NRSC 7614 Questions for Thought / Review  
Topic: Nicotine Dependence with Neuroimaging Correlates  
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1. What is this graph depicting on the y-axis as a unique feature of addiction?

![Graph](image)

- a. Increasing negative affect
- b. Increasing doses of drug use secondary to decreased tolerance
- c. Increased delusions and disorganized thoughts
- d. Increasing compulsivity / loss of control

2. The nucleus accumbens is a cluster or collection of deep cerebral nuclei located within which of the following anatomical structures?

- a. Ventral tegmental area
- b. Globus pallidus
- c. Thalamus
- d. Ventral striatum
- e. Orbitofrontal cortex

3. The ventral tegmental area is located in which of the following anatomical structures?

- a. Midbrain / mesencephalon
- b. Basal forebrain
- c. Ventral striatum
- d. Tectum

4. Nicotine pharmacodynamics are mediated by which of the following mechanisms of action?

- a. Dopaminergic agonism
- b. Acetylcholinergic agonism
- c. GABAergic agonism
- d. Serotonergic agonism

5. The insula is **NOT** involved in which of the following characteristics of addiction?

- a. Physical discomfort, visceral pain, and craving sensations
- b. Intoxication / “high”
- c. Obsession with obtaining drugs and using drugs
- d. Withdrawal behaviors

6. The crosshairs on this T1-weighted MRI of the brain are centered within which of the following structures critical for addiction pathophysiology?

![MRI](image)

- a. Nucleus accumbens
- b. Ventral striatum
- c. Ventral tegmental area
- d. Red nucleus
- e. Substantia nigra

7. The “Dopamine Hypothesis” describes dopaminergic neurotransmitter release from which structure unto which structure?

- a. Ventral tegmental area → nucleus accumbens
- b. Nucleus accumbens → ventral tegmental area
- c. Nucleus accumbens → ventral pallidum
- d. Ventral pallidum → nucleus accumbens
- e. Ventral striatum → ventral pallidum
8. Which of the following is NOT one of the prototypical stages of addiction according to the Koob and Volkow model?
   a. Withdrawal / negative affect
   b. Binge / intoxication
   c. Impulsivity / compulsivity
   d. Preoccupation / anticipation ("craving")

9. The hippocampus is generally thought to participate in which of the following prototypical stages of addiction?
   a. Withdrawal / negative affect
   b. Binge / intoxication
   c. Impulsivity / compulsivity
   d. Preoccupation / anticipation ("craving")

10. The crosshairs on this T1-weighted MRI of the brain are centered within which of the following structures critical for addiction pathophysiology?

   a. Dorsal striatum
   b. Ventral striatum
   c. Ventral tegmental area
   d. Globus pallidus
   e. Putamen

Answers: 1. (d) 2. (d) 3. (e) 4. (a) 5. (b) 6. (c) 7. (a) 8. (c) 9. (b) 10. (b)