

An Introduction To Radiation Oncology Physics

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Medical physics staffing for radiation oncology: a decade of experience in Ontario, Canada

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The January 2010 articles in *The New York Times* generated intense focus on patient safety in radiation treatment, with physics staffing identified frequently as a critical factor for consistent quality assurance. The purpose of this work is to review our experience with medical physics staffing, and to propose a transparent and flexible staffing algorithm for general use. Guided by documented times required per routine procedure, we have developed a robust algorithm to estimate physics staffing needs according to center-specific workload for medical physicists and associated support staff, in a manner we believe is adaptable to an evolving radiotherapy practice. We calculate requirements for each staffing type based on caseload, equipment inventory, quality assurance, educational programs, and administration. Average per-case staffing ratios were also determined for larger-scale human resource planning and used to model staffing needs for Ontario, Canada over the next 10 years. The workload specific algorithm was tested through a survey of Canadian cancer centers. For center-specific human resource planning, we propose a grid of coefficients addressing specific workload factors for each staff group. For larger scale forecasting of human resource requirements, values of 260, 700, 300, 600, 1200, and 2000 treated cases per full-time equivalent (FTE) were determined for medical physicists, physics assistants, dosimetrists, electronics technologists, mechanical technologists, and information technology specialists, respectively.

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I. INTRODUCTION

Medical physicists provide essential technical and scientific support to radiation oncology practices through a combination of direct support of patient treatment, routine quality control of treatment-related technology, and the development and improvement of treatment procedures. Unlike many other medical professionals for whom the staffing may be directly related to such parameters as the number of patients seen or treated, the diversity of workload and the continually changing technology have rendered the assessment of physics staffing a challenging problem that demands a balanced approach accounting for factors such as technological environment, regulatory requirements, quality and safety, and the number of patients treated.⁽¹⁻⁷⁾

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93

93

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