Workforce Supply & Demand into the Future: Nuclear Medical Physicists

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AAPM Annual Meeting - August 1, 2018
Nashville, TN

Number of Accredited Facilities and Units (NM and PET)

* InterSocietal Accreditation Commission (IAC):
  * Nuclear Medicine and PET Facilities: 1720
    * Active Sites: 3250 Sites (July 2018)

Number of Accredited Facilities and Units (NM and PET)

* American College of Radiology: (July 2018)
  * Nuclear Medicine Facilities:
    * Active Sites: 3525 with 5762 Active Units
  * PET Facilities:
    * Active Sites: 1591 with 1702 Active Units

2015 Report on Nuclear Medical Physicist Training

- AAPM/SNNMI Joint Task Force Report: *JACMP*, Vol. 16, No. 5, 2015, p. 3. Goals for this task force:
- Estimate the demand for board-certified nuclear medicine physicists in the next 5-10 years
- Identify the critical issues related to supplying an adequate number of physicists who have received the appropriate level of training in nuclear medicine physics and
- Identify approaches that may be considered to facilitate the training of nuclear medicine physicists.

Task Force Representation

- Representation from:
- AAPM
- SNMMI
- American Board of Radiology (ABR)
- American Board of Science in Nuclear Medicine (ABSNM)
- Commission for the Accreditation of Medical Physics Educational Programs (CAMPEP).

Unique Training of Nuclear Medical Physicists

- Nuclear Medicine Physicists must understand:
- the physical and physiological basis of nuclear medicine
- the current state-of-the-art instrumentation
- the fundamentals of molecular imaging
- dosimetric and radiation safety aspects of the therapeutic use of radiopharmaceuticals
- radiation dose calculations
- quality control of instrumentation and radiopharmaceuticals

Current Workforce Status Information Sources

- Conference of Radiation Control Program Directors (CRCPD) maintains the national Qualified Medical Physicist (QMP) registry.
- Database identifies the board that certified the individual and the year of certification.
- The ABR and ABSNM provide data directly to the CRCPD database.

Current Supply of Nuclear Medical Physicists

- Two Certifying Boards for Nuclear Medical Physicists:
- American Board of Radiology (ABR):

	2014 Data	2015-2018	2018 Data
NM:	185	28	213
NM + DX:	99		99
NM + TX:	10		10

- **Total ABR Certified NM Physicists: 322**
- (5-10 per year average)

Current Supply of Nuclear Medical Physicists

- American Board of Science in Nuclear Medicine (Nuclear Medicine Physics & Instrumentation)
  - 2014 Data: 61
  - 2015 - 18: 28

  (Average of 7/year for past 4 years)

Total NM Certified Physicists by ABSNM: 89

What is the Workload/Physicist?

- Total Number of Certified Physicists:
  - 322 + 89 = 411 physicists (This is consistent with the estimate from the 2015 survey stating 350-450)
- Total Number of Units to be Annually surveyed for Accreditation Compliance:
  - 7464 + 3250 = 10,714 units

Average Workload = 26 units/physicist if all 411 physicists are performing annual equipment evaluations

Average Age of NM Physicists

- Median Years of Experience is greater than 20 years for all categories of Board Certified NM Physicists
- Significant need for physicists to replace those that will be retiring in the next 10 years
- Increased accreditation requirements will increase the need for board-certified physicists
- More cancer treatments with unsealed sources are being developed and will need board-certified NM physicists.

Current Status of CAMPEP Training Programs

- As of July 2018, there are 10 CAMPEP accredited programs for NM residencies but several of these are not filled.
- NM as a second certification is a significant number of certified NM physicists.

Challenges for the future

- High median age of qualified nuclear medicine physicists
- Poorly understood training and certification processes
- Shortage of formal training programs
- Increased requirements for physics evaluations for accreditation of NM equipment