Sedative-Hypnotics Primary Learning Objectives

1. Describe the key characteristics of GABAergic synapses in terms of the synthesis, storage, release, and inactivation of GABA.

2. Distinguish between the two main classes of GABA receptors. Identify GABA-A receptors as ionotropic. Compare and contrast the structure and ion selectivity of GABA-A receptors with that of nicotinic cholinergic receptors. Identify GABA-B receptors as Gi/o coupled metabotropic receptors and note their intracellular effector pathways.

3. Identify the medical use of the GABA-B receptor agonist baclofen in neurology.

4. Describe the effect that BDZ binding to GABA-A channels has on the activity of CNS neurons.

5. Define allosteric modulation. Provide examples of different types of allosteric modulation.

6. Define what a BDZ receptor antagonist is and give an example of one.

7. Distinguish between a GABA-A receptor antagonist and a BDZ receptor antagonist.

8. List in order, from mild to most severe, the progressive dose-dependent effects of BDZs on the brain.

9. Explain how the CNS depressant effects of BDZs are cumulative with that of non-BDZ sedative hypnotics and other CNS depressants. Identify the safety issue and the risk/benefits in the context of general anesthesia.

10. Describe the ways in which benzodiazepines can be administered.

11. Explain how aging affects the metabolism of some benzodiazepine drugs.

12. Identify common side-effects of BDZ drugs.

13. Summarize the physical and chemical properties of benzodiazepine drugs.

14. Describe the key characteristics of contemporary sleeping pills in terms of their receptor selectivity, duration of half-life, and the rate at which they release active ingredients.

15. Identify the various classes of BDZs and describe their main clinical uses.

16. List the criteria a physician uses to determine whether a hypnotic drug is effective in a patient.

17. Explain the characteristics of tolerance/dependence to BDZs.

18. Identify the medical uses of Flumazenil.

19. Compare and contrast the molecular mechanism of BDZs and that of other (non-BDZ) sedative-hypnotic drugs.

20. Describe the cross-tolerance/dependence of sedative hypnotics and explain the implications for treating alcohol withdrawal.

21. List the medications that can be used to treat hypersomnia.

22. Describe the molecular and synaptic effects of amphetamines. Explain how amphetamine drugs influence the CNS noradrenaline and serotonin neurons that mediate waking.

23. Describe some common problems and side effects that are associated with prolonged use of amphetamines (such as for hypersomnia).

24. Explain why modafinil represents a new approach to the treatment of hypersomnia.