

Perspectives of Nurse Practitioners and Physician Associates on Presenting Long-Acting Injectables to Adults With Schizophrenia: A Delphi Panel Study

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Introduction

- Oral antipsychotics (APs) are common treatments for adults with schizophrenia, but daily dosing can present adherence challenges which limit clinical effectiveness^{1,2}
- Long-acting injectable (LAI) APs improve AP adherence and clinical outcomes such as reduced hospitalizations and relapses compared with oral APs^{3,4} and are recommended by clinical guidelines for certain patients^{5,6}
- Despite these advantages, LAIs remain underutilized, owing to barriers including stigma, patient concerns and misconceptions, reimbursement constraints, and limited awareness from both healthcare practitioners (HCPs) and patients⁷⁻⁹
- While prior research in this domain has focused on physician, particularly psychiatrist, perceptions, insights from nurse practitioners (NPs) and physician associates (PAs) remain limited, despite their key role in routine care for patients diagnosed with schizophrenia

Objective

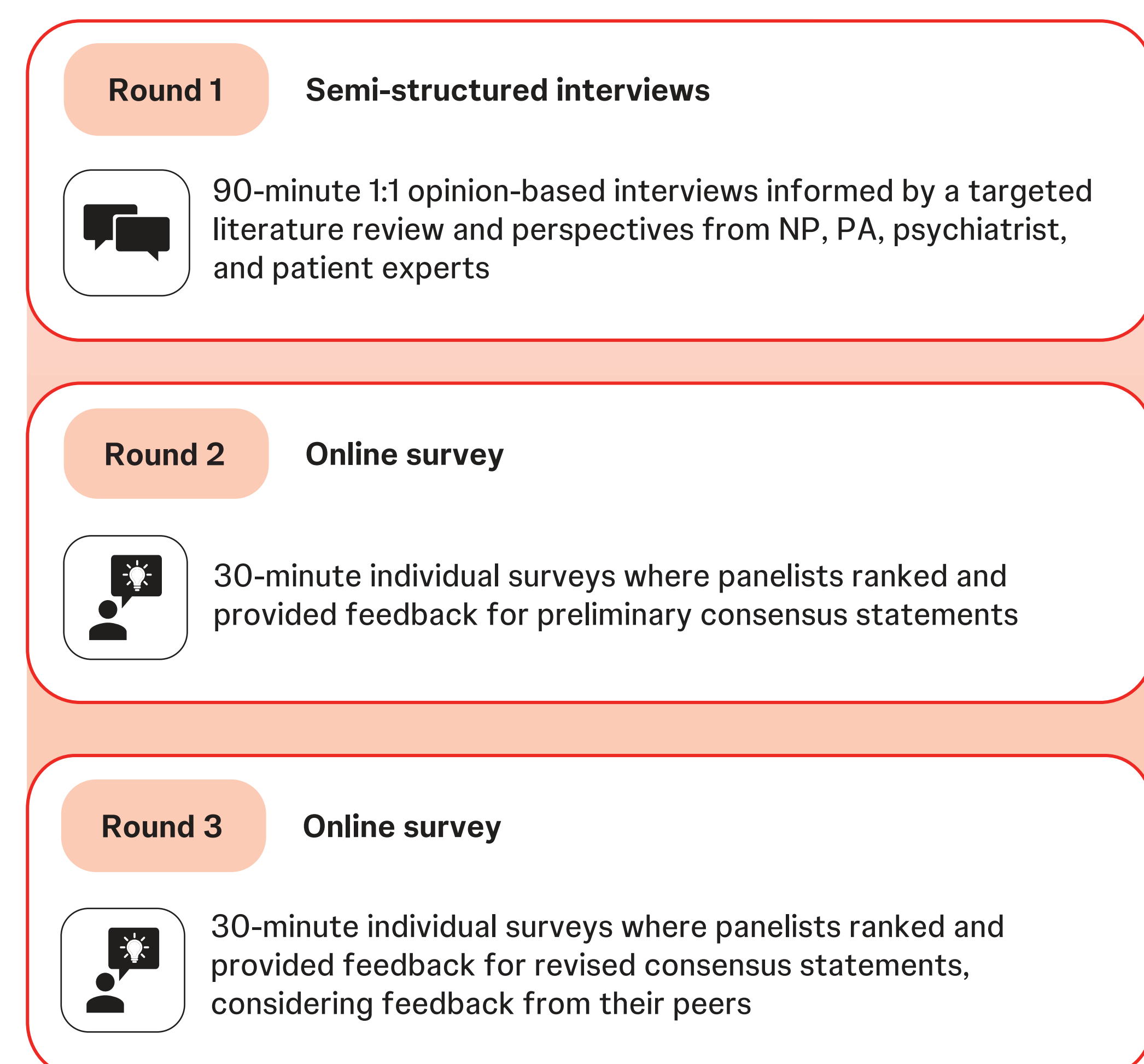
- This study leveraged NP and PA perspectives to achieve consensus on strategies for offering and operationalizing LAI use among eligible adults diagnosed with schizophrenia, to provide a roadmap for HCPs for promoting acceptance among patients, and accelerating earlier utilization in the treatment journey

Methods

Study design

- A 3-round modified Delphi study was conducted online (Figure 1)
- Expert advisors provided key insights on study design, interview guide development, and consensus statements
- The study explored 3 key themes: barriers to successful LAI initiation, strategies for effective LAI offers, and facilitators of early LAI use
- The study was double-blind—panelists were blinded to the identities of other panelists and the sponsor, and the sponsor remained blinded to panelist identities

Figure 1: Study design



NP, nurse practitioner; PA, physician associate.

Study population

- At the time of survey screener completion, panelists were required to meet the following criteria
 - Be an NP with a psychiatric mental health specialization, or a PA, licensed in the United States (US)
 - Have treated ≥ 5 adults diagnosed with schizophrenia in the past month
 - Have been involved in ≥ 1 new LAI initiation in the past 3 months
 - Have cared for ≥ 1 patient diagnosed with schizophrenia who had used an LAI for ≥ 6 months
 - Do not work exclusively in long-term institutional settings where patient discharge is not expected (eg, forensic psychiatric hospitals or state-operated psychiatric hospital chronic care units)

Statistical analysis

- Agreement was ranked on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree)
- Percent agreement was defined as the proportion of panelists who responded 4 (agree) or 5 (strongly agree) to a given statement
- Consensus was defined a priori as $\geq 50\%$ agreement
 - Moderate consensus: $\geq 50\%$ to $< 80\%$ agreement
 - Strong consensus: $\geq 80\%$ agreement
 - Unanimous consensus: 100% agreement

Results

Panel characteristics

- 12 panelists participated in all 3 rounds of the study; consistent with real-world clinical workforce trends,^{10,11} the panel was primarily composed of female NPs (Table 1)
- All panelists practiced in outpatient settings at the time of the study, with some prior or concurrent experience in inpatient settings, and used both in-person and virtual care models
- The panel was diverse with respect to race/ethnicity, US state of practice, and years of practice experience

Round 3 results

- All 29 statements reached consensus, with 23 statements (79.3%) achieving strong consensus ($\geq 80\%$ agreement), including 9 statements (31.9%) that reached unanimous agreement (Table 2)

Table 1: Panel characteristics

	Panelists N = 12
Panel demographics	
Specialty, n (%)	
Psychiatric mental health nurse practitioner	11 (91.7)
Physician associate	1 (8.3)
Sex, n (%)	
Female	10 (83.3)
Male	2 (16.7)
Race/ethnicity, n (%)^a	
White	6 (50.0)
Black or African American	3 (25.0)
Hispanic or Latino	2 (16.7)
Asian	1 (8.3)
Prefer not to disclose	1 (8.3)
Practice characteristics	
Primary clinical practice setting, n (%)^a	
Outpatient/ambulatory clinic	12 (100.0)
Inpatient	2 (16.7)
Virtual care, n (%)	
Combination of in-person and virtual	10 (83.3)
Exclusively virtual	2 (16.7)
Region of primary practice, n (%)	
South	8 (66.7)
Florida	3 (25.0)
North Carolina	2 (16.7)
Maryland	1 (8.3)
Texas	1 (8.3)
Virginia	1 (8.3)
West	3 (25.0)
California	1 (8.3)
Colorado	1 (8.3)
Washington	1 (8.3)
Midwest	1 (8.3)
Michigan	1 (8.3)
Schizophrenia care characteristics	
Patient health insurance accepted, n (%)^a	
Medicare	11 (91.7)
Medicaid	9 (75.0)
Uninsured/self-pay	8 (66.7)
Private/commercial insurance	9 (75.0)
Veterans Affairs	5 (41.7)
Integrated managed care consortium	1 (8.3)
Years treating adult patients diagnosed with schizophrenia, mean (SD), median [min, max]	
	9 (5), 10 [2, 18]
Number of adult patients diagnosed with schizophrenia treated in the past month, n (%)	
≥ 5 to < 10 patients	4 (33.3)
≥ 10 to < 30 patients	2 (16.7)
≥ 30 to < 50 patients	3 (25.0)
≥ 50 patients	3 (25.0)
Number of successful offers of LAIs to adult patients diagnosed with schizophrenia in the past 3 months, mean (SD), median [min, max]	
	19 (21), 10 [1, 75]
Number of adult patients diagnosed with schizophrenia using an LAI for ≥ 6 months seen in the past month, mean (SD), median [min, max]	
	21 (17), 14 [3, 60]

^aNot mutually exclusive.

Table 2: Agreement on Round 3 consensus statements

Round 3 statement	% agreement
Category 1. Barriers to successful LAI initiation	
Patient concerns/misconceptions	
Barrier: Fear of needles or concerns about discomfort associated with receiving an injection Action: Explain the LAI injection process by demonstrating the device/needle, explaining that discomfort is typically brief, offering numbing, ice, shot blockers, or alternate sites for injection, and/or comparing it to a familiar experience for the patient (eg, a flu shot)	91.7%
Barrier: Patients may view LAIs as indicating severe illness, reflecting and reinforcing existing stigma, and may compare LAIs to prior trauma associated with short-acting sedating injections Action: Normalize the use of LAIs as part of routine schizophrenia treatment, including proactive offering to first-episode and/or early-phase patients with schizophrenia, acknowledge past experiences, and explain the difference between LAIs and acute injections	91.7%
Barrier: Patients may perceive the use of LAIs as loss of autonomy and may fear irreversibility of LAI treatment Action: Emphasize increased independence resulting from less frequent administration and a reduced pill burden (eg, fewer medication reminders from caregivers), and that treatment will be discussed and adjusted as needed	83.3%
Provider concerns/misconceptions	
Barrier: Healthcare providers may only associate LAIs with the treatment of patients who have demonstrated nonadherence or have had a recent hospitalization Action: Initiate discussions surrounding LAIs proactively with all eligible patients, as an early standard of care option for schizophrenia treatment	91.7%
Barrier: Limited formal education on LAI utilization may reduce prescriber confidence Action: Prescribers should engage in ongoing training on dosing, administration, transitions, and how to initiate discussions on LAIs through continuing medical education (eg, articles, web-based modules and video tutorials, in person sessions) and on-site tutorials	91.7%
Structural and practical barriers	
Barrier: Long delays between a patient accepting and obtaining an LAI can reduce the likelihood of initiation Action: Begin insurance discussions as early as possible, ensure LAI samples are readily available, and initiate LAI administration immediately when possible or schedule appointments for administration without delay	100.0%
Action: Establish reliable partnerships between clinics and local pharmacies and/or build on-site stocks of LAIs	91.7%
Barrier: Limited access to transportation can make it difficult for patients to attend appointments for LAI administration Action: Identify reliable transportation or alternative solutions for in-home administration (eg, mobile medical teams or home health services) through case managers, family, local programs	91.7%
Barrier: Insurance coverage restrictions and administrative processes limit access to and delay initiation of LAIs Action: Collaborate with support staff (eg, administrative staff, pharmaceutical representatives, pharmacies) to build understanding of patient insurance coverage and include required language to support prior authorization or access to patient support programs	83.3%
Barrier: Lack of onsite staff available for LAI administration Action: Identify personnel who are trained in LAI administration, either on-site or via local partnerships (eg, pharmacies, injection centers, general practitioners), and proactively coordinate scheduling	75.0%
Barrier: Telehealth-heavy practices lack infrastructure to administer LAIs Action: Establish relationships and coordinate with local clinics, providers, pharmacies, emergency departments/urgent care, and mobile medical teams where available, who can assist with LAI administration, if at all possible	75.0%
Category 2. Strategies for effective LAI offers	
Introducing and discussing LAIs	
Strategy: Introduce the concept of LAIs early in the therapeutic relationship after building a rapport, present them as part of a standard schizophrenia treatment offering, and revisit the conversation often	100.0%
Strategy: Frame LAIs in terms of how they will help patients achieve their goals (eg, employment, social relationships, travel), referencing the convenience, clinical benefits, and reduced burden relative to taking oral medication for schizophrenia daily and how this can help patients feel less defined by their diagnosis	100.0%
Strategy: Normalize the use of LAIs among patients and team members by incorporating them into routine medication reviews and follow-up discussions, revisiting the conversation early if LAIs are not initiated at first offer	100.0%
Strategy: When appropriate, include family members, caregivers, and other team members (eg, case managers, peer advocates) who interact frequently with patients in discussions surrounding LAIs	100.0%
Strategy: Start conversations by using plain language to describe "longer-interval medication options" as an alternative to daily medication (eg, "Your medicine is available to be taken in different ways. How would you feel about a long-acting medication that you would only need to take once a month, instead of taking a pill every day?"), before discussing that the treatment is administered via injection	83.3%
Strategy: Highlight the availability of LAIs with varying dosing intervals to illustrate treatment flexibility	75.0%
Increasing patient and caregiver education	
Strategy: Reinforce education about LAIs, including the advantages relative to oral antipsychotics, by sharing plain language materials for patients and caregivers (eg, pamphlets, curated links to reputable websites/resources)	100.0%
Strategy: Increase patient/caregiver education about LAIs through encouraging further conversations with trusted team members where possible, such as case managers, therapists, and primary care providers	91.7%
Strategy: Encourage information sharing using peer support and examples of lived experience as appropriate, both in-person and/or through curated links to reputable websites/resources, to increase patient/caregiver acceptance and openness to LAIs	83.3%
Category 3. Facilitators of early LAI use	
Facilitators to increase patient uptake	
Facilitator: Highlight how LAIs improve antipsychotic adherence compared with oral medications, emphasizing their association with fewer hospitalizations, decreased mortality, improved patient experience, and better cognitive and functional outcomes	100.0%
Facilitator: Normalize mainstream conversations for antipsychotic treatment, specifically LAIs, by advertising broadly in places where patients with schizophrenia and their caregivers frequent (eg, bus stops, subways) to reduce stigma	83.3%
Facilitators to increase prescriber confidence	
Facilitator: Incorporate comprehensive training on LAIs, including clinical rationale for use (eg, how LAIs support medication adherence, symptom stability, and cognitive/functional outcomes) and administration logistics into formal early career education on the treatment of mental health conditions for NPs, PAs, and PCPs	100.0%
Facilitator: Include continuing medical education courses specific to LAI prescribing and administration as mandatory components for practicing NPs, PAs, and PCPs specializing in the treatment of mental health conditions	91.7%
Facilitators to streamline LAI initiation and maintenance processes	
Facilitator: Develop clear guidelines on required authorization processes from payers to facilitate earlier LAI initiation among eligible patients	100.0%
Facilitator: Develop and leverage relationships with local pharmacies to assist with prior authorization, LAI delivery to clinics, and monitoring of patient adherence to oral antipsychotics	83.3%
Facilitator: Strengthen information sharing systems between prescribing (eg, NPs, PAs, PCPs) and non-prescribing treatment team members (eg, therapists, nurses, pharmacists, case managers) to increase knowledge of relevant life events and patient experience	75.0%
Facilitator: Better assess oral antipsychotic adherence by optimizing systems of information sharing between pharmacies and prescribers regarding prescription fill patterns	66.7%
Facilitator: Enable optional automated notifications in electronic medical record systems to flag patients who demonstrate clinical events relevant to LAI initiation (eg, reminder of availability of LAI formulations for oral antipsychotics, alternative treatments for which LAI formulations are available, or flags for missed prescription fills)	58.3%

LAI, long-acting injectable; NP, nurse practitioner; PA, physician associate; PCP, primary care physician.

Key Takeaways

There was strong alignment among NPs and PAs specializing in the care of adults diagnosed with schizophrenia on best practices for engaging in patient-centered discussions surrounding LAIs

These insights reflect actionable strategies for overcoming barriers to early LAI prescribing that can be leveraged by HCPs with all levels of experience with LAIs

Limitations

This study captured perspectives from a limited group of NPs and PAs, and results may not be generalizable to all practitioners. While efforts were made to ensure diversity, the panel was restricted to experienced LAI providers, with higher representation from NPs in the Southern US

Findings are based on expert opinion and are subject to individual bias; therefore, they may not fully reflect empirical evidence

Expert Panel Recommendations

- There was panel alignment on the following strategies for approaching LAI discussions, promoting acceptance among patients, and accelerating utilization earlier in the treatment journey
 - Normalize the use of LAIs as a standard treatment option, introducing them early in the schizophrenia treatment journey
 - Center LAI discussions around patient preferences and goals, using clear, accessible language, and emphasizing convenience, flexibility, and reduced treatment burden relative to oral APs
 - Provide ongoing education and resources to patients, caregivers, and HCPs to address misconceptions and build confidence in LAI use
 - Leverage multidisciplinary care teams and shared decision-making to reinforce LAI discussions and support patient engagement
 - Address structural and logistical barriers through coordinated workflows, staff training, and external partnerships

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Disclosures

DW serves as a consultant for Johnson & Johnson. AC serves as a speaker and consultant for Johnson & Johnson. JG and KJ are employees and stock holders of Johnson & Johnson. LC has served as a consultant for Abbvie, Acadia, Adheretech, Altus, Alumis, Axsome, Alkermes, Arc, Auritec, Autobahn, Avant Healthcare Solutions, Biogen, BioXcel, BMS/Karuna, Boehringer Ingelheim, Cadent, Cerevel, Clario/Medavante/Prophase, Clinilabs, Compass, Corcept, Definium, Delpor, Eisai, Enteris BioPharma, Health Wellness Partners, HLS, Idorsia, Immune Bio, Intra-Cellular, Johnson & Johnson/Janssen, Little Bear, Lundbeck, Luye, Lyndra, Maplight, Marvin, Mindmed, Neurelis, Neushen, Neumora, Neurocrine, Noema, Novartis, Noven, Orexo, Otsuka, Ovid, Pontifax/Draig, Praxis, PSL, Real Chemistry, Reimada, Renew Research, Response, Reviva, Sage, Seaport, Summito/Sunovion, Supernus, Teva, University of Arizona, Vanda, Wells-Fargo, and one-off ad hoc consulting for individuals/entities conducting marketing, commercial, or scientific scoping research; speaker for Abbvie, Acadia, Alkermes, BMS, Eisai, Idorsia, Intra-Cellular, Johnson & Johnson/Janssen, Lundbeck, Luye, Neopharm, Neurocrine, Noven, Otsuka, Recordati, Takeda, Teva, Vanda, and CME activities organized by medical education companies such as Decera Clinical Education/Clinical Education Alliance/Clinical Care Options, CME Institute, CMEology, HMP/Psych Congress, Medscape/WebMD, MultiMedia Medical LLC, Neuroscience Education Institute, NEI, Paradigm, Real Psychiatry/Efficient, Real World CE, Rockpointe, Total CME, Vindico, and Universities, Professional Organizations/Societies and Advocacy Associations (MHA); owns small amounts of health-related shares of common stock in multiple companies in a portfolio managed externally, and stock options in Reviva; and earns royalties/publishing income from Taylor & Francis (Editor-in-Chief, Current Medical Research and Opinion, 2022-date), UpToDate (reviewer), Springer Healthcare (book), Elsevier (Topic Editor, Psychiatry, Clinical Therapeutics, through Spring 2025).

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