<table>
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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  
Case: Differential Diagnosis of a 21-Year-Old with Cognitive and Social Decline  
Lecture Format: Cognitive Impairment in Schizophrenia: The Great Unmet Need  
Lightning Round Cases: What's New in Psychosis and Antipsychotics  
Article: Cognitive Impairment in Schizophrenia: The Great Unmet Need |                                                                                                                                                                                                                           |
| **Neurobiology of Symptoms** | Identify the brain regions associated with each symptom domain of schizophrenia  
Identify major neurotransmitters that regulate the brain regions involved in 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  
Briefly explain the NMDA receptor hypofunction hypothesis of schizophrenia  
Explain the role of excitotoxicity in the neurodegenerative hypothesis of schizophrenia  
Identify potential biological endophenotypes in schizophrenia  
Identify genetic markers under investigation for their relevance to schizophrenia | Stahl SM. Stahl's essential psychopharmacology, fourth edition. New York, NY: Cambridge University Press; 2013. (Chapter 4)  
Animation: The Hypothetical Role of Glutamate in Schizophrenia  
The Neurobiology of Aggression  
Maternal Immune Activation and the Risk for Schizophrenia |                                                                                                                                                                                                                           |

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# NEI's Master Psychopharmacology Program

## Study Guide: Psychosis and Schizophrenia

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| **Mechanisms of Conventional Antipsychotics** | Identify and explain pharmacological mechanisms that can modulate dopaminergic activity  
Identify what makes an antipsychotic conventional  
Describe the impact of conventional antipsychotics in each dopamine pathway and the corresponding clinical effects  
Describe the relationship between dopamine and acetylcholine in the nigrostriatal pathway  
Describe mechanisms that contribute to inducing extrapyramidal side effects (EPS)  
Explain the biological evolution from EPS to tardive dyskinesia  
Explain the impact of dopamine 2 antagonism on prolactin  
| **Clinical Characteristics of Conventional Antipsychotics** | Identify currently available conventional antipsychotics  
Identify the effective dose range and general titration requirements for each conventional antipsychotic  
Differentiate among conventional antipsychotics in terms of risk of different side effects  
Identify any contraindications or major drug interactions for each conventional antipsychotic  
Antipsychotic medication prescribing information/package inserts. |

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| **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 relationships between dopamine, serotonin, and prolactin in the tuberoinfundibular pathway  
Describe the effects of partial dopamine 2 agonists on dopaminergic output  
Describe the impact of partial dopamine 2 agonists in each dopamine pathway and the corresponding clinical effects  
Explain the regulatory actions of 5HT1A receptors on dopamine release | Stahl SM. Stahl's essential psychopharmacology, fourth edition. New York, NY: Cambridge University Press; 2013. (Chapter 5)  
Animations:  
**Why Antipsychotic Monotherapies Fail: Pharmacokinetics and Pharmacodynamics**  
**Pharmacologic Rationale for Antipsychotic Polypharmacy Alternatives**  
**Antipsychotic Actions at Serotonin Receptors** |
| **Clinical Characteristics of Atypical Antipsychotics** | Define what makes an antipsychotic atypical in clinical terms  
Identify the currently available serotonin dopamine antagonists  
Identify the currently available partial dopamine 2 antagonists  
Identify the currently available partial 5HT1A agonists  
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 any contraindications or major drug interactions for each atypical antipsychotic  
Lecture Format:  
**Tolerability is Key: Individualizing Treatment for Patients With Schizophrenia**  
**Atypical Antipsychotics: Their Similarities Are Different** |

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| 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  
Identify receptors hypothesized to be associated with sedation as well as which antipsychotics have higher affinity for those receptors  
Identify situations in which sedation is advantageous as well as those in which it is undesirable  
Describe mechanisms that contribute to reducing EPS  
Antipsychotic medication prescribing information/package inserts.  
Article: [The Clinical Challenges of Akathisia](http://www.neiglobal.com/Members/MPP/MPPOverview/tabid/307/Default.aspx)  
Treatment of Obesity and Disability in Schizophrenia  
Cases:  
[31-Year-Old Man With Chronic Schizophrenia and Obesity](http://www.neiglobal.com/Members/MPP/MPPOverview/tabid/307/Default.aspx)  
[21-Year-Old With Medication-Induced Movement Disorder](http://www.neiglobal.com/Members/MPP/MPPOverview/tabid/307/Default.aspx)  
[Tolerability is Key: Individualizing Treatment for Patients With Schizophrenia](http://www.neiglobal.com/Members/MPP/MPPOverview/tabid/307/Default.aspx)  

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#### Study Guide: Psychosis and Schizophrenia

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<td><strong>Treatment Strategies</strong></td>
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<td>Identify pharmacological strategies for maximizing adherence to treatment</td>
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<td>Describe recommended treatment maintenance strategies</td>
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<td>Identify appropriate adjunct treatments for each symptom domain of schizophrenia</td>
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<td>Identify methods for management of difficult-to-treat cases</td>
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<td>Identify preferred treatments for individuals at risk for cardiometabolic complications</td>
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<td>Identify preferred treatments for individuals at risk for extrapyramidal side effects</td>
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<td>Identify preferred treatments for individuals at risk for prolactin elevation</td>
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<td>Identify preferred treatments for patients in whom sedation is undesirable</td>
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<td>Explain various strategies to minimize risks when switching medications</td>
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<td>Identify novel mechanisms and strategies being investigated for potential application to schizophrenia treatment</td>
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<td>Special Considerations</td>
<td>Identify methods for treating patients with aggression and/or violence</td>
<td>Stahl SM. Essential psychopharmacology, the prescriber's guide, fifth edition. New York, NY: Cambridge University Press; 2014.</td>
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<td>Identify antipsychotics for which dosing recommendations are different for children and/or adolescents than they are for adults</td>
<td>Antipsychotic medication prescribing information/package inserts.</td>
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<td>Explain recommendations for antipsychotic selection/maintenance in pregnant women</td>
<td>Cases: <a href="#">16-Year-Old Boy Caught in Antipsychotic Cross-Titration</a></td>
</tr>
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<td>Explain recommendations for antipsychotic selection/maintenance in women who are breastfeeding</td>
<td>The Case: 41-Year-Old Uncooperative Man With Psychosis and Menacing Behavior</td>
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<td>Identify antipsychotics for which dosing recommendations are different for the elderly than they are for younger adults</td>
<td>Animation: <a href="#">Maternal Immune Activation and the Risk for Schizophrenia</a></td>
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<td>Identify antipsychotics for which dosing recommendations are different for individuals with medical complications</td>
<td>Lecture Format: <a href="#">The Relevance of Sexual Dimorphism in Schizophrenia</a></td>
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<td>Article: <a href="#">Illustrative cases to support the Cal-VAT guidelines</a></td>
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