Medical Dosimetry Program

JRCERT Accredited

Program Handbook

2023-2024

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Note: ***Due to the ongoing improvement of our program, any information is subject to change without notice. Reviewed and Revised June 2023 for the Academic Year 2023-2024.***

Introduction

The following information which includes policies, procedures, regulations, and schedules has been prepared for students entering the University Of Maryland Medical Dosimetry Certificate Program. Students should become familiar with this handbook, ask questions for better understanding and abide by the policies, procedures, regulations and schedules as best as possible. Students should recognize that in addition to being students of the University of Maryland Medical Dosimetry Program, they are also employed as dosimetry trainees by the University of Maryland Medical Center and must adhere to policies, procedures, and regulations of the Medical Center in addition to the policies within this handbook.

Students of all backgrounds are equally welcome to the program irrespective of race, color, gender, age, disability, religion, national origin or any other protected class.

Statement of Understanding

Receipt of Handbook

I have received a copy of the current Student Handbook. It is my understanding that if I have any questions concerning material in this handbook I may contact any of the University of Maryland Medical Dosimetry Program Advisors (i.e. Program Director, Clinical Coordinator, and/or Chief Dosimetrist) for further clarification. I am responsible for all the information contained in this handbook as well as any subsequent additions, and I understand and agree to follow the policies during my enrollment in the program, including all clinical education and University of Maryland Medical Center policies.

_____ _____ _____

Date Student Signature Printed Name

Medical Dosimetry as a Profession

Definition

As defined by the American Association of Medical Dosimetrists (AAMD):

"A medical dosimetrist is an analytical member of the radiation oncology team who works closely in collaboration with the radiation therapists, medical physicists, and radiation oncologists within the department. A medical dosimetrist has an overall knowledge of math, physics, anatomy & physiology, radiobiology, and knows the characteristics and clinical relevance of radiation oncology treatment machines and equipment. With their expertise, medical dosimetrists design, generate, and measure radiation dose distributions and dose calculations while providing oversight to high level treatment procedures in both external beam radiation therapy and brachytherapy."

Profession

As defined by the American Association of Medical Dosimetrists (AAMD):

"Following consultation, the patient is simulated for tumor localization to ensure reproducibility and accuracy of treatment. The simulation consists of a CT scan of the specific area where the tumor or area of interest is located. During simulation, a medical dosimetrist may assist in creating molds and/or immobilization devices to establish the best body position for accurate daily treatment delivery. The radiation oncologist decides on the specific treatment modality and radiation dosage, based on the patient's tumor type, stage, and location of cancer. CT scans, alone or in combination with MRI or PET scans, allow the physician to map out the exact location of the area to be treated. Medical dosimetrists use their knowledge and skills in conjunction with advanced computer technology to design a treatment plan specifically for each patient.

Clinical medical dosimetrists will typically specialize in one or more of the following types of radiation:

> External Beam Radiation Therapy- radiation delivered from outside the body to the tumor or treatment area.
>
> Photon therapy- administered by a machine called a linear accelerator, which is a sophisticated device that produces high energy therapeutic x-rays that are used to treat tumors.
>
> Proton therapy- treatment that uses high-energy proton beams to treat tumors. Proton beams are generated by an extremely large and complex particle accelerator—only a few dozen exist in the US.
>
> Brachytherapy- a radioactive source is placed directly inside or next to the area where the tumor is located. The radioactive source can be either temporary or permanent.

In external beam radiation therapy, the medical dosimetrist will carefully select the treatment technique, beam angles, and beam shapes to deliver a high dose of radiation to the tumor while sparing as many healthy cells and organs as possible. Once the medical dosimetrist has developed the best treatment plan given the anatomy, tumor location, and dose, the radiation oncologist will review and approve the plan.

Before the treatment plan can be executed, members of the radiation oncology team work together by performing rigorous quality assurance checks to ensure that the treatment plan is safe and effective. A medical dosimetrist will communicate the patient's treatment plan to the radiation therapists by providing field arrangements, beam modification devices, and any concerns that may arise during treatment planning phase. Medical dosimetrists may perform or assist a medical physicist with radiation measurements including ion chamber, thermoluminescent dosimeters (TLD), or film measurement. Another area a medical dosimetrist can contribute to quality assurance and safety is by providing technical and physics support. This support could be in radiation protection, qualitative machine calibrations, and/or quality assurance of the radiation oncology equipment.

In conclusion, a medical dosimetrist is a vital member of the radiation oncology team who performs calculations for accurate delivery of the radiation oncologist's prescribed dose, documents pertinent information in the patient record, and verifies the mathematical accuracy of all calculations."

Scope of Practice & Practice Standards

As defined by the American Association of Medical Dosimetrists (AAMD):

"The Scope of Practice of a Medical Dosimetrist is designed to assist the Qualified Medical Dosimetrist (QMD) in defining their role in the clinical and technical services they provide in patient care. This document defines a QMD, their basic responsibilities, and addresses the educational requirements, board certification, and maintenance of certification. Statements are included on supervision by and of the QMD. This document stresses the importance that the QMD is an active participant in the patient care team; and that effective communication with the radiation oncology team is essential for providing quality patient care and ensuring patient safety.

In addition, this Scope of Practice is intended to educate professionals in the fields of health care, education, other communities of interest, and the public regarding the expectations of a QMD. This document can be used by individual facilities to develop job descriptions and practice parameters.."

The Scope of Practice can be located at: https://pubs.medicaldosimetry.org/pub/0D422D93-A306-DC24-3BB8-CF7E046B1779

"These Practice Standards are designed to assist Qualified Medical Dosimetrists (QMDs) in defining their roles in the technical services that they provide in radiation oncology. This document stresses that it is essential that the QMD 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 ."

The Practice Standards can be located at: https://pubs.medicaldosimetry.org/pub/0D4F14CE-F3FE-DC5B-3329-9A7658229EEB

Program Information

Overview & Accreditation

The University of Maryland Medical Center Medical Dosimetry Program is a one -year, certificate program accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT). A copy of the Standards for an Accredited Educational Program in Medical Dosimetry is available in the Appendix of this handbook as well as online and from the Program Director. Any questions about the program may be forwarded to either the program director or the JRCERT (JRCERT Standard 1.5). The JRCERT contact information is:

JRCERT
20 N. Wacker Drive
Suite 2850
Chicago, IL 60606
312-704-5300
FAX: 312-704-5304
mail@jrcert.org
www.jrcert.org

Accreditation of our program has been effective since May 10, 2007. In 2018, our program was re-accredited by the JRCERT for a total of 8 years, until 2026. In 2022 an interim report was submitted and maintenance of the 8 year accreditation was awarded.

The Department of Radiation Oncology, under the auspices of the University of Maryland Medical Center, started the School of Medical Dosimetry in 2001. Students of this program are employed by the University of Maryland Medical Center as dosimetry trainees, not students of the University of Maryland.

JRCERT accreditation is part of the eligibility requirements by the Medical Dosimetry Certification Board and our program fulfills this requirement. However, the applicant, student or graduate are urged to contact the MDCB with questions of eligibility.

Complaints Relating to Non-Compliance with JRCERT Standards

Per JRCERT Standard 1.5, "Any individual associated with the program has the right to submit allegations against a JRCERT-accredited program if here is a reason to believe that the program has acted contrary to JRCERT accreditation standards and/or JRCERT policies. Additionally an individual has the right to submit allegations against the program if the student believes that conditions at the program appear to jeopardize the quality of instruction or the general welfare of its students."

Any person who believes the Medical Dosimetry Program is in non-compliance with any of the JRCERT standards is asked to formally submit in writing to the Program Director the details of the believed non-compliance. The Program Director and/or Program Officials will confer with the person submitting the non-compliance complaint to gain further information. The Program Director and/or Program Officials will then attempt to establish compliance. If the complainant still believes the issue has not been resolved they should contact the JRCERT.

The program takes every complaint or alleged non-compliance seriously. Each complaint will be thoroughly investigated and should the complaint be found valid, the program is dedicated to speed resolution of the problem. In addition, it is the policy of the program to work closely and professionally with the JRCERT to resolve any reported non-compliance allegations.

Mission, Objectives & Goals

Mission

"To provide world class education and training in medical dosimetry and provide competent dosimetrists to serve the needs of the community in the treatment of patients with radiation"

Objectives

1) Provide education and expertise in medical dosimetry through didactic and clinical instruction
2) Foster critical thinking, analytical skills, and problem solving in the rapidly changing world of science and technology
3) Promote a commitment to patient care and professional development.

Goals & Outcomes:

Goal 1: Students will graduate as clinically competent dosimetrists.

Student Learning Outcome:

1. Students will demonstrate the ability to perform CT-based contours for organ at risk structures (OARs) at a clinically acceptable level and/or to a gold standard
2. Students will design clinically acceptable and treatable external beam radiotherapy plans utilizing 3DCRT, IMRT/VMAT, SBRT, and other techniques.
3. Students will demonstrate an understanding of basic radiation physics concepts and treatment planning concepts and relate them to treatment planning

Goal 2: Students will demonstrate the critical thinking skills required for medical dosimetry.

Student Learning Outcome:

1. Students will demonstrate an understanding of the physics and radiobiology of radiation therapy
2. Students will be able to present formal clinical case plans and a research project to the broader community and sufficiently respond to questions from staff dosimetrists, physicists, and physicians regarding such treatment plans and projects

Goal 3: Students will effectively communicate within an interdisciplinary radiation oncology team.

Student Learning Outcome:

1. Students will display effective oral communication skills with physicians, physicists and dosimetrists
2. Students will display effective written communication skills with physicians, physicists and dosimetrists

Goal 4: Students will conduct themselves in a professional manner and practice the ideals of professional growth and lifelong learning.

Student Learning Outcome:

1. Students will conduct themselves in a professional manner
2. Graduates will demonstrate lifelong learning

Goal 5: Students will graduate as entry-level dosimetrists.

Student Learning Outcome:

1. Students will obtain a job in the field of medical dosimetry
2. Students will take the CMD board examination within one year of graduation
3. Students will feel prepared to enter the workforce as an entry-level dosimetrist
4. Students will complete the program within 12 months.
5. Students will pass their CMD board exams within two years of graduation
6. Employers will be satisfied with the performance of graduates

Admission Requirements & Process

Admission Requirements:

Trainees must hold a Bachelor of Science or Bachelor of Applied Science Degree, with minimum overall GPA of 3.0 (preferably with at least one year of physics coursework), **or** be a graduate of an accredited Radiation Therapy Program with a Bachelor's Degree. All applicants must have completed post-secondary instruction in the following areas:

- Basic mathematics including algebra, trigonometry, and intro to calculus
- Basic physics
- Oral and written communication
- Biology
- Medical terminology, anatomy and physiology
- Computer competency

Transfer Credits:

The UMMC Medical Dosimetry Program does not accept transfer credits. Course credits from our Medical Dosimetry Program cannot be counted towards a higher education degree from a higher education organization, nor can credits from other programs be counted by our program.

Admission Policy:

It is the policy of the school and its sponsor to admit trainees without regard to race, color, gender, age, religion, national origin, other protected status or disability, unless that disability would prevent the trainee from fulfilling their clinical requirements.

Applications including all associated materials such as personal references, CV and transcripts must be received by December 1st for admission the following July 1st. The selection of candidates will occur on or before March 1st.

Selection Process:

The selection of all trainees will be through the admissions board. Admission data will be kept on file for five years in the department of radiation oncology. All federal and state nondiscriminatory laws are observed. Refer to enrollment policy section if further detail is needed.

The admissions board will consist of at least the following individuals:

1. Physician Representative
2. Program Director
3. Clinical Coordinator
4. Chief or Associate Chief of Medical Physics
5. Chief Medical Dosimetrist or Designee
6. Staff Dosimetrist

Equal Opportunity:

The University of Maryland Medical Center is actively committed to providing equal educational and employment opportunity in all of its programs. It is the goal of the institution to assure that equitable representation of women and minorities exists among the faculty, staff and administration of the institution, so that its work force reflects the diversity of Maryland's population.

All employment policies and activities of the University of Maryland Medical Center shall be consistent with federal and state laws, regulations and executive orders on nondiscrimination on the basis of race, color, religion, age, ancestry or national origin, sex, sexual orientation, handicap, marital status and veteran status. Sexual harassment, as a form of sex discrimination, is prohibited among the work force of the institution.

The University of Maryland Medical Center's full equal opportunity policy is available on the intranet. The human resource website can be accessed at: http://intra.umms.org/umms

Health and Insurance

All University of Maryland Medical Center employees (i.e. Dosimetry Trainee), are required to complete a health assessment before beginning employment per the Pre-Placement Health Assessment Policy. The health assessment ensures an applicant can perform the essential functions of the job for which s/he is being offered employment. In keeping with the University of Maryland's commitment to maintaining a drug free workplace and to reducing safety risks to patients and co-workers, all new team members will be screened for illicit and controlled substances through urinalysis as a part of the pre-placement health assessment.

The health assessment will include the following:

- Complete Medical History, with focused physical examination if indicated
- Team members may be required to obtain medical documentation from a current treating provider for medical conditions
- Urine drug screen
- Vital signs including height, weight, blood pressure, pulse, and body mass index
- Tuberculosis screening
- Counseling and administration, if indicated, of Hepatitis B, Measles, Mumps, Rubella (MMR), Td/Tdap and Varicella Immunizations
- Collection of COVID-19 vaccination documentation or advising on how to receive vaccine or submit request for exemption
- Flu vaccination during flu season or submission of an approved medical or religious exemption
- A blood draw for antibody titers to the infectious diseases listed above if indicated
    - Vision Screen
    - Color Vision Screen
    - Respirator medical clearance and fit testing for clinical staff involved in direct-patient care
- Individuals who will be working in the hyperbaric chamber will be required to undergo an expanded medical history along with a qualifying dive

Trainees who accept the stipend will be offered health coverage by UMMC.

Counseling Services

Trainees can take advantage of The Counseling Center at the University of Maryland, Baltimore. It serves as the primary centrally administered service center providing short-term individual, couples, family and group counseling for dysfunctions that impinge on academic or work achievement. It also provides direct service to trainees, faculty and staff members with acute problems and acute exacerbations of chronic problems. The employee assistance program (EAP) is also available.

Liability Insurance

All trainees accepted into the program will be covered by UMMC.

Tuition & Finances

The University of Maryland Medical Center will provide full financial support for the program.

The value of the Program for each trainee is Fifty One Thousand Two Hundred Dollars ($51,200). As part of the program value, the accepted trainee will receive an educational stipend of Thirty One Thousand Two Hundred Dollars ($31,200.00). In consideration of the value of the program, including the Educational Stipend, the trainee agrees to full time employment with UMMC as a dosimetrist for a period of twenty-four (24) months following graduation from the program, if a position is available. Trainees who are employed after graduation, by UMMC are paid a competitive salary during the twenty-four month obligation to the University of Maryland Medical Center. Notably, if a position is not available upon completion of the program, the trainee does not have to pay back any part of the ($51,200.00) value of the program. If an applicant is accepted into the program and wishes not to enter the commitment to work for 24 months, a one-time fee will be due of ($51,200.00) to cover the value of the program. In such instance, the trainee will receive the stipend portion of that fee, back in the amount of ($31,200.00) as a salary during their one year employment at UMMC. If a trainee should need or wish to breach the agreement to commit to employment after graduation or at any time during the 24 months employment after graduation, a one-time fee of ($51,200.00) shall be due. It should be noted that both the tuition and the contractual obligations are reviewed on an annual basis and are subject to change.

A trainee will not serve as a substitute for full-time equivalent (FTE) or part-time employees.

The program will not charge any fees to the trainee.

The program's policies and procedures have been reviewed by the hospital's legal office.

Financial Aid

Our program provides each graduate with a Certificate of Completion. We are not a degree-granting program. Therefore, the Medical Dosimetry Program is not presently recognized as a degree-granting Higher Education Organization, or branch of such, by student loan managing agencies.

Transportation

All trainees will be responsible for providing their own transportation to and from the clinical sites of the Department of Radiation Oncology. Trainees will be responsible for paying their own parking costs.

Housing

All trainees will be responsible for providing their own housing. University and/or the Medical Center facilities will not be available.

Organization and Administration

Sponsoring Institution:

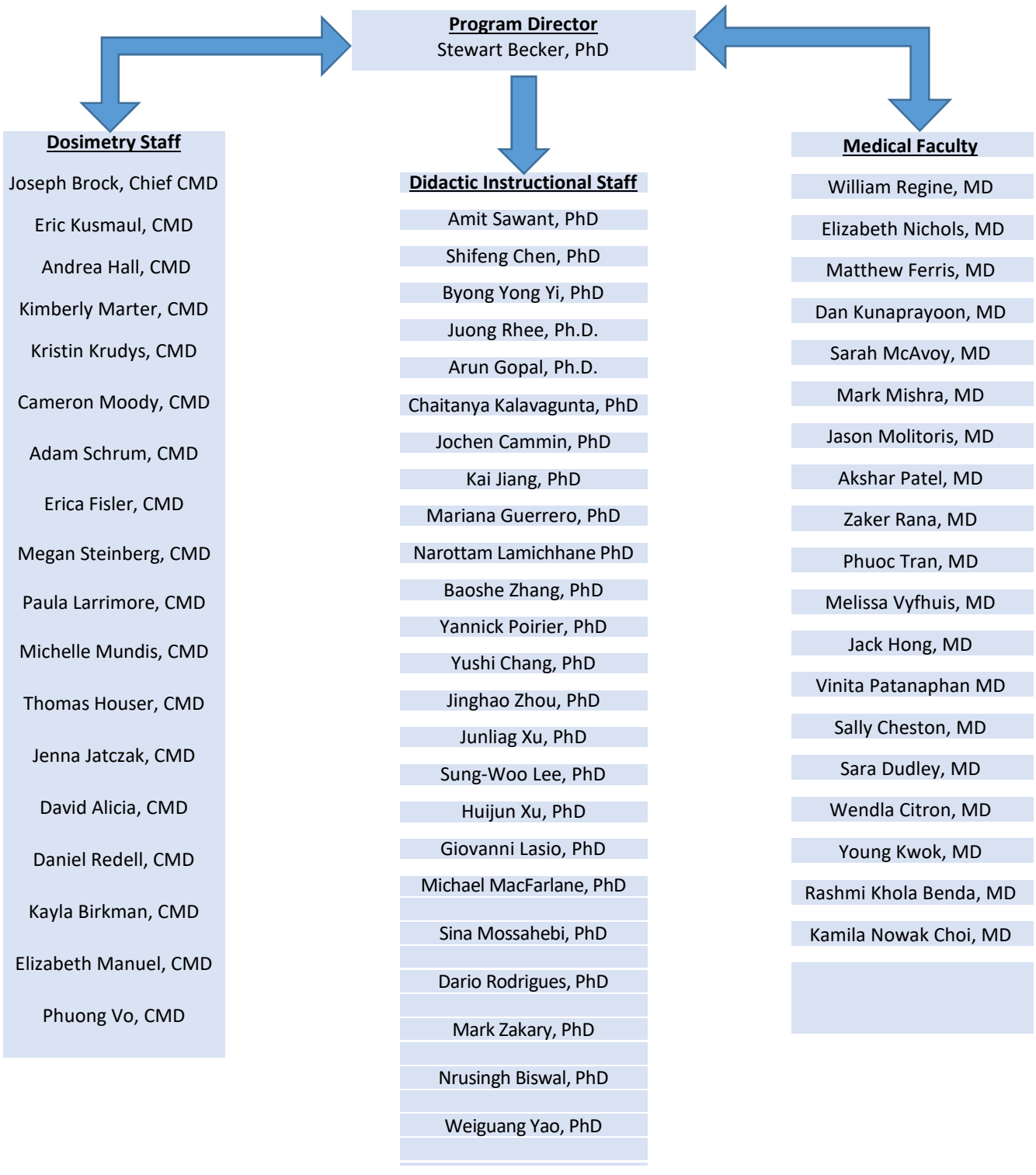
The program is a hospital-based program sponsored by the University of Maryland Medical Center, Department of Radiation Oncology, 22 South Greene Street, Baltimore, Maryland, 21201. The hospital is a JCAHO accredited facility and the department meets the Standards for Radiation Oncology as defined by the ACR (Res. 38-1995)

Chief Executive Officer:	Bert O'Malley, Jr., M.D., President and CEO
Department Chairman:	William Regine, M.D., FACR, FACRO, FASTRO
Department Administrators:	Erika Maynor, M.P.A., Executive Administrator for Dosimetry Training Program and Sr. Director of Clinical Operations
	Frank Young, Senior Administrator

Program Officials

Program Director:	Stewart Becker, PhD
Clinical Coordinator:	Michelle Mundis, MS, CMD
Medical Advisor:	Sarah McAvoy, MD, Vice Chair of Education
Physics Advisors:	Shifeng Chen, PhD, Chief of Clinical Medical Physics
Administrative Coordinator:	Keona Davis

Medical Dosimetry Program Organizational Chart



Instructional Staff

Didactic Instructional Staff
(Physics Faculty: UM School of Medicine):

Amit Sawant, PhD
Shifeng Chen, PhD
Byong Yong Yi, PhD
Stewart Becker, PhD
Arun Gopal, PhD
Chaitanya Kalavagunta, PhD
Jochen Cammin, PhD
Kai Jiang, PhD
Mariana Guerrero, PhD
Narottam Lamichhane, PhD
Baoshe Zhang, PhD
Yannick Poirier, PhD
Jinghao Zhou, PhD
Junliag Xu, PhD
Sung-Woo Lee, PhD
Huijun Xu, PhD
Giovanni Lasio, Ph.D.
Michael MacFarlane, PhD
Sina Mossahebi, PhD
Dario Rodrigues, PhD
Nrusingh Biswal, PhD
Weiguang Yao, PhD
Mark Zakhary, PhD

Didactic Instruction Staff
(Biology Faculty: UM School of Medicine)

Juong Rhee, Ph.D., Associate Professor

Clinical Dosimetry Instructors

Joseph Brock, CMD
Kimberly Marter, CMD
Andrea Hall, CMD
Adam Schrum, CMD
Kristin Krudys, CMD
Eric Kusmaul, CMD
Erica Fisler, CMD
David Alicia, CMD
Daniel Redell, CMD
Megan Steinberg, CMD
Jenna Jatczak, CMD
Michelle Mundis, CMD
Elizabeth Manuel, CMD
Thomas Houser, CMD
Cameron Moody, CMD

Clinical Faculty (Medical Instructors):

William Regine, MD
Elizabeth Nichols, MD
Young Kwok, MD
Sally Cheston, MD
Wendla Citron, MD
Sarah McAvoy, MD
Mark Mishra, MD
Jason Molitoris, MD

Learning Resources

Classroom & Instructional Facilities

The Nicola Regine Conference Room:

The Radiation Oncology Department conference room is used for all lectures. This conference room is equipped with a projector for all PC based lectures, review of CT, MRI and PET studies from the department of Radiology and Nuclear Medicine. There is also a whiteboard available for more explanations that are detailed.

UMMC/Midtown Campus:

Multiple computer classroom locations are available at these two campuses. They allow each individual student to utilize a computer workstation with access to the treatment planning system (TPS) and clinical software. An instructor has access to their own workstation in which they present material from onto a projection screen and/or monitor. This allows students the ability to work alongside the instructor. These locations are used most often during the Introduction to Dosimetry Curriculum (also known as Bootcamp) as well as throughout Treatment Planning Labs.

University of Maryland Health Sciences and Human Services Library (HS/HSL):

This facility is located across the street from the Department of Radiation Oncology, serving all schools on campus and the University of Maryland Medical Center. It contains more than 350,000 volumes, including more than 2,500 journal titles. It has more than 900 seats, 40 study rooms, 3 microcomputer labs, a satellite conferencing center and network connections throughout the building. It allows the trainee quiet access to the Internet to do research as well as a space to study as needed.

Designated Computer Workstation:

Trainees each have their own designated computer workstation with dual monitors, in the dosimetry area of UMMC. This workstation has access to RayStation and Eclipse TPS software as well as other clinical software. This computer is available to each individual student at all times for didactic and clinical assignments.

Internet access:

Trainees have onsite and virtual internet access to their dedicated computer workstations.

Textbooks & Supplies:

The dosimetry area of UMMC maintains a library of textbooks specifically for dosimetry students. It also contains some copies of dosimetry related journals and other study materials. Additionally trainees have access to our residents' library that contains scores of books on radiation therapy and scholarly journals in the field. Office supplies are available in this area as well and can be requested through the program director, clinical coordinator and/or dosimetry program administrator as necessary.

Academic Requirements

Grading Policy and Graduation Requirements

The trainees of the Medical Dosimetry Program at University of Maryland Medical Center are evaluated in an ongoing basis from the beginning to the end of the one-year program. The grading plan accumulates performance from clinical practicum, didactic class performance, completion of coursework and homework, completion of trainee presentations and associated preparation, and attendance. The grading policies are disclosed herein, to trainees, prospective trainees, faculty and staff. This grading policy is under continuous development to meet changes in the program and to adapt to shortcomings in its design.

Trainees must maintain a 3.0 GPA (B grade) or higher, in order to avoid failing the program of Medical Dosimetry. Graduates with a GPA of 3.0 (B grade) and greater will successfully complete the program, and receive a certificate of completion from the Medical Dosimetry Program.

For grading policies of the individual courses, please refer to the syllabi for the individual courses.

Program Grading Scale

The absolute numerical grading system was discarded in favor of a normalized grading system starting September 2008. Due to a large number of faculty involved with teaching and relatively small number of dosimetry trainees, there is a large variation in the difficulty level of the various exams used for trainee assessment. The relative or normalized grading is introduced to make the assessment process fair to the trainees and reduce “fluctuations” from faculty to faculty and from one year to the next. The normalized grade is largely based on the mean and standard deviation. Usually, 1.25 standard deviation above the average score is an A, and the average is “defined” to be between, B- and a B depending on the course. This grading scheme subject to adjustment based on the discretion of the particular faculty member involved. The assigned grade must reflect the trainees ability compared to competent dosimetrists in our department as well as across the country. Medical dosimetry trainees also attend some courses taught at the same level as radiation oncology residents and medical physics residents, such as the biology and physics didactic lectures. Separate exams are given to dosimetry trainees to ensure the tested information is at a level appropriate for that of a future dosimetrist. The following scale is used for GPA assignment.

Points	Letter Grade	GPA
97-100	A	4.00
93-96	A-	3.67
89-92	B+	3.33
85-88	B	3.00
81-84	B-	2.67
77-80	C+	2.33
73-76	C	1.67
69-72	C-	1.33
65-68	D	1.00
Below 65	F	0.00

Scheduled Reporting of Grades to Trainees

The trainees will receive the evaluations of the tests and exams in a timely manner so that they are aware of their overall standing at any given time and to be in compliance with JRCERT standards. The trainees falling short of the 3.0 GPA (B grade) average will be required to spend extra time with the director, clinical coordinator and appropriate faculty to maintain the minimum standard.

Due Process Procedures

Trainees with a complaint should first present the complaint orally to the person(s) involved. If the complaint is not resolved in five business days, the trainee can present a formal written complaint to the program director. This formal written complaint should be filed within ten business days of the original oral presentation. A review of the appeal and rendering of a decision will be completed within five business days. If the trainee wishes to appeal beyond the program director, he or she can file a written appeal to the Human Resources Department.

The appeal process of the Human Resources Department is outlined in detail on our intranet at: http://intra.umms.org/-/media/intranets/ummc/pdfs/policies/hr/hrm-501cs.pdf?upd=20150701205103

A copy of this document will be provided to any trainee upon request.

Reporting Non-Compliance of JRCERT standards

The Program adheres to the standards for medical dosimetry set by JRCERT ("Standards-MD"). The procedure for reporting non-compliance can be found the JRCERT website and will be given to each trainee in printed form at the start of the program. The form for filing complaints can be found at: http://www.jrcert.org/pdfs/accreditation_process/forms_&_checklists/other_forms/allegati_ons reporting form.pdf

Disciplinary Action

Any activities or behavior that violate the policy and procedures of the University of Maryland Medical Center as outlined in the policy and procedure manual of the University of Maryland Medical Center (the sponsoring organization of this program) and located on the intranet will be grounds for disciplinary action to include dismissal from the program.

Confidentiality

Trainee records will be maintained in accordance with JRCERT standards and the Family Education Rights and Privacy Act (FERPA) (Buckley Amendment).

Curriculum

The length of the program will be 12 months. It consists of 1700 hours of clinical training and 300+ hours of formal classroom, laboratory exercises or modules. There will not be a difference in the length for any trainee with respect to their background.

Program

The University of Maryland Medical Center (UMMC) dosimetry program exists to provide training in the field of medical dosimetry. Upon completion of the program, graduates will be able to:

1. Perform entry-level dosimetry tasks.
2. Develop treatment plans for three-dimension conformal radiotherapy.
3. Develop treatment plans for intensity modulated radiation therapy.
4. Perform hand calculations to verify plan accuracy.
5. Understand the principles of IGRT in treatment planning and delivery
6. Communicate effectively orally and in writing.
7. Function in a professional manner as part of an interdisciplinary team.

Trainee to Instructor Ratio

Trainee to instructor ratio of 2:1

Academic Calendar

This year long program commences the first week of July.
Didactic courses will be offered to the students on a weekly basis during a majority of the academic year. These courses are taught by department faculty and the day and time which they are taught may vary year to year. They will account for roughly 2 hours a week of the student's time.

Clinical hours for trainees are in accordance with the normal clinic schedule, Monday - Friday, 7:30 a.m. - 4:00 p.m., however this is subject to change depending on the number of patients under treatment and availability of clinical preceptors. Trainees are not required to work as a part of clinical practicum beyond normal operating hours or observed holidays honored by the University of Maryland Medical System. Trainees are not to exceed 40 hours per week of clinical practicum hours. The University of Maryland Medical System recognizes 7 holidays a year, during which the department of radiation oncology is closed. The 7 holidays in which the trainee will not participate in clinical activities due to department closure and lack of required supervision are New Year's Day, Martin Luther King Holiday, Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day. Students are required to take a lunch break during their clinical days.

The academic year has two semesters (fall and spring). The fall semester runs from July through December, the spring semester runs January through June. Transcripts will be given for both semesters.

Curriculum Outline

Course #	Credits	Course Name
First Semester (20 Credits)		
DOS21.100	2.0	Introduction to Medical Dosimetry
A.	0.2	Healthcare Ethics & Professional Conduct
B.	0.2	Medical Terminology
C.	0.2	Computers & Computer Networking
D.	0.2	Math Review for Dosimetrists
E.	0.2	ICRU Concepts
F.	0.2	Imaging, Simulation & Patient Data Acquisition
G.	0.8	Cross Sectional Anatomy & Introduction to 3D Planning
DOS21.101	2.0	Fundamental of Medical Management of Cancer I
DOS21.102	2.0	Medical Treatment Planning Concepts I
DOS21.103	5.0	Medical Treatment Planning Labs I
DOS21.104	3.0	Clinical Practicum I
DOS21.105	2.0	Radiobiology and Pathophysiology I
DOS21.106	3.0	Radiation Physics I
DOS21.107	1.0	Treatment Planning Project I
Second Semester (20 Credits)		
DOS21.201	2.0	Fundamental of Medical Management of Cancer II
DOS21.202	2.0	Medical Treatment Planning Concepts II
DOS21.203	5.0	Medical Treatment Planning Labs II
DOS21.204	5.0	Clinical Practicum II
DOS21.205	2.0	Radiobiology and Pathophysiology II
DOS21.206	3.0	Radiation Physics II
DOS21.207	1.0	Treatment Planning Project II

Course Descriptions

DOS21.100	Introduction to Medical Dosimetry
A.	**Healthcare Ethics & Professional Conduct** An introduction to the profession of medical dosimetry and its standards, scope of practice, ethical codes and professional conduct are detailed in this course. Students will learn the major ethical philosophies and rules and how they apply to health care.
B.	**Medical Terminology** Commonly used radiation oncology terminology will be reviewed.
C.	**Computers & Computer Networking** Basic computer terminology, features of computer hardware components and their functions, software essentials, programs and applications of computers used in radiation oncology will be introduced. Security for computers and networking in the health care environment will be discussed. Protocols in healthcare, imaging, and radiation oncology will be reviewed.
D.	**Math Review for Dosimetrists** Basic mathematical concepts and calculations utilized in dosimetry will be reviewed. This includes the study of geometry, trigonometry, and algebraic principles.
E.	**ICRU Concepts** The International Commission on Radiation Units and Measurements reports and standards and how they apply to the field of radiation oncology will be examined.

F.	**Imaging, Simulation & Patient Data Acquisition** This course reviews the production of medical images used in radiation oncology, including CT, PET and MRI. Techniques of simulation with respect to patient set-ups and treatment devices are explored. Basic principles of data acquisition and tumor localization are also addressed.
G.	**Cross Sectional Anatomy & Introduction to 3D Planning** Anatomical structures and functions which affect the treatment planning process are examined. Students learn to become proficient with identification and contouring of anatomic structures on radiographs, CTs, and MRI images. As a part of this course students will be introduced to the treatment planning system.
DOS21.101 & 201	**Fundamental of Medical Management of Cancer I and II** Trainees will learn about the medical management of cancer by attending weekly treatment planning rounds and new case conferences in which all patients under treatment are peer-reviewed by the radiation oncology team. A thorough discussion of new patient case details takes place during these conferences. Trainees will also attend physics educational events, occurring at least monthly and focusing on emerging technology within the field of radiation oncology. Other educational conferences offered and attended by trainees will be counted for credit of this course as well.
DOS21.102 & 202	**Medical Treatment Planning Concepts I and II** Lectures and methods of planning will be reviewed for both 3DCRT and IMRT/VMAT in at least eight anatomical sites, reviewing key planning details including contouring organs at risk, technical components of developing a treatment plan, dose constraints, target coverage goals and how to properly evaluate a plan.
DOS21.103 & 203	**Medical Treatment Planning Labs I and II** Students will use the information provided to them during their Medical Treatment Planning Concept lectures and create their own treatment plans on a data set. Plans will then be evaluated for clinical competency to ensure the trainee is able to produce treatable plans for at least eight anatomical locations with both 3DCRT and IMRT/VMAT.
DOS21.104 & 204	**Clinical Practicum I and II** Students will gain clinical experience under supervision of the clinical preceptor at designated clinical sites. This will include reviewing simulation procedures and set up, assisting with image fusions, contouring of organs at risk, developing treatment plans, reviewing plans with radiation oncologists, participating in plan quality assurance procedures and plan documentation. *** Students will be required to be on-site and rotate through the clinical practice sites**
DOS21.105 & 205	**Radiobiology and Pathophysiology I and II** Students will attend weekly lectures held by the biology faculty of the University of Maryland. This lecture course reviews the effect of radiation on the human body in the context of radiation therapy.
DOS21.106 & 206	**Radiation Physics I and II** Students will attend weekly lectures held by the physics faculty of the University of Maryland. They will be introduced to physics concepts that relate to the production of radiation and its use in treating cancer. Dose measurement and instruments utilized within the field of radiation oncology will be reviewed. Quality assurance procedures will also be discussed.
DOS21.107 & 207	**Treatment Planning Project I and II** Students will attend journal club as it is offered and/or available. Students will be introduced to fundamental principles guiding research in radiation oncology. A research topic that is relevant to the clinic will be chosen and students will be provided with a research mentor group consisting of a physicist, dosimetrist and physician. They will conduct background research to understand the current information and research within their subject and develop a literature review of their findings. Students will then conduct research under supervision of their research team and develop a final research project presentation that will be given to dosimetry, physics, and physician faculty members.

Clinical Practicum

Clinical Practice Locations

Our program has one main campus and two clinical practice settings at off-site treatment facilities affiliated with the University of Maryland Medical System (UMMS):

University of Maryland Medical Center (UMMC)
22 South Greene Street
Baltimore, Maryland, 21201
410-328-0777
Clinical Coordinator: Michelle Mundis, MS, CMD
* Maryland Proton Treatment Center (MPTC) affiliated and on campus location

Central Maryland Radiation Oncology Center (CMRO)
10710 Charter Drive #G030
Columbia, Maryland 21044
443-546-1330
Preceptor: Adam Schrum, CMD

Tate Cancer Center at Baltimore Washington Medical Center (BWMC)
305 Hospital Drive
Glen Burnie, Maryland, 21061
410-553-8100
Preceptor: Eric Kusmaul, CMD

Clinical Practice Equipment Details

- Simulators
    - Philips Brilliance Big Bore Multi-slice (Siemens SOMATOM go.Open Pro) CT/Simulator
    - Varian Acuity Fluoroscopic Simulator
- Immobilization Devices
    - Vac-Loc bags
    - Med-Tec Breast Boards
    - Alpha-Cradles
    - Pituitary head holder and BOS Frame Systems
    - Encompass SRS Fibreplast System
- Linear Accelerators (4)
    - Varian Clinac 21EX
    - Varian Trilogy with Stereotactic Capabilities, On Board Imaging and Cone-beam CT (CBCT)
    - Varian TrueBeam Edge
    - Varian Truebeam
- Cyclotron (Proton Treatment Machine)
    - Varian ProBeam
- Treatment Planning Systems
    - Varian Eclipse
    - RaySearch RayStation
    - Nucletron Oncentra (Brachytherapy HDR Planning)
    - Varian VariSeed (Brachytherapy LDR Planning)
- Image Guided Radiation Therapy Systems
    - Varian kV on-board imager and Cone-beam CT (CBCT)
    - Varian RPM respiratory motion management system
    - Vision RT surface localization and tracking system

In addition to the above equipment, Radiation Oncology Department has numerous radiation measurement devices including ionization chambers, survey meters, OSL detectors and film.

Clinical Practice Dosimetry Staff Details

UMMC employs four MDCB certified dosimetrists; CMRO employs two certified dosimetrists; BWMC employs two certified dosimetrists. The Faculty includes a hosts of physicists, clinicians, and radiobiologists, see the program organizational chart and/or instructors listing for more information.

Clinical Obligations and Responsibilities

Purpose

Preceptors and clinical staff are valued professionals who help in the educational process to form, mentor, and provide valuable experience to student trainees. These guidelines outline responsibilities of preceptors, students, and the clinical staff learning team.

Trainee Responsibilities

The learning experience can be optimized by the following guidelines:

Preceptor Assignments
Student's clinical practicum rotations and clinical site visitation to a clinical preceptor's site are assigned and approved by the Program Director, Chief Dosimetrist, and Clinical Coordinator.

Contact with Preceptor
Trainees must contact the preceptor prior to the first clinical day to make an initial introduction and verify arrival time and necessary logistics. The Clinical Coordinator will assist the trainee in providing contact information of the preceptor and aid in arranging a meeting time. Any changes to the start or end time of the clinical day must be approved by the Program Director and/or Clinical Coordinator as well as the Chief Dosimetrist.
Trainees will meet with the preceptor and other staff dosimetrists, if available, involved in their training at the clinical site prior to beginning clinical hours.

Documentation of Clinical Hours
Trainees are to keep a record of their clinical hours and schedule. Approved time off during the clinical rotation must be communicated to the clinical site preceptor as well as the Chief Dosimetrist and Clinical Coordinator. Changes to the approved time off must be submitted in writing to the Chief Dosimetrist and Clinical Coordinator and approved before implementation.

Attendance at Clinical Sites
Trainees are expected to treat the clinical rotation schedule as a professional contract. If the trainee is to be absent, the preceptor should be notified prior to the beginning of the clinical day or given as much advanced notice as possible. Trainees also must contact the Clinical Coordinator and Chief Dosimetrist promptly. Trainees are not sole owners on any clinical tasks, however if they are working with a preceptor or staff on a task and feel assistance on the task is needed while they are absent they should provide the professional courtesy of reminding the preceptor or staff of the task and report to them their current progress on the task.

Evaluation of Clinical Site and Preceptor
Trainees are required to evaluate their preceptors, clinical site and dosimetry staff at the end of the program. However, if there are issues at a clinical site, with a preceptor or staff member, the trainee should make the Clinical Coordinator, and/or Program Director, and/or Chief Dosimetrist aware immediately. Trainees should refer to the grievance policy as necessary if they feel it is warranted.

Preceptor Responsibilities

Application and Documentation of Credentials
A current affiliation agreement with the UMMC Medical Dosimetry Program must be in place prior to the student being on site for clinical practicum. Documentation of the preceptor license and credentials to practice is required by the Joint Commission of Education in Radiologic Technology (JRCERT) to assure the quality of providers who mentor students. These documents must be available to the visiting accrediting bodies during program evaluation and renewal. The documentation is placed in the Medical Dosimetry Program accreditation files.

Oversight of the Trainee
Preceptors provide direct oversight of a Trainee. Under a preceptor arrangement, the Program Director may not be consistently at the clinical site, therefore preceptors must provide continuous oversight of a trainee, and the trainee may not be left under the supervision of unlicensed personnel. Preceptors are responsible for obtaining feedback related to the students' performance from the certified staff and are ultimately responsible for student evaluation.

Communication with Medical Dosimetry Staff
Trainees will provide preceptors with contact information. Preceptors and dosimetry staff are encouraged to contact the Program Director at any time. The Program Director and Clinical Coordinator as well as Chief Dosimetrist must be contacted immediately for situations involving a trainee's unsafe practice, unethical conduct, or changes in preceptor/certified staff availability. Any concerns expressed by other employees or staff should be communicated to the Program Director. Preceptors will have the opportunity to discuss Trainee's progress with the Program Director or Clinical Coordinator at any time.

Communication with Student
Preceptors are encouraged to provide regular daily feedback to the trainee and final performance reviews to the trainee and program officials. In order for the trainee to resolve any concerns in an expeditious manner, preceptors are encouraged to relate concerns to the trainee when they occur. Written documentation of concerns and resolution must be shared with the Program Director and Clinical Coordinator.

Evaluation of Student
While the Program Director has the ultimate responsibility for the formal evaluation, the preceptor's input provides evidence to support the ratings. The "Clinical Site Rotation-Trainee Performance Evaluation" form provides a guide for collecting and recording data related to student performance. The preceptor's primary role is teaching. In this process, the preceptor will observe the trainee in practice and fit those observations into the evaluation framework. The preceptor not only collects data that verifies trainee competence, but also has the opportunity to support professional practice standards and the credibility of UMMC Medical Dosimetry Program. The preceptor's observations regarding the trainee's performance should be compared with practice standards, corroborated with program officials, and shared with the student. Preceptors need to remember that they do not fail students or impede a student's progress. Rather, the student's performance either meets or fails to meet criteria.

Clinical Staff Learning Team Responsibilities

Preceptor/ Site Approval and Verification of Current Affiliation Agreements
The Program Director confirms that a current affiliation agreement is in place. The Program Director ensures that the preceptor receives information about the clinical objectives, is provided a current program handbook, and how to evaluate the student in the clinical setting. The Program Director maintains documentation of the preceptor license and credentials to practice in the JRCERT accreditation files.

Communication with Preceptors
The Clinical Coordinator will contact the preceptor prior to the assigned experience. Information shared include clinical site rotation schedule; names of each trainee; time and method of regular communication; expectations of the preceptor; and method(s) of student performance evaluation. In addition, program officials will communicate with the preceptor at the time of site visits. Additional communications deemed necessary by the Clinical Coordinator or preceptor would be arranged.

Student Preparation
The Clinical Staff Learning Team will orient trainees regarding clinical practice protocols followed at their specific clinical site. Students are responsible for maintaining and following clinical compliance practices during their clinical site rotation. Students however will not be graded on site specific criteria but rather overall dosimetric skills and abilities.

Site Visits & Facilitation of Clinical Activities
The Program Director or assigned program official will make scheduled visits to the clinical site. The purpose of the site visit is to observe and evaluate the trainee in actual practicum situations, to observe and evaluate the trainee's interaction with staff and preceptor, and to evaluate the facility.

Student Evaluation
The requirements and evaluation criteria for successful trainee performance is found in the course syllabus and clinical site performance evaluation forms. Evaluations by the preceptor with input from the staff dosimetrists are an important component of the student performance. Open communication between the dosimetry staff, preceptor and trainee is essential for trainee success. The Program Director assumes the ultimate responsibility for the evaluation of the student. While specific criteria is identified in each program, program officials utilize a combination of methods including making the site visit(s) to observe the trainees performance and interactions with trainee, staff, and preceptor. Regular review of clinical documentation and supportive evidence from the clinical preceptor are utilized.

Clinical Site Evaluations
The Program Director or Clinical Coordinator will complete a regular review of each clinical site using information from trainees' evaluations of preceptor, preceptor evaluations and site visits. The review of clinical sites will be included in the program assessment reports and shared with the Medical Dosimetry Advisory Committee for review and modifications.

Policies

Enrollment Policies

The Enrollment Policies of the University of Maryland Medical Center Medical Dosimetry Program are instituted to provide a scholastic, professional and fair environment. This section of the handbook focuses on the four major areas of enrollment; acceptance, program completion, probation and dismissal. All aspects are reviewed by the Medical Dosimetry Program Advisory Committee:

Acceptance:

Up to Four positions are available each year and filled by individual applicants. The individual applicant, accepted to fill one position, must complete the application process, submitting all pertinent documentation of application form, school records and transcripts, recommendation letters and references, and assurance that all information is honest and true. The administrative coordinator will ensure that all documentation has been received and ensure documentation is kept secure.

The Medical Dosimetry Program Selection Committee, composed of the Program Director, Clinical Coordinator, Chief Dosimetrist or their designee, and the Chief of Clinical Medical Physics or their designated faculty physicist shall review all applications that were received and compiled by the administrative coordinator. This committee will complete a secondary verification that all application materials were received. The committee will then ensure that each individual applicant meets the programs admissions requirements. Depending then on the number of candidates and number of positions available, this committee will select the number and individual applicants to invite to interview for the positions available.

Interviews are conducted virtually. Each year, the program invites 4 or more candidates to interview for entry into the program, again dependent upon the number of applicants. Generally a maximum of 15 applicants are invited for interviews, however this is subject to change and may depend upon how many positions are available. Should the number of applicants exceed the specified maximum number of applicants invited to interview during a given year, and should an applicant invited to interview reject an offer to interview; the next applicant, ranked from the application review process shall be invited for interview and so on and so forth.

The final selection of all trainees will be through the admissions committee. Admission data will be kept on file for five years in the department of radiation oncology. All federal and state nondiscriminatory laws are observed.

The admissions committee will consist of at least the following individuals:

1. Physician Representative
2. Program Director
3. Clinical Coordinator
4. Chief or Associate Chief of Medical Physics

5. Chief Medical Dosimetrist or Designee
6. Staff Dosimetrist
7. Executive Administrator

An objective scoring system shall be used by the admissions committee to review GPA, letters of recommendation, letter of intent of the applicant and past professional experience, as well as other designated criteria during the actual interview process including but not limited to the closest match of interest of the applicant, experience, GPA, level of professionalism, and ability to complete a written exam that highlights the subject matter required for admittance.

All Applications are due on December 1st of the year prior of starting the program. Interviews are conducted no later than March of the year the trainee would start the program.
Acceptance may be denied based on the candidate being under-ranked relative to other applicants in GPA, recommendation, statement of interest, professional experience and overall performance in the interview process. Acceptance may also be revoked if a candidate is found to have submitted untrue information, or misled the program into believing any information submitted in the application that may be related to another person. Applications are reviewed objectively. In the application process, age, sex, and race are omitted. Ultimately, the application process is aiming towards an objective, performance-based evaluation to find the best candidate to perform the trainee role in the program.

Initial UMMC Employee Probationary Period

Trainees of the Medical Dosimetry Program become employed by the University of Maryland Medical Center as dosimetry trainees when they join the program. The UMMC policy and procedures institute a 6 month probationary period on all full-time hospital employees.

Trainees will not have access to the appeal process during initial review, as this is not available to employees of UMMC, until after they complete their initial 6 month probationary period. This does not mean the trainee starts the program in bad standing, rather this signifies that UMMC reserves the right to oversee employee conduct, professional ability and commitment to patient care through direct approach from administration if that is necessary. Such circumstances would become active if a trainee was to display disciplinary misconduct, failure to show up for work, or evident inability to conduct basic tasks assigned during the initial 6 months of employment. The trainees are advised to review the UMMC guidelines on the UMMC intranet website. A copy of the appeal process is also available to prospective trainees on request. The intranet link for all policies and procedures is http://intra.umms.org/ummc/policies/human-resources

Completion of the Program

Completion of the one-year program will yield a Certificate of Completion and its associated benefits, as the trainee may expect to support application for other employment. Completion is important to our program. We encourage each trainee to advance and to complete the program to the best of their ability. However, it is important that all competencies be completed. Delays in completion are addressed in the monthly program director meetings and if necessary by meeting with the Program Director and Clinical Coordinator, as this may be required. If a trainee falls outside of the bounds of reasonable time to complete a competency requirement, displays undue behavior, disrespect of faculty and staff, or deliberately decides not to conduct certain competencies, the trainee will default to a probationary period.

At completion of the program the school goals shall be met:

1) Demonstrate a clear understanding of medical dosimetry of radiation oncology so that the trainees can easily adapt to ever changing technology.
2) Design treatment plans for three-dimensional conformal radiotherapy (3DCRT).
3) Design treatment plans for intensity modulated radiation therapy (IMRT).
4) Perform hand calculations to verify plan accuracy.
5) Understand image-guided radiation therapy (IGRT) as it applies to radiation treatment planning and delivery
6) Effectively communicate with an interdisciplinary radiation oncology team.
7) Pursue a career that embraces professional development.

The Medical Dosimetry Program believes deeply in these goals and will guide each trainee to reach these goals recognizing that trainees may fall behind at times or need additional support. Unkind, inhumane, disrespectful or belligerent behavior will not be fostered and trainees exhibiting such trends will be held accountable in a probationary period.

Medical Dosimetry Program Probationary Period

Trainees are hospital employees and are subject to policies and procedures within hospital grounds. Hospital employees are sanctioned, and possibly dismissed due to smoking on hospital grounds, inappropriate behavior, time and attendance, activities that place patient care at risk, or unwillingness to conduct assigned work. Within the program of Medical Dosimetry, focus is placed on trainee achievement in learning, and clinical duties. The trainee shall enter a period of probation within the Medical Dosimetry Program that will span from 1 to 3 months. For example, if a trainee fails more than one of the courses during a single month's time, the trainee will be advised of this.

The Medical Dosimetry Advisory Committee will assign the Program Director, or Clinical Coordinator to discuss the trainee's performance with the trainee. In such discussion the source of the failure in that competency shall be reviewed with the trainee, and a formal written statement describing the performance improvement plan will be delivered to the trainee and signed of awareness by the trainee. The trainee will be allowed to explain the reasons for such performance and a solution will be proposed by the Clinical Coordinator or Program Director. Review of progress will occur in one month. If the trainee has recovered to a passing performance in all areas, the trainee will be released of the probationary period, with due note in writing. If the trainee does not correct the performance in all areas to be at passing or better, the trainee will have a committee meeting. At the committee meeting the trainee will be allowed to explain if extraordinary circumstances are preventing the trainee from performing at an acceptable level in the program, in any one of the areas where the trainee is failing. The status will be summarized by the committee in writing. The trainee will also be asked to return to the committee in one month where performance shall be reviewed. If the trainee returns to normal levels of performance, the probationary period shall be stopped, and the trainee will be expected to continue to perform at an acceptable level, with a letter to the trainee from the committee of the resolution of probation.

Should a trainee show some improvement in performance after the second month of probation, but continue to fail in one or more areas, the trainee will be granted one final month of probation before the hospital is advised to consider dismissal at the administrative level. Also, at this point the trainee will be clearly informed in person and in writing of these circumstances and a permanent record will be placed in the trainee file. At the completion of this third month the trainee will have to demonstrate passing level in all areas and will be held in close observation.

Misconduct, failure in any competency, time and attendance, or incomplete assignments will be due cause to initiate termination without further notice.

Should a trainee continue to fail in any area at the completion of the third month of probation a written statement will be issued to the hospital administration to pursue termination of the trainee's contract with UMMC.

The trainee has access to the hospital appeal process if the trainee finds that any probationary period assigned by the Medical Dosimetry Program is not due, is unfair, or simply wishes to challenge the probationary period instituted by the program. Trainees are advised on how to use

the appeal process from the hospital intranet and from the appeal documents provided to each new employee.

Dismissal

A trainee may be dismissed from the program due to extraordinary circumstances such as unusual behavior that may threaten co-workers, staff, faculty, trainees, or patients. Any trainee, who reaches three months of program probation, will also be forwarded for dismissal to the UMMC administration. Dismissal due to trainees violating any aspect of the employee regulations not expressed herein, are at the discretion of the UMMC administration. Such regulations include sexual harassment, threatening intimidation, dangerous behavior, smoking on hospital grounds after disciplinary actions have been taken, or extended absence from work. Trainees are alerted to review the hospital employee handbook from the UMMC intranet at their earliest enrollment in the program.

Withdraw

A trainee may choose at any time to withdraw from the Medical Dosimetry Program at any time and for any reason. If a trainee withdraws from the Medical Dosimetry Program and thus their University of Maryland Medical Center trainee employment position they must do so by formal written notification to both the Chief Dosimetrist who supervises their University of Maryland Medical Center employment and the Program Director who supervises their Medical Dosimetry Program enrollment. A resignation/withdraw date should be specified within this formal written notification and it should be signed by the trainee wishing to withdraw. All applicable hospital policies and procedures for withdraw of employment should be followed.

Radiation Safety

The Radiation Oncology Department of the University of Maryland Medical Center (UMMC) including its regional clinical settings in accordance with the University of Maryland Baltimore (UMB) Radiation Safety Program (http://www.ehs.umaryland.edu) is committed to maintaining all employee radiation exposures and individual members of the public to the lowest possible levels achievable. To accomplish this goal, the radiation safety committee has adopted a formal ALARA Program designed to maintain employee radiation exposure to levels "As Low As Reasonably Achievable".

All trainees will receive radiation safety training conducted by the department's radiation safety officer and all trainees are issued radiation monitor badges when they start the program. The program includes didactic training in radiation safety including basics of radiation protection, applicable state and national rules and regulations, quality assurance in radiation oncology and the department's radiation safety policy. The trainees also participate in an annual radiation safety refresher course, taught by a medical physicist to all radiation workers in the department.

When performing procedures involving radiation, a qualified radiation worker will directly supervise each trainee. Monthly records of the personnel exposure (Film Badge Readings) shall be readily available for trainees review. The monthly records will be reviewed during their monthly meeting with the Program Director.

The declaration of pregnant worker status is voluntary, administered by the office of environmental health and safety, and must be submitted in writing. Declared pregnant trainees will be offered an alternative schedule to gain competency in brachytherapy procedures when sources are present.

Pregnancy Policy

The pregnancy policy will be maintained in accordance with the policies of the University of Maryland Medical Systems, which are discussed in the UMMC policy and procedure manual, procedure #409, leave of absence.

Declaration of Pregnant Worker (DPW) Status

The declaration of pregnant worker status is voluntary and is administered by the office of environmental health and safety. Declared pregnant trainees will be offered an alternative schedule to gain competency in brachytherapy procedures when sources are present. The pregnancy policy of our Department of Environmental Health and Safety is available through their website at: http://www.ehs.umaryland.edu/Radiation%20Safety/Policies/docs/RSP_1_4%20April%201%202005.pdf. Additionally, this page includes a link where one can voluntarily disclose their status as a pregnant radiation worker.

APPENDIX I: JRCERT Standards

https://www.jrcert.org/wp-content/uploads/Documents/Resources/Standards-PDFs/2021-Medical-Dosimetry-Standards.pdf

Standards for an Accredited Educational Program in Medical Dosimetry

Effective January 1, 2021

Adopted April 2020

JRCERT

Excellence in Education

Introductory Statement

The Joint Review Committee on Education in Radiologic Technology (JRCERT) **Standards for an Accredited Educational Program in Medical Dosimetry** are designed to promote academic excellence, patient safety, and quality healthcare. The **Standards** require a program to articulate its purposes; to demonstrate that it has adequate human, physical, and financial resources effectively organized for the accomplishment of its purposes; to document its effectiveness in accomplishing these purposes; and to provide assurance that it can continue to meet accreditation standards.

The JRCERT is recognized by both the United States Department of Education (USDE) and the Council for Higher Education Accreditation (CHEA). The JRCERT **Standards** incorporate many of the regulations required by the USDE for accrediting organizations to assure the quality of education offered by higher education programs. Accountability for performance and transparency are also reflected in the **Standards** as they are key factors for CHEA recognition.

The JRCERT accreditation process offers a means of providing assurance to the public that a program meets specific quality standards. The process not only helps to maintain program quality but stimulates program improvement through outcomes assessment.

There are six (6) standards. Each standard is titled and includes a narrative statement supported by specific objectives. Each objective, in turn, includes the following clarifying elements:

- **Explanation** - provides clarification on the intent and key details of the objective.

- **Required Program Response** - requires the program to provide a brief narrative and/or documentation that demonstrates compliance with the objective.

- **Possible Site Visitor Evaluation Methods** - identifies additional materials that may be examined and personnel who may be interviewed by the site visitors at the time of the on-site evaluation in determining compliance with the particular objective. Review of supplemental materials and/or interviews is at the discretion of the site visit team.

Regarding each standard, the program must:

- Identify strengths related to each standard
- Identify opportunities for improvement related to each standard
- Describe the program's plan for addressing each opportunity for improvement
- Describe any progress already achieved in addressing each opportunity for improvement
- Provide any additional comments in relation to each standard

The self-study report, as well as the results of the on-site evaluation conducted by the site visit team, will determine the program's compliance with the Standards by the JRCERT Board of Directors.

Standards for an Accredited Educational Program in Medical Dosimetry

Table of Contents

Standard One: Accountability, Fair Practices, and Public Information

The sponsoring institution and program promote accountability and fair practices in relation to students, faculty, and the public. Policies and procedures of the sponsoring institution and program must support the rights of students and faculty, be well-defined, written, and readily available.

Objectives:

1.1 The sponsoring institution and program provide students, faculty, and the public with policies, procedures, and relevant information. Policies and procedures must be fair, equitably applied, and readily available.

1.2 The sponsoring institution and program have faculty recruitment and employment practices that are nondiscriminatory.

1.3 The sponsoring institution and program have student recruitment and admission practices that are nondiscriminatory and consistent with published policies.

1.4 The program assures the confidentiality of student educational records.

1.5 The program assures that students and faculty are made aware of the JRCERT **Standards for an Accredited Educational Program in Medical Dosimetry** and the avenue to pursue allegations of noncompliance with the **Standards**.

1.6 The program publishes program effectiveness data (credentialing examination pass rate, job placement rate, and program completion rate) on an annual basis.

1.7 The sponsoring institution and program comply with the requirements to achieve and maintain JRCERT accreditation.

1.1 The sponsoring institution and program provide students, faculty, and the public with policies, procedures, and relevant information. Policies and procedures must be fair, equitably applied, and readily available.

Explanation:
Institutional and program policies and procedures must be fair, equitably applied, and promote professionalism. Policies, procedures, and relevant information must be current, accurate, published, and made readily available to students, faculty, staff, and the public on the institution's or program's website to assure transparency and accountability of the educational program. For example, requiring the public to contact the institution or program to request program information is not fully transparent. Policy changes must be made known to students, faculty, and the public in a timely fashion. It is recommended that revision dates be identified on program publications.

At a minimum, the sponsoring institution and/or program must publish policies, procedures, and/or relevant information related to the following:

- ☐ admission and transfer of credit policies;
- ☐ tuition, fees, and refunds;
- ☐ graduation requirements;
- ☐ grading system;
- ☐ program mission statement, goals, and student learning outcomes;
- ☐ accreditation status;
- ☐ articulation agreement(s);
- ☐ academic calendar;
- ☐ clinical obligations;
- ☐ grievance policy and/or procedures.

Any policy changes to the above must be made known to students, faculty, and the public in a timely fashion.

In addition, programs must develop a contingency plan that addresses any type of catastrophic event that could affect student learning and program operations. Although the contingency plan does not need to be made readily available to the public, program faculty must be made aware of the contingency plan.

Required Program Response:

- Describe how institutional and program policies, procedures, and relevant information are made known to students, faculty, staff, and the public.
- Describe how policies and procedures are fair, equitably applied, and promote professionalism.
- Describe the nature of any formal grievance(s) and/or complaints(s) and their resolution.
- Provide publications that include the aforementioned policies, procedures, and relevant information, including the hyperlink for each.
- Provide a copy of the resolution of any formal grievance(s).

Possible Site Visitor Evaluation Methods:

- Review of institutional and program website
- Review of institutional and program materials
- Review of student handbook
- Review of student records
- Review of formal grievance(s) record(s), if applicable
- Interviews with institutional administration
- Interviews with faculty
- Interviews with staff
- Interviews with students

1.2 The sponsoring institution and program have faculty recruitment and employment practices that are nondiscriminatory.

Explanation:
Nondiscriminatory recruitment and employment practices assure fairness and integrity. Equal opportunity for employment must be offered to each applicant with respect to any legally protected status such as race, color, gender, age, disability, national origin, or any other protected class. Employment practices must be equitably applied.

Required Program Response:

- Describe how nondiscriminatory recruitment and employment practices are assured.
- Provide copies of employment policies and procedures that assure nondiscriminatory practices.

Possible Site Visitor Evaluation Methods:

- Review of employee/faculty handbook
- Review of employee/faculty application form
- Review of institutional catalog
- Interviews with faculty

1.3 The sponsoring institution and program have student recruitment and admission practices that are nondiscriminatory and consistent with published policies.

Explanation:

Nondiscriminatory recruitment practices assure applicants have equal opportunity for admission. Defined admission practices facilitate objective student selection. In considering applicants for admission, the program must follow published policies and procedures. Statistical information such as race, color, religion, gender, age, disability, national origin, or any other protected class may be collected; however, the student must voluntarily provide this information. Use of this information in the student selection process is discriminatory.

Required Program Response:

- Describe how institutional and program admission policies are implemented.
- Describe how admission practices are nondiscriminatory.
- Provide institutional and program admission policies.

Possible Site Visitor Evaluation Methods:

- Review of published program materials
- Review of student records
- Interviews with faculty
- Interviews with admissions personnel, as appropriate
- Interviews with students

1.4 The program assures the confidentiality of student educational records.

Explanation:
Maintaining the confidentiality of educational records protects students' right to privacy. Educational records must be maintained in accordance with the Family Educational Rights and Privacy Act (FERPA). If educational records contain students' social security numbers, this information must be maintained in a secure and confidential manner. Space should be made available for the secure storage of files and records.

Required Program Response:
Describe how the program maintains the confidentiality of students' educational records.

Possible Site Visitor Evaluation Methods:

- Review of institution's/program's published policies/procedures
- Review of student academic and clinical records, including radiation monitoring reports
- Tour of program offices
- Tour of clinical setting(s)
- Interviews with faculty
- Interviews with clerical staff, if applicable
- Interviews with clinical preceptor(s)
- Interviews with clinical staff
- Interviews with students

1.5 The program assures that students and faculty are made aware of the JRCERT **Standards for an Accredited Educational Program in Medical Dosimetry** and the avenue to pursue allegations of noncompliance with the **Standards**.

Explanation:
The program must assure students and faculty are cognizant of the **Standards** and must provide contact information for the JRCERT.

Any individual associated with the program has the right to submit allegations against a JRCERT-accredited program if there is reason to believe that the program has acted contrary to JRCERT accreditation standards and/or JRCERT policies. Additionally, an individual has the right to submit allegations against the program if the student believes that conditions at the program appear to jeopardize the quality of instruction or the general welfare of its students.

Contacting the JRCERT must not be a step in the formal institutional or program grievance policy/procedure. The individual must first attempt to resolve the complaint directly with institutional/program officials by following the grievance policy/procedures provided by the institution/program. If the individual is unable to resolve the complaint with institutional/program officials or believes that the concerns have not been properly addressed, the individual may submit allegations of noncompliance directly to the JRCERT.

Required Program Response:

- Describe how students and faculty are made aware of the **Standards**.
- Provide documentation that the **Standards** and JRCERT contact information are made known to students and faculty.

Possible Site Visitor Evaluation Methods:

- Review of program publications
- Review of program website
- Interviews with faculty
- Interviews with students

1.6 The program publishes program effectiveness data (credentialing examination pass rate, job placement rate, and program completion rate) on an annual basis.

Explanation:
Program accountability is enhanced, in part, by making its program effectiveness data available to the program's communities of interest, including the public. In an effort to increase accountability and transparency, the program must publish, at a minimum, its most recent five-year average credentialing examination pass rate data, five-year average job placement rate data, and annual program completion rate data on its website to allow the public access to this information. If the program cannot document five years of program effectiveness data, it must publish its available effectiveness data.

The program effectiveness data must clearly identify the sample size associated with each measure (i.e., number of first-time test takers, number of graduates actively seeking employment, and number of graduates).

Program effectiveness data is published on the JRCERT website. Programs must publish a hyperlink to the JRCERT website to allow students and the public access to this information.

Required Program Response:
- Provide the hyperlink for the program's effectiveness data webpage.
- Provide samples of publications that document the availability of program effectiveness data via the JRCERT URL address from the program's website.

Possible Site Visitor Evaluation Methods:
- Review of program website
- Review of program publications
- Interviews with faculty
- Interviews with students

1.7 The sponsoring institution and program comply with requirements to achieve and maintain JRCERT accreditation.

Explanation:
Programs must comply with all JRCERT policies and procedures to maintain accreditation. JRCERT policies are located at www.jrcert.org. In addition, substantive changes must be reviewed and approved by the JRCERT prior to implementation, with the exception of a change of ownership.

JRCERT accreditation requires that the sponsoring institution has the primary responsibility for the educational program and grants the terminal award. Sponsoring institutions may include educational programs established in colleges, universities, vocational/technical schools, hospitals, or military facilities. The JRCERT does not recognize a healthcare system as the program sponsor. A healthcare system consists of multiple institutions operating under a common governing body or parent corporation. A specific facility within the healthcare system must be identified as the sponsor. The JRCERT requires each program to have a separate accreditation award and does not recognize branch campuses. The JRCERT recognizes a consortium as an appropriate sponsor of an educational program.

The JRCERT requires programs to maintain a current and accurate database. The program must maintain documentation of all program official qualifications, including updated curricula vitae and current MDCB certification and registration, or equivalent documentation. This documentation is not required to be entered into the Accreditation Management System (AMS). Newly appointed institutional administrators, program officials, and clinical preceptors must be updated through the AMS within thirty (30) days of appointment.

No Required Program Response

Possible Site Visitor Evaluation Method:
Review of a representative sample of program official qualifications

Standard Two: Institutional Commitment and Resources

The sponsoring institution demonstrates a sound financial commitment to the program by assuring sufficient academic, fiscal, personnel, and physical resources to achieve the program's mission.

Objectives:

2.1 The sponsoring institution provides appropriate administrative support and demonstrates a sound financial commitment to the program.

2.2 The sponsoring institution provides the program with the physical resources needed to support the achievement of the program's mission.

2.3 The sponsoring institution provides student resources.

2.4 The sponsoring institution and program maintain compliance with United States Department of Education (USDE) Title IV financial aid policies and procedures, if the JRCERT serves as gatekeeper.

2.1 The sponsoring institution provides appropriate administrative support and demonstrates a sound financial commitment to the program.

Explanation:
The program must have sufficient institutional support and ongoing funding to operate effectively. The program's relative position in the organizational structure helps facilitate appropriate resources and enables the program to meet its mission.

The sponsoring institution should provide the program with administrative/clerical services as needed to assist in the achievement of its mission.

Required Program Response:

- Describe the sponsoring institution's level of commitment to the program.
- Describe the program's position within the sponsoring institution's organizational structure and how this supports the program's mission.
- Describe the adequacy of financial resources.
- Describe the availability and functions of administrative/clerical services, if applicable.
- Provide institutional and program organizational charts.

Possible Site Visitor Evaluation Methods:

- Review of organizational charts of institution and program
- Review of published program materials
- Review of meeting minutes
- Interviews with institutional administration
- Interviews with faculty
- Interviews with clerical staff, if applicable

2.2 The sponsoring institution provides the program with the physical resources needed to support the achievement of the program's mission.

Explanation:
Physical resources include learning environments necessary to conduct teaching and facilitate learning. The sponsoring institution must provide faculty with adequate office and classroom space needed to fulfill their responsibilities. Faculty office space should be conducive to course development and scholarly activities. Space must be made available for private student advisement and program meetings. Classrooms must be appropriately designed to meet the needs of the program's curriculum delivery methods.

Resources include, but are not limited to, access to computers, reliable and secure Internet service, instructional materials (computer hardware and/or software, technology-equipped classrooms, simulation devices, and other instructional aides), and library resources.

Laboratories must be conducive to student learning and sufficient in size. Assignments to a treatment planning laboratory(ies), while educationally valid, shall not replace assignments to clinical settings. Classrooms and treatment planning laboratories must be conducive to student learning, sufficient in size, and appropriately designed to meet the needs of the program's curriculum delivery methods.

The JRCERT does not endorse any specific physical resources.

Required Program Response:
Describe how the program's physical resources, such as offices, classrooms, and laboratories, facilitate the achievement of the program's mission.

Possible Site Visitor Evaluation Methods:
- Tour of the classroom, laboratories, and faculty offices
- Review of learning resources
- Interviews with faculty
- Interviews with students

2.3 The sponsoring institution provides student resources.

Explanation:
Student resources refer to the variety of services and programs offered to promote academic success. The institution and/or program must provide access to information for personal counseling, requesting accommodations for disabilities, and financial aid.

The JRCERT does not endorse any specific student resources.

Required Program Response:

- Describe how students are provided with access to information on personal counseling, disability services, and financial aid.
- Describe how the program utilizes other student resources to promote student success.

Possible Site Visitor Evaluation Methods:

- Tour of facilities
- Review of published program materials
- Review of surveys
- Interviews with faculty
- Interviews with students

2.4 The sponsoring institution and program maintain compliance with United States Department of Education (USDE) Title IV financial aid policies and procedures, if the JRCERT serves as gatekeeper.

Explanation:
If the program has elected to participate in Title IV financial aid and the JRCERT is identified as the gatekeeper, the program must:

- maintain financial documents including audit and budget processes confirming appropriate allocation and use of financial resources;
- have a monitoring process for student loan default rates;
- have an appropriate accounting system providing documentation for management of Title IV financial aid and expenditures; and
- inform students of responsibility for timely repayment of Title IV financial aid.

The program must comply with all USDE requirements to participate in Title IV financial aid.

Required Program Response:

- Describe how the program informs students of their responsibility for timely repayment of financial aid.
- Provide evidence that Title IV financial aid is managed and distributed according to the USDE regulations to include:
    - recent student loan default data and
    - results of financial or compliance audits.

Possible Site Visitor Evaluation Methods:

- Review of records
- Interviews with administrative personnel
- Interviews with faculty
- Interviews with students

Standard Three: Faculty and Staff

The sponsoring institution provides the program adequate and qualified faculty that enable the program to meet its mission and promote student learning.

Objectives:

3.1 The sponsoring institution provides an adequate number of faculty to meet all educational, accreditation, and administrative requirements.

3.2 The sponsoring institution and program assure that all faculty and staff possess the academic and professional qualifications appropriate for their assignments.

3.3 The sponsoring institution and program assure the responsibilities of faculty and clinical staff are delineated and performed.

3.4 The sponsoring institution and program assure program faculty performance is evaluated and results are shared regularly to assure responsibilities are performed.

3.5 The sponsoring institution and/or program provide faculty with opportunities for continued professional development.

3.1 The sponsoring institution provides an adequate number of faculty to meet all educational, accreditation, and administrative requirements.

Explanation:
An adequate number of faculty promotes sound educational practices. Full- and part-time status is determined by, and consistent with, the sponsoring institution's definition. Institutional policies and practices for faculty workload and release time must be consistent with faculty in other comparable health sciences programs in the same institution. Faculty workload and release time practices must include allocating time and/or reducing teaching load for educational, accreditation, and administrative requirements expected of the program director and clinical coordinator.

A full-time program director is required. The program director may also be identified as the radiation therapy program director. A full-time equivalent clinical coordinator is required if the program has more than fifteen (15) students enrolled in the clinical component of the program (e.g., the total number of students simultaneously enrolled in all clinical courses during a term). The clinical coordinator may also be identified as the radiation therapy clinical coordinator. The clinical coordinator position may be shared by no more than four (4) appointees. If a clinical coordinator is required, the program director may not be identified as the clinical coordinator. The clinical coordinator may not be identified as the program director.

A minimum of one clinical preceptor must be designated at each recognized clinical setting. The same clinical preceptor may be identified at more than one site as long as a ratio of one full-time equivalent clinical preceptor for every ten (10) students is maintained. The program director and clinical coordinator may perform clinical instruction; however, they may not be identified as clinical preceptors.

Required Program Response:
- Describe faculty workload and release time in relation to institutional policies/practices and comparable health sciences programs within the sponsoring institution.
- Describe the adequacy of the number of faculty and clinical preceptors to meet identified accreditation requirements and program needs.
- Provide institutional policies for faculty workload and release time.

Possible Site Visitor Evaluation Methods:
- Review institutional policies for faculty workload and release time
- Review of faculty position descriptions, if applicable
- Review of clinical settings
- Interviews with faculty
- Interviews with clinical preceptor(s)
- Interviews with students

3.2 The sponsoring institution and program assure that all faculty and staff possess the academic and professional qualifications appropriate for their assignments.

Position	Qualifications
Program Director	Holds, at a minimum, a master's degree; For master's degree programs, a doctoral degree is preferred;
	Proficient in curriculum design, evaluation, instruction, program administration, and academic advising;
	Documents three years' clinical experience in the professional discipline;
	Documents two years' experience as an instructor in a JRCERT-accredited program;
	Holds current Medical Dosimetrist Certification Board (MDCB) certification or equivalent[1].
Clinical Coordinator	Holds, at a minimum, a bachelor's degree; For master's degree programs, holds, at a minimum, a master's degree;
	Proficient in curriculum development, supervision, instruction, evaluation, and academic advising;
	Documents two years' clinical experience in the professional discipline;
	Documents one year's experience as an instructor in a JRCERT-accredited program;
	Holds current Medical Dosimetrist Certification Board (MDCB) certification or equivalent[1].
Full-time Didactic Faculty	Holds, at a minimum, a bachelor's degree;
	Is qualified to teach the subject;
	Proficient in course development, instruction, evaluation, and academic advising;
	Documents two years' clinical experience in the professional discipline;
	Holds current Medical Dosimetrist Certification Board (MDCB) certification or equivalent[1].
Adjunct Faculty	Holds academic and/or professional credentials appropriate to the subject content area taught;
	Is knowledgeable of course development, instruction, evaluation, and academic advising.
Clinical Preceptor	Is proficient in supervision, instruction, and evaluation;
	Documents two years' clinical experience in the professional discipline;
	Holds current Medical Dosimetrist Certification Board (MDCB) certification or equivalent[1].
Clinical Staff	Holds current Medical Dosimetrist Certification Board (MDCB) certification or equivalent[1].

[1] Equivalent: certification by the American Board of Radiology (ABR) as a radiation oncologist or the American Board of Medical Physicists (ABMP) as a medical physicist.

Explanation:
Faculty and clinical staff must possess academic and professional qualifications appropriate for their assignment. Clinical preceptors and clinical staff supervising students' performance in the clinical component of the program must document Medical Dosimetrist Certification Board (MDCB) certification (or equivalent) or other appropriate credentials. Equivalent qualifications are certification by the American Board of Medical Physics (ABMP) as a medical physicist. Appropriate credentials, other than MDCB, American Board of Radiology (ABR), or ABMP certification and/or registration, may be used for qualified healthcare professionals supervising students in specialty areas (e.g., radiation oncologist or a registered radiation therapist supervising students' observation of therapeutic procedures).

No Required Program Response.

3.3 The sponsoring institution and program assure the responsibilities of faculty and clinical staff are delineated and performed.

Position	Responsibilities must, at a minimum, include:
Program Director	Assuring effective program operations;
	Overseeing ongoing program accreditation and assessment processes;
	Participating in budget planning;
	Participating in didactic and/or clinical instruction, as appropriate;
	Maintaining current knowledge of the professional discipline and educational methodologies through continuing professional development;
	Assuming the leadership role in the continued development of the program.
Clinical Coordinator	Correlating and coordinating clinical education with didactic education and evaluating its effectiveness;
	Participating in didactic and/or clinical instruction;
	Supporting the program director to assure effective program operations;
	Participating in the accreditation and assessment processes;
	Maintaining current knowledge of the professional discipline and educational methodologies through continuing professional development;
	Maintaining current knowledge of program policies, procedures, and student progress.
Full-Time Didactic Faculty	Preparing and maintaining course outlines and objectives, instructing, and evaluating student progress;
	Participating in the accreditation and assessment process;
	Supporting the program director to assure effective program operations;
	Participating in periodic review and revision of course materials;
	Maintaining current knowledge of professional discipline;
	Maintaining appropriate expertise and competence through continuing professional development.
Adjunct Faculty	Preparing and maintaining course outlines and objectives, instructing and evaluating students, and reporting progress;
	Participating in the assessment process, as appropriate;
	Participating in periodic review and revision of course materials;
	Maintaining current knowledge of the professional discipline, as appropriate;
	Maintaining appropriate expertise and competence through continuing professional development.

Position	Responsibilities must, at a minimum, include:
Clinical Preceptor	Maintaining knowledge of program mission and goals;
	Understanding the clinical objectives and clinical evaluation system and evaluating students' clinical competence;
	Providing students with clinical instruction and supervision;
	Participating in the assessment process, as appropriate;
	Maintaining current knowledge of program policies, procedures, and student progress and monitoring and enforcing program policies and procedures.
Clinical Staff	Understanding the clinical competency system;
	Understanding requirements for student supervision;
	Evaluating students' clinical competence, as appropriate;
	Supporting the educational process;
	Maintaining current knowledge of program clinical policies, procedures, and student progress.

Explanation:

Faculty and clinical staff responsibilities must be clearly delineated and support the program's mission. The program director and clinical coordinator may have other responsibilities as defined by the sponsoring institution; however, these added responsibilities must not compromise the ability, or the time allocated, to perform the responsibilities identified in this objective. For all circumstances when a program director's and/or clinical coordinator's appointment is less than 12 months and students are enrolled in didactic and/or clinical courses, the program director and/or clinical coordinator must assure that all program responsibilities are fulfilled.

Required Program Response:

- Describe how faculty and clinical staff responsibilities are delineated.
- Describe how the delegation of responsibilities occurs to assure continuous coverage of program responsibilities, if appropriate.
- Provide documentation that faculty and clinical staff positions are clearly delineated.
- Provide assurance that faculty responsibilities are fulfilled throughout the year.

Possible Site Visitor Evaluation Methods:

- Review of position descriptions
- Review of handbooks
- Interviews with institutional administration
- Interviews with faculty
- Interviews with clinical preceptors
- Interviews with clinical staff
- Interviews with students

3.4 The sponsoring institution and program assure program faculty performance is evaluated and results are shared regularly to assure responsibilities are performed.

Explanation:
Evaluating program faculty, including but not limited to program directors and clinical coordinators, assures that responsibilities are performed, promotes proper teaching methodology, and increases program effectiveness. The performance of program faculty must be evaluated and shared minimally once per year. Any evaluation results that identify concerns must be discussed with the respective individual(s) as soon as possible.

It is the prerogative of the program to evaluate the performance of clinical preceptors who are employees of clinical settings. If the program elects to evaluate the clinical preceptors, a description of the evaluation process should be provided to the clinical preceptors, along with the mechanism to incorporate feedback into professional growth and development.

Required Program Response:
- Describe the evaluation process.
- Describe how evaluation results are shared with program faculty.
- Describe how evaluation results are shared with clinical preceptors, if applicable.
- Provide samples of evaluations of program faculty.
- Provide samples of evaluations of clinical preceptors, if applicable.

Possible Site Visitor Evaluation Methods:
- Review of program evaluation materials
- Review of faculty evaluation(s)
- Review of clinical preceptor evaluation(s), if applicable
- Interviews with institutional administration
- Interviews with faculty
- Interviews with clinical preceptor(s), if applicable
- Interviews with students

3.5 The sponsoring institution and/or program provides faculty with opportunities for continued professional development.

Explanation:
Opportunities that enhance and advance educational, technical, and professional knowledge must be available to program faculty. Faculty should take advantage of the available resources provided on an institutional campus. Program faculty should not be expected to use personal leave time in order to attend professional development activities external to the sponsoring institution.

Required Program Response:

- Describe how professional development opportunities are made available to faculty.
- Describe how professional development opportunities have enhanced teaching methodologies.

Possible Site Visitor Evaluation Methods:

- Review of institutional and/or program policies for professional development
- Interviews with institutional administration
- Interviews with faculty

Standard Four: Curriculum and Academic Practices

The program's curriculum and academic practices prepare students for professional practice.

Objectives:

4.1 The program has a mission statement that defines its purpose.

4.2 The program provides a well-structured curriculum that prepares students to practice in the professional discipline.

4.3 All clinical settings must be recognized by the JRCERT.

4.4 The program provides timely, equitable, and educationally valid clinical experiences for all students.

4.5 The program provides learning opportunities in advanced and/or therapeutic technologies.

4.6 The program assures an appropriate relationship between program length and the subject matter taught for the terminal award offered.

4.7 The program measures didactic, laboratory, and clinical courses in clock hours and/or credit hours through the use of a consistent formula.

4.8 The program provides timely and supportive academic and clinical advisement to students enrolled in the program.

4.9 The program has procedures for maintaining the integrity of distance education courses.

4.1 The program has a mission statement that defines its purpose.

Explanation:

The program's mission statement should clearly define the purpose or intent toward which the program's efforts are directed. The mission statement should support the mission of the sponsoring institution. The program must evaluate the mission statement, at a minimum every three years, to assure it is effective. The program should engage faculty and other communities of interest in the reevaluation of its mission statement.

Required Program Response:

- Describe how the program's mission supports the mission of the sponsoring institution.
- Describe how the program reevaluates its mission statement.
- Provide documentation of the reevaluation of the mission statement.

Possible Site Visitor Evaluation Methods:

- Review of published program materials
- Review of meeting minutes
- Interviews with institutional administration
- Interviews with faculty

4.2 The program provides a well-structured curriculum that prepares students to practice in the professional discipline.

Explanation:

A well-structured curriculum must be comprehensive, current, appropriately sequenced, and provide for evaluation of student achievement. This allows for effective student learning by providing a knowledge foundation in didactic and laboratory courses prior to competency achievement. Continual refinement of the competencies achieved is necessary so that students can demonstrate enhanced performance in a variety of situations and patient conditions. The well-structured curriculum is guided by a master plan of education.

At a minimum, the curriculum should promote qualities that are necessary for students/graduates to practice competently, make ethical decisions, assess situations, provide appropriate patient care, communicate effectively, and keep abreast of current advancements within the profession. Expansion of the curricular content beyond the minimum is required of programs at the bachelor's degree or higher levels.

Use of a standard curriculum promotes consistency in medical dosimetry education and prepares the student to practice in the professional discipline. All programs must follow a JRCERT-adopted curriculum. An adopted curriculum is defined as:

- the most recent American Association of Medical Dosimetrists (AAMD) professional curriculum and/or
- another professional curriculum adopted by the JRCERT Board of Directors.

The JRCERT encourages innovative approaches to curriculum delivery methods that provide students with flexible and creative learning opportunities. These methods may include, but are not limited to, distance education courses, part-time/evening curricular tracks, service learning, and/or interprofessional development.

Required Program Response:

- Describe how the program's curriculum is structured.
- Describe the program's clinical competency-based system.
- Describe how the program's curriculum is delivered, including the method of delivery for distance education courses. Identify which courses, if any, are offered via distance education.
- Describe alternative learning options, if applicable (e.g., part-time, evening and/or weekend curricular track(s)).
- Describe any innovative approaches to curriculum delivery methods.
- Provide the Table of Contents from the master plan of education.
- Provide current curriculum analysis grid.
- Provide samples of course syllabi.

Possible Site Visitor Evaluation Methods:

- Review of the master plan of education
- Review of didactic and clinical curriculum sequence
- Review of input from communities of interest
- Review of part-time, evening and/or weekend curricular track(s), if applicable
- Review of course syllabi
- Observation of a portion of any course offered via distance delivery
- Interviews with faculty
- Interviews with students

4.3 All clinical settings must be recognized by the JRCERT.

Explanation:
All clinical settings must be recognized by the JRCERT. Clinical settings must be recognized prior to student assignment. Ancillary medical facilities and imaging centers that are owned, operated, and on the same campus of a recognized setting do not require JRCERT recognition. A minimum of one (1) clinical preceptor must be identified for each recognized clinical setting.

If a facility is used as an observation site, JRCERT recognition is not required. An observation site is used for student observation of equipment operation and/or procedures that may not be available at recognized clinical settings. Students may not assist in, or perform, any aspects of patient care during observational assignments. Facilities where students participate in community-based learning do not require recognition.

Required Program Response:
- Assure all clinical settings are recognized by the JRCERT.
- Provide a listing of ancillary facilities under one clinical setting recognition.
- Describe how observation sites, if used, enhance student clinical education.

Possible Site Visitor Evaluation Methods:
- Review of JRCERT database
- Review of clinical records
- Interviews with faculty
- Interviews with clinical preceptors
- Interviews with clinical staff
- Interviews with students

4.4 The program provides timely, equitable, and educationally valid clinical experiences for all students.

Explanation:

Programs must have a process in place to assure timely, appropriate, and educationally valid clinical experiences to all admitted students. A meaningful clinical education plan assures that activities are equitable, as well as prevents the use of students as replacements for employees. Students must have sufficient access to clinical settings that provide a wide range of procedures for competency achievement. The maximum number of students assigned to a clinical setting must be supported by sufficient human and physical resources. The medical dosimetry student to medical dosimetry staff ratio must always be no more than 2:1.

Clinical placement must be nondiscriminatory in nature and solely determined by the program. Students must be cognizant of clinical policies and procedures including emergency preparedness and medical emergencies.

Programs must assure that clinical involvement for students is limited to not more than ten (10) hours per day. If the program utilizes evening and/or weekend assignments, these assignments must be equitable, and program total capacity must not be increased based on these assignments. Students may not be assigned to clinical settings on holidays that are observed by the sponsoring institution. Programs may permit students to make up clinical time during the term or scheduled breaks; however, appropriate supervision must be maintained. Program faculty need not be physically present; however, students must be able to contact program faculty during makeup assignments. The program must also assure that its liability insurance covers students during these makeup assignments.

Required Program Response:

- Describe the process for student clinical placement including, but not limited to:
    - assuring equitable learning opportunities,
    - assuring access to a sufficient variety and volume of procedures to achieve program competencies, and
    - orienting students to clinical settings.
- Describe how the program assures a 2:1 student to radiation oncology staff ratio at all clinical settings.
- Provide current clinical student assignment schedules in relation to student enrollment.

Possible Site Visitor Evaluation Methods:

- Review of published program materials
- Review of clinical placement process
- Review of course objectives
- Review of student clinical assignment schedules
- Review of clinical orientation process/records
- Review of student records
- Interviews with faculty
- Interviews with clinical preceptors
- Interviews with clinical staff
- Interviews with students

4.5 The program provides learning opportunities in advanced and/or therapeutic technologies.

Explanation:
The program must provide learning opportunities in advanced and/or therapeutic technologies. It is the program's prerogative to decide which advanced and/or therapeutic technologies should be included in the didactic and/or clinical curriculum.

Programs are not required to offer clinical rotations in advanced and/or therapeutic technologies; however, these clinical rotations are strongly encouraged to enhance student learning.

Required Program Response:
Describe how the program provides opportunities in advanced and/or therapeutic technologies in the didactic and/or clinical curriculum.

Possible Site Visitor Evaluation Methods:

- Review of clinical rotation schedules, if applicable
- Interviews with faculty
- Interviews with students

4.6 The program assures an appropriate relationship between program length and the subject matter taught for the terminal award offered.

Explanation:
Program length must be consistent with the terminal award. The JRCERT defines program length as the duration of the program, which may be stated as total academic or calendar year(s), total semesters, trimesters, or quarters.

Required Program Response:
Describe the relationship between the program length and the terminal award offered.

Possible Site Visitor Evaluation Methods:

- Review of course catalog
- Review of published program materials
- Review of class schedules
- Interviews with faculty
- Interviews with students

4.7 The program measures didactic, laboratory, and clinical courses in clock hours and/or credit hours through the use of a consistent formula.

Explanation:
Defining the length of didactic, laboratory, and clinical courses facilitates the transfer of credit and the awarding of financial aid. The formula for calculating assigned clock/credit hours must be consistently applied for all didactic, laboratory, and clinical courses, respectively.

Required Program Response:

- Describe the method used to award credit hours for didactic, laboratory, and clinical courses.
- Provide a copy of the program's policies and procedures for determining credit hours and an example of how such policies and procedures have been applied to the program's coursework.
- Provide a list of all didactic, laboratory, and clinical courses with corresponding clock or credit hours.

Possible Site Visitor Evaluation Methods:

- Review of published program materials
- Review of class schedules
- Interviews with institutional administration
- Interviews with faculty
- Interviews with students

4.8 The program provides timely and supportive academic and clinical advisement to students enrolled in the program.

Explanation:
Appropriate academic and clinical advisement promotes student achievement and professionalism. Student advisement should be both formative and summative and must be shared with students in a timely manner. Programs are encouraged to develop written advisement procedures.

Required Program Response:

- Describe procedures for student advisement.
- Provide sample records of student advisement.

Possible Site Visitor Evaluation Methods:

- Review of students' records
- Interviews with faculty
- Interviews with clinical preceptor(s)
- Interviews with students

4.9 The program has procedures for maintaining the integrity of distance education courses.

Explanation:

Programs that offer distance education courses must have processes in place that assure that the students who register in the distance education courses are the same students that participate in, complete, and receive the credit. Programs must verify the identity of students by using methods such as, but not limited to, secure logins, passcodes, proctored exams, and/or video monitoring. These processes must protect the student's privacy.

Required Program Response:

- Describe the process for assuring the integrity of distance education courses.
- Provide published institutional/program materials that outline procedures for maintaining the integrity of distance education courses.

Possible Site Visitor Evaluation Methods:

- Review of published institutional/program materials
- Review the process of student identification
- Review of student records
- Interviews with institutional administration
- Interviews with faculty
- Interviews with students

Standard Five: Health and Safety

The sponsoring institution and program have policies and procedures that promote the health, safety, and optimal use of radiation for students, patients, and the public.

Objectives:

5.1 The program assures the radiation safety of students through the implementation of published policies and procedures.

5.2 The program assures that students employ proper safety practices.

5.3 The program assures that a credentialed practitioner approves all medical dosimetry calculations and treatment plans prior to implementation.

5.4 The program assures that direct patient contact procedures (e.g., simulation, fabrication of immobilization devices, etc.) are performed under the direct supervision of a credentialed practitioner.

5.5 The sponsoring institution and/or program have policies and procedures that safeguard the health and safety of students.

5.1 The program assures the radiation safety of students through the implementation of published policies and procedures.

Explanation:
Appropriate policies and procedures help assure that student radiation exposure is kept as low as reasonably achievable (ALARA). The program must monitor and maintain student radiation exposure data. All students must be monitored for radiation exposure when using equipment in energized laboratories as well as in the clinical environment during, but not limited to, simulation procedures, image production, or quality assurance testing.

Students must be provided their radiation exposure report within thirty (30) school days following receipt of the data. The program must have a published protocol that identifies a threshold dose for incidents in which student dose limits are exceeded. Programs are encouraged to identify a threshold dose below those identified in federal regulations.

The program's radiation safety policies must also include provisions for the declared pregnant student in an effort to assure radiation exposure to the student and fetus are kept as low as reasonably achievable (ALARA). The pregnancy policy must be made known to accepted and enrolled female students, and include:

- a written notice of voluntary declaration,
- an option for written withdrawal of declaration, and
- an option for student continuance in the program without modification.

The program may offer clinical component options such as clinical reassignments and/or leave of absence. Pregnancy policies should also be in compliance with Title IX regulations. The program should work with the Title IX coordinator and/or legal counsel to discuss and resolve any specific circumstances.

Required Program Response:

- Describe how the policies and procedures are made known to enrolled students.
- Describe how the radiation exposure report is made available to students.
- Provide copies of appropriate policies.
- Provide copies of radiation exposure reports.

Possible Site Visitor Evaluation Methods:

- Review of published program materials
- Review of student records
- Review of student radiation exposure reports
- Interviews with faculty
- Interviews with clinical preceptor(s)
- Interviews with students

5.2 The program assures that students employ proper safety practices.

Explanation:
The program must assure that students are instructed in the utilization of simulation and treatment equipment and accessories to minimize radiation exposure to patients, selves, and others. These practices assure radiation exposures are kept as low as reasonably achievable (ALARA).

Students must understand basic safety practices prior to assignment to clinical settings. As students progress in the program, they must become increasingly proficient in the application of radiation safety practices. Programs must establish a magnetic resonance imaging (MRI) safety screening protocol and students must complete MRI orientation and screening which reflect current American College of Radiology (ACR) MR safety guidelines for students having access to the MR environment, if applicable. This assures that students are appropriately screened for magnetic field or radiofrequency hazards.

Required Program Response:
- Describe how the curriculum sequence and content prepares students for safe radiation practices.
- Describe how the program prepares students for magnetic resonance safe practices.
- Provide the curriculum sequence.
- Provide policies/procedures regarding radiation safety.
- Provide MR safety screening protocol and screening tool, if applicable.

Possible Site Visitor Evaluation Methods:
- Review of program curriculum
- Review of radiation safety policies/procedures
- Review of magnetic resonance safe practice and/or screening protocol
- Review of student handbook
- Review of student records
- Review of student dosimetry reports
- Interviews with faculty
- Interviews with clinical preceptor(s)
- Interviews with clinical staff
- Interviews with students

5.3 The program assures that a credentialed practitioner approves all medical dosimetry calculations and treatment plans prior to implementation.

Explanation:

The approval of dosimetry calculations and treatment plans by a credentialed practitioner assures patient safety and proper educational practices. The program must develop and publish a policy that clearly delineates this expectation to students, clinical preceptors, and clinical staff.

Required Program Response:

- Describe how this requirement is made known to students, clinical preceptors, and clinical staff.
- Describe how this requirement is enforced and monitored in the clinical practice setting.
- Provide a copy of appropriate policy(s).
- Provide documentation that the program assures all medical dosimetry calculations and treatment plans are approved by a credentialed practitioner prior to implementation.
- Provide documentation that the program's policy is made known to students, clinical preceptors, and clinical staff.

Possible Site Visitor Evaluation Methods:

- Review of published program materials
- Review of approved dose calculations and treatment plans
- Review of student records
- Review of meeting minutes
- Interviews with faculty
- Interviews with clinical preceptor(s)
- Interviews with clinical staff
- Interviews with students

5.4 The program assures that direct patient contact procedures (e.g., simulation, fabrication of immobilization devices, etc.) are performed under the direct supervision of a credentialed practitioner.

Explanation:
Direct supervision assures patient safety and proper educational practice. All patient contact procedures require direct supervision. The program must develop and publish its direct supervision policy that clearly delineates the expectations of students, clinical preceptors, and clinical staff.

The JRCERT defines direct supervision as student supervision by a credentialed practitioner who:

- reviews the procedure in relation to the student's achievement,
- evaluates the condition of the patient in relation to the student's knowledge,
- is physically present during the conduct of the procedure, and
- reviews and approves the procedure.

Required Program Response:
- Describe how the direct supervision policy for simulation, fabrication immobilization devices, etc., is made known to students, clinical preceptors, and clinical staff.
- Describe how the direct supervision policy is enforced and monitored in the clinical practice setting.
- Provide the direct supervision policy.
- Provide documentation that the direct supervision requirement for simulation, fabrication immobilization devices, etc., is made known to students, clinical preceptors, and clinical staff.

Possible Site Visitor Evaluation Methods:
- Review of published program materials
- Review of student records
- Review of meeting minutes
- Interviews with faculty
- Interviews with clinical preceptor(s)
- Interviews with clinical staff
- Interviews with students

5.5 The sponsoring institution and/or program have policies and procedures that safeguard the health and safety of students.

Explanation:
Appropriate health and safety policies and procedures assure that students are part of a safe, protected environment. These policies must, at a minimum, address campus safety, emergency preparedness, harassment, communicable diseases, and substance abuse. Enrolled students must be informed of policies and procedures.

Required Program Response:

- Describe how institutional and/or program policies and procedures are made known to enrolled students.
- Provide institutional and/or program policies and procedures that safeguard the health and safety of students.

Possible Site Visitor Evaluation Methods:

- Review of published program materials
- Review of student records
- Interviews with faculty
- Interviews with students

Standard Six: Programmatic Effectiveness and Assessment:
Using Data for Sustained Improvement

The extent of a program's effectiveness is linked to the ability to meet its mission, goals, and student learning outcomes. A systematic, ongoing assessment process provides credible evidence that enables analysis and critical discussions to foster ongoing program improvement.

Objectives:

6.1 The program maintains the following program effectiveness data:

- five-year average credentialing examination pass rate of not less than 75 percent at first attempt within the next testing cycle after graduation,
- five-year average job placement rate of not less than 75 percent within twelve months of graduation, and
- annual program completion rate.

6.2 The program analyzes and shares its program effectiveness data to facilitate ongoing program improvement.

6.3 The program has a systematic assessment plan that facilitates ongoing program improvement.

6.4 The program analyzes and shares student learning outcome data to facilitate ongoing program improvement.

6.5 The program periodically reevaluates its assessment process to assure continuous program improvement.

6.1 The program maintains the following program effectiveness data:

- **five-year average credentialing examination pass rate of not less than 75 percent at first attempt within the next testing cycle after graduation,**
- **five-year average job placement rate of not less than 75 percent within twelve months of graduation, and**
- **annual program completion rate.**

Explanation:
Program effectiveness outcomes focus on issues pertaining to the overall curriculum such as admissions, retention, completion, credentialing examination performance, and job placement.

The JRCERT has developed the following definitions and criteria related to program effectiveness outcomes.:

Credentialing examination pass rate: The number of graduates who pass, on first attempt, the Medical Dosimetrist Certification Board (MDCB) certification examination, or an unrestricted state licensing examination, compared with the number of graduates who take the examination within the next testing cycle after graduation.

Job placement rate: The number of graduates employed in the radiologic sciences compared to the number of graduates actively seeking employment in the radiologic sciences. The JRCERT has defined not actively seeking employment as: 1) graduate fails to communicate with program officials regarding employment status after multiple attempts, 2) graduate is unwilling to seek employment that requires relocation, 3) graduate is unwilling to accept employment, for example, due to salary or hours, 4) graduate is on active military duty, and/or 5) graduate is continuing education.

Program completion rate: The number of students who complete the program within the stated program length. The program specifies the entry point (e.g., required orientation date, final drop/add date, final date to drop with 100% tuition refund, official class roster date, etc.) used in calculating the program's completion rate. When calculating the total number of students enrolled in the program (denominator), programs need not consider students who attrite due to nonacademic reasons such as: 1) financial, medical/mental health, or family reasons, 2) military deployment, 3) a change in major/course of study, and/or 4) other reasons an institution may classify as a nonacademic withdrawal.

Credentialing examination, job placement, and program completion data must be reported annually via the JRCERT Annual Report.

No Required Program Response.

Possible Site Visitor Evaluation Methods:

- Review of program effectiveness data
- Interviews with faculty

6.2 The program analyzes and shares its program effectiveness data to facilitate ongoing program improvement.

Explanation:
Analysis of program effectiveness data allows the program to determine if it is meeting its mission. This analysis also provides a means of accountability to faculty, students, and other communities of interest. Faculty should assure all data have been analyzed and discussed prior to sharing results with an assessment committee or other communities of interest. Sharing the program effectiveness data results should take place in a timely manner.

Programs must use assessment results to promote student success and maintain and improve program effectiveness outcomes. Analysis of program effectiveness data must occur at least annually, and results of the evidence-based decisions must be documented.

In sum, the data analysis process must, at a minimum, include:

- program effectiveness data that is compared to expected achievement; and
- documentation of discussion(s) of data analysis including trending/comparing of results over time to maintain and improve student learning.
    - If the program does not meet its benchmark for a specific program effectiveness outcome, the program must implement an action plan that identifies the issue/problem, allows for data trending, and identifies areas for improvement. The action plan must be reassessed annually until the performance concern(s) is/are appropriately addressed.

Required Program Response:

- Describe examples of evidence-based changes that have resulted from the analysis of program effectiveness data and discuss how these changes have maintained or improved program effectiveness outcomes.
- Provide actual program effectiveness data since the last accreditation award.
- Provide documentation of an action plan for any unmet benchmarks.
- Provide documentation that program effectiveness data is shared in a timely manner.

Possible Site Visitor Evaluation Methods:

- Review of aggregated data
- Review of data analysis and actions taken
- Review of documentation that demonstrates the sharing of results with communities of interest
- Review of representative samples of measurement tools used for data collection
- Interviews with faculty
- Interview with institutional assessment coordinator, if applicable

6.3 The program has a systematic assessment plan that facilitates ongoing program improvement.

Explanation:

A formalized written assessment plan allows programs to gather useful data to measure the goals and student learning outcomes to facilitate program improvement. Student learning outcomes must align with the goals and be explicit, measurable, and state the learning expectations. The development of goals and student learning outcomes allows the program to measure the attainment of its mission. It is important for the program to engage faculty and other communities of interest in the development or revision of its goals and student learning outcomes.

The program must have a written systematic assessment plan that, at a minimum, contains:

- goals in relation to clinical competency, communication, and critical thinking;
- two student learning outcomes per goal;
- two assessment tools per student learning outcome;
- benchmarks for each assessment method to determine level of achievement; and
- timeframes for data collection.

Programs may consider including additional goals in relation to ethical principles, interpersonal skills, professionalism, etc.

Programs at the bachelor's and higher degree levels should consider the additional professional content when developing their goals and student learning outcomes.

The program must also assess graduate and employer satisfaction. Graduate and employer satisfaction may be measured through a variety of methods. The methods and timeframes for collection of the graduate and employer satisfaction data are the prerogatives of the program.

Required Program Response:

- Describe how the program determined the goals and student learning outcomes to be included in the systematic assessment plan.
- Describe the program's cycle of assessment.
- Describe how the program uses feedback from communities of interest in the development of its assessment plan.
- Provide a copy of the program's current assessment plan.

Possible Site Visitor Evaluation Methods:

- Review of assessment plan
- Review of assessment methods
- Interviews with faculty
- Interview with institutional assessment coordinator, if applicable

6.4 The program analyzes and shares student learning outcome data to facilitate ongoing program improvement.

Explanation:
Analysis of student learning outcome data allows the program to determine if it is meeting its mission, goals, and student learning outcomes. This analysis also provides a means of accountability to faculty, students, and other communities of interest. Faculty should assure all data have been analyzed and discussed prior to sharing results with an assessment committee or other communities of interest. Sharing the student learning data results must take place in a timely manner.

Programs must use assessment results to promote student success and maintain and improve student learning outcomes. Analysis of student learning outcome data must occur at least annually, and results of the evidence-based decisions must be documented.

In sum, the data analysis process must, at a minimum, include:

- student learning outcome data that is compared to expected achievement; and
- documentation of discussion(s) of data analysis including trending/comparing of results over time to maintain and improve student learning.
    - If the program does meet its benchmark for a specific student learning outcome, the program should identify how student learning was maintained or improved and describe how students achieved program-level student learning outcomes.
    - If the program does not meet its benchmark for a specific student learning outcome, the program must implement an action plan that identifies the issue/problem, allows for data trending, and identifies areas for improvement. The action plan must be reassessed annually until the performance concern(s) is/are appropriately addressed.

Required Program Response:

- Describe examples of changes that have resulted from the analysis of student learning outcome data and discuss how these changes have maintained or improved student learning outcomes.
- Describe the process and timeframe for sharing student learning outcome data results with its communities of interest.
- Provide actual student learning outcome data and analysis since the last accreditation award.
- Provide documentation of an action plan for any unmet benchmarks.
- Provide documentation that student learning outcome data and analysis is shared in a timely manner.

Possible Site Visitor Evaluation Methods:

- Review of aggregated/disaggregated data
- Review of data analysis and actions taken
- Review of documentation that demonstrates the sharing of results with communities of interest
- Review of representative samples of measurement tools used for data collection
- Interviews with faculty
- Interview with institutional assessment coordinator, if applicable

6.5 The program periodically reevaluates its assessment process to assure continuous program improvement.

Explanation:
Identifying and implementing needed improvements in the assessment process leads to program improvement and renewal. As part of the assessment process, the program must review its mission statement, goals, student learning outcomes, and assessment plan to assure that assessment methods are providing credible information to make evidence-based decisions.

The program must assure the assessment process is effective in measuring student learning outcomes. At a minimum, this evaluation must occur at least every three years and be documented. In order to assure that student learning outcomes have been achieved and that curricular content is well-integrated across the curriculum, programs may consider the development and evaluation of a curriculum map. Programs may wish to utilize assessment rubrics to assist in validating the assessment process.

Required Program Response:

- Describe how assessment process reevaluation has occurred.
- Discuss changes to the assessment process that have occurred since the last accreditation award.
- Provide documentation that the assessment process is evaluated at least once every three years.

Possible Site Visitor Evaluation Methods:

- Review of documentation related to the assessment process reevaluation
- Review of curriculum mapping documentation, if applicable
- Interviews with faculty
- Interview with institutional assessment coordinator, if applicable

Glossary of Terms

Academic calendar: the official institutional/program document that, at a minimum, identifies specific start and end dates for each term, holidays recognized by the sponsoring institution, and breaks.

Accreditation status: a statement of the program's current standing with the JRCERT. Per JRCERT Policies 10.000 and 10.700, accreditation status is categorized as one of the following: Accredited, Probationary Accreditation, and Administrative Probationary Accreditation. The program must also identify its current length of accreditation award (i.e., 8-year, 5-year, 3-year, probation). The JRCERT publishes each program's current accreditation status at www.jrcert.org.

Administrator: individual(s) that oversee student activities, academic personnel, and programs.

Articulation agreement: a formal partnership between two (2) or more institutions of higher education. Typically, this type of agreement is formed between a hospital-based program and a community college or a community college and a four (4) year academic institution with the goal of creating a seamless transfer process for students.

Campus: the buildings and grounds of a school, college, university, or hospital. A campus does not include geographically dispersed locations.

Clinical capacity: the maximum number of students that can partake in clinical experiences at a clinical setting at any given time. Clinical capacity is determined by the availability of human and/or physical resources.

Clinical obligations: relevant requirements for completion of a clinical course including, but not limited to, background checks, drug screening, travel to geographically dispersed clinical settings, evening and/or weekend clinical assignments, and documentation of professional liability.

Communities of interest: the internal and external stakeholders, as defined by the program, who have a keen interest in the mission, goals, and outcomes of the program and the subsequent program effectiveness. The communities of interest may include current students, faculty, graduates, institutional administration, employers, clinical staff, or other institutions, organizations, regulatory groups, and/or individuals interested in educational activities in medical imaging and radiation oncology.

Comparable health sciences programs: health science programs established in the same sponsoring institution that are similar to the medical dosimetry program in curricular structure as well as in the number of faculty, students, and clinical settings.

Consortium: two or more academic or clinical institutions that have formally agreed to sponsor the development and continuation of an education program. A consortium must be structured to recognize and perform the responsibilities and functions of a sponsoring institution.

Curriculum map (-ping): process/matrix used to indicate where student learning outcomes are covered in each course. Level of instructional emphasis or assessment of where the student learning outcome takes place may also be indicated.

Distance education: refer to the Higher Education Opportunity Act of 2008, Pub. L. No. 110-315, §103(a)(19) and JRCERT Policy 10.800 - Alternative Learning Options.

Asynchronous distance learning: learning and instruction that do not occur in the same place or at the same time.

Distance education: an educational process characterized by the separation, in time and/or place, between instructor and student. Distance education supports regular and substantive interaction synchronously or asynchronously between the instructor and student through one or more interactive distance delivery technologies.

Distance (Delivery) technology: instructional/delivery methods that may include the use of TV, audio, or computer transmissions (broadcast, closed-circuit, cable, microwave, satellite transmissions); audio, computer, or Internet-based conferencing; and/or methodologies.

Hybrid medical dosimetry course: a professional level medical dosimetry course that uses a mix of face-to-face traditional classroom instruction along with synchronous or asynchronous distance education instruction. Regardless of institutional definition, the JRCERT defines a hybrid medical dosimetry course as one that utilizes distance education for more than 50% of instruction and learning.

Online medical dosimetry course: a professional level medical dosimetry course that primarily uses asynchronous distance education instruction. Typically, the course instruction and learning is 100% delivered via the Internet. Often used interchangeably with Internet-based learning, web-based learning, or distance learning.

Synchronous distance learning: learning and instruction that occur at the same time and in the same place.
[Definitions based on Accrediting Commission of Education in Nursing (ACEN) Accreditation Manual glossary]

Equivalent: with regards to certification and registration, certification by the American Board of Radiology (ABR) as a radiation oncologist or the American Board of Medical Physicists (ABMP) as a medical physicist.

Faculty: the teaching staff for didactic and clinical instruction. These individuals may also be known as academic personnel.

Faculty workload: contact/credit hours or percentages of time that reflect the manner in which the sponsoring institution characterizes, structures, and documents the nature of faculty members' teaching and non-teaching responsibilities. Workload duties include, but are not limited to, teaching, advisement, administration, committee activity, service, clinical practice, research, and other scholarly activities.

Gatekeeper: the agency responsible for oversight of the distribution, record keeping, and repayment of Title IV financial aid.

Grievance policy and/or procedure: a grievance is defined as a claim by a student that there has been a violation, misinterpretation, or inequitable application of any existing policy, procedure, or regulation. The program must have a policy/procedure to provide individuals an avenue to pursue grievances. If the institutional policy/procedure is to be followed, this must be clearly identified and provided to students. The policy/procedure must outline the steps for formal resolution of any grievance. The final step in the process must not include any individual(s) directly associated with the program (e.g., program director, clinical coordinator, faculty, administrator). The procedure must assure timely resolution. The program must maintain a record of all formal grievances and their resolution. Records must be retained in accordance with the institution's/program's retention policies/procedures. Additionally, the program must have a procedure to address any complaints apart from those that require invoking the grievance procedure (e.g., cleanliness of classroom). The program must determine if a pattern of any grievance or complaint exists that could negatively affect the quality of the educational program.

Master plan of education: an overview of the program and documentation of all aspects of the program. In the event of new faculty and/or leadership to the program, a master plan of education provides the information needed to understand the program and its operations. At a minimum, a master plan of education must include course syllabi (didactic and clinical courses), program policies and procedures, and the curricular sequence calendar. If the program utilizes an electronic format, the components must be accessible by all program faculty.

Meeting minutes: a tangible record of a meeting of individuals, groups, and/or boards that serve as a source of attestation of a meeting's outcome(s) and a reference for members who were unable to attend. The minutes should include decisions made, next steps planned, and identification and tracking of action plans.

Program effectiveness outcomes/data: the specific program outcomes established by the JRCERT. The JRCERT has developed the following definitions and criteria related to program effectiveness outcomes:

> **Credentialing examination pass rate:** the number of graduates who pass, on first attempt, the Medical Dosimetrist Certification Board (MDCB) certification examination, or an unrestricted state licensing examination, compared with the number of graduates who take the examination within the next testing cycle after graduation.
>
> **Job placement rate**: the number of graduates employed in the radiologic sciences compared to the number of graduates actively seeking employment in the radiologic sciences. The JRCERT has defined not actively seeking employment as: 1) graduate fails to communicate with program officials regarding employment status after multiple attempts, 2) graduate is unwilling to seek employment that requires relocation, 3) graduate is unwilling to accept employment due to salary or hours, 4) graduate is on active military duty, and/or 5) graduate is continuing education.
>
> **Program completion rate:** the number of students who complete the program within the stated program length. The program specifies the entry point (e.g., required orientation date, final drop/add date, final date to drop with 100% tuition refund, official class roster date, etc.) used in calculating the program's completion rate. When calculating the total number of students enrolled in the program (denominator), programs need not consider graduates who attrite due to nonacademic reasons such as: 1) financial, medical/mental health, or family reasons, 2) military deployment, 3) a change in major/course of study, and/or 4) other reasons an institution may classify as a nonacademic withdrawal.

Program total capacity: the maximum number of students that can be enrolled in the educational program at any given time. Program total capacity is dependent on the availability of human and physical resources of the sponsoring institution. It is also dependent on the program's clinical rotation schedule and the clinical capacities of recognized clinical settings.

Release time (reassigned workload): a reduction in the teaching workload to allow for the administrative functions associated with the responsibilities of the program director or clinical coordinator or other responsibilities as assigned.

Sponsoring institution: the facility or organization that has primary responsibility for the educational program and grants the terminal award. A recognized institutional accreditor must accredit a sponsoring institution. Educational programs may be established in: community and junior colleges; senior colleges and universities; hospitals; medical schools; postsecondary vocational/technical schools and institutions; military/governmental facilities; proprietary schools; and consortia. Consortia must be structured to recognize and perform the responsibilities and functions of a sponsoring institution.

Awarding, Maintaining, and Administering Accreditation

A. Program/Sponsoring Institution Responsibilities

1. Applying for Accreditation

The accreditation review process conducted by the Joint Review Committee on Education in Radiologic Technology (JRCERT) is initiated by a program through the written request for accreditation sent to the JRCERT, on program/institutional letterhead. The request must include the name of the program, the type of program, and the address of the program. The request is to be submitted, with the applicable fee, to:

Joint Review Committee on Education in Radiologic Technology
20 North Wacker Drive, Suite 2850
Chicago, IL 60606-3182

Submission of such information will allow the program access to the JRCERT's Accreditation Management System (AMS). The initial application and self-study report will then be available for completion and submission through the AMS.

2. Administrative Requirements for Maintaining Accreditation

a. Submitting the self-study report or a required progress report within a reasonable period of time, as determined by the JRCERT.

b. Agreeing to a reasonable site visit date before the end of the period for which accreditation was awarded.

c. Informing the JRCERT, within a reasonable period of time, of changes in the institutional or program officials, program director, clinical coordinator, full-time didactic faculty, and clinical preceptor(s).

d. Paying JRCERT fees within a reasonable period of time. Returning, by the established deadline, a completed Annual Report.

e. Returning, by the established deadline, any other information requested by the JRCERT.

Programs are required to comply with these and other administrative requirements for maintaining accreditation. Additional information on policies and procedures is available at www.jrcert.org.

Program failure to meet administrative requirements for maintaining accreditation will lead to Administrative Probationary Accreditation and potentially result in Withdrawal of Accreditation.

B. JRCERT Responsibilities

1. Administering the Accreditation Review Process

The JRCERT reviews educational programs to assess compliance with the **Standards for an Accredited Educational Program in Medical Dosimetry**.

The accreditation process includes a site visit.

Before the JRCERT takes accreditation action, the program being reviewed must respond to the report of findings.

The JRCERT is responsible for recognition of clinical settings.

2. Accreditation Actions

Consistent with JRCERT policy, the JRCERT defines the following as accreditation actions:

> Accreditation, Probationary Accreditation, Administrative Probationary Accreditation, Withholding Accreditation, and Withdrawal of Accreditation (Voluntary and Involuntary).

For more information regarding these actions, refer to JRCERT Policy 10.200.

A program or sponsoring institution may, at any time prior to the final accreditation action, withdraw its request for initial or continuing accreditation.

Educators may wish to contact the following organizations for additional information and materials:

Accreditation:
Joint Review Committee on Education in Radiologic Technology
20 North Wacker Drive, Suite 2850
Chicago, IL 60606-3182
(312) 704-5300
www.jrcert.org

Curriculum:
American Association of Medical Dosimetrists
12100 Sunset Hills Road, Suite 130
Reston, VA 20190-3321
(703) 234-4063
www.medicaldosimetry.org

Certification:
Medical Dosimetrist Certification Board
15000 Commerce Parkway, Suite C
Mt. Laurel, NJ 08054-2212
(866) 813-MDCB (6322)
www.mdcb.org

JRCERT
20 North Wacker Drive
Suite 2850
Chicago, IL 60606-3182
(312) 704-5300
(312) 704-5304 (fax)
mail@jrcert.org (e-mail)
www.jrcert.org

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