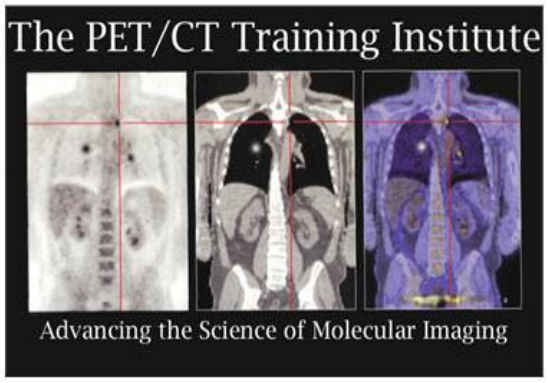

"***PET/CT Course for the Nuclear Medicine Technologist***"

Course Control Document

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The PET/CT Training Institute, Inc.

FAC: 64E-3.033: Florida Administrative Code: This online self-study course meets the CE requirements for Alternative Specific Device Training for Nuclear Medicine Technologist who are operating a dedicated PET or PET/CT system and did not receive onsite manufacturer's specific training. This course covers the following subjects concerning PET and CT: PET-CT theory and physics; radiation safety; equipment operation; image formation, reconstruction and evaluation; quality control and assurance, and radiopharmaceutical quality control. This course has been approved by the ARRT, SNMMI-TS, and the Florida Bureau of Radiation Control, and various Accreditation Agencies.

Course Control Document:

1. 028606 – Photon Interaction in Matter - 1.5 CEH(s) – (CA Scope: R)
Describe the interactions of photons and particles interacting with matter.

2. 028611 – Cellular Effects of Radiation - 1.5 CEH(s) – (CA Scope: R)
Examine the physical and biological factors affecting cell radio-sensitivity. Inspect the direct and indirect effects of radiation. Evaluate the radiolysis of water. Analyze the types of dose-response relationships. Discuss the target theory and explain cell survival curves.

3. 028612 – Effects of Initial Exposure to Radiation - 1.5 CEH(s) – (CA Scope: R)
Discuss the hematological, gastrointestinal, and central nervous system syndromes. Describe the local tissue damage to the skin, eyes and gonads. Explain hematological and cytogenesis effects.

4. 028613 – Effects of Long-Term Radiation Exposure to Radiation - 1.5 CEH(s) – (CA Scope: R)

Discuss epidemiology. Examine radiation-induced malignancies. Identify life span shortening. Discuss genetic damage. Explain irradiation of the fetus. Analyze stochastic and non-stochastic effects.

5. 028614 – Protection of Personnel - 1.5 CEH(s) – (CA Scope: R)
Discuss the rationale for radiation protection. Explain personnel dosimeters, dosimetry reports, and duties of the Radiation Safety Officer. Define the dose-limiting recommendations for diagnostic imaging personnel. Discuss ALARA principles. Discuss how using distance can decrease radiation exposure.

Illustrate the inverse square law. Identify garments that can be worn to reduce radiation exposure and explain when such garments should be used.

6. 028615 – Measuring Patient Dose from Computed Tomography - 1.5 CEH(s) – (CA Scope: R)
Discuss the historical perspectives of measuring a dose of radiation delivered to a patient using ionization chambers, multi scan average dose index, and CT dose indexes. Review Spiral and Helical CT Scanner dosimetry. Discuss methods for reducing the overall patient radiation dose in a CT exam.

7. 028616 – Radiation Safety in PET Imaging - 1.5 CEH(s) – (CA Scope: NI)
Discuss the principles and methods of radiation protection in Nuclear Medicine and PET, health physics units, measurement, and dose-limiting regulations for occupationally and non-occupationally exposed individuals; radiation surveys; techniques and decontamination methods; monitoring of radioactive waste, radiation dose measurements, and radionuclide accountability; special topics, including precautions with PET patients, and in management of accidentally contaminated individuals.

8. 0028617 – CT Physics and Instrumentation - 1.5 CEH(s) – (CA Scope: NI)
Provide an overview of CT Physics, the CT Scanner Imaging System, and basic instrumentation components.

9. 028618 – Acquisition, Processing and Display of CT Images - 1.5 CEH(s) – (CA Scope: I)
Review the clinical application of data processing techniques; principles of tomographic imaging; CT image acquisition, processing, reconstruction, filtering and displaying of CT image sets.

10. 028619 – Overview of CT Quality Control Procedures - 1.5 CEH(s) – (CA Scope: NI)
Discuss various quality control tests and frequency of performing the quality control test on CT Scanners. Review basic artifacts demonstrated on routine quality control tests.

11. 028620 – An Overview of the Integration of CT Procedures into the Combined PET/CT Examination - 1.5 CEH(s) – (CA Scope: I)
Review the fundamentals acquisition parameters of the PET and CT systems. Describe the detection of true, scatter, and random events. Describe transmission imaging and its need and use in attenuation correcting PET images. Characterize the visual presentation of nonattenuation and attenuation corrected images. Define SUV and explain how it is calculated and used.

12. 028621 – PET Instrumentation - 1.5 CEH(s) – (CA Scope: NI)
Explain the fundamental operation of a coincidence, dedicated and hybrid PET Imaging system. List the detector crystals that can be used for PET imaging and describe their properties. Discuss 2D and 3D imaging and the advantages and disadvantages of each.

13. 028622– Acquisition, Processing and Display of PET Images - 1.5 CEH(s) – (CA Scope: I)
Review basic acquisition, processing, and display parameters used to create the PET Image.

14. 028623 – An Overview of PET Quality Control Procedures - 1.5 CEH(s) – (CA Scope: I)
Discuss the quality assurance program used for calibrating coincidence, dedicated and hybrid PET Imaging systems.

15. 028624 – Troubleshooting Image Artifacts in PET/CT - 1.5 CEH(s) – (CA Scope: I)
Discuss the origin of PET and CT image artifacts and describe their prevention.

16. 028625 – Physics of Positrons and Production of PET Tracers - 1.5 CEH(s) – (CA Scope: R)
Describe positron decay and the production of annihilation photons. List the positron emitting radionuclide and their properties.

17. 028626 – PET Radiopharmacy Quality Control - 1.5 CEH(s) – (CA Scope: R)

Describe the difference between quality control relative to radionuclide purity, radiochemical purity, and chemical impurities. Discuss aseptic technique in the hot lab. Discuss the difference between sterile compounds and compounds containing pyrogens and the tests for ensuring these properties.