

Osteoporosis: Review Questions

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QUESTIONS

Choose the single best answer for each question.

- Fractures are the major complication of osteoporosis. Which one of the following fractures is the most severe in patients with osteoporosis?**
 - Vertebral body fracture
 - Wrist fracture
 - Hip fracture
 - Humerus fracture
 - Tibia fracture
- Using dual energy x-ray absorptiometry (DEXA), which of the following criteria is diagnostic for osteoporosis?**
 - T score of +2.0 to +1.0
 - T score of +1.0 to -1.0
 - T score of -1.0 to -2.5
 - T score of -2.5 or less
 - None of the above
- Which of the following represents the recommended daily dietary intake of calcium and vitamin D in the treatment of established osteoporosis?**
 - 800 mg/day of calcium, 100 U/day of vitamin D
 - 900 mg/day of calcium, 200 U/day of vitamin D
 - 1200 mg/day of calcium, 200 to 400 U/day of vitamin D
 - 1500 mg/day of calcium, 400 to 800 U/day of vitamin D
 - 1800 mg/day of calcium, 800 to 1000 U/day of vitamin D
- All of the following are risk factors for developing osteoporosis EXCEPT:**
 - Asian or Caucasian race
 - African American race
 - Cigarette smoking
 - Advanced age
 - Family history of osteoporosis
- All of the following medications are used in the treatment of established osteoporosis EXCEPT:**
 - Calcitonin
 - Estrogen
 - Rofecoxib
 - Raloxifene
 - Alendronate
- Which of the following medications can be used for its analgesic effect in patients with painful osteoporotic fractures?**
 - Calcitonin
 - Risedronate
 - Raloxifene
 - Estrogen
 - None of the above

(turn page for answers)

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EXPLANATION OF ANSWERS

1. **(C) Hip fracture.** Osteoporosis is a generalized disorder of the skeleton. The major complications of this disorder are fractures of the vertebrae, hip, humerus, tibia, and wrist. Hip fractures are the most severe, with approximately 300,000 hip fractures occurring annually in the osteoporotic population. Hip fractures carry a major risk of morbidity and mortality; up to 20% of patients die within 1 year of hip fracture, and 70% never regain their previous level of function.¹
2. **(D) T score of -2.5 or less.** DEXA is the gold standard for measuring bone density. According to criteria established by the World Health Organization, normal bone density is reflected by a T score of +1.0 to -1.0, which is a value within 1 standard deviation (SD) of the young adult mean. Osteopenia is diagnosed by a T score of -1.0 to -2.5, which is a value greater than 1 SD below the young adult mean, but less than 2.5 SDs below this value. Osteoporosis is diagnosed by a T score of -2.5 or less, which is a value 2.5 SDs or more below the young adult mean.
3. **(D) 1500 mg/day of calcium, 400 to 800 U/day of vitamin D.** Adequate calcium and vitamin D intake should be a part of the prevention and treatment of osteoporosis. Dietary intake of calcium should be 800 to 1000 mg/day in childhood through early adulthood, 1000 to 1200 mg/day in the middle years, and 1500 mg/day in the elderly. If osteoporosis is established, the treatment includes 1500 mg/day of calcium and 400 to 800 U/day of vitamin D.
4. **(B) African American race.** Adult women, family history of osteoporosis, Asian or Caucasian race, ciga-

rette smoking, and advanced age are all risk factors for osteoporosis. Other risk factors include alcoholism, malnutrition, vegetarian diet, and sedentary lifestyle. The use of certain medications (eg, phenytoin sodium, carbamazepine, corticosteroids, heparin, furosemide) can also be a risk factor for osteoporosis. Certain medical conditions (eg, Cushing's syndrome, hyperparathyroidism, hyperthyroidism, rheumatoid arthritis) as well as long-term renal dialysis can also lead to osteoporosis.

5. **(C) Rofecoxib.** Rofecoxib is used to treat osteoarthritis, not osteoporosis. Estrogen is the initial drug of choice for both prevention and treatment of osteoporosis. It can be given by an oral or transdermal route and in combination with progesterone when needed. Alendronate and risedronate are approved bisphosphonates for prevention and treatment of osteoporosis. Raloxifene is the only approved selective estrogen receptor modulator for prevention and treatment of osteoporosis. Raloxifene is an option for patients who cannot or will not take estrogen. Calcitonin is approved for both prevention and treatment of osteoporosis.
6. **(A) Calcitonin.** Calcitonin is a weaker antiresorptive than estrogen or the bisphosphonates. However, because of its analgesic effect, calcitonin can be used in patients with pain caused by osteoporotic fractures. Calcitonin can be administered by a subcutaneous, intramuscular, or intranasal route.

REFERENCE

1. Brandon WH: Prevention and treatment of osteoporosis. In *Clinical Review and Primary Care Update 2000*. Mayo Clinic: Jacksonville, FL; 293-302.

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