.net

Phenotypes:

- 5HTT Poor Serotonin Transporter
- 5HTT Intermediate Serotonin Transporter

Frequencies:

- 5HTT Poor Serotonin Transporter: European 16.7%, Asian 60.2%, Other/Mixed: 30.4%
- 5HTT Intermediate Serotonin Transporter: European: 46.3%, Asian: 35.1%, Other/Mixed: 49.6%⁶

Caution	Dose adjustment	Alternative
citalopram (Celexa®)	Caucasian patients with this genotype are predicted to have slower response, decreased rates of depression remission and increased levels of adverse effects to SSRIs. ⁷	SNRI: venlafaxine (Effexor®), duloxetine (Cymbalta®) NDRI: bupropion (Wellbutrin®) TCA: amitriptyline (Elavil®), Nortriptyline (Pamelor®)
escitalopram (Lexapro®)		
fluoxetine (Prozac®)		
fluvoxamine (Luvox®)		
paroxetine (Paxil®)		
sertraline (Zoloft®)		

Phenotypes:

- Factor V Leiden Heterozygous or Homozygous
- Factor II 20210A Heterozygous or Homozygous

Frequencies:

- Factor V Leiden Heterozygous and Homozygous: 2-5% of US population
- Factor II 20210A Heterozygous and Homozygous: 0.5-3% of US population^{8,9}

Caution	Dose adjustment	Alternative
combined oral contraceptives (e.g. Activella®, Microgestin®, etc.)	Avoid estrogen-containing oral contraceptive ^{10,11,12,13}	barrier method, levonorgestrel, copper IUD; oral and injectable progestin-only contraceptive (e.g. Camila®, Errin®, etc.), although safety not yet established
estrogens (e.g. FemHRT®, Estrace®, Premarin®, bio-identical, phytoestrogens.)	Avoid, if possible ^{10,11,12,13}	short-term use of low-dose transdermal estrogen in heterozygotes; black cohosh (limited efficacy data)
tamoxifen (Nolvadex®)	not established*	exemestane (Aromasin®)

Phenotypes:

- MTHFR Intermediate Activity (677CT / 1298AA or 677CC / 1298CC)
- MTHFR Poor Activity (677TT / 1298 [AA, AC, CC] or 677CT / 1298 [AC, CC])

Frequencies:

- heterozygous deficiency (677CT) 39.8%, (1298AC) 38.8%
- homozygous deficiency (677TT) 10.9%, (1298CC) 9%¹⁵

Caution	Dose adjustment	Alternative
methotrexate (Trexall®, Rheumatrex®, Otrexup®)	decrease ^{16,17}	base on treatment guidelines for indication

This table shows commonly prescribed medications with drug levels likely to be impacted by the patient phenotype indicated.⁴ This table doesn't list all affected medications nor does it take co-medication into account. For a personalized report based on the cumulative effect of all prescription drugs, OTCs, foods, herbals, and other relevant patient factors including DNA test results, consult the YouScript software at www.YouScript.net

Initial dosing recommendations do not take into account other important clinical factors affecting initial warfarin doses such as age, concomitant medications, etc. Consult warfarindosing.org for more specific recommendations. Maintenance doses should be adjusted based off the INR and other clinical factors.

Alternatives to consider include rivaroxaban (Xarelto[®]), apixaban (Eliquis[®]) or dabigatran etexilate (Pradaxa[®]).

Phenotype: VKORC1 low (G/G), intermediate (G/A) and high warfarin sensitivity (A/A)

Frequency: A allele carriers: 40.6% Europeans; 66.7% Asians and 10.8% Africans¹⁴

CYP2C9 phenotype						
VKORC1	Normal metabolizer	Intermediate metabolizer (*1/*2, *1/*8, *1/*11) ^{18,19,20}	Intermediate metabolizer (*1/*3), (*1/*5) ^{18,22}	Poor metabolizer (*2/*2)	Poor metabolizer (*2/*3)	Poor metabolizer (*3/*3)
Low sensitivity (G/G)	Expect decreased warfarin sensitivity in CYP2C9 normal metabolizers and VKORC1 low sensitivity. If initiating warfarin, consider starting at higher doses (5 to 7 mg/day).	Expect normal to slightly decreased warfarin sensitivity in CYP2C9 intermediate metabolizers and VKORC1 low sensitivity. If initiating warfarin, consider starting at standard doses (5 to 7 mg/day).	Expect slightly increased warfarin sensitivity in CYP2C9 intermediate metabolizers and VKORC1 low sensitivity. If initiating warfarin, consider starting at slightly decreased doses (3 to 4 mg/day).	Expect increased warfarin sensitivity in CYP2C9 poor metabolizers and VKORC1 low sensitivity. If initiating warfarin, consider starting at decreased doses (3 to 4 mg/day).	Expect increased warfarin sensitivity in CYP2C9 poor metabolizers and VKORC1 low sensitivity. If initiating warfarin, consider starting at decreased doses (3 to 4 mg/day).	Expect increased warfarin sensitivity in CYP2C9 poor metabolizers and VKORC1 low sensitivity. If initiating warfarin, consider starting at decreased doses (0.5 to 2 mg/day).
Intermediate sensitivity (G/A)	Expect normal to slightly decreased warfarin sensitivity in CYP2C9 normal metabolizers and VKORC1 intermediate sensitivity. If initiating warfarin, consider starting at standard doses (5 to 7 mg/day).	Expect slightly increased warfarin sensitivity in CYP2C9 intermediate metabolizers and VKORC1 intermediate sensitivity. If initiating warfarin, consider starting at slightly decreased doses (3 to 4 mg/day).	Expect slightly increased warfarin sensitivity in CYP2C9 intermediate metabolizers and VKORC1 intermediate sensitivity. If initiating warfarin, consider starting at slightly decreased doses (3 to 4 mg/day).	Expect increased warfarin sensitivity in CYP2C9 poor metabolizers and VKORC1 intermediate sensitivity. If initiating warfarin, consider starting at decreased doses (3 to 4 mg/day).	Expect increased warfarin sensitivity in CYP2C9 poor metabolizers and VKORC1 intermediate sensitivity. If initiating warfarin, consider starting at decreased doses (0.5 to 2 mg/day).	Expect increased warfarin sensitivity in CYP2C9 poor metabolizers and VKORC1 intermediate sensitivity. If initiating warfarin, consider starting at decreased doses (0.5 to 2 mg/day).
High sensitivity (A/A)	Expect slightly increased warfarin sensitivity in CYP2C9 normal metabolizers and VKORC1 high sensitivity. If initiating warfarin, consider starting at slightly decreased doses (3 to 4 mg/day).	Expect slightly increased warfarin sensitivity in CYP2C9 intermediate metabolizers and VKORC1 high sensitivity. If initiating warfarin, consider starting at slightly decreased doses (3 to 4 mg/day).	Expect increased warfarin sensitivity in CYP2C9 intermediate metabolizers and VKORC1 high sensitivity. If initiating warfarin, consider starting at decreased doses (0.5 to 2 mg/day).	Expect increased warfarin sensitivity in CYP2C9 poor metabolizers and VKORC1 high sensitivity. If initiating warfarin, consider starting at decreased doses (0.5 to 2 mg/day).	Expect increased warfarin sensitivity in CYP2C9 poor metabolizers and VKORC1 high sensitivity. If initiating warfarin, consider starting at decreased doses (0.5 mg to 2 mg/day).	Expect increased warfarin sensitivity in CYP2C9 poor metabolizers and VKORC1 high sensitivity. If initiating warfarin, consider starting at decreased doses (0.5 mg to 2 mg/day).

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Drug Name	Pages	Tags
Abilify®	2,3,4,11	CYP2D6 substrate, CYP3A4 substrate
Aciphex®	5,6,7	CYP2C19 alternative
Activella®	13	Factor V Leiden and Factor II mutation
Adalat®	12	CYP3A5 substrate
Adderall®	2,3,4	CYP2D6 substrate
Aleve®	8,9,10	CYP2C9 alternative
Allegra®	2,3,4	CYP2D6 alternative
Amaryl®	8,9,10	CYP2C9 substrate
Antivert®	2,3,4	CYP2D6 substrate
Arimidex®	2,3,4	CYP2D6 alternative
Aromasin®	2,3,4,13	CYP2D6 alternative, Factor V Leiden and Factor II mutation alternative
Artane®	2,3,4	CYP2D6 alternative
Atarax®	2,3,4,11	CYP2D6 substrate, CYP3A4 alternative
Ativan®	2,3,4,5,6,7,11	CYP2D6 alternative, CYP2C19 alternative, CYP3A4 alternative
Betapace®	2,3,4,11	CYP2D6 alternative, CYP3A4 alternative
Biaxin®	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
Brilinta®	5,6,7	CYP2C19 alternative
Brintellix®	2,3,4	CYP2D6 substrate
Buspar®	2,3,4,11	CYP2D6 substrate, CYP3A4 substrate
Byetta®	8,9,10	CYP2C9 alternative
Calan®	2,3,4,11,12	CYP2D6 inhibitor, CYP3A4 inhibitor, CYP3A5 substrate, CYP3A5 inhibitor
Camila®	13	Factor V and Factor II mutation alternative
Cardene®	12	CYP3A5 alternative
Cardizem®	11,12	CYP3A4 inhibitor, CYP3A5 alternative, CYP3A5 inhibitor
Catapres®	2,3,4	CYP2D6 substrate
Celebrex®	8,9,10	CYP2C9 substrate
Celexa®	2,3,4,5,6,7,13	CYP2D6 alternative, CYP2C19 substrate, 5HTT gene
CellCept®	11,12	CYP3A4 alternative, CYP3A5 alternative
Chantix®	2,3,4	CYP2D6 alternative
Chlor-Trimeton®	2,3,4	CYP2D6 substrate
Cipro®	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
Cogentin®	2,3,4	CYP2D6 substrate
combined oral contraceptives (e.g. Activella®, Microgestin®, etc.)	13	Factor V Leiden and Factor II mutation
Compazine®	2,3,4	CYP2D6 alternative
Concerta®	2,3,4	CYP2D6 alternative
Cordarone®	2,3,4,11	CYP2D6 alternative, CYP3A4 substrate
Coreg®	2,3,4,8,9,10	CYP2D6 alternative, CYP2C9 substrate
Coumadin®	8,9,10,13	CYP2C9 substrate, VKORC1 gene
Crestor®	11	CYP3A4 alternative

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Drug Name	Pages	Tags
Crixivan®	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
Cymbalta®	2,3,4,13	CYP2D6 inhibitor, 5HTT alternative
Daypro®	8,9,10	CYP2C9 alternative
Desyrel®	11	CYP3A4 substrate
Dexedrine®	2,3,4	CYP2D6 substrate
Diflucan®	5,6,7,8,9,10,11,12	CYP2C19 inhibitor, CYP2C9 inhibitor, CYP3A4 inhibitor, CYP3A5 inhibitor
Dilantin®	8,9,10,11,12	CYP2C9 substrate, CYP3A4 inducer, CYP3A5 inducer
Dilaudid®	2,3,4,11,12	CYP2D6 alternative, CYP3A4 alternative, CYP3A5 alternative
Duragesic®	11	CYP3A4 substrate
Effexor®	2,3,4,13	CYP2D6 substrate, 5HTT alternative
Effient®	5,6,7	CYP2C19 alternative
Elavil®	2,3,4,5,6,7,13	CYP2D6 substrate, CYP2C19 substrate, 5HTT alternative
Eliquis®	8,9,10,13	CYP2C9 alternative, VKORC1 alternative
Errin®	13	Factor V and Factor II mutation alternative
Ery-Tab®	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
Estrace®	13	Factor V Leiden and Factor II mutation
Evista®	12	CYP3A5 substrate
Exalgo®	2,3,4,11,12	CYP2D6 alternative, CYP3A4 alternative, CYP3A5 alternative
Femara®	2,3,4	CYP2D6 alternative
FemHRT®	13	Factor V Leiden and Factor II mutation
Flexeril®	5,6,7	CYP2C19 alternative
Focalin®	2,3,4	CYP2D6 alternative
Geodon®	2,3,4	CYP2D6 alternative
Glucophage®	8,9,10	CYP2C9 alternative
Glucotrol®	8,9,10	CYP2C9 substrate
Haldol®	2,3,4	CYP2D6 substrate
Imuran®		CYP3A4 alternative, CYP3A5 alternative
Indocin®	8,9,10	CYP2C9 substrate
Intuniv®	2,3,4	CYP2D6 alternative
Invega®	2,3,4,11	CYP2D6 alternative, CYP3A4 alternative
Invirase®	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
Januvia®	8,9,10	CYP2C9 alternative
Keppra®	8,9,10	CYP2C9 alternative
Klonopin®	11	CYP3A4 substrate
Lamictal®	8,9,10	CYP2C9 alternative
Lamisil®	2,3,4	CYP2D6 inhibitor
Lexapro®	5,6,7,13	CYP2C19 substrate, 5HTT gene
Lioresal®	5,6,7	CYP2C19 alternative
Lipitor®	11	CYP3A4 substrate
Livalo®	11	CYP3A4 alternative
Lopressor®	2,3,4,8,9,10	CYP2D6 substrate, CYP2C9 alternative

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Drug Name	Pages	Tags
Lortab®	2,3,4	CYP2D6 substrate
Lunesta®	11	CYP3A4 substrate
Luvox®	2,3,4,5,6,7,13	CYP2D6 substrate, CYP2D6 alternative, CYP2C19 inhibitor, 5HTT gene
Lyrica®	8,9,10	CYP2C9 alternative
Mevacor®	11	CYP3A4 substrate
Microgestin®	13	Factor V Leiden and Factor II mutation
Micronase®	8,9,10	CYP2C9 substrate
Mobic®	8,9,10	CYP2C9 substrate
Motrin®	8,9,10	CYP2C9 substrate
MS Contin®	2,3,4,11	CYP2D6 alternative, CYP3A4 alternative
Mysoline®	5,6,7,8,9,10,11,12	CYP2C19 inducer, CYP2C9 inducer, CYP3A4 inducer, CYP3A5 inducer
Neoral®	11,12	CYP3A4 substrate, CYP3A5 substrate
Nesina®	11	CYP3A4 alternative
Neurontin®	8,9,10	CYP2C9 alternative
Nexium®	5,6,7	CYP2C19 substrate, CYP2C19 inhibitor
Nolvadex®	2,3,4,13	CYP2D6 substrate, Factor V Leiden and Factor II mutation
Norpace®	2,3,4,11	CYP2D6 alternative, CYP3A4 alternative
Norvir®	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
Noxafil®	5,6,7,11,12	CYP2C19 alternative, CYP3A4 inhibitor, CYP3A5 inhibitor
Nucynta®	2,3,4	CYP2D6 alternative
Onfi®	5,6,7	CYP2C19 substrate
Onglyza®	8,9,10,11	CYP2C9 alternative, CYP3A4 substrate
Opana®	2,3,4,11,12	CYP2D6 alternative, CYP3A4 alternative, CYP3A5 alternative
Orinase®	8,9,10	CYP2C9 substrate
Osphena®	12	CYP3A5 alternative
Otrexup®	13	MTHFR deficiency
Oxycontin®	2,3,4,11,12	CYP2D6 substrate, CYP3A4 substrate, CYP3A5 substrate
Pamelor®	2,3,4,5,6,7,13	CYP2D6 substrate, CYP2C19 alternative, 5HTT alternative
Paxil®	2,3,4,5,6,7,13	CYP2D6 substrate, CYP2D6 inhibitor, CYP2C19 alternative, 5HTT gene
Pepcid®	5,6,7	CYP2C19 alternative
Percocet®	2,3,4,11,12	CYP2D6 substrate, CYP3A4 substrate, CYP3A5 substrate
Phenergan®	2,3,4	CYP2D6 substrate
Plavix®	5,6,7	CYP2C19 substrate
Plendil®	12	CYP3A5 alternative
Pradaxa®	8,9,10,13	CYP2C9 alternative, VKORC1 alternative
Pravachol®	11	CYP3A4 alternative
Prevacid®	5,6,7	CYP2C19 substrate
Prilosec®	5,6,7	CYP2C19 substrate, CYP2C19 inhibitor
Pristiq®	2,3,4	CYP2D6 alternative
Procardia®	12	CYP3A5 substrate
Prograf®	11,12	CYP3A4 substrate, CYP3A5 substrate

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Drug Name	Pages	Tags
Prozac®	2,3,4,5,6,7,13	CYP2D6 substrate, CYP2D6 inhibitor, CYP2C19 substrate, CYP2C19 inhibitor, 5HTT gene
Rapamune®	11,12	CYP3A4 substrate, CYP3A5 substrate
Restoril®	11	CYP3A4 alternative
Rheumatrex®	13	MTHFR deficiency
Risperdal®	2,3,4,11	CYP2D6 substrate, CYP3A4 substrate
Ritalin®	2,3,4	CYP2D6 alternative
Robaxin®	5,6,7	CYP2C19 alternative
Rozerem®	11	CYP3A4 alternative
Rythmol®	2,3,4,11	CYP2D6 substrate, CYP3A4 alternative
Sandimmune®	11,12	CYP3A4 substrate, CYP3A5 substrate
Saphris®	11	CYP3A4 alternative
Savella®	2,3,4	CYP2D6 alternative
Sensipar®	2,3,4	CYP2D6 inhibitor
Serax®	2,3,4,5,6,7,11	CYP2D6 alternative, CYP2C19 alternative, CYP3A4 alternative
Seroquel®	11	CYP3A4 substrate
Soma®	5,6,7	CYP2C19 substrate
Sonata®	11	CYP3A4 alternative
Sporanox®	5,6,7,11,12	CYP2C19 alternative, CYP3A4 inhibitor, CYP3A5 inhibitor
Strattera®	2,3,4	CYP2D6 substrate
Sustiva®	11,12	CYP3A4 inducer, CYP3A5 inducer
Tambocor®	2,3,4,11	CYP2D6 substrate, CYP3A4 alternative
Tegretol®	8,9,10,11,12	CYP2C9 inducer, CYP3A4 inducer, CYP3A5 inducer
Tenex®	2,3,4	CYP2D6 alternative
Tenormin®	2,3,4,8,9,10	CYP2D6 alternative, CYP2C9 alternative
Ticlid®	5,6,7	CYP2C19 inhibitor
Topamax®	8,9,10	CYP2C9 alternative
Toprolol XL®	2,3,4,8,9,10	CYP2D6 substrate, CYP2C9 alternative
Tradjenta®	11	CYP3A4 alternative
Transderm-Scop®	2,3,4	CYP2D6 alternative
Trexall®	13	MTHFR deficiency
Trojan®	13	Factor V Leiden and Factor II mutation alternative
Tylenol #3®	2,3,4	CYP2D6 substrate
Tylenol®	8,9,10	CYP2C9 alternative
Ultram®	2,3,4	CYP2D6 substrate
Valium®	5,6,7	CYP2C19 substrate
Verelan®	2,3,4,11,12	CYP2D6 inhibitor, CYP3A4 inhibitor, CYP3A5 substrate, CYP3A5 inhibitor
Vfend®	5,6,7,8,9,10,11,12	CYP2C19 substrate, CYP2C19 inhibitor, CYP2C9 inhibitor, CYP3A4 inhibitor, CYP3A5 inhibitor
Vicodin®	2,3,4	CYP2D6 substrate
Viibryd®	2,3,4,5,6,7	CYP2D6 alternative, CYP2C19 alternative
Viracept®	11,12	CYP3A4 inhibitor, CYP3A5 alternative

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Drug Name	Pages	Tags
Vistaril®	2,3,4,11	CYP2D6 substrate, CYP3A4 alternative
Vyvanse®	2,3,4	CYP2D6 alternative
Wellbutrin®	2,3,4,13	CYP2D6 substrate, CYP2D6 inhibitor, 5HTT alternative
Xarelto®	8,9,10,13	CYP2C9 alternative, VKORC1 alternative
Xanax®	11	CYP3A4 substrate
Zanaflex®	5,6,7	CYP2C19 alternative
Zantac®	5,6,7	CYP2C19 alternative
Zebeta®	2,3,4,8,9,10	CYP2D6 alternative, CYP2C9 alternative
Zocor®	11	CYP3A4 substrate
Zofran®	2,3,4	CYP2D6 alternative
Zoloft®	2,3,4,5,6,7,13	CYP2D6 alternative, CYP2C19 substrate, 5HTT gene
Zyprexa®	2,3,4,11	CYP2D6 alternative, CYP3A4 alternative
Zyrtec®	2,3,4	CYP2D6 alternative

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Drug Name	Pages	Tags
acetaminophen	8,9,10	CYP2C9 alternative
alogliptin	11	CYP3A4 alternative
alprazolam	11	CYP3A4 substrate
amiodarone	2,3,4,11	CYP2D6 alternative, CYP3A4 substrate
amitriptyline	2,3,4,5,6,7,13	CYP2D6 substrate, CYP2C19 substrate, 5HTT alternative
anastrozole	2,3,4	CYP2D6 alternative
apixaban	8,9,10,13	CYP2C9 alternative, VKORC1 alternative
aripiprazole	2,3,4,11	CYP2D6 substrate, CYP3A4 substrate
asenapine	11	CYP3A4 alternative
atenolol	2,3,4,8,9,10	CYP2D6 alternative, CYP2C9 alternative
atomoxetine	2,3,4	CYP2D6 substrate
atorvastatin	11	CYP3A4 substrate
azathioprine		CYP3A4 alternative, CYP3A5 alternative
baclofen	5,6,7	CYP2C19 alternative
barrier method contraception	13	Factor V Leiden and Factor II mutation alternative
benztropine	2,3,4	CYP2D6 substrate
bisoprolol	2,3,4,8,9,10	CYP2D6 alternative, CYP2C9 alternative
black cohosh	13	Factor V Leiden and Factor II mutation alternative
bupropion	2,3,4,13	CYP2D6 substrate, CYP2D6 inhibitor, 5HTT alternative
bupirone	2,3,4,11	CYP2D6 substrate, CYP3A4 substrate
carbamazepine	8,9,10,11,12	CYP2C9 inducer, CYP3A4 inducer, CYP3A5 inducer
carisoprodol	5,6,7	CYP2C19 substrate
carvedilol	2,3,4,8,9,10	CYP2D6 alternative, CYP2C9 substrate
celecoxib	8,9,10	CYP2C9 substrate
cetirizine	2,3,4	CYP2D6 alternative
chlorpheniramine	2,3,4	CYP2D6 substrate
cinacalcet	2,3,4	CYP2D6 inhibitor
ciprofloxacin	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
citalopram	2,3,4,5,6,7,13	CYP2D6 alternative, CYP2C19 substrate, 5HTT gene
clarithromycin	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
clobazam	5,6,7	CYP2C19 substrate
clonazepam	11	CYP3A4 substrate
clonidine	2,3,4	CYP2D6 substrate
clopidogrel	5,6,7	CYP2C19 substrate
codeine	2,3,4	CYP2D6 substrate
combined oral contraceptives (e.g. Activella®, Microgestin®, etc.)	13	Factor V Leiden and Factor II mutation
copper IUD	13	Factor V Leiden and Factor II mutation alternative
cyclobenzaprine	5,6,7	CYP2C19 alternative

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Drug Name	Pages	Tags
cyclosporine	11,12	CYP3A4 substrate, CYP3A5 substrate
dabigatran etexilate	8,9,10,13	CYP2C9 alternative, VKORC1 alternative
desipramine	5,6,7	CYP2C19 alternative
desvenlafaxine	2,3,4	CYP2D6 alternative
dexmethylphenidate	2,3,4	CYP2D6 alternative
dextroamphetamine	2,3,4	CYP2D6 substrate
diazepam	5,6,7	CYP2C19 substrate
diltiazem	11,12	CYP3A4 inhibitor, CYP3A5 alternative, CYP3A5 inhibitor
disopyramide	2,3,4,11	CYP2D6 alternative, CYP3A4 alternative
doxepin	2,3,4,5,6,7	CYP2D6 substrate, CYP2C19 substrate
duloxetine	2,3,4,13	CYP2D6 inhibitor, 5HTT alternative
efavirenz	11,12	CYP3A4 inducer, CYP3A5 inducer
erythromycin	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
escitalopram	5,6,7,13	CYP2C19 substrate, 5HTT gene
esomeprazole	5,6,7	CYP2C19 substrate, CYP2C19 inhibitor
estrogens (e.g. FemHRT®, Estrace®, Premarin®, bio-identical, phytoestrogens.)	13	Factor V Leiden and Factor II mutation
eszopiclone	11	CYP3A4 substrate
ethinyl estradiol	11	CYP3A4 substrate, CYP3A4 alternative
exemestane	2,3,4,13	CYP2D6 alternative, Factor V Leiden and Factor II mutation alternative
exenatide	8,9,10	CYP2C9 alternative
famotidine	5,6,7	CYP2C19 alternative
felodipine	12	CYP3A5 alternative
fentanyl	11	CYP3A4 substrate
fexofenadine	2,3,4	CYP2D6 alternative
flecainide	2,3,4,11	CYP2D6 substrate, CYP3A4 alternative
fluconazole	5,6,7,8,9,10,11,12	CYP2C19 inhibitor, CYP2C9 inhibitor, CYP3A4 inhibitor, CYP3A5 inhibitor
fluoxetine	2,3,4,5,6,7,13	CYP2D6 substrate, CYP2D6 inhibitor, CYP2C19 substrate, CYP2C19 inhibitor, 5HTT gene
fluphenazine	2,3,4	CYP2D6 alternative
fluvoxamine	2,3,4,5,6,7,13	CYP2D6 substrate, CYP2D6 alternative, CYP2C19 inhibitor, 5HTT gene
gabapentin	8,9,10	CYP2C9 alternative
glimepiride	8,9,10	CYP2C9 substrate
glipizide	8,9,10	CYP2C9 substrate
glyburide	8,9,10	CYP2C9 substrate
goldenseal	2,3,4	CYP2D6 inhibitor
grapefruit juice	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
guanfacine	2,3,4	CYP2D6 alternative
haloperidol	2,3,4	CYP2D6 substrate

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Drug Name	Pages	Tags
hydrocodone	2,3,4	CYP2D6 substrate
hydromorphone	2,3,4,11,12	CYP2D6 alternative, CYP3A4 alternative, CYP3A5 alternative
hydroxyzine	2,3,4,11	CYP2D6 substrate, CYP3A4 alternative
ibuprofen	8,9,10	CYP2C9 substrate
imipramine	2,3,4,5,6,7	CYP2D6 substrate, CYP2C19 substrate
indinavir	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
indomethacin	8,9,10	CYP2C9 substrate
insulin	8,9,10	CYP2C9 alternative
itraconazole	5,6,7,11,12	CYP2C19 alternative, CYP3A4 inhibitor, CYP3A5 inhibitor
ketoconazole	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
ketoprofen	8,9,10	CYP2C9 alternative
lamotrigine	8,9,10	CYP2C9 alternative
lansoprazole	5,6,7	CYP2C19 substrate
letrozole	2,3,4	CYP2D6 alternative
levetiracetam	8,9,10	CYP2C9 alternative
levonorgestrel	13	Factor V Leiden and Factor II mutation alternative
linagliptin	11	CYP3A4 alternative
lisdexamfetamine	2,3,4	CYP2D6 alternative
lorazepam	2,3,4,5,6,7,11	CYP2D6 alternative, CYP2C19 alternative, CYP3A4 alternative
lovastatin	11	CYP3A4 substrate
low-dose transdermal estrogen	13	Factor V Leiden and Factor II mutation alternative
meclizine	2,3,4	CYP2D6 substrate
melatonin	11	CYP3A4 alternative
meloxicam	8,9,10	CYP2C9 substrate
metformin	8,9,10	CYP2C9 alternative
methocarbamol	5,6,7	CYP2C19 alternative
methotrexate	13	MTHFR deficiency
methylphenidate	2,3,4	CYP2D6 alternative
metoprolol	2,3,4,8,9,10	CYP2D6 substrate, CYP2C9 alternative
milnacipran	2,3,4	CYP2D6 alternative
morphine	2,3,4,11	CYP2D6 alternative, CYP3A4 alternative
mycophenolate mofetil	11,12	CYP3A4 alternative, CYP3A5 alternative
naproxen	8,9,10	CYP2C9 alternative
nelfinavir	11,12	CYP3A4 inhibitor, CYP3A5 alternative
nicardipine	12	CYP3A5 alternative
nifedipine	12	CYP3A5 substrate
nortriptyline	2,3,4,5,6,7,13	CYP2D6 substrate, CYP2C19 alternative, 5HTT alternative
olanzapine	2,3,4,11	CYP2D6 alternative, CYP3A4 alternative
omeprazole	5,6,7	CYP2C19 substrate, CYP2C19 inhibitor
ondansetron	2,3,4	CYP2D6 alternative

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Drug Name	Pages	Tags
oral and injectable progestin-only contraceptive (e.g. Camila, Errin, etc).	13	Factor V Leiden and Factor II mutation alternative
ospemifene	12	CYP3A5 alternative
oxaprozin	8,9,10	CYP2C9 alternative
oxazepam	2,3,4,5,6,7,11	CYP2D6 alternative, CYP2C19 alternative, CYP3A4 alternative
oxycodone	2,3,4,11,12	CYP2D6 substrate, CYP3A4 substrate, CYP3A5 substrate
oxymorphone	2,3,4,11,12	CYP2D6 alternative, CYP3A4 alternative, CYP3A5 alternative
paliperidone	2,3,4,11	CYP2D6 alternative, CYP3A4 alternative
paroxetine	2,3,4,5,6,7,13	CYP2D6 substrate, CYP2D6 inhibitor, CYP2C19 alternative, 5HTT gene
perphenazine	2,3,4	CYP2D6 substrate
phenobarbital	5,6,7,8,9,10,11,12	CYP2C19 inducer, CYP2C9 inducer, CYP3A4 inducer, CYP3A5 inducer
phenytoin	8,9,10,11,12	CYP2C9 substrate, CYP3A4 inducer, CYP3A5 inducer
pitavastatin	11	CYP3A4 alternative
posaconazole	5,6,7,11,12	CYP2C19 alternative, CYP3A4 inhibitor, CYP3A5 inhibitor
prasugrel	5,6,7	CYP2C19 alternative
pravastatin	11	CYP3A4 alternative
pregabalin	8,9,10	CYP2C9 alternative
primidone	5,6,7,8,9,10,11,12	CYP2C19 inducer, CYP2C9 inducer, CYP3A4 inducer, CYP3A5 inducer
prochlorperazine	2,3,4	CYP2D6 alternative
promethazine	2,3,4	CYP2D6 substrate
propafenone	2,3,4,11	CYP2D6 substrate, CYP3A4 alternative
quetiapine	11	CYP3A4 substrate
quinidine	2,3,4,11	CYP2D6 alternative, CYP2D6 inhibitor, CYP3A4 substrate
rabeprazole	5,6,7	CYP2C19 alternative
raloxifene	12	CYP3A5 substrate
ramelteon	11	CYP3A4 alternative
ranitidine	5,6,7	CYP2C19 alternative
rifampin	5,6,7,8,9,10,11,12	CYP2C19 inducer, CYP2C9 inducer, CYP3A4 inducer, CYP3A5 inducer
risperidone	2,3,4,11	CYP2D6 substrate, CYP3A4 substrate
ritonavir	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
rivaroxaban	8,9,10,13	CYP2C9 alternative, VKORC1 alternative
rosuvastatin	11	CYP3A4 alternative
saquinavir	11,12	CYP3A4 inhibitor, CYP3A5 inhibitor
saxagliptin	8,9,10,11	CYP2C9 alternative, CYP3A4 substrate
scopolamine	2,3,4	CYP2D6 alternative
sertraline	2,3,4,5,6,7,13	CYP2D6 alternative, CYP2C19 substrate, 5HTT gene
simvastatin	11	CYP3A4 substrate
sirolimus	11,12	CYP3A4 substrate, CYP3A5 substrate
sitagliptin	8,9,10	CYP2C9 alternative
sotalol	2,3,4,11	CYP2D6 alternative, CYP3A4 alternative

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Drug Name	Pages	Tags
St John's Wort	5,6,7,8,9,10,11,12	CYP2C19 inducer, CYP2C9 inducer, CYP3A4 inducer, CYP3A5 inducer
tacrolimus	11,12	CYP3A4 substrate, CYP3A5 substrate
tamoxifen	2,3,4,13	CYP2D6 substrate, Factor V Leiden and Factor II mutation
tapentadol	2,3,4	CYP2D6 alternative
temazepam	11	CYP3A4 alternative
terbinafine	2,3,4	CYP2D6 inhibitor
ticagrelor	5,6,7	CYP2C19 alternative
ticlopidine	5,6,7	CYP2C19 inhibitor
tizanidine	5,6,7	CYP2C19 alternative
tolbutamide	8,9,10	CYP2C9 substrate
topiramate	8,9,10	CYP2C9 alternative
tramadol	2,3,4	CYP2D6 substrate
trazodone	11	CYP3A4 substrate
trihexyphenidyl	2,3,4	CYP2D6 alternative
varenicline	2,3,4	CYP2D6 alternative
venlafaxine	2,3,4,13	CYP2D6 substrate, 5HTT alternative
verapamil	2,3,4,11,12	CYP2D6 inhibitor, CYP3A4 inhibitor, CYP3A5 substrate, CYP3A5 inhibitor
vilazodone	2,3,4,5,6,7	CYP2D6 alternative, CYP2C19 alternative
voriconazole	5,6,7,8,9,10,11,12	CYP2C19 substrate, CYP2C19 inhibitor, CYP2C9 inhibitor, CYP3A4 inhibitor, CYP3A5 inhibitor
vortioxetine	2,3,4	CYP2D6 substrate
warfarin	8,9,10,13	CYP2C9 substrate, VKORC1 gene
zaleplon	11	CYP3A4 alternative
ziprasidone	2,3,4	CYP2D6 alternative

References

The following are the clinical references supporting drug, dose and frequency citations in the YouScript Lite booklet, a guide to pharmacogenetic impact to commonly prescribed medications. To request a copy of the entire booklet, please email info@genelex.com.

* Dose adjustment based on expected change to drug exposure in patients with this phenotype. Recommendation not established in the literature.

† Prevalence varies among populations. People of Asian and African ancestry have a greatly increased prevalence of poor metabolizer status.

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