



Guide to Professional Practice of Clinical Medical Physics 2018

*Task Force on the ACR Guide to Medical Physics Professional Practice
of the
Commission on Medical Physics*

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Introduction

The goal of this guide is to provide perspectives and insight regarding the aspects of professional clinical medical physics practice. It is intended for interested parties including medical physicists, medical physicists in training, administrators, human resources personnel, and physicians. While medical physicists have traditionally worked solely with radiation oncologists, radiologists, and cardiologists, their work has since expanded to include collaboration with medical professionals in a wide range of specialties.

To begin, the disciplines of medical physics, the education and training requirements necessary to become a qualified medical physicist, and the corresponding general responsibilities are presented. Types of clinical medical physics practices in which a certified individual can participate are academic, community hospital, or private practice groups. These may be for-profit or not-for-profit and may present the medical physicist with different levels of autonomy and professional responsibilities. A discussion of employee and employer relationships includes: professional duties, chain of authority, employee benefits, membership on a medical staff, credentialing, and ethics considerations. [1] Recommendations for written agreements, legal advice, provisions and resources provided by the employee, and contracts specific to services rendered are considered. Relationships with other medical physicists, radiologists/radiation oncologists, other physicians, professional staff, patients, and the public are described. The Guide to Professional Practice of Clinical Medical Physics concludes with a reference list and appendices with example supporting documents, including: an example medical physics position description, considerations for establishing and maintaining retirement plans, and example consulting contracts.

I. MEDICAL PHYSICS

A. Definition

Medical physics is primarily an applied branch of physics that deals with the application of physical principles to the diagnosis and treatment of human disease. Medical physicists are medical specialists recognized by the American Board of Medical Specialties (ABMS) who practice in one or more subfield of medical physics. The subfields include therapeutic medical physics (primarily radiation oncology), diagnostic medical physics, and nuclear medical physics. Due to the specialized professional knowledge that medical physicists possess, they are regarded as colleagues of radiologists and radiation oncologists within the medical profession. The American Board of Radiology (ABR), the American Board of Medical Physics (ABMP), American Board of Science in Nuclear Medicine (ABSNM), and the Canadian College of Physicists in Medicine (CCPM) award certification to medical physicists who pass stringent examinations in one or more of the subfields of medical physics. Appropriate qualifications and board certifications for specific areas of medical physics are described in relevant ACR Accreditation Programs, Practice Parameters, and Technical Standards. [2]

B. Education and Training

A medical physicist must have a graduate degree in medical physics or a related discipline. In addition to this academic preparation, the ABR requires completion of a medical physics residency for admittance to their examination. If the medical physicist intends to practice more than one of the subfields of medical physics, the clinical training and experience should encompass each area.

C. Qualified Medical Physicist

A Qualified Medical Physicist is an individual who is competent to practice independently in one or more of the subfields in medical physics. [3] The American College of Radiology (ACR) considers certification, continuing education, and experience in the appropriate subfield(s) to demonstrate that an individual is competent to practice one or more of the subfields in medical physics, and to be a Qualified Medical Physicist. The ACR strongly recommends that individuals be certified in the appropriate subfield(s) by the ABR, the Canadian College of Physics in Medicine, or the American Board of Medical Physics (ABMP).

A Qualified Medical Physicist should meet the ACR Practice Parameter for Continuing Medical Education (CME).

The subfields of medical physics are*:

- Therapeutic Medical Physics

This pertains to (1) the therapeutic applications of x-rays, of gamma rays, of electrons and charged particle beams, of neutrons, of radiations from sealed and unsealed radionuclide sources, (2) the equipment associated with their production, use, measurement, and evaluation, (3) the quality of information and images resulting from their production and use, and (4) associated patient and personnel radiation safety issues.

- Diagnostic Medical Physics

This pertains to (1) the diagnostic applications of x-rays, or gamma rays from sealed and unsealed sources, of ultrasound, of radiofrequency radiation, of magnetic fields, (2) the equipment associated with their production, use, measurement, and evaluation, (3) the quality of information and images resulting from their production and use, and (4) associated patient and personnel radiation safety issues.

- Nuclear Medical Physics

This pertains to (1) the therapeutic and diagnostic applications of radionuclides (except those used in sealed sources for therapeutic purposes), (2) the equipment associated with their production, use, measurement, and evaluation, (3) the quality of information and images resulting from their production and use, and (4) associated patient and personnel radiation safety issues.

(* Previous medical physics certification categories including radiological physics, therapeutic radiological physics, medical nuclear physics, diagnostic radiological physics, and diagnostic imaging physics are also acceptable.)

D. General Responsibilities

Some typical responsibilities of a medical physicist may include, but are not limited to, the following items. The scope of these varies widely based on the size and staffing of the institution.

1. Performance of acceptance testing, calibration, and safety surveys of imaging and radiation therapy equipment.
2. Participation in the development of purchasing and acceptance specifications for imaging and radiation therapy equipment.
3. Consultation with radiologists, radiation oncologists, other physicians and medical professionals concerning patient and fetal dose determinations.
4. Participation in the clinical process of patient care in association with other medical specialists.
5. Consultation with other physicians and patients regarding radiation exposure and safety.
6. Participation in department financial and personnel planning.

7. Teaching and presentation of continuing education programs for medical students, residents, fellows, graduate students, physicians, nurses, technologists, ancillary personnel, and other staff.
8. Participation in planning for future medical facilities.
9. Supervision and oversight of radiation safety program.
10. Development, implementation and supervision of quality control programs in areas related to medical physics.
11. Research and development of new devices and modalities for improved diagnostic and therapeutic uses.
12. Membership on applicable committees, such as the Safety Committee, Radiation Safety Committee, Radioactive Drug Research Committee, Continuous Quality Improvement (CQI) Committee, Disaster Committee, Cancer Care Committee, Institutional Review Board, and Sourcing and Procurement Committee.
13. Participation in clinical and basic research.

See AAPM Medical Physics Practice Guideline 10: Scope of Practice for Clinical Medical Physics [4] for detailed activities of each subfield of medical physics.

[Appendix A](#) contains examples of medical physicist responsibilities in sample position descriptions.

II. Practice and Employment Models

A. Practice Models

The discipline of medical physics offers appropriately qualified individuals a wide spectrum of opportunities for professional practice. It is sometimes useful to categorize various pathways for practice, but it is important to recognize that an individual medical physicist may engage in a variety of practice patterns, either serially during a career or simultaneously engaging in several practice areas, sometimes overlapping and sometimes independent. Some categories are described below without implying that the list entries are either comprehensive or mutually exclusive.

1. Clinical practice.
 - a. This broad category generally includes professional activities that have direct impact on the care of individual patients. Clinical medical physicists work in a variety of settings, such as: hospitals, clinics, and medical offices, and they may be associated with a variety of medical specialties including Radiology, Radiation Oncology, Cardiology, Internal Medicine, Nuclear Medicine, Dermatology, Orthopedics, etc.
 - b. Responsibilities to patients may be executed through direct contact, participation in treatment plan development and execution, optimization of imaging techniques, dose calculations, risk evaluation, and consultation with physician and other providers regarding questions that fall within the professional expertise of the medical physicist.
 - c. In all of these interactions, the primary obligation of the clinical medical physicist is the welfare of the patient. In fulfilling these obligations, the clinical medical physicist must restrict his or her activities to areas where they possess adequate knowledge, training, and skills. Clinical medical physicists must be familiar with current recommendations, reports, and guidelines of professional organizations; should acquire the relevant board certification; and should maintain appropriate continuing education (and Maintenance of Certification where required).
 - d. In endeavors where professional accreditation programs are available, the medical physicist encourages and facilitates the attainment of appropriate accreditation recognitions.
 - e. Clinical medical physicists typically undergo a credentialing process within their practice setting. This process may vary in level of formality but could include medical staff privileges, allied health staff privileges, clinical faculty status, or some other formal peer or institutional review of training and credentials.

- f. Clinical medical physicists also recognize the importance of creating and maintaining appropriate and productive relationships with colleagues, including physicians, other practitioners, technical staff, and administrative staff. These relationships are essential in providing quality patient care through a team approach. The clinical medical physicist typically assumes a leadership role within the clinic, even if present only part-time.
 - g. Much of the equipment and techniques used in the application of physics in medicine is subject to government regulatory requirements. Medical physicists conduct equipment performance evaluations to establish regulatory compliance and typically participate or direct programs associated with control of ionizing or non-ionizing radiation hazards to workers and the public. Merely establishing regulatory compliance does not fulfill the medical physicist's obligation to patients to provide high quality clinical care.
 - h. Clinical research activities are commonly within the practice of the clinical medical physicist. These may be carried out in a formal academic setting, but are also performed in non-academic settings through cooperative clinical research groups, or through the efforts of physicians and medical physicists in a clinical practice. Such research activities are to be encouraged.
 - i. A clinical medical physicist is obligated to engage in lifelong learning. Some credentials, such as ABR certification or a state license, may require continuing education credits for maintenance of the credential(s). Therefore, it is important for the clinical medical physicist to create time during in their practice schedule to attend conferences and seminars in order to keep abreast of relevant advances in technology and science.
2. Academic practice.
- a. This category includes professional activities focused on education, scholarship, and research in areas that are related to the applications of physics in medicine. If possible, employee FTE allocations to each of these areas should be clearly defined in the negotiation process and documented in the employment contract.
 - b. Academic medical physicists with faculty status should be eligible to participate in the tenure track advancement process within the appropriate departmental structure. Some research positions may not be within the faculty or tenure track structure. Academic appointments may be divided into tenure-track and non-tenure track path options. The medical physicist should be aware of the requirements for promotion in both of these tracks in addition to any timeline requirements for achieving tenure. Documentation from the institution's promotion and tenure committee should be provided to the employee during the negotiation process or at least at the start of employment.

- c. A doctoral degree or other terminal degree is generally required for an academic medical physicist, although appointments may be offered to others with particular credentials.
 - d. Academic medical physicists may be engaged in a variety of educational efforts. Education and training of students, residents, and fellows in a variety of disciplines (medicine, physics, allied health, and other related basic and applied sciences) are typically within the scope of the academic medical physicist.
 - e. Research may be a primary or a secondary focus of the academic medical physicist. Research topics can be clinically related or be directed towards understanding of basic science questions. Publication of research results, review articles, etc. are a significant component of the academic medical physicist's responsibilities.
 - f. Scholarly endeavors such as scientific and educational meeting attendance and related presentations, communications with other educators and researchers, and generally gaining an increased understanding of the science related to the medical physicist's interests and work are, within themselves, an important professional endeavor. In fact, these items may be expected, or even required, as part of the medical physicist's job description or promotion path. The employee should understand what resources (time away, financial resources, etc.) will be available to support these endeavors. Ideally, some minimum level of support will be guaranteed as part of the employment contract.
3. Industry practice.
- a. Medical physicists may practice in the commercial/industrial setting.
 - b. Commercial/industrial professional work may focus on applied research, generally related to product creation and development.
 - c. Medical physicists engaged in working with commercial products may also find themselves participating in clinical applications, enabling clinical medical physicists and other clinical staff to use commercial products, and providing training and support for clinical implementation.

B. Employment Models

Whatever the practice mode in which a medical physicist is engaged, there are a variety of employment models that may be relevant and worthy of consideration. [5] Some models and their characteristics are described below without implying that the list entries are either comprehensive or mutually exclusive.

1. Employment by a non-academic medical institution or health care organization is a common situation for a medical physicist. The employer may be a for-profit or not-for-profit corporation, but in either instance the employment interface is likely to have similar features.

- a. Medical physics employees should engage in an employment contract with the institution rather than serve as an at-will employee. (At-will employees can be terminated by their employer at any time, for any cause, without notice although anti-discrimination laws must be followed.) It is in the best interest of the professional medical physicist to have a clearly described set of expectations regarding the employment relationship. Unless one has a contract that specifically states that they are not an at-will employee, one should assume that they are. Some features of such an agreement might be:
 - i. Salary and non-salary benefits description
 - ii. Contract termination provisions and timing (to ensure continuity of patient care and patient safety)
 - iii. Reporting structure
 - iv. Description of duties
 - v. Evaluation process
 - vi. Relationship to physician and other practitioner colleagues
 - vii. Support for continuing education/MOC
 - viii. Provision of appropriate medical physics instrumentation, IT needs and support staff, and the process for assuring future needs are met.
 - ix. Support for research activities
 - x. Expectations regarding conflict of interest.
 - xi. Requirements for continued employment (maintenance of certification, health screenings, etc.)
 - xii. Expectations regarding workload and non-work leave (meetings, vacation, medical leave, parental leave, FMLA, etc.)
 - xiii. Assignments to remote or branch clinics or facilities, or the need to support a number of dispersed hospitals or clinics on a routine basis.
 - b. In the absence of a specific employment contract, the medical physicist should document expectations based on pre-employment interview/recruiting discussion and memorialize them in a letter of acceptance or similar communication with the employer's representative.
2. Employment by an academic facility invokes the need to consider many of the features described above. In addition, the medical physicist engaging in academic activity should expect clarity on employment components such as:
 - a. Initial academic rank. This should be clearly described, as well as expectations for advancement in a particular academic series.

- i. Academic series based on academic productivity and teaching (e.g., “ladder rank” positions). This appointment typically requires medical physicists to engage in extramural funding efforts to support a specified fraction of their salary compensation (“soft” money) with some fraction of support from the institution or state (“hard” money), based upon achieving the status of tenure – e.g., promotion to “Associate Professor” from “Assistant Professor” after a certain length of time (usually 7 years).
 - ii. Academic series based on clinical productivity (e.g., “Clinical Professor” positions). This appointment typically requires medical physicists to chiefly engage in clinical medical physics tasks, with expectations of some clinical research, teaching, and administrative responsibilities for advancement. These positions may provide tenure status, but most often non-tenure status, depending on the academic rank and the policies of the institution. These appointments typically do not require extramural funding support for the individual, but have a promotion cycle similar to the “ladder rank” positions.
 - iii. Academic staff positions. These positions typically do not have academic faculty status or rank, and are often based on an hourly wage scale basis with annual renewal contracts. This appointment requires medical physicists to engage in daily prescribed medical physics tasks, with little or no time to engage in academic pursuits.
 - b. The academic medical physicist may have expectations for such provisions as protected research or academic time, travel support (time and funds) to research symposia, participation in professional society committees, etc. Institutional support and resources for these items should be clarified during the negotiation process and agreed upon in writing.
3. Employment by a physician practice group is an option for some medical physicists and can offer benefits to both the medical physicist and physician group. The employer would be expected to be focused on the delivery of a particular range of clinical services (Radiology, Cardiology, Radiation Oncology, etc.) and thus provide a suitable practice environment for the medical physicist with an aligned practice specialty. The features of an employment agreement to be considered in this situation might include:
 - a. All of the items listed above in the section “[Employment by a non-academic medical institution or health care organization](#)”. In particular, medical physics employees should engage in an employment contract with the group practice rather than serve as an at-will employee. The medical physicist contemplating a long-term relationship should inquire as to the possibility of serving as a partner or stockholder in the practice, depending on the corporate structure.

- b. A physician group is likely to have non-physician practitioners as part of the practice; their role and status may provide guidance as to the potential status of the clinical medical physicist in the group.
 - c. In support of the physician practice, it may be necessary to perform some duties at a hospital or other facility with which the physician practice is associated. The medical physicist should carefully review the requirements at those facilities for non-physician practitioners/employees who are associated with a physician practice to assure that no impediments to performing medical physics duties are presented.
 - d. Hospitals with which the physician practice is associated may find the need for medical physics services that are outside of the scope of the physician practice. An Example might be service as an RSO. The medical physicist should have a clear, written understanding with both the hospital and physician group if these services will be provided by the medical physicist under a separate contract.
 - e. In addition to fixed-salary arrangements, the practice may offer salary adjustments based on productivity metrics. Options for and details of such arrangements should be clearly understood.
4. Employment by a commercial clinical services company has become an option for many medical physicists in recent years. These companies are often national in scope and may focus on corporate provision of a narrow scope of services (e.g. Medical Physics, Radiation Oncology, Radiology, etc.). The focused nature of the services as well as the resources that can be associated with a large corporation may offer benefits to the medical physicist. The features of an employment agreement to be considered in this situation include:
- a. All of the items listed above in the section “[Employment by a non-academic medical institution or health care organization](#)” and in the section “[Employment by a physician practice group](#)” should be carefully considered. In particular, medical physics employees should seek to engage in an employment contract with the group practice rather than serve as an at-will employee.
 - b. Reporting structure descriptions are particularly important. Medical physicists should endeavor to report to a clinical peer, either another medical physicist or physician in an allied specialty. The location of the supervisor may be physically remote from the practice location of the medical physicist, so reporting and consultation mechanisms should be clearly understood.
 - c. The company may have several sites, corporately linked but geographically removed from one another; the medical physicist should understand expectations for either routine or episodic coverage at corporate clinical facilities.

- d. The corporation is likely to have established physics protocols, policies, and procedures. The medical physicist should understand the scope of these corporate imperatives and the opportunities and constraints associated with the local practice of medical physics. The medical physicist should clarify the expectations and resources available for professional peer review.
 - e. Commercial clinical services companies are likely to have a structured process with clear business metrics for determining when and where to make capital investments and how to allocate resources. The medical physicist should understand these aspects of the business model before deciding whether to join the company.
5. Employment by a medical physics practice group is an option for many medical physicists. This arrangement has a number of advantages for clinical medical physicists. The practice leadership are peers, well acquainted with the professional requirements of a medical physicist. Benefits, salary, and working conditions can be tailored to the needs of the clinical medical physicist in providing services. The peer interaction and support within the group focuses on the medical physics endeavor. The features of an employment agreement to be considered in this situation might include
- a. All of the items listed above in the section “[Employment by a non-academic medical institution or health care organization](#)”. In particular, medical physics employees should engage in an employment contract with the group practice rather than serve as a generic “at-will” employee.
 - b. The medical physicist should clearly understand the nature of the medical physics group. Is it specialty limited or geographically limited? Does it primarily engage in consulting services, full-time or nearly full-time on-site clinical staff placement, or some combination of the two?
 - c. If services are provided at a number of sites, there should be a clear description related to travel time and expenses.
 - d. The medical physicist contemplating a long-term relationship should inquire as to the possibility of serving as a partner or stockholder in the practice, depending on the corporate structure.
 - e. The medical physicist should carefully consider the scope and ramifications of any proffered “non-compete” agreements. These are seldom in the best interest of the employee medical physicist and may interfere with their future ability to provide clinical services to patients in other settings.
6. Partnership in a medical physics practice group. One or more medical physicists may form a medical physics practice group. Such a group is typically formed as a corporation, providing a structural basis, recognition as an entity for legal and tax purposes and offering the potential of limitation of personal liability for the individual owners. Medical physics groups might organize as a C corporation, an S

corporation, a Limited Liability corporation, or a non-profit corporation. The advantages and disadvantages of these options are beyond the scope of this document and should be discussed with a knowledgeable business attorney.

7. Sole proprietor self-employment. A sole proprietor is someone who owns an unincorporated business by themselves. As a sole proprietor, one becomes an independent contractor rather than an employee. As an employee, one typically works for a single employer, works at the employer's place of business, and is under the control and direction of the employer, with tasks established by the employer. As a contractor, one may serve more than one institution, will typically have their own supplies and equipment, and will work independently, deciding how to accomplish necessary work tasks. A full-time employee typically receives benefits, including unemployment and workers compensation, and does not have to invest in the costs of providing service. The contractor incurs the expense of running a business and does not have benefits provided by others. Local, State, and Federal regulations may apply when distinguishing between an employee and a contractor. Some characteristics that may be indicative of a contractor relationship are:
 - a. Provides services to more than a single client.
 - b. Advertises/promotes their availability to provide services to clients.
 - c. Independently determines the time and effort to accomplish tasks.
 - d. Exercises independent judgment when completing tasks
 - e. Provides equipment necessary for the services.
 - f. Works under a written contract that specifically describes contractor or non-employee status.
 - g. Variable degrees to which the medical physicist may be economically dependent on individual clients.

III. EMPLOYEE/EMPLOYER RELATIONSHIPS

A. General

A medical physicist may practice as an employee of an organization or as a private contractor to an organization. The structure of the relationship between the medical physicist and the organization determines whether the medical physicist is classified as an employee or private contractor. It is important to clearly identify which classification applies in each case.

The most common type of work relationship that a medical physicist may find is as an employee of an organization. Organization types may include, but are not limited to, community hospitals, academic institutions, freestanding cancer centers, and medical physics groups. Employment situations may arise that are a hybrid of multiple organization types (e.g., academic medical center that provides contract physics services for a community hospital). The medical physicist should be aware of the structure of the arrangement between the institutions and the impact the arrangement will have on the practice (e.g., reporting structure, compensation, scope of work, etc.).

B. Duties/Responsibilities

This is a broad area, but it is most important to get a complete, specific, and clear understanding of what services are to be provided for the employer. It is highly desirable to have a written description of these duties and responsibilities (see [Section IV](#)).

C. Chain of Authority

The appropriate chain of authority depends on the type of organization in which the medical physicist works.

1. Community hospital
 - a. The medical physicist should report to the Chief of Medical Physics for clinical and administrative matters.
 - b. The Chief of Medical Physics should report to the medical director for clinical matters and the institution's senior administrator (e.g., vice-president) for administrative matters.
2. Academic institution/medical school
 - a. The medical physicist should report to the Chief or Chair of Medical Physics for clinical and administrative matters.
 - b. The Chief of Medical Physics should report to the clinic director for clinical matters and the department or division chair for administrative matters.

3. Freestanding cancer center
 - a. The medical physicist should report to the Chief of Medical Physics for clinical and administrative matters.
 - b. The Chief of Medical Physics should report to the medical director for clinical matters and the institution's CEO/President for administrative matters.
4. Medical physics group
 - a. The medical physicist should report to the group's owner or designated medical physicist supervisor for clinical issues that are not directly related to patient care (e.g., machine QA) and the medical director of the contracting institution for direct patient care clinical issues.
 - b. The medical physicist should report to the group's administrator for administrative issues. The medical physicist supervisor should report to the group owner or group administrator for administrative issues.
5. Radiation Safety Officer (RSO)
 - a. If serving as Radiation Safety Officer, the medical physicist should report to the medical director for clinical matters and to the institution's senior administrator (e.g., vice-president) for administrative matters. Regulatory constraints may require a specific reporting structure. The reporting structure should be carefully considered for potential conflicts of interest. For example, it could be inappropriate for a RSO to report to a director of radiology.
 - b. The RSO is accountable directly to a senior level administrator. Executive management must give the RSO authority necessary to meet job responsibilities, including prohibiting the use of radioactive material by employees who do not meet the necessary requirements and shutting down operations when justified for radiation safety.
 - c. The RSO directs the radiation safety program, which may include the technical direction of radiation safety or medical physics staff, technologists and/or therapists, equipment service engineers, and other support staff personnel.

D. Benefits

The monetary value of benefits is significant, accounting for approximately 32% of an employee's paycheck (<https://www.bls.gov/news.release/ecec.nr0.htm>; accessed 7/23/18). The types of benefits included as part of an employment contract may depend on the type of organization for which the medical physicist works (e.g., community vs. academic center). Any agreement should clearly specify what benefits are included and the methods by which the value of the benefits may change. Common benefits include:

1. Medical insurance (individual or family)

There are many medical insurance plans available and they vary widely in the benefits and cost to the employee. Each plan should be carefully studied to ensure that particular needs are met.

2. Dental insurance (individual or family)

3. Life insurance

This insurance is usually term insurance with a base amount paid by the employer and additional amounts up to a predetermined limit (as a multiple of the employee's salary) available at extra cost to the employee.

4. Disability insurance

Disability insurance is a form of insurance that provides income to the beneficiary in the case that a disability prevents the insured from performing the duties of their employment. There are various definitions of "disability" that can impact the distribution of policy benefits to the insured. These may include terms such as "total disability," "partial disability," and "permanent disability." It is imperative that the medical physicist be aware of the terms used by their disability insurance provider, the specific definitions of these terms, and the financial implications of the terms in payout of the policy.

Disability insurance may be classified as "short-term" or "long-term" depending on the length of the disability. The medical physicist should be aware of any waiting period before the policy goes into effect after the disabling event. These periods may range from none to weeks for short-term plans, or from weeks to months (or years) for long term-plans. The medical physicist should consider the potential impact on his or her financial situation.

This type of employer-provided insurance may be taxable or non-taxable depending on whether the policy is paid by the employer with pre-tax dollars or by the employee with post-tax dollars. The medical physicist should be aware of the tax implications for the paid benefits and discuss, as needed, with a financial advisor. Depending upon the coverage provided by the employer's policy, private disability insurance might be necessary to supplement the employer-provided disability policy. Private disability insurance is less expensive when the medical physicist is younger and healthier, so this option should be thoroughly reviewed early in one's career. The benefits are generally non-taxable and remain in effect even with employment changes. Some policies become effective if one cannot practice rather than requiring complete and total disability. As stated previously, the requirements for disbursement of policy benefits depend on the specific definitions of disability used in the policy. Details of the policy should be discussed with an insurance professional.

5. Time off (vacation, holidays, sick days, and paid time off)

It is important to understand the distinction between traditional time off categories and paid time off (PTO). While PTO may offer more flexibility in the use of time off, the number of days in the allotted pool may not be as many as in traditional categories of vacation, holidays, and sick leave combined. The medical physicist should be aware of this, as well as any probationary period and start of employment that may be in effect before accumulated time off can be used.

Depending on the employer, the amount of time off may be negotiable as part of employment. The medical physicist should be aware of this during the employment negotiation process.

6. Meeting allowance

It has been common practice for an employer to provide funding for professional meetings. The number of days and the reimbursement should be clarified at the outset. Some employers may allow for a single allotment of professional development funds to be used for items such as meeting travel costs. It is important that the medical physicist clarify at the time of negotiations whether travel funds are guaranteed as part of employment or if they are subject to future reductions or elimination. These funds should be guaranteed in writing as part of the employment contract.

7. Professional society membership fees

The medical physicist should clarify whether society membership fees are included as part of employment or are the responsibility of the employee. This should be established in writing as part of the employment contract.

8. Licensure and certification fees

Licensure and/or board certification are frequently required for employment. As such, it is desirable for the employer to cover costs associated with their maintenance.

9. Malpractice (professional liability) insurance

Verify the coverage of this employer-provided insurance. One may need to purchase additional private insurance [see [Professional Liability Insurance](#)]. It should also be stipulated if tail-end malpractice endorsements are required upon termination, who such insurance should cover (i.e. institution, medical physicist, or both), and who is responsible for payment of such coverage. These endorsements would address potential claims that might arise after the medical physicist is no longer employed by the practice, based on their acts or omissions during their employment.

10. Child care and elder care benefits

11. Parking or other transportation benefits

12. Tuition reimbursement (individual and family)

13. Profit sharing and fund matching

There are many different types of retirement and pension accounts. Verify the time that it takes to become fully vested, the ability to roll over the vested funds if employment changes, whether the program is fully funded by the employer, and whether one may individually supplement it.

14. Outside consulting

This may or may not be permitted. Consulting for medical physics services may be handled differently from consulting as an expert witness.

E. Medical Staff Membership

Membership on the medical staff is desirable for medical physicists regardless of the employment arrangement. However, it should be realized that full membership on the medical staff may be limited to physicians and dentists, or otherwise restricted by state statutes or institutional bylaws. In such cases, medical physicists may not be allowed to become full members of the medical staff even if the climate at the facility is otherwise favorable. In many cases, the appropriate membership is classified as "Associate Staff" or "Professional Staff." This appointment is often accorded to other professionals such as clinical psychologists. This type of membership may not carry the same protection and privileges as full membership. Even though full membership on the medical staff does protect an individual from termination from the medical staff, it does not protect the individual from termination by the facility if one is an employee or has a contract with the facility. Membership on the medical staff does affect how medical physicists are viewed by other professionals at the facility and can thus affect the medical physicist's effectiveness.

F. Credentialing

Credentialing is the process by which an institution confirms that a practitioner is qualified before extending delineated clinical privileges. It should be understood that being credentialed and being on the medical staff are not the same thing. In most institutions credentialing is required of physicians and other members of the medical staff by the medical staff bylaws. However, it is possible for professionals who are not members of the medical staff to also be credentialed. Such groups include clinical psychologists, pharmacists, nurses, technologists, and medical physicists.

Medical physicists who are employees of a facility should have a job description that contains a detailed list of services to be performed. However, it may not necessarily list the qualifications of the person performing those duties. Likewise, if medical physics services are provided by an individual or group under contract, there should be a detailed list of services to be provided, but the qualifications of the person or persons performing the work may not be included. If the qualifications of the employee or contractor are not stipulated, the job description or contract may not imply a

commitment from the institution to utilize only the services of qualified medical physicists. Therefore, regardless of the type of practice arrangement, it is desirable to address documentation of credentials and delineation of clinical privileges in addition to any job description or contract. Failure to do so may leave the facility and/or physicians without guidance and assurance of competent medical physics support, and leaves the medical physicist in a less advantageous position if the institution desires replacement with a less qualified individual.

Credentialing decisions rest with the institution's governing board; however, the criteria for credentialing are usually developed by the medical staff in consultation with the chiefs of departments. In many cases, state licensure and certification by an appropriate board is sufficient. For a medical physicist, the criteria may also include minimum educational requirements.

Clinical privilege delineation also varies widely among institutions. Privileges may be broadly defined, or there may be specific delineation (e.g., extending diagnostic radiology privileges for conventional imaging, MRI, interventional, mammography, ultrasound, etc.). In almost all cases, however, the list of clinical privileges is much less detailed than a job description.

The process of developing a list of clinical privileges for a specific professional position is usually carried out at the department level. In institutions that do not already have clinical privileges defined, medical physicists are advised to initiate discussions with the departmental chair. The actual form of the resultant document will depend on the institutional circumstances.

IV. WRITTEN AGREEMENTS

A. General

Regardless of the type of practice arrangement, a written agreement is highly recommended and is an important means of documenting the agreed relationship between the medical physicist and his or her employer. Ideally, a written document serves as a basic reference which defines and clarifies existing commitments; it also serves as a foundation upon which new relationships and new understandings can be built. A written agreement is also an excellent vehicle for defining, during negotiations, the roles and expectations of both parties. Without such a document, too much is subject to the memory, interpretation, and assumptions of each party.

The type and extent of a written agreement varies greatly depending on the type of practice. A formal letter of employment from a hospital or other institution may state little more than title, starting date, and salary. Employees of institutions, however, typically have other documents such as a job description, a code of employee conduct, an employee benefits brochure, and departmental policies and procedures which provide additional detail. Medical physicists who are in contractual relationships with an institution or group may have contract documents that are extremely detailed and cover an extensive list of topics. Therefore, medical physicists must read all documents and engage qualified counsel, as noted below.

It is possible for medical physicists to have multiple employment situations simultaneously (e.g. part-time employment with an institution with simultaneous external contract work, or employment at one institution with teaching responsibilities at another). In such cases it is extremely important that:

1. The individual's responsibilities at each institution are clearly stated in writing,
2. The individual agreements do not violate non-competition or other restrictive clauses in any of the relationships, and
3. The individual does not overextend him/herself and not be able to provide the agreed-on services.

It is beneficial that all parties know of all of the service(s) that the medical physicist will be providing so that there will be reasonable expectations in terms of emergency or unexpected coverage needs.

The provisions listed in [Section IV-C](#) may or may not be included in every document, but they should at least be addressed in the thought process and discussed. The exact chronology and details of any negotiation process depend upon the situation, the competition for the contract or position, the personalities involved, etc. As stated earlier, a standard contract or employment agreement may be the only document offered and the hospital or group may or may not allow changes to this "standard," but any questions or reservations should be clarified during the negotiation phase. In other

situations, especially as a private consultant, the medical physicist may be able to offer a personal contract of their own to the client that can be amended as necessary.

B. Legal Advice

1. General

The medical physicist should seek competent legal advice at the very beginning of a negotiation process. It is necessary not only to ensure that the resulting document is lawful and binding, but it is also critical to have a legal advisor with the medical physicist's best interests as the primary goal. The lawyers for hospitals and other groups represent their clients and their clients' interests, not the medical physicist. The final contract, which results from negotiations, should be a compromise between the two parties. Even if the medical physicist is offered a "take-it-or-leave-it" proposition, a personal lawyer can advise the medical physicist of potential pitfalls, risks, and liabilities, and serve as a valuable negotiating voice for the medical physicists.

2. Selecting an attorney

- a. When selecting an attorney, first determine what type of legal assistance you will need. Since professional contracts are governed by state law, it is important to find a lawyer who is licensed to practice in the appropriate state. Most local bar associations offer a referral service, which can be helpful. Other medical professionals also may be able to offer suggestions or references. Physicists who are ACR members have access to the ACR Legal Office list of lawyers who can advise on contract negotiations in each state.
- b. Gather a list of candidates.
- c. Prepare questions and interview each candidate.

3. Fees

The "flat fee" or set charge for these types of services is a common fee arrangement. This is the easiest charge to check and compare. Simply call several lawyers and determine their fees for this work. Hourly rates are another type of fee structure. Medical physicists should ask whether the lawyer would agree to a "blended" rate. Rates vary greatly, and most attorneys charge for each hour spent reviewing the contract and each hour spent discussing it with the medical physicist. Hourly attorneys often require a "retainer" (i.e., a down payment), and if the attorney spends less time than the retainer, the difference should be refunded. Contingency fee arrangements are not a normal mode of payment for this type of work. A consulting medical physicist will most likely encounter other situations in which a contract review by a qualified attorney is prudent. It is therefore in one's best interest to find an attorney who can be relied upon for ongoing advice and with whom a comfortable relationship can be developed.

C. Specific Provisions

This section furnishes a list of recommended items that may be included in a written agreement. As mentioned earlier, each item, whether or not it is actually included in a final written agreement, should be discussed and carefully considered regardless of practice type.

1. Services, Scope of Work, and Standards

The services to be provided, the scope of work, and the standards by which the work is accomplished should be identified. For a medical physicist hired as an employee, this information should be covered, at least partially, by the job description. For consulting medical physicists, these need to be carefully identified to allow proper contract bidding. Questions such as the following should be addressed:

a. What equipment and facilities are to be covered?

What is the expected patient load? How will significant changes in equipment, facilities or patient load be addressed?

b. What standards will be followed?

The medical physics support provided should be consistent with the facilities and equipment available and the standards established by the medical physics community, professional societies, and other professional and advisory organizations. Selection and strict compliance with these standards should be subject to the professional judgment of the medical physicist (e.g., which specific protocols are used, what tests are conducted, and what tolerance levels are acceptable). If a contract includes specific reports, protocols, state and federal regulations, etc., the medical physicist must be careful to include the right to exercise their own professional judgment whenever necessary. In some cases, such as compliance with state or federal regulations, there is no option. In those instances, the medical physicist should confirm with a personal lawyer how to meet such regulations. However, flexibility should be maintained whenever possible. The medical physicist should only agree to provide those services for which the medical physicist is deemed qualified. These medical physics services should be maintained in such a manner that a department or group would be eligible for accreditation by appropriate review agencies such as the ACR or American Society for Radiation Oncology (ASTRO). The medical physicist should have copies of, or access to, any documents referenced in the contract. The medical physicist should read and be familiar with all references (e.g., hospital bylaws, policies and procedures, federal and state regulations).

c. What clinical coverage (i.e., presence in the clinic) is expected? When can equipment calibration and maintenance be performed?

If the institution has a heavy workload, wants physics coverage during the entire workday, and equipment calibration and testing can only be performed during non-clinical hours, then more than 1 FTE is probably needed. In the case of a sole practitioner, how is coverage provided for vacation, illness, and meetings?

- d. Is the current or proposed number of physics FTEs adequate to meet the scope of work and provide the desired level of coverage? What physics support personnel (e.g. medical physicist assistants, dosimetrists, administrative assistants) is provided by the institution?

The institution should agree to employ only those individuals who meet the standards of training and experience agreed upon jointly by the medical physicist, radiologist or radiation oncologist, and administrator. The medical physicist should have the authority to set the standards and qualifications required for any jobs involving medical physics or medical physics support.

2. Remuneration

If a medical physicist is considering entering a position as an employee, remuneration considerations should include the following:

- a. Salary
- b. Benefits including health and disability insurance coverage options, time off allowance, profit sharing and/or retirement benefits, malpractice coverage
- c. Professional development including: dues, meetings, books and subscriptions
- d. If a medical physicist is considering a consulting arrangement, remuneration must include sufficient funds to provide the above plus the following:
 - i. Office expenses including administrative support, office space, supplies, and equipment
 - ii. Professional services such as those of an accountant, attorney, and locum tenens
 - iii. Medical physics equipment
 - iv. Travel expenses, including auto, train, and air
 - v. Malpractice insurance
 - vi. Taxes
 - vii. Remuneration for other medical physicists if they are part of the consulting group

3. Authority and supervision

For all practice types, it is important to establish the line of accountability and authority for the medical physicist. For example, the medical physicist should be

accountable directly to the medical director of radiology, radiation oncology, or nuclear medicine, as appropriate. Where the medical physicist is employed in a setting that precludes reporting to the medical director on administrative matters, the medical physicist should be administratively accountable to the appropriate senior administrator. In addition, the medical physicist should direct the physics program, including the technical direction of medical physicist assistants, QA or QC technologists, dosimetrists, field service or biomedical engineers, and other physics support personnel. In situations where the QC personnel, dosimetrists, or other physics support staff are hospital employees and the medical physicist is under a professional services contract, the authority of the medical physicist must be clearly defined. The medical physicist should be responsible for the evaluation of such individuals and for making recommendations directly to senior-level management for the hiring, firing, and disciplining of medical physics support staff. Changes in department directors or chief support personnel may create authority problems and conflicts if the medical physicist's supervisory and management role is not clearly defined.

4. Equipment requirements, replacements, upgrades

The availability of modern imaging, treatment, and physics testing equipment is essential for the practice of medical physics. If serving as an employee, a medical physicist does not typically provide physics equipment. The selection of available equipment should be reviewed to determine completeness. The procedure for requesting and obtaining additional or replacement equipment should be reviewed and understood. If the medical physicist is a consultant, the written agreement should clearly describe who provides the equipment. If the institution provides the equipment, the mechanism by which the need for new or replacement equipment needs to be determined along with procedures to be followed in budgeting, purchasing, and amortizing should be included as well. In all cases, it should be understood that the medical physicist is an integral part of the team that selects all major diagnostic and/or therapeutic radiology equipment and accessory devices.

5. Equipment maintenance

The medical physicist should review and approve all equipment maintenance and provide permission for return to clinical service.

6. Exclusivity

The medical physicist should insure that exclusive rights to provide medical physics services to the area of specialty are delegated to them. If the institution has an open staff arrangement with the physicians, major confusion would exist if every physician were to utilize his or her own medical physicist. Such a situation would be inefficient and would certainly create confusion within the department and institution. Separate contracts and physics support for different specialty areas are typical (e.g., separate medical physicists for diagnostic radiology and radiation

oncology); however, responsibilities in overlapping areas such as radiation safety should be clearly defined.

7. Intellectual property

Identification and clarification of intellectual property is important and should be defined, particularly for academic positions. Considerations include the definition of intellectual property, ownership of intellectual property, and the final ownership in case of termination. Many institutions may insist that all data and other information the medical physicist generates for the institution, even as an independent contractor or consultant, is a “work for hire” to which the institution asserts sole ownership. The institution and physicist would have to agree to that in writing.

8. Professional liability insurance

Considerable thought should be given to one’s professional liability (medical malpractice) coverage. It is possible that a full-time employee is provided coverage by the employer, but every medical physicist should carefully review that liability coverage and its possible limitations. An employer-provided policy may cover the employer but may not protect the individual employee medical physicist. It may be in the medical physicist’s best interest to invest in further personal coverage. The non-employee medical physicist usually finds it imperative to purchase coverage, as many hospitals require that independent contractors provide their own personal liability coverage, often specifying the limits themselves. It should also be stipulated that if tail-end malpractice endorsements are required upon termination, who such insurance should cover (i.e., institution, medical physicist, or both), and who is responsible for payment of such coverage.

9. Outside professional activities and non-competition clauses

A medical physicist may encounter opportunities to become involved in many professional outside activities such as professional societies, teaching, research, and additional consulting. As an employee, the medical physicist should seek to have the allowance for such activities, especially professional service activities, which may require time away from the clinic, stated in writing. For the private consulting medical physicist, these activities may not present a contractual problem unless there is a coverage issue or a non-competition clause in their contract with an institution which restricts additional consulting. Non-competition clauses can apply to outside work during the term of the contract and/or work after the contract ends or the physicist leaves for any other reason. Non-competition clauses usually apply for a specific period of time and a specific geographic area. For example, “the physicist may not perform the same or similar services within 50 miles of the facility for one year.” In that case, the physicist either has to go more than 50 miles to a new job, or move to a new area to work. Non-competition provisions should be avoided whenever possible. Not only do they limit the ability

of the medical physicist to participate in care that can utilize his or her expertise, but they may limit the availability of that care to patients. If an institution requires a non-competition clause, which restricts a medical physicist from providing physics services to the institution's competitors, it is recommended that a reasonable distance limitation and time duration be specified. Medical physicists should consult with a qualified healthcare attorney for advice on whether a non-compete provision might violate a specific state's law.

Before accepting additional work, the medical physicist should verify that he or she is not overextending his/her resources and will be able to meet existing commitments. It is suggested that verbiage such as "full-time" be avoided in a contract or at least that the term "full-time" be defined. Administrative support for professional society activities should be identified if this involvement is important to the medical physicist.

10. Miscellaneous

Ideally, the medical physicist should be entitled to any benefits or perquisites afforded other professional staff. In institutions where "provider" and "non-provider" clinical staff are administered as different groups, the medical physicist should receive professional benefits that are comparable to those of other providers. These benefits should be part of any written agreement.

Agreements that are in the form of detailed contracts should also include the following items:

1. Contract terms and renewals ("Evergreen" clause)

Ideally, it would be beneficial to have a contract automatically renew after a specified time period unless either party gives ample notice (e.g., six months or 90 days) that the contract is to be terminated or renegotiated.

2. Termination

The exact conditions under which a contract may be terminated must be fully defined. In situations where it is stated that the contract may be terminated "for cause," "cause" should be specifically defined. For example, cause may be defined as fraud, embezzlement, gross misconduct or felony conviction. The effective date of termination must also be stated. (A five-year contract that may be terminated without cause within 30 days is really a 30-day contract.) It is advisable to define who has the authority to approve termination. Also, it is strongly recommended that such a decision must be unanimous between, at least, the medical director and CEO or the appropriate senior vice president. It is also strongly recommended that any act or failure to act be identified in writing and that the medical physicist be given at least 30 days to correct or remedy such act.

3. Amendments

Any written agreement should have provisions for amendments. It should be explicitly stated that all amendments should be clearly stated, must be in writing, and must be signed by both parties. Failure to approve a proposed amendment should not be grounds for termination of the contract.

V. RELATIONSHIPS

A. Relations with Medical Physicists

Medical physicists should treat each other in a professional and respectful manner. They should compete only on the quality of service.

B. Relations with Physicians

The medical physicist is a professional colleague of the physician.

Medical physicists should strive to have mutually beneficial relationships with their colleagues to achieve the primary goal of benefitting patients. One important aspect of the medical physicist's role in this regard is to provide accurate, up-to-date information to their physician colleagues. If the medical physicist believes that a patient is not receiving proper care, this should be discussed with the relevant physician and, if necessary, with other professionals and the administration of the facility. At no time should the medical physicist interfere with the doctor-patient relationship.

C. Relations with Regulatory Agencies

Medical physicists frequently interact with regulators and are, in many cases, the primary contact with such agencies. The medical physicist should assist and cooperate with regulators in an honest and respectful manner, while acting as an advocate for the client. Medical physicists must fully comply with regulatory requirements for which they bear responsibility by way of their role in the organization, including required reporting to regulatory agencies, but this must be done with the knowledge of the employer or client and the responsible physician.

D. Relations with Patients

The medical physicist should provide services in such a way that maximum benefit to the patient is obtained. The medical physicist should limit activities to competent practice areas. In dealing with patients, the medical physicist should provide identification as a medical physicist, and should, if appropriate, indicate education, training and experience. The medical physicist must not offer medical advice to the patient.

E. Relations with the Public

The medical physicist is an expert in this chosen profession and should be available to the community to provide expert information. The medical physicist should always conduct activities professionally, and should base statements on scientific principles and fact. In all communications with the public (including online communication), the medical physicist should maintain standards of privacy and confidentiality.

VI. References

1. [ACR Bylaws. Article XI – Ethics and Discipline.](#)
2. [ACR Medical Physics Practice Parameters and Technical Standards.](#)
3. [ACR Digest of Council Actions: Definition of a Qualified Medical Physicist \(QMP\). 2012 \(Res. 42\).](#)
4. AAPM MEDICAL PHYSICS PRACTICE GUIDELINE 10.a.: Scope of Practice for Clinical Medical Physics. *J Appl Clin Med Phys*. 2018. DOI: 10.1002/acm2.12469.
5. [AAPM Report No. 301. An Updated Description of the Professional Practice of Diagnostic and Imaging Medical Physics: The Report of AAPM Diagnostic Work and Workforce Study Subcommittee. May 2017. ISBN: 978-1-936366-60-6.](#)
6. [AAPM Code of Ethics. 2012.](#)

VII. Appendices

[Appendix A](#): Sample Position Descriptions

[Appendix B](#): Retirement Plans

[Appendix C](#): Sample Contracts

Appendix A: Sample Position Descriptions

The following sections apply to positions in all medical physics subspecialties regardless of the practice environment: position summary, qualifications, experience, and responsibilities. Some positions may have more or fewer responsibilities such as only commissioning new equipment, training medical physics residents, or serving as a facility radiation safety officer, and the basics below should be expanded to reflect those differences. In each section below, for all positions, language is included for both imaging and radiation oncology.

Position Summary

Primarily and professionally engaged in the design optimization, technical evaluation, and precise and accurate delivery of medical imaging (imaging) or treatment plans (radiation oncology).

Responsible for the radiation protection program for patients and staff (imaging and radiation oncology).

Responsible for the design and implementation of the aspects of the quality management program that involve the use of ionizing radiation, MRI, ultrasound, or diagnostic and therapeutic radionuclides (imaging), or external beam radiotherapy equipment and therapeutic radionuclides (radiation oncology).

Responsible for the review and approval of the quality control procedures followed by the diagnostic imaging staff (imaging). Responsible for the review and approval of radiation therapy staff in the delivery of the prescribed dose (radiation oncology).

Qualifications

Master of Science or Doctoral degree in Medical Physics, Radiological Physics, Physics, or related discipline.

Certification by the ABR, ABMP, ABSNM, or CCPM in the relevant subspecialty or subspecialties (if more than one applies) of medical physics and compliance with the [ACR Practice Parameter for Continuing Medical Education \(CME\)](#).

Must also meet any qualifications imposed by the federal or state radiation control agency to practice imaging physics and/or provide oversight of the establishment and conduct of the radiation quality management program.

Experience

At least two years of post-degree clinical experience or completion of a post-degree clinical medical physics residency program under the preceptorship of a medical physicist certified by the ABR, ABMP, ABSNM, or CCPM in the relevant subspecialty or subspecialties (if more than one subspecialty applies). If serving as a facility Radiation Safety Officer, must meet the Nuclear Regulatory Commission or Agreement State requirements.

Responsibilities

Imaging:

1. Provides surveys, reports and consultation related to radiation safety for applicable facilities and/or patients that meet the organizations and regulatory standards in a timely manner.
2. Conducts patient dose assessments and reporting as needed.
3. Develops and implements quality assurance and evaluation programs for applicable imaging and/or radiation therapy equipment that insure high quality images and radiation treatments and that meet regulatory requirements.
4. Directs the acceptance testing of new imaging and ancillary devices.
5. Serves in leadership capacity for radiation safety program for radiology department.
6. Participates in equipment life cycle management by contributing technical expertise on imaging equipment currently installed and available technologies on the market.
7. Participates in site planning by contributing radiation shielding designs and related safety recommendations.
8. Provides technical assistance and clinical expertise for resolving informatics issues in the radiology department.
9. Monitors and reports quality assurance activities to insure adherence to established QA policies and procedures.
10. Evaluates and reports the performance of imaging equipment in a timely manner and makes recommendations to improve quality and safety.
11. Provides proper records necessary for The Joint Commission, Nuclear Regulatory Commission, state, or other agencies.
12. Serves as focal point for imaging equipment maintenance and repair, and when imaging systems are ready for patient use.
13. Provides technical direction of radiology staff as specified by the department medical director.
14. Maintains up-to-date technical knowledge of new and developing technologies and regulatory issues to support clinical and administrative decision-makers.
15. Serves as a member of various committees, such as Radiation Safety Committee, Cancer Committee, CQI Committee, and Hospital Safety Committee.
16. Provides in-service training to staff and physicians, as necessary, to insure high quality images and radiation treatments, a radiation-safe environment, and compliance with regulatory standards.

17. Communicates to staff, physicians, and patients in a manner that is precise, understandable, timely, constructive, and proactive, and that demonstrates excellent listening skills.
18. Maintains working relationships that are professional, collaborative, team-oriented, responsive, thorough, and cordial and that demonstrate flexibility, innovation, a broad view of issues, acceptance of full responsibility for assignments, and a solutions orientation.

Radiation Oncology:

1. Calibrates therapy equipment in a manner suitable for accurate radiation dose delivery.
2. Directs the determination of radiation dose distributions in patients undergoing treatment (i.e., computerized dosimetry planning or direct radiation measurement).
3. Directs the acceptance testing of new equipment and treatment devices.
4. Directs the design and construction of patient treatment aids or special devices (blocks, compensators, molds, etc.).
5. Directs the radiation safety program for the radiation oncology department.
6. Provides continuing education lectures to staff, technologists, and associated allied health personnel.
7. Participates in equipment planning and evaluation, program planning, marketing, staff review, and budget preparation.
8. Maintains proper records necessary for The Joint Commission, Nuclear Regulatory Commission, state, or other agencies.
9. Reviews and approves department policies and procedures.
10. Develops policies and procedures related to radiation safety and radiation oncology physics.
11. Provides consultation for personnel radiation exposure.
12. Designs and implements pertinent aspects of the quality management program that involve the use of external beam radiotherapy equipment and therapeutic radioisotopes.
13. Manages the medical physics service in a manner to meet or exceed established standards of practice consistent with the facility size and available resources.
14. Serves as a member of various committees such as the Radiation Safety Committee, Cancer Committee, CQI Committee, and the Hospital Safety Committee.
15. Oversees the performance levels of imaging equipment used in radiation oncology.
16. Evaluates new technologies and implements as needed.

17. Consults with the radiation oncologists, as required, concerning patient doses and optimization of patient treatment plans and delivery.
18. Provides technical direction of radiation oncology staff as specified by the department medical director.
19. Serves as the focal point for machine maintenance and repair, and when systems are again ready for clinical use.

Radiation Safety Officer:

1. Responsible for the management of the radiation protection program.
2. Identifies and documents radiation protection problems.
3. Initiates, recommends, or provides corrective actions in writing and as otherwise appropriate for a given situation.
4. Verifies and documents implementation of corrective actions.
5. Stops unsafe activities.
6. Ensures compliance with regulations.

Professional Relationships (accountability and authority)

The reporting structure and authority in a position will likely vary by subspecialty as well as the employment model. Detailed below are examples for an imaging physicist employed by a medical center, a radiation oncology physicist employed by a cancer center, an imaging or radiation oncology physicist employed in a private practice group, and a radiation safety officer. Note that any of the first four positions may also serve as a radiation safety officer and it may be appropriate to combine elements of multiple examples.

1. Hospital or facility based, including academic institutions or medical schools:

Accountable directly to the Chief of Medical Physics for clinical and administrative matters. In the absence of a Chief of Medical Physics, the medical physicist is administratively accountable directly to the appropriate department leader such as a physician or administrator responsible for quality and safety. It may be inappropriate to report to a director of medical imaging, especially if serving as the facility Radiation Safety Officer.

Directs the hospital or facility physics program, which includes the technical direction of medical technologists or therapists, equipment service engineers, and other physics support staff personnel.

2. Medical physics group:

The medical physicist should report to the group's owner or designated medical physicist supervisor for clinical issues that are not directly related to patient care and the medical director of the contracting institution for direct patient care clinical issues.

3. Radiation Safety Officer – may be combined with any of the previous examples.

Appendix B: Retirement Plans

Pensions and profit-sharing plans provide one of the most effective means for wealth accumulation available to business owners, employees, and self-employed individuals. Tax-qualified plans offer a number of tax-shelter elements including: complete income tax deduction for contributions, tax-deferred investment returns, favorable tax treatment of various types of distributions, and the ability to borrow from the plan. Along with tax benefits, plans provide powerful incentives for attracting and maintaining employees

Establishing and maintaining pensions and profit sharing plans can be difficult. There are myriad ever-changing government rules and burdensome regulations to contend with as well as investment decisions to make. There are many types of plans and there are numerous key ingredients for an effectively structured plan. Plans can be designed to provide maximum benefits to key employees. However, plans must meet strict requirements, including minimum employee participation standards, minimum employee coverage rules, and maximum contribution and benefit rules.

The major aspects of establishing and maintaining a plan are as follows:

- *Plan design and implementation* - An in-depth analysis of the needs and goals of the business owner, organization, and employees and creation of an appropriate plan. Various professionals provide this type of service, including attorneys, accountants, insurance companies, banks, mutual fund organizations, financial planners, and others. Many have prototype plans to simplify the process.

Care should be exercised in selecting experienced professionals for plan design, administration, compliance, and investment management. Close scrutiny should be given to costs for these plan services.

- *Administration* - The day-to-day detail management of the plan, including maintenance of participant accounts, determination of contributions, etc.
- *Compliance* - Filing of proper forms with the Internal Revenue Service and Department of Labor and monitoring of continuing plan compliance with rules and regulations.
- *Investment management* - Selection and maintenance of plan asset investments. This can be accomplished through the use of brokerage firms, mutual funds, insurance companies, banks, financial planners, or other investment management organizations.
- *Trusteeship* - A trustee is needed to execute plan monetary transactions. This may be accomplished by the plan sponsor or by an outside party such as a bank or insurance company.

Various organizations such as insurance companies, mutual fund organizations, and plan administrators provide more than one or all of the services described above.

Retirement accounts can be divided into groups based on whether they are established by the employee or by the employer. However, contributions to the account may come from either the individual employee or the employer depending on the structure of the account as defined

by federal retirement contribution laws and the structure of the employment arrangement. Some common retirement contribution options are described below.

Individual Retirement Accounts/Arrangements (IRAs)

An individual retirement account is an investing tool used by individuals to earn funds for retirement savings. There are several types of IRAs: Traditional IRAs, Roth IRAs, SIMPLE IRAs and SEP IRAs. Traditional and Roth IRAs are established by individuals through an investment firm, while SEP and SIMPLE IRAs (described below) are established by small business owners and self-employed individuals. IRAs may be invested in a range of options including stocks, bonds, and mutual funds.

Traditional IRA

Contributions to traditional IRAs are generally tax deductible as they are made from pre-tax dollars from the employee's compensation. However, withdrawals from the account are taxed as income. There may be limits on the dollar amount of tax deductible contributions depending on the income of the employee making the contributions.

Roth IRA

Contributions to Roth IRAs are not tax deductible, but distributions during retirement are tax-free. There are eligibility requirements for contributions to Roth IRA plans where high income individuals may not be able to contribute to these plans. The income limit for Roth contributions is determined by the Internal Revenue Service.

Employer-provided retirement plans can generally be divided into two groups: defined-contribution plans and defined-benefit plans. Within each of these groups are a number of specific plan types.

Defined-Contribution Plans

A defined contribution plan does not promise a specific amount of benefits at retirement. In these plans, the employee or the employer (or both) contribute to the employee's individual account under the plan, sometimes at a set rate, such as 5 percent of earnings annually. These contributions generally are invested on the employee's behalf. The employee will ultimately receive the balance in their account, which is based on contributions plus or minus investment gains or losses. The value of the account will fluctuate due to the changes in the value of the investments. Examples of defined contribution plans include 401(k) plans, 403(b) plans, employee stock ownership plans, and profit-sharing plans.

(<https://www.dol.gov/general/topic/retirement/typesofplans>; accessed 1/17/18)

401(k)

A 401(k) plan is a qualified plan that includes a feature allowing an employee to elect to have the employer contribute a portion of the employee's wages to an individual account under the plan. The underlying plan can be a profit-

sharing, stock bonus, pre-ERISA money purchase pension, or a rural cooperative plan. Generally, deferred wages (elective deferrals) are not subject to federal income tax withholding at the time of deferral, and they are not reported as taxable income on the employee's individual income tax return. There are special rules governing the operation of a 401(k) plan. For example, there is a dollar limit on the amount an employee may elect to defer each year. An employer must advise employees of any limits that may apply. Employees who participate in 401(k) plans assume responsibility for their retirement income by contributing part of their salary and, in many instances, by directing their own investments. (<https://www.irs.gov/retirement-plans/plan-sponsor/401k-plan-overview>; <https://www.dol.gov/general/topic/retirement/typesofplans>; accessed 2/12/18)

403(b)

A 403(b) plan (also called a tax-sheltered annuity or TSA plan) is a retirement plan offered by public schools and certain 501(c)(3) tax-exempt organizations. Employees save for retirement by contributing to individual accounts. Employers can also contribute to employees' accounts. (<https://www.irs.gov/retirement-plans/irc-403b-tax-sheltered-annuity-plans>; accessed 1/17/18)

ESOP

An Employee Stock Ownership Plan (ESOP) is a form of defined contribution plan in which the investments are primarily in employer stock. (<https://www.dol.gov/general/topic/retirement/typesofplans>; 2/18/18)

SEP IRA

A Simplified Employee Pension Plan (SEP) is a relatively uncomplicated retirement savings vehicles. A SEP allows employers to make contributions on a tax-favored basis to individual retirement accounts (IRAs) owned by the employees. SEPs are subject to minimal reporting and disclosure requirements. Under a SEP, an employee must set up an IRA to accept the employer's contributions. Employers may no longer set up Salary Reduction SEPs. However, employers are permitted to establish SIMPLE IRA plans with salary reduction contributions. If an employer had a salary reduction SEP, the employer may continue to allow salary reduction contributions to the plan. (<https://www.dol.gov/general/topic/retirement/typesofplans>; 2/18/18)

SIMPLE IRA

SIMPLE IRAs or Savings Incentive Match Plans for Employees are also for small businesses and self-employed individuals. However, unlike SEP IRAs, SIMPLE IRAs allow employees to make contributions to their accounts, and the employer is required to make contributions. All the contributions are tax deductible, potentially pushing the business or employee into a lower tax

bracket, a helpful way to reduce one's tax bill.
(<https://www.investopedia.com/terms/i/ira.asp>; accessed 2/18/18).

Profit Sharing

A Profit Sharing Plan or Stock Bonus Plan is a defined contribution plan under which the plan may provide, or the employer may determine, annually, how much will be contributed to the plan (out of profits or otherwise). The plan contains a formula for allocating to each participant a portion of each annual contribution. A profit sharing plan or stock bonus plan include a 401(k) plan.
(<https://www.dol.gov/general/topic/retirement/typesofplans>; 2/18/18)

Defined Benefit Plans (Pensions)

Depending on the sponsoring entity and structure of the program, defined-benefit plans and retirement benefits may be financed by member and state contributions, employer contributions in some circumstances, and through investment earnings of the pension trust fund. A defined benefit plan promises a specified monthly benefit at retirement. The plan may state this promised benefit as an exact dollar amount, such as \$100 per month at retirement. Or, more commonly, it may calculate a benefit through a plan formula that considers such factors as salary and service. These plans typically require a minimum number of years of service (vesting time in the program) and a metric that incorporates both years of service and age at retirement (e.g. the sum of the employee's years of service and age at retirement must equal or exceed some threshold value). As these plans are frequently provided by state governments for employees at state institutions, they are subject to legislative changes over time. The employee is responsible for evaluating the impact of any program changes on their retirement funds and planned retirement timeline.

Example:

A university offers its employees a defined-benefits plan where the Monthly Standard Annuity is calculated by multiplying the average of the employee's five highest years of salary (S) by their years of service to the institution (Y) and a multiplier of 2.3%, then dividing the result by 12:

$$(S \times Y \times 2.3\%) / 12$$

For an employee of 20 years with an average salary of \$200,000 for the five highest years, this results in a standard monthly annuity payment of \$7,666.67.

This amount may vary depending on a number of variables, such as penalties for early retirement and options on beneficiary payout plans. The employee should discuss the impact of these variables on their retirement plans with an investment professional.

Other Plans

Highly compensated employees (as determined by the entity sponsoring the plan) may qualify for a deferred compensation plan, sometimes referred to as a 457(b) plan. Plans eligible under 457(b) allow employees of sponsoring organizations to defer income

taxation on retirement savings into future years. (<https://www.irs.gov/retirement-plans/irc-457b-deferred-compensation-plans>; accessed 7/23/18)

Appendix C: Sample Contracts

The inclusion of sample contracts does not imply endorsement of such contracts by the American College of Radiology. ACR includes these samples only as examples of contracts that have been used by medical physicists in practice.

NOTE: State law governs contracts. Specific clauses and terms may vary by state. Medical physicists should seek qualified and experienced legal counsel in their own locality.

Sample Employee Contract

{Medical Physicist Employee's Name} Employment Contract with {Name of Company}

The following agreement between the {Medical Physicist Employee's Name} and {Name of Company} is entered into on {date}. It will be interpreted and disputes resolved under the laws of the State of {state}

Terms of employment:

1. Salary of \$XXX,XXX per year, with a raise anticipated in {month and year}.
2. 20 days of vacation per year.
3. 20 sick days per year to be used in case of illness (employee or a family member who requires employee's care).
4. 10 meeting days per year.
5. A professional allowance of \$XXXX per year for dues, meetings, journals, etc.
6. Medical insurance for employee and family (currently with Blue Cross/Blue Shield). Employee will arrange for a COBRA plan with current Employer until enrolled in our plan. {Name of Company} will reimburse Medical Physicist for the cost of the COBRA insurance.
7. A medical savings fund employer contribution of \$XXXX per year for medical expenses not covered by the medical insurance.
8. Disability Insurance.
9. Professional Liability Insurance.
10. A 401k salary deferral plan for which Medical Physicist is eligible after the first calendar year of employment.
11. Medical Physicist will be present for work on or before {date}.
12. Medical Physicist will perform full time professional Medical Physics work consistent with current professional standards (refer to AAPM and ACR standards of practice, technical guidance and Code of Ethics [6]).
13. This contract will renew annually with annual salary review on 1 October of each year.
14. Either party may terminate the agreement for any reason with 60 days' notice. [the contract should specify what duties the company expects the medical physicist to fulfill by the termination date, e.g., work with any successor]
15. Medical Physicist shall perform all professional medical physics work through the employer unless otherwise by mutual agreement. Exceptions are for volunteer professional tasks not directly related to {Name of Company}.

For {Name of Company}:

Employee:

{Name of Responsible Company Representative}

{Medical Physicist Employee's Name}

Date: _____

Date: _____

Sample Diagnostic Medical Physics Consulting Agreement

{HOSPITAL NAME}
{MEDICAL PHYSICS COMPANY}
Diagnostic Medical Physics Services Agreement

This Agreement is between {MEDICAL PHYSICS COMPANY}, a {STATE} limited liability company and {LLC NAME}, a limited liability company, doing business as {HOSPITAL NAME}, and is effective {DATE}. It is hereby agreed that the {MEDICAL PHYSICS COMPANY}, being duly registered by the State of {STATE} to provide Medical Physics Services will provide such services at {HOSPITAL NAME} as described below.

1. {MEDICAL PHYSICS COMPANY} shall be responsible for the general supervision of the Medical Physics aspects of the {HOSPITAL NAME} Radiological services. More specifically, these services shall include:
 - A. Assist in setting up and maintaining a radiation safety program for {HOSPITAL NAME}.
 - B. Registration of X-ray systems with the State Department of Health and Human Services in connection with initial and continuing Imaging System performance review.
 - C. Conduct initial and annual inspection of X-Ray and other Imaging Systems.
 - D. Inspections following any major service, as required by State regulations or as requested by {HOSPITAL NAME}.
 - E. Service as Radiation Safety Officer (RSO). {HOSPITAL NAME} shall supply an appointment letter appointing designated {MEDICAL PHYSICS COMPANY} staff members as RSO and Alternate RSO. Duties shall be in compliance with relevant State and NRC requirements.
 - F. Assistance as requested in any program for the Medical or Nursing Staff of {HOSPITAL NAME} for the purpose of in-service training to enhance the effectiveness of the {HOSPITAL NAME} services.
 - G. Other service required by Federal or State laws, statutes, or regulations, for accreditation programs, or as requested by the {HOSPITAL NAME} or as consistent with current Medical Physics practice standards.
2. {Medical Physics Company} shall be responsible for providing services to {HOSPITAL NAME} during the term of this Agreement. {MEDICAL PHYSICS COMPANY} shall perform the services in a professional, good workmanlike manner. Subject to {HOSPITAL NAME}'s reasonable scheduling requirements, {MEDICAL PHYSICS COMPANY} shall diligently provide the services at all times as necessary to timely satisfy its obligations hereunder and as otherwise reasonably requested by {HOSPITAL NAME}. In the event {MEDICAL PHYSICS COMPANY} shall fail to perform any of its material obligations hereunder, or bankruptcy, receivership, assignment for benefit or creditor or other insolvency proceedings are commenced by or against {MEDICAL PHYSICS COMPANY}, {HOSPITAL NAME} shall have no further obligation hereunder and may immediately terminate this Agreement upon written notice to {MEDICAL PHYSICS COMPANY}.
3. {MEDICAL PHYSICS COMPANY} agrees that during the term of this Agreement {MEDICAL PHYSICS COMPANY} shall be covered by adequate professional and general liability and malpractice insurance. Upon request, {MEDICAL PHYSICS

COMPANY} shall furnish to Hospital certificates of insurance assuring such coverage is in place.

4. {HOSPITAL NAME} shall take all reasonably necessary steps to provide adequate access by the {MEDICAL PHYSICS COMPANY} medical physics staff to all records and supplies within {HOSPITAL NAME} necessary for the performance of their duties herein.
5. Unless otherwise required by law, {MEDICAL PHYSICS COMPANY} shall not, without obtaining the prior written consent of {HOSPITAL NAME}, disclose information relating to the business methods, business policies, procedures, patients, techniques or trade secrets, or other knowledge or processes of or developed by {HOSPITAL NAME}, or any other confidential information relating to or dealing with the business operations, activities or affairs of {HOSPITAL NAME} (“Confidential Information”). {MEDICAL PHYSICS COMPANY} shall require its employees, agents, staff, and contractors providing services hereunder to comply with the terms of this section. This section shall survive the termination or expiration of this Agreement. {MEDICAL PHYSICS COMPANY} agrees to retain the Confidential Information in accordance with Health Insurance Portability and Accountability Act of 1996 (HIPAA) privacy and information security requirements and/or as specifically requested by {HOSPITAL NAME}.
6. This Agreement may be terminated by either party with thirty (30) days written notice.
7. {MEDICAL PHYSICS COMPANY} will provide {HOSPITAL NAME} a copy of {MEDICAL PHYSICS COMPANY} staff Certifications/Registrations as requested by {HOSPITAL NAME}.
8. {HOSPITAL NAME} may immediately and permanently remove from its premises any {MEDICAL PHYSICS COMPANY} personnel hereunder (i) who poses an immediate threat or danger to personnel or to the quality of medical services, (ii) who is listed or has been listed by a federal agency as suspended, excluded, barred, or sanctioned by any federal or state agency, (iii) who has been convicted of any offense related to health care, (iv) who fails to obtain or maintain the professional licensure and/or liability insurance required hereunder, or (v) who engages in unprofessional behavior.
9. {MEDICAL PHYSICS COMPANY} represents and warrants that neither it nor any employees, agents or contractors performing services hereunder are or have been excluded, terminated, suspended, or debarred from a federal or state health care program or from participation in any federal or state procurement or non-procurement programs, and that neither it nor its employees, agents or contractors is listed, and will not, during the term of this Agreement, become listed on the databases at <https://www.sam.gov/portal/public/SAM/#1> or https://oig.hhs.gov/exclusions/exclusions_list.asp or any state exclusions or sanctions databases. {MEDICAL PHYSICS COMPANY} will immediately notify {HOSPITAL NAME} of any change in the status of the representations and warranty set forth in this section. Any breach of this section shall give {HOSPITAL NAME} the right to terminate this Agreement immediately for cause.
10. {MEDICAL PHYSICS COMPANY} shall at all times indemnify, defend, and hold harmless {HOSPITAL NAME} and its officers, directors, shareholders, employees, agents, affiliates, subsidiaries, successors, and assigns from and against any and all

third-party claims, damages, liabilities, costs, and expenses, including reasonable legal fees and expenses, arising out of: (a) damage to the {HOSPITAL NAME} facilities or equipment caused by {MEDICAL PHYSICS COMPANY}; (b) personal injury and property damage resulting from the negligent installation or maintenance by {MEDICAL PHYSICS COMPANY}; or (c) its breach of this Agreement.

11. {HOSPITAL NAME} shall at all times indemnify, defend, and hold harmless {MEDICAL PHYSICS COMPANY} and its officers, directors, shareholders, employees, agents, affiliates, subsidiaries, successors, and assigns from and against any and all third-party claims, damages, liabilities, costs, and expenses, including reasonable legal fees and expenses, arising out of: (a) damage to the {MEDICAL PHYSICS COMPANY} facilities or equipment caused by {HOSPITAL NAME}; (b) personal injury and property damage resulting from the negligent installation or maintenance by {HOSPITAL NAME} or (c) its breach of this Agreement.
12. This Agreement shall be governed and construed in accordance with the laws of the State of {STATE}.
13. Nothing contained in this Agreement will require either party to refer any patients to or otherwise generate business for the other party. The parties enter into this Agreement with the intent of conducting their relationship in full compliance with applicable federal, state, and local law, including the Medicare/Medicaid Anti-fraud and Abuse Amendments. Notwithstanding any unanticipated effect of any of the provisions herein, neither party will intentionally conduct itself under the terms of this Agreement in a manner to constitute a violation of these provisions. The parties agree that all amounts paid in connection with the replenishing of pharmaceutical supplies and non-prescription drugs hereunder are commercially reasonable and are not in return for, do not vary with and do not take into account or reflect the volume or value of referrals or other business generated between the parties.
14. {MEDICAL PHYSICS COMPANY} shall not assign this Agreement or any portion hereof and shall not delegate any duties under this Agreement without the prior written consent of {HOSPITAL NAME}. This Agreement may be executed in exact counterparts and when so executed by the parties hereto shall be effective in accordance with the terms hereof. This Agreement is a complete integration and final expression of the agreement between the parties, and may not be amended, supplemented, or otherwise modified except by written agreement executed by authorized representatives of each party.
15. {MEDICAL PHYSICS COMPANY} fees will be as described in the following Appendix for the term {START DATE} to {END DATE}.

{LLC NAME}
d/b/a {HOSPITAL NAME}

{MEDICAL PHYSICS COMPANY}:

Administrator

Chief Medical Physicist

Date: _____

Date: _____

Appendix to Sample Diagnostic Medical Physics Consulting Agreement

Fee Schedule: {START DATE} through {END DATE}
Terms: Net 30 of date of {HOSPITAL NAME}'s receipt of invoice

Service	Fee
Planar Radiographic or Fluoroscopic System Review	
C- Arm System Review:	
Computed Tomography System Review	
Computed Tomography System Review with ACR Accreditation process	
Mammography System Performance Review (MQSA/ACR) Digital	
High Field MRI System Performance Review	
Ultrasound System Performance review (up to 3 transducers)	
Service as RSO (quarterly fee)	
Other Medical Physics Services (hourly)	

Sample Professional Services Agreement

Medical Physics Services

This agreement made as of this first day of January 2018, by and between **Allstate Medical Center**, non-profit corporation, with its principal place of business at Number Street, Town, State, Zip (hereinafter “AMC”) and **Super Medical Physics, LLC**, Number Street, Town, State, Zip (hereinafter “Service Provider”) **effective January 1 2018 and expiring on December 31, 2018.**

WHEREAS, Service Provider and AMC desire to retain certain professional medical physics services for patients receiving technically sophisticated Radiation Oncology Services at AMC; and

WHEREAS, AMC reimburses Service Provider for said services; and

NOW THEREFORE, for and in consideration of the mutual covenants and promises of this Agreement, the parties intending to be legally bound, agree as follows:

I. Responsibilities of Service Provider

A. Medical Services

1. Duties. Service Provider shall provide professional medical physics services as reasonably requested and/or required by AMC (hereafter “Professional Services”). The Professional Services shall include:
 - a. Technical oversight of treatment planning activities. Review of all work performed by the AMC dosimetry staff or dosimetry consultant.
 - b. Consultation and/or patient data collection on difficult or complicated simulations and patient plans.
 - c. Supervision of simulator and treatment unit quality assurance testing including biweekly linac output calibrations, monthly linac and simulator mechanical alignment and safety system testing, and monthly linac beam parameter testing.
 - d. Annual simulator radiographic/fluoroscopic system image quality testing.
 - e. Checks on calculations performed by the AMC dosimetry staff, dosimetry consultant and radiation therapists.
 - f. Weekly chart checks on current patients.
 - g. Special physics consultations.
 - h. New procedure/protocol development and support as needed.
 - i. Preparation of required physics data documentation for research protocol patients.
2. Scope of Commitment. On-site coverage will consist of five physicist visits per week. At least four visits per week will be during normal clinic hours. Other visits will take place at the end of the day or on weekends. Telephone support will be available during normal clinic hours.

Emergency visits, such as necessary testing following treatment unit repair, will be made as quickly as possible. In most cases, it will be possible to direct the on-site dosimetry staff to perform necessary measurements.

The above services will normally be provided personally by Joseph P. Physicist. Coverage by another qualified medical physicist will be provided by

the service provider during vacations, conferences and other scheduled absences.

Routine treatment planning will be performed by the AMC dosimetry staff or dosimetry consultant and will be reviewed by the service provider. The service provider will assist with difficult and/or complicated cases as needed. The service provider will provide AMC with treatment planning services during scheduled absences of the dosimetry staff, at the request of AMC, at a rate of \$XXX per hour.

Acceptance testing of new treatment or simulation units will fall outside the scope of this agreement and will require special arrangements.

Rental fees for scanning equipment, if necessary, will be paid by AMC directly to the vendor or institution supplying the equipment.

B. Administration

1. Professional Service Charge. In consideration of service provider's services as outlined above, AMC shall pay service provider compensation in the amount of \$YYY per month (\$ZZZ per year). Such compensation shall be paid within 30 days following the month in which said services were rendered.

The parties acknowledge that compensation paid for the Professional Services provided pursuant to this Agreement were negotiated by the parties to reflect the current fair market value of such services.

2. Independent Contractor. It is expressly understood and agreed that the Service Provider is an independent contractor and not an employee of AMC. Service Provider will not claim vacation pay, paid sick leave, retirement benefits, social security, worker's compensation, health disability, professional malpractice, unemployment insurance benefits or other employee benefits of any kind. Service Provider shall indemnify and hold AMC harmless from any liability arising from claims related to the failure to make such payments, withholdings, and benefits of any kind. The provision shall survive the termination of this contract.
3. Indemnification. Service Provider agrees to defend, indemnify, and hold harmless AMC and its employees, servants, agents, successors, and assigns from and against any and all third party claims and demands for bodily injury or property damage arising out of or resulting from the acts or omissions of Service Provider, provided, however, that this indemnification and hold harmless shall not apply to any claims arising from or as a result of willful misconduct or negligence of AMC or its employees, agents, or licensees. Whenever AMC receives notice of a claim or demand that would be covered by Service Provider's indemnity, AMC shall in turn provide Service Provider with prompt written notice of said claim or demand.
4. Insurance. Service Provider shall provide proof of professional liability coverage of not less than \$1,000,000 / \$3,000,000. Service Provider shall specifically name AMC as an additional insured on all such insurance. Service Provider will provide AMC with a certificate of insurance, showing the coverage required prior to the execution of this agreement.

II. Responsibilities of AMC

A. Medical Services

1. Patient Records. AMC shall retain all medical and health records of AMC patients. However, Service Provider agrees and acknowledges that, in connection with the performance of services hereunder, AMC shall disclose to Service Provider individually identifiable patient health information that is protected under the Health Insurance Portability and Accountability Act of 1996 (HIPAA). Service Provider shall keep strictly confidential, hold in trust and shall use any Protected Health Information it receives from AMC only in manner that complies with applicable laws, rules and regulations, including, without limitation, HIPAA. AMC shall only disclose Protected Health Information to Service Provider in a manner that complies with applicable laws, rules and regulations, including, without limitation, HIPAA.

Service Provider will sign a Confidentiality Statement from AMC to comply with HIPAA and the policies and procedures of AMC.

2. Billing for Technical / Professional Services. AMC shall be solely responsible, as its own cost and expense, for the coding, billing and collecting of professional charges associated with the technical and professional components of Radiation Oncology Services performed pursuant to this Agreement. All such charges shall be billed by AMC under its own name for its own account. All collections received by AMC shall accrue to the sole benefit of AMC.

III. Terms of Agreement

A. General Provisions

1. Confidentiality. Service Provider will not at any time or in any manner, whether directly or indirectly, use for personal benefit, or divulge, disclose or communicate in any manner any information that is proprietary to AMC. Service Provider will protect such information and treat it as strictly confidential. This provision shall continue to be effective after the termination of the Agreement. Upon termination of the Agreement, Service Provider will return to AMC all records, notes, documentation and other items that were used, created or controlled by Service Provider during the term of this Agreement.
2. Compliance with Social Security Act. Upon written request of the Secretary of Health and Human Services or the Comptroller General of the United States, or any of their duly authorized representatives, the parties to this Agreement shall make available to such requesting official those contracts, books, documents, and records necessary to certify the nature and extent of the costs of providing the services under this Agreement. Such records shall be available for inspection for up to four years after the performance of such services. This provision is included pursuant to and is governed by the requirements of Section 952 of Public Law 96-499, 94 Stat. 2646 (1980) (Section 1861(v)(1) of the Social Security Act), 42 U.S.C.A. Section 1395(x)(v)(I) and the regulations promulgated thereunder.
3. Assignment. It is agreed by and between the parties that this Agreement may not be assigned without the written consent of both parties.

4. Amendments. Amendments may be necessary to the terms of this agreement due to major changes in the extent or nature of services offered and shall be made only through mutual, written agreement of the parties.
5. Termination. Either party may terminate this agreement (i) without cause upon ninety (90) days prior written notice, or (ii) with cause upon ten (10) days prior written notice. As used herein, “with cause” shall mean (i) negligent or willful misconduct by one party or its employees that is injurious to the other party, or (ii) any material breach of any of the provisions of this Agreement, if such breach is not cured within five (5) days after written notice is delivered to the breaching party. Should this Agreement be terminated prior to December 31, 2018, AMC agrees to pay the full monthly fee of \$XXX for any part of a month in which the Professional Services are used. Upon any termination of this Agreement in accordance with its terms, neither AMC nor Service Provider shall have any further obligations under this Agreement, except for liabilities and/or obligations accrued through the date of termination.
6. Notice. Any notice required or desired to be give hereunder shall be in writing and delivered personally or by certified mail, return receipt requested, postage prepaid, addressed as follows:

If to Service Provider:
 Joseph P. Physicist
 Number Street
 Town State Zip

If to AMC:
 Attn: Chief Financial Officer
 Allstate Medical Center
 Number Street
 Town State Zip

or at such other address and to the attention of such other person as either party shall designated by written notice. Notice shall be deemed to have been given when received if delivered personally or when postmarked, if sent by certified mail.

7. Governing Law/Jurisdiction. This Agreement shall be construed and the validity and effect of its provisions shall be determined by the laws of the State of _____. If the services of an attorney are required to secure the performance hereof or otherwise upon the breach or default of the other party, or if any judicial remedy or arbitration is necessary to enforce or interpret any provision of this Agreement, or the rights and duties of any person in relation thereto, the prevailing party shall be entitled to reasonable attorney’s fees, costs and other expenses in addition to any other relief to which the party may be entitled. The parties consent to the exercise of personal jurisdiction by the State and federal courts located in Town, State for any action related to the enforcement or cancellation of this Agreement.
8. Waiver. The waiver of any party hereto of any breach of any provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach by any party.
9. Miscellaneous. This document constitutes the entire Agreement between the parties, all oral agreements being merged herein, and supersedes all prior representations. Subject to the provisions otherwise contained in this Agreement, this Agreement shall inure to the benefit of and be binding on the heirs, successors, and permitted assigns of the respective parties hereto. If any provision of this Agreement is held by a court of competent jurisdiction to be invalid or

unenforceable, the remainder of the Agreement shall continue in full force and effect.

10. Compliance Program. The Service Provider is aware that AMC operates in accordance with a Corporate Compliance Program, employs a Compliance Officer and operates a 24-hour, seven-day-a-week compliance Hot Line. Service Provider understands to abide by the terms and conditions of the Compliance Plan. The Service Provider is under an affirmative obligation to immediately report to the Compliance Officer any actions by an agent or employee of AMC which The Service Provider believes, in good faith, violates an ethical, professional or legal standard.
11. Providing Information About the False Claims Act. The Deficit Reduction Act of 2005 (DRA) requires that health care organizations like AMC provide information to contractors and agents about the False Claims Act. This requirement applies to any organization that receives or makes Medicaid payments of five million dollars or more.
12. No Debarment. The Service Provider acknowledges that not now and has not been excluded within the last five (5) years from any federal health care program or any state funded health care programs.
13. Arbitration. All claims and disputes relating to this contract shall be subject to arbitration at the option of either party in accordance with the Arbitration Rules as set out in the _____ Arbitration Act contained in Chapter 192 of Title 12 of _____ Statutes Annotated. The _____ Arbitration Act shall govern the arbitration procedures. Written notice of demand for arbitration shall be filed with the other party to the Contract within a reasonable time after the dispute has arisen.
14. Acknowledgement of Arbitration. The Parties hereto understand that this agreement contains an agreement to arbitrate. After signing this agreement, the Parties understand that they will not be able to bring a lawsuit concerning any dispute that may arise which is covered by the arbitration agreement, unless it involves a question of constitutional or civil rights. Instead, the Parties agree to submit any such dispute to an impartial arbitrator.

Dated as of the date set forth on the first page of this Agreement:

ALLSTATE MEDICAL CENTER:

_____	Date	_____	Date
Witness		Joseph F. Finance, CFO	

SERVICE PROVIDER:

_____	Date	_____	Date
Witness		Joseph P. Physicist	
Super Medical Physics, LLC			

Sample Services Agreement

SERVICES AGREEMENT BETWEEN {INSTITUTION} AND {MEDICAL PHYSICS COMPANY}

This Services Agreement (“Agreement”) effective as of {date} (the “Effective Date”) by and between **{Institution}**, a limited liability company organized under the laws of {State} with a place of business located at {Street, City, State} (“Institution”) and **{Medical Physics Company}**, a non-profit corporation organized under the laws of {State}, located at {Street, City, State} (“MPCo”). Together, Institution and MPCo are referred to herein as the “Parties,” and each as a “Party.”

RECITALS

WHEREAS, Institution is the owner and operator of a radiation therapy clinic located at {Street, City, State} (the “Facility”);

WHEREAS, Institution requires the services of certain individuals to provide routine therapeutic radiologic physics services, quality control services, oversight and program development services, and special therapeutic and other radiologic physics services to the Facility;

WHEREAS, MPCo employs or contracts with certain individuals who are qualified to provide such services; and

WHEREAS, Institution desires to retain MPCo to provide such services as are specified in this Agreement, and MPCo desires to provide such services for Institution in accordance with the provisions hereinafter set forth;

NOW, THEREFORE, in consideration of the mutual covenants and promises set forth in this Agreement, the Parties hereby agree as follows:

1. SERVICES

MPCo shall provide the following services to Institution (collectively, the “Services”) in accordance with the terms and conditions set forth herein:

1.1 Routine Services. The services set forth in this Section 1.1 shall be referred to collectively as the “Routine Services.”

1.1.1 Therapeutic Radiologic Physics Services. MPCo shall provide the routine therapeutic radiologic services for the Facility as described in Exhibit A attached hereto and incorporated herein (the “Therapeutic Radiologic Physics Services”) through its employees who are board certified or board eligible physicists (each, a “Physicist”). MPCo shall ensure that the Physicist devotes a total of 8.5 hours per day (during a mutually agreeable four day work week) toward the performance of the Therapeutic Radiologic Physics Services during the Term (defined below).

- 1.1.2 Quality Control Services. Under the supervision of a Physicist and in accordance with best practices for similarly situated radiation oncology facilities, a physicist assistant (each, a “Physicist Assistant”) shall perform quality control tests, block cutting, and treatment planning assistance (collectively, the “Quality Control Services”). MPCo shall ensure the Physicist Assistant devotes 20 hours per week toward the performance of the Quality Control Services set forth in Exhibit A.
 - 1.1.3 Oversight and Development Services. MPCo’s Chief of Medical Physics Services (the “Chief Physicist”) shall provide oversight with respect to the Therapeutic Radiologic Physics Services and the Quality Control Services as well as program development services for the Facility (the “Oversight and Development Services”). MPCo shall ensure that the Chief Physicist devotes five hours per week toward the performance of the Oversight and Development Services.
 - 1.2. Special Services. Upon the mutual agreement of the Parties, MPCo shall provide the special therapeutic and other radiologic physics services set forth on Exhibit B (the “Special Services”).
 - 1.3. Approval and Right to Remove Personnel. All personnel supplied by MPCo under this Agreement, including without limitation any Physicist or Physicist Assistant providing Routine Services (collectively, the “Personnel”) must be approved in advance by the Institution. If any Physicist or Physicist Assistant is not reasonably performing his or her duties under this Agreement, Institution shall provide notice to MPCo, and MPCo shall have thirty (30) days in which to cure such performance issues with the Physicist or Physicist Assistant. If such performance issues are not resolved to Institution’s reasonable satisfaction within that period, MPCo shall remove such Personnel from providing Services hereunder. Notwithstanding the foregoing, Institution shall require, and MPCo shall cause, the immediate removal of any Personnel from the Facility and the provision of Services hereunder in the event that such Personnel poses an immediate threat to the health, safety or welfare of any patient or employee of the Facility or Institution.

2. MPCo COVENANTS, REPRESENTATIONS, AND WARRANTIES

- 2.1. Compliance with Institution Standards. Throughout the term of this Agreement, MPCo shall (to the extent applicable), and shall ensure that all Personnel shall, (a) comply with all applicable terms of this Agreement and all policies, bylaws, rules and regulations of Institution and Facility, as in effect from time to time; (b) cooperate in good faith to investigate any complaints made by Institution patients or Institution personnel and to resolve such complaints in a reasonable time with appropriate action; (c) participate in Institution’s quality assurance, utilization review and risk management programs and serve on such quality assurance, utilization review and risk management committees, or any other committees, as may be requested by Institution from time to time; (d) participate in ongoing quality assurance monitoring activities, such as audits; (e) use reasonable efforts, consistent with the job duties and professional judgment of the applicable Personnel, to monitor and control the expenses of Institution in order to provide cost efficient Services; and (f) ensure that the Routine Services (and Special

Services, to the extent provided) are at all times rendered in a competent and professional manner, consistent with the continuous quality improvement standards of Institution as in effect from time to time. Institution shall be responsible for providing MPCo with copies of all such policies, bylaws, rules, and regulations, prior to or upon execution of this Agreement. Institution shall also be responsible for providing MPCo with copies any changes or updates to any such documents that occur during the term or any extension of this Agreement.

- 2.2. Compliance with Applicable Laws, Regulations and Standards. MPCo shall ensure that all Personnel are properly qualified and satisfy all educational and competency requirements established by applicable federal and state regulatory and accrediting bodies. MPCo shall, and shall ensure that the Personnel shall, comply with all applicable laws, rules and regulations of all governmental authorities and accrediting agencies having jurisdiction over Institution, the Facility and/or this Agreement, including, without limitation, federal and state laws governing the confidentiality and privacy of patient health information. In addition, MPCo shall, and shall ensure that the Personnel shall, comply with all Institution and professional licensure and reimbursement laws, regulations, rules and policies, including, without limitation, all applicable standards of the Joint Commission. Each of the MPCo and the Personnel shall exercise independent clinical judgment in performing the Services under this Agreement consistent with generally accepted professional standards and shall not unlawfully discriminate against individuals in the provision of Services under this Agreement.
- 2.3. Qualifications of Personnel. MPCo shall ensure that all Personnel: (a) shall possess all licenses and registrations required by such Personnel to perform the Services described herein, which licenses or registrations shall not be revoked, suspended or restricted in any manner; (b) shall not have been, and shall not during the term of this Agreement be, censured, reprimanded, suspended or placed on probation for reasons relating to professional competence or misconduct by any professional licensing board, any federal, state or local governmental agency, or any professional society or specialty board; (c) shall meet all applicable credentialing criteria of Institution; and (d) shall not have been, and shall not during the term of this Agreement be, the subject of any investigation or other proceeding by any third party payer involving allegations of false claims or fraudulent billing practices or any violation of the Medicare or Medicaid laws or regulations.
- 2.4. Consistency in Personnel Assignments. MPCo shall make good faith efforts to ensure that Personnel are assigned to the Facility on a consistent basis with minimal turnover.
- 2.5. HIPAA. MPCo agrees that MPCo shall comply and shall ensure that each of the Personnel complies, and the Personnel shall assist Institution to comply, with the regulations promulgated under the Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), as currently issued, as amended from time to time, and as promulgated at any time during the term of this Agreement (collectively, the “HIPAA Regulations”), with respect to the privacy and security of “protected health information” (“PHI” as defined in the HIPAA

Regulations) created, transmitted, maintained or received by MPCo or the Personnel pursuant to or in connection with the performance of MPCo's obligations under this Agreement and shall enter into a Business Associate Agreement in the form attached hereto as Exhibit C.

- 2.6. Cooperation with Institution. The Parties agree that it is essential to this Agreement that the Personnel work cooperatively with Institution including but not limited to its administration, members of the medical staff, nurses, and other medical providers. MPCo shall ensure that the Personnel will use good faith efforts to work cooperatively with Institution's administration, members of the medical staff and other medical providers in order to provide high quality clinical care that is both consistent with applicable standards and supportive of Institution's efforts to promote an environment that is cooperative and patient-focused.
- 2.7. Medical Records. The Personnel shall, in a timely manner, enter adequate, legible and appropriate information into patients' medical records on each occasion on which Personnel render Services at the Facility. All such records prepared in connection with Services performed pursuant to this Agreement shall be the property of Institution and shall be retained by Institution in accordance with State and Federal laws and regulations; provided, however, that MPCo shall have access to such records both during and after the Term for all legitimate purposes, including but not limited to patient care and defense of claims against MPCo or Personnel.
- 2.8. Activity Records. Each of the Personnel shall submit to Institution activity records showing the nature and extent of the Services performed pursuant to the terms of this Agreement, in the form and at the times so that, if permitted by law, Institution may recover allowable costs from certain Federal and State health care programs pursuant to 42 C.F.R. §§ 415.1 et seq. and applicable Sections of the Medicare Provider Reimbursement Manual.
- 2.9. Representations and Warranties. Each Party represents and warrants to the other Party that on and as of the date hereof and at all times during the term of this Agreement:
 - 2.9.1. Due Authorization and Enforceability. The Party has the power and authority to execute, deliver and perform this Agreement. The execution, delivery and performance of this Agreement have been duly authorized by all necessary action and it constitutes the legal, valid and binding obligations of the Party, enforceable against the Party in accordance with its terms.
 - 2.9.2. No Suspension or Exclusion from Any Government Health Program. No Party (nor any Personnel), has been suspended or excluded from participation in any government health care reimbursement program, including Medicare and Medicaid.
 - 2.9.3. No Restrictive Covenants. No Party is subject to any covenant-not-to-compete or other covenant or restriction which would prohibit or otherwise restrict any of them from performing their obligations hereunder.

- 2.9.4. No Pending or Threatened Investigations or Other Legal Proceedings. No Party is subject to any pending or, to the Party's knowledge, threatened litigation, investigation or other proceeding by (a) any third party payor involving any allegations of false claims or fraudulent billing practices or any violation of any Medicare or Medicaid laws or regulations, or (b) any government agency, board, bureau or other administrative agency or a health care facility, peer review organization or professional society.

3. COMPENSATION

- 3.1. Compensation. In consideration of MPCo's services hereunder, Institution shall pay MPCo the following compensation:
- 3.1.1. Routine Services. Institution shall pay MPCo an amount equal to \$xxxx per week for the Therapeutic Radiologic Physics Services, Quality Control Services and the Oversight and Development Services provided by MPCo to Institution.
- 3.1.2. Special Services. Institution shall pay MPCo an amount equal to \$yyy per hour for time spent in the performance of the Special Services; provided, however, that Institution has authorized the performance of the Special Services in advance through a written request to MPCo.
- 3.2. Billing. Within fifteen (15) days of the end of each calendar month, MPCo shall provide Institution with a written invoice of all Services provided by MPCo to Institution during such calendar month and the amount of compensation owed by Institution to MPCo for such services. Institution shall pay such compensation to MPCo within thirty (30) days of receipt of such invoice. Neither MPCo nor any Personnel shall bill, collect or seek payment or reimbursement for the Services provided under this Agreement from any person or entity other than Institution. Institution shall be responsible for MPCo's costs of collection, including reasonable attorney's fees, on overdue amounts.

4. INDEPENDENT CONTRACTORS

It is expressly understood and agreed that, in the performance of services under this Agreement, MPCo and the Personnel shall at all times act as independent contractors with respect to Institution, and not as employees or agents of Institution. Further, it is expressly understood and agreed by the Parties that nothing contained in this Agreement shall be construed to create a joint venture, partnership, association, or other affiliation, or like relationship between the Parties, or a relationship of landlord and tenant, it being specifically agreed that their relationship is and shall remain that of independent parties to a contractual relationship as set forth in this Agreement. In no event shall either Party be liable for the debts or obligations of the other of them, except as otherwise specifically provided in this Agreement. Neither MPCo nor the Personnel shall have any claim under this Agreement or otherwise against Institution for vacation pay, paid sick leave, retirement benefits, social security, workers compensation, health, disability, professional malpractice, or unemployment insurance benefits, or other employee benefits of any kind. MPCo understands and agrees that (i) the Personnel will not be treated as Institution employees for federal tax purposes; (ii) Institution will not withhold on behalf of the Personnel any sums for income tax,

unemployment insurance, social security, or any other withholding pursuant to any law or requirement of any governmental body or make available any of the benefits afforded to employees of Institution; (iii) all of such payments, withholdings, and benefits, if any, are the sole responsibility of MPCo; and (iv) MPCo will indemnify and hold Institution harmless from any and all loss or liability arising from its failure to make such payments, withholdings, and benefits, if any.

5. INSURANCE AND INDEMNIFICATION

5.1. Professional Liability Insurance. MPCo shall purchase and maintain throughout the term of this Agreement professional liability insurance covering all services rendered by the Personnel under this Agreement in the amount of at least \$2,000,000 for each occurrence with a per annum aggregate limitation of at least \$6,000,000 and shall obtain so-called “tail insurance” in the above amounts if the insurance being provided is on a claims-made as opposed to an occurrence basis. Upon reasonable request by Institution, MPCo shall deliver to Institution a certificate reflecting such insurance coverage, and shall provide written notice to Institution of any termination, expiration, non-renewal, or other change in the amount or scope of such insurance coverage. Institution shall not be required to provide such insurance and shall not be liable for the payment of any premiums on such insurance. The provisions of this section shall survive the termination or expiration of this Agreement.

5.2. Worker’s Compensation Insurance. MPCo shall purchase and maintain throughout the term of this Agreement worker’s compensation insurance, including statutory disability benefits, occupational diseases and employers’ liability coverages, in the greater of statutorily required amounts or the following amounts:

5.2.1. \$1,000,000 each accident

5.2.2. \$1,000,000 disease – policy limit

5.2.3. \$1,000,000 disease – each employee

5.3. Indemnification. MPCo and Institution hereby agree to defend, indemnify and hold the other (including the officers, members, representatives, trustees and employees of Institution or MPCo and their affiliates) harmless from and against any and all losses, claims, damages, costs, expenses (including reasonable attorneys’ fees) or liabilities arising out of or relating to (i) a breach by either MPCo or Institution of any representation, warranty or covenant contained in this Agreement, or (ii) the negligence, willful misconduct or violation of law by MPCo or the Personnel or Institution, or the failure by MPCo or the Personnel or Institution to perform its/their obligations under this Agreement. The provisions of this section shall survive the termination or expiration of this Agreement.

6. ACCESS TO BOOKS AND RECORDS

Until the expiration of four (4) years after the furnishing of the Clinical Services called for by this Agreement, MPCo upon request, shall make available to the Secretary, U.S. Department of Health and Human Services, the U.S. Comptroller General, and their representatives, this Agreement and all other books, documents and records as are necessary to certify the nature and extent of the costs incurred by Institution in

purchasing services under this Agreement. If MPCo is required to disclose any books, documents, or other records relevant to this Agreement for the purpose of an audit or investigation, MPCo shall promptly notify Institution of the nature and scope of such requests and shall make available, upon written request of Institution, all such books, documents or records. The provisions of this section shall survive the termination or expiration of this Agreement.

7. TERM AND TERMINATION

- 7.1. Term. This Agreement shall have a term (the “Term”) of two (2) years commencing on the Effective Date and shall automatically renew for subsequent one year terms unless terminated earlier in accordance herewith.
- 7.2. Termination of Agreement. Notwithstanding any other provisions of this Agreement, this Agreement may be terminated upon any of the following:
- 7.2.1. Termination without Cause. Either Party may terminate this Agreement without cause at any time upon sixty (60) days prior written notice to the other Party.
- 7.2.2. Termination for Material Default. Either Party may terminate this Agreement for cause at any time if there is a material default in performance hereunder by the other Party upon thirty (30) days prior written notice and an opportunity to cure during said thirty (30) day period.
- 7.2.3. Immediate Termination. Notwithstanding the foregoing, this Agreement may, in the discretion of Institution, be immediately terminated in the event that (i) Institution determines in good faith and consistent with prevailing medical standards that the provision of services under this Agreement by MPCo or the Personnel constitutes a threat to the health or safety of the patients or employees of the Facility or the Institution, (ii) MPCo or any employee of the MPCo, including without limitation the Personnel, has its or his participation in any government health care reimbursement program, including Medicare and Medicaid, or any license, registration, or certificate necessary to provide Services pursuant to this Agreement, suspended, surrendered, revoked or restricted in any manner, provided however, that Institution shall not have the right to terminate this Agreement if any employee of MPCo is so suspended, surrendered, revoked, restricted or excluded and such employee is immediately removed by MPCo from providing services hereunder and a replacement, acceptable to Institution, is provided to perform services hereunder.
- 7.3. Effect of Termination.
- 7.3.1. Upon termination of this Agreement, as herein above provided, neither Party shall have any further obligation hereunder except for (i) obligations accruing prior to the date of termination and (ii) obligations, promises, or covenants contained herein which are expressly made to extend beyond the term of this Agreement including, without limitation, any indemnities and access to books and records.

8. CHANGES IN LAW

Notwithstanding any other provision of this Agreement, if the governmental agencies (or their representatives) which administer Medicare, any other payer, or any other federal, state or local government or agency passes, issues or promulgates any law, rule, regulation, standard or interpretation, or if any court of competent jurisdiction renders any decision or issues any order, at any time while this Agreement is in effect, which prohibits, restricts, limits or in any way significantly affects either Party's rights or obligations hereunder, either Party may give the other notice of intent to amend this Agreement to the satisfaction of both Parties, to accommodate for such prohibition, restriction, limitation or change. If this Agreement is not so amended in writing within fifteen (15) days after said notice was received, this Agreement shall terminate as of midnight on the fifteenth (15th) day after said notice was received.

9. MISCELLANEOUS PROVISIONS

9.1. Notices. Written notice required under this Agreement shall be effective when delivered by hand-delivery or sent by United States registered or certified mail, postage prepaid and return receipt requested, or consigned to an established overnight mail carrier, and addressed or delivered to the Parties at the following addresses (or such address as may hereafter be designated by a Party by written notice thereof to the other Party actually received):

To MPCo: {Medical Physics Company}
Street
City, State
Attn: Chief Physicist

To Institution: {Institution}
Street
City, State
Attn: Chief Operating Officer

9.2. Incorporation of Exhibits. All schedules, exhibits, addenda, and recitals referred to in this Agreement are an integral part of this Agreement and are hereby incorporated into this Agreement.

9.3. Amendment. This Agreement may be amended at any time by mutual agreement of the Parties, provided that any amendment shall become effective only when reduced to writing and signed by the Parties.

9.4. Assignment and Delegation. No assignment of this Agreement or delegation of the rights and obligations hereunder shall be valid without the specific written consent of both Parties hereto, except that this Agreement may be assigned by Institution as a result of reorganization, merger, consolidation, sale of assets, change in control or sponsorship, or bankruptcy, or to any successor entity. Subject to the prohibition contained in this paragraph, this Agreement shall be binding upon and inure to the benefit of the successors and permitted assigns of the Parties hereto.

9.5. Governing Law. This Agreement and all matters arising out of and relating to this Agreement shall be construed and enforced in accordance with the laws of {State}, without regard to conflict of law rules.

- 9.6. Waiver. No delay or omission by either Party to exercise any right or remedy under this Agreement shall be construed to be either acquiescence or the waiver of the ability to exercise any right or remedy in the future. Any waiver of any terms and conditions hereof must be in writing, and signed by the Parties hereto. A waiver of any term or condition hereof shall not be construed as a future waiver of the same or any other term or condition hereof.
- 9.7. Section Heading. The section headings contained in this Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this Agreement.
- 9.8. Entire Agreement. This Agreement, including all exhibits and attachments, constitutes the entire agreement between the Parties with respect to the subject matter hereof. This Agreement supersedes all prior agreements, negotiations, and communications, whether written or oral, between the Parties hereto with respect to the subject matter hereof.
- 9.9. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original, but all such counterparts together shall constitute one and the same instrument.
- 9.10. Proprietary Information. Neither Party shall, nor shall its employees or agents, at any time during or after the term of this Agreement, unless and to the extent required by law, disclose any professional secrets or confidential information with respect to the other Party, its medical services or its patients, any entity providing services to such Party, or any entity related to such Party, including, without limitation, manuals, methods of operations, sources of supplies, architectural plans for that Party's offices, patient records, patient identifying data, medical services development plans, personnel data, physician recruitment methods, protocols, sources and methods of financing, payment structures, pricing structures, marketing methods, contractual arrangements (including the terms of this Agreement), internal corporate and legal documents, strategies, tactics, plans, litigation and negotiations and other confidential information compiled, created or obtained by such Party (collectively, "Confidential Information"). Neither Party shall, nor shall its employees or agents, at any time during or after the term of this Agreement, remove any documents or transfer any computer files containing any such Confidential Information from the other Party's offices, and such Confidential Information shall remain the property of such Party at all times. Each Party hereby acknowledges that such Confidential Information, as it exists from time to time, is a valuable, special and unique asset of the other Party and that if such Party or its employees or agents were to engage in any such prohibited activity, said activity would diminish the value of the other Party and would cause the other Party irreparable harm and damages in an amount that would be difficult to quantify. Therefore, each Party agrees that if it or if any of its employees or agents engages in any such prohibited activity, the other Party shall be entitled to all remedies available at law or in equity, including, without limitation, injunctive relief and/or specific performance.
- 9.11. Severability. If any provision of this Agreement shall be declared invalid or illegal for any reason whatsoever, then notwithstanding such invalidity or illegality, the remaining terms and provisions of this Agreement shall remain in

full force and effect in the same manner as if the invalid or illegal provision had not been contained herein, and such invalid, unenforceable or illegal provision shall be valid, enforceable and legal to the maximum extent permitted by law.

- 9.12. Non-Exclusivity. Nothing in this Agreement shall be construed or interpreted in a way that would prevent either Party from obtaining services from, or rendering services to, another party.

[Remainder of the page is intentionally blank. Signature pages follow.] IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives as of the Effective Date.

{Medical Physics Company}

{Institution}

By: _____
Name:
Title:

By: _____
Name:
Title:

EXHIBIT A

ROUTINE SERVICES

Therapeutic Radiological Physics Services and Quality Control Services to be provided by MPCo to Institution include the following schedule of services, which schedule shall be reviewed and amended if necessary from time to time by mutual agreement between MPCo and Institution.

- Provide weekly reviews of patients' radiation therapy charts and as applicable, complete chart check log.
- Conduct a quality control program in accordance with the most current and applicable provisions of AAPM Task Group Reports (i.e. #142, #51, etc.) and Medical Physics Practice Guidelines (e.g. MPPG 8a) on the Linear Accelerators and brachytherapy systems, and in accordance with Institution's Physics Procedures, as applicable and appropriate for the Facility, provided that Facility has provided the instrumentation and equipment necessary for such quality control tests.
- Supervise dosimetry personnel relative to treatment planning scope and quality of work.
- Perform applicable consultative and teaching support for Facility personnel and radiation oncologists.
- Provide all necessary physics service relative to the use of I-125 interstitial and electronic HDR radiation therapy treatments.
- Monitor any treatment-planning computer in use by Institution to verify the accuracy of treatment machine beam data, consistent with the most current and applicable Medical Physics Practice Guideline (e.g. MPPG 5a).
- Through the Physicist Assistant, provide block-cutting services for electron-beam cutouts.
- Through the Physicist Assistant, provide treatment planning support services (e.g. importing image data and coordinating deadlines) as time permits and as deemed appropriate by MPCo's medical physicists.
- Provide regular inter-comparison of megavoltage output with a Radiological Physics Center (RPC) or Radiation Dosimetry Service (RDS), if such service is available. Institution is required to purchase this service from RPC or RDS on an annual basis if available.
- Provide all other radiation oncology physics services as necessary to maintain a safe and clinically effective radiation oncology physics program.
- Oversight and programmatic support by the MPCo Chief of Medical Physics, including monthly visits to the Facility.
- Assist with special radiation therapy projects relating to Facility financial, resource, facility, budget, and technology planning for current and future Facility requirements.

- Assist in preparation for and compliance with regulatory and accreditation inspections for all external beam programs and participate in such inspections in coordination with key Facility personnel.

Provide clinical physics services on-site at the Facility as determined necessary by Institution and MPCo for the Facility.

EXHIBIT B

SPECIAL SERVICES

Special Therapeutic and Other Radiological Physics Services to be provided by MPCo are those outside the scope of Routine Services (see Exhibit A) and may be provided upon request by Institution at an additional charge if requirements exceed time contracted for routine FTE medical physics support. Each request for Special Services must be presented by Institution in writing with reasonable advance notice, and MPCo may accept or decline each individual request as it deems appropriate based on the nature and timing of the request.

- Acceptance and commissioning of new Equipment such as linear accelerators, simulators, treatment planning systems, HDR, etc.
- Implementation of new programs and projects such as Adaptive Radiotherapy, Cranial Stereotactic Radiosurgery, Brachytherapy for Brain, Intraoperative Radiation Therapy, etc.
- Dosimetric treatment planning services provided by medical dosimetrist(s) experienced with the Institution's treatment planning system (either through MPCo employed dosimetrists or independent contractors working under the supervision of MPCo's medical physicists).
- Any additional therapeutic related physics services/programs as requested and approved by Facility and mutually agreed upon by Institution and MPCo.

EXHIBIT C

BUSINESS ASSOCIATE AGREEMENT

A sample Business Associate Agreement is published by the U.S. Department of Health & Human Services at the following URL (accessed 9/10/18):

<https://www.hhs.gov/hipaa/for-professionals/covered-entities/sample-business-associate-agreement-provisions/index.html>