Schizophrenia: Remission, Recovery and Long-acting Injectable (LAI) Antipsychotics

Learning Objectives
1. Describe the signs and symptoms of schizophrenia and the impact on patients’ lives;
2. Explain what constitutes remission and recovery in patients receiving treatment for schizophrenia and the importance of treatment adherence;
3. Assess the safety, pharmacokinetic, and pharmaceutical properties of long-acting injectable (LAI) antipsychotics when optimizing medication profiles for patients with schizophrenia; and
4. Identify strategies to implement in pharmacist-patient encounters to achieve treatment adherence and optimal patient outcomes.

Post-Test/Rationale

1. A man, 25 years of age, with a 3-year history of schizophrenia comes to the pharmacy for a refill of his risperidone prescription. He is malodorous, disheveled, and does not make eye contact with the pharmacist during patient counseling. Which symptom domain of schizophrenia is being exhibited by this patient?
   A. Cognitive
   B. Mood
   C. Negative
   D. Positive

Correct Answer
The negative symptoms of schizophrenia include poor grooming and limited eye contact, in addition to reductions in verbal fluency, using fewer words, a reduced range of emotions, and a lack of spontaneity in actions.

2. Several areas of psychosocial functioning can be rated as milestones that indicate achievement or improvement in functioning. Which one of the following is an indicator of better psychosocial functioning for a patient with schizophrenia:
   A. Independent housing
   B. Attending employment seminars
   C. Participation in talk therapy
   D. Decreased substance use
Independent housing is considered to be a milestone that indicated better psychosocial functioning in a patient with schizophrenia. Simply attending employment seminars does not necessarily indicate employment. Participation in talk therapy does not indicate improvement in disease state insight. Decreased substance use can aid in improvements in the symptom domains of schizophrenia, but is not a milestone that has been identified as indicated better functioning.

3. In a clinical trial evaluating remission in schizophrenia, what baseline parameter predicted a better chance of remission by the end of the study?

A. History of multiple psychotic episodes
B. Lower symptom severity
C. Past use of fewer than two antipsychotics
D. Good family and friend support

Correct Answer
Lower symptom severity when beginning the trial predicted a higher chance of remission by the end of the study. While patients with a history of multiple psychotic episodes can achieve remission, it is more likely for patients with fewer episodes. The number of antipsychotic trials prior to participation was not evaluated in the study. The support of family and friends is important in remission, but was not found to be a baseline parameter that predicted better outcomes.

4. Which one of the following statements is TRUE regarding the concepts of remission and recovery in schizophrenia:

A. Patients are considered to be in remission only if they no longer need medication
B. The concept of recovery emphasizes the patient experience of their illness
C. It is well known by the general public that people with schizophrenia can recover
D. Remission rates are higher in patients using LAI antipsychotics

Correct Answer
The concept of recovery takes into account the patient’s experience in regard to his or her illness and the impact of the illness on his or her life. It is a subjective experience, not specifically aligned with the signs and symptoms of illness. The use of medications generally continues for a patient in remission and is important for the prevention of relapse. The general public often believes that people with schizophrenia will continue to decline and that recovery is not possible. There is no study evaluating remission rates for schizophrenia relative to the use of specific dosage forms of antipsychotics. Studies generally focus on relapse rates as the long-term outcomes, not remission.
5. A patient, 23 years of age, has been taking aripiprazole 20 mg orally once daily for 3 months with improvement in symptoms of schizophrenia. His psychiatrist calls the pharmacy to inquire about an appropriate dose of aripiprazole long-acting injection for this patient. The patient is also taking bupropion XL 300 mg orally once daily for depression. What is the most appropriate recommendation for the pharmacist to make?

A. 160 mg intramuscular (IM) every 4 weeks  
B. 200 mg IM every 4 weeks  
C. 300 mg IM every 4 weeks  
D. 400 mg IM every 4 weeks

Correct Answer  
The usual dose of aripiprazole long-acting injection for patients without drug interactions is 400 mg IM every 4 weeks. This patient is also taking bupropion, which is a strong cytochrome P450 (CYP) 2D6 inhibitor, so the recommended dose is 300 mg IM every 4 weeks. The 160 mg and 200 mg doses are used for patients who have been stabilized on 300 mg IM every 4 weeks and begin to take CYP 2D6 and/or 3A4 inhibitors.

6. A prescription is presented to the pharmacist for olanzapine pamoate 300 mg IM every 2 weeks. According to the REMS for olanzapine pamoate, what should the prescription state in order for it to be filled?

A. Written verification of patient informed consent  
B. The PIN number of the patient for the program  
C. The enrollment number of the clinic  
D. The physician NPI number

Correct Answer  
The PIN number for the olanzapine pamoate program that was obtained by the physician should be written on the prescription so the pharmacist can verify patient informed consent and enrollment. Written verification of informed consent by the patient is not required for prescription dispensing. The pharmacist does not have to verify enrollment of the clinic and the physician NPI is not required on the prescription.

7. A patient, 28 years of age, has been maintained on paliperidone palmitate once monthly 234 mg IM every 4 weeks for the past 4 months. A new prescription for paliperidone palmitate every 3 months is presented to the pharmacy for this patient. What is the appropriate dose of paliperidone palmitate every 3 months if the patient has been receiving 234 mg of paliperidone palmitate once monthly?

A. 273 mg  
B. 410 mg  
C. 546 mg  
D. 819 mg
Correct Answer
Paliperidone palmitate once monthly 234 mg IM every 4 weeks = paliperidone palmitate every 3 months 819 mg IM every 12 weeks. The other doses listed represent lower doses of paliperidone palmitate once monthly in the dose conversion.

8. A patient, 30 years of age, is initiating aripiprazole long-acting injection 400 mg IM every 4 weeks. Which of the following oral antipsychotics and time frames is most appropriate for the oral antipsychotic overlap required for aripiprazole long-acting injection?

A. Aripiprazole 10 mg orally once daily x 4 weeks
B. Risperidone 3 mg orally at bedtime x 2 weeks
C. Olanzapine 20 mg orally at bedtime x 3 weeks
D. Haloperidol 10 mg orally once daily x 1 week

Correct Answer
Overlap of oral antipsychotic drug therapy is required for 2 weeks after the first injection of aripiprazole long-acting injection. While it is important for the patient to take at least one dose of oral aripiprazole to ensure the patient does not have a hypersensitivity reaction to the injection, the 2 week oral overlap is not required to be aripiprazole.

9. The pharmacist is counseling a patient receiving a LAI antipsychotic injection who has come to the pharmacy to pick up a new prescription for metformin extended-release 500 mg orally at bedtime. The patient tells the pharmacist that they have gained about 30 pounds in the 2 months since starting the LAI injection and has increased blood glucose. Which LAI antipsychotic is the patient most likely receiving?

A. Aripiprazole long-acting injection
B. Paliperidone palmitate once monthly
C. Risperidone microspheres
D. Olanzapine pamoate

Correct Answer
Olanzapine is the antipsychotic from the available answers that is most likely to cause weight gain and increases in blood glucose during drug therapy, especially in the first few months. Paliperidone and risperidone are moderately likely to increase weight and aripiprazole is the least likely of the answer choices to increase weight or blood glucose.
10. The pharmacist is discussing a new prescription for paliperidone palmitate once monthly with a patient who has been taking oral paliperidone 6 mg once daily for 3 months with a reduction in auditory hallucinations and is improved in disorganized thinking. There is a self-reported decrease in her monthly menstrual cycle. Can this be caused by paliperidone? Which one of the following responses is most appropriate for the pharmacist:

   A. No, it is not caused by paliperidone and the patient should be referred to a physician
   B. Yes, it is caused by paliperidone and will likely improve over the next few months
   C. Yes, it is caused by paliperidone and will probably continue with paliperidone palmitate once monthly
   D. No, it is not caused by paliperidone, the pharmacist should review other medications

Correct Answer
It is caused by paliperidone and the side effect of hyperprolactinemia and will likely continue with paliperidone palmitate once monthly. It is not likely to improve over time, the patient should let his or her physician know and ask for treatment options.