ANTIPSYCHOTICS AGENTS – CONVENTIONAL

A. FDA-Approved Indications (Documentation Required): Please see table below.

Medication	Management of Manifestations of Psychotic Disorders & Schizophrenia	Manic Type of Manic-Depressive Illness	Severe Behavioral Problems in Children	Acute Treatment of Agitation Associated with Bipolar I Disorder or Schizophrenia	Tourette's Syndrome	Non-Psychotic Anxiety
Chlorpromazine	✔	✔	✔ (6 months – 12 years)			
Fluphenazine	✔					
Haloperidol	✔		✔ (≥3 years)		✔	
Loxapine	✔					
Inhaled Loxapine (Adasuve®)				✔		
Molindone	✔					
Perphenazine	✔					
Pimozide					✔	
Thioridazine	✔ (not first line)					
Thiothixene	✔					
Trifluoperazine	✔					✔

B. Non-FDA Approved Common Uses (Documentation Required)

1. Agitation
2. Augmentation in Refractory Obsessive-Compulsive Disorder
3. Pervasive Developmental Disorders
4. Impulse Control Disorder
5. Other Neurological Conditions (e.g. ALS, Huntington's)

C. Minimal Documentation (Documentation Required)

1. All standard outpatient & inpatient requirements
2. Document rationale for use of a conventional neuroleptic, in lieu of an atypical agent, given the increased risk of tardive dyskinesia
3. Document rationale for use of **pimozide** or thioridazine in lieu of another antipsychotic medication, given the increased risk for cardiac arrhythmia

D. Dosing Information (Documentation Required) (Refer to Medication Maximum Daily Dose (MDD))

1. Applicable to Prolixin Decanoate® (Fluphenazine Decanoate) injectable solution, for intramuscular (IM) or subcutaneous (SQ) use ONLY:

    - Prolixin Decanoate may be given IM or SQ, using a needle of at least a 21-gauge

- For those with no prior history of taking phenothiazines, patients should be treated with oral fluphenazine before administering the decanoate, to establish tolerability, appropriate dosage, and patient's response.

- Usual starting dose for most patients is 12.5 to 25 mg (0.5 to 1 mL), with onset of action around 24-72 hours after injection; the effect on psychotic symptoms becomes significant within 48-96 hours.

- There is no precise conversion between oral fluphenazine and fluphenazine decanoate, but the prescribing information refers to a controlled multicenter study that approximated a conversion ratio of:
    - 12.5 mg (0.5 mL) of decanoate every 3 weeks for every 10 mg of fluphenazine HCl daily.

- Dosage should not exceed 100 mg.

2. Applicable to Haldol Decanoate® (Haloperidol Decanoate) injectable solution, for IM use ONLY:

    - Haldol Decanoate should ONLY be given IM using a 21-gauge needle; the maximum volume per injection site should not exceed 3 MLs.

    - Prior to starting Haldol Decanoate, patients should have been treated with oral haloperidol to establish tolerability, appropriate dosage, and patient's response. (Short-acting forms of haloperidol can be used to supplement Haldol Decanoate therapy during dose adjustments or schizophrenia symptoms exacerbation episodes.)

    - Initial Haldol Decanoate dose should not exceed 100 mg regardless of previous antipsychotic dose requirements. If the conversion requires >100mg, the dose should be administered in 2 doses:100mg followed by the remaining dose 3 to 7 days later. There is limited clinical experience of Haldol Decanoate doses >450 mg/month.

<table>
<tr><th>Patients</th><th>Monthly 1st Month</th><th>Maintenance</th></tr>
<tr><td>Stabilized on low daily oral (PO) doses (≤10 mg/day)</td><td rowspan="2">10-15x daily PO dose</td><td rowspan="2">10-15x previous daily PO dose</td></tr>
<tr><td>Elderly or Debilitated</td></tr>
<tr><td>High Dose</td><td rowspan="3">20x daily PO dose</td><td rowspan="3">10-15x previous daily PO dose</td></tr>
<tr><td>Risk of Relapse</td></tr>
<tr><td>Tolerant to PO Haloperidol</td></tr>
</table>

E. Duration of Use/Medication Changes (Documentation Required)

1. For Outpatient: Document rationale when making any drug switch.
2. For Inpatient: Document rational when making more than 3 changes in any 7-day period.

F. Polypharmacy (Documentation Required)

1. When considering the addition of more than one agent within a class, it is recommended to first titrate the initial agent to maximum tolerated dose, then provide clear supportive rationale for the additional agent(s).

2. When changing medications, a process of cross-tapering is recommended and may require up to 90 days to accomplish. If polypharmacy is necessary beyond the maximum period of 90 days to complete the cross-tapering, clear documentation of the rationale for continuation of the polypharmacy is necessary

G. Standard Laboratory and Examination Requirements (Documentation Required) (Refer to Table 1 APA Monitoring Guidelines)

1. Both first- and second-generation antipsychotics have the potential for weight gain therefore all antipsychotics require metabolic monitoring per the APA 2020 Guidelines (See Table 1).
2. Basic laboratory studies on admission (inpatient only)
3. Document the Extrapyramidal Syndrome:
    - Monitoring via an appropriate rating scale is required at baseline and **at a minimum of every 6 months (for patients at high risk of tardive dyskinesia) and** ANNUALLY **(for other patients)**. Depending on the symptoms presented, the Abnormal Involuntary Movement Scale (AIMS), Barnes Akathisia Rating Scale (BARS) OR Simpson-Angus Scale (SAS) may be used when anticholinergics are used.
4. **Pregnancy test for women of childbearing potential or documentation of why it is not warranted**.
5. Prior to starting treatment with: Iloperidone, pimozide, thioridazine and Ziprasidone, electrocardiogram (EKG) is required.
6. More frequent and/or additional monitoring should be considered depending on the clinical situation and whenever there is a change in the patient's status.
7. There is an increased risk of leukopenia/neutropenia/agranulocytosis with all antipsychotic agents, especially in patients who are concomitantly on other myelosuppressive drugs i.e. carbamazepine (CBZ) and valproic acid (VPA). It is recommended to monitor more closely by ordering more frequent complete blood count (CBC) with differentials.

H. Black Box Warnings (Documentation Required)

1. Elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death**. *(Note: This Black Box Warning is not listed for pimozide.)***

2. THIORIDAZINE ONLY

- Thioridazine has been shown to cause QTc prolongation in a dose related manner and has been associated with Tosardes de pointes type arrhythmias and death. Thioridazine should be reserved for treatment of schizophrenic patients who fail to show an appropriate response to adequate courses of other antipsychotic drugs.

I. Contraindications/Warnings/Precautions (Documentation Required)

Note: Contraindication includes known hypersensitivity to the desired drug or any of its components.

1. Fluphenazine Decanoate is not intended for Children <12 yo

2. Applicable to Inhaled Loxapine (Adasuve®) ONLY
    - Acute respiratory symptoms/signs (e.g. wheezing)
    - Current diagnosis or history of chronic obstructive pulmonary disease (COPD), asthma, or another bronchospasm-associated lung disease
    - Current medication use treating airways disease (including COPD and asthma)
    - History of bronchospasm following inhaled loxapine treatment

3. Pimozide is contraindicated in the following:
    - Treatment of tics not associated with Tourette's Disorder or simple tics
    - Taking drugs that may, themselves, cause phonic and motor tics (including amphetamines and methylphenidate) until the patients have been withdrawn from these medications to determine if the drugs (rather than the Tourette's Disorder), are responsible for the tics
    - Receiving macrolide antibiotics (azithromycin, clarithromycin, erythromycin, dirithromycin, and troleandomycin)
    - Concomitant use with:
        - escitalopram or citalopram
        - paroxetine (and other strong 2D6 inhibitors)
        - sertraline
        - ketoconazole and itraconazole
        - protease inhibitors
        - nefazodone

4. Applicable to Thioridazine ONLY:
    - Genetic defect that causes reduced levels of P450 2D6 activity
    - Drugs that inhibit P450 2D6 (that appreciably inhibit the metabolism of thioridazine)
    - Hypotensive or hypotensive heart disease of extreme degree

5. Applicable to Thiothixene ONLY:
    - Circulatory collapse

J. Warning/Precautions & Relative Contraindications (Refer to Table 3 for Pregnancy/Nursing)

1. QT interval prolongation and sudden death—Increased risk of sudden death likely due to QT interval prolongation is associated with exposure to any antipsychotic drug. Among FGAs, thioridazine and IV haloperidol are known to be more likely to prolong the QT interval, with pimozide posing an intermediate level of risk. Due to its potential for significant, possibly life-threatening, proarrhythmic effects, thioridazine hydrochloride should be reserved for use in the treatment of schizophrenic patients who fail to show an acceptable response to adequate courses of treatment with other antipsychotic drugs, either because of insufficient effectiveness or the inability to achieve an effective dose due to intolerable adverse effects from those drugs. EKG changes (T-wave inversion, ST-segment depression, QTc lengthening) may increase the risk for arrhythmias; electrolyte abnormalities including hypokalemia, hypomagnesemia and hypocalcemia can also contribute to the development of Torsade's de Pointes.

2. History of Tardive Dyskinesia (TD)—anticholinergics worsen TD; therefore, they should be avoided and discontinued if TD develops.

3. History of Neuroleptic Malignant Syndrome (NMS)—rare disorder characterized by muscular rigidity, tachycardia, hyperthermia, altered consciousness, autonomic dysfunction, and increases in CPK— can occur with any class of antipsychotic agent, at any dose, and at any time (increased risk in hot weather). Other risk factors include polypharmacy, organic brain syndromes, mood disorders, dehydration, low serum sodium, exhaustion, and agitation.

4. Extrapyramidal Syndrome (EPS)—when EPS presents:
    a. Reduce the dose if clinically indicated.
    b. Switch to another agent with lower liability to cause EPS.
    c. If failed above options or clinically inappropriate, then management with anticholinergics may be initiated at the lowest effective dose for a short duration (i.e. three months). It is recommended to taper to discontinuation after the management of acute EPS. This is intended to minimize, polypharmacy, risk of side effects including cognitive impairment and the risk of abuse.

5. Syncope—falls may result (due to potential of medication to cause motor and sensory instability, postural hypotension, and somnolence); may cause confusion, poor concentration, and disorientation at high doses or in the elderly
    a. Hypotensive Phenomena (for those undergoing surgery)

6. Leukopenia, Neutropenia, and Agranulocytosis

7. Abrupt Withdrawal—Abrupt cessation of high doses may cause discontinuation syndrome with gastritis, nausea, sweating, tachycardia, headache, and insomnia

8. Increase in Prolactin Levels

9. **Broncopneumonia**

10. **Corneal and lenticular deposits/pigmentation**

11. Use caution in patients with:
    a. Cardiovascular disease, renal disease, elderly; blood counts and renal function should be monitored periodically
    b. Known or suspected liver disease; in such patients, monitor transaminases more frequently
    c. Chronic respiratory disorders (especially in children)
    d. Convulsive disorders – may lower seizure threshold
    e. Glaucoma, Prostatic hypertrophy, etc.—medications with anticholinergic effects may lead to urinary retention, constipation, etc.
    f. Potential exposure to organophosphorus insecticides, extreme heat, and in persons receiving atropine or related drugs**.**

12. Cigarette smoking is reported to induce the metabolism and decrease the plasm level of certain antipsychotics i.e. Olanzapine and Clozapine

13. Applicable to Thioridazine ONLY:

a) History of allergy to this class of drugs

b) May cause confusion, poor concentration, and disorientation at high dose or in the elderly
b) Age less than 5 years (age 3 for haloperidol, age 2 for thioridazine)
c) Syncope
d) Marked sedation or lethargy
e) Significant laboratory abnormalities during treatment
f) Cigarette smoking is reported to induce the metabolism and decrease the plasm level of certain antipsychotics i.e. Olanzapine and Clozapine
g) Lower seizure threshold
h) Tardive dyskinesia
i) Constipation, urinary retention
j) Hypotension
k) EKG changes (T wave inversion, ST segment depression, QTc lengthening may increase risk for arrhythmias. Electrolyte abnormalities including hypokalemia Hypomagnesemia and hypocalcemia can contribute to the development of torsade's de pointes

K. **Pharmacokinetics and Drug-Drug Interactions (Refer to Table 2)**

L. Pregnancy and Lactation (Refer to Table 3)

M. Adverse Effects

a. Serious Adverse Effects (Refer to Table 4)

i. Anaphylaxis & **Allergic Reactions**
ii. Extrapyramidal Symptoms
iii. Tardive Dyskinesia
iv. Hyperpyrexia, Heat Stroke, Neuroleptic Malignant Syndrome
v. Metabolic Syndrome
vi. Hypotension (orthostatic)
vii. Arrhythmias (QTc prolongation, Tosardes De Pointes, sudden death)
viii. Hyponatremia
ix. Seizure
x. Hepatic Impairment, Jaundice
xi. Agranulocytosis, Neutropenia, Leukopenia
xii. Cataracts, Retinopathy, Ocular Changes
xiii. Skin pigmentation
xiv. Withdrawal Symptoms (with high dose, long term use)

b. Common Adverse Effects (Refer to Table 5)

i. Anticholinergic (constipation, urinary retention, blurred vision, xerostomia, tachycardia)
ii. Lethargy, drowsiness, dizziness, confusion
iii. Hyperprolactinemia (gynecomastia, galactorrhea)
iv. Sexual adverse effects
v. Akathisia
vi. Insomnia
vii. Photosensitivity

Attachments:

Table 1: Standard Laboratory and Examination Requirements
Table 2: Pharmacokinetics and Drug-Drug Interactions
Table 3: Pregnancy and Lactation
Table 4: Serious Adverse Effects
Table 5: Common Adverse Effects
Table 6: Drug Formulations
Table 7: Dose Equivalencies

References:

- UpToDate 2018: First-generation antipsychotic medications: Pharmacology, administration, and comparative side effects
- Liorente MD, Urrutia, V: Diabetes, Psychiatric Disorders, and the Metabolic Effects of Antipsychotic Medications. Clinical Diabetes Vol24, Number 1, 2006.

APA 2004 Practice Guideline for the Treatment of Patients With Schizophrenia

1. www.Epocrates.com
2. www.MicroMedex.com
3. FDA Package Insert for each respective Conventional Antipsychotic Medication

4. Association, A. P. (2020). The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia. doi:10.1176/appi.books.9780890424841

- J Clin Psychiatry 2003;64 (Suppl 12)

5. Future Research Needs for First- and Second-Generation Antipsychotics for Children and Young Adults [Internet]. ***https://www.ncbi.nlm.nih.gov/books/NBK84656/***

Table 1: APA Monitoring Guidelines[1]

	Baseline or Initial Assessments	Frequency of Follow-Up
Physical Status & Physical Conditions		
Vital Signs	• HR • BP	As clinically indicated (including temperature)
Body Weight & Height	• Body Weight • Height	
	• BMI	Every visit x6 months and at least quarterly thereafter
Pregnancy	• **Pregnancy Test for women of childbearing potential**	
Hematology	• **CBC (including ANC)**	As clinically indicated
Blood Chemistries	• **Electrolytes** • **Kidney Function** • **LFTs** • **TSH**	
Drug Toxicology	• Drug toxicology screen, if clinically indicated	
Imaging & Genetic Testing	• If indicated based on examination or history	
Specific Treatment Side Effects		
Diabetes	• Fasting Blood Glucose (A1c) • Diabetes Risk Factors	**At 4 months after starting a new treatment, and at least annually thereafter**
Hyperlipidemia	• Lipid Panel	
Metabolic Syndrome (≥3 of the risk factors): • Waist circumference >102 cm (men) and >88 cm (women) • TG ≥ 150 mg/dL or drug treatment for elevated TG • HDL-C <40 mg/dL (men) or <50 mg/dL (women) or drug treatment for reduced HDL • SBP ≥ 130 mmHg and/or DBP ≥85 mmHg or on antihypertensive treatment for HTN • FBG ≥ 100 mg/dL or drug treatment for elevated BG	• **Determine if metabolic syndrome criteria are met**	
QTc prolongation	**EKG before treatment with** • **Chlorpromazine** • **Droperidol** • **Iloperidone** • **Pimozide** • **Thioridazine** • **Ziprasidone** **Or in the presence of cardiac risk factors**	**EKG with significant change in dose, or with addition of other medications that can affect QTc interval in patients with elevated baseline QTc intervals or with cardiac risk factors**
Hyperprolactinemia	• Symptoms of hyperprolactinemia	At each visit until stable, then yearly if treated with an antipsychotic known to increase prolactin
	• Prolactin level, if indicated based on clinical history	If indicated based on clinical history
Antipsychotic-Induced Movement Disorders	• Clinical assessment of EPS (and use of structured instrument if movements are present)	Assessment with a structured instrument at least every 6 months in patients at high risk of TD and at least every 12 months in other patients (and if new onset or exacerbation of preexisting movements is detected at any visit)

References:

1. *Association, A. P. (2020). The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia. doi:10.1176/appi.books.9780890424841*

Table 2: Pharmacokinetics & Drug-Drug Interactions[1-4]

Agent	Brand	Metabolism; CYP (Substrate)	$t_{1/2}$ (hr)	Comments
First Generation				
Chlorpromazine	Thorazine®	2D6 (major), 1A2/3A4	Biphasic – initial 2 hours; terminal 30 hours	• Use with caution in renal (not dialyzable) and hepatic impairment
Fluphenazine Fluphenazine decanoate	Prolixin®	2D6	4.4-16.4	• Contraindicated in hepatic impairment • Use with caution in renal impairment
Haloperidol Haloperidol decanoate	Haldol®	2D6/3A4 (major), 1A2, glucuronidation	14-37 21 (haloperidol decanoate)	
Loxapine	Loxitane®	1A2/2D6/3A4 (minor)	Biphasic – 5 hours; terminal 19 hours	• **Pgp inhibitor**
Molindone	Moban®	2D6	1.5	• Use with caution in hepatic impairment
Perphenazine	Trilafon®	2D6 (major), 1A2/3A4/2C9/2C19 (minor)	Perphenazine: 9-12 7-hydroxyperphenazine: 10-19	• Active metabolite (responsible for 70% of activity) • Contraindicated in liver damage • Use with caution in renal impairment
Pimozide	Orap®	1A2, 2D6, 3A4	55	• Use with caution in renal and hepatic impairment
Thioridazine	Mellaril®	2D6 (major), 2C19	21-24	• **Moderate 2D6 inhibitor** • Metabolite: mesoridazine (2x as potent as thioridazine) • Use with caution in hepatic impairment
Thiothixene	Navane®	1A2	34	
Trifluoperazine	Stelazine®	1A2	3-12	• Contraindicated in hepatic disease
Second Generation				
Aripiprazole	Abilify® Aristada® Abilify Maintena®	2D6, 3A4	Aripiprazole: 75 Dehydro-aripiprazole: 94 2D6 poor metabolizers: 146 Maintena® 29.9 (300 mg) - 46.5 days (400 mg) - after q4 week gluteal administrations Aristada® 53.9-57.2 days – q monthly, q6 week, and q2 month injections	• Active metabolite: dehydro-aripiprazole • No dose adjustments for mild-to-severe renal impairment (GFR 15-90 mL/min) or mild-to-severe hepatic function (Child-Pugh score between 5-15) **Factors** / **Aripiprazole PO Dose Adjustments** Known 2D6 Poor Metabolizers: Administer ½ of usual dose Known 2D6 Poor Metabolizers & Strong 3A4 Inhibitors: Administer ¼ of usual dose Strong 3A4 or 2D6 inhibitors: Administer ½ of usual dose Strong 3A4 and 2D6 inhibitors: Administer ¼ of usual dose Strong 3A4 inducers: Double usual dose over 1-2 weeks **Factors** / **Maintena® Dose Adjustments if P450 modulators are added for > 14 days** 2D6 Poor Metabolizers: 200 mg Patients taking Abilify Maintena 400 mg: Strong 3A4 or 2D6 Inhibitor: 300 mg 3A4 and 2D6 Inhibitor: 200 mg 3A4 Inducers: Avoid Use Patients taking Abilify Maintena 300 mg: Strong 3A4 or 2D6 Inhibitor: 200 mg 3A4 and 2D6 Inhibitor: 160 mg 3A4 Inducers: Avoid Use

Table 2: Pharmacokinetics & Drug-Drug Interactions[1-4]

<table>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><th>Factors</th><th>Aristada® Dose Adjustments if P450 modulators are added for > 14 days</th></tr>
<tr><td>Strong 3A4 Inhibitor</td><td>Reduce Aristada dose to next lower strength (but no adjustments if taking 441 mg, if tolerated)
Poor 2D6 metabolizers: Reduce dose to 441 mg from 662 mg, 882 mg, or 1064 mg (but no adjustments if taking 441 mg, if tolerated)</td></tr>
<tr><td>Strong 2D6 Inhibitor</td><td>Reduce Aristada dose to next lower strength (but no adjustments if taking 441 mg, if tolerated)
Poor 2D6 metabolizers: No dose adjustment required</td></tr>
<tr><td>Strong 3A4 and 2D6 Inhibitor</td><td>Avoid use if patients taking 662 mg, 882 mg, or 1064 mg (but no adjustments if taking 441 mg, if tolerated)</td></tr>
<tr><td>3A4 Inducer</td><td>No dose adjustment for 662 mg, 882 mg, or 1064 mg dose; increase 441 mg dose to 662 mg.</td></tr>
</table>
</td></tr>
<tr><td>Asenapine</td><td>Saphris®</td><td>1A2 (major) and glucuronidation, 2D6/3A4 (minor)</td><td>24</td><td>

Weak 2D6 inhibitor
Intake of water ~2-5 minutes after asenapine administration caused decrease in asenapine exposure; Avoid drinking and eating 10 minutes after administration.
No dose adjustments for mild-to-severe renal impairment (GFR 15-90 mL/min) or mild-to-moderate hepatic impairment (Child-Pugh A and B)
Contraindicated in severe hepatic impairment (Child-Pugh C)
If taking paroxetine (2D6 substrate and inhibitor), reduce paroxetine dose by ½

</td></tr>
<tr><td>Brexpiprazole</td><td>Rexulti®</td><td>2D6, 3A4</td><td>91</td><td>

Moderate-to-severe hepatic impairment (Child-Pugh B or C) or CrCl <60 mL/min:

MDD max dose: 2 mg/day
Schizophrenia max dose: 3 mg/day

<table>
<tr><th>Factors</th><th>Brexipiprazole Dose Adjustments</th></tr>
<tr><td>Known 2D6 Poor Metabolizers & Strong/moderate 3A4 Inhibitors</td><td>Administer ¼ of usual dose</td></tr>
<tr><td>Strong 3A4 or 2D6 inhibitors</td><td>Administer ½ of usual dose</td></tr>
<tr><td>Strong/moderate 2D6 and 3A4 inhibitors</td><td>Administer ¼ of usual dose</td></tr>
<tr><td>Strong 3A4 inducers</td><td>Double usual dose and further adjust based on clinical response</td></tr>
</table>
</td></tr>
<tr><td>Cariprazine</td><td>Vraylar®</td><td>3A4 (major), 2D6</td><td>2-4 days</td><td>

CrCl <30 mL/min and severe hepatic impairment (Child-Pugh C): not recommended

<table>
<tr><th>Factors</th><th>Cariprazine Dose Adjustments</th></tr>
<tr><td>Strong 3A4 Inhibitors</td><td>Administer ½ of usual dose</td></tr>
<tr><td>3A4 Inducers</td><td>Not recommended</td></tr>
</table>
</td></tr>
</table>

Table 2: Pharmacokinetics & Drug-Drug Interactions[1-4]

<table>
<tr>
<td>Clozapine</td>
<td>Clozaril®</td>
<td>1A2 (major), 2C19/2C9/2D6/3A4</td>
<td>4-66 (steady state 12 hours)</td>
<td>

Active metabolite: N-desmethyl-clozapine
Cigarette smoke can induce 1A2 (cannabis can induce 1A2; consider dose adjustment when patient stops or resumes smoking)

<table>
<tr><th>Factors</th><th>Clozapine Dose Adjustments</th></tr>
<tr><td>Strong 1A2 Inhibitors</td><td>Administer 1/3 of usual dose</td></tr>
<tr><td>Strong 3A4 Inducers</td><td>Not recommended</td></tr>
<tr><td>Discontinuation of 3A4 or 1A2 Inducers (e.g. tobacco smoke)</td><td>Consider reducing clozapine dose when 3A4 or 1A2 inducers are discontinued</td></tr>
</table>
</td>
</tr>
<tr>
<td>Iloperidone</td>
<td>Fanapt®</td>
<td>2D6 (major), 3A4</td>
<td><u>Extensive metabolizers</u>
Iloperidone: 18
P88: 26
P95: 23
<u>Poor metabolizers</u>
Iloperidone: 33
P88: 37
P95: 31</td>
<td>

Use with caution in moderate hepatic impairment
Not recommended in severe hepatic impairment

<table>
<tr><th>Factors</th><th>Iloperidone Dose Adjustments</th></tr>
<tr><td>Strong 2D6 or 3A4 Inhibitors</td><td>Reduce dose</td></tr>
</table>
</td>
</tr>
<tr>
<td>Lumateperone</td>
<td>Caplyta®</td>
<td>UGT1A1, 3A4, 2C8, 1A2</td>
<td>18 hours (IV administration)</td>
<td>

Administer without food (a high-fat meal with lumateperone can lower mean C_{max} by 33% and increases AUC by 9%)
Not recommended in moderate-to-severe hepatic impairment (Child-Pugh B or Child-Pugh C)

<table>
<tr><th>Factors</th><th>Lumateperone Dose Adjustments</th></tr>
<tr><td>3A4 Inducers</td><td>Avoid concomitant use</td></tr>
<tr><td>Moderate or strong 3A4 Inhibitor</td><td>Avoid concomitant use</td></tr>
</table>
</td>
</tr>
<tr>
<td>Lurasidone</td>
<td>Latuda®</td>
<td>3A4</td>
<td>Lurasidone: 18-40
ID-14283: 7.5-10</td>
<td>

Weak 3A4 inhibitor
Administer with food (≥350 calories) (administration with food increases AUC ~2x and C_{max} ~3x)
Active metabolite: ID-14283, ID-14326
CrCl < 50 mL/min: Initial dose 20 mg; max dose 80 mg
Moderate-to-severe hepatic impairment (Child-Pugh B or C):

Child-Pugh B: Initial dose 20 mg; max dose 80 mg
Child-Pugh C: Initial dose 20 mg; max dose 40 mg

<table>
<tr><th>Factors</th><th>Lurasidone Dose Adjustments</th></tr>
<tr><td>Strong 3A4 Inhibitors</td><td>Avoid concomitant use</td></tr>
<tr><td>Moderate 3A4 Inhibitors</td><td>Administer ½ of usual dose</td></tr>
<tr><td>Strong 3A4 Inducers</td><td>Avoid concomitant use</td></tr>
<tr><td>Moderate 3A4 Inducers</td><td>Increase dose</td></tr>
</table>
</td>
</tr>
<tr>
<td>Olanzapine</td>
<td>Zyprexa®
Relprevv®</td>
<td>1A2 (major), 2D6, glucuronidation</td>
<td>PO: 30 hours
Relprevv: 30 days</td>
<td>

Use with caution in hepatic impairment
Not removed by dialysis
Cigarette smoke can induce 1A2 (cannabis can induce 1A2; consider dose adjustment when patient stops or resumes smoking)
See package insert for specific dose adjustments regarding drug-drug interactions

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<tr>
<td>Paliperidone</td>
<td>Invega®
Sustenna®
Trinza®</td>
<td>Pgp, ABCB1, 2D6, 3A4</td>
<td>Paliperidone: 23
Renal impairment (CrCl <80 mL/min): 24-51</td>
<td>

No dose adjustments in mild-to-moderate hepatic impairment, and not studied in severe hepatic impairment.
Renal impairment:

CrCl < 10 mL/min: Not recommended for use

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</tr>
</table>

Table 2: Pharmacokinetics & Drug-Drug Interactions[1-4]

<table>
<tr><td></td><td></td><td></td><td>Sustenna® 39-234 mg
25-49 days

Trinza® 273-819 mg
84-95 days (deltoid injection)
118-139 days (gluteal injection)</td><td>o CrCl 10-49 mL/min: max dose 3 mg/day
o CrCl 50-79 mL/min: max dose 6 mg/day
<table><tr><th>Factors</th><th>Paliperidone Dose Adjustments</th></tr><tr><td>Strong 3A4 and Pgp Inducer</td><td>May consider increasing paliperidone PO dose (avoid concomitant use in Sustenna® and Trinza®)</td></tr><tr><td>Divalproex sodium</td><td>See package insert</td></tr></table></td></tr>
<tr><td>Quetiapine</td><td>Seroquel®
Seroquel XR®</td><td>3A4 (major), 2D6</td><td>Quetiapine: 6-7
Norquetiapine: 12</td><td>• Active metabolite: Norquetiapine
• IR: Can be taken with or without food
• XR: Administer without food or with a light meal (~300 calories), (a light meal had no significant effect on AUC or C_{max} of quetiapine)
• Hepatic impairment:
o IR: Initial dose 25 mg/day, increase by 25-50 mg/day to effective dose
o ER: Initial dose 50 mg/day, increase by 50 mg/day to effective dose
<table><tr><th>Factors</th><th>Quetiapine Dose Adjustments</th></tr><tr><td>Strong 3A4 Inhibitors</td><td>Administer 1/6 of usual dose</td></tr><tr><td>Strong 3A4 Inducers</td><td>Administer ≤5x of usual dose with chronic treatment (>7-14 days) of strong 3A4 Inducers</td></tr><tr><td>Discontinuation of strong 3A4 Inducers</td><td>Reduce quetiapine dose by 5x within 7-14 days of 3A4 inducer discontinuation</td></tr></table></td></tr>
<tr><td>Risperidone</td><td>Risperdal®
Perseris®
Risperdal Consta®</td><td>2D6 (major), 3A4, Pgp, N-dealkylation</td><td>Risperidone: 3-20
9-hydroxyrisperidone: 21-30

Perseris®: 9-11 days

Consta®: 3-6 days</td><td>• Weak 2D6 inhibitor
• Active metabolite: 9-hydroxyrisperidone
• Renal impairment:
o CrCl ≥30 mL/min: Reduce dose
o CrCl <30: Start at 0.5 mg BID, increase by ≤0.5 mg BID, may increase total dosage to >1.5 mg BID at 1 week or more
• Hepatic impairment:
o Child-Pugh A or Child-Pugh B: reduce dose
o Child-Pugh C: Start at 0.5 mg BID, increase by ≤0.5 mg BID, may increase total dosage to >1.5 mg BID at 1 week or more
• See package insert for specific dose adjustments regarding drug-drug interactions</td></tr>
<tr><td>Ziprasidone</td><td>Geodon®</td><td>1A2/3A4 (minor)</td><td>PO: 7
IM: 2-5</td><td>• Active metabolites: benzisothiazole sulfoxide and benzisothiazole sulfone
• Administer with food (≥500 calories without regard to fat content, absorption is increased ≤2x with food)[3]
• Ziprasidone not removed by dialysis
• Use with caution in hepatic impairment.
• IM ziprasidone contains cyclodextrin – use with caution in renal impairment
• See package insert for specific dose adjustments regarding drug-drug</td></tr>
</table>

Table 2: Pharmacokinetics & Drug-Drug Interactions[1-4]

	Common DDI Offenders*					
	3A4		2D6	1A2		Pgp
	Inducers	Inhibitors	Inhibitors	Inducers	Inhibitors	Inhibitors
Weak Inhibitor: ↑ substrate† AUC ≥1.25 to <2x Inducer: ↓ substrate† AUC ≥20% to <50%	Armodafinil Modafinil 200 mg		Amiodarone Clobazam Escitalopram Fluvoxamine Labetalol Ritonavir Sertraline		Allopurinol	(↑ digoxin AUC ≥1.25x) Clarithromycin Verapamil
Moderate Inhibitor: ↑ substrate† AUC ≥2 to <5x Inducer: ↓ substrate† AUC ≥50% to <80%	Phenobarbital	Ciprofloxacin Diltiazem Fluconazole Fluvoxamine Verapamil	Duloxetine	Phenytoin Rifampin Ritonavir 800 mg Smoking	Oral contraceptives	(↑ digoxin AUC ≥2x with co-administration) Amiodarone Carvedilol Clarithromycin Ritonavir Some HIV medications & antifungals
Strong Inhibitor: ↑ substrate† AUC ≥5x Inducer: ↓ substrate† AUC ≥80%	Carbamazepine Phenytoin Rifampin St. John's wort	Clarithromycin Grapefruit juice Nefazodone Some HIV medications & antifungals	Bupropion Fluoxetine Paroxetine		Fluvoxamine Ciprofloxacin	

Not a comprehensive list of all potential drug-drug interactions; please refer to the desired drug's prescribing information for additional details and dosage adjustments, as necessary.
†According to the FDA, these area under the curve (AUC) changes are applicable to "sensitive" substrates; not all antipsychotics are "sensitive" substrates and yield the specific degree of AUC changes; please refer to the desired drug's prescribing information for additional details and dosage adjustments, as necessary.

1. *Prescribing Information*
2. *Association, A. P. (2020). The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia. doi:10.1176/appi.books.9780890424841*
3. *Lincoln, J., Stewart, M. E., & Preskorn, S. H. (2010). How Sequential Studies Inform Drug Development: Evaluating the Effect of Food Intake on Optimal Bioavailability of Ziprasidone. Journal of Psychiatric Practice, 16(2), 103-114. doi:10.1097/01.pra.0000369971.64908.dc*
4. *Center for Drug Evaluation and Research. (n.d.). Table of Substrates, Inhibitors and Inducers. Retrieved December 01, 2020, from https://www.fda.gov/drugs/drug-interactions-labeling/drug-development-and-drug-interactions-table-substrates-inhibitors-and-inducers*

Table 3: Pregnancy Categories & Nursing Mother[1-2]

Medication	Pregnancy Category (PC) *Note: Neonates exposed to antipsychotic drugs, during the third trimester of pregnancy are at risk for extrapyramidal and/or withdrawal symptoms following delivery. There have been reports of agitation, hypertonia, hypotonia, tremor, somnolence, respiratory distress and feeding disorder in these neonates. These complications have varied in severity; while in some cases symptoms have been self-limited, in other cases neonates have required intensive care unit support and prolonged hospitalization*	Nursing Mother (NM)
Chlorpromazine	**Safety for the use of chlorpromazine during pregnancy has not been established.** Therefore, it is not recommended that the drug be given to pregnant patients except when, in the judgment of the physician, it is essential. The potential benefits should clearly outweigh possible hazards. There are reported instances of prolonged jaundice, extrapyramidal signs, hyperreflexia or hyporeflexia in newborn infants whose mothers received phenothiazines. **Chlorpromazine hydrochloride should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.**	**There is evidence that chlorpromazine is excreted in the breast milk of nursing mothers.** Because of the potential for serious adverse reactions in nursing infants from chlorpromazine, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother.
Fluphenazine	**The safety for the use of this drug during pregnancy has not been established**; therefore, the possible hazards should be weighed against the potential benefits when administering this drug to pregnant patients. **Fluphenazine hydrochloride should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.**	
Fluphenazine Decanoate	**The safety for the use of this drug during pregnancy has not been established; therefore, the possible hazards should be weighed against the potential benefits when administering this drug to pregnant patients.**	
Haloperidol	**Haloperidol should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. There are no well controlled studies with haloperidol in pregnant women.** There are reports, however, of cases of limb malformations observed following maternal use of haloperidol along with other drugs which have suspected teratogenic potential during the first trimester of pregnancy. Causal relationships were not established in these cases. Since such experience does not exclude the possibility of fetal damage due to haloperidol, **this drug should be used during pregnancy or in women likely to become pregnant only if the benefit clearly justifies a potential risk to the fetus**. Infants should not be nursed during drug treatment.	**Since haloperidol is excreted in human breast milk, infants should not be nursed during drug treatment with haloperidol decanoate.**
Haloperidol Decanoate	**There are no adequate and well-controlled studies in pregnant women.** There are reports, however, of cases of limb malformations observed following maternal use of haloperidol along with other drugs which have suspected teratogenic potential during the first trimester of pregnancy. Causal relationships were not established with these cases. **Since such experience does not exclude the possibility of fetal damage due to haloperidol, haloperidol decanoate should be used during pregnancy or in women likely to become pregnant only if the benefit clearly justifies a potential risk to the fetus.**	**Since haloperidol is excreted in human breast milk, infants should not be nursed during drug treatment with haloperidol decanoate.**
Loxapine	**Loxapine Succinate should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.** **Safe use of loxapine during pregnancy or lactation has not been established**; therefore, its use in pregnancy, in nursing mothers, or in women of childbearing potential requires that the benefits of treatment be weighed against the possible risks to mother and child. No embryotoxicity or teratogenicity was observed in studies in rats, rabbits, or dogs although, with the exception of one	The extent of the excretion of loxapine or its metabolites in human milk is not known. However, loxapine and its metabolites have been shown to be transported into the milk of lactating dogs. Loxapine administration to nursing women should be avoided if clinically possible.

Table 3: Pregnancy Categories & Nursing Mother[1-2]

	rabbit study, the highest dosage was only two times the maximum recommended human dose and in some studies it was below this dose. Perinatal studies have shown renal papillary abnormalities in offspring of rats treated from mid-pregnancy with doses of 0.6 and 1.8 mg/kg, doses which approximate the usual human dose but which are considerably below the maximum recommended human dose.	
Inhaled Loxapine (Adasuve®)	**There are no adequate and well-controlled studies of inhaled loxapine use in pregnant women.** Loxapine, the active ingredient in inhaled loxapine, has demonstrated increased embryofetal toxicity and death in rat fetuses and offspring exposed to doses approximately 0.5-fold the maximum recommended human dose (MRHD) on a mg/m2 basis. **Inhaled loxapine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.**	It is not known whether loxapine is present in human milk. Loxapine and its metabolites are present in the milk of lactating dogs. Because many drugs are excreted in human milk and because of the potential for serious adverse reactions in nursing infants from loxapine, a decision should be made whether to discontinue nursing or discontinue loxapine, taking into account the importance of the drug to the mother
Molindone	**Studies in pregnant patients have not been carried out.** Reproduction studies have been performed in the following animals (pregnant rats, pregnant mice, pregnant rabbits). Animal reproductive studies have not demonstrated a teratogenic potential. The anticipated benefits must be weighed against the unknown risks to the fetus if used in pregnant patients. **Molindone Hydrochloride should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.**	Data are not available on the content of Molindone Hydrochloride in the milk of nursing mothers.
Perphenazine	**Safe use of perphenazine during pregnancy and lactation has not been established**; therefore, in administering the drug to pregnant patients, nursing mothers, or women who may become pregnant, the possible benefits must be weighed against the possible hazards to mother and child. **Perphenazine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.**	Safe use of perphenazine during pregnancy and lactation has not been established; therefore, in administering the drug to pregnant patients, nursing mothers, or women who may become pregnant, the possible benefits must be weighed against the possible hazards to mother and child.
Pimozide	Reproduction studies performed in rats and rabbits at oral doses up to 8 times the maximum human dose did not reveal evidence of teratogenicity. In the rat, however, this multiple of the human dose resulted in decreased pregnancies and in the retarded development of fetuses. These effects are thought to be due to an inhibition or delay in implantation which is also observed in rodents administered other antipsychotic drugs. In the rabbit, maternal toxicity, mortality, decreased weight gain, and embryotoxicity including increased resorptions were dose-related. Because animal reproduction studies are not always predictive of human response, pimozide should be given to a pregnant woman only if the potential benefits of treatment clearly outweigh the potential risks. **Pimozide should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.**	It is not known whether pimozide is excreted in human milk. Because many drugs are excreted in human milk and because of the potential for tumorigenicity and unknown cardiovascular effects in the infant, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother.
Thioridazine	**Reproductive studies in animals and clinical experience to date have failed to show a teratogenic effect with thioridazine.** However, in view of the desirability of keeping the administration of all drugs to a minimum during pregnancy, thioridazine should be given only when the benefits derived from treatment exceed the possible risks to mother and fetus. **Thioridazine hydrochloride should be used during pregnancy only if the potential benefit justifies the**	

Table 3: Pregnancy Categories & Nursing Mother[1-2]

	potential risk to the fetus.	
Thiothixene	**Safe use of thiothixene capsules during pregnancy has not been established.** Therefore, this drug should be given to pregnant patients only when, in the judgment of the physician, the expected benefits from the treatment exceed the possible risks to mother and fetus. **Thiothixene capsules should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.** Animal reproduction studies and clinical experience to date have not demonstrated any teratogenic effects. In the animal reproduction studies with thiothixene capsules, there was some decrease in conception rate and litter size, and an increase in resorption rate in rats and rabbits. Similar findings have been reported with other psychotropic agents. After repeated oral administration of thiothixene capsules to rats (5 to 15 mg/kg/day), rabbits (3 to 50 mg/kg/day), and monkeys (1 to 3 mg/kg/day) before and during gestation, no teratogenic effects were seen.	
Trifluoperazine	**Safety for the use of trifluoperazine HCl during pregnancy has not been established.** Therefore, it is not recommended that the drug be given to pregnant patients except when, in the judgment of the physician, it is essential. The potential benefits should clearly outweigh possible hazards. There are reported instances of prolonged jaundice, extrapyramidal signs, hyperreflexia or hyporeflexia in newborn infants whose mothers received phenothiazines. Reproductive studies in rats given over 600 times the human dose showed an increased incidence of malformations above controls and reduced litter size and weight linked to maternal toxicity. These effects were not observed at half this dosage. No adverse effect on fetal development was observed in rabbits given 700 times the human dose nor in monkeys given 25 times the human dose. **Trifluoperazine Hydrochloride should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.**	**There is evidence that phenothiazines are excreted in the breast milk of nursing mothers.** Because of the potential for serious adverse reactions in nursing infants from trifluoperazine, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother.

Note: "Grayed out" boxes indicate that use during nursing and breast-feeding were not referred within the medications' prescribing information; it is likely <u>not known</u> if these medications are present in breast milk.

1. Prescribing Information
2. Association, A. P. (2020). The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia. doi:10.1176/appi.books.9780890424841

Note: Bolded agents reflect formulary status at SCVMC

Table 4: Atypicals & Typicals Serious Adverse Effects[1-2]

	Seizures (relative risk)	**QTc prolongation** (relative risk)	**Syncope & Orthostatic Hypotension** (relative risk)	**Tardive Dyskinesia** (relative risk)	**Leukopenia, Neutropenia, Agranulocytosis**	**Other ADRs**
First Generation Antipsychotics						
Chlorpromazine	++	+++	+++	+++	X	
Fluphenazine	+	++	+	+++	X	
Haloperidol	+	++	+	+++	X	
Loxapine	+	++	++	++	X	
Molindone	+	++	+	++	X	
Perphenazine	+	++	++	++	X	
Pimozide	+++	+++	+	+++	X	
Thioridazine	++	+++	+++	+	X	• Pigmentary retinopathy • Avoid use if concomitant use of drugs that inhibit 2D6 or prolong the QTc interval, or if QTc interval is >450 msec
Thiothixene	+++	++	+	+++	X	
Trifluoperazine	+	++	+	++	X	
Second Generation Antipsychotics						
Aripiprazole	+	+	+	+	X	• Impulse control disorders
Asenapine	+	++	++	++	X	• Oral hypoesthesia
Brexpiprazole	+	++	+	+	X	• Impulse control disorders
Cariprazine	+	++	+	+	X	(Late-occurring ADRs—monitor several weeks after starting)
Clozapine	+++	++	+++	+	X	Possible • Paralytic ileus • Severe Constipation • Fever with initiation Infrequent/Rare • Myocarditis and Cardiomyopathy • Severe Neutropenia
Iloperidone	+	+++	+++	+	X	• Dose-related ↑SCr in some patients • Priapism
Lumateperone					X	
Lurasidone	+	+	+	++	X	
Olanzapine	++	++	++	+	X	• DRESS
Paliperidone	+	++	++	++	X	• GI obstruction
Quetiapine	++	++	++	+	X	• Cataracts (lens changes)
Risperidone	+	++	++	++	X	• Reported intraoperative floppy iris syndrome Risperdal Consta® • Priapism • Thrombotic Thrombocytopenia Purpura (TTP)
Ziprasidone	+	+++	++	+	X	• DRESS

References:

1. *Prescribing Information*
2. *Association, A. P. (2020). The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia. doi:10.1176/appi.books.9780890424841*

Table 5: Atypicals & Typicals Common Adverse Effects[1]

	Weight Gain & Diabetes Mellitus	Hyper-cholesterolemia	EPS/TD	Prolactin Elevation	Sedation	Anticholinergic Side Effects	Orthostatic Hypotension
Chlorpromazine	++/++	+	++/+++	+	+++	+++	+++
Fluphenazine*	++/+	+	+++/+++	+++	+	+	+
Haloperidol*	++/+	+	+++/+++	+++	+	+	+
Loxapine	+/+	+	++/++	++	++	+	++
Molindone	+/+	+	++/++	++	++	+	+
Perphenazine	++/+	+	++/++	++	++	++	++
Pimozide	+/+	+	+++/+++	+++	+	+	+
Thioridazine	++/+	+	+/+	++	+++	+++	+++
Thiothixene	+/+	+	+++/+++	+++	+	+	+
Trifluoperazine	++/+	+	++/++	++	+	++	+
Aripiprazole*	+/+	+	++/+	+	+	+	+
Asenapine	++/++	++	++/++	++	++	+	++
Brexpiprazole	+/+	++	+/+	++	+	+	+
Cariprazine	++/+	+	+/+	+	++	++	+
Clozapine	+++/+++	+++	+/+	+	+++	+++	+++
Iloperidone	++/++	+	+/+	++	++	+	+++
Lurasidone	+/++	++	++/++	++	++	+	+
Olanzapine*	+++/+++	+++	+/+	++	+++	++	++
Paliperidone*	++/+	++	++/++	+++	+	+	++
Quetiapine	++/++	+++	+/+	+	+++	++	++
Risperidone*	++/++	+	++/++	+++	++	+	++
Ziprasidone	+/+	+	+/+	++	++	+	++

Injectable formulations may have injection-site reactions as a potential adverse effect.

References:

1. *Association, A. P. (2020). The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia. doi:10.1176/appi.books.9780890424841*

Table 6: Drug Formulations[1]

	Tablet (T) or Capsule (C)	**Oral Solution/Syrup**	**~~Rectal Suppository~~**	**Depot (mg/mL)**	**IM (mg/mL)**	Inhaled Powder (mg)
Chlorpromazine	T: 10, 25, 50, 100, 200				25, 50 mg/2 mL)	
Fluphenazine	T: 1, 2.5, 5, 10	Elixir: 2.5 mg/5mL Solution: 5 mg/mL			2.5	
Fluphenazine Decanoate				25		
Haloperidol	T: 0.5, 1, 2, 5, 10, 20	Solution: 2 mg/mL			5	
Haloperidol Decanoate				50, 100		
Loxapine	C: 5, 10, 25, 50					
Inhaled Loxapine (Adasuve®)						10
Molindone	T: 5, 10, 25					
Perphenazine	T: 2, 4, 8, 16					
Pimozide	T: 1, 2					
Thioridazine	T: 10, 25, 50, 100,					
Thiothixene	C: 1, 2, 5, 10					
Trifluoperazine	T: 1, 2, 5,10		-	-		

Reference:

1. Prescribing Information, MicroMedex

Table 7: Dose Equivalencies[1]

Psychiatric Pharmacy Essentials: Antipsychotic Dose Equivalents

It is not uncommon that patients may need to be switched from one antipsychotic to another. Chlorpromazine equivalents help guide clinicians in estimating an approximately equivalent dose when transitioning from one antipsychotic to another.

How should I convert doses between different antipsychotics?[1-8]

Antipsychotic Dose Equivalents (based on chlorpromazine equivalents)

First Generation Antipsychotics		
Chlorpromazine	Thorazine®	100 mg
Fluphenazine	Prolixin®	2 mg
Haloperidol	Haldol®	2 mg
Loxapine	Loxitane®	10 mg
Perphenazine	Trilafon®	8 mg
Pimozide	Orap®	2 mg
Prochlorperazine	Compazine®	15 mg
Trifluoperazine	Stelazine®	2-5 mg
Thioridazine	Mellaril®	100 mg
Thiothixene	Navane®	4 mg
Second Generation Antipsychotics		
Aripiprazole	Abilify®	7.5 mg
Asenapine	Saphris®	4 mg[1]
Brexpiprazole	Rexulti®	N/A
Cariprazine	Vraylar®	N/A
Clozapine	Clozaril®	100 mg
Iloperidone	Fanapt®	3-4 mg[1]
Lurasidone	Latuda®	16 mg[1]
Olanzapine	Zyprexa®	5 mg
Paliperidone	Invega®	2 mg[1]
Quetiapine	Seroquel®	75 mg
Risperidone	Risperdal®	1 mg
Ziprasidone	Geodon®	60 mg

Long-Acting Injectable Antipsychotic IM Equivalents

Based on: Rothe PH, Heres S, Leucht S. Dose equivalents for second generation long-acting injectable antipsychotics: The minimum effective dose method. Schizophr Res. 2018;193:23-8.

Aripiprazole lauroxil (Aristada)	441mg (300mg of aripiprazole) every 4 weeks
Aripiprazole microspheres (Abilify Maintena)	400mg every 4 weeks
Haloperidol decanoate (Haldol Decanoate)	50mg every 4 weeks
Olanzapine pamoate (Zyprexa Relprevv)	210mg every 2 weeks
Paliperidone palmitate (Invega Sustenna)	25mg every 4 weeks
Risperidone microspheres (Risperdal Consta)	25mg every 2 weeks
Risperidone suspension (Perseris)	90mg every 4 weeks

Minimum effective dose defined as the lowest fixed dose from at least one double blind randomized control trial which demonstrated consistent superior efficacy over placebo.[4]

References

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Psychiatric Pharmacy Essentials: Antipsychotic Dose Equivalents. (n.d.). Retrieved December 03, 2020, from https://cpnp.org/guideline/essentials/antipsychotic-dose-equivalents[1]