<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 symptoms of a major depressive episode  
Distinguish between presentations of depressive illnesses  
Identify potential indicators that a depressive episode may be part of unipolar versus bipolar illness  
Describe the potential progression of depression over a lifetime | Learning Activities*  
52-Year-Old Woman With Depression and Cognitive Fogginess (CME case)  
Additional Resources**  
Guidelines for the Recognition and Management of Mixed Depression (article) |
| Neurobiology of Symptoms         | Associate each symptom of a major depressive episode with hypothesized brain regions and circuits  
Explain the monoamine receptor hypothesis and the gene expression hypothesis  
Explain current research regarding the effects of stress on the brain  
Describe the relationship between inflammation, obesity, and depression  
Identify genetic markers under investigation for their relevance to depression | Learning Activities*  
My Microbiota Made Me Do It: How the Microbiome Can Influence Behavior (CME article)  
Additional Resources**  

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# NEI's Master Psychopharmacology Program
## Study Guide: Unipolar Depression

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| **Mechanisms of Newer Generation Serotonergic Antidepressants**         | Explain the mechanisms of action of the different types of antidepressants  
Identify pre- and postsynaptic serotonin receptor subtypes  
Explain the regulatory actions of serotonin receptors on other neurotransmitters  
Identify the underlying mechanisms behind common side effects of serotonergic antidepressants  
Describe how serotonergic agents can modulate BDNF and what relevance this may have to treatment | **Additional Resources****  
Stahl SM. Stahl’s essential psychopharmacology, fifth edition.  
New York, NY: Cambridge University Press; 2021. (Chapter 7)  
NEI Prescribe                                                                 |
| **Clinical Characteristics of Newer Generation Serotonergic Antidepressants** | Identify currently available serotonergic antidepressants  
Explain the time course of therapeutic versus side effects  
Describe the clinically relevant receptor binding profiles and hypothesized corresponding clinical effects for each serotonergic antidepressant  
Identify the effective dose range and general titration requirements for each serotonergic antidepressant  
Differentiate among serotonergic antidepressants in terms of risk of different side effects  
Identify any contraindications or major drug interactions for each serotonergic antidepressant | **Additional Resources****  
Stahl SM. Stahl’s essential psychopharmacology, fifth edition.  
New York, NY: Cambridge University Press; 2021. (Chapter 7)  
NEI Prescribe  
Antidepressant prescribing information/package inserts.                   |

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| Mechanisms of Newer Generation Noradrenergic Antidepressants | Explain the effects of noradrenergic antidepressants on monoamines, monoamine receptors, and gene expression  
Explain the consequences of inhibition of the norepinephrine transporter  
Explain the consequences of alpha 2 antagonism  
Identify the underlying mechanisms of action of common side effects of noradrenergic antidepressants | Additional Resources**  
NEI Prescribe |

| Clinical Characteristics of Newer Generation Noradrenergic Antidepressants | Identify currently available noradrenergic antidepressants  
Explain the time course of therapeutic versus side effects  
Describe the clinically relevant receptor binding profiles and hypothesized corresponding clinical effects for each noradrenergic antidepressant  
Identify the effective dose range and general titration requirements for each noradrenergic antidepressant  
Differentiate among noradrenergic antidepressants in terms of risk of different side effects  
Identify any contraindications or major drug interactions for each noradrenergic antidepressant | Additional Resources**  
NEI Prescribe  
Antidepressant medication prescribing information/package inserts. |

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**Study Guide: Unipolar Depression**

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| **Older Generation Antidepressants** | - Describe the mechanism of action of irreversible monoamine oxidase inhibitors (MAOIs)  
- Differentiate the clinical effects of MAO-A versus MAO-B inhibition  
- Explain the impact of high tyramine diet on norepinephrine as well as the associated clinical effects  
- Explain the clinical relevance of MAO inhibition to tyramine level  
- Explain the clinical relevance of reversible inhibition of MAO-A  
- Explain the clinical relevance of selective MAO-B inhibition and differentiate between the effects of different delivery methods  
- Describe dietary requirements for the different MAO inhibitors  
- Identify currently available tricyclic antidepressants (TCAs)  
- Identify the general pharmacological properties of TCAs  
- Identify the underlying mechanisms of action of common side effects of TCAs  
- Identify potential central and peripheral consequences of TCA overdose  
- Identify the effective dose range and general titration requirements for each older generation antidepressant  
- Differentiate among older generation antidepressants in terms of risk of different side effects  
- Identify any contraindications or major drug interactions for each older generation antidepressant  | Additional Resources**  
**NEI Prescribe**  
Antidepressant medication prescribing information/package inserts.  
The MAO Handbook (iBook)  
The MAO Handbook (pdf) |

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### Study Guide: Unipolar Depression

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| Treatment Strategies | Describe the general response, remission, recovery, relapse, and recurrence rates for depressive illness  
Identify appropriate monotherapies for major depression, dysthymia, and premenstrual dysphoric disorder  
Identify treatment methods for difficult or treatment-resistant cases of depression  
Identify non-pharmacological strategies for the treatment of depression  
Identify appropriate adjunct treatments for specific residual symptoms of depression  
Identify appropriate management strategies to address antidepressant side effects  
Identify novel mechanisms and strategies being investigated for potential application to antidepressant treatment | **Learning Activities***  
Ketamine for Treatment-Resistant Depression: A Review of the Data (CME article)  
Antidepressant-Induced Sexual Dysfunction (CME video)  
37-Year-Old Woman With Drug-Induced Akathisia (CME case)  
26-Year-Old Man Develops Antidepressant-Induced Activation (CME case)  
**Additional Resources**  
NEI Prescribe  
So Stimulating! Non-pharmacotherapy for Depression (CME video)  
This Month in Psychopharmacology, Depression Articles |

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Study Guide: Unipolar Depression

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<td>Describe the risk/benefit ratios for using antidepressants in different age groups</td>
<td><strong>Learning Activities</strong></td>
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<td>Identify the correlation between estrogen levels and depression and the relevance of this across the life cycle</td>
<td>11-Year-Old Girl With ADHD and Self-Injurious Behavior (CME case)</td>
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<td>Explain recommendations for antidepressant selection/maintenance in women who are pregnant or breastfeeding</td>
<td><strong>Additional Resources</strong></td>
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<td>Explain how comorbid medical conditions (metabolic, inflammatory, endocrine) may affect treatment response and course</td>
<td>Nei Prescribe</td>
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<td>Identify antidepressants for which dosing recommendations are different for individuals with medical complications</td>
<td>Antidepressant medication prescribing information/package inserts.</td>
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**Learning Activities**
- **Nei Prescribe**
  - Antidepressant medication prescribing information/package inserts.

**Additional Resources**
- **Nei Prescribe**
  - Antidepressant medication prescribing information/package inserts.
- **Psychopharmacologic Approaches to Depression in Children and Adolescents (CME video)**
- **Maternal Mental Health: Addressing Peri- and Postpartum Depression (CME video)**
- **I Feel It In My Gut: The Brain and Microbiome (CME video)**
- **This Month in Psychopharmacology, Depression Articles**

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