



Michigan Child Collaborative Care Program

Psychopharmacology Reference Cards



MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

DEPARTMENT OF PSYCHIATRY

Antidepressants (1)‡

Generic (Trade)	S: start dose(mg) T: target dose (mg/day)	Titration Schedule	Formulations (mg)	t 1/2 (hr)	FDA Approved in Youth ¹	N: notes; S: side effects; R: risks All: Black Box Warning for SI
Fluoxetine (Prozac)	S: 5-10 T: 20-60 [§]	5-10 mg q 2 weeks	tab : 10, 20, 60 cap : 10, 20, 40 weekly cap : 90 liq : 4mg/mL	96-384	≥7y OCD ≥8y MDD ≥10y Bipolar depression, in combo w/ olanzapine (Puvule capsule only)	N: Long titration / washout = self-tapering N: CYP 2D6 inhibition S: Behaviorally activating
Sertraline (Zoloft)	S: 12.5-25 T: 50-200 [§]	25 mg q 2 weeks	tab : 25, 50, 100 liq : 20mg/mL	26	≥6y OCD	
Escitalopram (Lexapro)	S: 2.5-5 T: 10-30	5-10 mg q 2 weeks	tab : 5, 10, 20 liq : 1mg/mL	27-32	≥12y MDD	N: Few CYP interactions
Fluvoxamine (Luvox)	S: 12.5-25 T: 50-200 [§]	25 mg q 2 weeks	tab : 25, 50, 100	16	≥8y OCD (immediate release only)	N: CYP 2C9 inhibition
Citalopram (Celexa)	S: 5-10 T: 20-40	10 mg q 2 weeks	tab : 10, 20, 40 liq : 2mg/mL	35	--	N: Few CYP interactions R/S: ↑QTc risk >40mg
Bupropion (Wellbutrin)	S: 37.5-75 T: 150-300	37.5 – 75 mg q 2 weeks	tab : 75, 100 er : 100, 150, 174, 200, 300, 348, 450, 522	21-37	--	N: Behaviorally activating; used to augment SSRI, treat ADHD R/S: ↑Anxiety, ↑SZ risk
Trazodone (Desyrel)	S: 25 T: 50-100	25 mg weekly	tab : 50, 100, 150, 300 er : 150, 300	10	--	N: Use for insomnia R/S: Priapism
Mirtazapine (Remeron)	S: 7.5-15 T: 15-30	7.5 mg q 2 weeks	tab : 7.5, 15, 30, 45 dis : 15, 30, 45	20-40	--	N: Used to augment SSRI, treat insomnia S: Stimulates appetite R: ↑Appetite / wgt gain
Duloxetine (Cymbalta)	S: 20 T: 30-60	20 mg q 2 weeks	dr : 20, 30, 40, 60	12	≥7y GAD	N: Limited evidence supporting use for depression in children

‡Some also used for anxiety and chronic pain, [§]Higher doses needed for OCD. CYP = Cytochrome P450 proteins;

tab = tablet; **cap** = capsule; **liq** = oral liquid, **er** = extended release, **dr** = delayed release.

¹Only psychotropic use approvals are listed. Medications may have other approvals in youth.

Antidepressants (2)[‡]

Generic (Trade)	S: start dose (mg) T: target dose (mg/day)	Titration Schedule	Formulations (mg)	t 1/2 (hr)	FDA Approved in Youth ¹	N: notes; S: side effects; R: risks All: Black Box Warning for SI
Paroxetine ** (Paxil)	S: 5-10 T: 10-40	5-10 mg q 2 weeks	tab : 10, 20, 30, 40 er : 12.5, 25, 37.5 liq : 2mg/mL	21	--	N: ↓Lit. support in minors; anxiolytic, CYP interaction R: ↑SI risk among SSRIs
Venlafaxine ** (Effexor)	S: 25-37.5 T: 150-300	25 mg q 2 weeks	tab : 25, 37.5, 50, 75, 100 er cap : 37.5, 75, 150 er tab : 37.5, 75, 150, 225	5-11	--	N: ↓Lit. support in minors S/R: Hypertension risk Marked withdrawal (vertigo, n/v, paresthesia, headache) on abrupt discontinuation
Desvenlafaxine * (Pristiq)	S: 50 T: 100	25 mg q 2 weeks	er tab : 25, 50, 100	11	--	N: ↓Lit. support in minors S: Hypertension risk
Buspirone (Buspar)	S: 2.5-5 BID T: 5-15 TID	5 mg q 2-3 days	tab : 5, 7.5, 10, 15, 30	2-4	--	N: 3-6 weeks for effect Substrate of CYP3A4
Vilazodone * (Viibryd)	S: 10 T: 40	10 mg q 2 weeks	tab : 10, 20, 40, 10-20	25	--	N: ↓ Lit. support in minors SSRI + partial 5HT1a agonist; substrate of CYP3A4
Gabapentin (Neurontin)	S: 100 BID T: 300-600 BID	100 – 300 mg q 3-4 days	cap : 100, 300, 400 tab : 600, 800; er : 300, 600 liq : 250mg/5mL	5-7	--	N: Used for anxiety and chronic pain. R: Decrease dosing in renal impairment Start: 10-15mg/kg/d divided TID Max: 40mg/kg/d up to 2400mg TDD
Vortioxetine * (Trintellix)	S: 5-10 T: 20	5 mg q 2 weeks	tab : 5, 10, 20	66	--	N: ↓Lit. support in minors

[‡]Some also used for anxiety and chronic pain. *Limited data for use in children. **Typically not recommended in minors.
CYP = Cytochrome P450 proteins; **tab** = tablet; **cap** = capsule; **liq** = oral liquid, **er** = extended release, **dr** = delayed release.

¹Only psychotropic use approvals are listed. Medications may have other approvals in youth.

Antipsychotics/Neuroleptics

Generic (Trade) RDE	S: start dose (mg) T: target dose (mg/day)	Titration Schedule	Formulations (mg)	Peak (hr)	t 1/2 (hr)	FDA Approv in Youth ¹	N: notes; S: side effects; R: risks
Risperidone (Risperdal) 2	S: 0.25-1 T: 0.5-4	0.25 – 0.5 mg weekly	ir : 0.25, 0.5, 1, 2, 3, 4, liq : 1 mg/ml sl : 0.5, 1, 2, 3, 4 dp : 12.5, 25, 37.5, 50 mg	1-2	20-30	≥13y schizophrenia ≥10y mania/mixed ≥5y irritable (ASD; oral only)	R: ↑Prolactin, metabolic
Aripiprazole (Abilify) 7.5	S: 2-5 T: 2-30	2-5 mg q 2 weeks	ir : 2, 5, 10, 15, 20, 30, liq : 1 mg/ml sl : 10, 15 im : 7.5mg/ml	3-5	50-72	≥6y agitation (ASD) ≥10y bipolar mania ≥13y schizophrenia ≥6y Tourette's	R: Akathisia
Ziprasidone (Geodon) 60	S: 20 qd T: 20-60 bid	20 mg q 3-4 days	ir : 20, 40, 60, 80 im : 20mg/ml	5	5-7	--	N: Take with food R: ↑QTc, akathisia
Quetiapine (Seroquel) 75	S: 12.5-50 T: 50-750	12.5 – 25 mg q 3-4 days	ir : 25, 50, 100, 200, 300, 400 xr : 50, 150, 200, 300, 400	2	6-7	≥13y schizophrenia (ir formulation) ≥10y bipolar	S: Sedation
Olanzapine (Zyprexa, Zydys) 5	S: 2.5-5 T: 2.5-20	2.5 mg q 2 weeks	ir : 2.5, 5, 7.5, 10, 15, 20 sl : 5, 10, 15, 20 (Zydys) im : 10mg vial dp : 210, 300, 405 mg	6	21-54	≥13y schizophrenia ≥10y mania/mixed ≥10y adjunct for bipolar depression	S: Most weight gain, sedation R: Hypotension (w/ EtOH / BZDs)
Paliperidone (Invega) 3	S: 3 T: 3-12	1.5 mg q 2 weeks	ir : 1.5, 3, 6, 9 dp : 39, 78, 156, 234 mg	24	21-30	≥12y schizophrenia	R: ↑Prolactin
Lurasidone (Latuda) 40	S: 20 T: 20-80	20 mg weekly	ir : 20, 40, 60, 80, 120	1-3	18	≥13y schizophrenia ≥10y bipolar depression	N: Take with food R: Akathisia
Haloperidol (Haldol) 2	S: 0.25-1 T: 1-6	0.25 – 0.5 mg weekly	ir : 0.5, 1, 2, 5, 10, 20, liq : 2 mg/ml im : 5mg/ml dp : 50, 100mg/ml	2-6	12-22	≥3y schizophrenia ≥3y disruptive d/o ≥3y Tourette's ≥3y hyperactive behavior	R: ↑EPS/NMS
Pimozide (Orap) 1.5		1 mg q 2 weeks	ir : 1, 2	7	55	≥12y Tourette's	R: ↑EPS/NMS, ↑QTc

ir = immediate release; **xr** = extended release; **sl** = sublingual, **liq** = oral liquid, **im** = intramuscular, **dp** = depot; **RDE**= Relative Dose Equivalence (mg); **EPS** = Extrapyramidal Symptoms; **NMS** = Neuroleptic Malignant Syndrome; **ASD** = Autism Spectrum Disorder;

Metabolic risk with all antipsychotics = ↑Wgt, ↑lipids, ↑HgA1c, ↑fasting glucose

¹Only psychotropic use approvals are listed. Medications may have other approvals in youth.

Antipsychotics/Neuroleptics (cont.)

Generic (Trade)	S: start dose (mg) T: target dose (mg/day)	Titration Schedule	Formulations (mg)	Peak (hr)	t 1/2 (hr)	FDA Approv in Youth ¹	N: notes; S: side effects; R: risks
Brexiprazole (Rexulti)	S: 1 T: 2-4	0.25 – 0.5 mg q 2 weeks	0.25, 0.5, 1, 2, 3, 4	4	91	--	R: SI, TD, leukopenia, akathisia
Asenapine (Saphris)	S: 2.5-5 T: 10-20	2.5 mg weekly	sl: 2.5, 5, 10	0.5-1.5	24	≥10y bipolar 1	R: Akathisia, TD
(O)Olanzapine- (F)Fluoxetine (Symbyax)	S: (O) 3 (F) 25 T: (O) 6 (F) 25	q 2 weeks	(O:F), 3:25, 6:25, 6:50, 12:25, 12:50	4 h (O) 6 h (F)	192	≥10y bipolar depression	N: Not evaluated in doses >12 mg (O) /50 mg (F) in children

¹Only psychotropic use approvals are listed. Medications may have other approvals in youth.

Starting and Monitoring Antipsychotics in Children ¹

	Baseline	qVisit	qTitration	@3 Mo.	q6 Mo.	qYear
Patient & Family History ²	X					X
Lifestyle/Behaviors ³	X	X				
Weight	X	X				
BP/Pulse	X					
HgA1c/Glc	X			X	X	
Lipids	X			X	X	

¹ Based on Correll, Int Rev Psychiatry 2008; 20(2):195-201. Other labs that are not routinely checked but may warrant monitoring include prolactin, CBC and/or LFTs.

² Obesity, hypertension, diabetes, dyslipidemia, hx of coronary heart disease (CHD) or equivalent (diabetes, peripheral arterial disease, abdominal aortic aneurysm, symptomatic carotid artery disease, arrhythmias, QT prolongation), hx of premature CHD in 1st relatives (males < 55y and females < 65y), hx of adverse/allergic reaction.

³ Diet, exercise, smoking, substance use, sleep hygiene

Lithium and Antiepileptic Drug (AED) Mood Stabilizers

Generic (Trade)	LS	Start (daily total mg)	Target Dose (Blood Level)	Titration Schedule	Formulations (mg)	t 1/2 (hr)	FDA Approved in Youth ¹	Notes Boxed Warnings
Lithium (Lithobid, Eskalith)	A	<25kg: 300 25-40kg: 600 >40kg: 900	600-1500 mg 25-30mg/kg/d (0.6-1.2 mEq/L)	300 mg q 3-5d	ir: 150, 300, 600 dr: 300, 450 liq: 8mEq/5mL	12-27	≥7y mania/mixed ≥7y bipolar 1 maintenance	↓Therapeutic window ↓Thyroid; NSAIDs toxic Brugada syndrome
Valproic Acid (Depakene, Depakote)	B	<25kg: 250 25-40kg: 375 >40kg: 500	500-2000 mg 30mg/kg/d (50-120 mg/L)	10 mg/kg/d q 3-4d	s: 125 dr: 125, 250, 500 liq: 50mg/mL	4-14 child 9-18 adult	--	Hepatic necrosis (<2yo) Hepatitis, Pancreatitis, PCOS Teratogenic
Carbamazepine (Tegretol, Carbatrol)	B	<25kg: 100 25-40kg: 200 >40kg: 400	400-1200 mg (8-12 mg/L)	100 mg q 5d	ir: 200 c: 100 dr: 100, 200, 300, 400 liq: 20mg/mL	18-55 initial 12-17 stable	--	SJS/TEN (↑in Asians) Agranulocytosis Glaucoma
Lamotrigine (Lamictal)	C	<40kg: 12.5 >40kg: 25	75 - 400 mg (4.5-7.5 mg/kg/d)	12.5-25 mg q 7d	ir: 25, 100, 150, 200 c: 5, 25 dr: 25, 50, 100, 200, 250, 300	13	--	SJS/TEN (↑in kids)
Topiramate (Topamax)	C	<40kg: 15 >40kg: 25	50 - 400 mg SZ: 5- 9mg/kg/d	25 mg q 3-7d	ir: 25, 50, 100, 200 s: 15, 25 dr: 25, 50, 100, 150, 200	21	--	↑[NH ₄], Glaucoma Metabolic acidosis Renal stones, sedation
Oxcarbazepine (Trileptal)	D	8-10/kg/d	600-2100 mg	5 mg/kg/d q 3d	ir: 150, 300, 600 dr: 150, 300, 600 liq: 60mg/mL	parent: 2 10-OH: 9	--	SJS/TEN (↑in Asians) Sedation

Screen & Monitor for All: pregnancy, CBC, Chem7, thyroid function, kidney (lithium) or liver (AEDs) dysfunction.

LS = literature support: **A** = effective in placebo-controlled randomized trials (PC-RT) in children, **B** = effective in PC-RT in adults, **C** = positive results in child/adol open trial(s), **D** = positive in child/adol case report(s); SZ = seizures; **ir** = immediate release; **dr** = delayed release (XR, ER); **c** = chewable; **s** = sprinkles; **liq** = oral liquid. SJS/TEN = Stevens-Johnson Syndrome/Toxic Epidermal Necrolysis
¹Only psychotropic use approvals are listed. Medications may have other approvals in youth.

Stimulants

Type	Trade	Formulations (mg)	t ½	FDA Appr ¹	FDA Max (mg/d)	Starting Dose
MPH	Ritalin	5, 10, 20	+	≥6y	72 or 2mg/kg/day	0.25 to 1 mg/kg/d
	Methylin ^c	2.5, 5, 10				
	Methylin Soln.	1mg/ml, 2mg/ml				
	Ritalin SR [*]	20	++			
	Methylin ER [*]	10, 20				
	Metadate ER [*]	20				
	Ritalin LA ^s	10, 20, 30, 40	+++			
Metadate CD ^s	10, 20, 30, 40, 50, 60					
Concerta [*]	18, 27, 36, 54					
Daytrana (patch)	10, 15, 20, 30 /9 hrs					
Quillivant XR	5mg/ml					
QuilliChew ER	20, 30, 40					
Dex-MPH	Focalin	2.5, 5, 10	+	≥3y	40	0.1 to 0.5 mg/kg/d
	Focalin XR [*]	5, 10, 15, 20, 25, 30, 35, 40	+++			
AMPH	Adzenys XR-ODT	3.1, 6.3, 9.4, 12.5, 15.7, 18.8	+++			
	Adderall	5, 7.5, 10, 12.5, 15, 20, 30	+			
	Adderall XR ^s	5, 10, 15, 20, 25, 30	+++			
Dex-AMPH	Dexedrine	5, 10, 15	+	≥6y	70	20-30 mg
	Dexedrine CR ^s	5, 10, 15	++			
	Vyvanse	20, 30, 40, 50, 60, 70	+++			

For All: discuss risk for anorexia, insomnia, tics, ↑BP, ↑HR, arrhythmia, possible ↓terminal height

MPH = Methylphenidate; AMPH = Amphetamine, * = do not crush or cut, ^c = chewable available, ^s = may be sprinkled on food. ¹Only psychotropic use approvals are listed. Medications may have other approvals in youth.

Stimulant Prescribing Notes

Pre-Screen	<ul style="list-style-type: none"> Pt and family cardiovascular hx (<i>consult a cardiologist if patient has a structural heart defect or a family history of sudden cardiac death</i>) Family history of tic disorders (stimulants may unmask) Baseline PE, HR, BP, height & weight
Dose Titration	<ul style="list-style-type: none"> q3-4 days to weekly Short-acting forms given BID or TID; Long-acting forms given once daily May supplement with a short-acting form after school Last dose no later than 4pm to avoid sleep disruption
Adequate Trial	<ul style="list-style-type: none"> 1 week at max dose
Monitor	<ul style="list-style-type: none"> Weekly for 2-4 wks (titration period) Monthly until “stable” then at discretion Review HR, BP, height, weight at each visit
Prognosis	<ul style="list-style-type: none"> Rule of thirds (1/3 remain syndromal, 1/3 subsyndromal, 1/3 remit) OK to consider drug holidays
Other Notes	<ul style="list-style-type: none"> Abuse/misuse potential (less w/ some formulations, e.g., Vyvanse, Concerta) Educate parents on securing and monitoring medication use Watch for rebound or irritability as stimulant wears off later in the day Watch for mood deterioration despite improvement in focus and impulsivity Higher doses may increase risk for psychosis, esp. with amphetamine class Some forms should not be crushed, cut or chewed Mixed data on potential for growth suppression Recommended that patients continue on these medications during pregnancy only if they are needed to function on a daily basis

Alternatives to Stimulants

	Dosing	Notes
Atomoxetine (Strattera)	<p><u>≤70 kg</u>: 0.5 mg/kg/d; Advance to 1.2 mg/kg/d after 1-2 wks Max: 1.4 mg/kg/d or 100 mg/d</p> <p><u>>70 kg</u>: up to 40 mg/day Advance to 60-80 mg/d after 1-2 wks Max: 100 mg/d</p> <p>ir: 10, 18, 25, 40, 60, 80, 100mg</p> <p>t ½ = 5 hrs</p>	<ul style="list-style-type: none"> • FDA approved for ADHD in youth ≥6y • Black box warning (suicidality) • Effect not readily apparent for 2-4 weeks • Adj. dose if on CYP2D6 inhibitors • Adj. dose for hepatic insufficiency • Up to 1.6 to 1.8 mg/kg/d may be OK • Better tolerated split BID and taken with food <p>SEs: n/v, decreased appetite, dizziness, fatigue, mood swings, headache, insomnia, hot flushing</p>
Bupropion (Wellbutrin)	<p><u>8-12y</u>: 75mg/d ↑q1-2wk by 50-75mg</p> <p><u>Adol</u>: 100 mg/d ↑q1-2wk by 50-100mg</p> <p>Max: Least of 6 mg/kg/d or 300 mg</p> <p>ir: 75, 100 mg (BID to TID)</p> <p>sr: 100, 150, 200mg (Daily)</p> <p>xl: 150, 300, 450mg (Daily)</p> <p>t ½ = 21 to 37 hrs</p>	<ul style="list-style-type: none"> • Not FDA approved for ADHD in youth • Black box warning (suicidality) • Indications (in adult) also include intolerance to stimulants, smoking cessation, ADHD with depression, seasonal mood disorder • Lowers seizure threshold: limit to < 150mg/8hr (split BID or use slow release for higher doses) • Avoid in bulimia, anorexia, or bipolar disorder <p>SEs: insomnia, tremor, agitation, weight loss, n/v, dizziness</p>

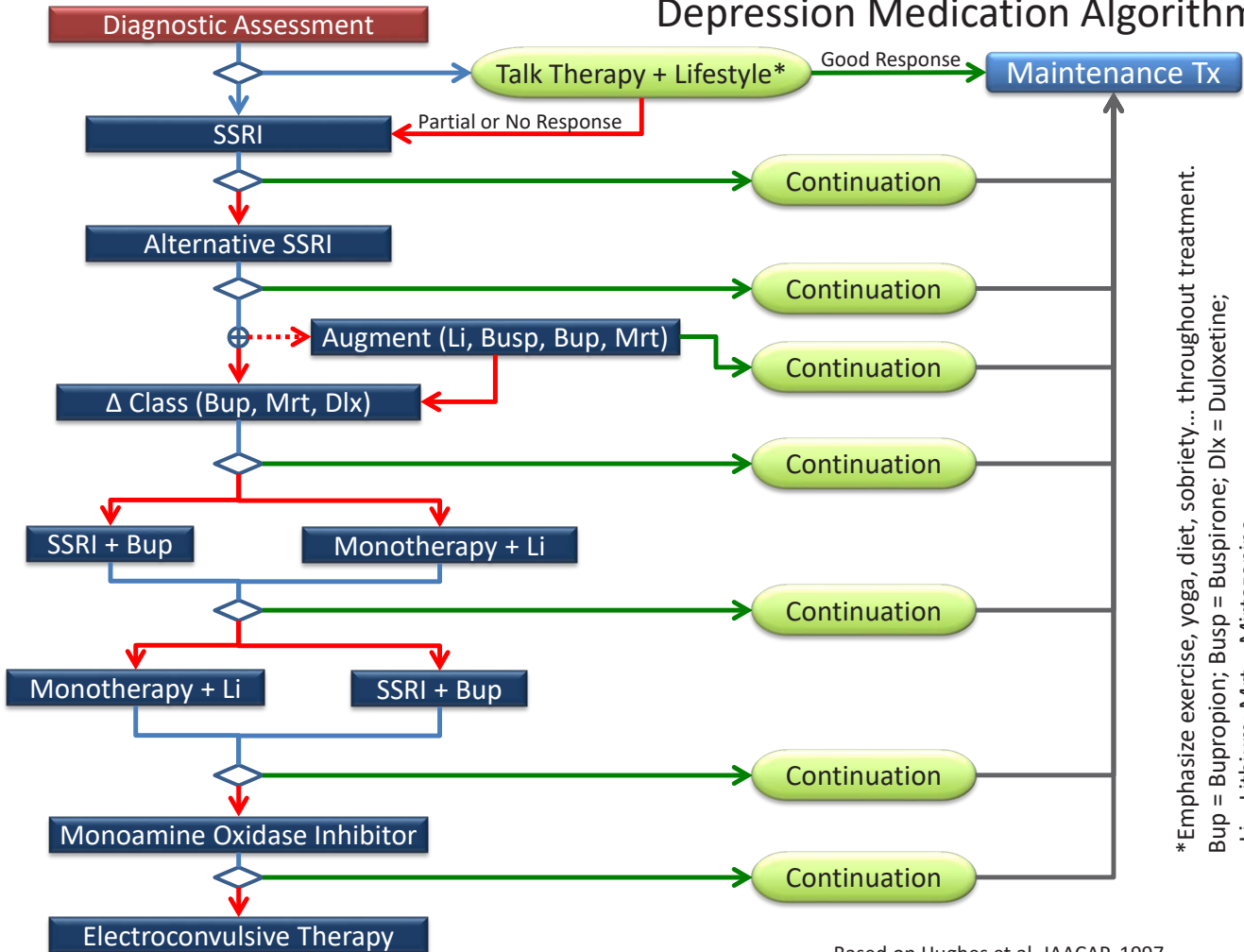
ir = immediate release; **sr** = sustained release; **xl** = extended release

Alpha-2 Agonists

	Dosing	Notes
Clonidine (Catapres, Kapvay)	<p>Start: 0.05 to 0.1 mg at time needed ↑by 0.05 mg every 3 to 7d Typical range: 0.05 to 0.4 mg/d</p> <p>ir: 0.1, 0.2, 0.3mg (qHS to QID) patch: 0.1, 0.2, 0.3mg/24h (daily) er: (Kapvay) 0.1mg (daily; do not crush or chew)</p> <p>t ½ = 12-16 hr</p>	<ul style="list-style-type: none"> • FDA approved for ADHD in youth ≥6y, but also used for tics, insomnia, agitation, aggression associated with intellectual disability or TBI, opiate withdrawal • Consider baseline EKG • Monitor BP @ baseline, dose Δ, at f/u • Rebound HTN, insomnia if stopped abruptly: taper over 1-2 wks • Caution against other PRNs if using for insomnia • Kapvay: more expensive, better compliance <p>SEs: sedation, dizziness, anorexia, orthostatic HTN, ↓BP, ↓HR, depression, enuresis</p>
Guanfacine (Tenex, Intuniv)	<p>Start: 0.5 to 1 mg at time needed ↑by 0.5 to 1 mg per week Typical range: 0.5 to 4 mg/d</p> <p>ir: 1, 2mg (qHS to TID) er: (Intuniv) 1, 2, 3, 4mg (daily; do not crush or chew)</p> <p>t ½ = 17 hr</p>	<ul style="list-style-type: none"> • FDA approved for ADHD in youth ≥6y; other uses similar to clonidine • Consider baseline EKG • Monitor BP @ baseline, dose Δ, at f/u • Less risk for rebound HTN (vs clonidine) • Intuniv: more expensive, better compliance <p>SEs: less sedation than clonidine, otherwise similar</p>

ir = immediate release; **er** = extended release

Depression Medication Algorithm



*Emphasize exercise, yoga, diet, sobriety... throughout treatment.
 Bup = Bupropion; Busp = Buspirone; Dlx = Duloxetine;
 Li = Lithium; Mrt = Mirtazepine

Developed by Paresh Patel, MD, PhD

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The information on these cards is intended to offer general guidelines on psychotropic medications used to treat behavioral health conditions. It is not a substitute for specific professional medical advice.

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