DSM-5 Criteria: Schizophrenia

Box 5.

DSM-5 Diagnosis: Schizophrenia

- Two (or more) of the following, each present for a significant portion of time during a 1-month period (or less if successfully treated). At least one of these must be delusions, hallucinations or disorganized speech:
  - Delusions
  - Hallucinations
  - Disorganized speech (e.g., frequent derailment or incoherence)
  - Grossly disorganized or catatonic behavior
  - Negative symptoms (i.e., diminished emotional expression or avolition)
- Continuous signs of the disturbance persist for at least 6 months. This 6-month period must include at least 1 month of symptoms (or less if successfully treated) that meet the above criteria (i.e., active phase symptoms) and may include periods of prodromal or residual symptoms. During these prodromal or residual periods, the signs of the disturbance may be manifested only be negative symptoms or by two or more symptoms listed above present in an attenuated form.
- For a significant portion of time since the onset of the disturbance, level of functioning in one or more major areas, such as work, interpersonal relations, or self-care is markedly below the level achieved prior to the onset (or when the onset is in childhood or adolescence, there is a failure to achieve expected level of interpersonal, academic, or occupational functioning).
- Schizoaffective disorder and depressive or bipolar disorder with psychotic features have been ruled out.
- The disturbance is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition.
- If there is a history of autism spectrum disorder or a communication disorder of childhood onset, the additional diagnosis of schizophrenia is made only if prominent delusions or hallucinations, in addition to the other required symptoms of schizophrenia, are also present for at least 1 month (or less if successfully treated).

Treatment of Schizophrenia

Note: *Treatment recommendations are based on levels of evidence and expert opinion. For a description of the criteria for each level, see page 4.*

Conduct comprehensive assessment and use measurement-based care. Refer to Principles of Practice on pages 6–11.

Most importantly, assess social support system (housing, family, other caregivers) and evaluate threats to continuity of care (access to medication, adherence, etc.).

Strongly recommend psychiatric consultation prior to initiation of therapy + psychotherapeutic medication using a multi-disciplinary approach if treated by a non-psychiatrist.

Level 1 Initial Treatment:

- ✦ Monotherapy with an antipsychotic (SGA) other than clozapine*—either oral, or oral antipsychotic followed by the same SGA-LAI (if tolerable and sufficiently efficacious)
- ✦ If initial trial of antipsychotic monotherapy unsuccessful, try monotherapy with another SGA antipsychotic (either oral or LAI) with low metabolic adverse effects.

**Note: Balance efficacy, side-effects, individual vulnerabilities and preferences. Select a medication with lower metabolic risk, lower risk of extrapyramidal symptoms (EPS), sedation, and sexual side-effects. For more detail on LAIs, refer to page 43.*

Level 2A If non-adherent or refractory to Level 1:

- ✦ Long-acting injectable antipsychotic medication (LAI)

Level 2B If Level 1 is ineffective in at least two antipsychotic trials:

- ✦ Clozapine

Level 3 If Levels 1 and 2 are ineffective and/or not well tolerated:

- ✦ Diagnostic review and/or consultation
- ✦ Clozapine if not tried earlier
- ✦ Antipsychotic, including clozapine + electroconvulsive therapy (ECT)
- ✦ Augmentation of clozapine with aripiprazole, lamotrigine, topiramate or if partial or incomplete response to clozapine

Level 4 If Levels 1, 2, and 3 are ineffective and/or not well tolerated:

- ✦ Two antipsychotics, ideally with different pharmacological mechanisms* and side-effect profiles (evidence is weak)
- ✦ First generation antipsychotic use

**Full antagonist with partial agonist; loose binding with tight binding*

Table 4. Recommended Medications for the Treatment of Schizophrenia: Oral Antipsychotics

Medication	Chlorpromazine Equivalents[a]	Acute Therapy	Maintenance Therapy[b]
First Generation Antipsychotics (FGAs)			
Chlorpromazine	100	300–1,000 mg/day	300–800 mg/day
Fluphenazine HCl	2	5–20 mg/day	5–15 mg/day
Haloperidol	2	5–20 mg/day	6–12 mg/day
Loxapine	10	30–100 mg/day	30–60 mg/day
Molindone	10	30–100 mg/day	30–60 mg/day
Perphenazine	8	16–80 mg/day	16–64 mg/day
Thiothixene	5	15–50 mg/day	15–30 mg/day
Trifluoperazine	5	15–50 mg/day	15–30 mg/day
Second Generation Antipsychotics (SGAs)			
Aripiprazole	N/A	10-30 mg/day	10–30 mg/day
Asenapine	N/A	10–20 mg/day	10–20 mg/day
Brexpiprazole	N/A	2–4 mg/day	2–4 mg/day
Cariprazine	N/A	1.5–6 mg/day	3–6 mg/day
Clozapine	N/A	150–800 mg/day	150–800 mg/day
Iloperidone	N/A	12–24 mg/day	12–24 mg/day
Lurasidone	N/A	40–160 mg/day	40–160 mg/day
Olanzapine	N/A	10–30 mg/day	10–20 mg/day
Paliperidone	N/A	3–12 mg/day	3–12 mg/day
Quetiapine	N/A	300–800 mg/day	300–800 mg/day
Risperidone	N/A	2–8 mg/day	2–8 mg/day
Ziprasidone	N/A	80–240 mg/day	80–160 mg/day

Notes:

Recommendations may be below FDA maximum approved doses but are based on current evidence and expert consensus.

Consider lower doses for first episode due to better response and higher side effects to medications in pharmaceutically naïve patients. Use atypical antipsychotics and avoid haloperidol completely due to well-documented neuronal cell death caused by haloperidol (and also fluphenazine and perphenazine). Thioridazine is not recommended due to concerns about ventricular arrhythmias (Torsades de Pointes).

[a]Approximate dose equivalent to 100 mg of chlorpromazine (relative potency); it may not be the same at lower versus higher doses. Chlorpromazine equivalent doses are not relevant to the second generation antipsychotics and therefore are not provided for these agents.

[b]Drug-drug interactions (DDIs) can impact dosing. Maintenance dose should generally be no less than half of the initial clinically effective dose, as that can result in reduced effectiveness of relapse prevention.

Treatment of Schizophrenia with Long-Acting Injectable Antipsychotic Medications (LAIs)

Note: *Treatment recommendations are based on levels of evidence and expert opinion. For a description of the criteria for each level, see page 4.*

Conduct a comprehensive assessment and use measurement-based care as found in the Principles of Practice on pages 6–11.

Assess social determinants (housing, family, other caregivers) and evaluate threats to continuity of care (access to medication, adherence, etc.).

Strongly recommend psychiatric consultation prior to initiation of therapy + psychotherapeutic medication using a multi-disciplinary approach if treated by a non-psychiatrist.

Level 1 Initial Treatment:

- After stabilization or obtaining sufficient evidence for efficacy and tolerability, offer any of the following long-acting injectable antipsychotics (LAI). Base the selection on past efficacy and tolerability patterns to specific oral or LAI, expected tolerability advantages*, desired injection intervals, and procedural (oral overlap needed- yes versus no)/logistic/access/cost considerations:
  - Aripiprazole monohydrate
  - Aripiprazole lauroxil
  - Paliperidone palmitate
  - Risperidone microspheres
  - Risperidone extended release subcutaneous injectable.
- If initial, adequate trial (minimum 3 to 4 months) of LAI is unsuccessful, try monotherapy with another LAI from the above group or address potential reasons for efficacy difficulty on the LAI. Refer to Figure 1: Management of Breakthrough Psychosis with LAI for options to consider if psychotic symptoms persist despite adequate medication trial.

**Note:* Balance efficacy, side-effects, individual vulnerabilities and preferences. Select medication with lower propensity for metabolic and extrapyramidal side-effects.*

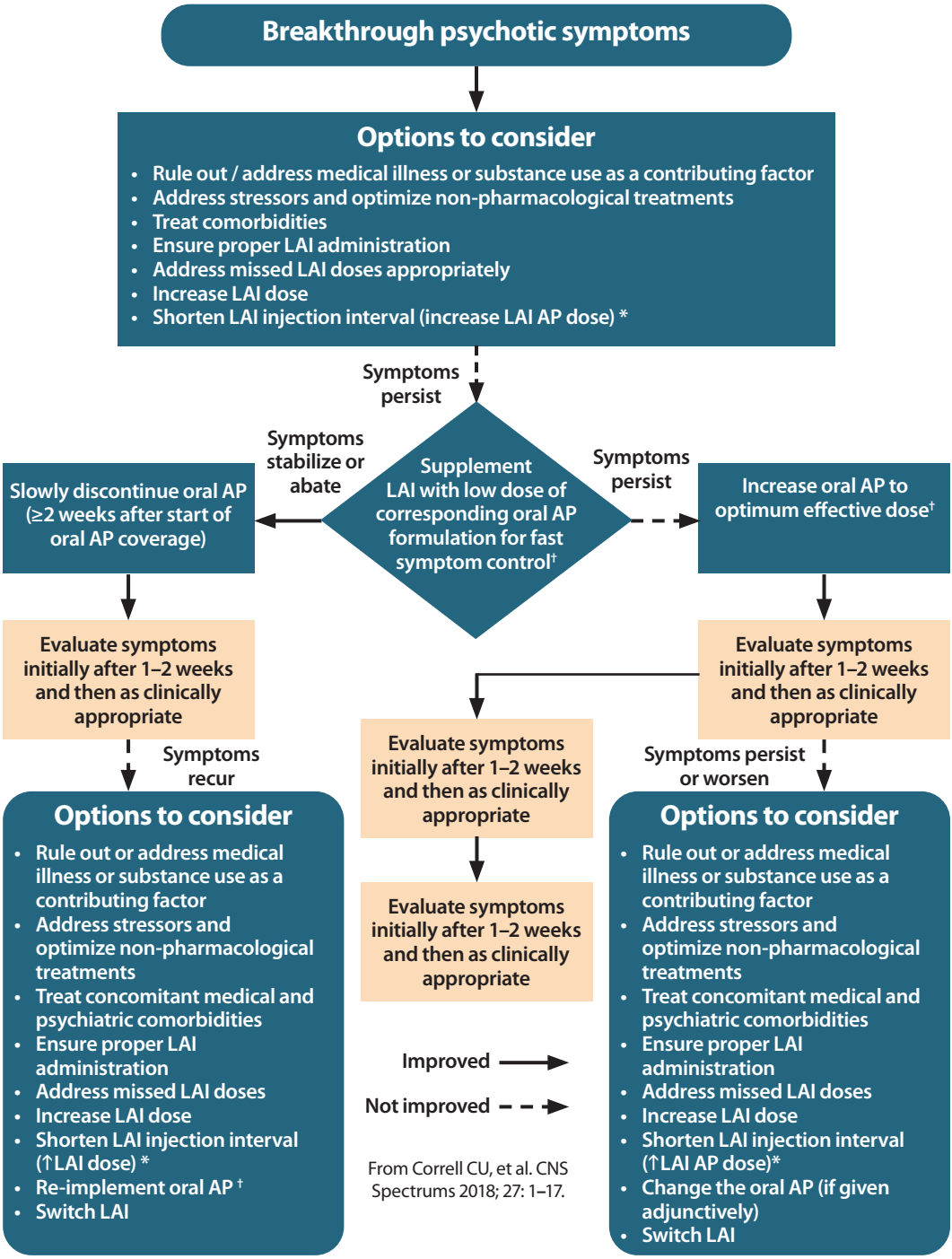
Level 2 If Level 1 is ineffective and/or not well tolerated:

- Consider LAI with greater adverse effect risk [olanzapine: post-injection delirium/sedation syndrome (PDSS); FGA-LAIs: EPS, TD]
  - Olanzapine pamoate
  - Fluphenazine decanoate
  - Haloperidol decanoate

Level 3 If Levels 1 and 2 are ineffective and/or not well tolerated:

- Diagnostic review and/or consultation
- Consider switch to an oral antipsychotic not available as an LAI (if adherence can be assured)
- Clozapine if not tried earlier
- LAI + electroconvulsive therapy (ECT) or oral antipsychotic
- Clozapine + ECT

Figure 1. Management of Breakthrough Psychosis with Long-Acting Injectable Antipsychotics (LAIs)



**Off-label strategy; based on expert opinion.*

†Caution should be exercised with this strategy, because data on the safety of concomitant use of LAI and oral APs are limited, especially over extended periods of time.

Table 5. Recommended Medications for the Treatment of Schizophrenia: Long-Acting Injectable Antipsychotics

Medication	Dose Interval	Dosage Strengths/ Forms	Starting Dose	Maintenance Dose	Oral Supplementation	Time to Peak	Steady State
First-Generation Long-Acting Injectable Antipsychotics*							
Fluphenazine decanoate	Varies	25 and 100 mg/mL ampoules/vials/ syringes	Varies, 12.5 mg	Varies, 12.5 to 100 mg	No	2 to 4 days	2 to 3 months
Haloperidol decanoate	4 weeks	50 and 100 mg/mL ampoules	Varies, 50 mg	Varies, 300 mg	No	6 to 7 days	2 to 3 months
Second-Generation Long-Acting Injectable Antipsychotics*							
Aripiprazole monohydrate (Abilify Maintena®)	Monthly	300, 400 mg vial kits and dual-chamber syringe	400 mg	400 mg (300 to 400 mg)	2 weeks	5 to 7 days	400 mg: 4 to 8 months 300 mg: 3 to 4 months
(Aripiprazole lauroxil (Aristada®)	Monthly for 441 mg dose; monthly to every 6 weeks for 882 mg dose; bimonthly for 1,064 mg dose	441; 662; 882; 1,064 mg prefilled syringes	Varies 441 mg to 1,064 mg**	Varies, 441 to 882 mg	3 weeks if Aristada Initio® is not administered at the beginning of treatment. If initiating treatment with Aristada Initio®, 1 day oral supplementation with aripiprazole 30 mg tablet is required.	4 days	4 to 6 months

Table 5. Recommended Medications for the Treatment of Schizophrenia: Long-Acting Injectable Antipsychotics *(continued)*

Medication	Dose Interval	Dosage Strengths/ Forms	Starting Dose	Maintenance Dose	Oral Supplementation	Time to Peak	Steady State
Aripiprazole lauroxil (Aristada Initio®)	Once at the beginning to initiate aripiprazole lauroxil (Aristada®) treatment	675 mg	675 mg	Not applicable (N/A)	1 day (aripiprazole 30 mg tablet) —therapeutic levels in 4 days	27 days	With single IM injection of Aristada initio® and 30 mg oral aripiprazole at time of first Aristada® dose, aripiprazole concentration reaches therapeutic levels within 4 days
Olanzapine pamoate‡ (Zyprexa Relprevv®)	2 to 4 weeks	210, 300, 405 mg vial kits	Varies, up to 300 mg every 2 weeks	Varies, up to 300 mg every 2 weeks	No	4 days	3 months
Paliperidone palmitate (Invega Sustenna®)	Monthly	39, 78, 117, 156, 234 mg prefilled syringes	234 mg (day 1) + 156 mg (day 8) Deltoid only	117 mg (39 to 234 mg)	No	13 days	7 to 11 months
Paliperidone palmitate (Invega Trinza®)	Once every 3 months	273, 410, 546, 819 mg prefilled syringes	Depends on once-monthly paliperidone palmitate (Invega Sustenna®) dose	Varies, 273 to 819 mg	No	30 to 33 days	Continues steady state at equivalent dose

Medication	Dose Interval	Dosage Strengths/ Forms	Starting Dose	Maintenance Dose	Oral Supplementation	Time to Peak	Steady State
Risperidone microspheres (Risperdal Consta®)	Once every two weeks	12.5, 25, 37.5, 50 mg vial kits	Varies, 12.5 mg to 25 mg	Varies, 12.5 mg to 50 mg	3 weeks	4-6 weeks	Steady state reached after 4 injections and maintained for 4-6 weeks after last injection
Risperidone extended release subcutaneous injectable (Perseris®)	Monthly	90 mg, 120 mg powder and liquid filled syringes	90 mg, 120 mg	90 mg, 120 mg	No	4-48 hours	4-6 weeks

Adapted and updated from: Correll CU, Kane JM, Citrome LL. Epidemiology, Prevention, and Assessment of Tardive Dyskinesia and Advances in Treatment. J Clin Psychiatry. 2017 Sep/Oct;78(8):1136-1147.

Notes:

For the most updated Florida Medicaid Preferred Drug List, visit https://ahca.myflorida.com/medicaid/Prescribed_Drug/pharm_thera/fmpdl.shtml.

**First-generation long-acting injectable antipsychotic medications (fluphenazine decanoate and haloperidol decanoate) have an oil base. Second-generation long-acting injectable antipsychotic medications (aripiprazole monohydrate, aripiprazole lauroxil, olanzapine pamoate, 1-month and 3-month paliperidone palmitate, and risperidone microspheres) have a water base.*

*** Initial Aristada® dose is based on current oral aripiprazole dose as follows: If oral aripiprazole dose is 10 mg/day, initial Aristada® dose is 441 mg once monthly. If oral aripiprazole dose is 15 mg/day, initial Aristada® dose is either 882 mg once monthly, 882 mg Aristada every 6 weeks, or 1,064 mg Aristada® every 2 months. If oral aripiprazole dose is ≥20 mg/day, initial Aristada® dose is 882 mg once monthly.*

‡Olanzapine pamoate (Zyprexa Relprevv) requires prescriber certification and patient enrollment with the Risk Evaluation and Mitigation Strategy (REMS) program. Administration of olanzapine pamoate requires at least 3-hours of post-injection monitoring for post-injection delirium/sedation syndrome (PDSS). Olanzapine has been found to cause more weight gain and related metabolic side effects than other SGAs.

Summary: Treatment of Schizophrenia with LAIs

Christoph U. Correll, M.D.
Professor of Psychiatry and Molecular Medicine, Donald and Barbara Zucker School of Medicine at Hofstra / Northwell
Investigator, Center for Psychiatric Neuroscience, Feinstein Institute for Medical Research
Medical Director, Recognition and Prevention (RAP) Program, The Zucker Hillside Hospital
Department of Psychiatry

Main Questions:

1. Are LAIs more effective than placebo?

Yes.

All approved LAIs have demonstrated efficacy for people with schizophrenia. In the USA (Correll et al., 2017), these agents include:

- First-generation antipsychotics:
  - Fluphenazine decanoate
  - Haloperidol decanoate
- Second-generation antipsychotics:
  - Aripiprazole monohydrate
  - Aripiprazole lauroxil
  - Olanzapine pamoate
  - Paliperidone palmitate
  - Risperidone microspheres
  - Risperidone extended release subcutaneous injectable

2. Are LAIs more effective than oral antipsychotics?

Yes, in many studies and settings, with some non-differential results, but very rare/virtually no data indicating better efficacy for oral antipsychotics.

Efficacy of LAIs versus oral antipsychotics depends on the study design and included population (Correll et al., 2016). In randomized clinical trials (RCTs) that include patients with better illness insight, less severity/complexity of the disease and better/monitored adherence, LAIs were not more efficacious than placebo (Kishimoto et al., 2014). In mirror image studies (Kishimoto et al., 2013) and cohort/database studies (Kishimoto et al., 2018) that enroll more generalizable patients, LAIs were superior to oral antipsychotics regarding relapse, hospitalization, and all-cause discontinuation risk, despite greater illness severity in patients started on LAIs versus oral antipsychotics in real-world studies. Additionally, LAIs have been associated with a 20–30% reduced all-cause mortality versus oral antipsychotics (Taipale et al., 2018).

3. Are LAIs tolerable?

Yes.

Generally, the adverse effects of LAIs are predictable from knowledge of the adverse effect potential of the oral counterpart and can be tested in an individual patient during lead in treatment with the oral antipsychotic.

Comparing 119 adverse events in patients randomized to an LAI or the same medication given in an oral formulation, 115 (97%) were not different, including discontinuation due to adverse event or mortality. Regarding 3 adverse effects [akinesia, (stiffness) with first generation antipsychotics (FGAs), increase in low density lipoprotein cholesterol, and anxiety], oral antipsychotics had lower events, while prolactin levels and hyperprolactinemia were lower in LAI treated patients (Misawa et al., 2016). Injection pain and injection site reactions are generally mild and infrequent (Correll et al., 2016).

Based on data with FGA-LAIs, there is no current indication that the outcome of neuroleptic malignant syndrome is worse when it occurs during LAI versus oral antipsychotic treatment, as management is symptomatic (Glazer and Kane, 1992).

An exception from the rules above is olanzapine pamoate, which is highly blood soluble and which can, in 1/1,100–1,200 injections, lead to a post-injection somnolence, sedation, and coma syndrome (known as post injection delirium/sedation syndrome, or PDSS). Therefore, at least 3 hours of post-injection observation for the duration of treatment with olanzapine pamoate is required.

4. Are there special populations in whom LAIs should especially be considered or not considered?

While prior guidelines relegated LAI use to a third-tier treatment step, unless patients were non-adherent, had multiple relapses or preferred LAIs, recent evidence and guidance includes offering LAIs to potentially all patients as a treatment option and also considering them for prevention of future non-adherence and relapse/deterioration (Llorca et al., 2013; Malla et al., 2013; Correll et al., 2016; Brugnoli et al., 2016; Galletly et al., 2016; Howes et al., 2017; Sajatovic et al., 2018).

- Populations and clinical scenarios in which first-line use of LAIs should be considered include:
  - Past or current nonadherence leading to deterioration
  - Low illness insight
  - Poor cognition
  - Dangerousness
  - Homelessness
  - Poor support system
  - Suicidality

- Emerging areas of first-line use of LAIs include:
  - High level of insight
  - High functioning (to prevent loss of function)
  - Anticipated nonadherence over time
  - Stabilized first episode and early phase patients (high future non-adherence risk, most to lose from future potential relapse)
  - Treatment-refractory patients who may be "pseudo-resistant" due to covert levels of non-adherence

The only contraindication for deep intramuscular injectable LAIs is significant anticoagulation, presenting a risk for internal bleeding/large hematomas. Needle phobia should be addressed with cognitive behavioral therapy (CBT).

5. How should break-through symptoms during LAI treatment be addressed?

Review and address non-pharmacologic reasons for exacerbation, such as substance use, other comorbid psychiatric or medical illness, psychosocial stressors, etc. Rule out drug-drug interactions and inappropriate injection (insufficient mixing prior to injection, lack of deep intramuscular injection, accumulation of late injection visits, etc.) (Correll et al., 2018).

If the above does not resolve the issue or immediate action is needed, add the same antipsychotic in oral formulation in an attempt to increase the dose. Generally, try to avoid polypharmacy with different antipsychotics, as the evidence for efficacy and safety is lacking (Galling et al., 2017; Correll et al., 2017).

If efficacy is reestablished and the higher dose is tolerated, at the next injection interval, use a higher LAI dose that corresponds to that combined LAI + oral dose. If already at the highest dose, consider changing injection site (deltoid injections lead to higher peak levels but shorter half-life, gluteal injection leads to lower peak levels but longer half-life), change to shortest FDA-approved injection interval (if not already done), or consider off-label strategy of shortening the injection interval (Correll et al., 2016; Correll et al., 2018).

6. How should LAIs best be offered in clinical care?

LAIs need to be destigmatized and presented not as a last resort or in a punitive or mistrustful way, but rather as a highly effective treatment option that offers for many patients a greater likelihood of stability and improved ability to focus on recovery. Data suggest that motivational interviewing and shared decision making, which do not pass the decision simply back to the patient, but that present the evidence and advantages in a respectful and authoritative (yet not authoritarian) way, may yield best results (Correll et al., 2016; Weiden et al., 2017). Inclusion of caregivers/significant others and/or peer counselors should also be considered (Correll et al., 2016). Furthermore, buy-in by and training of all team members can yield very high acceptance of LAIs, with such training, including role play, having been show to result in at least one LAI injection within 3 months of service engagement in >75% of first-episode and early-phase patients with schizophrenia (Kane et al., 2019).

References:

Brugnoli R, Rapinesi C, Kotzalidis GD, Marcellusi A, Mennini FS, De Filippis S, Carrus D, Ballerini A, Francomano A, Ducci G, Del Casale A, Girardi P. Model of Management (Mo. Ma) for the patient with schizophrenia: crisis control, maintenance, relapse prevention, and recovery with long-acting injectable antipsychotics (LAIs). Riv Psichiatr. 2016 Mar-Apr;51(2):47-59.

Correll CU, Citrome L, Haddad PM, Lauriello J, Olfson M, Calloway SM, Kane JM. The Use of Long-Acting Injectable Antipsychotics in Schizophrenia: Evaluating the Evidence. J Clin Psychiatry. 2016;77(suppl 3):1-24.

Correll CU, Rubio JM, Inczedy-Farkas G, Birnbaum ML, Kane JM, Leucht S. Efficacy of 42 Pharmacologic Cotreatment Strategies Added to Antipsychotic Monotherapy in Schizophrenia: Systematic Overview and Quality Appraisal of the Meta-analytic Evidence. JAMA Psychiatry. 2017 Jul 1;74(7):675-684.

Correll CU, Sliwa JK, Najarian DM, Saklad SR. Practical considerations for managing breakthrough psychosis and symptomatic worsening in patients with schizophrenia on long-acting injectable antipsychotics. CNS Spectr. 2018 Dec 27:1-17.

Galletly C, Castle D, Dark F, Humberstone V, Jablensky A, Killackey E, Kulkarni J, McGorry P, Nielssen O, Tran N. Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for the management of schizophrenia and related disorders. Aust N Z J Psychiatry. 2016 May;50(5):410-72.

Galling B, Roldán A, Hagi K, Rietschel L, Walyzada F, Zheng W, Cao XL, Xiang YT, Zink M, Kane JM, Nielsen J, Leucht S, Correll CU. Antipsychotic augmentation vs. monotherapy in schizophrenia: systematic review, meta-analysis and meta-regression analysis. World Psychiatry. 2017 Feb;16(1):77-89.

Glazer WM, Kane JM. Depot neuroleptic therapy: an underutilized treatment option. J Clin Psychiatry. 1992 Dec;53(12):426-33. Kishimoto T, Hagi K, Nitta M, Leucht S, Olfson M, Kane JM, Correll CU. Effectiveness of Long-Acting Injectable vs Oral Antipsychotics in Patients with Schizophrenia: A Metaanalysis of Prospective and Retrospective Cohort Studies. Schizophr Bull. 2018 Apr 6;44(3):603-619.

Howes OD, McCutcheon R, Agid O, de Bartolomeis A, van Beveren NJ, Birnbaum ML, Bloomfield MA, Bressan RA, Buchanan RW, Carpenter WT, Castle DJ, Citrome L, Daskalakis ZJ, Davidson M, Drake RJ, Dursun S, Ebdrup BH, Elkis H, Falkai P, Fleischacker WW, Gadelha A, Gaughran F, Glenthøj BY, Graff-Guerrero A, Hallak JE, Honer WG, Kennedy J, Kinon BJ, Lawrie SM, Lee J, Leweke FM, MacCabe JH, McNabb CB, Meltzer H, Möller HJ, Nakajima S, Pantelis C, Reis Marques T, Remington G, Rossell SL, Russell BR, Siu CO, Suzuki T, Sommer IE, Taylor D, Thomas N, Üçok A, Umbricht D, Walters JT, Kane J, Correll CU. Treatment-Resistant Schizophrenia: Treatment Response and Resistance in Psychosis (TRRIP) Working Group Consensus Guidelines on Diagnosis and Terminology. Am J Psychiatry. 2017 Mar 1;174(3):216-229.

Kane JM, Schooler NR, Marcy P, Achtyes ED, Correll CU, Robinson DG. Patients With Early- Phase Schizophrenia Will Accept Treatment With Sustained-Release Medication (Long-Acting Injectable Antipsychotics): Results From the Recruitment Phase of the PRELAPSE Trial. J Clin Psychiatry. 2019 Apr 23;80(3). pii: 18m12546.

Kishimoto T, Nitta M, Borenstein M, Kane JM, Correll CU. Long-acting injectable vs. oral antipsychotics in schizophrenia: A systematic review and meta-analysis of mirror-image studies. J Clin Psychiatry. 2013 Oct;74(10):957-65.

Kishimoto T, Robenzadeh A, Leucht C, Leucht S, Watanabe K, Mimura M, Borenstein M, Kane JM, Correll CU. Long-Acting Injectable vs Oral Antipsychotics for Relapse Prevention in Schizophrenia: A Meta-Analysis of Randomized Trials. Schizophr Bull. 2014 Jan;40(1):192-213.

Llorca PM, Abbar M, Courtet P, Guillaume S, Lancrenon S, Samalin L. Guidelines for the use and management of long-acting injectable antipsychotics in serious mental illness. BMC Psychiatry. 2013 Dec 20;13:340.

Malla A, Tibbo P, Chue P, Levy E, Manchanda R, Teehan M, Williams R, Iyer S, Roy MA. Long-acting injectable antipsychotics: recommendations for clinicians. Can J Psychiatry. 2013 May;58(5 Suppl 1):30S-5S.

Misawa F, Kishimoto T, Hagi K, Kane JM, Correll CU. Safety and tolerability of long-acting injectable versus oral antipsychotics: A meta-analysis of randomized controlled studies comparing the same antipsychotics. Schizophr Res. 2016 Oct;176(2-3):220-30.

Sajatovic M, Ross R, Legacy SN, Correll CU, Kane JM, DiBiasi F, Fitzgerald H, Byerly M. Identifying patients and clinical scenarios for use of long-acting injectable antipsychotics - expert consensus survey part 1. Neuropsychiatr Dis Treat. 2018 Jun 8;14:1463-1474.

Taipale H, Mittendorfer-Rutz E, Alexanderson K, Majak M, Mehtälä J, Hoti F, Jedenius E, Enkusson D, Leval A, Sermon J, Tanskanen A, Tiihonen J. Antipsychotics and mortality in a nationwide cohort of 29,823 patients with schizophrenia. Schizophr Res. 2018 Jul;197:274-280.

Weiden PJ, Roma RS, Velligan DI, Alphs L, DiChiara M, Davidson B. The challenge of offering long-acting antipsychotic therapies: a preliminary discourse analysis of psychiatrist recommendations for injectable therapy to patients with schizophrenia. J Clin Psychiatry. 2015 Jun;76(6):684-90.