*How the MPA can enhance an **IMAGING PHYSICS** practice*

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Overview

- How we use MPAs in Radiology at Mayo Clinic Rochester
  - Responsibilities
  - Supervision
  - Education/experience
- Long history of using the MPA model

Mayo Clinic Rochester

- Large practice with imaging equipment in 2 hospitals and 5 outpatient clinics
  - 130 Rad/fluoro systems
  - 19 CT
  - 33 MR
  - 19 NM/PET
  - 69 US

Mayo Clinic Health System Midwest

- In addition, our group covers 17 hospitals and 60 clinics in southern Minnesota and western Wisconsin, includes 51 imaging departments

MAYO CLINIC HEALTH SYSTEM

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Mayo Rochester Physics/MPA Group

- 20 medical physicists
- 19 MPAs
- Use of assistants is critical to be able to cover the large volume of imaging equipment and support needs

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Mayo Rochester MPAs

- Cover rad/fluoro, CT, NM, MRI, US, Informatics
- Background:
  - 15 radiologic technologists
  - 2 certified NM technologists
  - 2 with other background (1 BS computer science, 1 biomedical engineering)

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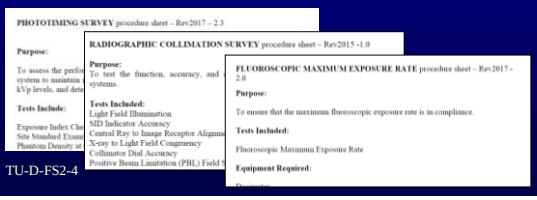
MPA Duties

- Equipment QC testing
- Plus additional QA technologist tasks:
  - Technique chart/protocol management
  - Equipment inventory, tube registration
  - Weekly/monthly/quarterly calibration and phantom imaging requirements
  - Assist with troubleshooting image artifacts, poor image quality issues, implementing new protocols, …
- Assist with selection of new imaging equipment, quote reviews, floor plans and siting, …

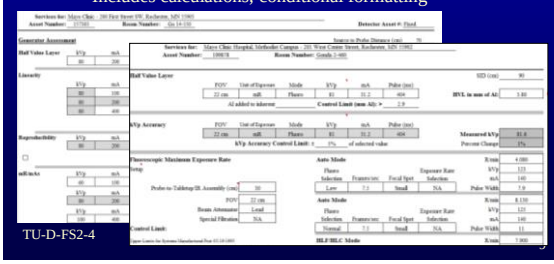
Equipment QC

- Equipment performance evaluation test procedures
  - Step by step instructions
  - Detailed for each type and model of equipment
  - Set pass/fail criteria for all data



Equipment QC

- Standardized electronic data forms
  - Includes calculations, conditional formatting



QMP Supervision of MPAs

- Personal (QMP present in room)
  - CT, MRI
- Direct (QMP on site) and General (QMP not present)
  - Rad/fluoro, NM, US
- QMP meets regularly with MPAs
- Reports regularly reviewed

MPA Education/Experience

- Primarily technologists selected from the clinical modality area
- MPA position is a promotion path with a salary increase
- Most have specialty certification (QM, CT, MR, ..)
- Generally, long-term position (> 10 yrs)

Why technologists?

- Already have basic familiarity with clinical area they work in
  - Experts on operation of the imaging equipment
  - Know the other technologists, supervisors, radiologists
  - Understand clinical imaging issues
- Can generally readily learn the basic technical skills needed for equipment QC testing
- Help to bridge the gap between physics and clinical application

MPA Education/Experience

- Selected out of pool of over 500 technologists
- Selection criteria:
  - Pay attention to detail and accuracy
  - Show dedication to quality work
  - Good organizational skills
  - Technical aptitude
  - Good communication skills
  - Able to flex work days and hours to test imaging systems after hours as needed

What about medical physics residents?

- We also train residents – 3 positions
- Participate in equipment performance testing
- Too much equipment for residents to cover all units
- MPAs provide consistent, quality work since they are long term employees

QMP:MPA Ratio

- Individual vs FTE?
  - QMPs may have mixed roles (partial research funding, …)
  - MPAs may have other duties in addition to equipment QC testing
    - Difficult to assign FTE equivalence
- If regulations define ratios for ionizing radiation modalities only, QMP and MPA FTE time spent on individual modalities would need to be determined
  - Particularly difficult for large practices

QMP:MPA Ratio

- Approximate values based on clinical FTE in each modality area:

Modality	QMP : MPA
Rad/fluoro	3 : 9
CT	3 : 2
NM	2.5 : 2
MRI	7 : 3
US	1.5 : 1.5
Informatics	1 : 0.5
Overall	**18 : 18**

MPA Scope of Practice in Imaging

- Tasks reserved for QMPs only?
  - Determined by accreditation and state requirements
- My thoughts:
  - Properly trained MPAs can perform all equipment QC tests under direct or general supervision
  - Some tasks we have reserved for QMPs only:
    - Patient dosimetry calculations
    - Participation in patient procedures (MRI ablations, MRI of implanted devices, …)
    - Patient consultations
    - Shielding design

MPA Benefits

- Frees up physicist time for higher level functions
- Allows physicist to be visible in clinical areas during daytime hours
- Improves physicist job satisfaction

- Best solution as facilities request additional and more advanced medical physics services, but want to avoid additional costs

What makes for successful MPAs?

- Well-defined equipment testing protocols with clear, objective pass/fail criteria
- Adequate QMP oversight of activities
  - Be readily available for questions and issues
  - Hold regular meeting times to discuss modifications to protocols, resolve questions
- Continued training and technology updates

Q & A