

## Chapter 3: Biological Implications

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. A depressed client states, "I have a chemical imbalance in my brain. I have no control over my behavior. Medications are my only hope to feel normal again." Which nursing response is appropriate?
- "Medications only address biological factors. Environmental and interpersonal factors must also be considered."
  - "Because biological factors are the sole cause of depression, medications will improve your mood."
  - "Environmental factors have been shown to exert the most influence in the development of depression."
  - "Researchers have been unable to demonstrate a link between nature (biology and genetics) and nurture (environment)."
- \_\_\_\_\_ 2. A client diagnosed with major depressive disorder asks, "What part of my brain makes me depressed?" Which nursing response is appropriate?
- "The occipital lobe governs perceptions, judging them as positive or negative."
  - "The parietal lobe has been linked to depression."
  - "The medulla regulates key biological and psychological activities."
  - "The limbic system is largely responsible for one's emotional state."
- \_\_\_\_\_ 3. Which part of the nervous system should a nurse identify as playing a major role during stressful situations?
- Peripheral nervous system.
  - Somatic nervous system.
  - Sympathetic nervous system.
  - Parasympathetic nervous system.
- \_\_\_\_\_ 4. Which client statement reflects an understanding of circadian rhythms in psychopathology?
- "When I dream about my mother's horrible train accident, I become hysterical."
  - "I get really irritable during my menstrual cycle."
  - "I'm a morning person. I get my best work done in the a.m."
  - "Every February, I tend to experience periods of sadness."
- \_\_\_\_\_ 5. Which types of adoption studies should a nurse determine as providing useful information for the psychiatric community?
- Studies in which children with mentally ill biological parents are raised by adoptive parents who were mentally healthy.
  - Studies in which children with mentally healthy biological parents are raised by adoptive parents who were mentally ill.
  - Studies in which monozygotic twins from mentally ill parents were raised separately by different adoptive parents.
  - Studies in which monozygotic twins were raised together by mentally ill biological parents.
  - All of the above
- \_\_\_\_\_ 6. A nurse is caring for a wife diagnosed with colitis 6 months after her husband and children were killed in a car accident. Which study perspective would this situation validate?
- Neuroendocrinology
  - Psychoimmunology

- C. Diagnostic technology
- D. Neurophysiology

- \_\_\_\_\_ 7. A withdrawn client, diagnosed with schizophrenia, expresses little emotion and refuses to attend group therapy. What altered component of the nervous system should a nurse recognize as most responsible for this behavior?
- A. Dendrites
  - B. Axons
  - C. Neurotransmitters
  - D. Synapses
- \_\_\_\_\_ 8. A group of nursing students is receiving instruction from a nurse educator about neurotransmitters. Which process best explains how neurotransmitters released into the synaptic cleft may return to the presynaptic neuron?
- A. Regeneration
  - B. Reuptake
  - C. Recycling
  - D. Retransmission
- \_\_\_\_\_ 9. A nurse concludes that a restless, agitated client is manifesting a fight or flight response. With which neurotransmitter should the nurse associate this response?
- A. Acetylcholine
  - B. Dopamine
  - C. Serotonin
  - D. Norepinephrine
- \_\_\_\_\_ 10. A client is admitted to a psychiatric unit with the diagnosis of catatonic schizophrenia. Which neurotransmitter should a nurse expect to be elevated in the client?
- A. Serotonin
  - B. Dopamine
  - C. Gamma-aminobutyric (GABA)
  - D. Histamine
- \_\_\_\_\_ 11. A client's wife of 34 years dies unexpectedly. The client cries often and becomes socially isolated. The client's therapist encourages open discussion of feelings, proper nutrition, and exercise. What is the best rationale for the therapist's advice?
- A. The therapist is using an interpersonal approach.
  - B. The client has an alteration in neurotransmitters.
  - C. It is routine practice to remind clients about nutrition, exercise, and rest.
  - D. The client is susceptible to illness due to effects of stress on the immune system.
- \_\_\_\_\_ 12. A nurse is caring for a client in the third trimester of pregnancy. Which illness, if diagnosed during the mental assessment of this client, should the nurse associate with a decrease in prolactin level?
- A. Major depression
  - B. Schizophrenia
  - C. Anorexia nervosa
  - D. Alzheimer's disease
- \_\_\_\_\_ 13. Which cerebral structure should a nursing instructor describe to students as the "emotional brain"?
- A. The cerebellum
  - B. The limbic system
  - C. The cortex
  - D. The left temporal lobe

- \_\_\_ 14. A nurse understands that abnormal secretion of growth hormone may play a role in which illness?
- A. Acute mania
  - B. Schizophrenia
  - C. Anorexia nervosa
  - D. Alzheimer's disease
- \_\_\_ 15. A client is admitted to an emergency department experiencing memory deficits and decreased motor function. What alteration in brain chemistry should a nurse correlate with the production of these symptoms?
- A. Abnormal levels of serotonin.
  - B. Decreased levels of dopamine.
  - C. Increased levels of norepinephrine.
  - D. Decreased levels of acetylcholine.
- \_\_\_ 16. In which illness should a nurse anticipate that a decrease in norepinephrine level would play a significant role?
- A. Mania
  - B. Schizophrenia
  - C. Anxiety
  - D. Depression
- \_\_\_ 17. Which client diagnosis should a nurse associate with a decrease in gamma-aminobutyric acid (GABA)?
- A. Alzheimer's disease
  - B. Schizophrenia
  - C. Panic disorder
  - D. Depression
- \_\_\_ 18. A nurse expects that an increase in dopamine activity may play a significant role in which client illness?
- A. Schizophrenia
  - B. Depression
  - C. Body dysmorphic disorder
  - D. Parkinson's disease

### Multiple Response

*Identify one or more choices that best complete the statement or answer the question.*

- \_\_\_ 1. Which information should a nurse include when explaining causes of anorexia nervosa to a client? (Select all that apply.)
- A. There is a possible correlation between abnormal secretion of growth hormone and anorexia nervosa.
  - B. There is a possible correlation between antidiuretic hormone levels and anorexia nervosa.
  - C. There is a possible correlation between low levels of gonadotropin and anorexia nervosa.
  - D. There is a possible correlation between increased levels of prolactin and anorexia nervosa.
  - E. There is a possible correlation between altered levels of oxytocin and anorexia nervosa.
- \_\_\_ 2. Which symptoms should a nurse associate with the development of decreased levels of thyroid-stimulating hormone (TSH) in a newly admitted client? (Select all that apply.)
- A. Depression
  - B. Fatigue
  - C. Increased libido
  - D. Mania

E. Hyperexcitability

- \_\_\_\_\_ 3. For which symptoms should a nurse assess a client with elevated levels of thyroid hormone? (Select all that apply.)
- A. Emotional lability
  - B. Depression
  - C. Insomnia
  - D. Restlessness
  - E. Apathy

## Chapter 3: Biological Implications

### Answer Section

#### MULTIPLE CHOICE

1. ANS: A

The nurse should advise the client that medications address biological factors, but there are other factors that effect mood. The nurse should educate the client on environmental and interpersonal factors that can lead to depression.

PTS: 1 REF: Page: 34

KEY: Cognitive Level: Analysis | Integrated Process: Nursing Process: Implementation

2. ANS: D

The nurse should explain to the client that the limbic system is largely responsible for one's emotional state. This system is often called the "emotional brain" and is associated with feelings, sexuality, and social behavior. The occipital lobes are the area of visual reception and interpretation. Somatosensory input (touch, taste, temperature, etc.) occurs in the parietal lobes. The medulla contains vital centers that regulate heart rate and reflexes.

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KEY: Cognitive Level: Application | Integrated Process: Nursing Process: Implementation

3. ANS: C

The nurse should identify that the sympathetic nervous system plays a major role during stressful situations. The sympathetic nervous system prepares the body for the fight or flight response. The parasympathetic nervous system is dominant when an individual is in a nonstressful state.

PTS: 1 REF: Page: 41

KEY: Cognitive Level: Comprehension | Integrated Process: Nursing Process: Analysis

4. ANS: C

By stating, "I am a morning person," the client demonstrates an understanding that circadian rhythms may influence a variety of regulatory functions, including the sleep-wake cycle, regulation of body temperature, and patterns of activity. Most humans follow a 24-hour cycle that is largely affected by lightness and darkness.

PTS: 1 REF: Page: 55

KEY: Cognitive Level: Analysis | Integrated Process: Nursing Process: Evaluation

5. ANS: E

The nurse should determine that all of the studies could possibly benefit the psychiatric community. The studies may reveal research findings relating genetic links to mental illness. Adoption studies allow comparisons to be made of the influences of the environment versus genetics.

PTS: 1 REF: Page: 55

KEY: Cognitive Level: Analysis | Integrated Process: Nursing Process: Analysis

6. ANS: B

Psychoimmunology is the branch of medicine that studies the effects of social and psychological factors of the functioning of the immune system. Studies of the biological response to stress hypothesize that individuals become more susceptible to physical illness following exposure to stressful stimuli.

PTS: 1 REF: Page: 55

KEY: Cognitive Level: Application | Integrated Process: Nursing Process: Implementation

7. ANS: C

The nurse should recognize that neurotransmitters play an essential function in the role of human emotion and behavior. Neurotransmitters are a target for mechanism of action of many psychotropic medications.

PTS: 1 REF: Page: 39

KEY: Cognitive Level: Comprehension | Integrated Process: Nursing Process: Analysis

8. ANS: B

The nursing instructor should best explain that the process by which neurotransmitters are released into the synaptic cleft and returned to the presynaptic neuron is by reuptake. Reuptake is the process in which neurotransmitters are stored for reuse.

PTS: 1 REF: Page: 39

KEY: Cognitive Level: Comprehension | Integrated Process: Teaching/Learning

9. ANS: D

The nurse should associate the neurotransmitter norepinephrine with the fight or flight response. Norepinephrine produces activity in the sympathetic postsynaptic nerve terminal and is associated with the regulation of mood, cognition, perception, locomotion, and sleep and arousal.

PTS: 1 REF: Page: 39

KEY: Cognitive Level: Comprehension | Integrated Process: Nursing Process: Analysis

10. ANS: B

The nurse should expect that elevated dopamine levels may be an attributing factor to the client's current level of functioning. Dopamine functions include regulation of movements and coordination, emotions, and voluntary decision-making ability.

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KEY: Cognitive Level: Comprehension | Integrated Process: Nursing Process: Analysis

11. ANS: D

The therapist's advice should be based on the knowledge that the client has been exposed to stressful stimuli is at an increased risk to develop illness due to effects of stress of the immune system. The study of this branch of medicine is called psychoimmunology.

PTS: 1 REF: Page: 55

KEY: Cognitive Level: Application | Integrated Process: Communication/Documentation

12. ANS: B

The nurse should associate decreased levels of prolactin with the mental illness schizophrenia. Prolactin stimulates milk production by the mammary glands in the presence of high levels of estrogen and progesterone during pregnancy. Hypersecretion of prolactin is associated with behavior symptoms such as depression, anxiety, stress intolerance, and increased irritability.

PTS: 1 REF: Page: 46

KEY: Cognitive Level: Application | Integrated Process: Nursing Process: Assessment

13. ANS: B

The limbic system is often referred to as the "emotional brain." The limbic system is largely responsible for one's emotional state and is associated with feelings, sexuality, and social behavior.

PTS: 1 REF: Page: 35

KEY: Cognitive Level: Knowledge | Integrated Process: Teaching/Learning

14. ANS: C

The nurse should understand that research has found a correlation between abnormal levels of growth hormone and anorexia nervosa. The growth hormone is responsible for growth in children, as well as continued protein synthesis throughout life.

PTS: 1 REF: Page: 43

KEY: Cognitive Level: Comprehension | Integrated Process: Nursing Process: Analysis

15. ANS: D

The nurse should correlate memory deficits and decreased motor function with decreased levels of acetylcholine. Acetylcholine is a major effector chemical of the autonomic nervous system. Functions of acetylcholine include sleep regulation, pain perception, the modulation and coordination of movement, and memory.

PTS: 1 REF: Page: 39

KEY: Cognitive Level: Application | Integrated Process: Nursing Process: Analysis

16. ANS: D

The nurse should anticipate that a decrease in norepinephrine level would play a significant role in depression. The functions of norepinephrine include the regulation of mood, cognition, perception, locomotion, cardiovascular functioning, and sleep and arousal.

PTS: 1 REF: Page: 39

KEY: Cognitive Level: Comprehension | Integrated Process: Nursing Process: Analysis

17. ANS: C

The nurse should associate a decrease in GABA with panic disorder. Enhancement of the GABA system is the mechanism of action by which benzodiazepines produce a calming effect, thus reducing anxiety. Alterations in the GABA system are also associated with movement disorders and epilepsy.

PTS: 1 REF: Page: 47

KEY: Cognitive Level: Application | Integrated Process: Nursing Process: Analysis

18. ANS: A

The nurse should expect that an increase in dopamine activity may play a significant role in schizophrenia. Dopamine functions include regulation of emotions, coordination, and voluntary decision-making ability. Increase dopamine activity is also associated with mania.

PTS: 1 REF: Page: 39

KEY: Cognitive Level: Comprehension | Integrated Process: Nursing Process: Analysis

## **MULTIPLE RESPONSE**

1. ANS: A, C

The nurse should explain to the client that there is a possible correlation between anorexia nervosa and decreased levels of growth hormones and gonadotropin. Anorexia nervosa has also been correlated with increased cortisol levels.

PTS: 1 REF: Page: 39

KEY: Cognitive Level: Comprehension | Integrated Process: Teaching/Learning

2. ANS: A, B

The nurse should associate depression and fatigue with increased levels of TSH. In addition to fatigue, other symptoms such as decreased libido, memory impairment, and suicidal ideation are also associated with chronic hypothyroidism.

PTS: 1 REF: Page: 45

KEY: Cognitive Level: Application | Integrated Process: Nursing Process: Assessment

3. ANS: A, C, D

The nurse should assess the client with an elevated level of thyroid hormone for evidence of emotional lability, insomnia, and restlessness. Hyperthyroidism is also associated with irritability, anxiety, and weight loss.

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KEY: Cognitive Level: Application | Integrated Process: Nursing Process: Assessment