NMED-296C: NUCLEAR MEDICINE FIELD EXPERIENCE IV

Cuyahoga Community College

Viewing: NMED-296C : Nuclear Medicine Field Experience IV

Board of Trustees:
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Academic Term:
Fall 2020

Subject Code
NMED - Nuclear Medicine Technology

Course Number:
296C

Title:
Nuclear Medicine Field Experience IV

Catalog Description:
Clinical experience in the nuclear medicine department under the direct supervision of qualified personnel. Participation in variety of nuclear medicine procedures emphasizing application of theory related to nuclear imaging protocols, patient care, radiopharmaceutical preparation, quality control, survey and wipe techniques, instrumentation, radiation accident prevention and radiation safety to include clinical projects and case studies. Clinical rotations through variety of specialty areas including nuclear medicine studies of various patient age groups (pediatrics/geriatric) and pathologies.

Credit Hour(s):
1

Other Hour(s):
180

Other Hour Details:
Field Experience: 180 hours at a clinical site

Requisites

Prerequisite and Corequisite
NMED-2950 Field Experience II or departmental approval.

Outcomes

Course Outcome(s):
Follow compliance with hospital policies and procedures for the successful completion of clinical training and professional preparedness.

Objective(s):
1. Show professional ethical behavior at all times with patients, hospital personnel, college staff and visitors.
2. Perform department charting of patient medical care with demonstrated efficiency. .
3. Know how to route patients to and from their destination within the hospital.

Course Outcome(s):
Adhere to professional standards for a nuclear medicine technologist.

Objective(s):
1. Apply effective communication skills as expected of a health care professional.
2. Adequately complete patient history and evaluate for appropriateness of testing ordered.
3. Contact ordering physician or Nuclear Medicine Staff if order is questionable before proceeding to injecting and scanning.
4. Practice and discuss effective patient care during nuclear medicine procedures.
5. Show proficiency by successfully completing examinations during clinical experiences from the following categories: imaging procedures, non-imaging procedures, radiopharmacy procedures, quality control procedures, and patient care.

6. Explain patient/public education related to nuclear medicine procedures and radiation safety.
7. Identify and interpret nuclear medicine requisitions and/or prescriptions.

Course Outcome(s):

Apply health care and related services with respect for the patient's dignity and age-specific needs without bias based upon personal attributes, nature of the disease, sex, race, creed, religion or socio-economic status by meeting standards of a nuclear medicine technologist.

Essential Learning Outcome Mapping:

Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

Objective(s):

1. Exhibit respect for patient confidentiality, understanding patient's rights, and compliance with all HIPAA regulations.
2. Explain and discuss the appropriate use of restraints when patient condition or age necessitates.
3. Provide general patient care including taking vital signs, performing venipuncture, and administering oxygen as needed.
4. Recognize emergency patient conditions and initiate first aid and basic life support procedures.

Course Outcome(s):

Use safe operation of imaging and ancillary equipment under the supervision of a registered nuclear medicine technologist and/or physician.

Objective(s):

1. Explain how to prepare the room and equipment prior to beginning each nuclear medicine procedure.
2. Demonstrate proficiency in operating nuclear medicine equipment.
3. Recognize variance in patient's body habitus and/or patient's pathological conditions and demonstrate the proper imaging adjustments to accommodate anticipated imaging expectations.

Course Outcome(s):

Practice proper radiation protection and safety techniques at all times and comply with ALARA standards.

Objective(s):

1. Demonstrate ability to perform quality control of nuclear medicine equipment, explain the safe limits of operation and report malfunctions to the proper authority.
2. Describe the roles the nuclear medicine technologist, radiologist and physicist have within the nuclear medicine department.
3. Explain and differentiate radiation safety limits for both patients (pregnant and non-pregnant) and a radiation safety worker.
4. Determine proper biohazard signage of areas that of areas that handle radiation and/or bodily fluids.

Course Outcome(s):

Produce quality images of all nuclear procedure(s) with the use of technique guides, positioning skills, computers, nuclear medicine instrumentation, and ancillary devices.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Competently perform quality control procedures.
2. Describe how to produce quality images using correct imaging equipment parameters.
3. Evaluate and critique quality of nuclear medicine images/results and correct for miscalculations/positioning accuracy.

Course Outcome(s):

Use a team approach in assisting the radiologist or nuclear medicine technologist in the handling, selection, dosage and quality control in preparation, administration and disposal of radiopharmaceuticals.

Essential Learning Outcome Mapping:

Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

Objective(s):

1. Properly select, prepare, and determine if a radiopharmaceutical meets quality control measures prior to administration to patient.
2. Correctly administer radiopharmaceuticals via proper route of administration to the patient.
3. Demonstrate the steps to dispose of and store radioactive materials.
4. Demonstrate the steps to dispose of and store biohazard materials.

Methods of Evaluation:

1. Site supervisor evaluation
2. Written tests
3. Competency performance evaluations
4. Professional/ethical evaluations
5. Basic technical evaluations
6. Completion of all clinical requirements
7. Case studies

Course Content Outline:

1. Professional standards for nuclear medicine technologist
    a. Code of ethics
    b. Department policies
    c. Clinical and ethical evaluation form
2. Hospital protocols and departmental policies
    a. Clinical site handbook
    b. Radiology information system
    c. Film library
3. Effective communication skills
    a. Patient communication
        i. identify and assess patient
        ii. verify and explain procedure
        iii. ensure patient safety
        iv. ensure comfort and cooperation of patient
    b. Patient clinical history
    c. Communication with radiologists, nuclear medicine technologists and staff
4. Nursing procedures for nuclear medicine
    a. Standard (universal) precautions for patients self and others
    b. Monitor, observe and respond to patients
    c. Provide general patient care as needed
        i. CPR
        ii. vital signs (BP, pulse, respiration, temperature)
        iii. venipuncture
        iv. O2 administration
5. Clinical rotations:
    a. Respiratory
        i. perfusion
        ii. ventilation or aerosol
        iii. quantitative
    b. Skeletal system
        i. planar - static
        ii. planar - whole body
        iii. Single photon emission tomography (SPECT)
        iv. three-phase
    c. Cardiovascular
        i. cardiac first pass
        ii. gated blood pool studies
        iii. myocardial perfusion - stress/rest or rest/stress SPECT and/or planar
        iv. myocardial perfusion gated with SPECT
    d. Positron Emission Tomography
        i. cardiac
        ii. skeletal

iii. oncological/whole body
iv. fusion imaging with computed tomography
v. fusion imaging with magnetic resonance imaging

e. SPECT fusion imaging
i. fused with computed tomography
ii. fused with magnetic resonance imaging

f. Nuclear Medicine Therapies

6. Equipment operation
a. Radiation safety and protection for self, patients, staff and others
b. Room preparation
c. Equipment preparation and configuration
d. Process images
i. darkroom
ii. daylight
iii. computed imaging
e. Image quality and evaluation

7. Radiopharmaceutical protocols
a. Radiation safety
i. major spills
ii. minor spills
b. Preparation and handling
i. selection
ii. dosage
iii. quality review
c. Administration and recording

8. Quality control
a. Gamma camera
b. Dose calibrators
c. Well counters/uptake probes
d. Survey meter

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Resources

Mettler, Fred Jr. and Milton Guiberteau, eds. *Essentials of Nuclear Medicine Imaging*. 7th ed. Philadelphia, PA: W.B. Saunders, 2018.

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Early, Paul J. and D. Bruce Sodee, eds. *Principles and Practices of Nuclear Medicine.* 2nd ed. St. Louis, MO: Mosby, 1995.

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Golfarb, C. Richard and Stevens R. Parmett, Lionel S. Zuckier, Fukaiat Ongseng, Maroun Karam, and Jeffrey A. Cooper, eds. *Nuclear Medicine Board Review: Questions and Answers for Self-Assessment*. 4th ed. New York, NY: Thieme Medical Publishing, 2018.

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Cherry, Simon R., James A. Sorenson and Michael E. Phelps. *Physics in Nuclear Medicine.* 4th ed. Philadelphia, PA: Saunders/Elsevier, 2013.

Saha, Gopal B., ed. *Fundamentals of Nuclear Pharmacy*. 7th ed. New York, NY: Springer-Verlag, 2018.

Adler, Patricia and Richard Carlton, eds. *Introduction to Radiologic Sciences and Patient Care*. 7th ed. St. Louis, MO: Elsevier, 2020.

American Registry of Radiologic Technologists (ARRT). "Competency Requirements for Nuclear Medicine Technology" 2017.

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