



August 12, 2024

Office of Management and Budget
New Executive Office Building, Washington, DC 20503
Email: Statistical_Directives@omb.eop.gov
Contact: Jeongsoo Kim

Re: Docket ID BLS-2024-0001–Standard Occupation Classification (SOC)—Updates for 2028

Dear Standard Occupational Classification Policy Committee:

The American Association of Physicists in Medicine (AAPM)¹ is pleased to submit comments in support of the SOC 2028 update efforts. Established in 1958, AAPM seeks to improve health and medical outcomes through the safe and effective application of physics in medicine. Over the decades, medical physics has grown into a vibrant profession, practicing in all the United States and territories. Medical Physicists often work behind the scenes, but we deliver care to everyone at some stage in their lives. Our discipline proudly exists at the intersection of the physical sciences, biology, and engineering.

We hope that your careful review and consideration of the information submitted here will support the creation of a new SOC for Medical Physicists. The below new SOC proposal addresses the “Desired Focus of Comments” items 1-10, as described in the solicitation of comments. If we can provide any additional information, please contact AAPM’s Senior Government Relations Manager, David Crowley (david@aapm.org).

Sincerely,

A handwritten signature in blue ink, appearing to read 'E. Samei', is positioned below the text 'Sincerely,'.

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Chair of the Board, AAPM

Chief Imaging Physicist, Duke University Health System

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¹ The American Association of Physicists in Medicine (AAPM) is the premier organization in medical physics, a broadly-based scientific and professional discipline encompassing physics principles and applications in biology and medicine whose mission is to advance the science, education and professional practice of medical physics. Medical physicists contribute to the effectiveness of radiological imaging procedures by assuring radiation safety and helping to develop improved imaging techniques (e.g., mammography CT, MR, ultrasound). They contribute to development of therapeutic techniques (e.g., prostate implants, stereotactic radiosurgery, radiopharmaceutical), collaborate with radiation oncologists to design treatment plans, and monitor equipment and procedures to ensure that cancer patients receive the prescribed dose of radiation to the correct location. Medical physicists are responsible for ensuring that imaging and treatment facilities meet federal and state rules and regulations. AAPM represents nearly 10,000 medical physicists.

SOC Proposal for Medical Physicist

1 Occupation Title

Medical Physicist

2 Nature of the Work Performed

Required Duties:

- Design and oversee radiation treatment plans for patients with various diseases, malignant (e.g., cancer) or at times benign, ensuring precision and safety.
- Calibrate and maintain radiation therapy equipment to ensure accurate delivery of treatment.
- Develop and implement quality control procedures for diagnostic imaging modalities such as MRI, X-ray (e.g., CT, radiography, fluoroscopy, mammography), nuclear medicine (SPECT, PET, planar imaging), and ultrasound imaging machines.
- Provide education and guidance to ensure patient and staff safety.
- Oversee the safe handling and use of radioactive materials in nuclear medicine imaging and therapeutic procedures.
- Conduct safety audits and risk assessments to ensure compliance with regulatory standards.
- Educate and train healthcare staff on the safe use of radiation and imaging equipment.
- Ensure that regulations and accreditation requirements on a local and national level—as relating to medical physics and radiation uses—are met and maintained.
- Oversee quality assurance and quality control programs.
- Provide institutional consultation on the development of clinical programs that utilize medical physics.
- Perform radiation dose estimates from diagnostic and nuclear medicine exams, including peak skin dose estimates, individual patient dose estimates, and fetal dose estimates, to be reported to the health care team and patient.
- Evaluate appropriate imaging protocols for diagnostic and interventional imaging, treatment simulation, and image-guided radiotherapy.
- AAPM establishes guidelines for the scope of work for Clinical Medical Physicists².

May Include:

- Generate radiation treatment plans and develop radiation dose calculations for special procedures.
- Research and develop new diagnostic and therapeutic medical technologies or methods, often collaborating with cross-disciplinary medical professionals and scientists.
- Participate in clinical trials and studies to advance the field of medical physics and patient care.

² AAPM medical physics practice guideline 10.a.: Scope of practice for clinical medical physics (2018) - <https://www.aapm.org/pubs/MPPG/detail.asp?docid=262>

- Collaborate with other healthcare professionals to improve patient care and treatment outcomes.
- Apply clinical and technical expertise to conduct research, design, and oversee the development, manufacture, and implementation of new medical imaging or therapy equipment and software products.
- Participate in research and development either individually or as part of a broader clinical team including support for clinical trials.
- Participate in evaluation of emerging technologies and incorporating technology innovations into clinical practice.
- Communicate with and educate patients, including discussions of risk.
- Consult with other healthcare professionals regarding patient radiation dose and associated risks.
- Participate in clinical education and training programs as needed to provide appropriate clinical training and supervision required for students.
- Provide formal and informal radiation physics training for all members of the care team necessary for safe and effective care of patients and employee safety.
- Perform individual patient dosimetry for therapies involving radiopharmaceuticals.
- Provide consultation for Information Technology as it applies to Imaging and Radiation Oncology.
- Participate in the development and the safe clinical implementation of Artificial Intelligence.
- Utilizes data science for the development and implementation of optimized and novel procedures.
- Participate in the development of national and international standards and practice guidelines for medical equipment and technology through organizations and agencies such as AAPM, FDA, NRC, SNMMI, ASTRO, RSNA, ACR, ANSI, DICOM, and IEC.

Supervisory or Management Duties:

- Supervise medical physics and other clinical or technical staff. This may include other trained physicists, residents, students, and medical physics assistants. Additionally, supervision might include dosimetrists, therapists, technologists, service engineers, nurses, or even physicians.
- Ensures compliance with all relevant regulatory requirements and appropriate professional documents (e.g., AAPM reports, ACR guidelines, etc.).
- Manage radiation quality control programs and radiation safety protocols within the institution.

3 Relationship to Other SOC Occupations

Distinct Characteristics:

- Unlike Radiologic Technologists (SOC 29-2034), Medical Physicists are responsible for the design and oversight of radiation treatment plans, quality assurance programs, equipment testing and acceptance, calibration, and safety protocols.

- Distinct from Radiation Oncologists (SOC 29-1069), who prescribe and manage patient treatment, Medical Physicists focus on the technical and physical aspects of radiation therapy.
- Distinct from Radiologists (SOC 29-1224), who diagnose and treat diseases and injuries using medical imaging techniques, Medical Physicists focus on the technical, quality, and radiation safety aspects of medical imaging.
- Distinct from Medical Dosimetrists (SOC 29-2036), who generate radiation treatment plans and develop radiation dose calculations, Medical Physicists plan, organize, and supervise the work of dosimetrists.
- Excludes Biomedical Engineers (SOC 17-2031), who design, develop, service, and repair medical imaging and therapeutic devices but do not typically engage in direct patient care, medical imaging, or radiation therapy planning.

4 Job Titles

- Medical Physicist
- Radiation Physicist
- Imaging Physicist
- Diagnostic Medical Physicist
- Therapeutic Medical Physicist
- Nuclear Medicine Physicist
- Magnetic Resonance Imaging Physicist
- Medical Health Physicist
- Professor, Assistant Professor, or Associate Professor

5 Indications of the Number of Workers in the Occupation

- Based upon AAPM's membership, there is approximately 10,000 Medical Physicists employed in the United States.
- Employment of Medical Physicists is projected to grow between 5-10%³ from 2022 to 2032, due to increasing demand for radiation therapy and advances in medical imaging technology.

6 Types of Employers

- Hospitals and healthcare facilities
- Cancer treatment centers
- Academic medical centers
- Research institutions
- Medical device and software manufacturers
- Medical physics practice groups
- Federal, Tribal, State, and Local Government regulatory agencies

³ Range is based on similar professions recognized at <https://blog.dol.gov/2024/03/08/fast-growing-science-occupations>

- Professional societies
- Accrediting organizations
- National and international standards-setting organizations (e.g., American National Standards Institute (ANSI) and Institute of Electrical and Electronic Engineers (IEEE)).
- National and International scientific advisory organizations (e.g., National Council on Radiation Protection and Measurements (NCRP), International Commission on Radiological Protection (ICRP), and International Commission on Radiation Units and Measurements (ICRU).

List of possible employers and respective codes:			
622110 General Medical and surgical hospitals	621100 Offices of Physicians	622300 Specialty Hospitals	423400 Professional and Commercial Equipment and Supplies Merchant Wholesalers
551100 Management of Companies and Enterprises	621400 Outpatient Care Centers	621500 Medical and Diagnostic Laboratories	6219 Other Ambulatory Health Care Services
611300 Colleges, Universities, and Professional Schools	999000 Federal, State, and Local Government, excluding State and Local Government Schools and Hospitals and the U.S. Postal Service (OEWS Designation)	541690 Other Scientific and Technical Consulting Services	541700 Scientific Research and Development Services

7 Education and Training

- Masters or doctoral degree (M.S., D.M.P., D.Sc., Ph.D. or equivalent) in Medical Physics, Physics, or a related field.
- For the clinical Medical Physicist, post-graduate training in an accredited residency program for one or more medical physics specialty areas, typically 2-3 years in duration.
- Certification by a recognized board such as the American Board of Radiology (ABR), the American Board of Medical Physics (ABMP), American Board of Health Physics, or the Canadian College of Physicists in Medicine (CCPM).

- AAPM maintains policy statements for the definition of a Qualified Medical Physicist (QMP)⁴ and practice standards⁵.

8 Licensing

- Licenses or registration are required in some states. Specific licensing or registration agencies include state health departments and radiation control programs.

9 Tools and Technologies

- Linear accelerators for radiation therapy
- Radioactive material treatment delivery systems (e.g., brachytherapy or gamma stereotactic radiosurgery)
- MRI, X-ray (e.g., CT, radiography, fluoroscopy, mammography), nuclear medicine (SPECT, PET, planar imaging), and ultrasound imaging machines
- Tools and equipment for nuclear medicine imaging, mapping the distribution of radiopharmaceuticals in the body
- Radiation dosimeters and calibration equipment
- Computer software for treatment planning and Image analysis
- Test objects mimicking some aspect of patient interaction with radiation (phantoms)
- Tools for performing quality assurance and quality control of imaging or therapy machines

10 Professional or Trade Associations and Unions

- American Association of Physicists in Medicine (AAPM)
- American College of Radiology (ACR)
- American Society for Radiation Oncology (ASTRO)
- Radiological Society of North America (RSNA)
- Health Physics Society (HPS)
- Society of Nuclear Medicine and Molecular Imaging (SNMMI)

⁴ AAPM PS 7-A Definition of a Qualified Medical Physicist - <https://www.aapm.org/org/policies/details.asp?id=2551>

⁵ AAPM PS 11-A Qualifications and Practice Standards for Clinical Medical Physicists: A Guide for Government and Regulators - <https://www.aapm.org/org/policies/details.asp?id=2555>