DEPARTMENT OF MENTAL HEALTH

PARAMETERS MED-08 FOR USE OF PSYCHOTROPIC MEDICATION IN CHILDREN AND ADOLESCENTS

January 15, 2025

INTRODUCTION

DMH Parameters Med-08 For Use of Psychotropic Medication for Children and Adolescents, is designed primarily to assist treatment providers in the use of psychotropic medications as part of the overall treatment plan for diagnosed mental disorders in children and adolescents, up to 18 years of age, who receive mental health services through either directly-operated Los Angeles County Department of Mental Health clinics or the Department's contracted agencies. The use of psychotropic medications in early childhood is relatively infrequent; the use of such medications in children under the age of three is rare.

Nonclinical, nonmedical, or otherwise insufficiently trained individuals should take caution when reading this guide due to risks of misunderstanding, misusing, and misinterpreting its information and intent. Such individuals are advised to consult with the prescribing healthcare provider when questions and concerns arise.

This resource document was developed by consensus among a committee composed of various community-based clinicians and faculty from local training institutions who are experienced in psychiatric medication treatment of children and adolescents. It is updated periodically to reflect advancements in research and literature regarding evidence-based treatments. The document is not intended to imply standard of care. It is also not intended to be a narrowly prescriptive or comprehensive treatment document, nor to guide pharmacotherapy in children and adolescents whose treatment planning is complicated by the presence of special healthcare needs. Similarly, items listed under medical workup and follow-up, including laboratory tests, are intended to be considered based on particular clinical circumstances rather than being categorically required. Psychosocial treatments, which are sometimes first-line treatments of mental disorders and important considerations in the formulation of an overall treatment plan, are discussed in other sources. Various documents that may serve as additional resources are identified in the references section of this document.

Treatment provided outside of the parametric elements in this guide should have special justification and/or consultation with corresponding documentation of rationale in the medical record. Changes in current medication regimens made for the purpose of conforming with this guide should be initiated only after careful clinical consideration of the basis for the current medication regimen and potential risks of altering it. Non-adherence to medication treatment is a special situation to be considered and addressed by the prescribing healthcare provider. The health risks related to medication discontinuation and lack of medication treatment should be considered in further treatment planning.

Doses of medications in this guide are expressed by a dosage range, with the assumption that the prescribing healthcare provider adjust dosages used based on the individual circumstances of each patient. Dose ranges in this guide are not expressed by body surface area or in weight-adjusted doses, and they are not specifically calibrated or adjusted for children with compromised ability to metabolize and excrete these drugs. A discussion of potential metabolic variations due to ethnic/racial/genetic background is beyond the scope of this document.

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*FIRST GENERATION ANTIPSYCHOTICS

A. Warnings for Concomitant Medication Use:

1. Drugs that lower plasma level: carbamazepine (CBZ), phenytoin (PHT), phenobarbital (PB), smoking
2. Drugs that increase plasma level: fluoxetine, fluvoxamine, paroxetine, macrolide antibiotic, cimetidine
3. Avoid >1 antipsychotic at a time

B. Medical Work-up (Baseline):

1. Physical exam (including height, weight, BMI, BP, pulse, dyskinesia)
2. Lab: fasting blood glucose, Hgb A1c, fasting lipid panel, liver enzymes, CBC + differential, UA, BUN, creatinine
3. Check for abnormal, involuntary movements
4. EKG if at high risk for QTc prolongation

C. Medical Follow-up:

1. Each visit: Abnormal movements, signs/symptoms of hyperprolactinemia, physical exam
2. 2 wks after every dose titration up: Abnormal movements
3. At least every 3 months: AIMS
4. Week 8, week 12 then annually: BMI
5. Week 12 then annually: fasting serum glucose, Hgb A1c, fasting lipid panel, BP, and pulse
6. Annual: Vision screen
7. If clinically indicated: CBC + differential, pregnancy test

Relative risk of adverse side effects, from highest to lowest:

- *EPS:* haloperidol = fluphenazine > pimozide > perphenazine > chlorpromazine
- *Hyperprolactinemia:* haloperidol = fluphenazine > pimozide > perphenazine > chlorpromazine
- *QTc prolongation:* pimozide = chlorpromazine > haloperidol = fluphenazine = perphenazine
- *Sedation:* chlorpromazine > perphenazine > pimozide = haloperidol = fluphenazine
- *Orthostatic hypotension:* chlorpromazine > perphenazine > haloperidol = fluphenazine = pimozide
- *Diabetes/hyperlipidemia/ weight gain:* chlorpromazine > haloperidol = perphenazine = fluphenazine = pimozide

DRUG**	CLINICAL INDICATIONS	DOSE^ (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	COMPLICATIONS/ PRECAUTIONS
chlorpromazine (Thorazine®) tablet (can be crushed but with caution for dermatitis), IM injection, oral solution	Psychosis Not first line in severe behavioral problems d/o with aggression	10 – 800 PO Initial: 0.55 mg/kg/dose Q4-6 hours IM, IV: Initial: 0.28 to 0.55 mg/kg/dose Max for < 5 y/o: 40 IM and 50 PO Max for 5-12 y/o: 75 IM and 200 PO	1-6 x/d	- EPS - Sedation - Cognitive dulling - Hypotension - Weight gain - Hyperprolactinemia^^ - Photosensitivity (phenothiazines)	Caution in patients with liver disease Caution in patients with asthma for injection Avoid use of anticholinergics Higher risk of sedation, hypotension Highest likelihood to reduce seizure threshold of first-generation antipsychotics **Contraindications:** Hypersensitivity to sulfites for injection	Complications: - Tardive dyskinesia - NMS Precautions: - Blood dyscrasias - Orthostatic hypotension - EKG changes - EEG changes, seizures - Ocular changes - Hyperprolactinemia - Anticholinergic effects - QTc prolongation - Torsades de pointes - Liver disease - Respiratory distress - Pregnancy - Breast feeding
haloperidol (Haldol®) tablet, oral solution, IM injection	Psychosis Tourette Disorder Not first line in severe behavior problems d/o with aggression	0.5 - 15 Max for 3-12 y/o: 0.15mg/kg/day or 6mg/day, whichever is less	2-3 x/d		Higher risk of EPS, hyperprolactinemia	
perphenazine (Trilafon®) tablet	Psychosis	2 - 64	2-4 x		Limited evidence on efficacy and safety for use in age 12 years and younger Use with caution in patients with liver disease Monitor liver function if clinically indicated	
fluphenazine (Prolixin®) tablet, oral solution/elixir, IM injection	Psychosis	1 - 20	2-3 x/d		Limited evidence on efficacy and safety for use in age < 18 Monitor liver enzymes if clinically indicated	

DRUG**	CLINICAL INDICATIONS	DOSE^ (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	COMPLICATIONS/ PRECAUTIONS
pimozide (Orap®) tablet	Tourette's Disorder	1-10 Max for 7-12 y/o: 6mg/day or 0.2 mg/kg/day, whichever is less Max for ≥ 12 y/o: 10mg/day or 0.2 mg/kg/day, whichever is less	1-2 x/d	- Sedation - Cognitive dulling - Hypotension - Weight gain - Hyperprolactinemia^^ - Photosensitivity (phenothiazines)	Monitor: EKG at baseline and each dose increase Monitor: liver enzymes at baseline and every 3 months Monitor for emergence or worsening of tics with co-administration of stimulant Avoid doses >0.5 mg/kg/day in poor CYP2D6 metabolizers Conduction delays with elevated liver enzymes Highest risk of QTc prolongation, EKG changes, Torsades de pointes within the first generation. Avoid concomitant use with other agents that prolong QTc **Contraindications:** congenital long QT syndrome, history of arrhythmia, hypokalemia, hypomagnesemia	Complications: - EPS - Tardive dyskinesia - NMS Precautions: - Blood dyscrasias - Orthostatic hypotension - EEG changes, seizures - Ocular changes - Hyperprolactinemia - Anticholinergic effects - Liver disease - Respiratory distress - Pregnancy - Breast feeding Inhibitors - Use of fluvoxamine, propranolol, pindolol, fluoxetine, paroxetine (strong CYP2D6 inhibitors), use of strong CYP3A4 inhibitors

Not included/recommended due to insufficient evidence in youth: **loxapine (Loxitane®), thiothixene (Navane®), perphenazine (Trilafon®)**

* *Not indicated for insomnia.*

** *Common brand name is indicated for convenience. No preference is implied.*

^ *Maximum doses based on literature.*

^^ *More so than novel antipsychotics.*

EPS *Extrapyramidal Symptoms*

TD *Tardive Dyskinesia*

NMS *Neuroleptic Malignant Syndrome*

DRESS *Drug Reaction with Eosinophilia and Systemic Symptoms*

AIMS *Abnormal Involuntary Movement Scale*

*SECOND GENERATION ANTIPSYCHOTICS

A. Warnings for Concomitant Medication Use:
1. Drugs that lower plasma level: carbamazepine (CBZ), phenytoin (PHT), phenobarbital (PB), smoking
2. Drugs that increase plasma level: fluoxetine, fluvoxamine, paroxetine, macrolide antibiotic, cimetidine
3. Avoid >1 antipsychotic at a time

B. Medical Work-up (Baseline):
1. Physical exam (including height, weight, BMI, BP, pulse, dyskinesia)
2. Labs: fasting blood glucose, Hgb A1c, fasting lipid panel, liver enzymes, CBC + differential, UA, BUN, creatinine
3. Check for abnormal, involuntary movements
4. Baseline EKG (ziprasidone)

C. Medical Follow-up:
1. Each visit: Vitals, height, weight and as clinically indicated.
2. Wk 4, 8, 12 then annually: height, weight, BMI (compared against growth chart)
   - If rapid weight gain, high risk for DM, and/or below age 7: need weight management intervention with close monitoring of fasting blood glucose and fasting lipid panel
     - Weight management intervention can include nutritional and exercise interventions, referral to pediatrician or pediatric endocrinologist, change of antipsychotic, or may consider trial of metformin
3. Two weeks after every dose titration up: BP, Pulse, EPS (rigidity, tremor, akathisia)
4. At least every 3 months: AIMS
5. Wk 12 then annually: fasting blood glucose, Hgb A1c, fasting lipid panel, liver enzymes, CBC + differential, BUN, creatinine (+ prolactin level, if clinically indicated for risperidone)
6. For clozapine: *per protocol*
7. For ziprasidone: repeat EKG after dose increases
8. If clinically indicated: pregnancy test

Relative risk of adverse side effects, from highest to lowest:	• *Diabetes/hyperlipidemia/ weight gain:*	clozapine ≥ olanzapine > quetiapine ≥ risperidone = paliperidone > asenapine > aripiprazole = brexpiprazole > lurasidone > ziprasidone
	• *Orthostatic hypotension:*	clozapine > risperidone = paliperidone > quetiapine > lurasidone > asenapine > olanzapine = aripiprazole = brexpiprazole > ziprasidone
	• *Sedation:*	clozapine > olanzapine > quetiapine > lurasidone > risperidone > paliperidone = asenapine > aripiprazole = brexpiprazole = ziprasidone
	• *Hyperprolactinemia:*	paliperidone > risperidone > olanzapine > ziprasidone, asenapine > quetiapine > lurasidone >> brexpiprazole > aripiprazole
	• *EPS:*	risperidone > paliperidone > lurasidone = aripiprazole = brexpiprazole = asenapine = ziprasidone > olanzapine >> quetiapine

DRUG NAME** + *Available dosage forms*	CLINICAL INDICATIONS	DOSE*** (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	BOXED WARNING	COMPLICATIONS / PRECAUTIONS
aripiprazole (Abilify®): tablet, oral solution, oral disintegrating tablet	Psychosis Bipolar disorder, mania / mania with depressive episodes Aggression/irritability in Autism Spectrum D/O Tourette D/O	2 – 30 Age ≥ 4: Initial 2 Age 4 – 11: Max 15 Age ≥ 12: Max 30 Tourette D/O: Wt < 50 kg: Max 10 Wt ≥ 50 kg: Max 20	1 x/d	Nausea, vomiting weight gain, restlessness, psychomotor activation Higher rates of akathisia	↑ nausea, hypotension Risk of impulse control disorder (including pathological gambling, increased libido, hypersexuality shopping, eating)	Increased risk of suicidal thoughts and behavior in short-term studies in children, adolescents, and young adults with major depressive D/O and other psychiatric D/O	**Complications:** - NMS - Withdrawal dyskinesis **Precautions:** - Liver disease - Respiratory distress - Pregnancy & breast feeding - Rare cases of DRESS: fever with rash, swollen lymph glands, face swelling - Requires immediate medical attention - Rare, but possible increase in risk of unexplained sudden death - Causality not established yet
quetiapine (Seroquel®): Tablet (crushable), XR tablet (do not crush)	Psychosis Bipolar disorder, mania	12.5 – 800 Age 5 – 9: Initial 12.5 – 25 Max 400 Age 10 – 17: Initial 25 mg **2x/d** Max 800	1 – 3 x/d XR: 1 x/d	Weight gain, ↑ lipids, ↑ glucose	Least EPS, ↑ prolactin, moderate hypotension XR formulation: Take while fasting or with a light meal (≤ 300 calories meal), preferably in the evening		

DRUG NAME** + *Available dosage forms*	CLINICAL INDICATIONS	DOSE*** (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	BOXED WARNING	COMPLICATIONS / PRECAUTIONS
lurasidone (Latuda®): tablet	Psychosis Bipolar I Depression, monotherapy	20 – 80 Psychosis (13 – 17 y/o): 40 – 80 Bipolar I Depression (10 – 17 y/o): 20 – 80	1 – 2 x/d	Dyspepsia, sedation, wt gain, nausea, ↑ glucose EPS / TD	Take with food (> 350 calorie meal) **Contraindication:** - Avoid use with strong CYP3A4 inhibitors/inducers		**Complications:** - NMS - Withdrawal dyskinesis **Precautions:** - Liver disease - Respiratory distress - Pregnancy & breast feeding - Rare cases of DRESS: fever with rash, swollen lymph glands, swelling of the face - Requires immediate medical attention - Rare, but possible increase in risk of unexplained sudden death - Causality not established yet
clozapine (Clozaril®): tablet, oral disintegrating tablet, oral solution (Versacloz – *brand only*)	Treatment resistant psychosis Bipolar disorder Tardive dyskinesia Severe EPS	6.25 – 600 Age 8 – 11: Initial 6.25 – 12.5 Max 150 – 300 Age ≥ 12: Initial 6.25 – 25 Max 600	1 – 2 x/d	Agranulocytosis, seizures, constipation, gastrointestinal hypomotility, salivation, myocarditis, akathisia, enuresis, risk for pulmonary embolism	- Consider when patient fails ≥ 2 trials of antipsychotics at adequate dose/duration - Target serum clozapine level of ≥ 350 ng/mL for optimal efficacy **Contraindications:** - Myelosuppression - Uncontrolled seizure disorder	- Severe neutropenia - Seizures - Orthostasis, bradycardia, syncope - Myocarditis, cardiomyopathy Mitral valve incompetence	
olanzapine (Zyprexa®): tablet, oral disintegrating tablet, IM injection	Psychosis Bipolar disorder	1.25 – 20 Age 4 – 5: Initial 1.25 Max 12.5 Age 6 - 12: Initial 2.5 Max 20 Age ≥ 13: Initial 2.5 – 5 Max 20	1 – 2 x/d	Highest risk: wt gain, ↑ lipids, ↑ glucose, sedation, hypotension, tachycardia, respiratory depression Weight gain, ↑ lipids, ↑ glucose, ↑ prolactin, tachycardia, restlessness EPS / TD	Not recommended to try as first-line treatment option due to high risk of significant weight gain (diabetes, hyperlipidemia)	None related to youth	

RUG NAME** + *Available dosage forms*	CLINICAL INDICATIONS	DOSE*** (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	BOXED WARNING	COMPLICATIONS / PRECAUTIONS
risperidone (Risperdal®): Tablet (crushable), oral disintegrating tablet, oral solution	Psychosis Bipolar disorder, mania / mania with depressive episodes Aggression/irritability in Autistic Spectrum D/O Tourette D/O	0.25 – 6 Age 4 – 5: Wt < 20 kg: Initial 0.25 Wt ≥ 20 kg: Initial 0.5 Age ≥ 6: Initial 0.5 Age 4 – 11: Max 3 Age ≥ 12: Max 6	1 – 2 x/d	Weight gain, ↑ lipids, ↑ glucose, ↑ prolactin, tachycardia, restlessness, hypotension (high risk) Highest risk of EPS / TD and hyperprolactinemia			**Complications:** - NMS - Withdrawal dyskinesis **Precautions:** - Liver disease - Respiratory distress - Pregnancy & breast feeding - Rare cases of DRESS: fever with rash, swollen lymph glands, swelling of the face → Requires immediate medical attention - Rare, but possible increase in risk of unexplained sudden death → Causality not established yet
paliperidone (Invega®): ER tablet (do not crush)	Psychosis	3 – 12 Age ≥ 12: Initial 3 Wt < 51 kg: Max 6 Wt ≥ 51 kg: Max 12	1x/d	Weight gain, ↑ lipids, ↑ glucose, ↑ prolactin, somnolence, tachycardia EPS / TD	- Active metabolite of risperidone - Limited hepatic metabolism - Potential for ghost tablet in stool		

DRUG NAME** + *Available dosage forms*	CLINICAL INDICATIONS	DOSE*** (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	BOXED WARNING	COMPLICATIONS / PRECAUTIONS
ziprasidone (Geodon®): capsule, IM injection	Psychosis Bipolar disorder	20 – 160 Age 10 – 17: Initial 20 Wt ≤ 45 kg: Max 80 Wt > 45 kg: Max 160	1 – 2 x/d	Nausea, headache, prolongation of QTc EPS / TD	- Take with food (≥ 500 calorie meal) - Lowest risk of: wt gain, EPS, hypotension, sedation **Contraindications (CI):** - Avoid use in patients with congenital long QT syndrome, current/history of QTc prolongation, or CVD/uncompensated heart failure Avoid use with concurrent med that ↑ QTc	None related to youth	**Complications:** - NMS - Withdrawal dyskinesis **Precautions:** - Liver disease - Respiratory distress - Pregnancy & breast feeding - Rare cases of DRESS: fever with rash, swollen lymph glands, swelling of the face → Requires immediate medical attention - Rare, but possible increase in isk of unexplained sudden death → Causality not established yet
brexpiprazole (Rexulti®): tablet (*brand only*)	Psychosis	0.5 – 4 Age 13 – 17: Initial 0.5 Max: 4	1x/d	Weight gain,↑ lipids, ↑ glucose EPS / TD	- Risk of impulse control disorder (including pathological gambling, increased libido, hypersexuality, shopping, eating)	None related to youth with psychosis	
asenapine (Saphris ®): sublingual tablet	Bipolar Disorder, acute manic and mixed episodes	5 – 20 Age ≥ 10: Initial 2.5 2x/d Max 10 2x/d	2x/d	Sedation, Weight gain, ↑ lipids, ↑ glucose EPS / TD	- Only available SL - Do not eat or drink for at least 10 minutes after administration	None related to youth	

Not approved for children/adolescents and insufficient evidence: **cariprazine (Vraylar®), Iloperidone (Fanapt®), lumateperone (Caplyta®)**

* *Not indicated for insomnia*
** *Common brand name is indicated for convenience. No preference is implied*
*** *Maximum doses based on literature*

EPS *Extrapyramidal Symptoms*

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NMS *Neuroleptic Malignant Syndrome*
DRESS *Drug Reaction with Eosinophilia and Systemic Symptoms*
AIMS *Abnormal Involuntary Movement Scale*

LONG-ACTING ANTIPSYCHOTIC INJECTIONS

A. Criteria for Use:

1. Must demonstrate positive response and tolerability to oral form of medication
2. No history of NMS
3. Maintenance antipsychotic therapy
4. Prevention of non-adherence related relapse
5. Effective medication delivery (if oral/GI delivery is not feasible)
6. **Insufficient data to support use under age 18**

B. Medical Work-up and Follow-up:
Refer to oral formulation of drug

C. Complications/Precautions:
Refer to oral formulation of drug

D. Adverse Effects:
Refer to oral formulation of drug

DRUG	FORMULATION	STRENGTHS SUPPLIED	DOSE (mg/d)	DOSAGE SCHEDULE	PO OVERLAP	SPECIAL CONSIDERATIONS
haloperidol decanoate (Haldol Decanoate®)	esterified with decanoic acid, (sesame) oil base	50 mg/mL 100 mg/mL	50 - 200	4 weeks	3 - 4 weeks	Additional contraindication: Hypersensitivity to sesame oil Similar warnings and side effects as oral haloperidol Less frequent EPS Inflammation & nodule at injection site especially with 100mg/mL concentrations (less common if deltoid used and 50mg/ml concentration is used) Do not administer more than 3 mL per injection
fluphenazine decanoate (Prolixin Decanoate®)	esterified with decanoic acid, (sesame) oil base	25 mg/mL	12.5 - 40	2 - 4 weeks	Varies (0-2 weeks)	Additional contraindication: Hypersensitivity to sesame oil Similar warnings and side effects as oral fluphenazine More frequent EPS (up to 50%) due to early peak serum level, dermatological reaction been reported, EKG changes in some patients, hematologic changes within normal variation Fluphenazine decanoate is contraindicated for use in children under 12 years of age
risperidone (Risperdal-Consta®)	encapsulated microspheres, aqueous base	12.5 mg/vial 25 mg/vial 37.5 mg/vial 50 mg/vial *must draw up entire vial	12.5 - 50	2 weeks	3 weeks	Similar warnings and side effects as oral risperidone Akathisia & parkinsonism (7%), hyperkinesia (12%), pain, redness, swelling at injection site (<5%)
paliperidone palmitate (Invega Sustenna®)	multi-sized particles in nanosuspension, aqueous base	39 mg/0.25mL 78 mg/0.5mL 117 mg/0.75mL 156 mg/mL 234 mg/1.5 mL	39 - 234	4 weeks	1 - 2 weeks	Need to initiate with 234 mg on day 1, then 156 mg on day 8 (both loading doses should be given in deltoid for optimal absorption) Similar warnings and side effects as oral paliperidone Induration, redness, swelling at injection site (>7%)
aripiprazole monohydrate (Abilify Maintena®)	lyophilized, aqueous base	300 mg 400 mg in prefilled syringes or vials	200 - 400	4 weeks	2 weeks	Similar warnings and side effects as oral aripiprazole Weight gain, akathisia, injection site pain, sedation Usual dose 400 mg, but adjusted to 200-300 mg if on concurrent CYP3A4/2D6 inhibitors
aripiprazole lauroxil (Aristada®)	non-ester prodrug of aripiprazole, aqueous base	441 mg/1.6 mL 662 mg/2.4mL 882 mg/3.2 mL 1064 mg/3.9 mL	441-1064	4 - 8 weeks	3 weeks	Gluteal IM administration only for doses >441 mg Similar warnings and side effects as oral aripiprazole Akathisia, pain, induration, swelling, redness at injection site (<4%) *Oral overlap: 1 day if given with Aristada initio 675mg and 30mg PO

ANTIPARKINSON / ANTICHOLINERGICS

A. Clinical Indications For Use:
medication induced extrapyramidal dysfunctions (Parkinson's syndrome, dystonia, akathisia, dyskinesia)

B. Frequency of Dose Change:
1. if clinically indicated
2. may be withdrawn after a few days to 3 months of use to observe for EPS and assess need for use.

C. Concomitant Medication Use:
1. use only one of this class at a time
2. avoid use with other parasympatholytic agents (TCA's, low potency antipsychotics)

D. Complications & Side Effects:
1. confusion, disorientation, delirium, hallucinations, cognitive dulling, impaired memory
2. constipation, visual accommodation, tachycardia, xerostomia, pupillary dilatation, flushed-dry-hot skin, headache, coma, death
3. worsening of pre-existing psychotic symptoms
4. aggravation of asthma
5. abuse potential: may produce a “buzz”
6. hyperthermia

E. Cautions/Contraindications:
1. age < 3 y/o
2. exposure to heat, severe physical stress
3. closed angle glaucoma
4. obstructive bowel d/o, megacolon

F. Medical Work-up:
1. none suggested

G. Medical Follow-up:
1. if clinically indicated

DRUG (Common brand name is indicated for convenience. No preference is implied.)	DOSE (mg/d)	DOSAGE SCHEDULE	SPECIAL CONSIDERATIONS
benztropine (Cogentin®)	0.25 - 6	1-2 x/d	available by injection
Trihexyphenidyl (Artane®)	0.50 - 6	2-3 x/d	abuse potential

ANTIHISTAMINES

A. Clinical Indications For Use:
1. Anxiolytic/sedative/hypnotic
2. allergic reactions
3. motion sickness

B. Frequency of Dose Change;
daily as indicated

C. Complications & Side Effects:
See Antiparkinson / Anticholinergic

D. Concomitant Medication Use:
1. avoid use with other parasympatholytic agents (TCA's, low potency antipsychotics)
2. avoid MAOI's
3. potentiates barbiturates, alcohol, tranquilizers, opiates

E. Cautions/Contraindications:
1. See Antiparkinson / Anticholinergic
2. age < 1 y/o

F. Medical Work-up:
1. none suggested

G. Medical Follow-up:
1. if clinically indicated

DRUG (Common brand name is indicated for convenience. No preference is implied.)	DOSE (mg/d)	DOSAGE SCHEDULE	SPECIAL CONSIDERATIONS
Diphenhydramine (Benadryl®)	12.5 - 150	1-4 x/d	tablet, capsule, liquid, IM or IV
hydroxyzine pamoate (Vistaril®) hydroxyzine HCl (Atarax®)	12.5 - 300	1-4 x/d	capsule, tablet, syrup

A. Clinical Indications for Use:
1. Attention-Deficit/Hyperactivity Disorder
2. attention deficit symptoms associated with other mental disorders

B. Frequency of Dose Change:
No more than two (2) changes in any 7-day period

C. Concomitant Medication Use:
1. only one psychostimulant at any one time
2. caution with venlafaxine, bupropion, atomoxetine, and viloxazine due to additive cardiovascular effects. Only consider use if trials of individual med have failed
3. no MAO inhibitors
4. CYP2D6 inhibitors may increase levels of amphetamine and dextroamphetamine (refer to CYP chart)

D. Complications & Side Effects:
1. insomnia, agitation, irritability, hyperactivity
2. increased heart rate & blood pressure
3. decreased appetite, weight loss, delayed or decreased growth (see footnote)
4. exacerbation of obsessions and compulsions
5. dyskinetic movements/tics
6. depression, mood lability
7. psychosis
8. withdrawal effect or rebound phenomena
9. peripheral vasculopathy

E. Cautions/Contraindications:
1. alcohol or drug use (not absolute Cx)
2. anorexia nervosa
3. psychoses
4. severe anxiety
5. hx of cardiovascular disease or family hx of cardiovascular disease, including structural heart defects, or unexplained sudden death

E. (cont'd) Cautions/Contraindications:
6. thyroid disease
7. glaucoma
8. pregnancy & breastfeeding
9. allergy to the medication

F. Medical Work-up:
1. physical exam (incl. ht, wt, BMI on growth chart
2. assess for cardiac risk factors (see E.5)
3. cardiac evaluation as indicated

G. Medical Follow-up:
1. BP, pulse: periodic or when clinically indicated
2. no less than every 3 months: height, weight, & BMI (growth chart)
3. annual: physical exam

DRUG*	DURATION OF EFFECT	DOSE** (mg/d)	DOSAGE SCHEDULE	SPECIAL CONSIDERATIONS[A,B,C]
SHORT ACTING				
dextroamphetamine[G]- tab (Zenzedi®, ProCentra®)	4-5 hours	2.5 - 60	1-3 x/d	ProCentra® avail in liquid form
amphetamine salts[G]- tab (Adderall®)*	4-5 hours	2.5 - 60	1-3 x/d	
amphetamine- tab, dissolving tab (Evekeo®, Evekeo ODT®)	4-6 hours	2.5 - 40	1- 3x/d	
methylphenidate[G] - tab (Ritalin®, Methylin®)	4-5 hours	2.5 - 100	1-3 x/d	Methylin® avail in liquid and generic avail in chewable tab
dexmethylphenidate[G]- tab (Focalin®)	3-5 hours	2.5 - 50	1-3 x/d	

DRUG*	DURATION OF EFFECT	DOSE** (mg/d)	DOSAGE SCHEDULE	SPECIAL CONSIDERATIONS[A,B,C]
INTERMEDIATE ACTING				
methylphenidate- tab (Metadate ER®, Methilyn ER®)	6-8 hours	2.5 - 100	1-2 x/d	Must be swallowed whole
methylphenidate CD- capsule (generic only)	8-9 hours	10 - 100	Once daily	Sprinkle on food as long as bead swallowed whole
methylphenidate[G] - capsule (Ritalin LA®)	8-10 hours	10 - 100	Once daily	Sprinkle on food as long as bead swallowed whole
methylphenidate- chewable tab (Quillichew ER®)	8-10 hours	10 - 100	Once daily	
dextroamphetamine[G]- capsule (Dexedrine Spansules®)		5 - 60	1-2x/d	
LONG ACTING				
methylphenidate- patch (Daytrana®)	as long as patch applied + up to 3 hours	10 - 30	Once daily for 9 hrs	Skin irritation, remove after 9 hours; risk of persistent loss of skin color (chemical leukoderma)
methylphenidate[G] - capsule (Concerta®)	8-12 hours	18 - 72	Once daily	Must be swallowed whole. Inert portion of tablet may appear in stool
methylphenidate- capsule (Aptensio XR®)	8-12 hours	10 - 100	Once daily	Can sprinkle on food as long as bead swallowed whole
methylphenidate- liquid (Quillivant XR®)	8-12 hours	10 - 100	Once daily	Must be reconstituted with water.
methylphenidate - dissolving tab (Cotempla XR ODT®)	8-12 hours	17.3 - 51.8	Once daily	Must keep in blister packaging until use
methylphenidate- delayed release capsule (Jornay PM®)	10-12 hours	20 - 100	Once daily	Dosed in the evening 6:30pm - 9:30pm Time of onset is approximately 10 hours after administration Can sprinkle on food as long as bead swallowed whole
methylphenidate- capsule (Adhansia XR®)	16 hours	25 - 70	Once daily	Can sprinkle on food as long as bead swallowed whole
dexmethylphenidate/serdexmethylphenidate (Azstarys®) - capsule	13 hours	26.1/5.2 - 52.3/10.4	Once daily	Can sprinkle on food as long as bead swallowed whole
dexmethylphenidate[G]- capsule (Focalin XR®)	12 hours	5 - 50	Once daily	Can sprinkle on food as long as bead swallowed whole

DRUG*	DURATION OF EFFECT	DOSE** (mg/d)	DOSAGE SCHEDULE	SPECIAL CONSIDERATIONS[A,B,C]
LONG ACTING, Cont'd				
amphetamine- liquid (Dyanavel XR®)	13	2.5 - 20	Once daily	
amphetamine salts[G]- capsule (Adderall XR®)	10-12 hours	5 - 60	Once daily	Can sprinkle on food as long as bead swallowed whole
amphetamine salts- capsule (Mydayis ER™)	16 hours	12.5 - 25	Once daily	FDA approved in ≥ 13 YO; higher levels and more adverse effects seen in younger children Can sprinkle on food as long as bead swallowed whole
amphetamine- dissolving tab, liquid (Adzenys XR ODT®, Adzenys ER®)	10-12 hours	6.3 - 18.8 mg	Once daily	FDA labeled max dose for ≥13 YO is 12.5 mg
lisdexamfetamine- capsule, chewable tab (Vyvanse®)	10-12 hours	20 - 70	Once daily	Can be dissolved in water to drink immediately
dextroamphetamine- patch (Xelstrym®)	9-12 hours	4.5 - 18	Once daily	Remove after 9 hours; applied to hairless area on hip, upper arm, chest, upper back, or flank. May also carry risk of chemical leukoderma as post-marketing data is limited

* Common brand name is indicated for convenience. No preference is implied
****** Maximum doses based on literature
[G] Generic available
[A] Avoid acidifying/alkalizing agents such as citric products and antacids
[B] Administration with food may result in increased or decreased stimulant effects; should be consistent in dosing with or without food
[C] Many extended-release stimulants have been found to have higher levels in patients ≤ 12 years at the same dose as adolescents, leading to higher rates of adverse effects

Delayed or decreased growth: A small, reduction in adult height is possible (1-2 cm) and may be clinically significant in youth already in low growth percentiles. Greater consistency/frequency of use, higher doses, and more appetite suppression during titration are all contributing risk factors. If mild growth suppression occurs, it may be reversible upon discontinuation of stimulant.

SELECTIVE NOREPINEPHRINE REUPTAKE INHIBITORS

A. Clinical Indications for Use:
1. Attention-Deficit/Hyperactivity Disorder
2. attention deficit symptoms associated with other mental disorders

B. Frequency of Dose Adjustment:
1. viloxazine: weekly
2. atomoxetine: increase to target dose after 3 days, then may increase in 2-4 weeks if optimal benefit not achieved

C. Concomitant Medication Use:
1. caution with CYP2D6 inhibitors, as atomoxetine is a substrate
2. caution with CYP1A2 substrates as viloxazine is a strong inhibitor (duloxetine, ramelteon, melatonin, tizanidine, theophylline)

C. (Cont'd) Concomitant Medication Use:
3. caution with CYP2D6 and 3A4 substrates as viloxazine is a weak inhibitor (see CYP chart)
4. no MAOIs
5. pressor agents, albuterol increase risk of increased heart rate and blood pressure

D. Complications & Side Effects:
1. headache, insomnia, drowsiness
2. decreased appetite, nausea, abdominal pain, vomiting, constipation
3. increased heart rate & blood pressure
4. peripheral vasculopathy

E. Cautions/Contraindications:
1. suicidal thoughts/behaviors
2. activation of mania or hypomania
3. pregnancy & breastfeeding
4. allergy to the medication

E. (cont'd) Cautions/Contraindications:
5. hx of cardiovascular disease or family hx of cardiovascular disease, including structural heart defects, or unexplained sudden death

F. Medical Work-up:
1. physical exam (incl. ht, wt, BMI on growth chart)
2. assess for cardiac risk factors (see E.5)
3. cardiac evaluation as indicated

G. Medical Follow-up:
1. BP, pulse: periodic or when clinically indicated
2. no less than every 3 months: height, weight, & BMI (growth chart)
3. annual: physical exam

DRUG (Common brand name is indicated for convenience. No preference is implied)	DOSE (mg/d)	DOSAGE SCHEDULE	ADDITIONAL CAUTIONS / CONTRAINDICATIONS	SPECIAL CONSIDERATIONS
atomoxetine (Strattera®)	10 – 100	1-2 x/d	1. narrow angle glaucoma 2. rare hepatoxicity 3. delayed growth 4. urinary hesitancy/retention	FDA approved ≥6 YO Onset of effect: ~ 3 weeks High-fat food delays absorption Capsule must be swallowed whole
viloxazine ER (Qelbree®)	100 – 400	Once daily	Above cautions/contraindications may be applicable as post-marketing data is still limited	FDA approved ≥6-17 YO Can sprinkle on food as long as bead swallowed whole Onset of effect: ~ 1 week High-fat food delays absorption Has additional effects on serotonin

ALPHA-ADRENERGIC AGONISTS

A. Clinical Indications For Use:
1. Attention-Deficit/Hyperactivity Disorder
2. agitation, impulsive aggression, impulsivity
3. Tic D/O
4. PTSD

B. Frequency of Dose Change:
No more than two (2) changes in any 7-day period.

C. Concomitant Medication Use:
1. only one alpha2-adrenergic agonist at any one time.
2. no MAO inhibitors

D. Complications & Side Effects:
1. sedation
2. decreased blood pressure
3. dizziness
4. rebound hypertension on discontinuation
5. constipation
6. headache
7. dry eyes

E. Cautions/Contraindications:
1. pregnancy & breast feeding
2. hx of cardiovascular disease and family hx of cardiovascular disease or unexplained sudden death
3. dosage adjustment for renal insufficiency

F. Medical Work-up:
1. physical exam
2. EKG at baseline if positive cardiac risk factors

G. Medical Follow-up:
1. at each dosage change: orthostatic BP, pulse,
2. annual: physical exam
3. repeat EKG if clinically indicated

H. Weight-Based Dosing:
1. guanfacine ER (Intuniv®) 0.05-0.12 mg/kg/dose PO QD
2. clonidine ER (Kapvay®) 0.003 – 0.005 mg/kg/day divided bid

DRUG (Common brand name is indicated for convenience. No preference is implied.)		MAIN INDICATIONS	DOSE (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS
clonidine	(Catapres®)	see class	0.05 - 0.60	1-4 x/d		cautious use in combination with psychostimulants
	patch (Catapres®) TTS-1, 2 or 3	see class	0.10 - 0.60	1 patch/wk	localized dermatitis fatal overdose if ingested	cautious use in combination with psychostimulants
	extended release (Kapvay®)	see class	0.1 – 0.4 (see weight-based dosing above)	1-2 x/d	URI sxs; mood sxs, irritability, sore throat, trouble sleeping (insomnia), nightmares, change in mood, and ear pain	adjunctive tx with psychostimulants
guanfacine	(Tenex®)	see class	1 - 4.0	1-3 x/d		cautious use in combination with psychostimulants
	extended release (Intuniv®)	see class	1-7 (see weight-based dosing above)	1-2 x/d		adjunctive tx with psychostimulants
prazosin	capsule	night-mares (PTSD)	1-4	QHS	palpitations, nausea, syncope, edema, floppy iris syndrome, priapism	start lowest dose for risk of orthostatic hypotension

TRICYCLIC ANTIDEPRESSANTS*

A. Warnings for Concomitant Medication Use:

1. Contraindicated in use with or within 14 days of discontinuing MAOI
2. Risk of serotonin syndrome with linezolid
3. Drugs that cause QT prolongation

B. Frequency of Dose Change:
No more than two (2) changes in any 7-day period

Medical Work-up:

1. Physical exam (including height, weight, blood pressure, pulse)
2. Labs: CBC + differential, liver enzymes, UA
3. EKG at baseline

D. Medical Follow-up:

1. Annual: Physical exam
2. EKG at steady state after each dose increase
3. If clinically indicated: Pulse, blood pressure, CBC + differential, liver enzymes, pregnancy test

DRUG NAME** + *Available dosage forms*	CLINICAL INDICATIONS	DOSE*** (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	COMPLICATIONS/ PRECAUTIONS
imipramine (Tofranil®) tablet, capsule	**FDA-approved Indication:** - Enuresis (age ≥ 6) **Other Clinical Use:** Not first line for depressive disorders	25 - 100 Max for 6-12 y/o: 2.5 mg/kg/day Enuresis: Max: 2.5 mg/kg/day or Age 6-11: 50 Age 12: 75	1-4 x/d 1 x/d for capsules	- Sedation - Dizziness - Syncope - Urinary retention - Constipation - Blurry vision - Dry mouth - ↓ seizure threshold - Weight gain	Most well-studied for enuresis in low doses Limited evidence on efficacy and safety for use in age ≤ 12 for depression May convert to imipramine pamoate capsules after reaching 75 mg/day on tablets	**Complications**: - Cardiac conduction abnormalities - Activation of mania/hypomania - Discontinuation syndrome - Overdose may be lethal - Agranulocytosis - Orthostatic hypotension **Precautions**: - Cardiac disease (including family history) - History of suicide attempts - Seizure disorder - Pregnancy - Breast feeding
desipramine (Norpramin®) tablet	Not first line for depressive disorders or ADHD	25 - 150 Max for 6-12 y/o: 3.5 mg/kg/day ADHD (age ≥ 5): Max: 3.5 mg/kg/day	1-4 x/d		Most well-studied for ADHD, sudden death reported Limited evidence on efficacy and safety for use in age ≤ 12 for depression	
amitriptyline (Elavil®) tablet	Enuresis Not first line for depressive disorders	2.5 - 150 Enuresis: Age 6-10: 25 Age ≥ 11: 50	1-4 x/d		Limited evidence on efficacy and safety for use in age ≤ 12 for depression High sedation, dry mouth and constipation	
nortriptyline (Pamelor®) capsules, oral solution	Not first line for depressive disorders	10 - 50	1-4 x/d		Limited evidence on efficacy and safety for use in age ≤ 12 for depression Least orthostasis Therapeutic blood level 60-100 ng/ml	
doxepin (Sinequan®) capsules, tablet, oral solution	Not first line for depressive disorders	10 - 100 Max: 3 mg/kg/day	1-4 x/d		Limited evidence on efficacy and safety for use in age ≤ 12 for depression Highest antihistamine effects Dilute oral solution in 120 mL of water, milk, orange, or tomato juice. Do not dilute in carbonated beverages	
clomipramine (Anafranil®) capsules	-	25 - 200 Max:3 mg/kg/day or 200 mg/d, whichever is smaller	1-4 x/d		Give with food to minimize GI upset	

** Antidepressants may increase suicidality (thoughts or behaviors) in children, teenagers and young adults when first started. Higher initial starting doses pose a greater risk of suicidality compared to lower initial starting doses (1% vs 0.5%). Depression and other serious mental illnesses are the most important causes of suicidal thoughts and actions. Not treating depression puts children, teenagers, and young adults at higher risk for suicide than treatment with antidepressants. ** Common brand name is indicated for convenience. No preference is implied *** Maximum doses based on literature*

SELECTIVE SEROTONIN REUPTAKE INHIBITORS*

A. Warnings for Concomitant Medication Use:

1. SSRIs that have a higher potential to increase the therapeutic levels of other medications
   a. fluvoxamine, fluoxetine, paroxetine
2. Contraindicated in use with or within 14 days of discontinuing MAOI
3. Washout period before starting MAOI
   a. 5 weeks after fluoxetine
   b. 2 weeks after sertraline, fluvoxamine, citalopram
   c. 1 week after paroxetine
4. No tryptophan

B. Frequency of Dose Change:

No more than two (2) changes in any 14-day period

C. Medical Work-up (Baseline):

1. Physical exam (including height, weight, BMI, blood pressure, pulse)
2. Lab: Liver enzymes, CBC + differential, UA, TSH
3. Additional labs to consider: vitamin D, B12, folate, zinc, magnesium

D. Medical Follow-up:

1. Annual: physical exam
2. If clinically indicated: CBC + differential, liver enzymes, serum sodium (hyponatremia symptoms), pregnancy test, abnormal involuntary movements, signs of abnormal bleedin

DRUG NAME** + Available dosage forms	CLINICAL INDICATIONS	DOSE*** (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	COMPLICATIONS/ PRECAUTIONS
fluoxetine (Prozac®) capsule, oral solution (mint flavor)	**FDA-approved Indications:** - Major depressive disorder (Age ≥ 8) - OCD (Age ≥ 7) **Other Clinical Uses:** - Adjunct with olanzapine in bipolar I disorder (Age ≥ 10) - Panic D/O (Age ≥ 8) - Generalized anxiety disorder (Age ≥ 7) - Social anxiety disorder (Age ≥ 7) - Bulimia nervosa (Age ≥ 12) - Separation anxiety disorder (Age ≥ 9) - Bulimia (Age ≥18)	5 - 60 Age 6 - 11: Initial 5 - 10 Age ≥ 12: Initial 10 Max: 60	1 x/d	- Nausea/Vomiting - Diarrhea - Dry mouth - Dyspepsia - Constipation - Dizziness - Drowsiness - Insomnia - Agitation, restlessness - Weight gain or loss - Anorexia - Headache - Sweating - Sexual dysfunction	Has most efficacy and safety data for use in children and adolescents Higher incidence of insomnia, dose in the morning Higher incidence of weight loss and anorexia	**Complications**: - Activation of mania/hypomania - Discontinuation Syndrome - Abnormal bleeding - Hyponatremia - QTc prolongation (citalopram, escitalopram, sertraline, fluoxetine) - Obesity - Akathisia - Serotonin syndrome (especially with concurrent serotonergic medications) **Precautions:** - Liver disease - Cardiac disease (citalopram, escitalopram, sertraline, fluoxetine) - Pregnancy - Breastfeeding
sertraline (Zoloft®) tablet, oral solution (menthol flavor, must be diluted before use)	**FDA-approved Indications:** - OCD (Age > 6) **Other Clinical Uses:** - Major depressive disorder (Age > 6) - Anxiety disorders (social, generalized, and separation anxiety, age > 7) - Panic disorder (Age > 8)	12.5 - 200 Age 6 - 12: Initial 12.5 - 25 Age 13 - 17: Initial 25 - 50 Max: 200	1-2 x/d		Give with food to minimize GI upset and improve absorption Higher incidence of nausea/vomiting and weight gain Caution in urine drug screens, reports of false positives for benzodiazepines in patients receiving sertraline	
paroxetine (Paxil®) tablet, oral suspension (orange flavor)	**Other Clinical Uses:** - OCD, panic disorder (Age > 7) - Social anxiety disorder (Age > 8)	10 - 50	1-2 x/d		Higher propensity for suicidality High risk of discontinuation syndrome, requires a slow taper	

DRUG NAME** + Available dosage forms	CLINICAL INDICATIONS	DOSE*** (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	COMPLICATIONS/ PRECAUTIONS
fluvoxamine (Luvox®) tablet, capsule (extended release)	**FDA-approved Indications:** OCD (Age ≥ 8) **Other Clinical Uses:** Anxiety disorders (social, generalized and separation anxiety, age > 6)	25 - 300 Age 8 - 11: Max 200 Age 12 - 17: Max 300	1-2 x/d IR: dose 2 x/d if daily dose >50 mg	- Nausea - Diarrhea - Dry mouth - Dyspepsia - Constipation - Dizziness - Sleep disturbance - Agitation, restlessness - Weight gain or loss - Anorexia - Headache - Sweating - Sexual dysfunction	Dose at bedtime for improved tolerability High drug interaction risk Higher incidence of weight loss, hyperkinesis Higher risk of discontinuation syndrome, requires slower taper	**Complications**: - Activation of mania/hypomania - Discontinuation Syndrome - Abnormal bleeding - Hyponatremia - QTc prolongation (citalopram, escitalopram, sertraline, fluoxetine) - Obesity - Akathisia - Serotonin syndrome (especially with concurrent serotonergic medications) **Precautions:** - Liver disease - Cardiac disease (citalopram, escitalopram, sertraline, fluoxetine) - Pregnancy - Breastfeeding
citalopram (Celexa®) tablet, oral solution (mint flavor)	**Other Clinical Uses:** - Major depressive disorder (Age ≥ 7) - OCD (Age ≥ 6) - Social anxiety disorder (Age ≥ 8)	5 – 40 Age 6 - 11: Initial 10 Age ≥ 12: Initial 20 Max: 40	1 x/d		Lower drug interaction risk QT prolongation risk increases when > 40 mg/day	
escitalopram (Lexapro®) tablet, oral solution (mint flavor)	**FDA-approved Indications:** - Major depressive disorder (Age ≥ 12) **Other Clinical Uses:** - Social anxiety disorder (Age ≥ 10) - Irritability in Autistic disorder (Age ≥ 6)	5 - 20 Age 6 - 11: Initial 5 Max 20 Age ≥ 12: Initial 10 Max 30	1 x/d		Higher incidence of weight gain Lower drug interaction risk	

***Antidepressants may increase suicidality (thoughts or behaviors) in children, teenagers and young adults during initiation. Higher initial starting doses pose a greater risk of suicidality compared to lower initial starting doses (1% vs 0.5%). Depression and other serious mental illnesses are the most important causes of suicidal thoughts and actions. Not treating depression puts children, teenagers, and young adults at higher risk for suicide than treatment with antidepressants.*

*** Common brand name is indicated for convenience. No preference is implied*

**** Maximum doses based on literature*

SEROTONIN & NOREPINEPHRINE REUPTAKE INHIBITORS*

A. Warnings for Concomitant Medication Use:

1. Contraindicated in use with or within 14 days of discontinuing MAOI
2. Risk of serotonin syndrome with linezolid

B. Frequency of Dose Change:

No more than two (2) changes in any 7-day period

C. Medical Work-up (Baseline):

1. Physical exam (including height, weight, blood pressure, pulse)
2. Labs: Liver enzymes, UA, TSH
3. Additional labs to consider: vitamin D, B12, folate, zinc, magnesium

D. Medical Follow-up:

1. Annual: Physical exam
2. Blood pressure during dosage titration
3. If clinically indicated: Pulse, blood pressure, liver enzymes, pregnancy test

DRUG NAME** + *Available dosage forms*	CLINICAL INDICATIONS	DOSE*** (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	COMPLICATIONS/ PRECAUTIONS
duloxetine (Cymbalta®) delayed-release capsules	**FDA-approved Indications:** - Generalized anxiety disorder (Age ≥ 7) - Fibromyalgia pain (Adolescents)	30 - 60 Max: 120 Fibromyalgia: Max: 60	1-2 x/d	- Headache - Insomnia - Somnolence - Fatigue - Dizziness - Nausea - Dry mouth - Anorexia - Weight loss or gain - Skin reaction	Cymbalta® and generic capsules: Swallow whole Drizalma® Sprinkle capsules: May open and sprinkle over cool applesauce	**Complications**: - Serotonin discontinuation syndrome - Activation of mania/hypomania - Severe skin reactions - Abnormal bleeding - Hepatotoxicity - Hyponatremia - Elevated blood pressure and pulse - Serotonin syndrome (especially with concurrent serotonergic medications) **Precautions**: - History of suicide attempts - Seizure disorders - Liver disease - Pregnancy - Breastfeeding
venlafaxine (Effexor®) tablets, extended-release tablets, extended-release capsules	Third line for depressive and anxiety disorders	12.5 – 225 Max dose: Wt 20 - 33 kg: 112.5 Wt 34 - 49 kg: 150 Wt ≥ 50 kg: 225	1-3 x/d		Limited evidence on efficacy and safety for use in age <18 for anxiety disorders Higher risk for suicidality, serotonin discontinuation syndrome, nausea, and dose-related hypertension Give w/ food to minimize GI upset Extended-release tabs/caps: Swallow whole	

***Antidepressants may increase suicidality (thoughts or behaviors) in children, teenagers and young adults when first started.** Higher initial starting doses pose a greater risk of suicidality compared to lower initial starting doses (1% vs 0.5%). Depression and other serious mental illnesses are the most important causes of suicidal thoughts and actions. Not treating depression puts children, teenagers, and young adults at higher risk for suicide than treatment with antidepressants.*

*** Common brand name is indicated for convenience. No preference is implied*

**** Maximum doses based on literature*

OTHER ANTIDEPRESSANTS*

A. Warnings for **Concomitant Medication Use:**
1. Contraindicated in use with or within 14 days of discontinuing MAOI
2. Bupropion - Drugs that lower seizure threshold

B. Frequency of Dose Change:
No more than two (2) changes in any 7-day period

C. Medical Work-up:
1. Physical exam (including height, weight, blood pressure, pulse)
2. Labs: CBC, fasting lipid panel, liver enzymes, UA, TSH
3. Additional labs to consider: vitamin D, B12, folate, zinc, magnesium

D. Medical Follow-up:
1. Annual: Physical exam
2. Blood pressure during dosage titration
3. CBC periodically
4. If clinically indicated: Pulse, blood pressure, liver enzymes, pregnancy test

DRUG NAME** + *Available dosage forms*	CLINICAL INDICATIONS	DOSE*** (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	COMPLICATIONS/ PRECAUTIONS
bupropion (Wellbutrin®), bupropion SR, bupropion XL tablets	Alternative for ADHD (age ≥ 6) Not first line for depressive disorders	Initial: 3 mg/kg/day Maximum: IR: 6 mg/kg/day or 300, whichever is less SR: 400 XL: 450 Max 200 per dose for IR, SR	IR: 1-3 x/d SR: 2 x/d XL: 1 x/d	- Agitation - Headache - Insomnia - ↓ seizure threshold - Weight loss	**Contraindications:** - Seizure disorder - Eating disorder Limited evidence on dosing and safety for use in age < 18 for depression Take early in day to prevent insomnia	**Complications**: - Activation of mania/hypomania - Discontinuation syndrome **Precautions**: - History of suicide attempts - Active drug/alcohol abuse
mirtazapine (Remeron®) tablets, oral disintegrating tablets (orange flavor, 7.5 mg strength unavailable)	Not first line for depressive disorders	7.5 - 45	1 x/d	- Increased appetite - Drowsiness - Weight gain - Hyperlipidemia	**Complications**: - Agranulocytosis - Liver injury **Precautions**: - Liver disease Limited evidence on efficacy and safety for use in age <18	**Complications**: - Activation of mania/hypomania - Discontinuation syndrome - Abnormal bleeding - Hyponatremia **Precautions**: - History of suicide attempts
trazodone (Desyrel®) tablets	Insomnia Not first line for depressive disorders	25 - 400 Insomnia: Max: 200 Major depression: Max: 6 mg/kg/day	1-2 x/d	- Orthostatic hypotension - Dizziness - Sedation - Constipation	**Complications:** - QT prolongation, risk of sudden cardiac death - Priapism - Cognitive and motor impairment Reports of anxiety, irritability, dysphoria with high levels of trazodone metabolite in adolescents	

***Antidepressants may increase suicidality (thoughts or behaviors) in children, teenagers and young adults when first started. Higher initial starting doses pose a greater risk of suicidality compared to lower initial starting doses (1% vs 0.5%). Depression and other serious mental illnesses are the most important causes of suicidal thoughts and actions. Not treating depression puts children, teenagers, and young adults at higher risk for suicide than treatment with antidepressants.*

*** Common brand name is indicated for convenience. No preference is implied*

**** Maximum doses based on literature*

A. Clinical Indications For Use:

FDA-approved indications:

1. bipolar disorder (Age ≥ 7)

Other clinical uses:

1. schizoaffective disorder
2. refractory depression (as adjunct when antidepressant alone is not effective)
3. refractory impulsive aggression
4. decreases suicidality

B. Concomitant Medication Use:

1. Diuretics, ACE-Inhibitors/ARB and routine non-steroidal anti-inflammatory drugs (e.g., ibuprofen, celecoxib) usage can increase blood drug level to toxic range
2. Cautious use of serotonergic agents, concomitant mood stabilizers, and antipsychotics

C. Medical Work-up (Baseline):

1. Physical exam (including height and weight)
2. Caution should be used when prescribing mood stabilizers to females of child-bearing age. Discuss risk vs benefits for use in pregnancy and contraception options. Consider baseline pregnancy test.
3. Labs: basic metabolic panel, CBC w/ differential, urinalysis, TSH
4. Consider EKG with multiple medications and relevant history and medical conditions

D. Medical Follow-up:

1. Annual: Physical exam, basic metabolic panel (serum creatinine), CBC
2. Serum levels 5-7 days after initiation or each dosage change
3. Every 6 months: weight, serum trough level, TSH
4. If clinically indicated: pregnancy test, repeat EKG after therapeutic level achieved

AVAILABLE DOSAGE FORMS	DOSE (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	BOXED WARNING	COMPLICATIONS/ PRECAUTIONS
lithium carbonate: capsules, ER tablets lithium citrate: oral solution (intermittent availability) IR capsules can be opened and mixed with small amt of soft food or liquid for youth with swallowing difficulty	Weight 20-30 kg: Initial 600 (or 16mEq/day) Weight > 30 kg: Initial 900 (or 24mEq/day) Goal serum levels: Acute mania 0.8-1.2mEq/L Maintenance 0.8-1mEq/L	1-3 x/d	- polyuria - polydipsia - tremor - nausea/vomiting - diarrhea - decreased appetite - rash/dermatitis - thyroid abnormalities - dizziness - ataxia	Higher risk for side effects/complications for age < 13 years Caregiver should verify adequate fluid and food intake Serum levels should be collected 12 hours post-dose Lithium carbonate 300mg = lithium citrate 8mEq	Lithium toxicity - Increased risk with dehydration, significant renal dysfunction, cardiovascular disease, sodium depletion, febrile illness, elevated serum levels (>1.5 mEq/L) - Signs: ataxia, coarse tremor, vomiting, lethargy, blurred vision, slurred speech, stupor, confusion, delirium	**Complications:** - Hypothyroidism - Chronic kidney disease - Hyponatremia - EPS (with concurrent antipsychotic) - Serotonin syndrome (with concurrent serotonergic agents) **Precautions:** - Cardiovascular disease - Pregnancy - Breastfeeding

A. Concomitant Medication Use:

1. CBZ - decreases serum levels of CYP3A4 substrates (see Appendix), efficacy of hormonal contraceptives may be decreased, CBZ levels may be increased by CYP3A4 inhibitors (e.g., fluoxetine)

2. VPA – increases lamotrigine serum levels (see Appendix)

B. Medical Work-up (Baseline):

1. Physical exam (including height, weight, and blood pressure)
2. Caution should be used when prescribing mood stabilizers to females of child-bearing age. Discuss risk vs benefits for use in pregnancy and contraception options. Consider baseline pregnancy test.
3. Labs: complete metabolic panel (including liver function test), CBC w/ differential, pregnancy test
4. Consider EKG with CBZ and LTG if clinically indicated
5. Consider HLA-B*1502 (for Asian descent) and HLA-A*3101 tests for CBZ

C. Medical Follow-up:

For CBZ, VPA:

1. Annual: Physical exam, CBC w/ differential, complete metabolic panel
2. CBC w/ differential, liver function tests: q3mos for the first 6 months, then as clinically indicated
3. Serum levels: 5-7 days after initiation and dose change, then as clinically indicated
4. As clinically indicated: pregnancy test

DRUG NAME* + Available dosage forms	CLINICAL INDICATIONS	DOSE (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	BOXED WARNING	COMPLICATIONS/ PRECAUTIONS
carbamazepine (CBZ) (Tegretol®) tablets, chewable tablets (some cherry flavor), ER tablets, ER capsules, oral suspension (vanilla, citrus flavor)	**FDA-approved indication:** Seizure disorders **Other clinical uses (**not first-line): - Adjunct for maintenance treatment of bipolar disorder - Schizoaffective disorder - Impulsive aggression	100-1200 Age 6-12: Initial 200 Max 1000 Age ≥13: Initial 400 Max 1200 Therapeutic serum level: 4-12 µg/ml	2-4 x/d	- nausea/vomiting - ataxia - skin rash - dizziness - drowsiness - blurred vision	**Contraindication:** - Use with or within 14 days of discontinuing MAOI - Hypersensitivity to TCA - Bone marrow suppression **Complications**: - Hyponatremia **Precautions**: - Cardiovascular disease - Pregnancy Contents of ER capsules may be sprinkled over food (applesauce); should not be stored for later use	Risk of blood dyscrasias (anemia, agranulocytosis) Severe, sometimes fatal, dermatologic reactions (Stevens-Johnson syndrome, toxic epidermal necrolysis)	**Complications**: - Myelosuppression - Hepatotoxicity - Withdrawal seizures - CNS depression - Drug reaction with eosinophilia and systemic symptoms (DRESS) **Precautions**: - Hepatic impairment
valproic acid (VPA) capsules, oral solution (alcohol free) Divalproex sodium (Depakote®) DR tablets, ER tablets, sprinkle capsules	**FDA-approved indication:** Seizure disorders **Other clinical uses:** - Bipolar disorder - Schizoaffective disorder - Impulsive aggression	125 – 2500 Initial: 15-20mg/kg/d Max: 60mg/kg/d Therapeutic serum levels: 50-125 µg/ml	2-4 x/d	- nausea/vomiting - tremor - weight gain - sedation - headache - skin rash - transient hair loss	**Contraindication:** - Pregnancy *VPA should be generally avoided, if possible, in females of child-bearing age* **Complications**: - Polycystic ovary syndrome - Thrombocytopenia - Hyperammonemia **Precautions**: - Cardiovascular disease	Hepatotoxicity Teratogenicity (neural tube defects, decreased IQ) Pancreatitis	

					Increase dose by 10-20% if converting from VPA or divalproex sodium DR to divalproex sodium ER Serum levels should be collected 12 hours post-dose for DR tablets, 24 hours post-dose for ER tablets		

MOOD STABILIZER – antiseizure agents *(Cont'd)*

DRUG NAME* + Available dosage forms	CLINICAL INDICATIONS	DOSE (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	BOXED WARNING	COMPLICATIONS/ PRECAUTIONS
Lamotrigine (LTG) (Lamictal®) tablets, ER tablets, chewable tablets, oral disintegrating tablets (blackcurrant flavor)	**FDA-approved indication:** Adjunct for seizure disorders **Other clinical uses (**not first-line): - Monotherapy for the treatment of bipolar depression - Adjunct for maintenance treatment of bipolar disorder - Schizoaffective disorder	12.5 – 400 Age 6-12: Initial 0.3 mg/kg/d Age ≥13: Initial 25 Adjust dose and titration for concurrent inducers or inhibitors of glucuronidation See package insert for recommended titration schedule	1-2 x/d	- benign rash - headache - nausea/vomiting - abdominal pain - diarrhea - tremor - somnolence - ataxia - dizziness	Consider baseline and follow-up EKG if pre-existing cardiac condition or cardiac risk factors Concurrent use of VPA increases LTG levels by 50%; adjust LTG dose Concurrent use of agents that induce glucuronidation like CBZ or rifampin or ritonavir decreases LTG levels; increase LTG dose may be needed Concurrent use of estrogen containing oral contraceptives decreases lamotrigine levels by ~ 50%, increased lamotrigine dose needed for therapeutic effects	Serious dermatologic reactions including Stevens Johnson syndrome	**Complications**: - Blood dyscrasia - Drug reaction with eosinophilia and systemic symptoms (DRESS) - Aseptic meningitis - Withdrawal seizures **Precautions**: - Risk of arrhythmias with structural or functional cardiac condition

** Common brand name is indicated for convenience. No preference is implied.*

ANXIOLYTICS

A. Clinical Indications For Use:

1. short term: relief of anxiety & some sleep disorders
2. acute alcohol withdrawal
3. older adolescents: anxiety, tension, muscle relaxation, sleep disorders
4. younger children: pavor nocturnis, somnambulism

B. Frequency of Dose Change:

1. acute care: daily or with each dose
2. long-term Rx: adjust every 4 days

C. Concomitant Medication Use:

1. potentiated by: phenothiazines, opiates, barbiturates, MAOI's, TCA's, cimetidine
2. potentiate: hypnotics, sedatives, alcohol
3. half-life extended by: renal disease, hepatic disease, oral contraceptives, cimetidine, obesity

D. Complications & Side Effects:

1. CNS depression: fatigue, drowsiness, ataxia, confusion, respiratory depression, death
2. paradoxical: dyscontrol, disinhibition, excitation, ↑ anxiety, ↑ aggression, rage reaction, hallucinations, insomnia, nightmares

E. Cautions/Contraindications:

1. substance abuse or dependency
2. pregnancy

F. Medical Work-up:

1. physical exam (incl. ht, wt, BP, P)

G. Medical Follow-up:

2. if clinically indicated

DRUG (Common brand name is indicated for convenience. No preference is implied.)	MAIN INDICATIONS	DOSE (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	CONTRAINDICATIONS
clonazepam (Klonopin®) *	see class	0.125 - 4	1-2 x/d	see class	see class
alprazolam (Xanax®) **	see class	0.25 - 4	3-4 x/d	see class & increased risk of rebound and withdrawal reactions	see class
lorazepam (Ativan®) **	severe adjustment d/o agitation, anxiety	0.25 - 6	3-4 x/d	see class & increased risk of rebound and withdrawal reactions	see class
Gabapentin (Neurontin)	Antiseizure, anxiety, cannabis craving				
buspirone (Buspar®)	anxiety, aggression	2.5 - 90	3-4 x/d		

* long-acting

** short-acting

COMPLEMENTARY/ALTERNATIVE SUPPLEMENTS

DRUG (Common brand name is indicated for convenience. No preference is implied.)	MAIN INDICATIONS	DOSE (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	CAUTIONS/ CONTRAINDICATIONS
melatonin	insomnia	1 - 10	bedtime	dizziness, headaches, intense dreams, abdominal pain	other sedating agents poorly controlled seizures

BETA-ADRENERGIC BLOCKERS

DRUG (Common brand name is indicated for convenience. No preference is implied.)	MAIN INDICATIONS	DOSE (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	CAUTIONS/ CONTRAINDICATIONS
propranolol (Inderal®)	aggression anxiety PTSD Panic disorder	10 – 40	1-4 x/d	hypotension bradycardia depression	bronchospasm disease, cardiovascular disease, diabetes, MAOI, hypothyroidism

OPIOID BLOCKERS

DRUG (Common brand name is indicated for convenience. No preference is implied.)	MAIN INDICATIONS	DOSE (mg/d)	DOSAGE SCHEDULE	ADVERSE EFFECTS	CAUTIONS/ CONTRAINDICATIONS
naltrexone	self-injurious behavior in IDD & autism	25 – 50	1 x/d 1-2x/d	nausea, headache sedation	liver dysfunction, concurrent opioids

PHARMACOTHERAPY aka MAT FOR CO-OCCURRING SUBSTANCE USE DISORDERS*

Evidence-Based Treatment for SUD in Youth

SUD	MEDICATIONS TO CONSIDER	CHOOSING AGENTS	NOTES
Alcohol Use Disorder	Naltrexone PO, IM Acamprosate	Naltrexone: has once daily and monthly option, often well-tolerated Acamprosate: dosed TID, works better if patient is already abstinent	Most evidence for oral naltrexone in youth, however safety of IM naltrexone has been established in studies for OUD. Acamprosate has one study of only 26 patients in youth, which was retracted due to copyright.
Cannabis Use Disorder	N-acetylcysteine (NAC) Gabapentin	NAC: well tolerated, minimal side effects Gabapentin: has multiple other uses such as anxiety, pain, sleep	Most evidence for NAC in youth. Evidence for gabapentin is extrapolated from adult data.
Opioid Use Disorder	Buprenorphine SL, SQ Naltrexone PO, IM	Route of medication should be individualized per patient preference Consider buprenorphine if patient has history of physiologic dependence and/or moderate to severe OUD	Buprenorphine is FDA approved for ages 16+, case reports for SQ use in under 18. More studies of IM naltrexone in adolescents for OUD, however PO can be effective as long as patient is adherent. Patient may require support to accept injections. Encourage shared decision making.
Sedative, Hypnotic, or Anxiolytic Use Disorder	Consider adding gabapentin as an adjunct while tapering benzodiazepine/ other medication	Limited data in adolescents	Gabapentin max dose in ages 5-11 years: 50 mg/kg/day; ages 12-17 years: 2400 mg/day long-term, 3600 mg/day short-term.
Stimulant Use Disorder - Cocaine or Methamphetamines	Mirtazapine for methamphetamine use Bupropion for cocaine use	Choose agent based on concomitant symptoms and individual factors. Mirtazapine not optimal if weight gain or high triglycerides problematic. Bupropion not optimal if seizure or eating disorder history. Bupropion SR NOT recommended alone for methamphetamine use disorder, due to being outperformed by placebo in clinical trial.	Mirtazapine extrapolated from adult data, however studies have shown mirtazapine as safe in youth as an antidepressant Generally, pharmacotherapy works better with behavioral treatment. Treatment should not be withheld if a behavioral intervention is unavailable.
Tobacco Use Disorder	Nicotine patch, gum, lozenge Bupropion Varenicline	NRT: consider if patient can adhere to using gum/lozenge multiple times a day in combination with patch Bupropion: contraindicated in seizure or eating disorders Varenicline: can cause seizures Varenicline not recommended as 1st-line for smoking cessation (similar outcomes to placebo in youth study)	Best evidence for bupropion + psychosocial interventions in youth. Varenicline is FDA approved for ages 17 and up, but was studied in ages 12-17.

PHARMACOTHERAPY aka MAT FOR CO-OCCURRING SUBSTANCE USE DISORDERS*

DRUG NAME (Common brand name is indicated for convenience. No preference is implied.)	CLINICAL INDICATIONS	MAX DAILY DOSE (mg)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	COMPLICATIONS/ PRECAUTIONS
naltrexone (oral)	alcohol use disorder	25 – 50	1x/d	nausea, headache, sedation, elevated liver enzymes	may also be administered IM, though data supporting use in adolescents for AUD is mostly oral form	confirm opioid free x7-10 d liver dysfunction, obesity, concurrent opioids (precipitates withdrawal)
XR-naltrexone (Vivitrol®)	opioid use disorder	n/a	380 mg IM q 4wk	sedation; injection site reactions, headache precipitated withdrawal if opioid dependent	confirm opioid free x7-10 days: use history, urine drug screen and/or oral naltrexone challenge (or SC naloxone challenge)	concurrent opioids (precipitated withdrawal) oral form NOT recommended for OUD
acamprosate	Alcohol use disorder	1998	333-666 mg PO 3x/d	Diarrhea, pruritus, diaphoresis, insomnia, anxiety or depression, asthenia, nausea, flatulence	Can consider in patients who are using opioids or have hepatitis (when naltrexone is not an option) Dose in study of 16-19 y.o. was 666/333/333	Possible increased risk for suicidal thinking May require renal dose adjustment
N-acetylcysteine (NAC)	cannabis use disorder	Up to 2700 (1200 bid typical dose)	2x/d Start 600mg BID, need 2 months for trial	abdominal discomfort, nausea	currently available OTC	no contraindications for oral form
gabapentin (Neurontin)	Cannabis use disorder Benzodiazepine use disorder (adjunct)	3600 (1200 TID)	300-1200 mg PO 3x/d	Drowsiness, nausea, vomiting, viral infection, tremor, difficulty with coordination, swelling	May require renal dose adjustment. Better bioavailability in divided doses.	Potential for misuse, monitor for clear clinical benefit. Mild withdrawal syndrome if stopped abruptly.

DRUG NAME (Common brand name is indicated for convenience. No preference is implied.)	CLINICAL INDICATIONS	MAX DAILY DOSE (mg)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	COMPLICATIONS/ PRECAUTIONS
nicotine transdermal patch (Nicoderm CQ®)	tobacco use disorder**	7, 14, 21 >15 cigs/d start 21 < 15 cigs/d start 14	1x/d 24-hour patch	skin irritation, sleep disturbance (remove at night if sleep disturbance occurs)	available OTC (U21 requires prescription) start initial dose x6wks, then step down to lower strength patch q 2 wks	only contraindication is hypersensitivity to nicotine or other ingredients; disease related cautions include CV disease, diabetes, hyperthyroidism, though NRT safer than tobacco use
nicotine gum, lozenge*** (Nicorette®)	tobacco use disorder**	48 (2 mg dose) 96 (4 mg dose)	q 1-2 hrs **prn** x6wks, then: q 2-4 hrs **prn** x3wks, then: q4-8 hrs **prn** x3wks	gum: jaw soreness, mouth irritation, indigestion, nausea, hiccups lozenge: oral irritation, nausea, hiccups	gum: teach “chew and park” method: chew until tingle, then park btn cheek/gum; repeat q1 min lozenge: allow lozenge to slowly dissolve; do not chew or swallow Use >9 pieces/day during initial 6wk	same as patch
bupropion ER (Wellbutrin SR®)	tobacco use disorder**	300 (150 bid)	2 x/d	agitation, headache, insomnia, ↑ seizure risk	take early in day to prevent insomnia; lower doses generally less effective	elevated seizure risk (e.g. eating disorder, other Rx)
varenicline (Chantix®)	tobacco use disorder**	2 (1 bid)	start 0.5 mg qd x 3 days, then 0.5 mg bid x4 days; then 1 mg bid	drowsiness, seizures	generally 12-wk course, which may be repeated x1	renal dz, cardiovascular dz, seizures early concern for suicidality and neuropsychiatric side effects were unfounded in adults and also not evident in youth studies (*N* > 500)

DRUG NAME (Common brand name is indicated for convenience. No preference is implied.)	CLINICAL INDICATIONS	MAX DAILY DOSE (mg)	DOSAGE SCHEDULE	ADVERSE EFFECTS	SPECIAL CONSIDERATIONS	COMPLICATIONS/ PRECAUTIONS
buprenorphine-naloxone**** (Suboxone®) sublingual tablet, sublingual film	opioid withdrawal syndrome (detox) opioid use disorder (maintenance)	32 Range 6-32 (2mg/0.5mg BUP/NAL Ratio)	1-2x/d Starting dose based on severity of withdrawal symptoms	headache, insomnia, nausea, constipation, depression, withdrawal sx (either precipitated or if abrupt D/C)	extant data suggests buprenorphine is more effective than clonidine for detox and longer detox schedules recommended (e.g. 56-day superior to 28-day); <u>maintenance may have best outcomes</u>	hepatic impairment no lower age-limit when otherwise clinidal indication for treatment
buprenorphine ER (Sublocade, Brixadi)	Opioid use disorder	n/a	Brixadi 16-32 mg SQ weekly, 64-128 mg SQ monthly Sublocade 100 or 300 mg SQ monthly	Injection site reactions, hypotension, tachycardia, constipation, nausea, vomiting, dizziness	Buprenorphine 24 mg SL ~= Sublocade 100 mg ~= Brixadi 128 mg Brixadi can be given in other SQ areas, Sublocade is abdomen only.	Use not recommended in moderate to severe hepatic impairment Must be administered by healthcare professional.
naloxone (Narcan Nasal®)	opioid overdose	1-2 spray: 4mg/0.1mL (intranasal)	repeat dose if not effective after 2-3 min	Precipitated withdrawal	CA law: offer naloxone to any patient at increased risk of opioid overdose at every encounter dispensed in 2-pack with single dose in each	Call 911 upon administration due to short half-life of naloxone
mirtazapine (Remeron)	Stimulant use disorder (amphetamines)	45	30 mg PO 1x/d	Weight gain increased appetite, dry mouth, constipation, increased cholesterol	Monitor weight, BMI, and lipid panel	Rare cases of neutropenia, more common in medically complicated

*Prescribers are encouraged to utilize consultation resources to assist in clinical decision-making when needed. Prescribing in combination with behavioral interventions is recommended, but do not withhold potentially life-saving treatment if there is limited access to behavioral interventions.

**No study has been conducted to assess electronic nicotine delivery systems (ENDS) as a smoking cessation tool in youth; unlike therapies listed here, ENDS have high abuse potential

***Scant evidence for gum and lozenge in U18, though most effective nicotine replacement therapy (NRT) in adults is combination (i.e. patch + gum or patch + lozenge)

****FDA-Approved for age 16+: the ONLY medication for addiction treatment that is FDA-approved in adolescents.

BUPRENORPHINE **QUICK START**

DISCLAIMER: This document is a general guideline, there are many different ways to prescribe buprenorphine. Adapted from adult dosing

Adapted algorithm from by Los Angeles County Youth Opioid Response Physician Champions: Sid Puri, Edward Liao, Gloria Sanchez, Rebecca Trotzky 2024

***Diagnosis of Opioid Withdrawal:**

1. At least TWO clear objective signs not attributable to something else: large pupils, yawning, runny nose & tearing, sweating, vomiting, diarrhea, piloerection, tachycardia
2. Confirm with the patient they feel "bad" withdrawal and ready to start bup
3. Consider using COWS, start if COWS >=8 with 2 objective signs

****Bup Dosing Tips:**

1. Shared decision making with the patient
2. If patient has heavy dependence or tolerance, they may need higher doses of bup
3. Lower dependence/tolerance may do well on lower doses of bup

Outpatient Self-Start Bup:
See also #1 under additional resources at bottom left

1. Stop using and wait until you feel very sick (at least 12 hours from last use, 24 hours for fentanyl or other long-acting opioid)
2. Give yourself bup 8-16 mg SL
3. After 1 hr, repeat a dose of bup 8-16 mg SL
4. The next day, take bup 16-32 mg SL at once
5. If it went well, repeat steps 2-4. If not, consult your doctor to find a dose that works for you

Example 2 week Rx:

Bup/nalox 8/2 mg film 2 film SL daily #28, 1 refill. Ok to substitute

Additional Resources for Buprenorphine Induction:

1. Detailed patient friendly guide using 4 mg increments --> https://www.asam.org/docs/default-source/education-docs/unobserved-home-induction-patient-guide.pdf
2. Quick start guide with more detail for providers --> https://www.samhsa.gov/sites/default/files/quick-start-guide.pdf

Behavioral Health Support and Referrals:

1. DMH Help-Line: 1-800-854-7771
2. The California Smokers' Helpline: 800-NO-BUTTS or CaliforniaSmokersHelpline.org
3. Youth who are pregnant and parenting: 844-37-MAMAS
4. LA County Substance Abuse Service Helpline (SASH) 844-804-7500

APPENDIX

PHARMACOKINETIC DRUG INTERACTIONS – CYTOCHROME P450 ENZYME METABOLIZING SYSTEM*

- Substrate: a psychotropic drug that is metabolized by a P450 CYP isoenzyme
- Inhibitor: coadministration of this drug and any substrate in isoenzyme (3A4, 2D6, 1A2) category would result in ↑ substrate levels
- Inducer: coadministration of this drug and any substrate in isoenzyme (3A4, 2D6, 1A2) category would result in ↓ substrate levels

3A4			2D6			1A2		
Substrate	**Inhibitor**	**Inducer**	**Substrate**	**Inhibitor**	**Inducer**	**Substrate**	**Inhibitor**	**Inducer**
alprazolam aripiprazole carbamazepine clonazepam eszopiclone guanfacine lurasidone nefazodone olanzapine pimozide quetiapine ritonavir sertraline trazodone zaleplon ziprasidone zolpidem	fluoxetine fluvoxamine *grapefruit juice* macrolide nefazodone ritonavir	phenobarbital phenytoin rifampin ritonavir *smoking* St. John's wort oxcarbazepine carbamazepine	aripiprazole atomoxetine clozapine dextroamphetamine duloxetine fluphenazine haloperidol mixed amphetamine salts pimozide risperidone TCA trazodone venlafaxine	bupropion cimetidine duloxetine fluoxetine haloperidol paroxetine ritonavir sertraline TCA	carbamazepine phenobarbital phenytoin rifampin ritonavir	amitriptyline caffeine clomipramine clozapine desipramine diazepam haloperidol imipramine	cimetidine ciprofloxacin duloxetine fluoxetine fluvoxamine *grapefruit juice* isoniazid levofloxacin sertraline viloxazine	phenobarbital phenytoin rifampin ritonavir *smoking*

Other Common Mood Stabilizer Pharmacokinetic Drug interactions		
Interacting drugs	**Mechanism**	**Recommendation**
lamotrigine & valproate	valproate inhibits glucuronidation	Give ½ lamotrigine dose: monitor more closely for rash.
valproate & aspirin	aspirin ↑ free valproate levels	Give acetaminophen instead of aspirin.
lithium & NSAID	NSAID ↓ clearance of lithium	Give acetaminophen instead of NSAID.

* Partial List

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