



AMERICAN ASSOCIATION *of* PHYSICISTS IN MEDICINE
Advancing the Science, Education & Professional Practice of Medical Physics

A photograph of a medical physicist's workstation. Three computer monitors display chest X-ray images. In the foreground, a person's hands are visible, wearing a watch and a ring, operating a computer mouse. A keyboard is also visible on the desk.

THE MEDICAL PHYSICIST ASSISTANT?!



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THE MEDICAL PHYSICIST ASSISTANT (MPA) – SHOULD THE AAPM BE INVOLVED?

J. Anthony Seibert, PhD
Chair, TG-259



LEARNING OBJECTIVES

1. Understand the reasoning and need for MPPG 7 (TG-259)
2. Understand the MPA / QMP supervision responsibilities
3. Understand the competency levels of the MPA



WHERE DID THIS ALL START?

- **Presidential ad-hoc committee initiated in 2011**
- **Charge:** Determine what procedures and tasks the Diagnostic (Dx) QMP needs to *personally* perform in terms of clinical practice. Determine “allowable” procedures and tasks performed by an unqualified assistant under the supervision of the Dx QMP. The level of supervision, *direct* or *general*, for each task not performed by the QMP must be explicitly described. Define types of supervision for different circumstances and tasks.

AAPM Ad Hoc Committee on Defining the Diagnostic QMP Practice Model

Committee Charge

Draft 5/31/2011

Proposed Membership: Tony Seibert (chair), Jessica Clement, Per Halvorsen, Mike Herman, Doug Pfeiffer, Bob Pizzutiello, Beth Schueler, Jeff Shepard



EXPANDING THE SCOPE

- **Initiation: MPPG-3 (TG-243)** – January 14, 2013
- **Inclusion:** Diagnostic, Therapeutic and Nuclear Medical Physics
- **Focus:** “Levels of Supervision in Clinical Medical Physics”
- **Charge:** Produce a Medical Physics Practice Guideline defining the role of the QMP for supervisory oversight of the Medical Physics student, the Medical Physics Resident, and *Quality Assurance Assistant* for designated medical physics tasks and concurrent responsibilities of each party
- **Outcome:** Initial draft (July 2013) created a storm of discussion at the 2013 Annual Meeting, chiefly related to the **recognition of non-physicists**



RE-DIRECTION OF MPPG-3

A group decision was made to focus only on medical physicists who are in or have completed formal MP education programs

93
94 ~~c. — Quality Assurance Assistant~~

95
96 ~~Quality assurance assistants are long term supervised individuals with a very limited~~
97 ~~scope of medical physics related responsibilities. These responsibilities can include~~
98 ~~routine data collection, data management and equipment management tasks which~~
99 ~~do not require professional judgment, provided the QMP has established clear,~~
100 ~~written procedures for such tasks. Any analysis of data is specifically outside the~~
101 ~~scope of practice of the quality assurance assistant. It is not appropriate to task~~
102 ~~quality assurance assistants with direct participation in clinical procedures. The~~
103 ~~degree of supervision of a quality assurance assistant must be determined by the~~
104 ~~QMP, based on the skills and experience of each individual using protocols~~
105 ~~determined by the QMP. The QMP must also ensure that the quality assurance~~
106 ~~assistant's work complies with any applicable staff privileging guidelines and payer~~
107 ~~policies.~~
108

109 **4. The Responsibilities of the Supervisor**

110
111 Supervision is a responsibility that **must not** be undertaken lightly. The supervisor **must**



DEFINING THE MPPG-3 TARGET GROUP

- **Medical Physicist in Training** – An individual, who has met the requirements of, and is currently in the process of completing board certification in one or more of the subfields of medical physics
- **Medical Physics Student** – An individual enrolled in a masters or doctoral degree-granting program from an approved institution (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
- **Medical Physics Resident** – 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, physics, or another relevant physical science or engineering discipline



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MPPG-3 OUTCOME

JOURNAL OF APPLIED CLINICAL MEDICAL PHYSICS, VOLUME 16, NUMBER 3, 2015

AAPM Medical Physics Practice Guideline 3.a: Levels of supervision for medical physicists in clinical training

Task Group Authors: J. Anthony Seibert, Chair, Jessica B. Clements, Per H. Halvorsen, Michael G. Herman, Melissa C. Martin, Jatinder Palta, Douglas E. Pfeiffer, Robert J. Pizzutiello Jr., Beth A. Schueler, S. Jeff Shepard, Lynne A. Fairobent, AAPM Staff



RECOMMENDATIONS: MPPG 3.A

Provides a framework for the appropriate supervision and scope of responsibilities for medical physics students and residents, and medical physicists-in-training

- 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 documented extenuating circumstances (e.g., illness or job transition), **a supervisor must not supervise:**
 - more than two medical physics trainees at one time
 - more than two medical physics students



... IN THE MEANTIME

- Requirements for a medical physics residency (2014)
- A lack of residency slots for the number of medical physics training graduates seeking a clinical medical physics career
- Many trained individuals seeking opportunities
- Existing QA technologists and service engineers performing Medical Physics tasks
- Continuing efforts to reduce the costs of healthcare
- Looming accreditation and regulatory requirements necessitating more workload and time for medical physics tasks

..... with **NO GUIDELINES** for supervision of these personnel



WHAT ABOUT THE QA TECH / MPA?

- **WHO?**
- Individuals who have completed a Medical Physics training program but are unable to complete the process for QMP status
- Technologists / therapists interested in medical physics tasks who provide quality control services
- Individuals from other related fields (Health Physics, Clinical Engineering, vendor service personnel)
- Off-the-street entrepreneurs



MPPG-7

Task Group No. 259 - MPPG #7 Medical Physics Extenders

Charge Determine what procedures and tasks can be delegated by a QMP to a **Medical Physicist Assistant** in the clinical setting. Determine “allowable” procedures and tasks performed by an unqualified assistant under the supervision of the QMP. The level of supervision, direct or general, for each task not performed by the QMP must be explicitly described. Define types of supervision for different circumstances and tasks.

Approved Start: 3/14/2014
Date(s)

Quality Assurance Assistant (other names) → Medical Physicist Assistant



Members of MPPG-7 (as of March 2016)

- J. Anthony Seibert, Chair
- Anthony P. Blatnica
- Jessica B. Clements
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- George W. Sherouse
- Lynne A. Fairobent
AAPM Staff



A FRAMEWORK ESTABLISHED FROM MPPG-3

- Face-to-face meeting in January 2015
- Basic structure of document produced
- Most discussed / contentious issue:
 - The number of FTE MPAs that can be supervised by a QMP
- Recognizing the differences in practice for DX, NM, TX disciplines–

Initial draft:

- No more than 4 FTE MPA per QMP for DX, NM
- No more than $\frac{1}{4}$ FTE MPA per QMP for TX



FEEDBACK / COMMENTS

- Just by recognizing the “MPA” we are legitimizing their existence
- A difference of 16:1 between DX and TX practice is too much
- I am really concerned about the 4:1 ratio for DX supervision
- Consulting groups with 10 QMPs can hire 40 assistants and take over all private consulting physics services – cheaply
- Take a lesson from the Medical Dosimetrists – physics services to non-physicists – now there are more dosimetrists than physicists!
- We are creating less QMPs and opening the market for MPAs
- MS medical physicists are being replaced by MPAs....



REALITY CHECK

- “Physicist Assistants” (under many names) have been around for a long time
- States are now enacting statutes recognizing existence of MPAs
- It is time for the AAPM to step up and create practice guidelines for regulators to consider when enacting state policies and regulations
- It would be a mistake to ignore the situation....



WHAT'S HAPPENING IN STATES?

- **New Jersey** has existing policies for the MPA in Diagnostic Medical Physics, limited to Radiography and Fluoroscopy
 - These individuals must be certified by the state, which requires minimum qualifications for certification as “Qualified MPA in radiography” or “Qualified MPA in Fluoroscopy”
- **Typical educational / experience requirements:**
 - ARRT certification (+Quality Management) with 5 (3) years - experience and 1 year experience performing QC tests
 - Bachelor's degree from accredited institution in related field and 4 years of experience performing QC tests
 - Masters or doctorate degree from accredited institution in related field and 2 years of experience performing QC tests
 - No explicit qualifications, but pertinent experience

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION APPLICATION FOR CERTIFICATION OF:

QUALIFIED MEDICAL PHYSICIST ASSISTANT IN RADIOGRAPHY
and /or
QUALIFIED MEDICAL PHYSICIST ASSISTANT IN FLUOROSCOPY

1. CATEGORIES OF CERTIFICATION

N.J.A.C. 7:28-22 requires medical physicists and medical physicist assistants performing initial and annual Medical Physicist QC Surveys on radiographic and fluoroscopic equipment to be certified by New Jersey Department of Environmental Protection.

N.J.A.C. 7:28-22.8 permits a certified “**Qualified medical physicist assistant in radiography**” to perform items number 1-9 on TABLE 4 “Medical Physicist’s Radiographic QC Survey” (see attached) provided that these items were delegated to the assistant by a certified qualified medical physicist for the supervision of quality assurance programs for diagnostic x-ray imaging. (See N.J.A.C. 7:28-22.8 for details)

N.J.A.C. 7:28-22.9 permits a certified “**Qualified medical physicist assistant in fluoroscopy**” to perform items number 1-7 and 9-10 on TABLE 5 “Medical Physicist’s Fluoroscopic QC Survey” (see attached) provided that these items were delegated to the assistant by a certified qualified medical physicist for the supervision of quality assurance programs for diagnostic x-ray

However, an assistant is prohibited from performing any QC Survey tests on digital fluoroscopic units or on fluoroscopic units located in dedicated interventional special procedure suite

TABLE 4

MEDICAL PHYSICIST'S RADIOGRAPHIC QC SURVEY		
Item	Test	Standard
1.	Radiographic Unit Assembly Evaluation	As required at N.J.A.C. 7:28-15.3
2.	Collimation Assessment	As required at N.J.A.C. 7:28-15.3
3.	Collimator Illumination	As required at N.J.A.C. 7:28-15.3
4.	Half Value Layer	As required at N.J.A.C. 7:28-15.3
5.	mA Exposure Linearity	As required at N.J.A.C. 7:28-15.3
6.	kVp Accuracy/Reproducibility	As required at N.J.A.C. 7:28-15.3
7.	Timer Accuracy/Reproducibility	As required at N.J.A.C. 7:28-15.3
8.	Automatic Exposure Control, Reproducibility, Tracking, Density Control	As required at N.J.A.C. 7:28-15.3
9.	Entrance Skin Exposure (ESE) Measurement	Determine ESE for common exam and compare with National Evaluation of X-ray Trends (NEXT) data available in the Compliance Guidance Documents referenced at N.J.A.C. 7:28-22.3(c)2
10.	Image Quality Evaluation (Recommendation)	Established standard for phantom test tool used
11.	Review Facility/Technologist QC Test Records	Review QC tests for proper procedure and corrective action
12.	Physicist Report and Recommendations	Communicate results and recommendations to registrant

Allowed tasks
by the MPA
under general
supervision

TABLE 5

MEDICAL PHYSICIST'S FLUOROSCOPIC QC SURVEY		
Item	Test	Standard
1.	Fluoroscopic Unit Assembly Evaluation	As required at N.J.A.C. 7:28-15.5
2.	Entrance Exposure Rate to Image Intensifier	Fluoroscopic equipment manufacturers' specifications
3.	Patient Entrance Exposure Rate	Fluoroscopic equipment manufacturers' specifications
4.	Maximum Exposure Rate	As required at N.J.A.C. 7:28-15.5
5.	High Contrast Resolution/Low Contrast for Fluoroscopy Video Monitor	Fluoroscopic equipment manufacturers' specifications
6.	Spot Film Automatic Exposure Control (AEC) System Performance	Fluoroscopic equipment manufacturers' specifications
7.	High Contrast Resolution/Low Contrast for Fluoroscopy Image Recording System (that is, spot film device, cine system, videotape system, etc.)	Fluoroscopic equipment manufacturers' specifications
8.	Half-Value Layer	Fluoroscopic equipment manufacturers' specifications
9.	Kilovoltage	Fluoroscopic equipment manufacturers' specifications
10.	Fluoroscopic and Spot Film Collimation Assessment	As required at N.J.A.C. 7:28-15.5
11.	Review of Facility and Technologist QC Tests	Review QC tests for proper procedure and corrective action
12.	Physicist Report and Recommendations	Communicate results and recommendations to registrant

Allowed tasks
by the MPA
under general
supervision



WHAT'S HAPPENING IN STATES?

Texas has proposed amendments to existing regulations to recognize the use of assistants by medical physicists licensed in specialties of diagnostic radiological physics, medical nuclear physics, and medical health physics

PART 26. TEXAS BOARD OF LICENSURE FOR PROFESSIONAL MEDICAL PHYSICISTS

CHAPTER 601. MEDICAL PHYSICISTS

22 TAC §601.21, §601.24

The Texas Board of Licensure for Professional Medical Physicists (Board) proposes amendments to §601.21, concerning

The amendments to §601.21 recognize and set basic parameters on the use of assistants by medical physicists licensed in the specialties of diagnostic radiological physics, medical nuclear physics, and medical health physics.



tracts with LMPs. The Board recognizes that there are many successful assistant/LMP relationships and that such collaboration is necessary given there are thousands of single tube x-ray units located in physician, dental, podiatric, chiropractic, and veterinary offices and urgent care clinics throughout Texas, many of these in rural locations. The Board also recognizes that LMPs frequently use assistants in the area of nuclear medicine physics and medical health physics. Nuclear medicine technologists rou-

performance monitoring. These individuals must be properly trained and approved by the medical physicist in the techniques of performing the tests, the function and limitations of the imaging equipment and test instruments, the reasons for the tests, and the importance of the test results. The tests will be performed by or under the general supervision of the medical physicist, who is responsible for and must review, interpret, and approve all data and provide a signed report.



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LOTS OF MEANINGFUL DISCUSSION....

POINT/COUNTERPOINT

Suggestions for topics suitable for these Point/Counterpoint debates should be addressed to Colin G. Orton, Professor Emeritus, Wayne State University, Detroit: ortonc@comcast.net. Persons participating in Point/Counterpoint discussions are selected for their knowledge and communicative skill. Their positions for or against a proposition may or may not reflect their personal opinions or the positions of their employers.

Medical physicist assistants are a bad idea

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Medphys listserver / AAPM BBS

BBS: "Medical physicist assistants are a bad idea"

Summary of Issues/Concerns

- QMP v. MPA scope of practice
- Are MPAs necessary?
- Implication on profession of medical physics
- Supervision
- MPAs v. medical dosimetrists
- Pay scales for medical dosimetrists, MPA, QMPs

BBS Thread: Physics Assistant Responsibilities

Summary Concerns/Points:

1. Roles and Responsibilities of MPA
2. Career path of an MPA
3. MPA v. someone in the board pathway
4. Maintaining lifeline of the profession of medical physics v. MPA delegation of duties
5. Training requirements to be an MPA
6. MPA v. medical dosimetrist
7. Reimbursement issues



LATEST DRAFT OF MPPG-7

2015-01-10 MPPG MPAs 5.0 .docx	4/8/2015 7:43 AM	Microsoft Word D...	514 KB
2015-03-16 Version 4.1 MPPG MPAs Integrated comments.xlsx	4/8/2015 7:43 AM	Microsoft Excel W...	25 KB
2015-04-08 MPPG MPAs Version 5 comments.xlsx	4/8/2015 7:43 AM	Microsoft Excel W...	12 KB
2015-05-30 MPPG MPAs Internal Review-SeibertJune1.docx	6/1/2015 8:53 AM	Microsoft Word D...	511 KB
2015-09-14 MPPG MPAs Public Review draft_Seibert-update.docx	9/14/2015 3:32 PM	Microsoft Word D...	510 KB
MPAtoQMPratio_SeibertDraft.docx	9/14/2015 3:29 PM	Microsoft Word D...	13 KB
2016-01-01 MPPG MPAs Public Review draft - PH edits BAS edits.docx	3/4/2016 3:25 PM	Microsoft Word D...	536 KB
2016-01-01 MPPG MPAs Public Review draft - PH edits.docx	2/23/2016 2:39 PM	Microsoft Word D...	530 KB
2016-01-01 MPPG MPAs Public Review draft.docx	2/23/2016 9:27 AM	Microsoft Word D...	524 KB

Define MPA:

Medical Physicist Assistant (MPA) – An individual working in a capacity that is not fulfilled by other scope of work, (e.g., radiologic technologist, medical dosimetrist) who works under the supervision and responsibility of a QMP.



LATEST DRAFT OF MPPG-7

Update supervision ratios:

Table 1: Medical Physicist Assistant Supervision Ratios

Practice	Supervision Ratio
Diagnostic Medical Physics	No more than 1 FTE MPA per 1 clinical FTE QMP*
Nuclear Medical Physics	No more than 1 FTE MPA per 1 clinical FTE QMP*
Therapy Medical Physics	No more than 0.25 FTE MPA per 1 clinical FTE QMP.**

* A higher ratio may be used for specific modalities provided a written justification is documented by a QMP. In no case should the ratio exceed 4 MPAs per 1 QMP.

** It is inappropriate to use an MPA in a practice setting with < 1 FTE QMP per location.



LATEST DRAFT OF MPPG-7

Conclusions:

- A QMP is advised to assess the use of an MPA in their medical physics practice in light of this practice guideline, and implement appropriate changes
- When an organization employs an MPA, it is the responsibility of the QMP to inform the healthcare organization of the need for a supervision plan and its requirements
- Facility administrators are likewise advised to review the use of an MPA and address the issues described in this practice guideline
- A QMP must only delegate tasks having low risk of harm to the patient, personnel, and the public
- The supervision level for the delegated task must be based on the risk level of the task and the competency level of the MPA



LATEST DRAFT OF MPPG-7

Appendices

Provision of Supervision Plan:

QMP supervisor responsibilities:

- Overseeing task-training
- Assigning duties
- Assessing performance
- Evaluating competence

Describing Expectations:

MPA responsibilities:

- Reviewing equipment SOPs
- Learning safety hazards
- Operating testing equipment
- Troubleshooting problems
- Undergoing compliance training



LATEST DRAFT OF MPPG-7

Evaluation checklist: developed by the QMP

Required supervisory levels depending on level of competence

Competency Level	Under Personal Supervision of QMP	Under Direct Supervision of QMP	Under General Supervision of QMP
Initial Training	X		
Deemed Competent			X
Annual Evaluation		X	
Re-evaluation of task competence when suboptimal performance of a task is suspected	X		



LATEST DRAFT OF MPPG-7

Specific tasks allowed to be documented by the QMP (Diagnostic Medical Physics example)

Once initial competence has been confirmed, the MPA may perform the following radiographic equipment performance test under General Supervision:

- Half value layer measurement
- Light field/x-ray field alignment
- Field size indicator accuracy
- Positive beam limitation system performance
- X-ray beam- image receptor alignment
- Kilovoltage accuracy
- Exposure timer accuracy
- Linearity and reproducibility
- Output mR/mAs measurement
- Automatic exposure control performance
- Artifact evaluation



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WHAT ABOUT EDUCATIONAL REQUIREMENTS?

Education Council has established a Task Group to develop requirements for the MPA

Task Group No. 276 Educational and Training Requirements for Medical Physicist Assistants

Charge To develop an AAPM statement on the educational and training requirements for Medical Physics Assistants



WHAT ARE THE NEXT STEPS?

- Refining MPA scope of practice per discipline
- Dissemination of MPPG-7 draft to the medical physics community for comments
- Discussion of concerns and issues raised; update draft



STEPS FOR REVIEW AND COMMENTS

- Internal comments and resolution
- PC – SPG – CPC; all Council Chairs, EXCOM
- Comment Resolution
- Public – All AAPM members
- Societies: ACR/ASTRO/ASRT/AAMD/AHRA/SROA
- Comment Resolution
- Concurrence: SPG – CPC – PC – EXCOM
- JACMP & peer review

~5 years



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THE BEAT GOES ON.....

Discussion, Concerns, Questions