

Chapter 2: Biological Implications

Multiple Choice

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

- _____ 1. A health-care provider prescribes computerized electroencephalography mapping for a client with suspected schizophrenia. Which statement made by the client accurately describes the procedure?
1. "Electrodes will be placed on my scalp and measure and mark waves of activity in my brain."
 2. "X-rays will be taken to detect any lesions I might have in my brain."
 3. "This test will use magnetic imaging and show if I have any swelling in my brain."
 4. "After receiving an injection of a radioactive substance, an image will measure brain functioning and produce an image."
- _____ 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."
- _____ 3. A nurse would identify which part of the nervous system as playing a major role during a stressful situation?
1. Peripheral nervous system
 2. Somatic nervous system
 3. Sympathetic nervous system
 4. Parasympathetic nervous system
- _____ 4. Which client statement reflects an understanding of seasonal affective disorder?
1. "I am most irritable when I haven't eaten anything in several hours."
 2. "I get lonely around the holidays because I have no one to spend them with."
 3. "The full moon is a really stressful time for me."
 4. "I notice I feel more depressed in the winter months, when there is less sunlight."

- _____ 5. Six months after her husband and children were killed in a car accident, a client is diagnosed with ulcerative colitis. The nurse would recognize that this situation validates which study perspective?
1. Neuroendocrinology
 2. Psychoneuroimmunology
 3. Diagnostic technology
 4. Neurophysiology
- _____ 6. A client diagnosed with schizophrenia is experiencing frequent hallucinations. What altered component of the nervous system would a nurse recognize as being responsible for this behavior?
1. Increase in serotonin
 2. Decrease in histamine
 3. Increase in dopamine
 4. Decrease in acetylcholine
- _____ 7. The nurse would associate the fight-or-flight response with which neurotransmitter?
1. Acetylcholine
 2. Dopamine
 3. Serotonin
 4. Norepinephrine
- _____ 8. Which neurotransmitters would a nurse expect to be elevated in a client with a diagnosis of catatonic schizophrenia?
1. Serotonin
 2. Dopamine
 3. Gamma-aminobutyric acid (GABA)
 4. Histamine
- _____ 9. 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 recognizes the role of circadian rhythms in the client's condition.
 2. The client has an alteration in neurotransmitters.
 3. The therapist is attempting to increase the client's acetylcholine levels.
 4. The client is susceptible to illness because of effects of stress on the immune system.

- _____ 10. Which mental illness would a nurse identify as being associated with an increase in prolactin level?
1. Depression
 2. Psychosis
 3. Anorexia nervosa
 4. Alzheimer's disease
- _____ 11. Melanocyte-secreting hormone has been implicated in the etiology of which disorder?
1. Anorexia nervosa
 2. Schizophrenia
 3. Seasonal affective disorder
 4. Autism
- _____ 12. The nurse is caring for a client whose diagnosis has been linked to an abnormal secretion of growth hormone. Which illness does the client most likely have?
1. Acute mania
 2. Schizophrenia
 3. Anorexia nervosa
 4. Alzheimer's disease
- _____ 13. 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 serotonin
 2. Decreased levels of histamine
 3. Increased levels of norepinephrine
 4. Decreased levels of acetylcholine
- _____ 14. A nurse is caring for a client with decreased norepinephrine levels. Which mental illness is the client most likely at risk for?
1. Bipolar disorder: mania
 2. Schizophrenia
 3. Generalized anxiety disorder
 4. Major depressive episode

- _____ 15. A nurse would expect that an increase in dopamine activity might play a significant role in the development of which mental illness?
1. Schizophrenia spectrum disorder
 2. Major depressive disorder
 3. Tourette syndrome
 4. Parkinson's disease

Multiple Response

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

- _____ 16. Which of the following describes concordance? (*Select all that apply.*)
1. There is a discrepancy between the genotypes of parent and child.
 2. A genetic overlap is present in dizygotic twins.
 3. Both twins have the same disorder in question.
 4. Adopted children and adopted parents have different disorders.
 5. There is strong evidence of genetic involvement in a disorder.
- _____ 17. The nurse is caring for a client who has been found to have decreased levels of thyroid-stimulating hormone (TSH). Which symptoms would the client likely exhibit? (*Select all that apply.*)
1. Depression
 2. Fatigue
 3. Increased libido
 4. Mania
 5. Hyperexcitability
- _____ 18. Which are biological implications of both bipolar disorder and panic disorder? (*Select all that apply.*)
1. Increased levels of dopamine
 2. Increased levels of thyroid hormones
 3. Decreased cortisol levels
 4. Decreased gamma-aminobutyric acid (GABA) activity
 5. Increased levels of norepinephrine

Completion

Complete each statement.

19. _____ is the study of the biological foundations of cognitive, emotional, and behavioral processes.
20. The junction between two neurons is called a _____.

Chapter 2: Biological Implications

Answer Section

MULTIPLE CHOICE

1. ANS: 1

Chapter: Chapter 2, Biological Implications

Objective: Identify various diagnostic procedures used to detect alteration in biological functioning that may be contributing to psychiatric disorders.

Page: 32

Heading: Table 2-5 Diagnostic Procedures Used to Detect Altered Brain Functioning

Integrated Processes: Teaching and Learning

Client Need: Physiological Integrity

Cognitive Level: Application [Applying]

Concept: Cognition

Difficulty: Moderate

	Feedback
1	An electroencephalogram (EEG) involves placing electrodes on the scalp and recording waves to measure brain activity.
2	A computed tomography (CT) scan involves x-rays taken to detect lesions or abscesses of the brain.
3	Magnetic resonance imaging (MRI) involves measuring strong anatomical and biochemical status of various segments of the brain, detecting edema, ischemia, trauma, and other changes using magnetic energy.
4	A positron emission tomography (PET) scan involves a client receiving an injection of a radioactive substance to measure specific brain functioning, such as glucose metabolism, oxygen utilization, blood flow, an interest in psychiatry, and neurotransmitter-receptor interaction.

PTS: 1

CON: Cognition

2. ANS: 4

Chapter: Chapter 2, Biological Implications

Objective: Identify gross anatomical structures of the brain and describe their functions.

Page: 13

Heading: Limbic System

Integrated Processes: Teaching and Learning

Client Need: Physiological Integrity

Cognitive Level: Comprehension [Understanding]

Concept: Intracranial Regulation

Difficulty: Easy

	Feedback
1	The occipital lobes are the area of visual reception and interpretation.
2	Somatosensory input (touch, taste, temperature, etc.) occurs in the parietal lobes.
3	The medulla contains vital centers that regulate heart rate and reflexes.
4	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.

PTS: 1

CON: Mood and Affect

3. ANS: 3

Chapter: Chapter 2, Biological Implications

Objective: Discuss the physiology of neurotransmission in the central nervous system.

Page: 13

Heading: Autonomic Nervous System

Integrated Processes: Nursing Process

Client Need: Physiological Integrity

Cognitive Level: Comprehension [Understanding]

Concept: Mood and Affect

Difficulty: Easy

	Feedback
1	The peripheral nervous system does not play a major role during stressful situations.
2	The somatic nervous system is part of the peripheral nervous system.
3	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.
4	The parasympathetic nervous system is dominant when an individual is in a nonstressful state.

PTS: 1

CON: Mood and Affect

4. ANS: 4

Chapter: Chapter 2, Biological Implications

Objective: Discuss the physiology of neurotransmission in the central nervous system.

Page: 13

Heading: The Anterior Pituitary: Melanocyte-Stimulating Hormone

Integrated Processes: Teaching and Learning

Client Need: Physiological Integrity

Cognitive Level: Analysis [Analyzing]

Concept: Cellular Regulation

Difficulty: Moderate

	Feedback
1	Irritability due to low blood sugar can occur in individuals with mood dysregulation but does not have anything to do with seasonal affective disorder.
2	While seasonal affective disorder typically onsets during the winter months, the etiology has nothing to do with loneliness during holidays.
3	This statement does not indicate understanding of seasonal affective disorder. Seasonal affective disorder refers to patterns of mood that change over the four seasons, not the monthly patterns of the moon.
4	By stating "I feel more depressed in the winter months," the client demonstrates an understanding that moods are influenced by exposure to sunlight, which is the etiology of seasonal affective disorder.

PTS: 1

CON: Sleep and Rest

5. ANS: 2

Chapter: Chapter 2, Biological Implications

Objective: Discuss the influence of psychological factors on the immune system.

Page: 30

Heading: Psychoneuroimmunology > Implications of the Immune System in Psychiatric Illness

Integrated Processes: Nursing Process

Client Need: Psychosocial Integrity

Cognitive Level: Application [Applying]

Concept: Stress and Coping

Difficulty: Easy

	Feedback
1	Neuroendocrinology is the study of the interaction between the nervous system and the endocrine system.
2	Psychoneuroimmunology 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.
3	Diagnostic testing assists in diagnosing.
4	Neurophysiology is the physiology of the nervous system.

PTS: 1

CON: Stress and Coping

6. ANS: 3

Chapter: Chapter 2, Biological Implications

Objective: Describe the role of neurotransmitters in the central nervous system.

Page: 19

Heading: Synapses, Dopamine
 Integrated Processes: Nursing Process
 Client Need: Physiological Integrity
 Cognitive Level: Comprehension [Understanding]
 Concept: Mood and Affect
 Difficulty: Moderate

	Feedback
1	Although an increase in serotonin is thought to play a role in schizophrenia, it is not associated with schizophrenic hallucinations.
2	A decrease in histamine can cause epilepsy, stroke, anxiety depression, psychosis, neurodegeneration, and neuroinflammatory processes.
3	Excessive activity of dopamine is believed to be responsible for symptoms of hallucinations and delusions seen in people with schizophrenia.
4	A decrease in acetylcholine affects Parkinson's disease, Huntington's disease, and Alzheimer's disease. It affects muscle as well.

PTS: 1 CON: Mood and Affect

7. ANS: 4

Chapter: Chapter 2, Biological Implications
 Objective: Describe the role of neurotransmitters in the central nervous system.
 Page: 19
 Heading: Monoamines > Norepinephrine
 Integrated Processes: Nursing Process
 Client Need: Physiological Integrity
 Cognitive Level: Comprehension [Understanding]
 Concept: Mood and Affect
 Difficulty: Easy

	Feedback
1	Acetylcholine functions include pain, arousal, and pain perception.
2	Dopamine functions include regulation of movement and coordination.
3	Serotonin plays a role in sleep, libido, and appetite.
4	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 CON: Mood and Affect

8. ANS: 2

Chapter: Chapter 2: Biological Implications
 Objective: Describe the role of neurotransmitters in the central nervous system.
 Page: 19

Heading: Monoamines > Norepinephrine

Integrated Processes: Nursing Process

Client Need: Physiological Integrity

Cognitive Level: Application [Applying]

Concept: Mood and Affect

Difficulty: Easy

	Feedback
1	Serotonin plays a role in sleep, libido, and appetite.
2	The nurse should expect that elevated dopamine levels might be a contributing factor to the client's current level of functioning. Dopamine functions include regulation of movements and coordination, emotions, and voluntary decision-making ability.
3	GABA prevents postsynaptic excitation, but it is not associated with catatonic schizophrenia.
4	Histamine mediates allergic and inflammatory reactions and would not be associated with the client's current state.

PTS: 1

CON: Mood and Affect

9. ANS: 4

Chapter: Chapter 2: Biological Implications

Objective: Discuss the influence of psychological factors on the immune system.

Page: 30

Heading: Psychoneuroimmunology > Implications of the Immune System in Psychiatric Illness

Integrated Processes: Nursing Process

Client Need: Physiological Integrity

Cognitive Level: Analysis [Analyzing]

Concept: Stress and Coping

Difficulty: Moderate

	Feedback
1	Although circadian rhythms and appropriate sleep are thought to play a role in various psychological conditions, the therapist's plan of care addresses a different area of concern.
2	Although this may be true, the therapist's plan of care responds to the role of a different area of concern.
3	An increase of acetylcholine levels would likely increase the client's depression.
4	The therapist's recommendations are most likely based on the knowledge that the client has decreased immune response due to exposure to stressful stimuli. As such, the client is at increased risk to develop illness and should take steps to increase immune function.

PTS: 1

CON: Stress and Coping