

Bone Mineral Density

- 1.) What are three methods of testing BMD?
 - a. X-ray, computed tomography, ultrasound, DEXA, DXA, P-DEXA, DPA, QCT
- 2.) How is this information used?
 - a. To estimate the strength of bones
- 3.) What is it called when our bones naturally become thinner?
 - a. Osteopenia
- 4.) What are some ways to increase bone density and strength?
 - a. Calcium and Vitamin D supplements, weight training, medications, hormone therapy
- 5.) What is the most accurate way to measure BMD?
 - a. DEXA
- 6.) What does DEXA stand for?
 - a. Dual-energy X-ray absorptiometry
- 7.) What are two reasons DEXA is a beneficial method to measure BMD?
 - a. Fast, low doses of radiation
- 8.) What is one drawback form using DEXA?
 - a. More expensive
- 9.) What is one disadvantage in using P-DEXA?
 - a. Cannot measure the bones most likely to break (hip and spine)
- 10.) In what areas of the body is DPA used to measure BMD?
 - a. Hip and spine
- 11.) What are three advantages of ultrasound?
 - a. Quick, painless, no radiation
- 12.) What is one disadvantage of ultrasound?
 - a. Cannot measure density of hip or spine
- 13.) What is QCT?
 - a. Quantitative computed tomography

- 14.) What are disadvantages of QCT?
- a. Expensive, high radiation doses, less accurate than DEXA, P-DEXA, or DPA

How X-Rays Work

- 15.) X-rays were invented accidentally in 1895 by what German physicist?
- a. Wilhelm Roentgen
- 16.) What are modified x-rays used for?
- a. Examining softer tissue such as lungs, blood vessels, or intestines
- 17.) What three events occur when atoms emit light?
- a. 1.) A collision with a moving particle excites the atom. 2.) This causes an electron to jump to a higher energy level. 3.) The electron falls back to its original energy level, releasing the extra energy in the form of a light photon
- 18.) What are some other ways that x-rays are used (outside of medicine)?
- a. Research involving quantum mechanics theory, crystallography, and cosmology; to detect minute flaws in heavy metal equipment; airport security
- 19.) Extra energy is released in the form of what type of photon?
- a. X-ray photon
- 20.) In an x-ray negative, how do hard and soft materials appear?
- a. Hard materials appear white; soft materials appear gray or black
- 21.) Doctors can bring different materials into focus by doing what?
- a. Varying the intensity of an X-ray beam
- 22.) What are contrast media?
- a. Liquids that absorb X-rays more effectively than surrounding tissue