CYP450 psychiatric meds chart

Substrate, inhibitor, and inducer status for common psychiatric medications, grouped by CYP enzyme. Reviewed against current guidelines as of June 8, 2026.

Most CYP interactions in psychiatry don't matter clinically. A short list matters a lot. Think through two questions when you add or change a drug. Is anything on the list a strong inhibitor or inducer of a CYP that another drug uses? Is anything on the list a substrate with a narrow therapeutic window? If both, look it up. Potency shorthand: strong inhibitors raise substrate AUC 5-fold or more, moderate 2 to 5-fold, weak 1.25 to 2-fold. Strong inducers drop AUC 80 percent or more.

CYP2D6

The enzyme with the most clinically relevant psychiatric drug interactions. About 5 to 10 percent of people of European ancestry are poor metabolizers.

Drug	Role and potency	Clinical scenario
Fluoxetine	Strong inhibitor	Blocks tamoxifen activation. Raises TCA levels, sometimes 4-fold. Blocks codeine and tramadol analgesia. Effect persists weeks after stopping.
Paroxetine	Strong inhibitor	Same picture as fluoxetine. Converts patients into functional 2D6 poor metabolizers.
Bupropion	Strong inhibitor	Often forgotten because it isn't an SSRI. Blocks tamoxifen and codeine activation. Raises atomoxetine and metoprolol.
Duloxetine	Moderate inhibitor	Meaningful with TCAs and metoprolol.
Sertraline	Weak (50 to 100 mg), mild-to-moderate at 200 mg	Usually fine, but at high dose the interaction with 2D6 substrates gets real.
Aripiprazole	Substrate	In 2D6 PMs or on a strong inhibitor, max dose is halved per label.
Atomoxetine	Substrate	PMs get 10-fold higher AUC. Start low and titrate by tolerability.
Risperidone	Substrate	Metabolized to paliperidone. PMs and inhibitors raise parent; side effects track with parent.
Pimozide	Substrate	Max 4 mg a day in 2D6 PMs or with strong inhibitors, per FDA label. QT risk is the reason.
TCAs (nortriptyline, desipramine, amitriptyline, clomipramine, imipramine)	Substrates	Levels swing with 2D6 status and inhibitors. Check levels when combined with fluoxetine, paroxetine, or bupropion.
Vortioxetine	Substrate	Max 10 mg a day in 2D6 PMs or on a strong inhibitor.
Haloperidol	Substrate	Inhibitors push levels up.

Codeine, tramadol, hydrocodone	Prodrugs, 2D6 activates	PMs and patients on 2D6 inhibitors get little or no analgesia. Ultrarapid metabolizers get toxicity.

CYP3A4

The busiest enzyme in the body. Most 3A4 interactions come from strong inhibitors or inducers rather than substrate competition.

Drug	Role and potency	Clinical scenario
Fluvoxamine	Moderate inhibitor	Adds to its 1A2 and 2C19 effects.
Nefazodone	Strong inhibitor	Rarely used due to hepatotoxicity signal.
Ritonavir	Strong inhibitor	Classic disaster with midazolam and triazolam. Also raises quetiapine and alprazolam.
Grapefruit juice	Moderate inhibitor (intestinal 3A4)	Real for buspirone (AUC up 9-fold), quetiapine, carbamazepine, and some benzos. Effect lasts about a day per dose of juice.
Ketoconazole, itraconazole, clarithromycin, erythromycin	Strong inhibitors	Standard cautions with 3A4 substrates.
Carbamazepine	Strong inducer (autoinducer)	Drops just about every 3A4 substrate. Autoinduces its own metabolism.
Phenytoin, phenobarbital, primidone, rifampin	Strong inducers	Same pattern as carbamazepine. Rifampin comes up with TB or MAC treatment.
St John's wort	Moderate to strong inducer	Underrecognized. Patients don't mention it. Drops OCP, tacrolimus, some antipsychotics.
Modafinil	Moderate inducer	Drops OCP efficacy, on the label.
Oxcarbazepine	Weak at low dose, moderate at 1200 mg and above	Milder than carbamazepine, still drops OCPs.
Alprazolam, midazolam, triazolam	Substrates	The benzos most vulnerable to 3A4 inhibitors.
Buspirone	Substrate	Grapefruit is a huge amplifier. Start low if any 3A4 inhibitor is on board.
Quetiapine	Substrate	3A4 inhibitors raise levels; inducers can wipe out efficacy.
Aripiprazole, cariprazine	Substrates	Label-driven dose adjustments with strong 3A4 inhibitors or inducers.
Lurasidone	Substrate	Contraindicated with strong 3A4 inhibitors and strong inducers.
Pimozide	Substrate	Contraindicated with strong 3A4 inhibitors.

CYP1A2

Small number of psychiatric drugs, but clozapine and olanzapine sit at the top of the 'levels matter' list.

Drug	Role and potency	Clinical scenario
Fluvoxamine	Strong inhibitor	The most important 1A2 interaction. Raises clozapine 5 to 10-fold. Also raises olanzapine, duloxetine, ramelteon, agomelatine, theophylline, caffeine.
Ciprofloxacin	Strong inhibitor	A short antibiotic course can push a stable clozapine patient into toxicity.
Smoking (polycyclic aromatic hydrocarbons)	Moderate inducer	Clozapine and olanzapine levels drop 30 to 50 percent in heavy smokers. Stopping smoking can raise levels enough to cause toxicity within a week.
Caffeine	Substrate (mild inhibitor at high intake)	Heavy coffee on fluvoxamine gets uncomfortable fast.
Clozapine	Substrate	Trough level target 350 to 600 ng/mL. Check a level after smoking change, new antibiotic, or new SSRI.
Olanzapine	Substrate	Same modifiers, less dangerous but sedation is noticeable.
Duloxetine	Substrate	Fluvoxamine contraindicated per label.
Ramelteon, melatonin, agomelatine	Substrates	Fluvoxamine markedly raises exposure.

CYP2C19

Matters mostly for citalopram and escitalopram, and for the occasional clopidogrel question.

Drug	Role and potency	Clinical scenario
Fluvoxamine	Strong inhibitor	Contributes to the citalopram QT problem when combined.
Fluoxetine	Moderate inhibitor	Same idea, less pronounced.
Omeprazole, esomeprazole	Moderate inhibitors	Common combo in outpatients. Can bump citalopram and escitalopram levels.
Citalopram	Substrate	FDA caps dose at 20 mg a day in 2C19 PMs and on strong inhibitors due to QT. Same 20 mg cap over 60.
Escitalopram	Substrate	Softer label language; consider lowering in PMs and on strong inhibitors.
Sertraline	Partial substrate	Levels can be somewhat higher in PMs, rarely clinically important.
Diazepam	Substrate	Longer effective half-life in PMs.
Clopidogrel	Prodrug, 2C19 activates	PMs and patients on strong inhibitors (including PPIs and fluoxetine) get less antiplatelet effect.

CYP2C9 and CYP2B6

Enzyme	Drug	Role	Clinical scenario
2C9	Fluvoxamine, fluoxetine	Moderate inhibitors	Raise S-warfarin. Recheck INR when starting or stopping.
2C9	Valproate	Weak inhibitor	Modest bump in warfarin and phenytoin. Displaces phenytoin protein binding.
2C9	Carbamazepine, phenytoin, rifampin	Inducers	Can drop warfarin effect.
2C9	Warfarin (S-warfarin)	Substrate	Highest yield 2C9 substrate in psych. Recheck INR with fluvoxamine or fluoxetine changes.
2C9	Phenytoin	Substrate	Nonlinear kinetics amplify small clearance changes.
2B6	Bupropion	Substrate; strong 2D6 inhibitor	Efavirenz and rifampin drop bupropion levels.
2B6	Ticlopidine, clopidogrel	Inhibitors	Raise bupropion.
2B6	Sertraline	Weak inhibitor	Modest effect on bupropion.
2B6	Methadone	Substrate	2B6 induction (efavirenz, rifampin) can precipitate withdrawal.
2B6	Ketamine, esketamine	Substrates	2B6 activity explains some variability in exposure.

The five moves that catch people off guard

- Fluvoxamine plus clozapine. Combined 1A2 and 2C19 inhibition can raise clozapine 5 to 10-fold. Only combine with levels and a clear reason.
- Fluoxetine, paroxetine, or bupropion plus tamoxifen. 2D6 inhibition drops endoxifen; observational data suggest higher breast cancer recurrence. Use sertraline, escitalopram, citalopram, venlafaxine, or mirtazapine.
- Fluoxetine or paroxetine plus a TCA. 2D6 inhibition raises TCA levels several-fold. Check a TCA level if the combination is needed.
- Carbamazepine and almost anything. Induces 3A4, 2C9, 2C19, 1A2, and UGTs. Drops OCPs, quetiapine, aripiprazole, lamotrigine, warfarin. Autoinduces itself.
- Smoking status change plus clozapine or olanzapine. 1A2 de-induces over about a week when a patient stops smoking. Toxicity can appear before you think to check. Plan a level after any smoking change.

Not medical advice.