

Neurotransmitter	Function	Effect of Deficit	Effect of Surplus	Excitatory or Inhibitory/ Additional Notes
Acetylcholine (ACh)	Stimulates muscle contraction (skeletal and smooth); involved in attention, memory, learning and general intellectual functioning	Alzheimer's Disease Lack of muscle movement & control (paralysis)	Severe muscle spasms	Additional notes: Explain botulin and curare's impact: Both paralyze its victims by blocking ACh receptors involved in muscle movement
Dopamine	Pleasurable sensations involved in voluntary movement, attention, and learning Stimulates hypothalamus (reward center)	Parkinson's Disease Anxiety disorders, memory problems, ADHD	Schizophrenia Drug Addiction	Excitatory and Inhibitory
Serotonin	Moods and emotional states, hunger regulation of sleep and wakefulness (arousal)	Depression, mood disorders	Autism Mania	Inhibitory
Norepinephrine	Used for arousal in the flight/fight response, modulation of mood, plays a role in learning and memory retrieval	Mental disorders, especially depression	Anxiety	Excitatory
GABA	Helps to offset excitatory messages and regulate daily sleep-wake cycles Brain's major inhibitory neurotransmitter	Anxiety, seizures, tremors, and insomnia	Sleep and eating disorders	Inhibitory
Endorphins	Involved in pain perception and positive emotions Similar to opiate family of drugs Pleasure, reduction of stress	Body experiences pain	Body may not give adequate warning about pain. Artificial highs	Inhibitory
Glutamate	Used in memory, learning, movement. Helps messages cross the synapse more efficiently		Too much glutamate (and too little GABA) associated with epileptic seizures	Excitatory