



**"PET Oncology Accreditation Course"**

**Course Control Document**

**Timothy K. Marshel, MBA, R.T. (R), (N)(CT)(MR)(NCT)(PET)(CNMT)**

*The PET/CT Training Institute, Inc.*

TOPIC: PRE TEST

TOPIC: **Protection of Personnel: (028614 - SNMITS 1.5 CEHs) 90 minutes**

Objectives:

1. Discuss the rationale for radiation protection.
2. Explain personnel dosimeters, dosimetry reports, and duties of the RSO.
3. Define and calculate the dose-limiting recommendations for PET/CT personnel.
4. Explain the basic structural shielding construction and list the items that influence this construction.
5. Describe how the PET/CT Technologist can decrease their radiation exposure during the patient preparation and scanning sequences.
6. Discuss how using distance can decrease radiation exposure.
7. Illustrate the Inverse Square Law.
8. Identify garments that can be worn to reduce radiation exposure and explain how each garment should be used.
9. QUIZ I:

TOPIC: **Radiation Safety in PET Imaging: (028616 – SNMITS 1.5 CEHs) 90 minutes**

Objectives:

1. Review cautions signs and labels.
2. Discuss the Do's and Don'ts in PET Radiation protection.
3. Examine the Receiving and Monitoring of Radioactive packages.
4. Discuss Radioactive waste disposal.
5. Explain how to clean up a radioactive spill.
6. Discuss recordkeeping principles.
7. QUIZ II:

**TOPIC: PET Instrumentation: (028621 – SNMITS 1.5 CEHs) 90 minutes**

Objectives:

1. List detector crystals that can be used for PET Imaging and describe their properties.
2. Explain the fundamental operation of dedicated and Hybrid PET Scanners and their design.
3. Describe the detection of True, Scatter, and random events.
4. Describe Transmission imaging and its need and use in attenuation corrected images.
5. Characterize the visual presentation of non-attenuated and attenuated corrected images.
6. QUIZ III:

**TOPIC: Acquisition, Processing, and Display of PET Images: (028622 – SNMITS 1.5 CEHs) 90 minutes**

Objectives:

1. Discuss 2D and 3D acquisition protocols.
2. Discuss scan protocol parameters.
3. Review Whole-Body versus Total Body acquisition modes.
4. Discuss Dynamic Acquisition modes.
5. Define SUV and explain how it is calculated and used.
6. Discuss critical elements in generating quantitative measurements.
7. Describe the process of data reconstruction.
8. Discuss the implications of image fusion and describe the PET/CT Scanner.
9. QUIZ IV:

**TOPIC: An Overview of PET Quality Control Procedures: (028623 – SNMITS 1.5 CEHs) 90 minutes**

Objectives:

1. Discuss the daily quality control procedures performed on a Hybrid PET/CT Scanner.
2. Discuss the frequency of PET/CT Quality Control Procedures.
3. Analyze a typical Blank Scan.
4. Discuss Blank Scans.
5. Discuss Coincidence Timing Circuitry.
6. Review Singles.
7. Discuss Normalization
8. Discuss Well Counter Calibration.
9. QUIZ V:

**TOPIC: Troubleshooting Image Artifacts in PET/CT: (028624 – SNMITS 1.5 CEHs) 90 minutes**

Objectives:

1. Identify misregistration artifacts.
2. Review Patient Motion Artifacts.

3. Discuss Beam Hardening Artifacts.
4. Identify Contrast Material Artifacts.
5. Discuss Partial Volume Averaging Artifacts.
6. Review Equipment induced Artifacts.
7. Analyze Metal Artifacts.
8. Identify Ring Artifacts.
9. QUIZ VI:

**TOPIC: Physics of Positrons and Production of PET Tracers: (028625 – SNMTS 1.5 CEHs) 90 minutes**

**Objectives:**

1. Describe positron decay and the production of annihilation photons.
2. List positron emitting radionuclides and their properties.
3. Discuss Generator produced versus Cyclotron produced radionuclides.
4. Discuss the properties of Oxygen 15, Nitrogen 13, Carbon 11, and F-18.
5. QUIZ VII:

**TOPIC: PET Radiopharmacy Quality Control : (028626 - SNMTS 1.5 CEHs) 90 minutes**

**Objectives:**

1. Discuss Radionuclidic Purity.
2. Discuss Radiochemical Purity.
3. Identify Chemical Impurities.
4. Discuss Microbiological Sterility Testing.
5. Discuss Pyrogen Testing .
6. Review the USP Quality Control requirements for F-18(FDG).
7. QUIZ VIII:

**TOPIC: PET/CT Oncology: (028627 – SNMTS 1.5 CEHs) 90 minutes**

**Objectives:**

1. Discuss the principles of PET/CT FDG Oncology imaging.
2. Recognize the normal bio-distribution of FDG and list the organs with intense, moderate, or mild FDG activity.
3. Discuss the normal patterns of head and neck FDG activity.
4. Discuss the benign causes of increase FDG activity.
5. Describe the variations in FDG bio-distribution caused by improper patient preparation.
6. Discuss the various cancers that localizes FDG.
7. QUIZ IX:

**TOPIC: Preparing the Patient for a PET/CT Oncology Procedure: (028628 – SNMTS 1.5 CEHs) 90 minutes**

Objectives:

1. Explain the steps in properly preparing a patient for a FDG PET Scan.
2. Discuss the significance of peripheral blood glucose levels in FDG Imaging.
3. List the necessary historical information that should be obtained from each patient.
4. Describe patient positioning and comfort issues that can hinder the acquisition of a high quality scan.
5. Review Indications and contraindications of the whole body scan.
6. Discuss PET/CT procedural parameters.
7. Review processing protocols.
8. Discuss Normal's and Abnormal's case studies.
9. QUIZ X:

TOPIC: Post Test

TOPIC: Course Evaluation Survey

Revised: V3.0: 09152014TM