Chapter 3: Biological Implications

Multiple Choice

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?1. “Medications only address biological factors. Environmental and interpersonal factors must also be considered.”2. “Because biological factors are the sole cause of depression, medications will improve your mood.”3. “Environmental factors have been shown to exert the most influence in the development of depression.”4. “Researchers have been unable to demonstrate a link between nature (biology and genetics) and nurture (environment).”
ANS: 1
Rationale: The nurse should advise the client that medications address biological factors, but there are other factors that affect mood. The nurse should educate the client on environmental and interpersonal factors that can lead to depression.

Cognitive Level: Analysis
Integrated Process: Implementation

2. A client diagnosed with major depressive disorder asks, “What part of my brain controls my emotions?” Which nursing response is appropriate?1. “The occipital lobe governs perceptions, judging them as positive or negative.”2. “The parietal lobe has been linked to depression.”3. “The medulla regulates key biological and psychological activities.”4. “The limbic system is largely responsible for one’s emotional state.”
ANS: 4
Rationale: The nurse should explain to the client that the limbic system is largely responsible for one’s emotional state. This system if 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.

Cognitive Level: Application
Integrated Process: Implementation

3. Which part of the nervous system should a nurse identify as playing a major role during stressful situations?
1. Peripheral nervous system 2. Somatic nervous system 3. Sympathetic nervous system 4. Parasympathetic nervous system

ANS: 3
Rationale: 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.

Cognitive Level: Comprehension
Integrated Process: Assessment

4. Which client statement reflects an understanding of circadian rhythms in psychopathology?1. “When I dream about my mother’s horrible train accident, I become hysterical.” 2. “I get really irritable during my menstrual cycle.”3. “I’m a morning person. I get my best work done before noon.”
4. “Every February, I tend to experience periods of sadness.”
ANS: 3
Rationale: 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.

Cognitive Level: Analysis
Integrated Process: Evaluation

5. Which types of adoption studies should a nurse recognize as providing useful information for the psychiatric community? 1. Studies in which children with mentally ill biological parents are raised by adoptive parents who were mentally healthy.2. Studies in which children with mentally healthy biological parents are raised by adoptive parents who were mentally ill.
3. Studies in which monozygotic twins from mentally ill parents were raised separately by different adoptive parents.4. Studies in which monozygotic twins were raised together by mentally ill biological parents.
5. All of the above.
ANS: 5
Rationale: 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.

Cognitive Level: Analysis
Integrated Process: Evaluation

6. Six months after her husband and children were killed in a car accident, a client is diagnosed with ulcerative colitis. The nurse should recognize that this situation validates which study perspective? 1. Neuroendocrinology
2. Psychoimmunology3. Diagnostic technology4. Neurophysiology
ANS: 2
Rationale: Psychoimmunology is the branch of medicine that studies the effects of social and psychological factors on 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.

Cognitive Level: Application
Integrated Process: Evaluation

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 being responsible for this behavior?
1. Dendrites2. Axons3. Neurotransmitters4. Synapses
ANS: 3
Rationale: The nurse should recognize that neurotransmitters play an essential function in the role of human emotion and behavior. Neurotransmitters are targeted and affected by many psychotropic medications.

Cognitive Level: Comprehension
Integrated Process: Evaluation

8. An instructor is teaching nursing students about neurotransmitters. Which best explains the process of how neurotransmitters released into the synaptic cleft may return to the presynaptic neuron?1. Regeneration2. Reuptake3. Recycling4. Retransmission
ANS: 2
Rationale: The nursing instructor should explain that the process by which neurotransmitters are released into the synaptic cleft and returned to the presynaptic neuron is termed *reuptake*. Reuptake is the process by which neurotransmitters are stored for reuse.

Cognitive Level: Comprehension
Integrated Process: Implementation

9. A nurse concludes that a restless, agitated client is manifesting a fight- or-flight response. The nurse should associate this response with which neurotransmitter?1. Acetylcholine2. Dopamine3. Serotonin4. Norepinephrine

ANS: 4
Rationale: 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.

Cognitive Level: Comprehension
Integrated Process: Assessment

10. A client is admitted to a psychiatric unit with the diagnosis of catatonic schizophrenia. Which of the client's neurotransmitters should a nurse expect to be elevated?1. Serotonin
2. Dopamine
3. Gamma-aminobutyric acid (GABA)
4. Histamine

ANS: 2
Rationale: The nurse should expect that elevated dopamine levels might 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.

Cognitive Level: Application
Integrated Process: Assessment

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 recommendations? 1. The therapist is using an interpersonal approach.2. The client has an alteration in neurotransmitters.
3. It is routine practice to remind clients about nutrition, exercise, and rest.4. The client is susceptible to illness because of effects of stress on the immune system.
ANS: 4
Rationale: The therapist's recommendations should be based on the knowledge that the client has been exposed to stressful stimuli and is at an increased risk to develop illness because of the effects of stress on the immune system. The study of this branch of medicine is called psychoimmunology.

Cognitive Level: Application
Integrated Process: Planning

12. Which mental illness should a nurse identify as being associated with a decrease in prolactin hormone level?
1. Major depressive episode2. Schizophrenia
3. Anorexia nervosa4. Alzheimer's disease

ANS: 2
Rationale: Although the exact mechanism is unknown, there may be some correlation between decreased levels of the hormone prolactin and schizophrenia.

Cognitive Level: Application
Integrated Process: Evaluation

13. Which cerebral structure should a nursing instructor describe to students as the "emotional brain"?1. The cerebellum2. The limbic system3. The cortex4. The left temporal lobe

ANS: 2
Rationale: 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.

Cognitive Level: Comprehension
Integrated Process: Implementation

14. A nurse understands that the abnormal secretion of growth hormone may play a role in which illness?1. Acute mania2. Schizophrenia3. Anorexia nervosa4. Alzheimer's disease
ANS: 3
Rationale: 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.

Cognitive Level: Comprehension
Integrated Process: Assessment

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? 1. Abnormal levels of serotonin2. Decreased levels of dopamine3. Increased levels of norepinephrine
4. Decreased levels of acetylcholine
ANS: 4
Rationale: 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.

Cognitive Level: Application
Integrated Process: Assessment

16. A nurse should recognize that a decrease in norepinephrine levels would play a significant role in which mental illness?1. Bipolar disorder: mania2. Schizophrenia spectrum disorder3. Generalized anxiety disorder4. Major depressive episode
ANS: 4
Rationale: The nurse should recognize that a decrease in norepinephrine level would play a significant role in the development of major depressive disorder. The functions of norepinephrine include the regulation of mood, cognition, perception, locomotion, cardiovascular functioning, and sleep and arousal.

Cognitive Level: Application
Integrated Process: Evaluation

17. A nurse should expect that an increase in dopamine activity might play a significant role in the development of which mental illness?1. Schizophrenia spectrum disorder2. Major depressive disorder3. Body dysmorphic disorder4. Parkinson's disease
ANS: 1
Rationale: The nurse should expect that an increase in dopamine activity might play a significant role in the development of schizophrenia spectrum disorder. Functions of dopamine include regulation of emotions, coordination, and voluntary decision-making ability. Increased dopamine activity is also associated with mania.

Cognitive Level: Application
Integrated Process: Evaluation

Multiple Response

18. Which of the following information should a nurse include when explaining causes of anorexia nervosa to a client? (*Select all that apply.*)1. There is a possible correlation between abnormal secretion of growth hormone and anorexia nervosa. 2. There is a possible correlation between antidiuretic hormone levels and anorexia nervosa.
3. There is a possible correlation between low levels of gonadotropin and anorexia nervosa.
4. There is a possible correlation between increased levels of prolactin and anorexia nervosa.
5. There is a possible correlation between altered levels of oxytocin and anorexia nervosa.
ANS: 1, 3
Rationale: 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.

Cognitive Level: Application
Integrated Process: Implementation

19. Which of the following symptoms should a nurse associate with the development of increased levels of thyroid-stimulating hormone (TSH) in a newly admitted client? (*Select all that apply.*)1. Depression2. Fatigue3. Increased libido4. Mania5. Hyperexcitability
ANS: 1, 2
Rationale: The nurse should associate depression and fatigue with increased levels of TSH. TSH is only increased when thyroid levels are low, as in the diagnosis of hypothyroidism. In addition to depression and fatigue, other symptoms, such as decreased libido, memory impairment, and suicidal ideation are associated with chronic hypothyroidism.

Cognitive Level: Application
Integrated Process: Assessment

Fill-in-the-Blank

20. _____ is the study of the biological foundations of cognitive, emotional, and behavioral processes.

ANS: Psychobiology
Rationale: Psychobiology is the study of the biological foundations of cognitive, emotional, and behavioral processes. In recent years, a greater emphasis has been placed on the study of the organic basis for psychiatric illness.

Cognitive Level: Application
Integrated Process: Assessment