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| 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) |
| 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 | Additional Resources**  

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<td>Identify risks and benefits of long-term conventional antipsychotic use</td>
<td>Antipsychotic medication prescribing information/package inserts.</td>
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<td><strong>Primary Atypical Antipsychotic Mechanisms</strong></td>
<td>Identify and explain the various mechanisms of action that make an antipsychotic atypical</td>
<td>Learning Activities*&lt;br&gt;Mechanism of Action of Cariprazine (article)</td>
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<td>Explain the regulatory actions of 5HT2A receptors on dopamine release</td>
<td>Mechanism of Action of Brexpiprazole: Comparison With Aripiprazole (article)</td>
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<td>Describe the impact of serotonin dopamine antagonists in each dopamine pathway and the corresponding clinical effects</td>
<td>Additional Resources**&lt;br&gt;Stahl SM. Stahl's essential psychopharmacology, fourth edition. New York, NY: Cambridge University Press; 2013. (Chapter 5)</td>
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<td></td>
<td>Describe the clinically relevant receptor binding profiles and hypothesized corresponding clinical effects for each atypical antipsychotic</td>
<td>Stahl SM. Stahl's essential psychopharmacology, fourth edition. New York, NY: Cambridge University Press; 2013. (Chapter 5)</td>
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<td>Identify the effective dose range and general titration requirements for each atypical antipsychotic</td>
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<td>Differentiate among atypical antipsychotics in terms of risk of different side effects</td>
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<td>Identify risks and benefits of long-term atypical antipsychotic use</td>
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## NEI's Master Psychopharmacology Program
### Study Guide: Psychosis and Schizophrenia

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<td><strong>Notable Side Effects of Antipsychotics</strong></td>
<td>Identify receptors hypothesized to be associated with cardiometabolic risk as well as which antipsychotics have higher affinity for those receptors</td>
<td>Learning Activities*&lt;br&gt;<strong>Tardive Dyskinesia (CME video)</strong></td>
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<td>Establish a metabolic monitoring protocol for patients receiving antipsychotic medications</td>
<td><strong>37-Year-Old Woman With Drug-Induced Akathisia (CME case)</strong></td>
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<td>Describe the relationship between dopamine and acetylcholine in the nigrostriatal pathway</td>
<td><strong>Movement Disorders: Akathisia, Tardive Dyskinesia (CME video)</strong></td>
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<td>Describe mechanisms that contribute to inducing extrapyramidal side effects (EPS) and akathisia</td>
<td><strong>Forgotten But Not Gone: New Developments in the Understanding and Treatment of Tardive Dyskinesia (CME article)</strong></td>
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<td>Explain the hypothetical neuropathology of tardive dyskinesia</td>
<td><strong>The Clinical Challenges of Akathisia (CME article)</strong></td>
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<td>Explain the impact of dopamine 2 antagonism on prolactin</td>
<td><strong>Lightning Round Cases: Antipsychotic and Antidepressant Side Effects (CME video)</strong></td>
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<td>Describe the relationships between dopamine, serotonin, and prolactin in the tuberoinfundibular pathway</td>
<td>Antipsychotic medication prescribing information/package inserts.</td>
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<td>Describe mechanisms to address the various drug-induced movement disorders</td>
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<td>Describe mechanisms to address prolactin elevation</td>
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| Treatment Strategies | Describe the typical response to antipsychotic medication  
Identify pharmacological strategies for maximizing adherence to treatment  
Describe recommended treatment maintenance strategies  
Identify appropriate adjunct treatments for each symptom domain of schizophrenia  
Identify methods for management of difficult-to-treat cases  
Identify preferred treatments for individuals at risk for cardiometabolic complications  
Identify preferred treatments for individuals at risk for extrapyramidal side effects  
Identify preferred treatments for individuals at risk for prolactin elevation  
Identify preferred treatments for patients in whom sedation is undesirable  
Explain various strategies to minimize risks when switching medications  
Identify novel mechanisms and strategies being investigated for potential application to schizophrenia treatment | Learning Activities*  
Dosing Depots: It Starts With Kinetics (CME animation)  
40-Year-Old Man With Psychosis and QTc Prolongation (CME case)  
26-Year-Old Man With Treatment-Resistant Psychosis (CME case)  
50-Year-Old Woman With Abrupt Onset of Psychosis (CME case)  
Additional Resources**  
Emerging Pharmacological Therapies in Schizophrenia: What’s New, What’s Different, What’s Next? (CME article)  
First-episode Schizophrenia: Setting the Stage for Successful Outcomes (CME video)  
Chronic Schizophrenia: Optimizing Adherence, Minimizing Burden (CME video)  
This Month in Psychopharmacology, Psychosis Articles  
The Art of Switching Antipsychotics: Aripiprazole (animation)  
The Art of Switching Antipsychotics: The "Pines" (animation)  
The Art of Switching Antipsychotics: The "Dones" (animation) |

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| **Special Considerations**| - Identify methods for treating patients with aggression and/or violence  
- Identify antipsychotics with an indication for use in children or adolescents  
- Explain recommendations for antipsychotic selection/maintenance in women who are pregnant or breastfeeding  
- Identify antipsychotics for which prescribing recommendations differ based on age  
- Identify antipsychotics for which dosing recommendations are different for individuals with medical complications | Learning Activities*  
Illustrative cases to support the Cal-VAT guidelines (article)  
18-Year-Old Man With Depression and Intrusive "Images" (CME case)  
Neurobiology and Genetics of Various Types of Violence (CME video)  
Additional Resources**  
Antipsychotic medication prescribing information/package inserts.  
This Month in Psychopharmacology, Psychosis Articles |

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