

Closing the Care Gap:

How digital transformation, global networking and remote solutions could expand the reach of radiotherapy in communities worldwide

2022



Executive Summary

The cancer community is becoming increasingly global, coming together under crises and conflict. At the same time, cancer incidence is rising and too many people worldwide are dying because they lack access to basic quality cancer care. The provision and improvement of equitable cancer care globally is critical but is significantly hampered.

The Lancet Oncology¹ cited the pandemic and other crises as a reason health-care professionals are being forced to “think outside the box for alternative solutions to everyday tasks.”

According to The Lancet Oncology, in radiotherapy, “telemedicine has also been a crucial tool to provide training to physicists, radiation oncologists, and dosimetrists in low-income and middle-income countries.” The Global Coalition for Radiotherapy (GCR) is prepared to take this digital disruption a step further.

The GCR met in February 2022 to discuss how recent digital technology developments in radiotherapy could be harnessed to make a big leap forward and help close the cancer care gap around the world. This white paper recommends where and how such innovative solutions could be used to improve health system infrastructure and access to quality radiotherapy. It calls for global collaboration and networking with professionals, industry and policy makers to ensure this moment is not lost for the much-needed digital transformation in radiotherapy cancer care. “Ultimately, when old paradigms are no longer working as well as they once did, we must look towards new and innovative approaches.”

Background

Half of the world’s population currently lacks access to the full range of essential health services, including cancer care. Cancer rates are rising, and cancer is still a leading cause of death. Almost 10 million people die from cancer annually across the world and 16% of deaths are due to cancer.

The cancer care gap is growing faster than the world’s ability to address the need. In 2019, there were 18 million new cancer cases. It is estimated that by 2040, there will be 30 million new cases per year.²

The increased focus on precision cancer medicine with advances in genomics and pharmaceuticals has improved survival in many cancers. However, the global cancer care gap is widening. Fifty percent of the global population has limited or no access to diagnostics, and up to 80% has no access to timely and affordable surgery and radiotherapy.³

¹ Clearing the radiotherapy backlog: innovation to pave the way, The Lancet Oncology; [https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045\(22\)00513-7/fulltext](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(22)00513-7/fulltext)

² How Can Radiotherapy Close the Care Gap? Recorded Webinar, YouTube, <https://www.youtube.com/watch?v=ePUIMRGUdP8&t=2s>

³ Aggarwal et al 2022

Radiotherapy is one of the three pillars of cancer therapy, alongside surgery and systemic therapy. It is estimated to be needed for at least 50% of cancer patients and in 40% of cures.

Between 2013 to 2015, the Union for International Cancer Control (UICC) brought together more than 100 experts in oncology, global health, and economics to form the Global Task Force on Radiotherapy for Cancer Control (GTFRCC). In their 2015 seminal Lancet Oncology publication, the GTFRCC concluded that there was a potential to save 1 million lives per year by 2035 through optimal access to radiotherapy, with a net economic benefit of up to \$365 billion USD over the 20-year scale-up period.⁴ However, progress toward this target has been limited and the world is lacking workforce and access to technology. It is estimated that by 2035, an additional 150,000 skilled radiotherapy clinicians will be needed.

The Challenge

Radiation therapy is safe and effective. Approximately 50 – 60 percent of all people diagnosed with cancer receive radiation therapy at some point during their care.⁵ Despite the need for this life-saving treatment, a gap continues to exist in accessing and using the technology. The annual Evidence-Based Medicine meeting in 2021 addressed current challenges in accessing radiotherapy services in Low- and Middle Income Countries (LMIC), advocating for implementation of modern radiotherapy technology to improve access to cancer care. By expanding technical and workforce infrastructure there is huge potential to improve cancer survival worldwide.⁶ This, combined with measuring outcomes to ensure that the results are in line with treatment goals. However, the challenge is delivering this across the globe as many areas are starting from a localized low technology base.

The Opportunity

There has been a digital technology revolution in radiotherapy over the last ten years, accelerated by the challenges of the Covid pandemic. By embracing and harnessing this revolution, and having the vision to embrace this for radiotherapy, closing the radiotherapy care gap could be fast-tracked.

Digital technology in radiotherapy has accelerated in the last ten years allowing more precise individualized quality radiotherapy to be delivered more widely, with many work flow and remote solutions. Radiotherapy, of all the medical disciplines, benefits from advanced technology. If there is a digital transformation in radiotherapy worldwide, this will not only cure more patients but assist the persistent workforce problem, having a high impact effect. Technology is a low-risk, low-cost solution which is guaranteed to improve quality and access to radiotherapy and therefore improve cancer survival globally. But as with all digital transformation strategies the challenge is in the delivery; the risk is not achieving its potential.

⁴ Atun R, Jaffray DA, Barton MB, et al. 2015. Expanding global access to radiotherapy. *Lancet Oncol* 16(10): 1153-86

⁵ Baskar R, Lee KA, Yeo R, Yeoh KW. Cancer and radiation therapy: current advances and future directions. *Int J Med Sci.* 2012;9(3):193-199. doi:10.7150/ijms.3635

⁶ Modern Radiotherapy Technology: Obstacles and Opportunities to Access in Low- and Middle-Income Countries | *JCO Global Oncology* (ascopubs.org)

Summary of Meeting of the Global Coalition for Radiotherapy: 8 February 2022

Steve Laws, Vice President of Advanced Oncology Solutions in EMEA for Varian, and Paul Naine, Director of Clinical Operations for Elekta presented suggestions for optimization of treatment and technology. The roundtable discussion which followed included possible solutions and areas for implementation. The webinar recording is available on the [GCR website](#).

Barriers to use of modern technology; the need for a digital transformation

Financial limitations (e.g. cost of equipment), insufficient skilled workforce, and patients living in remote locations are all barriers to accessing radiotherapy. Technology and software, which could radically improve access, are often not used at all, or not used to their full capacity. A digital transformation is needed to jump the hurdles and look at the technology afresh. Radiotherapy professionals need to be adequately trained on new equipment, enabled to create a holistic view of the cancer treatment workflow and empowered to assess if the technology is being used to maintain effective and efficient patient care.

Optimization of care includes using AI, cloud-based technology and actionable data as cancer centers continue to adapt to ever changing protocols and developments. Use of IT for centralization of resources and information will streamline communication. Computerized records will help clinicians on the team and in remote places access information in real time.

Making complex technology accessible

- Radiation therapy equipment, while increasingly allowing more complex procedures, is becoming simpler to use, more affordable and more accessible. Online training and remote support should be the norm.
- Remote learning technology is available to support infrastructure, maintenance, and training. Accessing skilled mentors and remote training also relieves the financial burden some centers may carry when sending a clinical staff to training abroad, particularly for LMIC.
- Collaboration is essential to build trust with all stakeholders in the radiotherapy community. For example, industry supporting training in LMIC and developing a local workforce.
- Local centers are open to student exchanges where clinically representative learning can occur particularly in radiation oncology programs and medical physics programs.
- Companies that produce machines can also collaborate on best practices as well as educational standards for entrance into the field and what is necessary to enable clinical productivity.

Increased visibility of the profession and raising awareness

Individuals, organizations and companies working in radiotherapy should discuss how to help increase the number of skilled professionals in the field. They can collaborate on a policy level to raise awareness and improve training and increase advocacy.

Summary

Although we live in a time of technological and health achievements, there continues to be a growing gap in cancer care. Global pandemics, humanitarian crises and shifting economies will continue to disrupt cancer services now and in the future. Radiotherapy continues to be an effective treatment that will help close this care gap, as long as there is increased access and optimized care options. The tools are available for a digital enablement in radiotherapy. By working together, the global community can provide the technology and health system infrastructure to improve world wide access to radiotherapy and so improve cancer care.



Key Recommendations

1. Ensure national cancer plans recognize investment in radiotherapy technology as one of the most cost-effective actions the government can make in improving cancer survival.
2. Use digital technology as a multiplier of workforce and quality, to rapidly improve access to quality cancer care.
3. Use radiotherapy technology/infrastructure investment as a low-cost, low-risk guaranteed strategy to improve cancer care.
4. Include a digital transformation strategy in national radiotherapy plans.
5. Use focused competency-based training; new clinical staff should be trained in what they need to know to achieve a therapeutic outcome.
6. Take advantage of remote learning technology to increase mentorship and training opportunities to address the growing need for skilled technicians.
7. Collaborate between companies, industry, academia and clinicians to produce a minimum standard for best practices in global radiotherapy and standardized education and training.
8. Expand capacity in hospitals by accessing clinical resources and services both remotely and onsite, prioritizing training, work-flow and expanding the radiotherapy workforce.
9. Help create a global digital radiotherapy technology task force as a reference center to help advise countries.

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