## NEI’s Master Psychopharmacology Program
Study Guide: Psychosis and Schizophrenia

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<th>Subtopic</th>
<th>Benchmarks (You Should Be Able To)</th>
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</table>
| **Symptom Presentation and Assessment** | Identify and describe the five symptom domains of schizophrenia  
Identify disorders in which psychosis is a defining feature  
Describe neurocognitive deficits frequently seen in schizophrenia  
Describe the typical course of schizophrenia, including premorbid and prodromal functioning  
Describe techniques for the clinical assessment of negative symptoms | **Learning Activities**  
* Differential Diagnosis of a 21-Year-Old with Cognitive and Social Decline (CME case)  
** Additional Resources**  
Ultra High Clinical Risk for Psychosis: The State of the Evidence (CME video)  
This Month in Psychopharmacology, Psychosis Articles |
| **Neurobiology of Symptoms**  | Identify the brain regions and neurotransmitters associated with each symptom domain of schizophrenia  
Explain the mesolimbic dopamine hypothesis of positive symptoms of schizophrenia  
Explain the mesocortical dopamine hypothesis of cognitive, negative, and affective symptoms of schizophrenia  
Explain the NMDA receptor hypofunction hypothesis of schizophrenia  
Identify genetic markers under investigation for their relevance to schizophrenia | **Learning Activities**  
Why Don’t Dopamine 2 Antagonists Improve Cognition in Schizophrenia? Part 2: The Hypothetical Roles of Glutamate and GABA (CME animation)  
** Additional Resources**  
Neurobiology of Psychosis in the Era of Genetic Medicine (CME video) |

*You may choose any 24 non-expired Learning Activities to complete the requirements of the Master Psychopharmacology Program. For the full list of Master Psychopharmacology Program requirements, please visit nei.global/mpp.

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### Subtopic: Mechanisms of Conventional Antipsychotics

- Identify what makes an antipsychotic conventional
- Describe the impact of conventional antipsychotics in each dopamine pathway and the corresponding clinical effects
- Identify common secondary properties of many conventional antipsychotics and their corresponding clinical effects

**Recommended Resources**

*Additional Resources**


### Subtopic: Clinical Characteristics of Conventional Antipsychotics

- Identify currently available conventional antipsychotics
- Differentiate among conventional antipsychotics in terms of risk of different side effects
- Identify risks and benefits of long-term conventional antipsychotic use

**Recommended Resources**

*Additional Resources**


Antipsychotic medication prescribing information/package inserts.

### Subtopic: Primary Atypical Antipsychotic Mechanisms

- Identify and explain the various mechanisms of action that make an antipsychotic atypical
- Explain the regulatory actions of 5HT2A receptors on dopamine release
- Describe the impact of serotonin dopamine antagonists in each dopamine pathway and the corresponding clinical effects
- Describe the impact of partial dopamine 2 agonists in each dopamine pathway and the corresponding clinical effects

**Recommended Resources**

*Learning Activities*

[Mechanism of Action of Cariprazine (article)]

[Mechanism of Action of Brexpiprazole: Comparison With Aripiprazole (article)]

*Additional Resources**


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| **Clinical Characteristics of Atypical Antipsychotics**      | Define what makes an antipsychotic atypical in clinical terms  
|                                                               | Describe the clinically relevant receptor binding profiles and hypothesized corresponding clinical effects for each atypical antipsychotic  
|                                                               | Identify the effective dose range and general titration requirements for each atypical antipsychotic  
|                                                               | Differentiate among atypical antipsychotics in terms of risk of different side effects  
|                                                               | Identify risks and benefits of long-term atypical antipsychotic use  | **Additional Resources**  
| **Notable Side Effects of Antipsychotics**                   | Identify receptors hypothesized to be associated with cardiometabolic risk as well as which antipsychotics have higher affinity for those receptors  
|                                                               | Establish a metabolic monitoring protocol for patients receiving antipsychotic medications  
|                                                               | Identify the warning signs for cardiometabolic parameters that warrant medical attention  
|                                                               | Describe the relationship between dopamine and acetylcholine in the nigrostriatal pathway  
|                                                               | Describe mechanisms that contribute to inducing extrapyramidal side effects (EPS) and akathisia  
|                                                               | Explain the hypothetical neuropathology of tardive dyskinesia  
|                                                               | Explain the impact of dopamine 2 antagonism on prolactin  
|                                                               | Describe the relationships between dopamine, serotonin, and prolactin in the tuberoinfundibular pathway  
|                                                               | Describe mechanisms to address the various drug-induced movement disorders  
|                                                               | Describe mechanisms to address prolactin elevation  | **Learning Activities**  
|                                                               |                                                                 | Tardive Dyskinesia (CME video)  
|                                                               |                                                                 | 37-Year-Old Woman With Drug-Induced Akathisia (CME case)  
|                                                               |                                                                 | **Additional Resources**  
|                                                               |                                                                 | Movement Disorders: Akathisia, Tardive Dyskinesia (CME video)  
|                                                               |                                                                 | Forgotten But Not Gone: New Developments in the Understanding and Treatment of Tardive Dyskinesia (CME article)  
|                                                               |                                                                 | The Clinical Challenges of Akathisia (CME article)  
|                                                               |                                                                 | Lightning Round Cases: Antipsychotic and Antidepressant Side Effects (CME video)  
|                                                               |                                                                 | Antipsychotic medication prescribing information/package inserts.                                                                                     |

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<td>Treatment Strategies</td>
<td>Describe the typical response to antipsychotic medication</td>
<td><strong>Learning Activities</strong></td>
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<td>Describe techniques for management of acute psychosis</td>
<td>Dosing Depots: It Starts With Kinetics (CME animation)</td>
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<td>Identify pharmacological strategies for maximizing adherence to treatment</td>
<td>40-Year-Old Man With Psychosis and QTc Prolongation (CME case)</td>
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<td>Describe recommended treatment maintenance strategies</td>
<td>26-Year-Old Man With Treatment-Resistant Psychosis (CME case)</td>
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<td>Identify appropriate adjunct treatments for each symptom domain of schizophrenia</td>
<td>50-Year-Old Woman With Abrupt Onset of Psychosis (CME case)</td>
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<td>Identify methods for management of difficult-to-treat cases</td>
<td><strong>Additional Resources</strong></td>
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<td>Identify preferred treatments for individuals at risk for extrapyramidal side effects</td>
<td>Emerging Pharmacological Therapies in Schizophrenia: What’s New, What’s Different, What’s Next? (CME article)</td>
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<td>Identify preferred treatments for individuals at risk for prolactin elevation</td>
<td>First-episode Schizophrenia: Setting the Stage for Successful Outcomes (CME video)</td>
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<td>Identify preferred treatments for patients in whom sedation is undesirable</td>
<td>Chronic Schizophrenia: Optimizing Adherence, Minimizing Burden (CME video)</td>
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<td>Explain various strategies to minimize risks when switching medications</td>
<td>This Month in Psychopharmacology, Psychosis Articles</td>
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<td>Identify novel mechanisms and strategies being investigated for potential application to schizophrenia treatment</td>
<td>The Art of Switching Antipsychotics: Aripiprazole (animation)</td>
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<td>The Art of Switching Antipsychotics: The “Pines” (animation)</td>
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<td><strong>Special Considerations</strong></td>
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<td><strong>Learning Activities</strong>*</td>
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<td>Identify methods for treating patients with aggression and/or violence</td>
<td><em>Illustrative cases to support the Cal-VAT guidelines (article)</em></td>
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<td>Identify antipsychotics with an indication for use in children or adolescents</td>
<td><em>18-Year-Old Man With Depression and Intrusive “Images” (CME case)</em></td>
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<td>Explain recommendations for antipsychotic selection/maintenance in women who are pregnant or breastfeeding</td>
<td><em>Neurobiology and Genetics of Various Types of Violence (CME video)</em></td>
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<td>Identify antipsychotics for which prescribing recommendations differ based on age</td>
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<td>Identify antipsychotics for which dosing recommendations are different for individuals with medical complications</td>
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