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Competences of Medical Dosimetrists and Radiation Therapy Technologists working in a Costa Rican Radiotherapy Department: A benchmarking approach to the recommended ESTRO Core Curriculum using a Training/Competency Matrix

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Abstract

Introduction: The European Qualification Framework (EQF) published a definition of competency, it means the proven ability to use knowledge, skills and personal, social and methodological abilities, in work or study situations and in professional and personal development. In the context of the EQF, competency is described in terms of responsibility and autonomy. The literature identifies various competences required for Medical Dosimetrists (CMD) and Radiation Therapy Technologists (RTT), however, these are varied and scattered among different publications. The aim of this study was to identify the actual competences of CMD and RTT practicing on treatment planning (TP) with tri-dimensional conformal (3DC) or intensity modulated (IM) radiation therapy (RT) and linear accelerator (LINAC) respectively, and their future training needs in Hospital San Juan de Dios Radiotherapy Department (RT-HSJD) according to a benchmarking approach over the recommended ESTRO Core Curriculum for RTTs.

Methods: The recommended ESTRO Core Curriculum for RTTs was scrutinized for competences practiced by CMD and RTT. A systematic approach was performed by direct observation of the CMD and RTT daily practices to find relevant competences and training needs. A thematic analysis was performed to organize the competences according to themes. The themes described vary with regard to how technical and how specific the competences are to the CMD and RTT.

Technical competences are those required to perform a specific job (or group of jobs) and are aligned with the autonomous and responsible application of knowledge and skills in specialized fields such as radiation therapy. These are complemented by non-technical competences ("soft skills") which can be applied to several professions.

The themes analyzed were: 1) Non-technical competences (Quality and risk management, Decision making and critical analysis, Management and leadership, Team work and multi-disciplinarity, Communication). 2) General technical competences in RT (Professionalism, Patient Care, Research, Education, Equipment quality assurance, File verification). 3) Technical competences in TP (Simulation, Contouring, 3DCRT-TP, IMRT-TP, Planning quality assurance). 4) Technical competences in LINAC (Positioning and immobilization, Delivery of treatment, Verification of patient setup, IGRT Image Verification).

Then, a Training/Competency Matrix (T/C-M) was created to identify the relationship of the competences and the actual level achieved by each CMD and RTT in the RT department (Table 1). The competency level was set in the following qualifications: Great competency, autonomy and can teach others (4 points, purple color), Advanced competency and independent decision making (3 points, green color), Basic competency and dependent decision making (2 points, light blue color), In training (1 point, orange color) and Needs training (0 points, red color).

Results: The actual level, distribution and results achieved by each CMD and RTT in RT-HSJD can be observed in Table 1. A T/C-M is a tool used to document and compare the required competences for a position with the current skill level of the employees performing the role. It is used in a gap analysis for determining where an organization have critical training needs and as a tool for managing people development. It can also be used in succession planning as a means of identifying employees who have critical skills needed for promotion. The multiple competences of the CMD and RTT described, encompass multiple themes and it's an evidence of the complexity of the role of these professionals.

Conclusion: The T/C-M provides a comprehensive view of all the skills and behaviors needed in a RT department. Aids in managing the training budget because it identifies skill gaps across the organization rather than just one person at a time. Assists with planning by helping identify and target new skill areas that RT departments might need for the long term. Helps managers with development planning by providing a framework of common skills required.

The RT-HSJD has only two of nine fixed employees with professional training and they summarizes the highest competency levels (Table 1). Both has a Licentiate degree in Diagnostic Imaging and Radiotherapeutics from the University of Costa Rica (LIC-IDT-UCR) with specific training in Radiation Oncology, the other team members are radiographers with empiric training in this specialized area. The actual CMD and RTT across RT-HSJD must be formal trained to bridge the gap with professional standards or recommendations published such as the ESTRO Core Curriculum for RTTs and ensure the best care possible is given to patients. This study also promotes and emphasizes in the importance to incorporate professionals on CMD and RTT roles, as the ones with LIC-IDT-UCR.

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