1. Anorexia nervosa is associated with an extraordinarily elevated premature mortality rate, most commonly due to complications from falls and bone fractures.

   A. True  
   B. False

2. Although many consequences of AN can be reversed with weight restoration and resumption of normal eating behaviors, low bone mineral density can persist for decades after disease resolution and cause lifelong debilitation.

   A. True  
   B. False

3. All of the following are risk factors for low bone mineral density, except for:

   A. Cigarette smoking and alcohol consumption  
   B. A vegetarian diet  
   C. Hyperthyroidism  
   D. Selective serotonin reuptake inhibitors

4. Amenorrhea is required for the diagnosis of AN per the new DSM-V criteria.

   A. True  
   B. False

5. Why is hypercortisolism seen in patients with AN?

   A. An increased basal cortisol secretion.  
   B. Increased steroid pulse frequency.  
   C. Reduced renal cortisol clearance.  
   D. Hypercortisolism is seen in patients with AN due to all of the above physiologic changes.
6. In a study of women with active AN, an annual BMD decline of 2.6% at the spine and 2.4% at the hip was observed.

A. True  
B. False

7. All of the following are increased in those with AN, except for:

A. Bone-specific alkaline phosphatase  
B. Pyridinoline  
C. Deoxypyridinoline  
D. N-telopeptide

8. Elevated turnover markers can still be detected during the initial _____ months of recovery from malnutrition but they do eventually normalize with continued nutrition and weight restoration.

A. 2 to 4  
B. 4 to 8  
C. 6 to 12  
D. 12 to 18

9. Causes of secondary osteoporosis should be evaluated with special attention to:

A. Steroids  
B. Diuretics  
C. Depot medroxyprogesterone acetate  
D. Special attention should be given to steroids, diuretics, SSRIs, AEDs, and depot medroxyprogesterone acetate when evaluating for causes of secondary osteoporosis

10. BMD of the spine can increase up to 3.1% with weight gain although improvements may be slow and may not be detectable for up to 16 months.

A. True  
B. False

11. Exercise in patients with active AN may hasten weight loss and cause further complications associated with low body weight.

A. True  
B. False
12. If patients have evidence of low bone mineral density but have normal vitamin D levels, they should be:

A. Treated with 50,000 IU of vitamin D weekly until serum levels are greater than 30 ng/mL, followed by maintenance dosing.
B. Started on 600 - 800 IU daily but may require doses between 1500 and 2000 IU daily if their level does not improve to greater than 30 ng/mL.
C. Started on 600 - 800 IU daily.
D. As long as patients have normal vitamin D levels, they do not need to be started on vitamin D supplementation.

13. If calcium supplements are required, calcium citrate is typically used unless the patient is on a proton-pump inhibitor or H2-blocker, in which case calcium carbonate is preferred.

A. True
B. False

14. Oral contraceptive pills are recommended for improving BMD in AN.

A. True
B. False

15. A study in females with AN found that _____ increased with use of transdermal testosterone replacement.

A. Lean mass
B. BMD
C. Both lean mass and BMD
D. Neither lean mass nor BMD

16. Which of the following is true with regard to bisphosphonates?

A. Bisphosphonates inhibit osteoblast activity.
B. Bisphosphonates reduce bone resorption and turnover.
C. Bisphosphonates bind to the exterior of the bone matrix.
D. Bisphosphonates’ function is temporary due to their short half-life.

Vegetarian-style dietary pattern during adolescence has long-term positive impact on bone from adolescence to young adulthood: a longitudinal study
17. This study found that participants who had higher adherence to the “Vegetarian-style” dietary pattern during adolescence had higher ____ during young adulthood (an average of 15 years later).

A. Total body bone mineral accrual and total body areal bone mineral density.
B. Femoral neck bone mineral accrual and femoral neck areal bone mineral density.
C. Participants who had higher adherence to the “Vegetarian-style” dietary pattern during adolescence had higher total body bone mineral accrual, total body areal bone mineral density, femoral neck bone mineral accrual, and femoral neck areal bone mineral density.
D. Participants who had higher adherence to the “Vegetarian-style” dietary pattern during adolescence had lower total body bone mineral accrual, total body areal bone mineral density, femoral neck bone mineral accrual, and femoral neck areal bone mineral density.

18. Vitamin C may affect bone health through all of the following, except:

A. Its antioxidant properties suppressing osteoclast activity.
B. Contributing to acid-base balance and calcium metabolism.
C. Acting as a cofactor for osteoblast differentiation and collagen formation.
D. Vitamin C may affect bone health through all of the above mechanisms.

19. An adequate protein intake is essential for bone matrix formation and maintenance.

A. True
B. False

20. Dietary fiber from non-refined grains and other plant sources may have a beneficial impact on bone through:

A. Decreasing glycemic load.
B. Inhibiting hyperinsulinemia.
C. Preventing urinary calcium loss induced by insulin.
D. Dietary fiber from non-refined grains and other plant sources may have a beneficial impact on bone through all of the above.

The role of a dairy fraction rich in milk fat globule membrane in the suppression of postprandial inflammatory markers and bone turnover in obese and overweight adults: an exploratory study
21. Biomarkers of bone resorption have been observed to fluctuate over the course of a day, with a peak occurring:

A. At night
B. In the morning
C. Mid-day
D. In the late afternoon

22. Consumption of _____ suppresses bone resorption marker C-telopeptide of type I collagen by 45-50% approximately 120 minutes after intake in healthy subjects.

A. Protein
B. Calcium
C. Glucose
D. Fat

23. Milk fat globule membrane has been shown to:

A. Reduce inflammation.
B. Improve endurance capacity and lipid metabolism in animals.
C. Reduce frailty in elderly women.
D. Milk fat globule membrane has been shown to reduce inflammation, improve endurance capacity and lipid metabolism in animals, and reduce frailty in elderly women.

24. The present study demonstrates differences in postprandial CTX suppression among high SFA meals containing an ingredient with anti-inflammatory properties.

A. True
B. False

The impact of type 2 diabetes on bone metabolism

25. Type 2 diabetes mellitus is associated with:

A. An increased risk of fracture.
B. Lower bone mineral density.
C. Both an increased risk of fracture and lower bone mineral density.
D. Neither an increased risk of fracture nor lower bone mineral density.
26. T2DM patients with fractures have been shown to have _____ than diabetic patients without fractures.

A. Higher pore-related deficits  
B. A greater cortical pore-volume  
C. Both higher pore-related deficits and a greater cortical pore-volume  
D. Lower pore-related deficits and a smaller cortical pore-volume

27. Which of the following is a true correlation between vitamin D and diabetes?

A. There is an inverse relationship between HbA1c levels and serum levels of 25(OH)D3.  
B. 25(OH)D3 supplements improve glucose control in T2DM.  
C. Vitamin D stimulates the expression of the insulin receptor.  
D. All of the above are true correlations between vitamin D and diabetes.

28. Higher levels of circulating advanced glycation end products are reported to increase fracture risk.

A. True  
B. False

29. Insulin plays a role in bone health by:

A. Increasing osteoblast recruitment  
B. Increasing osteoblast proliferation  
C. Diminishing collagen degradation  
D. Increasing bone matrix deposition

30. In bone, PPAR-gamma-2 plays a significant role in the regulation of mesenchymal cell differentiation, promoting cells of osteoblast lineage to be converted to terminally differentiated:

A. Adipocytes  
B. Osteocytes  
C. Osteoclasts  
D. Stromal cells

31. Studies indicate that glucagon-like peptide-2 may affect bone remodeling by acting both as an antiresorptive and anabolic hormone.

A. True  
B. False
32. An inverse association between osteocalcin and metabolic syndrome has been demonstrated, suggesting that reduced levels of osteocalcin may impact the pathophysiology of T2DM.

A. True  
B. False

33. High glycemic levels contribute to the reduced numbers of 1,25-dihydroxy vitamin D receptors on osteoblasts and limit the ability of the osteoblast to synthesize osteocalcin in response to 1,25-dihydroxy vitamin D.

A. True  
B. False