

Diagnostic Workforce and Manpower Survey – Part 1, History and Introduction

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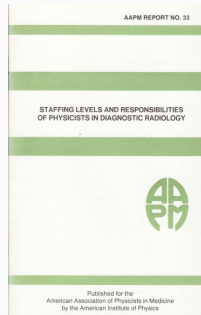
Outline

- History of Diagnostic Staffing Reports
 - 1991 AAPM Report No. 33 of Task Group 5
 - 1993 AAPM ACMP Bilateral Recommendations on Physics Staffing for Diagnostic Radiology
- 1995, 2003 and 2008 Abt Reports for radiation oncology physics services – philosophy as applied to diagnostic staffing
- Design of survey instrument
- Limitations of survey instrument
- Difference between staffing and professional workload

History of Imaging Physics Staffing Reports

AAPM Report 33 and AAPM ACMP Bilateral Recommendations on Physics Staffing for Diagnostic Radiology

AAPM Report 33 – April 1991



- Task Group 5 – Members:

- Edward L. Nickoloff (Chair)
- James Atherton
- Priscilla Butler
- Robert Chu
- Lance Hefner
- Mitchell Randall
- Louis Wagner

- Consultant Reviewers

- Stephen Balter
- Joseph Blinick
- Donald Frey
- Joel Gray
- Mary Moore
- Robert Waggener

AAPM Report 33 – April 1991

- Diagnostic physicists provide professional services for selecting, evaluating, monitoring and optimizing imaging devices
- Staff size recommendations are based on the equipment inventory
- Emphasis (is) placed on the primary physics needs generated by each piece of equipment
- Variations in needs between types of institutions have not been addressed
- Physics staffing must also address educational services, administrative, regulatory and accreditation work

AAPM Report 33 – April 1991

1 Diagnostic X-ray Staffing Recommendations	FTE
For each mobile radiography unit	0.015
For each general x-ray room	0.015
For each mobile fluoroscope	0.03
For each R/F room	0.05
For each special procedures room	0.08
For each digital system	0.04
For each CT scanner	0.08

AAPM Report 33 – April 1991

2 Nuclear Medicine, Ultrasound and MRI	FTE
For each scintillation camera	0.10
For each image processing computer	0.25
For each SPECT	0.25
For each PET	TBD*
For each ultrasound scanner	0.015
For each MRI	0.1 – 0.25

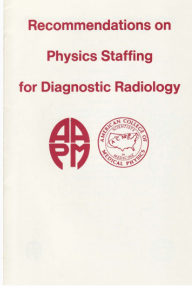
* To be determined in accordance with need

Equipment of a facility and FTE physicists & support staff are summarized:		
Equipment	FTE's per Equipment	Recommended FTE's
10 general x-ray rooms	0.015/room	0.15
4 RF rooms	0.05/room	0.20
3 special procedure rooms	0.08/room	0.24
2 digital systems	0.04/system	0.08
1 CT scanner	0.08/room	0.08
5 portable rad units	0.015/unit	0.075
2 portable fluoro units	0.03/unit	0.06
2 nuc med imagers	0.10/unit	0.20
1 image process computer	0.25/unit	0.25
1 SPECT unit	0.25/unit	0.25
4 ultrasound units	0.015/unit	0.06
Total:		1.72
Support staffing recommendation is 1.5 FTE support staff per physicist.		
Practical Staffing: 2.0 FTE Physicists and 2.6 (1.5 x 1.75) FTE Support Staff		

AAPM Report 33 – April 1991 – Final Thoughts

- Many new types of diagnostic imaging equipment have been released in the intervening years
- In some cases, the practice of diagnostic imaging physics has become more efficient
- In almost every case, the imaging equipment has become more complex, requiring additional expertise and more sophisticated performance measurement equipment
- AAPM Report 33 has never been superseded! It remains the current AAPM reference document for diagnostic imaging staffing!

AAPM ACMP – Physics Staffing for Diagnostic Radiology - 1993



Recommendations on
Physics Staffing
for Diagnostic Radiology

- Members of the Trilateral Task Force: AAPM, ACMP and ACR Commission on Physics
 - Edward Nickoloff (Chair)
 - Stewart Bushong (AAPM)
 - Charles Kelsey (AAPM)
 - James Kereiakes (ACR)
 - Mark Mishkin, MD (ACR)
 - Lawrence Rothenberg (ACMP)
 - Louis Wagner (AAPM)
- Contributing Consultants
 - James Deye
 - Thomas Payne
 - Ray Tanner

AAPM ACMP – Physics Staffing for Diagnostic Radiology - 1993

Staff recommendations for diagnostic radiology*	
Type of Diagnostic Equipment	Recommended Physicist Staff**
x-ray***	1 FTE/40 x-ray tubes
ultrasound	1 FTE/50 units
nuclear medicine	1 FTE/8 imagers
MRI	0.1 – 0.3 FTE per MR unit
PET	no recommendation

*Support staff is 1.5 FTE per physicist, including QC and rad safety technologists
 **For routine clinical duties; does not include staff for teaching and research
 ***Includes radiographic, fluoro, tomographic, mammographic, portables & CT
 ****One FTE is equivalent to one person working 230 8-hour days per year

AAPM ACMP – Physics Staffing for Diagnostic Radiology - 1993

- This staffing document was considerably simplified as compared to AAPM Report 33
- It represented an heroic effort to get agreement with all societies then representing the professional concerns of imaging medical physicists
- The document was not endorsed by the ACR, but was supported by the AAPM and ACMP.
- It remains the most recent diagnostic staffing document to receive endorsement by the AAPM

Abt reports for radiation oncology physics services - philosophy

Based on Abt surveys conducted in 1995, 2002 and 2007

Abt reports for radiation oncology physics services

- Philosophy and assumptions:
 - Medical physics work is professional in nature and must be performed by credentialed and qualified individuals
 - The time and effort associated with completing medical physics procedures may be measured and tabulated
 - The physicist time and effort must be surveyed and reported separately from support staff time
 - The survey must allow for and accommodate variations in practice location or practice type

Abt reports for radiation oncology physics services

- Philosophy and assumptions (cont.):
 - Medical physicists perform tasks that are associated both with equipment and with patient procedures
 - The work effort may therefore be reported both on the basis of equipment units and patient procedures
 - The number of equipment units and patient procedures may be normalized to the median imaging physicist
 - This information may be used to justify physicist staffing and build a business model for the imaging physics section

Design of survey instrument

Diagnostic Workforce and Manpower Survey - 2012

Diagnostic Workforce and Manpower Survey - 2012

- Application of Abt report philosophy to diagnostic staffing
 - Physicists reported :
 - Time per unit
 - Weekly patients per unit
 - Their time separate from support staff time
 - Their percentage effort by sub-specialty
 - Their location by region of the country
 - Their percentage of time by physics category of service or work
 - Percentage of physics services to type of medical facilities
 - Percentage effort by type of physics support (e.g., do all QC work, supervise support staff, supervise consultants, etc.)

Diagnostic Workforce and Manpower Survey - 2012

- Application of Abt report philosophy to diagnostic staffing
 - Physicists reported (cont.)
 - Regulatory environment in states where services are provided
 - Percentage of support time to various imaging units
 - Performance equipment cost and use by equipment category
 - Number of units for which you personally provide services
 - Number of patient procedures per week on each type of unit
 - Hours of support for initial planning and installation
 - Annual hours of support for each type of unit

How we hope to report the data:

- We wish to report
 - Both the number of hours/year and the % FTE of effort for the imaging QMP to support a unit of equipment
 - The cost in equipment, salary and benefits to provide imaging QMP support for each unit of equipment
 - The cost of imaging QMP support per patient procedure by category of procedure
 - A business model for the imaging physicist to use to support an imaging section based on:
 - Income from a structured revenue stream based on the cost of providing imaging physics support for patient procedures
 - Needed support for equipment, salaries, benefits and space

Limitations of survey instrument

Diagnostic Workforce and Manpower Survey - 2012

Limitations of the Survey

- Imaging physicists do not fall into neat categories. Imaging physicists practices vary:
 - Widely by percentage of time devoted to clinical service
 - By practice subspecialty (imaging, NM, HP, therapy, etc.)
 - By the percentage of time devoted to non-clinical activities (education, administration, regulations, etc.)
 - By the nature of the clinical support provided (perform QC, supervise technologists, supervise consultants, etc.)
 - By the regulatory environment and the impact on the time spent on each unit per year
- It is impossible divide imaging physicists neatly as either employees or consultants; the practices are too variable

Limitations of the survey: Diagnostic QMP practice model is undefined:

- Ad Hoc Committee on Defining the Diagnostic QMP Practice Model
 - Chair: Anthony Siebert
 - 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.

What is the difference between defending staffing and professional work?

- Staffing applies to the entire medical physics program, work applies only to the QMP
- Staffing may include non-professional effort, QMP work is professional in nature
- For professionals, work is directly related to compensation with respect to services provided, staffing is not

Conclusions

- The Diagnostic Workforce and Manpower Study is ambitious and represents the most sophisticated effort to date to measure the work of the imaging QMP
- The results are still being analyzed – this report is a work in progress and the numbers reported should not be cited or referenced
- There is still some discussion of whether to have an outside consulting group perform this study to eliminate any perception of bias in the results
