Workforce Supply & Demand into the Future: Nuclear Medical Physicists

Melissa C. Martin, M.S., FAAPM, FACR, FIOMP
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

  - 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
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 Workforce Status

Information Sources

Two Certifying Boards for Nuclear Medical Physicists:
- American Board of Radiology (ABR):
  - 2014 Data: NM: 185, NM + DX: 99, NM + TX: 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 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