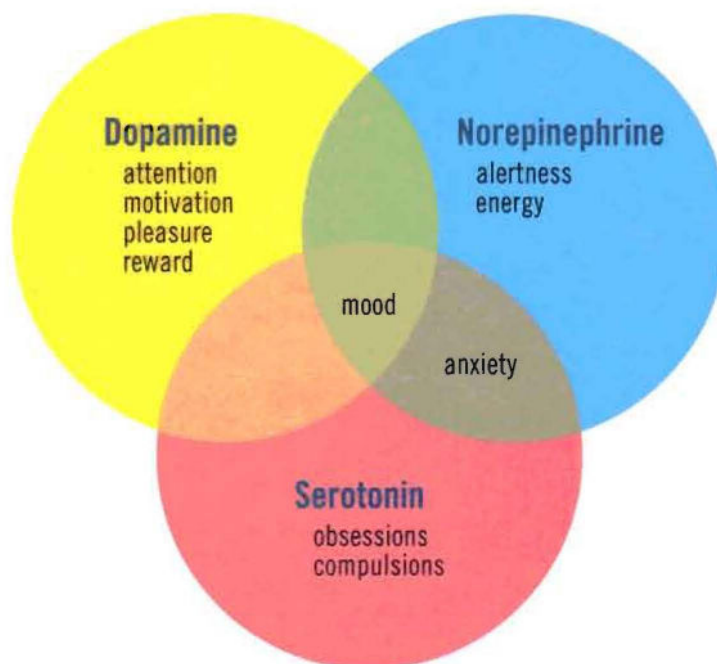


# INSIGHTS ON NEUROTRANSMITTERS

**Neurotransmitters regulate different aspects of mood, cognition, and behavior<sup>1,2</sup>**



**Abnormalities of neurotransmitter function are associated with depressed mood... and a range of different symptoms<sup>1,2</sup>**

<b>Serotonin</b>	<ul style="list-style-type: none"><li>• Obsessive-compulsive behavior</li></ul>
<b>Norepinephrine</b>	<ul style="list-style-type: none"><li>• Decreased alertness</li><li>• Low energy and lethargy</li></ul>
<b>Dopamine</b>	<ul style="list-style-type: none"><li>• Decreased attention</li><li>• Decreased motivation</li><li>• Decreased ability to experience pleasure</li><li>• Cognitive slowing</li></ul>

# NEUROTRANSMITTER-SPECIFIC EFFECTS

## Potential consequences of enhancing activity of different neurotransmitters

<b>Serotonergic side effects</b>	<ul style="list-style-type: none"><li>• Sexual dysfunction<sup>3</sup></li><li>• Weight gain (with long-term enhancement)<sup>4,5</sup></li><li>• Suppression of dopamine neurotransmission, which may result in<sup>1,6</sup>:<ul style="list-style-type: none"><li>– decreased ability to experience pleasure</li><li>– apathy and decreased motivation</li><li>– decreased attention</li><li>– cognitive slowing</li></ul></li><li>• Gastrointestinal upset<sup>3</sup></li><li>• Sleep disturbance<sup>3</sup></li></ul>
<b>Noradrenergic side effects</b>	<ul style="list-style-type: none"><li>• Tremor</li><li>• Tachycardia</li><li>• Dry mouth</li><li>• Insomnia</li></ul>
<b>Dopaminergic side effects<sup>1</sup></b>	<ul style="list-style-type: none"><li>• Psychomotor activation</li><li>• Aggravation of psychosis</li></ul>

## APA\* Practice Guideline for the Treatment of Adult Patients with Major Depressive Disorders

“The effectiveness of antidepressant medications is generally comparable between classes and within classes of medications. Therefore, the initial selection of an antidepressant medication will largely be based on the anticipated side effects, the safety or tolerability of these side effects for individual patients, patient preference, quantity and quality of clinical trial data regarding the medication, and its cost.”<sup>7</sup>

**References:** 1. Stahl SM. *Essential Psychopharmacology: Neuroscientific Basis and Practical Applications*. 2nd ed. New York, NY: Cambridge University Press; 2000. 2. Foote SL, Aston-Jones GS. Pharmacology and physiology of central noradrenergic systems. In: Bloom FE, Kupfer DJ, eds. *Psychopharmacology: The Fourth Generation of Progress*. New York, NY: Raven Press Ltd; 1995:335-345. 3. Richelson E. Pharmacology of antidepressants—characteristics of the ideal drug. *Mayo Clin Proc*. 1994;69:1069-1081. 4. Sussman N, Ginsburg D. Weight gain associated with SSRIs. *Primary Psychiatry*. 1998;5:28-37. 5. Richelson E. Weight gain on SSRIs: a paradox? *Primary Psychiatry*. 1998;5:40-41. 6. Kapur S, Remington G. Serotonin-dopamine interaction and its relevance to schizophrenia. *Am J Psychiatry*. 1996;153:466-476. 7. American Psychiatric Association. Practice guideline for the treatment of patients with major depressive disorder (revision). *Am J Psychiatry*. 2000;157(Suppl):1-45.

\*American Psychiatric Association, 2000.