



# **SCOPE OF PRACTICE OF A MEDICAL DOSIMETRIST**

**Approved October 2012**

## **Preamble**

This Scope of Practice is designed to assist the Qualified Medical Dosimetrist in defining his or her roles in the technical services that they provide in patient care [1].

This document also defines the Qualified Medical Dosimetrist, provides a statement of basic responsibility of the Qualified Medical Dosimetrist, and addresses education, certification, continuing education, and maintenance of certification. Also included are statements on supervision by and of the Qualified Medical Dosimetrist. This document stresses that it is essential that the Qualified Medical Dosimetrist be an active participant in the collaborative, team approach to patient care and that effective communication with the radiation oncology team is essential for providing quality patient care.

In addition this Scope of Practice is designed to educate professionals in the fields of health care, education, other communities of interest and the general public regarding the expectations of the Qualified Medical Dosimetrist [1]. This document can be used by individual facilities to develop job descriptions and practice parameters.

The Scope of Practice defined in this document is meant to have some flexibility in interpretation and is not meant to be used to establish a legal standard of care [2]. Also, professionals who use this document must be aware of state and federal laws affecting their practice as well as institutional policies and guidelines. The intent is not to supersede these laws or affect the interpretation or implementation of such laws [1].

## **I. Qualified Medical Dosimetrist [1]**

A Qualified Medical Dosimetrist is an individual who has the knowledge and skills to practice under the supervision of a Licensed Practitioner and a Qualified Medical Physicist. This individual uses critical thinking and problem solving skills as well as exercises discretion and judgment in the performance of medical dosimetry procedures.

It is expected that an individual will hold him/herself qualified to practice in medical dosimetry only when the knowledge and skills to perform dosimetric tasks has been established. An individual shall be considered eligible to practice if he/she is certified by the Medical Dosimetrist Certification Board. The MDCB will require

a Baccalaureate Degree to sit for their exam by the year 2017 and the AAMD fully supports that educational level for new candidates.

The American Association of Medical Dosimetrists (AAMD) recommends all personnel practicing in Medical Dosimetry attain, at a minimum, certification provided by the (MDCB). Accordingly, the CMD (Certified Medical Dosimetrist) is recognized as the appropriate credential for the Medical Dosimetrist.

## **II. Statement of Basic Responsibility**

The essential responsibility of the Qualified Medical Dosimetrist (QMD) is to demonstrate an understanding of topics including, but not limited to cancer, radiation biology, radiation therapy techniques, radiation oncology physics, equipment technology, radiation safety and protection, anatomy, physiology, and mathematics to generate treatment plans. Once the treatment plan has been generated the Qualified Medical Dosimetrist is responsible for communicating the plan to the Licensed Practitioner, and then to the Radiation Therapist for implementation. The Qualified Medical Dosimetrist must maintain a commitment to a high degree of accuracy, attention to detail, and safety. The Qualified Medical Dosimetrist must use critical thinking skills when performing treatment planning, plan evaluation, recognizing and resolving equipment problems and treatment discrepancies [1].

## **III. Definitions**

- The Qualified Medical Dosimetrist is a member of the radiation oncology team who has a knowledge of the overall characteristics and clinical relevance of radiation oncology in the management of cancer or other disease process, with special expertise in radiation therapy treatment planning [1].
- The Practice of Medical Dosimetry is performed by health care professionals responsible for the process of patient data acquisition, treatment planning for the administration of ionizing radiation, treatment evaluation, transfer of data from the treatment planning system into the record and verifies software, accurate treatment delivery, and quality management for radiation oncology patients. In addition to the above, the Qualified Medical Dosimetrist may perform or assist in other duties under the direction of the Licensed Practitioner and a Qualified Medical Physicist [1, 2].
- The “Licensed Practitioner” denotes a doctor of medicine who is licensed to practice their medical specialty and who prescribes or utilizes radiological procedures for other purposes [3].
- “Licensed / Credentialed Medical Physicist” or “Qualified Medical Physicist” denotes an individual who is competent to practice independently in one or more of the subfields of medical physics, and meets the criteria set forth in the Definition of a Qualified Medical Physicist (American Association of Physicists in Medicine (AAPM))

Professional Policy 1). A Qualified Medical Physicist must hold a professional medical physics license where required [3].

- Qualified Medical Dosimetrists are educated to independently perform duties and complete responsibilities under the direction of a Licensed Practitioner and a Qualified Medical Physicist [1].

#### **IV. Specifics of Practice**

This document summarizes the tasks for which a Qualified Medical Dosimetrist is qualified to perform. Each Qualified Medical Dosimetrist must exercise professional and prudent judgment in determining whether the performance of a given act is within the scope of practice for which the Qualified Medical Dosimetrist is educationally prepared and clinically competent to perform [1].

The decision making model described in **Appendix 1**, provides rational and logical guidance to Qualified Medical Dosimetrists. When these guidelines are used to analyze whether a medical dosimetrist may perform a task, the conclusion is reached that this act is or is not within the scope of practice of the individual Qualified Medical Dosimetrist [1].

Qualified Medical Dosimetrists should adhere to the American Association of Medical Dosimetrists (AAMD) Code of Ethics and the Ethical Standards of the Medical Dosimetrist Certification Board (MDCB) [2, 3].

#### **V. Education and Certification**

The AAMD recommends that Qualified Medical Dosimetrists entering the field be prepared for this profession by earning the minimum of a baccalaureate degree, completing a Medical Dosimetry educational program accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT) and obtaining certification by the Medical Dosimetry Certification Board (MDCB) [1, 2, 3].

The AAMD fully supports the Medical Dosimetry Certification Boards route of eligibility change that requires all examinees to have a baccalaureate degree and to have graduated from JRCERT accredited medical dosimetry educational program beginning in 2017 [4].

#### **VI. Continuing Education / Maintenance of Certification**

Radiation oncology is a rapidly changing and technologically advanced field. It is imperative that the Qualified Medical Dosimetrist maintains a level of expertise and awareness of changes and advances to remain current in the field.

Maintenance of certification by the MDCB is part of the continuing education of the Qualified Medical Dosimetrist. Once certified, the Qualified Medical

Dosimetrist is personally and professionally responsible for the maintenance of certification according to the guidelines established by the MDCB [1].

## **VII. Supervision [1]**

- A Qualified Medical Dosimetrist receives supervision from the Licensed Practitioner, Qualified Medical Physicist, and senior/ lead Qualified Medical Dosimetrists.
- A Qualified Medical Dosimetrist may supervise other Qualified Medical Dosimetrists and other allied health professionals.

## **VIII. Collaboration and Communication [1, 2]**

Collaboration and communication are essential to the process of patient data acquisition, treatment planning, treatment evaluation, accurate treatment delivery, and quality management for radiation oncology patients.

It is imperative that Qualified Medical Dosimetrists actively and openly collaborate and communicate with:

- Licensed Practitioner, Qualified Medical Physicists, and other allied health personnel for treatment planning and dose delivery.
- Licensed Practitioner and Qualified Medical Physicists to assure accurate radiation dose to each patient.
- Qualified Medical Physicists regarding quality assurance and quality management.
- Qualified Medical Physicists regarding radiation safety to patients, staff, and the general public.
- Research and Development Scientists, Licensed Practitioner, and equipment manufacturers involved in the development and improvement of products and procedures designed for patient care.
- Educators with graduate programs in medical physics, residency programs in radiation oncology and medical physics, medical dosimetry programs and other allied health programs to assist with the training and education of these individuals.

## **IX. The scope of practice of the Qualified Medical Dosimetrist may include, but is not limited to [1, 2, 3]:**

- Participation in accepted departmental, institutional, and national standards concerning the process of proper patient and treatment site identification.
- Acquisition of patient data via computer generated data sets from medical imaging devices such as CT, PET, MR, etc., or manual methods such as physical measurements and wire contours, and incorporation of this data into treatment plans, calculations, and treatment devices.

- Incorporation of patient data from medical imaging procedures as the imaging data pertains to simulation, treatment planning, treatment delivery and quality assurance.
- Provision of input into the use or necessity of ancillary treatment devices, patient immobilization techniques, and other patient positioning techniques as needed for simulation and treatment.
- Performance of or assistance with the fabrication of patient immobilization and ancillary treatment devices.
- Application of principles and concepts of radiation physics in treatment planning.
- Accuracy in the performance of dose calculations, both manual and computer generated, for treatment delivery.
- Accuracy in the performance of calculations pertaining to, but not limited to beam modifying devices, irregular fields, gaps for adjacent fields, and off-axis calculations.
- Participation in the development of optimal treatment strategies that result in attainable radiation therapy plans including localization of tumor volumes, critical structures, generation of isodose distributions, and performance of dose calculations according to the written directive.
- Participation in special treatment procedures offered in the department. These special procedures include, but are not limited to, TBI, TSEI, IORT, SRS, SBRT, and other treatment procedures.
- Accuracy in the evaluation of information generated from radiation treatment plans such as isodose distributions, Dose Volume Histograms (DVH's) and other data in establishing the appropriateness of the treatment plan.
- Application of knowledge of radiobiology with respect to dose tolerances, time dose fractionation calculations, hypofractionation, BED calculations and other applications of radiobiology to the radiation therapy treatment process.
- Accuracy in the transfer and documentation of treatment parameters either manually or electronically according to departmental policies.
- Participation in the implementation of the written directive for external beam, particle beam, and brachytherapy procedures.
- Performance of or assistance with quality assurance procedures as directed by a Qualified Medical Physicist.
- Performance of or assistance with the application of specific methods of radiation measurement including, but not limited to, diode, ion chamber, thermoluminescent dosimeter (TLD), or film measurement as directed by a Qualified Medical Physicist.
- Having been appropriately trained in emergency procedures; preparation, measurement, transportation, loading and/or removal of radioisotopes adhering to state/federal regulations under the supervision/ direction of the licensed/ authorized user.
- Having been appropriately trained in emergency procedures; assistance with low dose rate (LDR), pulsed dose rate (PDR), and high dose rate (HDR) procedures, adhering to state/federal guidelines.

- Application of the principles of ALARA to minimize exposure to patient, staff and others.
- Application of critical thinking skills to the simulation, treatment planning, treatment evaluation, and treatment delivery process.
- Participation in quality management in accordance with departmental, institutional, and national quality management procedures.
- Performance of daily and/or weekly chart checks per department policy.
- Participation in the implementation of the treatment plan; which includes, but is not limited to, collaboration with team members, plan documentation, treatment parameter verification and treatment charting.
- Participation in fiscal practices, such as billing, in accordance with institutional policies.
- Participation in clinical research for the development and implementation of new techniques in cancer treatment.
- Participation in managerial duties when required
- Participation in the education of members of the radiation oncology team.
- Participation in patient, and public education.
- Practice of universal precautions.
- Assistance for Licensed Practitioner as directed and in accordance with institutional policies.
- Adherence to high ethical standards in relation to patients, students or trainees and colleagues.

## Appendix 1

### Decision Making

- In addition to the *Scope and Standards of Medical Dosimetry Practice*, each Qualified Medical Dosimetrist must exercise professional and prudent judgment in determining whether the performance of a given act is within the scope of practice for which the Qualified Medical Dosimetrist is clinically competent to perform. The decision making model, subsequently described, provides rational and logical guidance to Qualified Medical Dosimetrists. When these guidelines are used to analyze whether a Qualified Medical Dosimetrist may perform a task, the conclusion is reached that this act is or is not within the scope of practice [1]. (Figure 1)

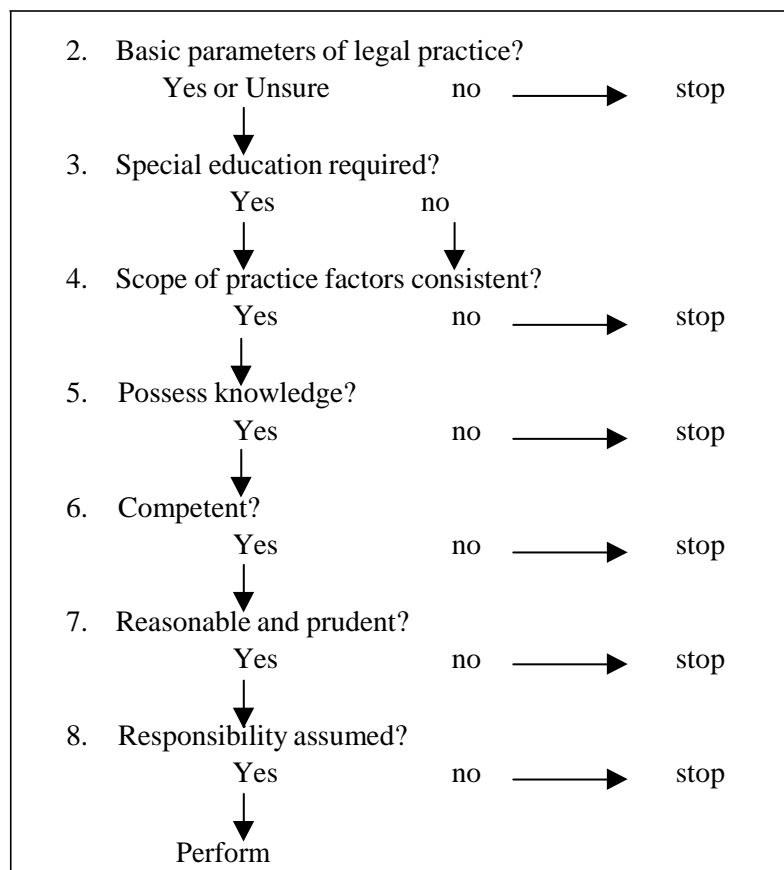
### Decision Making Model for Determining the Scope of Practice of a Qualified Medical Dosimetrist

1. Describe the act being performed.
2. Does the act follow the basic parameters of legal practice? (e.g. regulations regarding the handling of radioactive materials) (If you answered NO to the question, the act is **not** within your scope of practice.) (If the answer is YES or you are UNSURE, continue to the next step.)
3. Does the act require you to have specialized medical dosimetry knowledge and skill? (If you answered NO to the question, the act may be within your scope of practice, continue to the next step.) (If the answer is YES, continue to the next step.)
4. Is the act consistent with the scope of practice based upon at least one of the following factors?
  - a. *The Scope and Standards of Medical Dosimetry Practice.*
  - b. Positive and conclusive data in the medical dosimetry, medical physics, or radiation oncology literature.
  - c. Appropriately established policy and procedure of the employing facility.(If you answered NO to the question, the act is **not** within your scope of practice.) (If the answer is YES, continue to the next step.)
5. Do you personally possess the depth and breadth of knowledge to perform the act safely and effectively as demonstrated by knowledge acquired in an educational or continuing education program? (If you answer NO, the act is **not** within your scope of practice.) (If you answered YES, maintain documented evidence and continue.)

6. Do you personally possess current clinical competence to perform the act safely? (If you answer NO, the act is **not** within your scope of practice unless competence is achieved.) (If you answer YES, continue.)
7. Is the performance of the act within the accepted “standard of care” which would be provided in similar circumstances by reasonable and prudent medical dosimetrists who have similar training and experience? (If you answer NO, the act is **not** within your scope of practice. Performance of the act may place both medical dosimetrist and patient at risk.) (If you answer YES, continue.)
8. Are you prepared to accept the consequences of your action? (If you answer NO, the act is **not** within your scope of practice.) (If you answer YES, then:
  - a. Perform the act - based upon valid order when necessary, and in accordance with appropriately established policies and procedures.
  - b. Assume responsibility for your action(s).)

### Summary of Decision Making Model

#### 1. Designated act





## Scope of Practice References

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### Preamble

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#### **IV. Specifics of Practice**

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## **IX. The scope of practice of the Qualified Medical Dosimetrist may include, but is not limited to:**

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## **Appendix 1**

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