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Opinion

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The ability to see the patient beyond a set of structures: a humanized approach to clinical dosimetry

Abstract

In radiotherapy, the specific area of dosimetry is the most likely to value the great importance of a good technical work but it must not „forget" the patient – the person to whom that work is meant. In this opinion article, I reflect about some aspects that a radiation therapist working in clinical dosimetry must be concerned about to do a more humanised clinical dosimetry for his patient.

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Opinion

In clinical dosimetry, the radiation therapist develops the treatment plan that will subsequently be used on the treatment units. The development of any radiotherapy treatment plan is based on the planning computed tomography (CT) scan previously acquired, on the set of volumes delineated on that scan, whether target volumes such as the Clinical Target Volume (CTV), Planning Target Volume (PTV), and others defined by the physician, or organs at risk, on the dose prescription established by the physician, and on the set of guidelines and best-practice recommendations defined for the pathology in question.

Although the starting point is the same — the same CT scan, with the same delineated volumes, the same dose-prescription objective and the same general guidelines — a treatment plan is, I would venture to say, in most cases a personal and non-transferable product. This uniqueness also applies at an intra-individual level. In my practice as a radiation therapist working in clinical dosimetry, I rarely develop two treatment plans that are exactly alike under exactly identical conditions. Indeed, when I am unable to achieve the proposed objectives for a given treatment plan, I stop working on it for that day and return to it the following day, which often resolves the difficulty in itself.

Does the perfect treatment plan exist, then? In my opinion, it does not. Rather, there may be a set of very good plans that comply with all principles and recommendations — from PTV coverage to the homogeneity and conformity of the dose distribution within that volume, as well as compliance with all dose constraints for organs at risk, reflected in a fully acceptable and, in many cases, even excellent Dose-Volume Histogram (DVH).

However, any of these very good plans may "fail" if the technician is not able to see the patient as a person, beyond that CT scan and those delineated volumes. In this context, it is important to emphasise that the radiation therapist working in clinical dosimetry is often one of the few professionals who has no direct contact with the patient and does not know them personally. This aspect may influence treatment planning, not because the patient is entirely irrelevant to the therapist in the absence of a therapeutic relationship, but because the patient's specific circumstances — general condition, level of consciousness, pain, among others — are factors that should be considered even before the planning phase begins.

From my perspective, at an individual level and from the point of view of the professional responsible for developing treatment plans, three essential pillars support good practice in clinical dosimetry: technical training, experience and empathy.

The first two pillars are relatively objective and, to some extent, it is easier to identify strengths and gaps at these levels, as well as to define strategies to address the gaps identified.

Technical training

Initial technical training is naturally important, but continuing professional development is decisive for good practice in clinical dosimetry. On one hand, this involves knowledge of the constant updates to treatment planning systems and of the new tools that are emerging, including those currently associated with the integration of artificial intelligence systems. On the other hand, it is crucial to keep abreast of clinical research in oncology, which determines new dose prescription and fractionation schemes that, in turn, influence the admissible limits for organs at risk. There is a recognised need for continuous updating.

Professional experience

With regard to experience, it is clear that this is an aspect that develops over time, but it may also be influenced by the way in which the institution is organised. The organisational structure of a department can enhance the development of each professional's individual experience. In my opinion, an organisational model that prioritises peer case discussion and teamwork promotes the development of personal experience at a higher level than a model based on more individualistic working practices, in which experience is acquired exclusively through the therapist's own practice and personal investment.

Empathy

The third pillar presented, empathy, is, from my perspective, the most important if the radiation therapist responsible for treatment planning is to see the person beyond the CT slices, the delineated volumes and the diagnosed pathology to be treated. Empathy is

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defined in the APA dictionary of psychology as

„*understanding a person from their frame of reference rather than one's own, or vicariously experiencing that person's feelings, perceptions, and thoughts"*. Empathy is the personal attribute that enables the professional to consider not only which technique should be used for a given plan in order to meet all objectives as effectively as possible, but also which technique is most appropriate for that particular patient, even before making a choice based solely on the objectives to be achieved.[1]

What is the value of developing a perfect plan using Intensity Modulated Radiation Therapy (IMRT), which provides excellent sparing of an organ at risk for which no dose was intended, but entails a longer treatment time, if in practice the patient experiences such discomfort that he is unable to remain adequately immobilised, despite the best possible positioning having been selected during the planning CT and despite the patient receiving analgesic therapy? In my opinion, it is preferable to develop a plan that achieves a good compromise on the DVH and is fully reproducible on the treatment unit, rather than a plan with an exceptional DVH that is unlikely to be reproducible because of the patient's specific circumstances. In my practice, whenever the planning CT images suggest a specific condition, I try to speak with the colleagues who performed the CT in order to understand for whom I am developing that treatment plan and under what conditions that patient is being treated.

From my point of view, the more human dimension of the radiation therapist's work in clinical dosimetry is not sufficiently valued, owing to the highly technical nature of the work performed and the absence of a direct relationship with the patient. Even so, from my perspective, this is an aspect that should not be neglected.

At an individual level, each professional should seek to carry out their work while recognising that the patient who will benefit from it is a person with individual characteristics and specific needs. However, this concern should not be limited to the initial plan: timely preparation of the plan, in order to meet previously established schedules, as well as monitoring the therapeutic pathway of the patient for whom the plan was developed, are also important in professional practice. If, in close collaboration with the professionals who deliver the treatment on a daily basis, there is a practice of identifying changes — anatomical changes, changes in tumour volume or even changes in the delivered dose distribution, for example — the treatment plan can be adapted more rapidly to the current situation, thereby providing better treatment for that person. Naturally, these practices, which I consider to be good practices, may be constrained by time limitations and may not always be easy to implement.

At an institutional level, defining a workflow supported by an effective communication network between areas — between CT, clinical dosimetry and the treatment units, in all directions — can increase awareness of more humanised care and reduce the difficulties caused by the time constraints faced by professionals working in clinical dosimetry, who, because of the characteristics of their work, do not have the opportunity to establish a therapeutic relationship with the patient to whom they provide their service.

As a radiation therapist working in clinical dosimetry, I believe that professionals in this field are able to see beyond a greyscale image and lines of different colours. Taken together, these elements represent a person who needs a treatment plan that must not be difficult or impossible to deliver adequately, and who requires attention to be paid to their condition throughout the entire treatment pathway. The clinical dosimetry professional can respond to these needs and see the patient beyond that set of structures. In literature is already possible to find this concern, like in the work of O´Donovan and O´Hanlon[2] that emphasizes the importance of individualized treatment planning and describe a few models that can be adopted along the radiotherapy workflow such as the incorporation of geriatric assessment into radiotherapy planning that enables clinicians to adapt treatments according to physiological age, comorbidities, and patient preferences. This study is focused in older population but most their considerations could be taken in consideration for every patient.

This reflection aimed to highlight the need to consider the humanization of care within the scope of clinical dosimetry, while also recognising, above all, that institutional involvement and effective teamwork are essential for the intended outcome to be achieved. Training is essential, both in the more technical domain and in the human component; the capacity for self-analysis and self-reflection, at both individual and institutional levels, is equally essential in order to recognise strengths and areas for improvement; and a workflow based on clear and effective communication is fundamental. All these aspects contribute to a "more humanized clinical dosimetry", one that goes beyond PTVs, isodose curves and DVHs and that, from my perspective, can be built.

The patient is not a pathology or a planning volume. The patient is a person who, at that moment, is facing a problem that radiotherapy may help to overcome or control, who needs to start treatment on the scheduled date and who therefore requires an appropriate and properly prepared treatment plan, as well as careful monitoring of any changes that may occur during the course of treatment.

And even if the radiation therapist does not know that person, he should do everything possible to meet these objectives; this is what humanised clinical dosimetry means.

Conflicts of interest

The authors declare they have no conflicts of interest.

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