

AAPM medical physics practice guideline 3.b.: Levels of supervision for medical physicists in clinical training.

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1 INTRODUCTION The purpose of this practice guideline is to address the levels of supervision
necessary for the clinical training of medical physics students, residents, and medical
physicists in training. During the training of these individuals, it is often necessary or desirable for
them to perform functions generally performed by Qualified Medical Physicists (QMPs). In such
circumstances, the individuals performing these functions must be appropriately supervised and the
scope of the functions to be performed must be carefully defined. This document does not address
the supervision of medical physicist assistants or medical physics extenders, that is, positions not
intended to provide a path to becoming a QMP.

It is the responsibility of all individuals to be familiar with federal and state regulations and
accreditation requirements regarding supervision that may take precedence over the
recommendations in this document.

The demonstrated ability to independently perform the medical physics related task or function.

The process of obtaining a second signature or the formal process by which a report produced by a
supervised individual is finalized by the supervising QMP. The QMP retains full responsibility for the
trainee's work.

A deliverable or outcome that must be produced as part of the clinical work to complete a project
and achieve its objectives.

An individual enrolled in a masters, doctoral degree granting or certificate program from an
approved institution (eg, program accredited by one of the organizations recognized by the Council
on Higher Education Accreditation, or its successors) in medical physics, physics, or another
relevant physical science or engineering discipline.

An individual who meets the requirements of, and is currently preparing to complete, board
certification in one or more of the subfields of medical physics.

An individual enrolled in a structured training program designed to educate and train to a level of
competency sufficient to practice medical physics independently. This individual must have
obtained a master's or doctoral degree in medical physics or a doctoral degree in another relevant
physical science or engineering discipline with a certificate in medical physics from an approved
institution. An individual enrolled in a Doctorate of Medical Physics (DMP) program also meets this
definition of Medical Physics Resident while completing the clinical rotation requirements of the
DMP program.

As defined by AAPM Professional Policy 1. 1

Oversight of and acceptance of responsibility by the QMP for the medical physics related work
performed by a Trainee or Medical Physics Student: General Supervision – The procedure is
performed under a QMP's overall direction and control but the QMP's presence is not required
during the performance of the procedure. Under General Supervision, the training of the personnel
who actually perform the procedure and the maintenance of the necessary equipment and supplies
are the continuing responsibility of the QMP.

Direct Supervision – A QMP must exercise General Supervision and be present in the facility and immediately available to furnish assistance and direction throughout the performance of the procedure. It does not mean that the QMP must be present in the room when the procedure is being performed.

Personal Supervision – A QMP must exercise General Supervision and be present in the room during the performance of the procedure. 2

A QMP who oversees the medical physics-related work of a supervised individual in a clinical environment.

A medical physics student, resident, or medical physicist-in-training performing medical physics-related tasks under the direction of a QMP.

The term “trainee” in this document is used to include medical physics residents and medical physicists-in-training.

Medical physics students should be capable of performing basic medical physics tasks with appropriate training, such as the collection of x-ray generator calibration data for diagnostic / orthovoltage systems or linear accelerator depth dose data. Medical physics students are not expected to analyze or make decisions regarding the data, but may make comments or recommendations to the supervising QMP, and should be involved in the discussion of the data to further their education. If the medical physics student works on clinical medical physics tasks, it must be under the personal or direct supervision of a QMP, as deemed appropriate by the QMP. The QMP must provide personal supervision for at least the first performance of a task.

Medical physics residents are expected to grow in the degree of responsibility and independence of clinical practice. Early in residency, the resident should have responsibilities similar to medical physics students. Personal supervision should be provided for the initial performance of tasks within the medical physics scope of practice. 2 The resident, with experience and training, should progress to analysis of the data and performance of some functions under direct supervision. Late in the residency, the resident should be able to function largely as a QMP, with the supervisor balancing the transition from supervision toward independence of the resident during the residency program.

Medical physicists-in-training are expected to grow in the degree of responsibility and independence of clinical practice. With increasing experience, medical physicists-in-training should be able to function largely as a QMP, with the supervisor balancing the transition from supervision toward independence.

Supervision is a responsibility that must not be undertaken lightly. The supervisor must assume professional responsibility for the medical physics-related work done by the supervised individual.

Supervision of a trainee requires regular, high-quality interactions between the supervisor and the trainee during which medical physics is practiced by the trainee under the guidance of the supervisor. As the trainee grows in professional maturity, it is appropriate for the supervisor to allow the trainee greater responsibility and autonomy, with the understanding that the supervisor must still review and co-sign all formal work products of the trainee. Formal work products could include reports of machine calibrations, shielding designs, treatment plan reviews, patient-specific quality assurance measurements, treatment record reviews, and equipment evaluations. By co-signing, the supervisor takes full professional responsibility for the work as if it were their own. A supervised individual who has demonstrated competency through a formal, documented process and has been approved by a supervising QMP may be able to independently complete a task. However, the supervising QMP retains full responsibility for their work and the work product must be co-signed by the QMP. The documented process must describe the experience gained through personal,

direct, and general supervision of the supervising QMP.

The supervisor must have a professional relationship with the supervised individual that allows the supervisor to observe the work of the supervised individual and to correct that work if necessary. The supervisor should not commit to the supervisory relationship if: The supervised individual and the supervisor work for different employers without a formal agreement outlining the supervisory relationship.

The supervisor is unable to consistently provide the appropriate level of supervision.

The supervisor has not committed to assuming full professional responsibility for the supervised individual's work.

Except under documented extenuating circumstances (eg, illness or job transition), episodic training sessions, or situations as described in Section 7, a supervisor shall be responsible for no more than 3 full-time equivalents (FTE) at one time including:

No more than two medical physics trainees at one time;

No more than two medical physics students at one time;

Supervised individuals who are part-time in their clinical medical training are counted as their fractional FTE equivalent. For example, if each student is 0.25 clinical FTE and each resident is 0.75 FTE, the maximum of 3 FTE could be maintained with two students and two residents (total 2 FTE in this example).

During a supervisor's absence, the supervisor is responsible for delegating the required supervision to another QMP. There must be a clear description of what tasks may be performed independently by the supervised individual and under what circumstances a delegated QMP must cover the supervisory responsibility.

During a supervisor's absence from work, the supervised individual must only be allowed to perform tasks for which that individual has demonstrated and documented formal competency to work independently. The exception is when the supervisor has a coverage arrangement with another QMP and that coverage agreement specifically includes supervision of the supervised individual.

The supervised individual must not perform clinical medical physics-related tasks without appropriate supervision or documented competency by the QMP supervisor.

For supervised individuals in states with professional licensure of medical physicists: Currently, states that license medical physicists may require an individual working toward becoming a QMP to have a temporary or limited scope license to practice. If a supervised individual holds a temporary license in more than one subfield of medical physics, the supervisor must be fully licensed in all of the subfields the supervised individual is training toward (or in which the supervised individual holds a temporary license); otherwise, the supervised individual must secure more than one supervisor. However, the individual state mandates for supervision must be followed, as requirements may not be consistent in all states. It is the responsibility of the supervised individual to ensure that his or her supervisor(s) are licensed in the subfield at the time of the application for a temporary license.

There must be a progression from personal to general supervision for trainees. A supervision plan must be available and acknowledged by the trainee and the supervisor. Competency performance reviews should be completed and documented for each activity.

A supervision plan must be formally adopted and document well-defined progression of levels of responsibility for trainees. The assignment of trainee to supervisor (ie, which supervisor is responsible for which trainee) must be clear to all involved with clear lines of communication established.

As an example, a plan consisting of the following would meet the intent of this document: Personal supervision for the first 6 months,

Direct supervision for the remainder of the first year, and

Note that the supervisor is not relieved of the responsibility to review and co-sign reports and retains full responsibility for their content.

Prior to determining the assignment of work, the facility must have a process to facilitate documentation of a co-signature and to define the conditions under which a supervised individual can practice.

It is essential that the QMP determine whether a supervised individual may visit a facility alone for a specific activity. The QMP must determine whether the QMP should also personally participate in the initial visit (or more as required) to a facility to address unanticipated issues. A supervised individual must not be sent alone to perform a procedure that is not in the scope of practice for the role of the supervised individual, or for which the supervised individual has not demonstrated formal competency.

It is also essential that the plan delineates how a supervised individual may proceed from personal supervision to direct supervision and from direct supervision to general supervision. This may be task dependent with higher-level functions or critical patient care functions requiring more training and experience to be performed under personal or direct supervision than low-level functions. Examples of tasks requiring higher levels of supervision are measurements performed on clinical teletherapy or imaging equipment to determine the output or beam characteristics. Subsequent verification of radiation outputs could be considered a lower-level function. The progress plan with milestones to be achieved by the trainee should be documented.

The Residency Program Director must be a QMP and should have at least 5 years of full-time experience beyond residency. 3 , 4 All faculty members of a medical physics residency program should be fully qualified (including being licensed if practicing in a state with a medical physics licensure law) in the clinical activities that they supervise. The Residency Program Director who is on the faculty of a medical physics residency program may delegate day-to-day supervision of residents: To colleagues on the faculty who are QMPs or

To other qualified faculty or staff members only if:

A QMP in the appropriate subfield of medical physics co-signs each item of work produced by the resident, and

The formal supervisor shares with the delegate the authority to observe and correct the work of the resident.

The Residency Program Director exercises general supervision over all residents in the program. The Residency Program Director delegates responsibility for supervision to faculty members of the residency program by assignment of residents for a task or time period. Faculty members who have responsibility for supervision of a resident may further delegate authority for supervision to other faculty members who are QMPs for the tasks to be performed by the resident.

It is reasonable for one faculty member to be the formal supervisor of all residents, even more than two at a time, and to delegate day-to-day supervision to other qualified faculty members. Supervision cannot be delegated from a QMP to a resident; however, it is entirely appropriate for a more experienced resident to assist in the training of another resident. A QMP must supervise the training of one resident by another, must provide personal supervision of each resident during the first performance of a task at minimum, and must co-sign the joint work product of the two residents, who must also sign as residents. The supervising QMP is still ultimately responsible for the work of both residents.

Clinical practice environments must balance the need for competent staff with the need to train new professionals and provide services in a safe yet cost-effective manner. The guidelines presented in this document provide a framework for the appropriate supervision and scope of responsibilities for medical physics students, residents, and medical physicists in training.

Specifically: The supervisor must assume professional responsibility for the medical physics-related work done by the supervised individual.

A supervision plan must be formally adopted and document well-defined progression of levels of responsibility for trainees.

Except under certain circumstances, as outlined in Section 4.d., a supervisor must not supervise:

More than two medical physics trainees at one time;

More than two medical physics students at one time; and

More than three full-time equivalents per supervisor.

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This guideline was reviewed and updated by the Medical Physics Practice Guideline Task Group 340 of the Professional Council of the AAPM. Each author reviewed recent literature on the topic and offered opinions on and language for updates to be made to MPPG 3.a. They also reviewed and applied comments from the full AAPM membership to the document.

The Chair of Task Group No. 340 ■ MPPG 3.b: Levels of supervision for medical physicists in clinical training (TG340) has reviewed the required Conflict of Interest statement on file for each member of TG340 (3 instances) and determined that disclosure of potential Conflicts of Interest is an adequate management plan. Disclosures of potential Conflicts of Interest for each member of TG340 are found at the close of this document.

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This guideline was reviewed and updated by the Medical Physics Practice Guideline Task Group 340 of the Professional Council of the AAPM. The original guideline, MPPG 3.a, was developed by the Medical Physics Practice Guideline Task Group 243 of the Professional Council of the AAPM.