

Sustainable innovation in addressing radiotherapy workforce challenges

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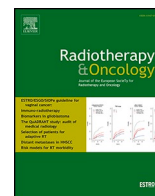
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Letter to the Editor

Sustainable innovation in addressing radiotherapy workforce challenges



With great interest we read the editorial by Petit et al. [1], which highlights the pressing challenge of workforce shortages in radiotherapy. Their timely and well-argued piece makes an important contribution by framing workforce resilience as one of the defining issues for oncology in the coming decades. While efforts to reduce cancer incidence and strengthen prevention are vital, it is equally important to consider how innovation can be pursued sustainably in the meantime. We suggest several approaches that may benefit the community in addressing this challenge.

First, there is a need for an innovative mindset and safe spaces for experimentation. Structured initiatives such as innovation laboratories provide environments where new ideas can be tested and refined without the immediate pressure of large-scale implementation [2]. This enables iterative cycles of development, evaluation and adjustment, fostering resilience and adaptability in workforce-related strategies.

Second, innovation should be collaborative and iterative. Established frameworks such as design thinking or the business model canvas [3] can guide teams in developing, testing and refining ideas in a structured manner. Crucially, this process should extend beyond professionals alone. Engaging patients as partners in innovation can uncover opportunities that improve care while reducing workload, for example enabling patients to self-manage follow-up symptoms so clinicians can prioritise those requiring urgent intervention.

To achieve this, both vertical and horizontal perspectives are necessary [4]. A vertical perspective involves exploring stakeholders' lived experiences in depth and uncovering knowledge that can inform co-design. Burnout among professionals often stems from complex socio-technical issues involving technology, people and organisations, and addressing these requires nuanced system-level insight. A horizontal perspective considers how changes in one part of the workflow affect downstream processes, ensuring that strategies are evidence-based and adaptable over time.

Finally, oncology innovation must grapple with the diversity of values across stakeholders [5]. Developing value-based business models with sustainable revenue streams is essential to avoid short-term efficiency gains at the expense of long-term resilience. Sharing insights from value-based innovation experiments and learning not only from successes but also from setbacks can help scale promising approaches across contexts.

In conclusion, we commend Petit et al. for drawing much-needed attention to the urgency of workforce shortages in radiotherapy. Building on their important editorial, we argue that addressing this challenge requires immediate action alongside the cultivation of an innovation ecosystem that is experimental, collaborative, stakeholder-driven and value-based. By combining vertical and horizontal

perspectives and integrating diverse voices, the oncology community can co-create sustainable solutions that strengthen care delivery while safeguarding patients and professionals alike.

CRediT authorship contribution statement

Pieter Vandekerckhove: Conceptualization, Writing – original draft, Writing – review & editing. **Benjamin H.L. Harris:** Conceptualization, Writing – original draft, Writing – review & editing. **Louis J. Koizia:** Conceptualization, Writing – original draft, Writing – review & editing.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- [1] Petit S, Franco P, Heukelom J, Callens D. Increasing cancer incidence and workforce shortages – it is time to act now. *Radiother Oncol* 2025;211:111057. <https://doi.org/10.1016/j.radonc.2025.111057>.
- [2] Armbruster RR, Begun JW, Duncan AK. An in-house learning laboratory for patient-centered innovation. *J Healthc Qual* 2009;31:10–7. <https://doi.org/10.1111/j.1945-1474.2009.00004.x>.
- [3] Osterwalder A, Pigneur Y. *Business model generation: a handbook for visionaries, game changers, and challengers*. John Wiley & Sons; 2010.
- [4] Vandekerckhove P, Harris BHL, Koizia LJ, Handa A, Brainard C, Howard S. Why we need a patient-centered innovation renaissance: a horizontal and vertical integration of knowledge to transform care pathways. *Patient Exp. J* 2025;12:9–13. <https://doi.org/10.35680/2372-0247.2023>.
- [5] Vandekerckhove P, Timmermans J, de Bont A, de Mul M. Diversity in stakeholder groups in generative co-design for digital health: assembly procedure and preliminary assessment. *JMIR Hum Factors* 2023;10:e38350. <https://doi.org/10.2196/38350>.

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