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The **Black Book** of  
Psychotropic Dosing  
and Monitoring  
**2021**

Charles DeBattista, MD  
Alan F. Schatzberg, MD

*A Supplement to*

Psychopharmacology  
 **BULLETIN**

Adapted from

# Psychopharmacology

## BULLETIN

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# The **Black Book** of Psychotropic Dosing and Monitoring **2021**

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# Introduction

## THE BLACK BOOK OF PSYCHOTROPIC DOSING AND MONITORING

By Charles DeBattista, MD  
and Alan F. Schatzberg, MD

Psychotropics continue to be among the most commonly prescribed medications in clinical practice. There are over 380 million outpatient psychotropic prescriptions in the US every year Greenblatt et al. (2018). The majority of these prescriptions are for antidepressants (58%) followed by anxiolytics (22%), hypnotics (14%) and antipsychotics (5%). Since the last edition of this Black Book in 2016, a large number many new psychotropics have been approved by the FDA and are now in clinical use.

Over the past several years, there has been a paradigm shift in antidepressant development. Historically, antidepressants have been oral agents which generally take 4–8 weeks to achieve maximum benefit at therapeutic doses. Two antidepressants have been approved that have been demonstrated efficacy in improving symptoms of major depression in hours or days as opposed to months. One of these, esketamine (Spravato), is the S enantiomer of ketamine which has been used as an anesthetic and for pain management since the 1960's. While IV ketamine has long been demonstrated to be rapidly effective for treatment resistant depression, IV use require regular visits to a clinic and is generally not covered by insurance. Esketamine (Spravato) is an intranasal preparation which is typically administered twice weekly for 4 weeks, one weekly for 3 weeks, and then every week or two thereafter. Esketamine, like ketamine, is a schedule 3 drug that require a REMS registration of patients and providers and carries some risk of abuse. Like ketamine, the most common symptoms

include nausea, dissociation, and increases in blood pressure and heart rate. Thus, patients have to be observed for at least two hours in the clinic after each administration and cannot drive to or from the clinic for each visit. In addition, since ketamine and S ketamine can be habituating, it is important to adhere to the guidelines for frequency and duration of dosing.

Another rapidly acting antidepressant approved in 2019 is brexanolone (Zulresso). Brexanolone is an allosteric modulator of GABA-a approved for the treatment of post partum depression. Like esketamine, it requires a REMS registration but unlike esketamine, requires observation in a hospital or overnight clinic over the course of the 60 hour infusion because of the risk of sudden sedation. Another difference from esketamine, whose antidepressant effects typically only last 5–7 days and thus requires repeated administration, brexanolone's antidepressant effects are observed by 60 hours and have been demonstrated to last at least 30 days from the initiation of treatment. The most common side effects of brexanolone are sedation/drowsiness, dizziness/sensation of spinning, and the sensation that one or the surroundings are moving. Brexanolone is a schedule IV drug.

The class of antipsychotic medications has seen the largest number of new additions of any class of psychotropics in recent years. These have included Cariprazine (Vraylar), Brexpiprazole (Rexulti), and lumaperone (Caplyta). While these second generation do not appear to improve efficacy over other second generation antipsychotics, they do provide additional options for clinician, and may have advantages in side effect profile or ease of use. For example, cariprazine became only the fourth drug approved for the treatment of bipolar depression, and brexpiprazole is only the third drug approved in the adjunctive treatment of major depressive disorder. Lumaperone is unique among antipsychotics in that it has single dose (42 mg) that is both the starting and therapeutic dose. All the newer agents have a somewhat better metabolic profile than older agents such



as olanzapine and quetiapine but still require metabolic monitoring.

In addition to newer antipsychotic drugs, there are a number of new formulations of older agents. For example, Invega Trinza is a long acting injectable formulation of paliperidone that last 3 months. As such it is the longest acting injectable antipsychotic that may require only 4 administrations per year. Asenapine, which is a sublingual drug approved for the treatment of schizophrenia, now is also available as the first and only transdermal (Secuado) antipsychotic. Some patients may find the patch more tolerable and convenient than sublingual asenapine including less food and drink restrictions, less hypoesthesia or distortion in the sense of taste, as well as more stable blood levels of the drug. There is even the availability of a smart pill (Abilify Mycite) which has an ingestible sensor embedded in each pill with blue-tooth tooth connection to a wearable patch that allows clinicians and patients to monitor adherence to taking the medication daily. Whether a chronically psychotic patient is likely to agree to swallowing a radio transmitter is not clear. Still, this type of digital monitoring may be useful for some patients who may not want a long acting injectable (Abilify Maintena, Aristada) but have trouble taking a daily medication.

One of the most serious potential long-term side effects of antipsychotics is tardive dyskinesia (TD). There has been no reliable treatment for TD until the approval of VMAT2 inhibitors in the past few years. The VMAT2 inhibitors work by reducing dopamine overstimulation without blocking D2 receptors. Two VMAT2 inhibitors, valbenazine (Ingrezza) and deutetrabenazine (Austedo) have been FDA approved to treat TD since the last edition of the Black Book. While some improvement in TD is often seen in the first 2 weeks of treatment, these drug work in a slow measured way with improvement accumulating over up to 3 years of use. The most common side effects of these drugs are drowsiness and anticholinergic side effects including dry mouth, constipation, urinary retention, and blurred vision. QT prolongation is also a possible side effect EKG monitoring is suggested.

Among the hypnotics, the most innovative recent advance has been the introduction of Dual Orexin Receptor Antagonists (DORAs). The first of these was approved in 2013 (Suvorexant; Belsomra) for sleep onset and maintenance insomnia, and another, lemborexant (Dayvigo) approved in late 2019 for insomnia. The DORAs appear to work on hypocretin/orexin endogenous system which regulates the sleep cycle. While the mechanism of action is unique, it not clear if this translates to advantages over less expensive, generically available hypnotics such as zolpidem. Possible advantages may include a lower risk of falls and possibly less time awake after falling asleep compared to benzodiazepine hypnotics or agents such as zolpidem and eszopiclone.

In addition to updating the Black Book on new drugs and formulations, we have added a number of new tables to assist with monitoring of antidepressants and antipsychotics. Since monitoring of patients on psychotropics also involves the monitoring of clinical symptoms, we have also included a number of common psychiatric scales available in the public domain for easy reference including the PHQ9 and Quick Inventory of Depressive Symptomatology (QIDs) for depression, the Brief Psychiatric Rating Scale (BPRS) for psychotic disorders, the Generalized Anxiety Disorder (GAD-7) for anxiety, and the Abnormal Involuntary Movement Scale (AIMS) for assessing extrapyramidal symptoms. These scales can help track the progress of patients on psychotropic and are increasingly used in the clinical setting. We hope that this edition of the Black Book proves as useful as some of the earlier editions have been.<sup>1-30</sup>

# Dosage Ranges

**Table I: PSYCHOTROPIC DRUG DOSAGE RANGES<sup>30,39-47</sup>**

Generic	Brand Name	Dosage Range* (mg/day)
Alprazolam	Xanax	0.75–10
Amitriptyline	Elavil, Endep, Enovil	50–300
Amoxapine	Asendin	50–600
Armodafinil	Nuvigil	150–250
Asenapine	Saphris	5–10 mg BID sublingual
	Secuado	3.8–7.6 mg patch/24hr
Brexpirazole	Rexulti	2–4
Bupropion	Wellbutrin, Wellbutrin SR, Zyban <sup>†</sup>	200–450 150–400 150–300
Bupirone	BuSpar	15–60
Carbamazepine <sup>‡</sup>	Epitol, Tegretol	400–1,600
Cariprazine	Vraylar	3–6
Chlordiazepoxide <sup>§</sup>	Librium, Libritabs, Mitrán	15–100
Chlorpromazine <sup>  </sup>	Ormazine, Thorazine	30–800
Citalopram	Celexa	20–60
Clomipramine	Anafranil	25–250
Clonazepam <sup>*:*</sup>	Klonopin	0.50–4
Clorazepate <sup>§</sup>	ClorazeCaps, ClorazeTabs, Gen-XENE, Tranxene	15–60
Clozapine	Clozaril	12.5–900
Desipramine	Norpramin, Pertofrane	25–300
Desvenlafaxine	Pristiq	50–100
Diazepam	Valium, Valrelease, Zetran	4–40
Doxepin	Adapin, Sinequan	25–300
Droperidol	Inapsine	2.5–15
Duloxetine	Cymbalta	40–120
Eszopiclone	Lunesta	1–3
Fluoxetine	Prozac, Sarafem	20–80
Fluphenazine	Permitil, Prolixin	1–40
Flurazepam	Dalmane	15–30
Fluvoxamine	Luvox	50–300
Gabapentin	Neurontin	300–3,600
Galantamine	Reminyl	16–32
Halazepam	Paxipam	60–160
Haloperidol	Haldol	1–100
lloperidone	Fanapt	6–12 mg BID
Imipramine	Janimine, Tofranil	50–300
Isocarboxazid	Marplan	20–60
Lamotrigine	Lamictal	25–400
Lemborexant	Dayvigo	5
Levomilnacipran	Fetzima	40–120
Lisdexamfetamine	Vivance	30–70
Lithium	Cibalith-S, Eskalith, Lithane, Lithobid, Lithonate, Lithotabs	600–1,800
Lorazepam	Ativan	1–10
Loxapine	Loxitane	20–250
Lumataperone	Caplyta	42
Lurasidone	Latuda	40–160

<b>Generic</b>	<b>Brand Name</b>	<b>Dosage Range* (mg/day)</b>
Maprotiline	Ludiomil	25–225
Methylphenidate HCl	Concerta	18–54
	Ritalin, Ritalin-SR	10–60
Mirtazapine	Remeron	15–45
Modafinil	Provigil	100–400
Nefazodone	Serzone	200–600
Nortriptyline	Aventyl, Pamelor	75–150
Olanzapine	Zyprexa	5–20
Oxazepam	Serax	30–120
Oxcarbazepine	Trileptal	600–1,200
Paroxetine <sup>††</sup>	Paxil	20–60
Perphenazine	Trilafon	12–64
Phenelzine	Nardil	15–90
Pimozide	Orap	1–10
Prazepam	Centrax	30–60
Protriptyline	Vivactil	15–60
Quazepam	Doral	7.5–15
Quetiapine	Seroquel	50–750
Risperidone	Risperdal	2–16
Rivastigmine	Exelon	6–12
Sertraline	Zoloft	50–200
Suvorexant	Belsomra	10–20
Temazepam	Restoril	15–30
Thioridazine	Mellaril	20–800
Thiothixene	Navane	6–60
Tiagabine	Gabitril	4–32
Topiramate	Topamax	50–400
Tranlycypromine	Parnate	30–60
Trazodone	Desyrel	150–600
Triazolam	Halcion	0.125–0.5
Trifluoperazine	Stelazine	2–40
Trimipramine	Surmontil	50–300
Valproic Acid/ Divalproex	Depakene,	750–4,200
	Depakote	
Venlafaxine <sup>‡‡</sup>	Effexor,	75–375
	Effexor XR <sup>***</sup>	75–225
Vilazodone	Viibryd	30–40 mg
Vortioxetine	Trintillex	10–20
Zaleplon	Sonata	5–20
Ziprasidone	Geodon	40–160
Zolpidem	Ambien	5–10

\*Recommended dosages may vary by indication. Dosage ranges include starting doses that may not represent effective dosages. Some drugs may be contraindicated or may require lower doses in pediatric, geriatric, or debilitated patients. Consult the prescribing information of individual drugs for more detailed information.

<sup>†</sup>Zyban is indicated as an aid to smoking cessation.

<sup>‡</sup>Although carbamazepine is not approved by the FDA for psychiatric indications, the authors view it as one of the most important agents available for the treatment of bipolar disorder. This view is supported in the medical literature.

<sup>§</sup>For alcohol detoxification and withdrawal, doses of up to 300 mg of chlorthalidopoxide and 90 mg of clorazepate may be warranted.

<sup>||</sup>Labeling suggests that higher doses in severe cases may be appropriate, up to 2,000 mg/day, but little therapeutic gain is achieved by >1,000 mg/day for extended periods. Intramuscular doses may be necessary.

<sup>\*\*</sup>Starting dosage of clonazepam should not be >1.5 mg/day for PD but doses up to 20 mg/day are approved for seizure disorders.

<sup>††</sup>Dosage range for paroxetine adjusted for OCD and PD.

<sup>‡‡</sup>Recommended starting dose is 75 mg/day.

<sup>\*\*\*</sup>37.5 mg/day for 4–7 days is an initial dosing option.

# Antidepressants

**Table 2: MOOD DISORDERS: ANTIDEPRESSANTS**<sup>29,30,40–43,45,46,48–54</sup>

<b>Drug</b>	<b>Typical Starting Dosage (mg)</b>	<b>Typical Dosage Range* (mg/day)</b>
Amitriptyline (Elavil, Endep, Enovil)	25 TID or 50 QHS	50–300
Amoxapine (Asendin)	50 BID/TID	50–600
Brexanolone (Zulresso)	30 mcg/kg/hr IV	30–90 mcg/kg/hr × 60 hrs
Bupropion (Wellbutrin)	100 BID	200–450 <sup>‡</sup>
Bupropion SR (Wellbutrin SR)	150 QAM	150–400 <sup>‡</sup>
Bupropion XL (Wellbutrin XL)	150 QD	300–450 QD
Bupropion SR (Zyban)	150 QD	150–300 <sup>‡</sup>
Citalopram (Celexa)	20	20–60
Clomipramine (Anafranil)	25–100 QD in divided doses within first 2 weeks	25–250
Desipramine (Norpramin, Pertofrane)	25 TID	100–300
Desvenlafaxine (Pristiq)	50 mg	50–100 mg
Doxepin (Sinequan)	25 TID	75–300
Duloxetine (Cymbalta)	20	40–120
Esketamine intranasal (Spravato)	56 mg Intranasal	56–84
Fluoxetine (Prozac, Sarafem)	20 QD	20–80
Fluvoxamine (Luvox)	50 QD	50–300
Imipramine (Janimine, Tofranil)	25 TID	75–300
Maprotiline (Ludiomil)	25 TID	75–225
Isocarboxazid (Marplan)	10	20–60
Levomilnacipran (Fetzima)	20	40–120
Milnacipran (Savella)	12.5 mg	50–100 mg BID
Mirtazapine (Remeron)	15 QHS	15–45
Nefazodone (Serzone)	100 BID	200–600
Nortriptyline (Aventyl, Pamelor)	25 TID/QD	75–150
Paroxetine (Paxil)**	20 QAM	10–60
Phenelzine (Nardil)	15 TID	15–90
Protriptyline (Vivactil)	5 TID	15–60
Sertraline (Zoloft)	50 QAM	50–200
Tranylcypromine (Parnate)	Individualized	30–60

FDA Indication(s)	Proposed Therapeutic Plasma Concentration (ng/mL)
Depression	120–250 <sup>†</sup>
Depression, psychotic depression	—
Post Partum Depression	—
Depression	<100 <sup>†</sup>
Depression	—
Depression	—
Smoking cessation	—
Depression	—
OCD	100–250
Depression	115–180 <sup>§</sup>
Depression, anxiety	—
Depression, anxiety, psychotic depressive disorders with associated anxiety	70–250 <sup>†</sup>
Depression, anxiety, neuropathic pain, chronic pain	—
Depression, Suicidality in Depression	—
Depression, OCD, bulimia nervosa, PMDD	—
OCD	—
Depression, childhood enuresis	200–250 <sup>†§</sup>
Depression	—
Depression	—
Depression	—
Fibromyalgia	—
Depression	—
Depression	—
Depression	50–150 <sup>§</sup>
Depression, OCD, PD, social anxiety disorder, GAD	—
Depression, atypical depression	—
Depression	70–250
Depression, OCD, PD, PTSD	—
Depression, depression without melancholia	—

**Table 2: MOOD DISORDERS: ANTIDEPRESSANTS<sup>29,30,40–43,45,46,48–54</sup>**  
(CONT'D)

Drug	Typical Starting Dosage (mg)	Typical Dosage Range* (mg/day)
Trazodone (Desyrel)	50 TID	150–600
Trimipramine (Surmontil)	25 TID	50–300
Venlafaxine (Effexor)	37.5 BID	75–375
Venlafaxine ER (Effexor XR) <sup>††</sup>	37.5–75 QD	75–225
Vilazodone (Vybryd)	10 mg	20–40 mg
Vortioxetine (Trintillex)	10 mg	10–20

\*In geriatric patients, the appropriate dosage is widely variable, but in general it is one half the young adult dosage range for TCAs and for compounds with significant cardiovascular toxicity.

<sup>†</sup>Parent and metabolite.

<sup>††</sup>Not >150 mg/dose. Zyban is indicated as an aid to smoking cessation.

<sup>‡</sup>Therapeutic drug monitoring is well established.

<sup>\*\*\*</sup>Dosage range for paroxetine adjusted for OCD and PD.

<sup>†††</sup>37.5 mg/day for 4–7 days is an initial dosing option.

FDA=Food and Drug Administration; OCD=obsessive-compulsive disorder;

PMDD=premenstrual dysphoric disorder; PD=panic disorder; GAD=generalized anxiety disorder;

PTSD=posttraumatic stress disorder.

**Table 3: PHARMACOKINETIC COMPARISON OF SELECTED ANTIDEPRESSANTS<sup>29,30,55,56</sup>**

	Sertraline	Fluoxetine
Half-life (hours)	26	48–72
Metabolite activity	20–30% activity	Equal
Metabolite half-life (hours)	62–104	96–384
Steady state (days)	7–10	28–35
Dose-proportional plasma levels	Yes	No
Protein binding (%)	98	94.5
Dose reduction in elderly	No	Yes
	Escitalopram	Venlafaxine
Half-life (hours)	27–33	3–7
Metabolite activity	Low activity	Equal
Metabolite half-life (hours)	—	9–13
Steady state (days)	7–10	3
Dose-proportional plasma levels	Yes	Yes
Protein binding (%)	56	27–30
Dose reduction in elderly	No	No



FDA Indication(s)	Proposed Therapeutic Plasma Concentration (ng/mL)
Depression	—
Depression	—
Depression	—
Depression, GAD	—
Depression	—
Depression	—



Paroxetine	Esketamine	Fluvoxamine	
21 (mean)	7–12	15.6	
Inactive	Low activity	Questionable	
—	1–1.3	14–16	
~10	NA	7	
No	No	No	
93–95	45	80	
Yes	No	Yes	
CLomipramine	Amitriptyline	Bupropion	Mirtazapine
19–37	9–46	14	20–40
Equal	Equal	4 variably active	10% activity
54–77	16–88	8–24	20–40
7–14	4–10	Variable	3–4
No	Yes	Yes	Yes
97	90–97	80	85
Yes	Yes	Yes	No



**Table 4: CENTRAL NERVOUS SYSTEM NEUROTRANSMITTERS: SELECTED ANTIDEPRESSANT EFFECTS<sup>29,30,55,57</sup>**

	Serotonin	Norepinephrine	Dopamine
Amitriptyline	++++	++++	0
Amoxapine	+++	+++	0
Bupropion	0/+	+*	++
Citalopram	++++	0	0
Desipramine	+	++++	0/+
Doxepin	+++	+	0
Fluoxetine	++++	0	0/+
Fluvoxamine	++++	0	0/+
Imipramine	+++	++	0/+
Lithium	0/+ <sup>§</sup>	0	0
Maprotiline	0	++++	0
Mirtazapine	+++*	++ <sup>†</sup>	0
Nortriptyline	++	+++	0
Paroxetine	++++	0/+	0/+
Protriptyline	+	++++	0
Sertraline	++++	0	0/+
Trazodone	++ <sup>‡</sup>	0	0
Trimipramine	++	++	0
Venlafaxine	++++	+++	0/+
Vortioxetine	***	0	0

++++=high; +++=moderate; ++=low; +=very low; 0=none.

\*5-HT<sub>2</sub> and 5-HT<sub>3</sub> antagonist.

<sup>†</sup>α<sub>2</sub>presynaptic antagonist.

<sup>‡</sup>5-HT<sub>2</sub> antagonist.

<sup>§</sup>Acutely increases; chronically stabilizes.

**Table 5: SUBSTRATES, INHIBITORS, AND INDUCERS OF SOME IMPORTANT CYTOCHROME P450 (CYP) ISOFORMS<sup>29,58–62</sup>**

CYP % of all CYP*	Substrates	
CYP1A2 13	3° amine TCAs (N-demethylation) Acetaminophen Caffeine Clozapine (major) Methadone	Olanzapine Phenacetin Propranolol Tacrine Theophylline
CYP2C9 20 (for all 2C)	Celecoxib Fluvastatin Glipizide Irbesartan Losartan	NSAIDs Phenytoin (major) Rosiglitazone S-warfarin Tolbutamide
CYP2C19 <sup>†</sup> 20 (for all 2C)	3° amine TCAs (N-demethylation) Citalopram (partly) Diazepam (partly) (N-demethylation) Hexobarbital Indomethacin Lansoprazole	Mephobarbital Moclobemide Nelfinavir Omeprazole (5-hydroxylation) Phenytoin (minor) R-warfarin S-mephenytoin



	<b>Inhibitors</b>	<b>Inducers</b>
Cimetidine Fluoroquinolones (ciprofloxacin, norfloxacin) Fluvoxamine	Mibefradil Moclobemide Naringenin Ticlopidine	Char-grilled meat Omeprazole Tobacco
Amiodarone D-propoxyphene Disulfiram Fluconazole Fluvastatin	Fluvoxamine Miconazole Phenylbutazone Sulphaphenazole Zafirlukast	Phenytoin Rifampin Secobarbital
Cimetidine Felbamate Fluoxetine Fluvoxamine Imipramine	Ketoconazole Moclobemide Omeprazole Phenytoin Tranlycypromine	Rifampin

**Table 5: SUBSTRATES, INHIBITORS, AND INDUCERS OF SOME IMPORTANT CYTOCHROME P450 (CYP) ISOFORMS<sup>29,58-62</sup>**  
(CONT'D)

<b>CYP % of all CYP*</b>	<b>Substrates</b>		
CYP2D6† 2	2° and 3° amine TCAs (2, 8, 10-hydroxylation)	Hydrocodone Mexiletine	
	Alprenolol	Mirtazepine (partly)	
	Amphetamine	Nortriptyline	
	Beta blockers	Oxycodone	
	Carvedilol	Paroxetine	
	Clozapine (minor)	Perphenazine	
	Codeine (hydroxylation, O-demethylation)	Propafenone (IC antiarrhythmics)	
	D-fenfluramine	Risperidone	
	Desipramine	Tamoxifen	
	Dextromethorphan (O-demethylation)	Thioridazine Timolol	
	Donepezil (partly)	Tramadol	
	Fluoxetine (partly)	Trazodone	
	Fluphenazine		
	Haloperidol (reduction)		
	CYP2E1 7	Acetaminophen	Isoflurane
		Chlorzoxazone	Methoxyflurane
Ethanol		Sevoflurane	
Halothane			
CYP3A4 30 (for all 3A)	3° amine TCAs (N-demethylation)	Lidocaine Loratadine	
	Acetaminophen	Lovastatin	
	Alfentanil	Midazolam	
	Alprazolam	Mirtazepine (partly)	
	Amiodarone	Nefazodone	
	Androgens	Nifedipine	
	Atorvastatin	Nimodipine	
	Bupirone	Nisoldipine	
	Carbamazepine	Nitrendipine	
	Cerivastatin	Omeprazole (sulfonation)	
	Citalopram (partly)	Propafenone	
	Codeine (demethylation)		
	Cyclophosphamide	Protease inhibitors	
	Cyclosporine	(HMG-CoA reductase inhibitors)	
	Dexamethasone	Quetiapine	
	Diazepam (partly) (hydroxylation and N-demethylation)	Quinidine Sertraline	
	Diltiazem	Sildenafil	



Inhibitors		Inducers
Amiodarone	Hydroxybupropion	
Bupropion	Metadone	
Celecoxib	Moclobemide	
Cimetidine	Paroxetine	
Fluoxetine	Perphenazine	
Fluphenazine	Quinidine	
Fluvoxamine (weak)	Ritonavir	
Haloperidol	Sertraline (weak)	
	Thioridazine	

Diethyldithio-carbamate (Disulfiram metabolite)	Ethanol
	Isoniazid

Amiodarone	Ketoconazole	Barbiturates
Cimetidine	(azole antifungals)	Carbamazepine
Clarithromycin	Mibefradil	Dexamethasone
Dexamethasone	Naringenin (grapefruit)	Phénobarbital
Diltiazem	Nefazodone	Phenytoin
Erythromycin	Nelfinavir	Pioglitazone
Fluconazole	Ritonavir	Rifampin
Fluoxetine	Saquinavir	St. John's wort
Fluvoxamine	Sertraline (weak)	
Gestodene	Troleandomycin (macrolides)	
Indinavir (protease inhibitors)	Verapamil	
Itraconazole		

**Table 5: SUBSTRATES, INHIBITORS, AND INDUCERS OF SOME IMPORTANT CYTOCHROME P450 (CYP) ISOFORMS<sup>29,58–62</sup>**  
(CONT'D)

CYP % of all CYP*	Substrates
	Disopyramide
	Donepezil (partly)
	Erythromycin (macrolides)
	Estrogens (steroids)
	Ethosuximide
	Felodipine
	Fentanyl
	Ifosfamide
	Simvastatin
	Sufentanil
	Tacrolimus
	Tamoxifen
	Tiagabine
	Triazolam
	Verapamil
	Vinblastine
	Vincristine
	Ziprasidone

\*Clinically significant human polymorphism reported.

CYP 450=cytochrome P450; TCAs=tricyclic antidepressants; NSAIDS=nonsteroidal anti-inflammatory drugs.

CYP=cytochrome P450; TCAs=tricyclic antidepressants.

**Table 6: EXAMPLES OF DRUGS\* THAT MIGHT INTERACT WITH AN ANTIDEPRESSANT<sup>31</sup>**

CYP 1A2	CYP 2C19	CYP 2C9
Acetaminophen	Barbiturates	Diclofenac
Caffeine	Citalopram	Ibuprofen
Clozapine	Diazepam	Naproxen
Haloperidol	Mephenytoin	Omeprazole
Olanzapine	Moclobemide	Phenytoin
Phenacetin	Propranolol	Piroxicam
Phenothiazines	3° TCAs	S-Warfarin
R-warfarin (minor)		Tolbutamide
Tacrine		
3° TCAs		
Theophylline		
Thiothixene		

\*Drug can be a substrate and/or an inhibitor of a given enzyme system.

†Inhibitor at 2D6, not a substrate.

††Loratadine not contraindicated.

CYP=cytochrome P450; TCA=tricyclic antidepressant.



**Inhibitors**

**Inducers**



**CYP 2D6**

**CYP 3A4**

Amphetamines  
 Chlorpheniramine  
 Codeine/hydrocodone  
 Desipramine other 2° TCAs  
 Dextromethorphan  
 Fecainide/encainide  
 Haloperidol (minor)  
 Phenothiazines  
 Propranolol, timolol, metoprolol  
 Reduced haloperidol  
 Risperidone  
 Quinidine<sup>†</sup>  
 Tamoxifen  
 Tramadol

Androgens  
 Benzodiazepines (alprazolam, triazolam, clonazepam, diazepam)  
 Calcium channel blockers  
 Carbamazepine  
 Corticosteroids  
 Cyclosporine  
 Dapsone  
 Estrogens  
 HMG-CoA reductase inhibitors  
 Ketoconazole, itraconazole  
 Macrolide antibiotics  
 Nonsedating antihistamines<sup>††</sup>  
 Paclitaxel  
 Quinidine  
 Tamoxifen  
 Zolpidem

**Table 7: EXAMPLES OF DRUG INTERACTIONS**<sup>29,30,58,61–67</sup>

<b>Drug</b>	<b>Interaction</b>	<b>Mechanism</b>
<b>TCA Interactions</b>		
Alcohol	sedation, ataxia	CNS depression synergism
Calcium channel blockers	TCA levels	Inhibit oxidation of TCAs
Carbamazepine	TCA levels	Hepatic enzyme induction
Clmetidine	TCA levels	Inhibit TCA metabolism
Clonidine	Antagonize antihypertensive effects	Norepinephrine reuptake
Estrogen	TCA levels	Inhibit oxidation of TCAs
Guanethidine	Reverse antihypertensive effects	Block norepinephrine reuptake
Haloperidol/phenothiazines	antipsychotic levels	CYP 2D6 inhibition
Methadone	TCA levels	Inhibit TCA metabolism
MAOIs	Serotonin syndrome	Serotonin synergism
Quinidine	TCA levels, arrhythmia	Inhibit CYP 2D6
SSRIs	TCA levels	Inhibit various CYP systems
Stimulants	TCA levels	Inhibit TCA metabolism
<b>SSRI Interactions</b>		
Cyproheptadine	Reverse antidepressant effect	Serotonin antagonism
Dextromethorphan	Serotonin syndrome	Serotonin synergism
Hallucinogens	LSD flashbacks	5-HT <sub>2</sub> agonism
MAOIs	Serotonin syndrome	Serotonin synergism
TCAs	TCA toxicity	Inhibit various CYP systems
Tryptophan	Serotonin syndrome	Serotonin synergism
Theophylline	Theophylline toxicity	Inhibit theophylline metabolism (fluvoxamine)
Warfarin	warfarin levels	Inhibit CYP 2C
<b>MAOI Interactions</b>		
Barbiturates	sedation	Inhibit barbiturate metabolism
Hypoglycemics	effects of hypoglycemics	MAOIs lower blood sugar
Meperidine	Serotonin syndrome	Serotonin synergism
SSRIs	Serotonin syndrome	Serotonin synergism
Succinylcholine	Prolonged apnea in surgery	Decreased cholinesterase levels
Sympathomimetics	Hypertensive crisis	indirect pressor effect
TCAs	Serotonin syndrome	Serotonin synergism
Tyramine (dietary)	Hypertensive crisis	indirect pressor effects

Drug	Interaction	Mechanism
<b>Venlafaxine Interactions</b>		
Clometidine	venlafaxine levels	CYP P450 inhibition
Haloperidol	haloperidol levels Haloperidol elimination half-life unchanged	Unknown
MAOIs	Serotonin syndrome	Serotonin synergism
SSRIs	Potential venlafaxine levels	2D6 inhibition
	Serotonin syndrome	Serotonin synergism
<b>Nefazodone Interactions</b>		
Glucocorticoids	steroid	Inhibit 3A4

TCA=tricyclic antidepressant; =increased; CNS=central nervous system; =decreased;  
 CYP=cytochrome P450; MAOIs=monoamine oxidase inhibitors. =increased; TCAs=tricyclic  
 antidepressants; CYP=cytochrome P450; SSRIs=selective serotonin reuptake inhibitors;  
 LSD=lysergic acid diethylamide; MAOIs=monoamine oxidase inhibitors.



# Antidepressant Monitoring

**Table 8: TCA MONITORING**<sup>29,30</sup>

Baseline	At Therapeutic dose steady state	Annually or PRN
	(Steady state at 5 x half life (t1/2) of drug)	
EKG, HR, BP (with orthostasis)	EKG, HR, BP with orthostasis	EKG, BP, HR
	Serum levels	Serum levels
Serum Level Monitoring	10–14 hour after last dose for once daily dosing 4–6 hours after last dose of split dosing	

TCA	Therapeutic Serum level (µ/L)	Toxic Level (µ/L)
Amitriptyline	120–250	>500
Desipramine	115–250	>500
Nortriptyline	50–150	>300
Imipramine	180–350	>500



**Table 9: INTRANASAL ESKETAMINE BP/HR MONITORING**<sup>4,29,30</sup>

Esketamine may cause increases in BP and Heart rate. For baseline BP >140/90 the risks of an increase in BP should be weighed against potential benefit. Food and drink discouraged for 2 hours prior to drug to reduce nausea/vomiting.

Prior to Administration	40 minutes	120 minutes
BP and HR	BP and HR	BP and HR

BP should be stable or reducing to baseline to discharge home. Patients should not drive to or from visits and should abstain from driving until the following day.  
(PDR 2020)

**Table 10: BREXANALONE IV MONITORING<sup>5,6,30</sup>**

Brexanalone is associated with a risk of excessive sedation and loss of consciousness in some patients.

**Before Administration**

Counsel the patient on signs and symptoms of excessive sedation, loss of consciousness, and the importance of immediately reporting to a healthcare provider any signs and symptoms of excessive sedation using the Patient Information Guide. Provide a copy of the material to the patient.

**During treatment, every 2 hours:**

- Assess the patient's health status for signs and symptoms of excessive sedation and loss of consciousness.

**During treatment:**

- Assess the patient's oxygen saturation using continuous pulse oximetry.

**After treatment discontinuation, prior to discharge:**

- Assess the patient's level of sedation

**After treatment discontinuation, within 3 business days of completion date:**

- Report excessive sedation or loss of consciousness to the REMS Program using the Excessive Sedation and Loss of Consciousness Adverse Event Form

# Mood Stabilizers

**Table II: MOOD STABILIZERS**<sup>29,30,68,73</sup>

<b>Lithium*</b>	
	(Cibalith-S, Eskalith, Lithane, Lithobid, Lithonate, Lithotabs)
Serum plasma levels	0.6–1.2 mEq/L (acute)
Usual adult daily dosage	600–1,800 mg
Onset of action	5–14 days
Protein binding	Not bound to plasma proteins
t <sub>1/2</sub>	24 hours (average) with age and/or with decreased renal function
Metabolic pathway(s)	Not metabolized, primarily excreted unchanged in urine
Route(s) of elimination	Renal
Common drug interactions	lithium serum concentrations (fluoxetine, <sup>†</sup> ACE inhibitors, diuretics, NSAIDs) lithium serum concentrations (acetazolamide, osmotic diuretics, theophylline, urinary alkalinizers)
	Antipsychotics may increase lithium neurotoxicity
Common adverse effects	Nausea, vomiting, diarrhea, polyuria, polydipsia, tremor, hypothyroidism
Indication(s)	Manic episodes of bipolar disorder, bipolar disorder maintenance

=decreased; =increased; CYP=cytochrome P450; ACE=angiotensin-converting enzyme; NSAIDs=nonsteroidal anti-inflammatory drugs; CNS=central nervous system; GI=gastrointestinal.

\*Women taking a mood stabilizing agent should be given a pregnancy test at baseline and then as clinically indicated.

<sup>†</sup>Both increases and decreases have been reported and lithium levels should be monitored when used together.

<sup>‡</sup>Carbamazepine may decrease the efficacy of oral contraceptives through enzyme induction.

<b>Valproic Acid*</b> (Depakene, Depakote)	<b>Carbamazepine**‡</b> (Carbitrol, Tegretol)
50–100 (µ/mL) 750–4,200 mg	4–12 (µg/mL) 400–1,600 mg
5–15 days	3–15 days
90% concentration dependent with high concentration (variable due to saturation)	76%
6–16 hours (average) with age and/or decreased hepatic function	Initial range 26–65 hours; with repeated dosing, 12–17 hours
Hepatic (glucuronidation, mitochondrial oxidation, microsomal oxidation)	Hepatic: CYP 3A, 2D6
Glucuronidation, renal	Renal (72%), fecal (28%)
Interacts with drugs that are hepatically metabolized; enzyme inducers can decrease concentrations of valproic acid; valproic acid can increase phenobarbital by impairment of nonrenal clearance (severe CNS depression)	Induces metabolism of CYP 3A4-dependent drugs; decreases phenobarbital, phenytoin, sex steroids, haloperidol, valproic acid, calcium channel blockers, etc. (see Table 6). Valproate increases 10, 11 epoxide metabolite of carbamazepine.
GI distress, diplopia, sedation, tremor, edema, weight gain, alopecia, and thrombocytopenia	Dizziness, drowsiness, ataxia, and weight gain
Bipolar disorder, acute mania (and seizure disorders)	Partial complex seizures

**Table 12: BASELINE AND ROUTINE MONITORING PARAMETERS FOR MOOD STABILIZERS<sup>29,30,34–36,69,72–73</sup>**

<b>Laboratory Parameters</b>	<b>Lithium*</b>
Serum plasma concentrations	Weekly × 4 weeks, then monthly × 3 months, then every 3 months or as clinically indicated
Complete blood count	Baseline, monthly × 3 months, then as clinically indicated
Blood chemistries	Baseline, then every 12 months or as clinically indicated (eg, serum creatinine, renal function, and electrolytes)
ECG (in patients 45 years or with preexisting cardiac disease)	Baseline, then every 12 months or as clinically indicated
Urinalysis	Baseline, then as clinically indicated
PT/PTT	—
Thyroid function tests (T3, T4, TSH, FTI)	Baseline, then every 12 months

\*Women taking a mood stabilizing agent should be given a pregnancy test at baseline and then as clinically indicated.

<sup>†</sup>Although carbamazepine is not approved by the FDA for psychiatric indications, the authors view it as one of the most important agents available for the treatment of bipolar disorder. This view is supported in the medical literature.

<sup>‡</sup>Carbamazepine may decrease the efficacy of oral contraceptives through enzyme induction.

ECG=electrocardiogram; PT/PTT=prthrombin time;

TSH=thyroid stimulaing hormone; FTI=free thyroid index;

FDA=Food and Drug Administration.



<b>Carbamazepine*†‡</b>	<b>Valproic Acid*</b>
2 weeks after initiation, then every 3 months or as clinically indicated	2 weeks after initiation, then every 3 months or as clinically indicated
Baseline, then monthly × 3 months, then as clinically indicated	Baseline, then monthly × 6 months, then every 6 months or as clinically indicated (include differential and platelets)
Baseline, then annually as indicated	Baseline, monthly then × 6 months, then every 6 months or as clinically indicated (eg, hepatic and renal function)
Baseline, then every 12 months	Baseline, then as clinically indicated
Baseline, then as clinically indicated	Baseline, then every 6 months or as clinically indicated
—	Baseline, then every 6 months or as clinically indicated
Baseline, then every 12 months	—

# Anxiolytics/Hypnotics

**Table 13: BENZODIAZEPINE ANXIOLYTICS**<sup>29,30,40,53,54</sup>

	<b>Approved Oral Adult Dosage Range (mg/day)</b>	<b>Approximate Equivalent Dosages (mg/day)</b>	<b>Half-life of Parent Drug (hrs)</b>
Alprazolam <sup>†‡</sup> (Xanax)	General: 0.75–4.0 Panic disorder: 1–10	0.5	6.3–26.9
Chlordiazepoxide <sup>†  </sup> (Librium, Libritabs, Mitran)	15–100	10	24–48
Clonazepam <sup>†‡</sup> (Klonopin)	1.5–20	0.25	18–50
Clorazepate <sup>†  </sup> (Clorazecaps, Clorazetabs, Gen-XENE, Tranxene)	15–60	7.5	Prodrug
Diazepam <sup>†</sup> (Valium, Valrelease, Zetran)	4–40	5	20–80
Lorazepam <sup>†</sup> (Ativan)	1–10	1	12
Oxazepam <sup>†</sup> (Serax)	30–120	15	5.7–10.9
Prazepam <sup>†</sup> (Centrax)	20–60	10	Prodrug

<sup>\*</sup>Adverse events commonly seen with the benzodiazepines include drowsiness, ataxia, confusion, fatigue, anterograde amnesia, light-headedness, and dizziness.

<sup>†</sup>Single doses provide sedation and calming; chronic dosing reduces symptoms of generalized anxiety disorder.

<sup>‡</sup>Clonazepam and alprazolam are FDA approved for PD.

<sup>||</sup>For alcohol detoxification and withdrawal, doses of up to 300 mg of chlordiazepoxide and 90 mg of clorazepate may be warranted.

D=relatively contraindicated; FDA = Food and Drug Administration; PD=panic disorder.

Peak Plasma Level $t_{max}$ (hrs)	Half-life for Major Active Metabolites (hrs)	Metabolic Pathway	Pregnancy Risk Category
1–2	None	Oxidation	D
Several hours	Desmethyl-chlordiazepoxide (18) Demoxepam (14–95) Desmethyldiazepam (30–200) Oxazepam (3–21)	N-dealkylation	D (not FDA specified)
1–2	None	Reduction, hydroxylation, oxidation	D (not FDA specified)
1–2	Oxazepam (3–21) Desmethyldiazepam (30–200)	Oxidation, hydroxylation, conjugation	D (not FDA specified)
0.5–2	Desmethyldiazepam (30–200) 3-Hydroxydiazepam (5–20) Oxazepam (3–21)	Oxidation, hydroxylation, demethylation	D (not FDA specified)
2	None	Conjugation	D
3	None	Conjugation	D (not FDA specified)
6	—	Oxidation	D (not FDA specified)



**Table 14: NONBENZODIAZEPINE ANXIOLYTICS**<sup>29,30,75–77</sup>

Drug	Brand Name	Dosage (mg)	Indications
Bupirone*	BuSpar	5–20 mg TID or 15–30 mg BID	GAD
Hydroxyzine†	Vistaril, Atarax	50–100 mg QD	Anxiety, tension

\*Adverse events commonly seen with bupirone include dizziness, nausea, headache, nervousness, lightheadedness, and excitement.

†Second-agent.

GAD=generalized anxiety disorder.

**Table 15: BENZODIAZEPINE DRUG INTERACTIONS**<sup>29,30, 61,62</sup>

Drug	Interaction	Mechanism
Antacids	absorption and benzodiazepine levels	gastric pH
Carbamazepine	benzodiazepine levels	CYP induction
Cimetidine	benzodiazepine levels	CYP inhibition
Digoxin	digoxin levels	Unknown
Erythromycin	alprazolam levels	3A4 inhibition
Ethanol	sedation/respiratory depression	CNS depression synergism
Nefazodone	alprazolam, triazolam levels	3A4 inhibition
Opioids	sedation, respiratory depression	CNS additive
SSRIs	diazepam, alprazolam levels	2D6 and 3A4 inhibition
Valproic acid	benzodiazepine levels	metabolism

=decreased; CYP=cytochrome P450; =increased; CNS=central nervous system; SSRIs=selective serotonin reuptake inhibitors.

**Table 16: HYPNOTIC AGENTS**<sup>29,30,40–53</sup>

	Daily Adult Dosage (mg/day)	Time to Peak Plasma Level (hours)
<b>Benzodiazepines</b>		
Estazolam (ProSom)	0.5–2	0.5–6
Flurazepam (Dalmane)	15–30	0.5–1 4.7–100†
Quazepam (Doral)	7.5–15	2 73†
Temazepam (Restoril)	7.5–30	1.2–1.6
Triazolam (Halcion)	0.125–0.5	2
<b>Nonbenzodiazepines</b>		
Chloral hydrate (Noctec, Aquachloral Supporettes)	500–2,000	0.5–12†
Zaleplon (Sonata)	5–20	1
Zolpidem (Ambien)	5–10	1.6

†Values given for active metabolite.



<b>t<sub>1/2</sub> (hours)</b>	<b>Metabolic Pathway</b>	<b>Pharmacokinetic Parameters Active Metabolites</b>	<b>Protein Binding (%)</b>
10–24	Oxidation	None	93
2.3 36–120 <sup>†</sup>	Oxidation, N-dealkylation	N-desalkylflurazepam, hydroxyethylflurazepam, flurazepam aldehyde	97
39 36–120 <sup>†</sup>	Oxidation	N-desalkylflurazepam, 2-oxoquazepam	>95
3.5–18.4	Conjugation	None	96
1.5–5.5	Conjugation	None	89
8–11 <sup>†</sup>	Oxidation, reduction	Trichloroethanol	35–41 <sup>†</sup>
1	Oxidation	5-oxo-zaleplon	92
2.6 1.4–4.5	Oxidation, hydroxylation	None	92.5

# Antipsychotics

**Table 17: FIRST GENERATION ANTIPSYCHOTIC DOSAGES AND ADVERSE EFFECTS<sup>29,30,40,41,44</sup>**

	<b>Class</b>	<b>Traditional Equivalents</b>
Chlorpromazine <sup>†</sup> (Ormazine, Thorazine)	Aliphatic phenothiazine	100
Thioridazine (Mellaril)	Piperidine phenothiazine	100
Mesoridazine (Serentil)	Piperidine phenothiazine	50
Fluphenazine (Permitil, Prolixin)	Piperazine phenothiazine	2
Perphenazine (Trilafon)	Piperazine phenothiazine	8
Trifluoperazine (Stelazine)	Piperazine phenothiazine	5
Thiothixene (Navane)	Thioxanthene	4
Haloperidol (Haldol)	Butyrophenone	2
Loxapine (Loxitane)	Dibenzoxazepine	10
Molindone (Moban)	Dihydroindolone	10
Pimozide (Orap)	Piperidine	—
Droperidol (Inapsine)	Butyrophenone	—

  

	<b>Adverse Effects<sup>‡</sup></b>	
	<b>Extrapyramidal</b>	<b>Sedation</b>
Chlorpromazine	++	+++
Thioridazine	+	+++
Mesoridazine	+	+++
Fluphenazine	++++	++
Perphenazine	+++	++
Trifluoperazine	+++	++
Thiothixene	+++	++
Haloperidol	++++	+
Loxapine	+++	++
Molindone	+++	++
Pimozide	+++	+
Droperidol	++++	+++

<sup>†</sup>In elderly patients, doses should be lowered and tailored to the patient.

<sup>‡</sup>Labeling suggests higher doses may be appropriate, noting intramuscular doses up to 2,000 mg (using >1,000 mg only in severe cases).

<sup>‡</sup>Severity: ++++=extremely high; +++=high; +=moderate; +=low.

Dosage* Range (mg/day) PO	Usual Maximum Dosage for Organic Mental Syndrome (mg/day)	Usual Dosage for Patients >65 Years of Age (mg/day)*
30–800	400	400
20–800	200	200
30–400	—	—
1–40	10	10
12–64	16	16
2–40	20	20
6–60	15	15
1–100	15	15
20–250	60	60
15–225	55	55
1–10	—	—
2.5–15	—	—

  

Adverse Effects <sup>‡</sup>	
Anticholinergic	Orthostatic Hypotension
+++	+++
++++	+++
++++	++
++	++
++	++
++	++
++	++
+	+
++	++
++	++
+	+
+	++

**Table 18: SECOND GENERATION ANTIPSYCHOTIC DOSAGES AND ADVERSE EFFECTS<sup>29,30,32,33,47,78–81</sup>**

	<b>Starting Dose</b>
Aripiprazole (Abilify)	2–5
Asenapine (Saphris, Secuado)	10–20
Brexpiprazole (Rexulti)	0.5–1
Cariprazine (Vraylar)	1.5
Clozapine (Clozaril)	12.5–25
Ileoperidone (Fanapt)	1–2
Lumateperone (Caplyta)	42
Lurasidone (Latuda)	20–40
Olanzapine (Zyprexa)	5–10
Pimavanserin (Nuplazid)	17
Quetiapine (Seroquel)	25–50
Risperidone (Risperdal)	0.5–1
Ziprasidone (Geodon)	20–40

	<b>Adverse Effects<sup>†</sup></b>	
	<b>Extrapyramidal</b>	<b>Sedation</b>
Aripiprazole	++	+
Asenapine	+	++
Brexpiprazole	++	+
Cariprazine	++	+
Clozapine	0	++++
Ileoperidone	+	+
Lurasidone	+	++
Olanzapine	+	++++
Risperidone	+++ <sup>§</sup>	++
Quetiapine	0/+	++/++
Ziprasidone	++	++

<sup>†</sup>In elderly patients, doses should be lowered and tailored to the patient.

<sup>‡</sup>Severity: ++++ = extremely high; +++ = high; ++ = moderate; + = low; 0 = none.

<sup>†</sup>Tolerance develops; slow dose titration is necessary.

<sup>§</sup>Dose-dependent extrapyramidal effects.

N/A = not available.



Dosage* Range (mg/day) PO	Recommended Dosage for Patients >65 Years of AGE mg/day*
10–30	2–15
10–20	5–20
2–3	1–2
3–6	1.5–3
300–900	25–100
12–24	6–12
42	42
60–120	20–60
5–20	5–10
17–34	10–17
50–750	Slower rate of dose titration, lower target dose
2–16	0.5 to start
40–160	Slow rate of dose titration, lower target dose

**Adverse Effects<sup>†</sup>**

Weight Gain	Anticholinergic	Orthostatic Hypotension
++	+	+
+	+	+++
+	+	+
+	+	+
++++	++++	++++ <sup>‡</sup>
++	++	++
+	+	+
++++	++	+
+	+	+++ <sup>‡</sup>
+++	++	++
+/0	+	++

**Table 19: PHARMACOKINETIC PARAMETERS AND DOSING OF DEPOT AND LONG ACTING ANTIPSYCHOTICS<sup>29,30,82,83</sup>**

**First Generation Antipsychotics**

Drug	Starting Dosage	Maintenance Dosage
Haloperidol	20 × oral haloperidol	10–15 × oral haloperidol
decanoate	100–450 mg/28 days	50–300 mg/28 days
Fluphenazine	1.2 × oral fluphenazine	Based on starting dose
decanoate	12.5–75 mg/7–14 days	and clinical response
Fluphenazine	12.5–100 mg/7–21 days	Based on starting dose
enanthate		and clinical response

**Second Generation Long Acting Injectable Antipsychotics**

Drug	Starting Dose
Aripiprazole (Abilify Maintena)	400 mg/monthly
Aripiprazole Lauroxil (Aristada)	441 mg/monthly
<b>Paliperidone</b>	
Invega Sustenna	234 mg on day 1, and 156 mg 1 week later
Invega Trinza	273 mg
Risperidone Consta	25 mg for 2 weeks
Olanzapine Relprevv	150 mg for 2 weeks

\*Patients maintained for 1 year or longer demonstrated a very long time to wash out drug (terminal observed half-life exceeding 60 days).  
N/A=not available.

**Table 20: ANTIPARKINSONIAN AGENTS<sup>29,30,42,84,86</sup>**

Drug	Approximate Dose Equivalent (mg)	Dosage Range (mg/day)	Dose Forms
<b>Antimuscarinics</b>			
Benzotropine (Cogentin)	1	1–8	T, I
Biperiden (Akineton)	2	2–8	T, I
Ethopropazine (Parsidol)	50	50–600	T
Orphenadrine (Various)	50	50–250	T
Procyclidine (Kemadrin)	2	7.5–20	T
Trihexyphenidyl (Artane)	2	2–15	T, C-SR, L
<b>Antihistaminic</b>			
Diphenhydramine (Various)	50	50–400	C,T, L, I
<b>Dopamine Agonists</b>			
Amantadine (Symadine, Symmetrel)	N/A	100–400	C, L
Ropinirole (Requip)	N/A	0.75–24*	T
Pramipexole (Mirapex)	N/A	1.5–4.5*	T

\*Maintenance dose for Parkinson's disease.

T=tablet; I=injection; C=capsule; SR=sustained release; L=liquid solution, elixir, or suspension;  
N/A=not available.

$t_{max}$ (days)	$t_{1/2}$ Single Dose (days)	$t_{1/2}$ Multiple Dose (days)	Time to Steady State (weeks)
4–11	21	21	12
0.3–2	6–10	14	4–8
2–3	3.5–4	N/A	3

  

Maintenance Dosage	$T_{1/2}$	Steady State
300–400 mg/monthly	30–46 days	4 months
441–882 mg/month. Or 882 mg/every 6 weeks or 1064 mg/every 8 weeks	29–35 days	4 months
39 mg to 234 mg (average maintenance dose 117 mg)/monthly	25–49 days	4–5 months
273–829/ every three months	84–95 days	12–15 Months
25–50 mg/every 2 weeks	3–6 day	4 weeks
150–300 mg/every 2 weeks or 405 mg/every 4 weeks	30 days	3 months

**Table 21: ANTIPSYCHOTIC DRUG INTERACTIONS**<sup>29,30,61–79,86</sup>

Interacting Medication	Mechanism	Clinical Effect
<b>Drug interactions assessed to have major severity</b>		
Anticholinergics	Pharmacodynamic effects Additive anticholinergic effect	Decreased antipsychotic effect
Barbiturates	Phenobarbital induces antipsychotic metabolism	Decreased antipsychotic concentrations
Beta-blockers	Synergistic pharmacologic effect; antipsychotic inhibits metabolism of propranolol; antipsychotic increases plasma concentrations	Severe hypotension
Carbamazepine	Induces antipsychotic metabolism	Up to 50% reduction in antipsychotic concentrations



**Table 21: ANTIPSYCHOTIC DRUG INTERACTIONS<sup>29,30,61–79,86</sup>**  
(CONT'D)

<b>Interacting Medication</b>	<b>Mechanism</b>	<b>Clinical Effect</b>
Charcoal	Reduces GI absorption of antipsychotic and absorbs drug during enterohepatic circulation	May reduce antipsychotic effect or cause toxicity when used during overdose or for GI disturbances
Cigarette smoking	Induction of microsomal enzymes	Reduced plasma concentrations of antipsychotic agents
Epinephrine, norepinephrine	Antipsychotic antagonizes pressor effect	Hypotension
Ethanol	Additive CNS depression	Impaired psychomotor skills
Fluvoxamine	Fluvoxamine inhibits metabolism of haloperidol and clozapine	Increased concentrations of haloperidol and clozapine
Guanethidine	Antipsychotic antagonizes guanethidine neuronal uptake	Impaired antihypertensive effect
Lithium	Unknown	Rare reports of neurotoxicity
Meperidine	Additive CNS depression	Hypotension and sedation
Amphetamines, anorexiant	Decrease pharmacologic effect of amphetamine; drug-disease state interaction	Diminished weight-loss effect; amphetamines may exacerbate psychosis; treatment-refractory patients may improve
ACE inhibitors	Additive hypotensive effect	Hypotension, postural intolerance
Antacids containing aluminum	Insoluble complex in GI tract formed	Possible reduced antipsychotic effect
Antidepressants (antidepressant, nonspecific)	Decreases metabolism of antidepressant through competitive inhibition	Increased antidepressant concentration
Benzodiazepines	Increases pharmacologic effect of benzodiazepine	Respiratory depression, stupor, hypotension
Bromocriptine	Antipsychotic antagonizes dopamine receptor stimulation	Increased prolactin
Caffeinated beverages	Form precipitate with antipsychotic solutions	Possible diminished antipsychotic effect
Cimetidine	Reduces antipsychotic absorption and inhibits clearance	Increased or decreased antipsychotic effect

<b>Interacting Medication</b>	<b>Mechanism</b>	<b>Clinical Effect</b>
Clonidine	Antipsychotic potentiates $\alpha$ -2-adrenergic hypotensive effect	Hypotension
Disulfiram	Impairs antipsychotic metabolism	Increased antipsychotic concentrations
Methyldopa	Unknown	Blood pressure elevations
Phenytoin	Induction of antipsychotic metabolism; increases phenytoin metabolism	Decreased antipsychotic concentrations; decreased phenytoin levels
SSRIs	Impair antipsychotic metabolism; pharmacodynamic interaction	Sudden onset of extrapyramidal symptoms
Valproic acid	Antipsychotic inhibits valproic acid metabolism	Increased valproic acid half-life and levels

ACE=angiotensin-converting enzyme; GI=gastrointestinal; CNS=central nervous system; SSRIs=selective serotonin reuptake inhibitors.

**Table 22: ACUTE NEUROLOGIC SIDE EFFECTS OF ANTIPSYCHOTIC MEDICATIONS**<sup>29,30,79,86,87</sup>

<b>Reaction</b>	<b>Clinical Features</b>	<b>Approximate Onset</b>	<b>Treatment</b>
Acute dystonia	Spasm of tongue, throat, face, jaw, eyes, neck, or back muscles	<1 week	Injectable benztropine or diphenhydramine, followed by oral anticholinergics or benzodiazepines
Akathisia	Motor restlessness, inability to stay still	<1 week–2 weeks	If possible, reduce dose of antipsychotic; add beta-blockers, benzodiazepines, or anticholinergics
Pseudoparkinsonism	Bradykinesia, rigidity, resting tremor, rabbit syndrome, sialorrhea, flat affect	~1 week	Add anticholinergics or amantadine; diphenhydramine and lorazepam may also be effective

**Table 23: PHARMACOKINETIC PARAMETERS OF SELECTED ORAL ANTIPSYCHOTICS<sup>29,30,40,41,79,84-88</sup>**

	<b>Bioavailability (%)</b>	<b>Protein Binding (%)</b>	<b>vd (L/kg)*</b>
Chlorpromazine	10–33	90–95	7–20
Clozapine	—	95	4–66
Haloperidol	40–70	92	10–35
Fluphenazine	10–50	90–95	—
Olanzapine	—60	93	10–20
Perphenazine	25	—	10–35
Quetiapine	100	83	6–14
Risperidone	70	90	—
Thioridazine	25–33	99	—
Thiothixene	50	90–95	—

\*Range given includes mean +/- standard deviation.

<sup>†</sup>Data inconclusive regarding therapeutic range for these drugs.

<sup>‡</sup>Optimal concentration for response not encompassing neuroleptic threshold (3–5 ng/mL).

<sup>§</sup>Trough concentration, predose.

<sup>\*\*</sup>Peak concentration 2–3 hours postdose.

**Table 24: APA/ADA RECOMMENDATIONS FOR PATIENTS WHO ARE TAKING ANTIPSYCHOTICS\***

Prior to starting an antipsychotic  
 Screen for personal or family history of diabetes, high blood pressure, heart disease, high cholesterol  
 Weight and height (BMI >25)  
 Waist circumference (>40 inches in males, 35 inches in females)  
 Blood pressure >130/85  
 Fasting glucose >110  
 Fasting cholesterol (HDL <40, total >200)  
 Fasting triglyceride levels (>175)  
 Reassess weight at weeks 4, 8, 12 and quarterly thereafter. Weight gain >5% consider switching antipsychotics.  
 Reassess glucose, lipids and blood pressure 3 months after starting the antipsychotic. Thereafter, check BP annually or as needed. Lipids checked at 5 year intervals or as needed.  
 Assessing EPS symptoms (place after table 19) Extrapyramidal symptoms may be checked at every visit or every 6 months.

\*Diabetes Care 2004; 27(2): 596–601.



<b>Plasma t<sub>1/2</sub> (hours)</b>	<b>Active Metabolites</b>	<b>Therapeutic plasma concentration (ng/ml)</b>
8–35	7-hydroxy	100–300 <sup>†</sup>
4–66	Desmethyl	350
12–36	Reduced haloperidol	3.0–30 5–12 <sup>‡</sup>
14–24	Hydroxy	0.2–3
21–54	—	9–20 <sup>†</sup>
8–21	None known	—
–6	7-hydroxy 7-hydroxy-N-dealkylated	—
3–20	9-hydroxy	—
9–30	Mesoridazine, sulphoridazine	200–800 <sup>†</sup>
34	None known	1.0–5.0* <sup>§</sup> 10–30***



**Table 25: VMAT INHIBITORS FOR THE TREATMENT OF TARDIVE DYSKINESIA<sup>19,20,29,30</sup>**

<b>VMAT2 Inhibitor</b>	<b>Starting dose</b>	<b>Therapeutic Dose</b>
Valbenazine (Ingrezza)	40 mg	40–80 mg
Deutetrabenazine (Austedo)	6 mg bid	12–24 mg bid

ADA/APA Monitoring protocol for patients on Second Generation Antipsychotics (SGA)s

	<b>Baseline</b>	<b>4 weeks</b>	<b>8 weeks</b>
Personal/family history	X		
Weight (BMI)	X	X	X
Waist circumference	X		
Blood pressure	X		
Fasting plasma glucose	X		
Fasting lipid profile	X		



12 weeks	Quarterly	Annually	Every 5 years
X	X	X	
		X	
X		X	
X		X	
X			X

# Clozapine Monitoring

**Table 26: CLOZAPINE MONITORING BY ACUTE NEUTROPHIL COUNT (ANC) LEVEL FOR THE GENERAL POPULATION. (FOR PATIENTS WITH BENIGN ETHNIC NEUTROPENIA, PLEASE SEE CLOZAPINE REMS)**

ANC Level	Recommendation
<b>Normal Range for a New Patient</b> (ANC $\geq$ 1500/ $\mu$ L)	<ul style="list-style-type: none"> <li>• Initiate treatment</li> <li>• If treatment interrupted:                             <ul style="list-style-type: none"> <li>– &lt;30 days, continue monitoring as before</li> <li>– <math>\geq</math>30 days, monitor as if new patient</li> </ul> </li> </ul> (Patient interrupted treatment for any reason other than low ANC)
<b>Mild Neutropenia</b> (1000 to 1499/ $\mu$ L)*	<ul style="list-style-type: none"> <li>• Continue treatment</li> </ul>
<b>Moderate Neutropenia</b> (500 to 999/ $\mu$ L)*	<ul style="list-style-type: none"> <li>• Hematology consultation</li> <li>• Suspend treatment for suspected clozapine induced neutropenia</li> <li>• Resume treatment once ANC normalizes to <math>\geq</math>1000/<math>\mu</math>L</li> </ul>
<b>Severe Neutropenia</b> (less than 500/ $\mu$ L)*	<ul style="list-style-type: none"> <li>• Hematology consultation</li> <li>• Suspend treatment for suspected clozapine induced neutropenia</li> <li>• Consider discontinuing unless the benefits clearly outweigh the risks</li> </ul>

\*Confirm all initial reports of ANC less than 1500/ $\mu$ L (ANC < 1000/ $\mu$ L for BEN patients) with a repeat ANC measurement within 24 hours.

Source: Adapted from *Clozapine and the Risk of Neutropenia: An Overview for Healthcare Providers, 2014* ([www.clozapinerems.com](http://www.clozapinerems.com)).

**Table 27: ANOREXIANTS<sup>29,30,64–71,89–91</sup>**

Agent	dosage range (mg/day)	Indication
Amphetamine (Biphetamine)	5–40	Obesity
Naltrexone + Bupropion 8/90 mg (Contrave)	1–2 tablets BID	Obesity
Methamphetamine (Desoxyn)	10–15	Obesity
Orlistat (Xenical)	120 TID with meals	Obesity
Phendimetrazine (various)	70–105	Obesity
Phentermine (Adipex-P, various)	18.75–37.5	Obesity
Phentermine + Topiramate 3.75/23 mg (Qsmia)	1–2 tablets Daily	Obesity

### ANC Frequency

- Weekly from initiation to 6 months
  - Every 2 weeks from 6 to 12 months
  - Monthly after 12 months
- 
- Three times weekly until ANC  $\geq 1500/\mu\text{L}$
  - Once ANC  $\geq 1500/\mu\text{L}$ , return to patient's last normal range ANC monitoring interval
- 
- Daily until ANC  $\geq 1000/\mu\text{L}$ , then
  - Three times weekly until ANC  $\geq 1500/\mu\text{L}$
  - Once ANC  $\geq 1500/\mu\text{L}$ , check ANC weekly for 4 weeks, then monthly as appropriate
- 
- Daily until ANC  $\geq 1000/\mu\text{L}$
  - Three times weekly until ANC  $\geq 1500/\mu\text{L}$
  - If patient is restarted on clozapine, monitor as a new patient or as needed

**Table 28: PSYCHOSTIMULANTS<sup>29,30,92</sup>**

Agent	Dosage Range (mg/day)	Indication
Dextroamphetamine (Dexedrine)	5–40 5–60	ADHD Narcolepsy
Dextroamphetamine + amphetamine (Adderall)	5–40 5–60	ADHD Narcolepsy
Methamphetamine (Desoxyn)	5–25*	ADHD
Methylphenidate (Ritalin, Ritalin LA, Aptenso XR)	10–40 10–60	ADHD Narcolepsy
Methylphenidate HCl (Concerta)	18–54	ADHD
Modafinil (Provigil)	200–400	Narcolepsy, idiopathic hypersomnia
Armodafinil (Nuvigil)	150–250	
Lisdexamfetamine (Vyvanse)	30–70	ADHD, Binge Eating

ADHD=attention-deficit/hyperactivity disorder. \*20–25 mg is effective dosage range; can be titrated up from 5 mg.



**Table 29: DRUGS FOR ALZHEIMER'S DISEASE<sup>29,30,38,40,93,97</sup>**  
(CHOLINESTERASE INHIBITORS)

Drug	Dosage	Peak Plasma	Elimination Half-life
Donepezil (Aricept)	5–10 mg/day	3–4 hours	70 hours
Galantamine (Reminyl)	16–32 mg/day	1 hour	7 hours
Rivastigmine (Exelon)	6–12 mg/day	1.4–2.6 hours	1.5–3 hours

CYP=cytochrome P450.



**Table 30: ADVERSE EFFECTS OF CHOLINESTERASE INHIBITORS<sup>29,30,37,39,93–96,98,99</sup>**

Symptom	Donepezil	Galantamine	Rivastigmine	Tacrine
<b>GI</b>				
Nausea, vomiting	+	++++	++	+++
Weight loss	+	+	++ (dose dependent)	+
LFTs rise	–	–	–	+++
<b>CNS</b>				
Insomnia	+/-	+	+/-	+
Fatigue	+/-	+	+/-	+/-
Depression	+/-	+	+/-	+/-
<b>Miscellaneous</b>				
Syncope	+/-	+	+	+/-
Increased urination	+/-	+	+/-	+/-
Rhinitis	+/-	+	–	–

++++=high; +++=moderate; ++=low; +=very low; –=none. GI=gastrointestinal; LFTs=liver function tests; CNS=central nervous system.



<b>Steady State</b>	<b>Protein Binding</b>	<b>Metabolism</b>
15 days	96%	2D6, 3A3/4
–	18%	2D6, 3A4
24–48 days	40%	Not CYP dependent



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# Appendix

## The Quick Inventory of Depressive Symptomatology (16-Item) (Self-Report) (QIDS-SR<sub>16</sub>)<sup>25</sup>

Name or ID: \_\_\_\_\_ Date: \_\_\_\_\_

CHECK THE ONE RESPONSE TO EACH ITEM THAT BEST DESCRIBES YOU FOR THE PAST SEVEN DAYS.

### During the past seven days...

#### 1. Falling Asleep:

- 0 I never take longer than 30 minutes to fall asleep.
- 1 I take at least 30 minutes to fall asleep, less than half the time.
- 2 I take at least 30 minutes to fall asleep, more than half the time.
- 3 I take more than 60 minutes to fall asleep, more than half the time.

#### 2. Sleep During the Night

- 0 I do not wake up at night.
- 1 I have a restless, light sleep with a few brief awakenings each night.
- 2 I wake up at least once a night, but I go back to sleep easily.
- 3 I awaken more than once a night and stay awake for 20 minutes or more, more than half the time.

#### 3. Waking Up Too Early:

- 0 Most of the time, I awaken no more than 30 minutes before I need to get up.
- 1 More than half the time, I awaken more than 30 minutes before I need to get up.
- 2 I almost always awaken at least one hour or so before I need to, but I go back to sleep eventually.
- 3 I awaken at least one hour before I need to, and can't go back to sleep.

#### 4. Sleeping Too Much:

- 0 I sleep no longer than 7–8 hours/night, without napping during the day.
- 1 I sleep no longer than 10 hours in a 24-hour period including naps.
- 2 I sleep no longer than 12 hours in a 24-hour period including naps.
- 3 I sleep longer than 12 hours in a 24-hour period including naps.

### During the past seven days...

#### 5. Feeling Sad:

- 0 I do not feel sad.
- 1 I feel sad less than half the time.
- 2 I feel sad more than half the time.
- 3 I feel sad nearly all of the time.

### Please complete either 6 or 7 (not both)

#### 6. Decreased Appetite:

- 0 There is no change in my usual appetite.
- 1 I eat somewhat less often or lesser amounts of food than usual.
- 2 I eat much less than usual and only with personal effort.
- 3 I rarely eat within a 24-hour period, and only with extreme personal effort or when others persuade me to eat.

- OR -

#### 7. Increased Appetite:

- 0 There is no change from my usual appetite.
- 1 I feel a need to eat more frequently than usual.
- 2 I regularly eat more often and/or greater amounts of food than usual.
- 3 I feel driven to overeat both at mealtime and between meals.

### Please complete either 8 or 9 (not both)

#### 8. Decreased Weight (Within the Last Two Weeks):

- 0 I have not had a change in my weight.
- 1 I feel as if I have had a slight weight loss.
- 2 I have lost 2 pounds or more.
- 3 I have lost 5 pounds or more.

- OR -

#### 9. Increased Weight (Within the Last Two Weeks):

- 0 I have not had a change in my weight.
- 1 I feel as if I have had a slight weight gain.
- 2 I have gained 2 pounds or more.
- 3 I have gained 5 pounds or more.

## The Quick Inventory of Depressive Symptomatology (16-Item) (Self-Report) (QIDS-SR<sub>16</sub>)<sup>25</sup>

### During the past seven days...

#### 10. Concentration / Decision Making:

- 0 There is no change in my usual capacity to concentrate or make decisions.
- 1 I occasionally feel indecisive or find that my attention wanders.
- 2 Most of the time, I struggle to focus my attention or to make decisions.
- 3 I cannot concentrate well enough to read or cannot make even minor decisions.

#### 11. View of Myself:

- 0 I see myself as equally worthwhile and deserving as other people.
- 1 I am more self-blaming than usual.
- 2 I largely believe that I cause problems for others.
- 3 I think almost constantly about major and minor defects in myself.

#### 12. Thoughts of Death or Suicide:

- 0 I do not think of suicide or death.
- 1 I feel that life is empty or wonder if it's worth living.
- 2 I think of suicide or death several times a week for several minutes.
- 3 I think of suicide or death several times a day in some detail, or I have made specific plans for suicide or have actually tried to take my life.

#### 13. General Interest

- 0 There is no change from usual in how interested I am in other people or activities.
- 1 I notice that I am less interested in people or activities.
- 2 I find I have interest in only one or two of my formerly pursued activities.
- 3 I have virtually no interest in formerly pursued activities.

### During the past seven days...

#### 14. Energy Level:

- 0 There is no change in my usual level of energy.
- 1 I get tired more easily than usual.
- 2 I have to make a big effort to start or finish my usual daily activities (for example, shopping, homework, cooking, or going to work).
- 3 I really cannot carry out most of my usual daily activities because I just don't have the energy.

#### 15. Feeling Slowed Down:

- 0 I think, speak, and move at my usual rate of speed.
- 1 I find that my thinking is slowed down or my voice sounds dull or flat.
- 2 It takes me several seconds to respond to most questions and I'm sure my thinking is slowed.
- 3 I am often unable to respond to questions without extreme effort.

#### 16. Feeling Restless:

- 0 I do not feel restless.
- 1 I'm often fidgety, wringing my hands, or need to shift how I am sitting.
- 2 I have impulses to move about and am quite restless.
- 3 At times, I am unable to stay seated and need to pace around.

## Patient Health Questionnaire (PHQ-9)<sup>29</sup>

Patient Name: \_\_\_\_\_

Date: \_\_\_\_\_

	Not at all	Several days	More than half the days	Nearly every day
1. Over the <i>last 2 weeks</i> , how often have you been bothered by any of the following problems?				
a. Little interest or pleasure in doing things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Feeling down, depressed, or hopeless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Trouble falling/staying asleep, sleeping too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Feeling tired or having little energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Poor appetite or overeating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Feeling bad about yourself or that you are a failure or have let yourself or your family down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Trouble concentrating on things, such as reading the newspaper or watching television.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Moving or speaking so slowly that other people could have noticed. Or the opposite; being so fidgety or restless that you have been moving around a lot more than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Thoughts that you would be better off dead or of hurting yourself in some way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. If you checked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?				
	Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## PHQ-9\* Questionnaire for Depression Scoring and Interpretation Guide

For physician use only

### Scoring:

Count the number (#) of boxes checked in a column. Multiply that number by the value indicated below, then add the subtotal to produce a total score. The possible range is 0-27. Use the table below to interpret the PHQ-9 score.

Not at all (#) \_\_\_\_\_ × 0 = \_\_\_\_\_  
Several days (#) \_\_\_\_\_ × 1 = \_\_\_\_\_  
More than half the days (#) \_\_\_\_\_ × 2 = \_\_\_\_\_  
Nearly every day (#) \_\_\_\_\_ × 3 = \_\_\_\_\_

**Total score:** \_\_\_\_\_

Interpreting PHQ-9 Scores		Actions Based on PH9 Score	
	Score	Score	Action
Minimal depression	0-4	< 4	The score suggests the patient may not need depression treatment
Mild depression	5-9		
Moderate depression	10-14	> 5-14	Physician uses clinical judgment about treatment, based on patient's duration of symptoms and functional impairment
Moderately severe depression	15-19		
Severe depression	20-27	> 15	Warrants treatment for depression, using antidepressant, psychotherapy and/or a combination of treatment.

\*PHQ-9 is described in more detail at the McArthur Institute on Depression & Primary Care website [www.depression-primarycare.org/clinicians/toolkits/materials/forms/phq9/](http://www.depression-primarycare.org/clinicians/toolkits/materials/forms/phq9/)

CLIENT NAME: \_\_\_\_\_  
CLIENT ID#: \_\_\_\_\_

DATE: \_\_\_\_\_  
MD: \_\_\_\_\_

## BRIEF PSYCHIATRIC RATING SCALE (BPRS)<sup>26</sup>

Please enter the score for the term which best describes the patient's condition.

0 = not assessed, 1 = not present, 2 = very mild, 3 = mild, 4 = moderate,  
5 = moderately severe, 6 = severe, 7 = extremely severe

<p><b>1. SOMATIC CONCERN</b></p> <p>Degree of concern over present bodily health. Rate the degree to which physical health is perceived as a problem by the patient, whether complaints have a realistic basis or not.</p> <p>SCORE <input type="text"/></p>	<p><b>5. GUILT FEELINGS</b></p> <p>Over-concern or remorse for past behavior. Rate on the basis of the patient's subjective experiences of guilt as evidenced by verbal report with appropriate affect; do not infer guilt feelings from depression, anxiety or neurotic defenses.</p> <p>SCORE <input type="text"/></p>
<p><b>2. ANXIETY</b></p> <p>Worry, fear, or over-concern for present or future. Rate solely on the basis of verbal report of patient's own subjective experiences. Do not infer anxiety from physical signs or from neurotic defense mechanisms.</p> <p>SCORE <input type="text"/></p>	<p><b>6. TENSION</b></p> <p>Physical and motor manifestations of tension "nervousness", and heightened activation level. Tension should be rated solely on the basis of physical signs and motor behavior and not on the basis of subjective experiences of tension reported by the patient.</p> <p>SCORE <input type="text"/></p>
<p><b>3. EMOTIONAL WITHDRAWAL</b></p> <p>Deficiency in relating to the interviewer and to the interviewer situation. Rate only the degree to which the patient gives the impression of failing to be in emotional contact with other people in the interview situation.</p> <p>SCORE <input type="text"/></p>	<p><b>7. MANNERISMS AND POSTURING</b></p> <p>Unusual and unnatural motor behavior, the type of motor behavior which causes certain mental patients to stand out in a crowd of normal people. Rate only abnormality of movements; do not rate simple heightened motor activity here.</p> <p>SCORE <input type="text"/></p>
<p><b>4. CONCEPTUAL DISORGANIZATION</b></p> <p>Degree to which the thought processes are confused, disconnected, or disorganized. Rate on the basis of integration of the verbal products of the patient; do not rate on the basis of patient's subjective impression of his own level of functioning.</p> <p>SCORE <input type="text"/></p>	<p><b>8. GRANDIOSITY</b></p> <p>Exaggerated self-opinion, conviction of unusual ability or powers. Rate only on the basis of patient's statements about himself or self-in-relation-to-others, not on the basis of his demeanor in the interview situation.</p> <p>SCORE <input type="text"/></p>

<p><b>9. DEPRESSIVE MOOD</b></p> <p>Dependancy in mood, sadness. Rate only degree of dependancy; do not rate on the basis of inferences concerning depression based upon general retardation and somatic complaints.</p> <p style="text-align: right;"><b>SCORE</b></p> <p style="text-align: center;"><input type="text"/></p>	<p><b>14. UNCOOPERATIVENESS</b></p> <p>Evidence of resistance, unfriendliness, resentment, and lack of readiness to cooperate with the interviewer. Rate only on the basis of the patient's attitude and responses to the interviewer and the interview situation; do not rate on basis of reported resentment or uncooperativeness outside the interview situation.</p> <p style="text-align: right;"><b>SCORE</b></p> <p style="text-align: center;"><input type="text"/></p>
<p><b>10. HOSTILITY</b></p> <p>Animosity, contempt, belligerence, disdain for other people outside the interview situation. Rate solely on the basis of the verbal report of feelings and actions of the patient toward others; do not infer hostility from neurotic defenses, anxiety, nor somatic complaints. (<i>Rate attitude toward interviewer under "uncooperativeness"</i>).</p> <p style="text-align: right;"><b>SCORE</b></p> <p style="text-align: center;"><input type="text"/></p>	<p><b>15. UNUSUAL THOUGHT CONTENT</b></p> <p>Unusual, odd, strange or bizarre thought content. Rate here the degree of unusualness, not the degree of disorganization of thought processes.</p> <p style="text-align: right;"><b>SCORE</b></p> <p style="text-align: center;"><input type="text"/></p>
<p><b>11. SUSPICIOUSNESS</b></p> <p>Brief (<i>delusional or otherwise</i>) that others have now, or have had in the past, malicious or discriminatory intent toward the patient. On the basis of verbal report, rate only those suspicions which are currently held whether they concern past or present circumstances.</p> <p style="text-align: right;"><b>SCORE</b></p> <p style="text-align: center;"><input type="text"/></p>	<p><b>16. BLUNTED AFFECT</b></p> <p>Reduced emotional tone, apparent lack of normal feeling or involvement.</p> <p style="text-align: right;"><b>SCORE</b></p> <p style="text-align: center;"><input type="text"/></p>
<p><b>12. HALLUCINATORY BEHAVIOR</b></p> <p>Perceptions without normal external stimulus correspondence. Rate only those experiences which are reported to have occurred within the last week and which are described as distinctly different from the thought and imagery processes of normal people.</p> <p style="text-align: right;"><b>SCORE</b></p> <p style="text-align: center;"><input type="text"/></p>	<p><b>17. EXCITEMENT</b></p> <p>Heightened emotional tone, agitation, increased reactivity.</p> <p style="text-align: right;"><b>SCORE</b></p> <p style="text-align: center;"><input type="text"/></p>
<p><b>13. MOTOR RETARDATION</b></p> <p>Reduction in energy level evidenced in slowed movements. Rate on the basis of observed behavior of the patient only; do not rate on the basis of patient's subjective impression of own energy level.</p> <p style="text-align: right;"><b>SCORE</b></p> <p style="text-align: center;"><input type="text"/></p>	<p><b>18. DISORIENTATION</b></p> <p>Confusion or lack of proper association for person, place or time.</p> <p style="text-align: right;"><b>SCORE</b></p> <p style="text-align: center;"><input type="text"/></p>

## Abnormal Involuntary Movement Scale (AIMS)<sup>27</sup>

**Instructions:** Complete the examination procedure before making ratings. Circle score for each item.

Patient Name:	Date:	None	Minimal, may be extreme normal	Mild	Moderate	Severe
<b>Facial and Oral Movements</b>						
1. Muscles of Facial Expression e.g., movements of forehead, eyebrows, periorbital area, cheeks; Include frowning, blinking, smiling, grimacing	0	1	2	3	4	
2. Lips and Perioral Area e.g., puckering, pouting, smacking	0	1	2	3	4	
3. Jaw e.g., biting, clenching, chewing, mouth opening, lateral movement	0	1	2	3	4	
4. Tongue Rate only increases in movement both in and out of mouth, NOT inability to sustain movement	0	1	2	3	4	
<b>Extremity Movements</b>						
5. Upper (arms, wrists, hands, fingers) Include choreic movements (i.e., rapid, objectively purposeless, irregular, spontaneous); athetoid movements (i.e., slow, irregular, complex, serpentine). DO NOT include tremor (i.e., repetitive, regular, rhythmic).	0	1	2	3	4	
6. Lower (legs, knees, ankles, toes) e.g., lateral knee movement, foot tapping, heel dropping, foot squirming, inversion and eversion of foot	0	1	2	3	4	
<b>Trunk Movements</b>						
7. Neck, shoulders, hips e.g., rocking, twisting, squirming, pelvic gyrations	0	1	2	3	4	
<b>Global Judgments</b>						
8. Severity of abnormal movements	0	1	2	3	4	
9. Incapacitation due to abnormal movements	0	1	2	3	4	
10. Patient's awareness of abnormal movements (rate only patient's report) 0 = not aware; 1 = aware, no distress; 2 = aware, mild distress; 3 = aware, moderate distress; 4 = aware, severe distress	0	1	2	3	4	
<b>Dental Status</b>						
11. Current problems with teeth and/or dentures?	No	Yes				

## Notes:

### AIMS Examination Procedure

Either before or after completing the Examination Procedure, observe the patient unobtrusively, at rest (e.g., in the waiting room)

The chair to be used in this examination should be a hard, firm one without arms.

1. Ask the patient whether there is anything in his/her mouth (i.e., gum, candy, etc.) And if there is, remove it.
2. Ask patient about the current condition of his/her teeth. Do teeth bother patient now?
3. Ask the patient whether he/she notices any movements in mouth, face, hands, or feet. If yes, ask to describe and to what extent they currently bother patient or interfere with his/her activities.
4. Have patient sit in chair with hands on knees, legs slightly apart, and feet flat on floor. (Look at entire body for movements while in this position).
5. Ask patient to sit with hands hanging unsupported. If male, between legs; if female and wearing a dress, hanging over knees. (Observe hands or other body areas).
6. Ask patient to open mouth. (Observe tongue at rest within mouth). Do this twice.
7. Ask patient to protrude tongue. (Observe abnormalities of tongue movement). Do this twice.
8. Ask patient to tap thumb, with each finger as rapidly as possible for 10 to 15 seconds; first with right hand, then with left hand. (Observe facial and leg movements).
9. Flex and extend patient's left and right arms (one at a time).
10. Ask patient to stand up. (Observe in profile. Observe all body areas again, hips included).
11. Ask patient to extend both arms outstretched in front with palms down. (Observe trunk, legs, and mouth).
12. Have patient walk a few paces, turn, and walk back to chair. (Observe hands and gait). Do this twice.

Guy W: ECDEU Assessment Manual for Psychopharmacology - Revised (DHEW Publ No ADM 76-338), US Department of Health, Education and Welfare; 1976.



## Generalized Anxiety Disorder 7-item (GAD-7) scale<sup>28</sup>

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all sure	Several days	Over half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it's hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3
<i>Add the score for each column</i>	+	+	+	
Total Score ( <i>add your column scores</i> ) =				

If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all \_\_\_\_\_

Somewhat difficult \_\_\_\_\_

Very difficult \_\_\_\_\_

Extremely difficult \_\_\_\_\_

### Scoring

Scores of 5, 10, and 15 are taken as the cut-off points for mild, moderate and severe anxiety, respectively. When used as a screening tool, further evaluation is recommended when the score is 10 or greater.

Using the threshold score of 10, the GAD-7 has a sensitivity of 89% and a specificity of 82% for GAD. It is moderately good at screening three other common anxiety disorders—panic disorder (sensitivity 74%, specificity 81%), social anxiety disorder (sensitivity 72%, specificity 80%) and post-traumatic stress disorder (sensitivity 66%, specificity 81%).

Source: Spitzer RL, Kroenke K, Williams JBW, Lowe B. A brief measure for assessing generalized anxiety disorder. *Arch Intern Med.* 2006;166:1092–1097.

## YOUNG MANIA RATING SCALE (YMRS)<sup>100</sup>

### GUIDE FOR SCORING ITEMS

The purpose of each item is to rate the severity of that abnormality in the patient. When several keys are given for a particular grade of severity, the presence of only one is required to qualify for that rating.

The keys provided are guides. One can ignore the keys if that is necessary to indicate severity, although this should be the exception rather than the rule.

Scoring between the points given (whole or half points) is possible and encouraged after experience with the scale is acquired. This is particularly useful when severity of a particular item in a patient does not follow the progression indicated by the keys.

Specify **one** of the reasons listed below by putting the appropriate number in adjacent box.

#### 1. ELEVATED MOOD

- 0 - Absent
- 1 - Mildly or possibly increased on questioning
- 2 - Definite subjective elevation; optimistic, self-confident; cheerful; appropriate to content
- 3 - Elevated, inappropriate to content; humorous
- 4 - Euphoric; inappropriate laughter; singing

#### 2. INCREASED MOTOR ACTIVITY ENERGY

- 0 - Absent
- 1 - Subjectively increased
- 2 - Animated; gestures increased
- 3 - Excessive energy; hyperactive at times; restless (can be calmed)
- 4 - Motor excitement; continuous hyperactivity (cannot be calmed)

#### 3. SEXUAL INTEREST

- 0 - Normal; not increased
- 1 - Mildly or possibly increased
- 2 - Definite subjective increase on questioning
- 3 - Spontaneous sexual content; elaborates on sexual matters; hypersexual by self-report
- 4 - Overt sexual acts (toward patients, staff, or interviewer)

#### 4. SLEEP

- 0 - Reports no decrease in sleep
- 1 - Sleeping less than normal amount by up to one hour
- 2 - Sleeping less than normal by more than one hour
- 3 - Reports decreased need for sleep
- 4 - Denies need for sleep

#### 5. IRRITABILITY

- 0 - Absent
- 2 - Subjectively increased
- 4 - Irritable at times during interview; recent episodes of anger or annoyance on ward
- 6 - Frequently irritable during interview; short, curt throughout
- 8 - Hostile, uncooperative; interview impossible

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6. SPEECH (Rate and Amount)

- 0 - No increase
- 2 - Feels talkative
- 4 - Increased rate or amount at times, verbose at times
- 6 - Push; consistently increased rate and amount; difficult to interrupt
- 8 - Pressured; uninterruptible, continuous speech

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7. LANGUAGE - THOUGHT DISORDER

- 0 - Absent
- 1 - Circumstantial; mild distractibility; quick thoughts
- 2 - Distractible; loses goal of thought; change topics frequently; racing thoughts
- 3 - Flight of ideas; tangentiality; difficult to follow; rhyming, echolalia
- 4 - Incoherent; communication impossible

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8. CONTENT

- 0 - Normal
- 2 - Questionable plans, new interests
- 4 - Special project(s); hyperreligious
- 6 - Grandiose or paranoid ideas; ideas of reference
- 8 - Delusions; hallucinations

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9. DISRUPTIVE - AGGRESSIVE BEHAVIOR

- 0 - Absent, cooperative
- 2 - Sarcastic; loud at times, guarded
- 4 - Demanding; threats on ward
- 6 - Threatens interviewer; shouting; interview difficult
- 8 - Assaultive; destructive; interview impossible

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10. APPEARANCE

- 0 - Appropriate dress and grooming
- 1 - Minimally unkempt
- 2 - Poorly groomed; moderately dishevelled; overdressed
- 3 - Dishevelled; partly clothed; garish make-up
- 4 - Completely unkempt; decorated; bizarre garb

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11. INSIGHT

- 0 - Present; admits illness; agrees with need for treatment
- 1 - Possibly ill
- 2 - Admits behavior change, but denies illness
- 3 - Admits possible change in behavior, but denies illness
- 4 - Denies any behavior change

