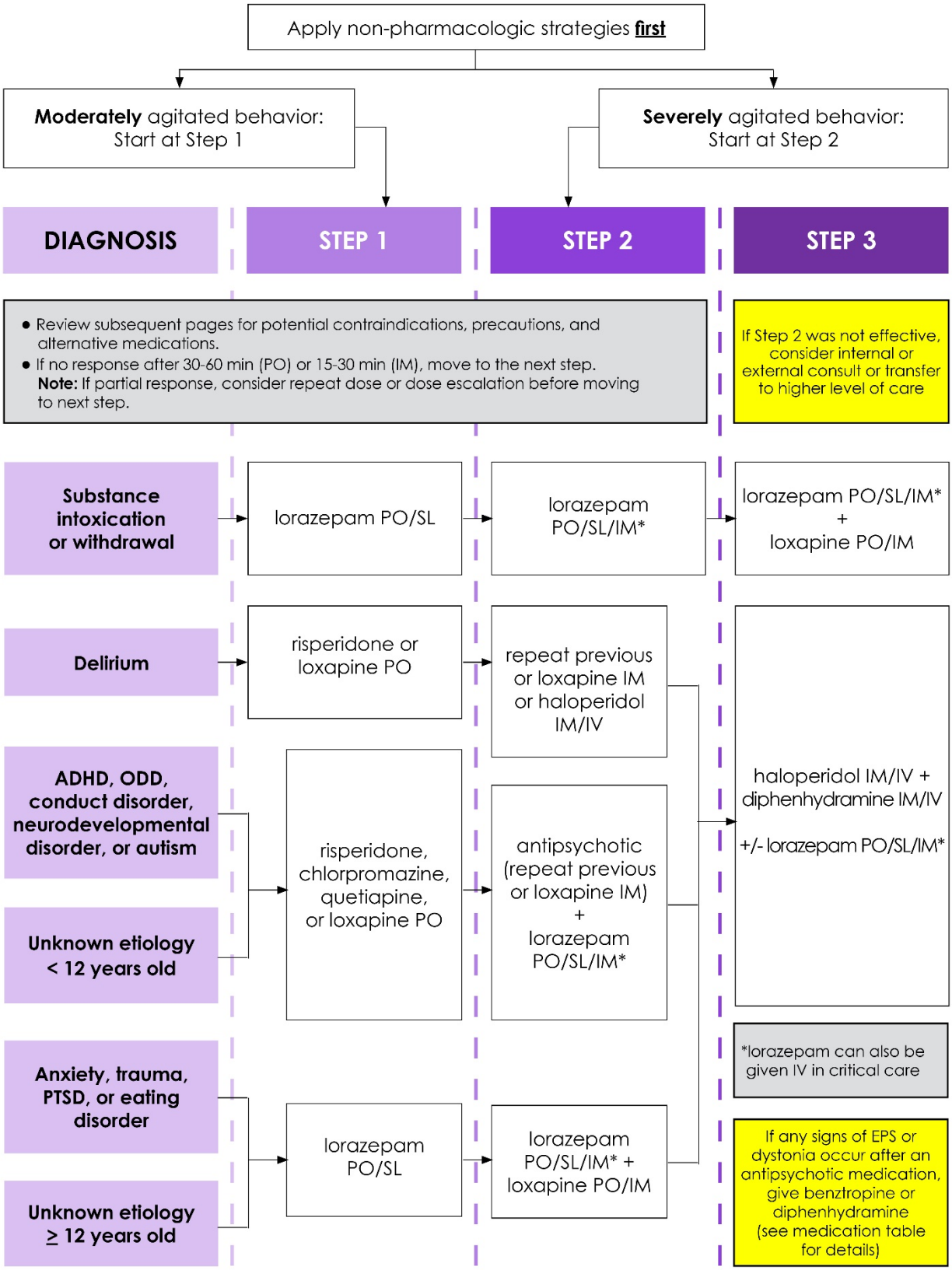

Created by Sarah Leung, BScPharm, ACPR2(Ped)

Child Health BC Provincial Least Restraint Guideline

Appendix C-2: Comparison of Medications for Management of Acute Agitation

		Antipsychotics (2nd generation)			Antipsychotics (1st generation)				Non-antipsychotic agents		
		quetiapine	risperidone	olanzapine	loxapine	haloperidol	methotrimeprazine	chlorpromazine	lorazepam	clonidine	diphenhydramine
PATIENT FACTORS	↑ QTc interval?	✗	!	✓	!	✗	!	!	✓	✓	!
	Hypotensive/ ↑ falls risk?	✗	!	! (PO) ✗ (IM)	✓	✓	✗	✗	!	✗	!
	Anticholinergic delirium?	✗	✓	✗	!	✓	✗	✗	✓	!	✗
	Seizures/ ↑ seizure risk?	!	!	!	✓	✓	!	✗	✓	✓	!
	Eating Disorder?	!	!	!	✓	✗	!	!	✓	!	✓
	Developmental disorder/autism	✓	✓	✓	✓	✗	✓	✓	! [d]	✓	! [d]
	Opioid use/ respiratory depression?	!	!	!	!	!	!	!	✗	✓	!
		quetiapine	risperidone	olanzapine	loxapine	haloperidol	methotrimeprazine	chlorpromazine	lorazepam	clonidine	diphenhydramine
DRUGS FACTORS	Routes/Dosage Forms	PO (TABLET)	PO (TABLET, LIQUID)	PO (TABLET, ODT) IM[a,b]	PO (TABLET) IM	PO (TABLET) IM/IV	PO (TABLET) IM/IV	PO (TABLET)	PO/SL (TABLET) IM	PO (TABLET, LIQUID)	PO (TABLET, LIQUID) IM
	EPS risk	+	++	+	++	++++	+	+	↓EPS	n/a	↓EPS
	Sedation properties	+++	++	++	+	+	+++	+++	++[d]	++	++[d]
	Useful as a PRN to treat acute agitation	✓	✓	✗ (PO/ODT) ✓ (IM)	✓	✓	✓	✓	✓	✗	✓
	Time to onset of action	~30-60 min	~60-75 min	~15 min(IM) ~6 hr (PO/ ODT)	~30 min (all forms)	~15 min (IM) ~3-20min (IV) ~2 hr (PO)	~30 min (IM) [c] ~15 min (IV) [c] ~1 hr (PO)	~30-45 min	~20-30 min (all forms)	~30-60 min	~30-45 min (PO) ~15-30 min (IM)
	Duration of action	~4-6 hr	~12-24 hr	~2 hr (IM) ~12-24 hr (PO)	~12 hr	~4-12 hr	~2-4 hr	~4-6 hr	~6-8 hr	~3-4 hr	~4-6 hr

✓ optimal choice
! caution
✗ less optimal choice

a Peak serum level 5 times higher with IM form compared to PO
b IM form **CONTRAINDICATED** within 1 hr of parenteral benzodiazepine
c Peak serum level 2 times higher with IM/IV form compared to PO
d Note: ↑ risk of paradoxical agitation

Abbreviations: EPS extrapyramidal symptoms; IM intramuscular; IV intravenous, ODT oral dissolving tablet; SL sublingual; PO oral

Table updated January 2022

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Child Health BC Provincial Least Restraint Guideline

Appendix C-3: Medications for Acute Agitation

NAME	USUAL DOSE (FOR ACUTE EPISODE)	ACTION	ADVERSE EFFECTS	CONTRAINDICATIONS
Benztropine	**EPS:** 0.5-1 mg/dose PO/IM Max: 0.1 mg/kg/24h or 6 mg/24h **Acute dystonia:** 1-2 mg/dose IM/IV	Anticholinergic	Sedation, dry mouth, blurred vision, tachycardia, constipation, urinary retention.	**Avoid:** Age < 3 years (use diphenhydramine), anticholinergic delirium **Caution:** Ileus, narrow angle glaucoma
Chlorpromazine	0.5-1 mg/kg/dose PO (round to nearest 12.5 mg) Max: 50 mg/dose	FGA, low potency	Postural hypotension, tachycardia, QTc prolongation, lowered seizure threshold. Less risk of EPS vs. haloperidol, but more anticholinergic effects.	**Avoid:** Seizure disorders, anticholinergic delirium **Caution:** Cardiac conditions, other QTc prolonging medications
Clonidine	1 mcg/kg/dose PO Max: 50 mcg/dose	Alpha-2 agonist	Dizziness, hypotension, bradycardia.	**Avoid:** Hypotension, bradycardia **Caution:** Anticholinergic delirium
Diphenhydramine	1 mg/kg/dose PO/IM/IV (round to nearest 5 mg). Max: 50 mg/dose. Given with haloperidol to prevent dystonic reaction. Use IM/IV route for treating acute dystonia.	Anticholinergic, used to treat agitation or EPS/dystonia	Sedation, dry mouth, blurred vision, tachycardia, constipation, urinary retention. QTc prolongation in high doses. Paradoxical excitation can occur; more common in younger children and those with neurodevelopmental disorders.	**Avoid:**: Anticholinergic delirium **Caution:** Ileus, narrow angle glaucoma
Haloperidol	0.025-0.075 mg/kg/dose PO/IM/IV Max: 5 mg/dose	FGA, high potency	High incidence of EPS and dystonic reactions in children and adolescents. IM route may have higher risk of dystonia, and IV route may have higher risk of QTc prolongation. Hypotension, lowered seizure threshold. Minimal anticholinergic effects.	**Avoid:** Cardiac conditions (particularly arrhythmias or prolonged QTc), other QTc prolonging medications **Caution:** Seizure disorders
Lorazepam	0.025-0.1 mg/kg/dose PO/SL/IM (round to nearest 0.25 mg) Max: 2 mg/dose (higher doses may be required for stimulant overdose or substance withdrawal; max single dose 4 mg)	Benzodiazepine	Confusion, mild cardiovascular suppression. Higher risk of respiratory depression when combined with opioids. Paradoxical excitation can occur; more common in younger children and neurodevelopmental disorders.	**Avoid:** Respiratory depression **Caution:** Patients taking opioids
Loxapine	0.1-0.2 mg/kg/dose PO/IM (round to nearest 2.5 mg) Max: 25 mg/dose	FGA, moderate potency	Moderate incidence of EPS and dystonic reactions, moderate anticholinergic effects.	**Caution:** Cardiac conditions, seizure disorders, other QT prolonging medications, anticholinergic delirium
Methotrimeprazine	**Child:** 0.125 mg/kg/dose PO **Adolescent:** 2.5-10 mg/dose PO **Child & Adolescent:** 0.06 mg/kg/dose IM/IV (round to nearest 2.5 mg)	FGA, low potency	Sedation, anticholinergic effects, postural hypotension. Less risk of EPS vs. haloperidol, but more anticholinergic effects.	**Avoid:** Hypotension, anticholinergic delirium **Caution:** Seizure disorders, cardiac conditions, other QTc prolonging medications
Olanzapine	2.5-10 mg/dose IM Max: 3 doses or 20 mg/24h, given 2-4 h apart (onset of PO route too slow for PRN use in acute agitation)	SGA	Postural hypotension (monitor before each IM dose), anticholinergic effects, lowered seizure threshold, akathisia. Minimal risk of QTc prolongation.	Do NOT combine IM route within 1 hour of parenteral benzodiazepine; reported cases of respiratory depression and death. **Avoid:** Hypotension, anticholinergic delirium **Caution:** Seizure disorders
Quetiapine	**Child:** 12.5-50 mg/dose PO **Adolescent:** 25-100 mg/dose PO	SGA	Sedation, dizziness, postural hypotension, tachycardia, QTc prolongation, anticholinergic effects, lowered seizure threshold. Lower risk of EPS than other agents.	**Avoid:** QTc prolongation, hypotension, anticholinergic delirium **Caution:** Cardiac conditions, other QTc prolonging medications, seizure disorders
Risperidone	**Child:** 0.125-0.5 mg/dose PO **Adolescent:** 0.25-1 mg/dose PO	SGA	Postural hypotension, EPS (in higher doses), lowered seizure threshold, akathisia. Minimal risk of anticholinergic effects.	**Caution:** Seizure disorders, cardiac conditions, CYP2D6 inhibitors (e.g. fluoxetine) – consider dose reduction with repeat/regular dosing of risperidone

EPS – Extrapyramidal symptoms; FGA – First generation antipsychotic; SGA – Second generation antipsychotic