

# Radiologic Sciences Program at UNM/HSC School of Medicine

## Your Career Direction

- BSRS Degree Completion
  - Medical Imaging (Management)
  - Nuclear Medicine
  - Computed Tomography (Certificate option)
  - Magnetic Resonance Imaging (Certificate option)

# Program Overview

- The University of New Mexico, School of Medicine, working in conjunction with University of New Mexico Hospital, VA Hospital and Presbyterian Health System as the primary clinical sites.
- Provides comprehensive training to prepare each student for a career in Nuclear Medicine.
- A Bachelor of Science in Radiologic Sciences is offered depending upon the needs of the individual.
- Certificates (post-primary) are offered in CT and MRI.

# Course work and Clinical Overview

- Each program involves academic course work.
- Nuclear Medicine, CT and MRI combine course work with intensive clinical training at various medical facilities throughout the County/state.
  - When not in the classroom, each student works under the supervision of clinical staff gaining knowledge on a wide array of equipment and experiences in performing the procedures associated with the various modalities such as Nuclear Medicine, CT or MRI.

# Education Requirements for Applicants

- **BSRS Degree Completion**
  - Participants are required to have completed a Primary Certificate &/or AS or higher.
  - **CT or MRI Post-Primary** applicants will complete observation in the modality of interest and accepted through the selection process
- **Nuclear Medicine Primary Pathway**
  - Completed the pre-requisites and accepted to the program through a selection process

# Certification in Each Field

- CT and MRI students completing program requirements and graduated from these programs are eligible to take the [American Registry of Radiologic Technologists \(ARRT\)](#) examination.
- BSRS Nuclear medicine students are also eligible to take the [Nuclear Medicine Technology Certification Board \(NMTCB\)](#) and the [American Registry of Radiologic Technologists \(ARRT\)](#) examination.
- All Radiologic Sciences students may choose to complete a Bachelor of Science Degree in Radiologic Sciences.

# Nuclear Medicine Technology

## Scope of Practice

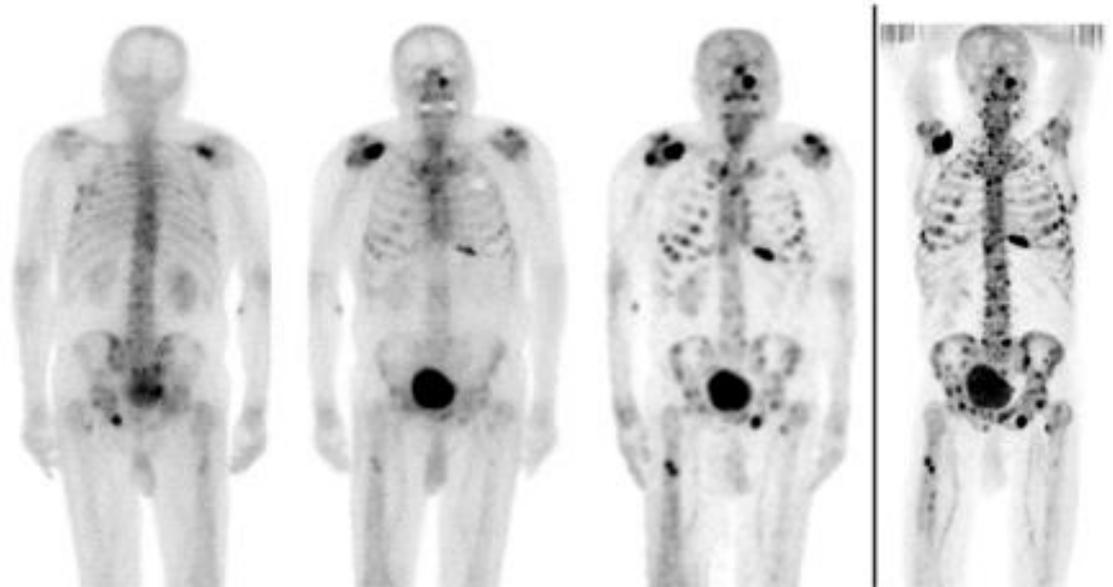
- Acquire patient diagnostic images using the nuclear properties of radioactive isotopes and radiopharmaceuticals.
- Technologists will use their knowledge in computer technology, anatomy and physiology, radiation physics, and safety regulations to prepare and administer radiopharmaceuticals.
- Nuclear Medicine physician interprets and evaluates the images to determine diagnosis and treatment of disease.

# To successfully prepare to become a Nuclear Medicine Technologist

- Biology
- Anatomy and Physiology
- Mathematics
- Computer skills
- Chemistry
- English
- Physics

# Nuclear Medicine Images

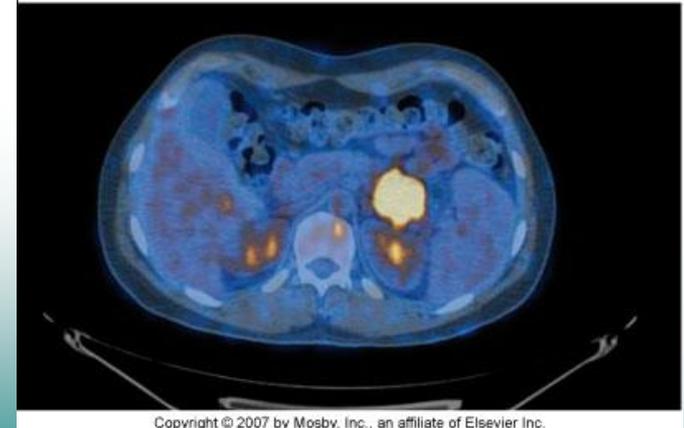
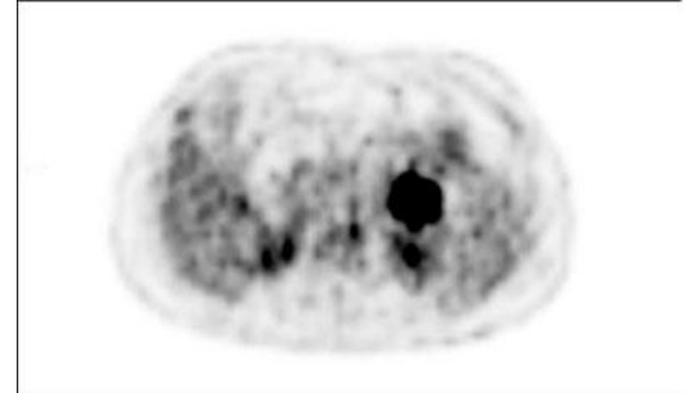
**FIGURE 4.** From left to right: posterior and anterior  $^{99m}\text{Tc}$ -MDP planar scintigraphy,  $^{99m}\text{Tc}$ -MDP multiple-field-of-view SPECT, and  $^{18}\text{F}$ -fluoride PET of 82-y-old patient with numerous bone metastases. As in this patient, more lesions are typically detected by SPECT than by planar imaging, and  $^{18}\text{F}$ -fluoride PET detects more lesions than does SPECT.



# Nuclear Medicine Images

FDG PET/CT scan on a patient with pancreatic carcinoma status post chemotherapy.

Christian and Waterstram-Rick: Nuclear Medicine and PET/CT Technology and Techniques, 6th Edition



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# Nuclear Medicine Imaging Program

- Four year BSRS program
  - Yrs. 1-2 completing prerequisite courses
    - Meet with the department for advisement/transcript evaluation
    - Pre-third/third year apply and gain acceptance to the Nuclear Medicine program
  - Yr. 3 prerequisites and BSRS courses
    - Complete the BSRS courses (7)
    - Complete pre-reqs if not done
  - Yr. 4 (14 mos.) Nuclear Medicine course and clinical completed
    - Ready for the NMTCB certification, ARRT certification

4-6 students are accepted out of approximately 10-15 applicants yearly.

- Application deadline is to be announced during advisement.

# Nuclear Medicine Technologist Earning Potential

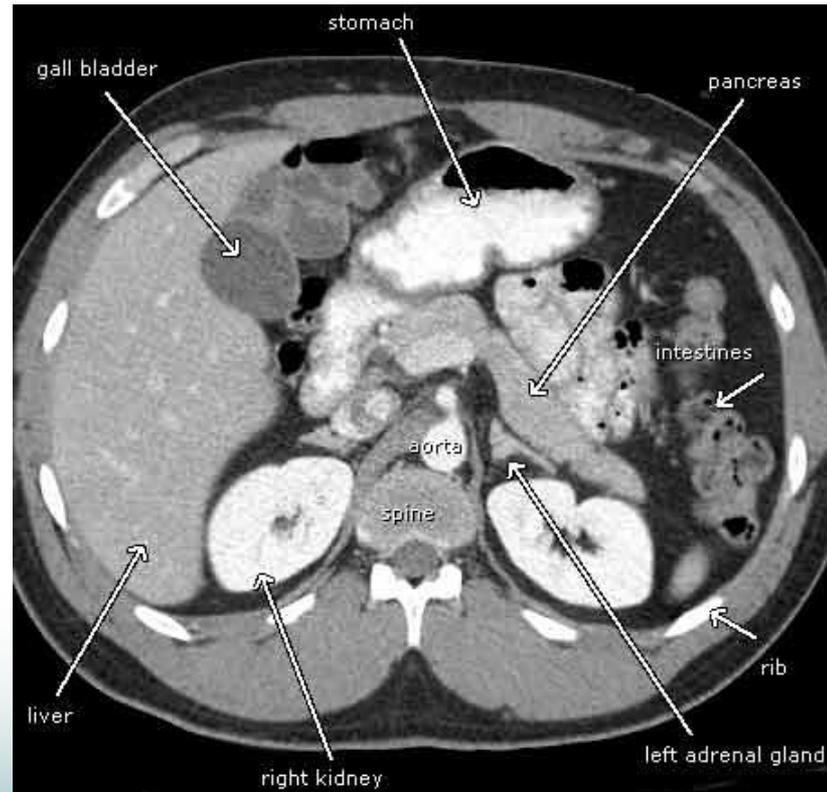
- Varies with years of experience and geographic location.
- Mean earnings in 2013 was approximately \$72,075.

<http://www.asrt.org/docs/default-source/research/2013.pdf?sfvrsn=0>

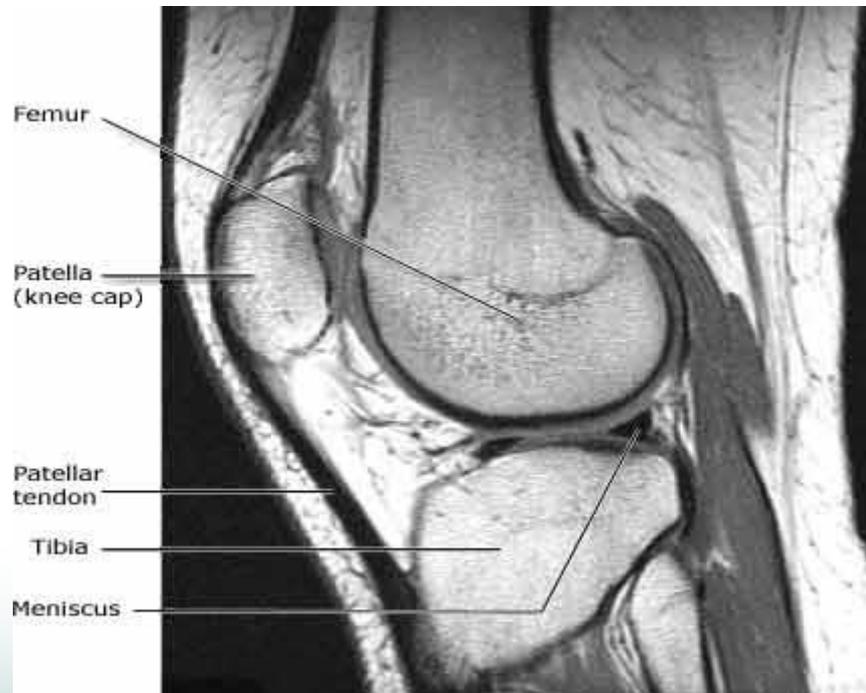
# Advance Medical Imaging

- Computed Tomography (CT) – All courses are online.
- Magnetic Resonance Imaging (MR)
  - 1 year – 3 semesters
    - 20-40 hours of clinical rotation per semester or 800+ in the program
    - Courses offered in the evening for those working technologists
- Those who complete the program are prepared and registry eligible for the certification in CT or MR.
- They also come away from the program with a protocol book as well as with skills to be utilized as a key player in any department to undertake the role of a technologist.

# CT of the Abdomen



# MR of a Knee



# Employment Outlook

- Radiologic technologists held about 316,000 jobs in 2013.
- More than half of all jobs were in hospitals.
- The majority of the rest were in offices of physicians; medical and diagnostic laboratories, including diagnostic imaging centers; and outpatient care centers.

# ASRT (2013) workforce Survey Outlook

## Workforce Demographics

Respondents were asked several questions pertaining to the age and longevity of the workforce at their facility:

- The average age of respondents is 52 years.
- The average age technologists retire from their facility is 64.

<http://www.asrt.org/docs/default-source/research/2013.pdf?sfvrsn=0>

# Future of Our Field

- Employment of radiologic technologists is expected to be slow for all occupations through 2016
- while the population grows and ages, this will cause an increase in the demand for diagnostic imaging.
- Although healthcare providers are enthusiastic about the clinical benefits of new technologies, the extent to which they are adopted depends largely on cost and reimbursement considerations.
- For example, digital imaging technology can improve the quality of the images and the efficiency of the procedure, but remains expensive.
- Some promising new technologies may not come into widespread use because they are too expensive and third-party payers may not be willing to pay for their use.

## Compensation and Benefits

- Overall mean annual full-time compensation for radiologic technologists across the nation was **\$62,736**, depending on discipline, position, years of experience, education, location, and other demographic factors.
- **States** with the **highest** reported mean compensation across disciplines were **California (\$84,162), Hawaii (\$80,761) and Alaska (\$77,559)**.
- **States** with the **lowest** reported mean compensation across disciplines were **West Virginia (\$51,607), Alabama (\$51,648), and Kentucky (\$52,173)**.
- The **disciplines** with the **highest** reported mean compensation were medical dosimetry (\$98,261), registered radiologic assistant/RPA (\$97,185) and radiation therapy (\$78,602).

<http://www.asrt.org/docs/default-source/research/2013.pdf?sfvrsn=0>

# Job Outlook

- Job opportunities are expected to be below average through 2016.
- Some employers report sufficient numbers of radiologic technologists.
- Imbalances between the demand for, and supply of, radiologic technologists should spur efforts to attract and retain qualified workers, who will work in rural areas as well as be willing to dual certify.

## Dual Certification

Radiologic technologists who also are experienced in more complex diagnostic imaging procedures, such as CT, PET-CT and MRI, will have better employment opportunities, brought about as employers seek to control costs by using multi skilled employees.

# Earning Potential

- Mean annual earnings of Radiologic Technologists were \$53,680 in 2013 down 0.5% from \$53,953 in 2010.
- Mean annual earnings of Nuclear Medicine Technologists were \$72,075 in 2013 up 1.8% from 70,822 in 2010.
- Mean annual earnings of Ultra Sonographers were \$70,701 in 2013 up 2.7% from 68,821 in 2010.
- Mean annual earnings of CT Technologists were \$63,545 in 2013 up 4.9% from \$60,586 in 2010.
- Mean annual earnings of MRI Technologists were \$68,384 in 2013 up 5% from \$65,098 in 2010.

<http://www.asrt.org/docs/default-source/research/2013.pdf?sfvrsn=0>

Full-time Compensation by Overall, Education and Years in Profession for Each Discipline<sup>ab</sup>

	R	T	N	MR	S	CT	M	CV	MD	BD	QM	RA	VS	BS	Overall
<b>Overall</b>															
n	2862	758	341	896	266	1089	661	659	136	86	60	71	21	18	7924
Mean	\$53,680	\$78,602	\$72,075	\$68,384	\$70,701	\$63,545	\$65,101	\$67,379	\$98,261	\$56,312	\$71,305	\$97,185	\$62,024	\$65,893	\$62,704
Median	\$49,765	\$73,511	\$70,702	\$66,535	\$69,085	\$61,714	\$62,381	\$65,178	\$99,995	\$54,527	\$67,516	\$95,868	\$63,934	\$67,100	\$60,109
<b>Mean by Education</b>															
Certificate(s)	\$55,461	\$79,016	\$73,513	\$69,827	\$71,971	\$65,581	\$63,320	\$69,845	\$88,946	\$60,157	\$68,637	\$94,167	\$61,820	\$69,741	\$64,314
Associate degree	\$50,134	\$78,758	\$70,042	\$67,616	\$68,801	\$62,073	\$65,054	\$66,329	\$104,731	\$53,972	\$66,709	\$100,000	\$59,922	\$67,375	\$58,841
Bachelor's degree	\$54,756	\$75,327	\$72,250	\$67,827	\$70,449	\$64,770	\$66,464	\$66,746	\$98,576	\$60,992	\$70,636	\$96,448	\$66,955	\$58,593	\$65,726
Master's degree	\$73,105	\$97,946	\$77,003	\$74,302	\$74,784	\$67,337	\$71,332	\$78,827	\$104,294	\$37,440	\$80,264	\$95,645		\$59,280	\$76,663
Doctoral degree (including medical)	\$67,444	\$76,833		\$84,311	\$110,963	\$54,080			\$105,000		\$140,000				\$88,129
Other education	\$55,676	\$118,181	\$70,705	\$77,205	\$86,645	\$60,557	\$82,072	\$62,882		\$63,888		\$132,200			\$68,933
<b>Mean by Years in Profession</b>															
2 years or less	\$43,155	\$60,246	\$62,804	\$52,499	\$50,764	\$51,129	\$52,586	\$48,118	\$95,680	\$41,317		\$100,000	\$46,968	\$49,428	\$45,878
3 to 5 years	\$45,444	\$66,746	\$62,517	\$56,441	\$56,647	\$53,262	\$53,518	\$52,861	\$81,633	\$50,482	\$60,735	\$97,596	\$57,251		\$50,006
6 to 10 years	\$50,871	\$70,599	\$64,666	\$59,263	\$66,326	\$57,909	\$60,342	\$58,993	\$91,088	\$56,007	\$68,754	\$90,179	\$64,397	\$50,780	\$57,425
11 to 15 years	\$58,096	\$82,881	\$72,331	\$69,066	\$63,350	\$64,451	\$58,568	\$70,199	\$90,136	\$51,313	\$64,031	\$90,402	\$64,000	\$68,400	\$65,327
16 to 20 years	\$61,330	\$87,876	\$76,811	\$71,302	\$69,801	\$66,990	\$65,843	\$72,874	\$107,376	\$54,603	\$67,504	\$101,811	\$67,980	\$64,893	\$69,632
21 to 30 years	\$66,425	\$92,059	\$76,408	\$75,186	\$79,297	\$69,720	\$70,505	\$75,950	\$105,191	\$59,781	\$71,485	\$99,962	\$63,765	\$77,670	\$73,644
31 years or more	\$68,421	\$87,844	\$78,126	\$74,787	\$77,698	\$73,184	\$69,233	\$76,248	\$94,714	\$61,694	\$77,366	\$106,011	\$59,253	\$64,480	\$73,634

a R=radiography; T=radiation therapy; N=nuclear medicine; MR=magnetic resonance; S=sonography; CT=computed tomography; M=mammography; CV=cardiovascular/interventional; MD=medical dosimetry; BD=bone densitometrist; QM=quality management; RA= radiologist assistant; VS=vascular sonography; BS=breast sonography. Decimal point=not available.

b Decimal point=Not available.

Note: All statistics (except for ns and sample percent) are weighted to national ARRT population.

# Years of Service in the Field

- 0 to 2 years (2013) National average
  - \$43,155 Rad Tech
  - \$62,804 NUCS
  - \$51,129 CT
  - \$52,499 MR
- In New Mexico (the average) across the U.S.
- Rad tech \$50,017 \$53,680
- Nuclear Medicine \$71,162 \$72,075
- Sonographer \$72,676 \$70,701
- CT \$59,039 \$63,545
- MR \$68,328 \$68,384

<http://www.asrt.org/docs/default-source/research/2013.pdf?sfvrsn=0>

# Program Locations/Offers

- Two years at:

Institution	Primary Modality/Degree
– CNM	R,S
– PIMA	R, BSRS
– Clovis CC	R
– Dona Anna CC (NMSU)	R, CT
– ENMU in Roswell	R ??
– NNMC	R (closing)

- Two years with UNM

BSRS Medical Imaging(Management) or Nuclear Medicine

BSRS CT or MR

Post Primary – Certificate CT or MR

# Online Degree Completion of the BSRS Medical Imaging

- Two years normally- offered to all modalities in Medical Imaging who are primary Certified by the ARRT or NMTCB or ARDMS
- Start with your entry level courses and any other transfer courses
- Meet with the department for advisement/transcript evaluation
- Work at your own pace
- Able to stay in your own community
- Continue with your current employment

# Contact Information for Program

University of New Mexico – School of Medicine

Radiologic Sciences Program **505-272-5254**

**Stevee McIntyre, B.A.** Program Coordinator

[stm McIntyre@unm.edu](mailto:stm McIntyre@unm.edu)

Elizabeth J. Greer, M.Ed., R.T.(R)(QM) Director & Advisor of Radiologic Sciences

[ejgreer@unm.edu](mailto:ejgreer@unm.edu)

Lynnette Trujillo, M.S., CNMT, R.T. (N) Director & Advisor Nuclear Medicine

[lytrujillo@unm.edu](mailto:lytrujillo@unm.edu)

Rebecca Blankley, MFA, RT(R)(M)(CT)(MR) CT & MRI Advisor and Coordinator

[rblankley@unm.edu](mailto:rblankley@unm.edu)

Frank Lopez, B.S., CNMT.R.T.(N) Advisor & Clinical Coordinator

[flopez@unm.edu](mailto:flopez@unm.edu)