

3701-72-03

APPENDIX F**GXMC BONE DENSITOMETRY CLINICAL TRAINING MODULE**

For the Bone Densitometry category the student will correctly label key radiographic anatomic landmarks.

On a simulated patient, the student will demonstrate their working knowledge of standard terminology for patient positioning and projection.

- A. DXA scanning of P/A lumbar spine, lateral spine, hip, forearm and total body
 1. Anatomy
 - a. ROI
 - b. Bony landmarks
 - c. Adjacent structures
 2. Scan acquisition
 - a. Patient instructions
 - b. Patient positioning
 - c. Selection of appropriate scan parameters
 3. Scan analysis and print out
 - a. ROI placement
 - b. BMC, area and BMD
 - c. T-score, Z-score
 4. Common problems
 - a. Poor bone edge detection
 - b. Nonremovable artifacts

- c. Variant anatomy
 - d. Fractures and other pathology
5. Follow- up scans
- a. Unit of Comparison
 - i. BMD
 - ii. T-score
 - b. Reproduce baseline study

B. BONE DENSITOMETRY EQUIPMENT

1. Basic Concepts

The student will become familiar with the fundamental aspects of osteoporosis and the non-invasive assessment methods of bone.

- a. Osteoporosis
 - i. WHO definition
 - ii. Types of Osteoporosis: Primary vs. Secondary
 - iii. Type I osteoporosis (post menopausal) vs. Type II osteoporosis (senile)
 - iv. Risk factors
 - b. Introduction to various methods commonly used
 - i. Quantitative Ultrasound (QUS)
 - ii. Dual Energy X-ray Absorptiometry (DXA)
 - c. Measuring BMD
 - i. Basic Statistical concepts
 - a. Mean
 - b. Standard deviation
 - c. Coefficient of variation
 - ii. Interpreting patient results
 - a. BMD
 - b. Z-score
 - c. T-score
2. Equipment Operation & Quality Assurance

The student will become familiar with the basic components of a dual-x-ray absorptiometry device (DXA) and with the quality assurance concept.

- a. Computer console and switches
- b. Data base maintenance
- c. Quality assurance
 - i. Use of phantoms and/or calibration
 - ii. Troubleshooting
 - iii. Identify possible shift or drift
- d. QA pass or fail
- e. Quality of BMD
 - i. Define precision
 - ii. Define accuracy
- f. Factors that affect both accuracy and precision
 - i. Scanner
 - ii. Operator
 - iii. Patient
- g. Least significant change (LSC)
 - i. Definition of LSC
 - ii. Measurement of LSC
- h. Radiation dose
 - i. Dose of various procedures
 - ii. Minimizing patient exposure
 - a. Patient instruction
 - b. Performing correct exam