Multidisciplinary Teamwork:
Medical Physics Challenges
and Future Opportunities

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Outline

• Historic development of medical physics
• Definition of qualified medical physicists (QMP)
• Scope of practice for clinical medical physics
• Challenges and opportunities facing medical physics and the multidisciplinary team
The Discovery of X-Rays (Imaging)

Roentgen discovered x-rays in 1895

Crookes tube

Brain surgery guided by x-ray image in 1897

X-ray image of a hand deformity in 1896
The Discovery of X-Rays (Therapy)

Emil Grubbe (1875-1960)

First use of radiation to treat breast cancer in 1896 (1h, 18 days)

Roentgen room

Fox Chase Cancer Center x-ray therapy 1905
Radiology
Departments separated in 1970s-1980s

ACR (1923)
ABR (1934)
AAPM (1958)

Diagnostic Imaging

Radiotherapy

Therapeutic Medical Physics
Diagnostic Medical Physics
Medical Nuclear Physics
Medical Health Physics
Magnetic Resonance Imaging Physics

Radiation Oncology
Definition of QMP

AAPM definition of Qualified Medical Physicist (QMP):

- Who has earned a master's or doctoral degree in physics, med phys, biophysics, or equivalent disciplines from an accredited university;

- Who has been granted certification in the specific subfield(s) of med phys by an appropriate national certifying body; and

- Who abides by the certifying body's requirements for continuing education.

Certifying bodies: ABR, ABMP, CCPM, ABSNM, ABHP
Scope of practice for clinical medical physics

QMP’s medical physics areas:

- Administrative
- Clinical services
- Education
- Informatics
- Equipment performance evaluation
- Quality
- Safety
Scope of practice for clinical medical physics

AAPM’s recommendation on the involvement of the QMP:

1. Activity must be performed by a QMP
2. Activity must be performed or supervised by a QMP
3. Activity should include a QMP

A QMP is a member of the multidisciplinary healthcare team.
Administrative tasks must be performed by a QMP

- Supervises medical physics staff, including physicists, physics assistants, med phys residents and students in compliance with all relevant regulatory requirements and appropriate professional documents
- Ensures that all regulations and accreditation requirements as relating to med phys are met and maintained
- Oversees QA and QC programs to meet all regulations, accreditation standards, and national recommendations
- Establishes training and competency requirements and monitors maintenance of competencies for clinical med phys tasks
Administrative tasks **should include** a QMP

- Participates in operations management
- Participates in staffing and budget discussions
- Participates in facility planning
- Consults on selection of new equipment prior to purchase
- Participates in coding/billing (documentation)
Clinical Services

**Must be performed by a QMP**
- Develops procedures for initial acceptance testing and ongoing equipment testing (e.g., annual testing, post-service testing)
- Develops and oversees processes to authorize release of clinical equipment after service

**Must be performed or supervised by a QMP**
- Reviews service activities (e.g., software updates) that may impact dose or image quality and determines if further med phy follow-up is required

**Should include a QMP**
- Participates in research and development including support for clinical trials
- Communicates with and educates patients, including discussions of risk
Recent Technical Developments

The role of Medical Physicists?

Automation in RT
- Auto contouring
- Auto planning
- Automated QA
- Adaptive therapy
Financial Challenges Facing US Healthcare

The value of Medical Physicists

Percent % of GDP, adjusted for differences in cost of living

2018 data:
- US: 16.9%
- SWIZ: 12.2%
- GER: 11.2%
- FRA: 11.2%
- SWE: 11.0%
- CAN: 10.7%
- NOR: 10.2%
- NETH: 9.9%
- UK: 9.8%
- AUS: 9.3%
- NZ: 9.3%

OECD average: 8.8%

Alternative Payment Models
Linking financial incentives to providers’ performance on a set of defined measures

- Shared Savings
- Pay for Performance
- Primary Care Services Payment
- Bundled Payments

Better Care, Better Health, Lower Costs

2022 Medicare Physician Fee Schedule
Proposed Rule Summary

On Tuesday, July 13, 2021, the Centers for Medicare & Medicaid Services (CMS) issued the 2022 Medicare Physician Fee Schedule (MPFS) proposed rule, which estimates an 8.7% cut to radiation oncology services for 2022. ASTRO is very disappointed in the Administration’s
AAPM

Strategic Planning

2018-19 Discussing strategic planning
2019-20 Defining strategic goals and objectives
2020-21 Implementing strategic goals and objectives

When written in Chinese, the word "crisis" is composed of two characters. One represents danger and the other represents opportunity.

危 机

John F. Kennedy
35th U.S. President
(1917-1963)

QuoteHD.com
AAPM Strategic Goals (SG)

SG01  Innovation
SG02  Membership
SG03  Leadership
SG04  Education

SG05  Organization management
SG06  Communication
SG07  Patient care
SG08  Diversity and inclusion
Unit 64 - Strategic Goal 01:

Drive scientific and clinical innovation in med phys to improve human health

(S Benedict, R Howell, M Huq, C Ma (chair), A Maidment, M Matuszak)

Strategic Objectives:

1. Encourage and explore new med phys applications
2. Encourage R&D to advance med phys and related professions
3. Catalyze translation from research to clinical applications
4. Improve med phys research funding
5. Strengthen the skills of med physicists as leaders in innovation
AAPM Areas of Strategic Focus
(approved by the Board on Mar 30, 2022)

• **Articulating Our Value**: Develop and implement a plan to advocate for our value as med physicists within the healthcare enterprise and broader medical communities.

• **Expanding our Scope and Presence in Medicine**: Identify future directions in the science and practice of med phys and consider possible areas in which AAPM could invest to ensure our success in the years ahead. Develop a plan to establish and maintain active relationships with the greater medical community beyond traditional, existing relationships for AAPM.
"NEVER LET A GOOD CRISIS GO TO WASTE"

-Winston Churchill
Thank you!